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SRX550 High Memory Services Gateway Hardware Guide

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YEAR 2000 NOTICE

Juniper Networks hardware and software products are Year 2000 compliant. Junos OS has no known time-related limitations through the year 2038. However, the NTP application is known to have some difficulty in the year 2036.

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4   Maintaining Components

5   Troubleshooting Hardware

6   Contacting Customer Support and Returning the Chassis or Components

7   Safety and Compliance Information

About This Guide

Use this guide to install hardware and perform initial software configuration, routine maintenance, and troubleshooting for the SRX550 High Memory Services Gateway. After completing the installation and basic configuration procedures covered in this guide, refer to the Junos OS documentation for information about further software configuration.

RELATED DOCUMENTATION

SRX550 High Memory Quick Start

Wi-Fi Mini-PIM Installation Guide

LTE Mini-PIM and Antenna Installation Guide

Transceivers Supported on SRX550 High Memory Services Gateways

1
CHAPTER

Overview

SRX550 High Memory (SRX550 HM) Services Gateway Overview

IN THIS SECTION

SRX550 High Memory Services Gateway Description

The SRX550 High Memory Services Gateway is a large branch office gateway that combines security, routing, switching, and WAN interfaces with next-generation firewall and advanced threat mitigation capabilities for cost-effective, secure connectivity across distributed enterprise locations. The services gateway simplifies network complexity, protects and prioritizes network resources, and improves user and application experience.

NOTE: The SRX550 High Memory Services Gateway is also called as SRX550 HM or SRX550M.

The SRX550 High Memory Services Gateway has a modular 2U chassis that fits a 19-inch rack with a depth of approximately 18.1 inches. The SRX550 High Memory Services Gateway comes with 4 GB of DRAM memory and 8 GB of flash memory.

Figure 1 on page 3 shows the SRX550 High Memory Services Gateway.

Figure 1: SRX550 High Memory Services Gateway
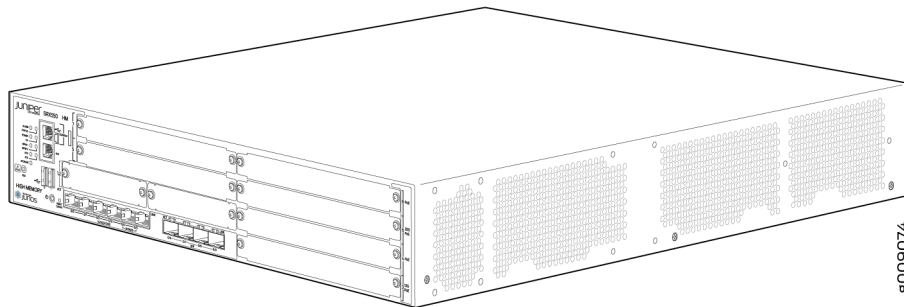
SRX550 High Memory Services Gateway Hardware Features

The SRX550 High Memory Services Gateway provides the following features:

- Symmetric Multiprocessing-based data forwarding.

- Hardware-based control and data plane separation.

- Six on-board 10/100/1000Base-T Gigabit Ethernet ports.

- Four on-board SFP Gigabit Ethernet ports.

- Support for dual AC or dual DC power supplies with a redundant configuration in the chassis. 645 W AC and DC power supplies with or without Power over Ethernet (PoE) support. The AC and DC power supplies are hot-swappable.

- Junos OS support for advanced security and routing services on the Services and Routing Engine (SRE).

- The services gateway supports Gigabit-Backplane Physical Interface Modules (GPIMs) and also Mini Physical Interface Modules (Mini-PIMs).

SRX550 High Memory Services Gateway Software Features and Licenses

The services gateway provides the software features listed in Table 1 on page 4.

> **NOTE**: Some software features require the purchase of a separate license.

For information about features that require a license on this services gateway, see the Installation and Upgrade Guide for Security Devices.

Table 1: Software Features and Licenses

Feature Category	Feature
Routing	OSPF
	BGP
	Routing Information Protocol version 1 (RIPv1) and version 2 (RIPv2)
	Static routes
	Intermediate System-to-Intermediate System (IS-IS)
	Connectionless Network Service (CLNS): • End System-to-Intermediate System (ES-IS) protocol • IS-IS extensions • BGP extensions • Static routes **NOTE**: CLNS is available only in packet-based mode.

Table 1: Software Features and Licenses *(Continued)*

Feature Category	Feature
	MPLS: • Layer 2 and Layer 3 virtual private networks (VPNs) • VPN routing and forwarding (VRF) table labels • Traffic engineering protocols such as LDP and RSVP • Virtual private LAN service (VPLS) • Multicast VLAN **NOTE**: MPLS is available in both packet-based mode and selective packet mode.
Internet protocols	• IPv4 • IPv6 routing and forwarding
IP address management	• Static addresses • Dynamic Host Configuration Protocol (DHCP) 8
Encapsulation	Ethernet: • Media access control (MAC) encapsulation • 802.1p tagging • Point-to-Point Protocol over Ethernet (PPPoE) • Circuit cross-connect (CCC) • Translational cross-connect (TCC)
	Synchronous Point-to-Point Protocol (PPP)
	Frame Relay

Table 1: Software Features and Licenses *(Continued)*

Feature Category	Feature
	High-Level Data Link Control (HDLC)
	802.1Q filtering and forwarding
	Multilink Frame Relay (MLFR)
	Multilink PPP
Ethernet switching	Line-rate Ethernet switching provided by XPIMs, including support for VLANs, spanning tree, link aggregation, and authentication
Security	IPsec VPN for site-to-site or remote access encrypted tunneling
	Antivirus filtering, including full antivirus file-based scanning or Express-AV packet-based scanning
	Antispam and anti-phishing filtering
	Web filtering
	Content filtering based on file types and types of files within HTTP and HTTPS
	Unified threat management (UTM)
	Network attack detection
	Denial of service (DoS) and distributed denial of service (DDoS) protection
	Generic routing encapsulation (GRE), IP-over-IP, and IP Security (IPsec) tunnels
	Advanced Encryption Standard (AES) 128-bit, 192-bit, and 256-bit

Table 1: Software Features and Licenses *(Continued)*

Feature Category	Feature
	56-bit Data Encryption Standard (DES) and 168-bit 3DES encryption
	MD5 and Secure Hash Algorithm 1 (SHA-1) authentication
	Stateful firewall and stateless packet filters
	Network Address Translation (NAT)
System management	Junos XML protocol XML application programming interface (API)
	The J-Web browser interface—For services gateway configuration and management
	Junos OS command-line interface (CLI)—For services gateway configuration and management through the console through Telnet, or SSH
	Simple Network Management Protocol version 1 (SNMPv1), SNMPv2, and SNMPv3
	Network and Security Manager (NSM)
	J-Flow flow monitoring and accounting
Traffic analysis	Packet capture
	Real-time performance monitoring (RPM)
	System log
Activity logging and monitoring	The J-Web interface event viewer

Table 1: Software Features and Licenses *(Continued)*

Feature Category	Feature
	Traceroute
	Supports the following external administrator databases: • RADIUS/AAA • TACACS+
Administration	Autoinstallation
	Configuration rollback
	Button-operated configuration rescue (the CONFIG button)
	Confirmation of configuration changes
	Software upgrades
	Supports the following features for automating network operations and troubleshooting: • Commit scripts • Operation scripts • Event policies
Hot-swappable	GPIMs and XPIMs are not hot-swappable on the SRX550 High Memory Services Gateway.
Bypass ports	LAN bypass ports are not supported on the SRX Series Services Gateways.

SRX550 High Memory Services Gateway Power over Ethernet

Power over Ethernet (PoE) supports the implementation of the IEEE802.3 af and IEEE802.3 at standards, which allow both data and electric power to pass over a copper Ethernet LAN cable.

The SRX550 High Memory Services Gateway provides PoE ports, which supply electric power over the same ports that are used to connect network devices. PoE ports allow you to plug in devices that require both network connectivity and electric power, such as Voice over IP (VoIP) and IP phones and wireless access points.

The PoE ports for the SRX550 High Memory Services Gateway reside on the individual XPIMs. The SRX550 High Memory Services Gateway supports the 16-Port Gigabit Ethernet XPIM with PoE.

The Services and Routing Engine (SRE) manages the overall system PoE power. You can configure the services gateway to act as power sourcing equipment to supply the power to the GPIMs connected on the designated PoE ports.

Table 2 on page 9 lists the SRX550 High Memory Services Gateway PoE specifications.

Table 2: SRX550 High Memory Services Gateway PoE Specifications

Power Management Schemes	Values
Supported standards	- IEEE802.3 af - IEEE802.3 at - Legacy
Supported slots	PoE is supported on the following front panel slots: 3 4 6 8 For more information, see "SRX550 High Memory Services Gateway Front Panel" on page 14.

Table 2: SRX550 High Memory Services Gateway PoE Specifications *(Continued)*

Power Management Schemes	Values
Total PoE power sourcing capacity	The 645 W AC and 645 W DC power supplies support the following capacities: • 255 W PoE on a single power supply, or with redundancy using the two power supply option • 510 W PoE using the two power supply option operating as nonredundant
Per-port power limit	31.2 W
Power management modes	• Static: Power allocated for each interface can be configured • Class: Power allocation for interfaces is decided based on the class of powered device connected

SEE ALSO

Accessing the SRX550 High Memory Services Gateway

The services gateway runs Junos OS. You can use two user interfaces to monitor, configure, troubleshoot, and manage the services gateway:

• The J-Web interface: A Web-based graphical interface that allows you to operate a services gateway without commands. The J-Web interface provides access to all Junos OS functionality and features.

• Junos OS command-line interface (CLI): Juniper Networks command shell that runs on top of a UNIX-based operating system kernel. The CLI is a straightforward command interface. On a single line, you type commands that are executed when you press the Enter key. The CLI provides command help and command completion.

In addition, you can also use Junos Space Security Director to define and manage security policies on the services gateway.

SRX550 High Memory Services Gateway Boot Devices and Dual-Root Partitioning Scheme

By default, the SRX550 High Memory Services Gateway boots from the following storage media (in order of priority):

1. Internal CompactFlash card (default; always present)

2. USB storage key (alternate)

> **NOTE**: When you explicitly boot the services gateway using the CLI and the services gateway has two USBs installed (one in slot 0 and the second in slot 1), if the USB in slot 0 fails, the booting sequence will not boot from the second USB installed in slot 1. Instead, the device will boot using the next storage media in its storage media booting priority list, the internal CompactFlash card.

The dual-root partitions allow the services gateways to remain functional if there is file system corruption and facilitate easy recovery of the corrupted file system.

The dual-root partitioning scheme keeps the primary and backup Junos OS images in two independently bootable root partitions. If the primary root partition is corrupted, the system will be able to boot from the backup Junos OS image located in the other root partition and remain fully functional.

When the services gateway powers up, it tries to boot Junos OS from the default storage media. If the device fails to boot from the default storage media, it tries to boot from the alternate storage media. With the dual-root partitioning scheme, the device first tries to boot Junos OS from the primary root partition and then from the backup root partition on the default storage media. If both primary and backup root partitions of a media fail to boot, then the device tries to boot Junos OS from the next available type of storage media. The services gateway remains fully functional even if it boots the Junos OS from the backup root partition of storage media.

Benefits of the SRX550 High Memory Services Gateway

- Threat protection—The SRX550 High Memory services gateway supports next-generation firewall capabilities such as IPS and unified threat management (UTM) features including antivirus, antispam, and enhanced Web filtering.

- Simplified deployment with minimal manual intervention—The Zero Touch Provisioning (ZTP) feature enables you to provision and configure the SRX550 High Memory services gateway automatically, thereby reducing operational complexity and simplifying the provisioning of new sites.

RELATED DOCUMENTATION

SRX550 HM Chassis

IN THIS SECTION

SRX550 High Memory Services Gateway Chassis

The SRX550 High Memory Services Gateway chassis is a rigid sheet metal structure that houses all the other hardware components.

Table 3 on page 13 provides information about the physical specifications for the services gateway.

Table 3: Physical Specifications for the SRX550 High Memory Services Gateway

Physical Specification	Value
Chassis height	3.5 in. (8.8 cm)
Chassis width	17.5 in. (44.4 cm)
Chassis depth	18.2 in. (46.2 cm)
Chassis weight (includes one power supply without any GPIMs or Mini-PIMs)	21.96 lb. (9.96 kg)

⚠️ **CAUTION**: Before removing or installing components of a functioning services gateway, attach an electrostatic discharge (ESD) strap to an ESD point and place the other end of the strap around your bare wrist. Failure to use an ESD strap could result in damage to the device.

The services gateway must be connected to earth ground during normal operation. The protective earthing terminal on the side of the chassis is provided to connect the services gateway to ground. Additional grounding is provided to an AC-powered services gateway when you plug its power supply into a grounded AC power receptacle.

SRX550 High Memory Services Gateway Front Panel

Figure 2 on page 14 shows the front panel of the SRX550 High Memory Services Gateway.

Figure 2: SRX550 High Memory Services Gateway Front Panel
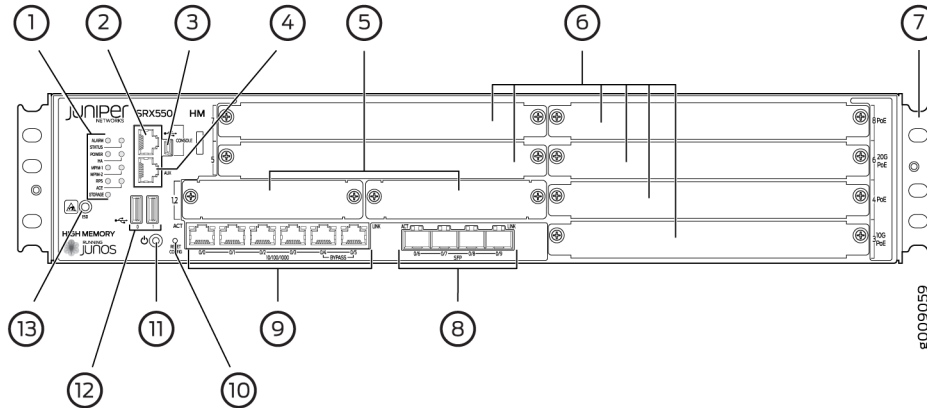
Table 4 on page 14 provides information about the front panel components of the services gateway with reference to Figure 2 on page 14.

Table 4: SRX550 High Memory Services Gateway Front Panel Components

Number	Component	Location	Description
1	Front panel LEDs	Left side of the front chassis panel	Indicate the current status of the services gateway. See "SRX550 High Memory Services Gateway Front Panel LEDs" on page 19 for detailed information about the front panel LEDs.
2	Serial Console Port	Left side of the front chassis panel	Connects a laptop to the services gateway for CLI management. The port uses an RJ-45 serial connection, is configured as data terminal equipment (DTE), and supports the RS-232 (EIA-232) standard.

Table 4: SRX550 High Memory Services Gateway Front Panel Components *(Continued)*

Number	Component	Location	Description
3	Mini-USB Console Port	Left side of the front chassis panel	Connects a laptop to the services gateway for CLI management through a USB interface. The port accepts a Mini-B type USB cable plug. A USB cable with Mini-B and Type A USB plug is supplied with the services gateway. To use the USB console port, you must download a USB driver to the management device from the Downloads page. To download the driver for Windows OS, select **6.5** from the **Version** drop-down list. To download the driver for macOS, select **4.10** from the **Version** drop-down list.
4	AUX Port	Left side of the front chassis panel	**NOTE**: The Auxiliary port is not supported on the SRX550 High Memory Services Gateway.
5	2 Mini-PIM slots numbered 1 and 2	Left side of the front chassis panel	Both slots support Mini-PIMs.
6	6 GPIM slots numbered 3 through 8. For specific GPIM/XPIM slots, see Figure 3 on page 19.	Front chassis panel	- All slots support GPIMs. - Slot 3 supports 10-gigabit XPIMs. - Slot 6 supports 20-gigabit XPIMs. - Slots 3, 4, 6, and 8 support PoE. For more information about PoE, see "SRX550 High Memory Services Gateway Power over Ethernet" on page 9. **NOTE**: SRX550 High Memory Services Gateway does not support hot-swappable functionality for GPIMs and XPIMs
7	Mounting brackets	Sides of chassis	Rack-mounting brackets attached when the services gateway is mounted on a rack. The mounting brackets are used to attach the services gateway to a rack or cabinet.

Table 4: SRX550 High Memory Services Gateway Front Panel Components *(Continued)*

Number	Component	Location	Description
8	4 SFP Ethernet ports: • Port labeled 0/6 • Port labeled 0/7 • Port labeled 0/8 • Port labeled 0/9 Provides link speeds of 10/100/1000 Mbps.	Middle of the front chassis panel, lower edge	The SFP Ethernet ports have the following characteristics: • Operate in full-duplex and half-duplex modes. • Support flow control. • Support autonegotiation. The SFP Ethernet ports can: • Function as front-end network ports. • Provide LAN and WAN connectivity to hubs, switches, local servers, and workstations. • Forward incoming data packets to the services gateway. • Receive outgoing data packets from the services gateway.

Table 4: SRX550 High Memory Services Gateway Front Panel Components *(Continued)*

Number	Component	Location	Description
9	6 fixed Gigabit Ethernet ports: • Port labeled 0/0 • Port labeled 0/1 • Port labeled 0/2 • Port labeled 0/3 • Port labeled 0/4 • Port labeled 0/5 Provides link speeds of 10/100/1000 Mbps.	Left side of the front chassis panel, lower edge	The Gigabit Ethernet ports have the following characteristics: • Use an RJ-45 connector. • Operate in full-duplex and half-duplex modes. • Support flow control. • Support autonegotiation. The Gigabit Ethernet ports can: • Function as front-end network ports. • Provide LAN and WAN connectivity to hubs, switches, local servers, and workstations. • Forward incoming data packets to the services gateway. • Receive outgoing data packets from the services gateway.
10	RESET CONFIG Button	Left side of the front chassis panel	Returns the services gateway to the rescue configuration or the factory default configuration. For more information, see Resetting the SRX550 High Memory Services Gateway.

Table 4: SRX550 High Memory Services Gateway Front Panel Components *(Continued)*

Number	Component	Location	Description
11	Power button	Left side of the front chassis panel	Use the Power button to shut down the services gateway. On a services gateway that has been previously shut down using the Power button, the services gateway starts up when the power button is pressed again. **WARNING**: The Power button does not shut off power to the power supplies or the midplane. You must remove the power cables or power cords to completely shut down the services gateway. The DC OK LED light on the power supply unit (PSU) changes from green to amber indicating that the software has stopped running. After the software has stopped running, you can safely remove any GPIMs or Mini-PIMs from the services gateway.
12	USB 0 and USB 1 ports	Left side of the front chassis panel	The services gateway has two USB ports, labeled USB 0 and USB 1, that accept a USB storage device. These USB ports accept USB flash drives with Type A plugs. When the USB drive is installed and configured, it automatically acts as the secondary boot device if the primary CompactFlash card fails on startup. **NOTE**: You must install Junos OS on the USB storage device to use it as the secondary boot device. The services gateway supports the following USB devices: • Lexar 2 GB • Juniper Networks 2 GB Depending on the capacity of the USB drive, you can also configure it to receive core files generated during a failure.
13	Electrostatic discharge (ESD) outlet	Left side of the front chassis panel	While working on the services gateway, use the ESD outlet to plug in an ESD grounding strap to prevent your body from sending static charges to the services gateway, which will damage the device.

Figure 3 on page 19 shows how the slots on the front panel of the SRX550 High Memory Services Gateway are numbered.

Figure 3: SRX550 High Memory Services Gateway Slot Numbers
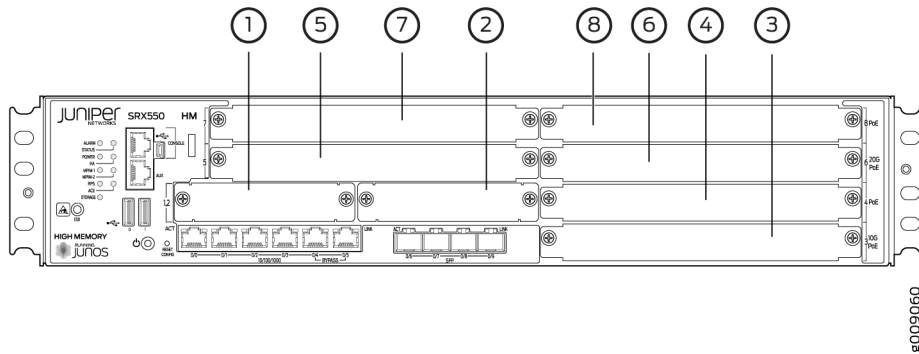
SRX550 High Memory Services Gateway Front Panel LEDs

Figure 4 on page 19 shows the locations of the SRX550 High Memory Services Gateway front panel LEDs. Table 5 on page 20 describes the LEDs.

Figure 4: SRX550 High Memory Services Gateway Front Panel LED Locations
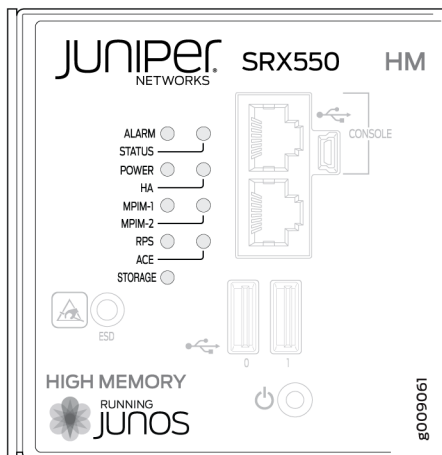
Table 5: SRX550 High Memory Services Gateway Front Panel LEDs

LED Label	LED State	LED Color	Description
ALARM	On Steadily	Amber	Indicates a major alarm, such as low Services Processing Unit (SPU) memory (less than 10% remaining), session full, maximum number of VPN tunnels reached, high availability (HA) status changed, or redundant group member not found.
		Red	Indicates a critical alarm, such as a failure of a hardware component or software module, or detection of a firewall attack.
	Off	Unlit	Indicates that the device is starting up. **NOTE**: When the system is up and running, if the ALARM LED is off, it indicates that no alarms are active on the device.
STATUS	On Steadily	Green	The services gateway is functioning normally.
		Amber	The services gateway is starting up, running diagnostics, or shutting down.
		Red	The services gateway has failed.
	Off	Unlit	The services gateway is powered off.
POWER	Steadily on	Green	The services gateway is functioning normally and that the services gateway and all power supply units (PSUs) are receiving power.
		Red	At least one PSU has failed.
		Amber	The Power button has been pressed and the services gateway is shutting down.
	Off	Unlit	The services gateway is not receiving power.

Table 5: SRX550 High Memory Services Gateway Front Panel LEDs *(Continued)*

LED Label	LED State	LED Color	Description
HA	Steadily on	Green	All configured high availability links are available.
		Red	High availability links are not working as expected and a cluster member might be missing or unreachable.
		Amber	Some configured high availability links are down, but enough links are still active for full high availability functionality. In this situation, performance might be reduced, current bandwidth could cause packet drops, or a single point of failure might now exist.
	Off	Unlit	High availability is not enabled.
MPIM-1, MPIM-2	On Steadily	Green	The Mini-PIM in the corresponding slot is functioning normally.
		Red	The Mini-PIM hardware in the corresponding slot has failed or its anti-counterfeit check failed.
	Off	Unlit	There is no Mini-PIM in the corresponding slot, or that the Mini-PIM is not detected by the device.
RPS	On Steadily	Green	The redundant power supply is operating normally.
		Red	One of the following conditions has occurred: • The primary power supply has failed, and the device is being powered by the redundant power supply. • The redundant power supply has been installed, but is not connected to a power source.
	Off	Unlit	The redundant power supply is not installed.
ACE	**NOTE**: The ACE LED is not functional.		

Table 5: SRX550 High Memory Services Gateway Front Panel LEDs *(Continued)*

LED Label	LED State	LED Color	Description
STORAGE	Blinking	Green	The services gateway is transferring data to or from the optional storage device.
	On Steadily	Green	The optional storage device is installed but no data is being transferred to or from it.
	Off	Unlit	The optional storage device is not installed.

SRX550 High Memory Services Gateway Back Panel

shows the back panel of the SRX550 High Memory Services Gateway.

Figure 5: SRX550 High Memory Services Gateway Back Panel
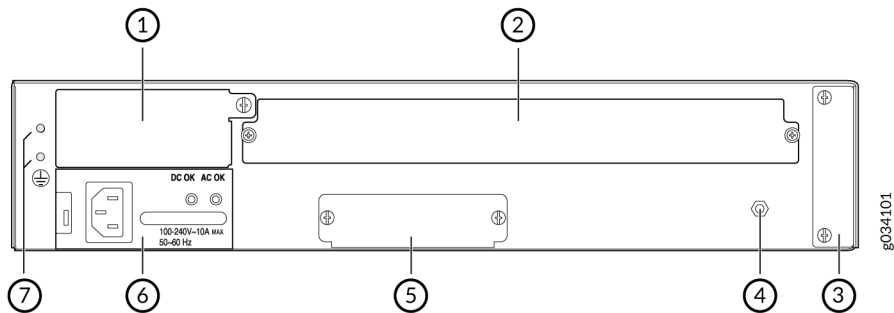
describes the components on the back panel of the SRX550 High Memory Services Gateway with reference to .

Table 6: SRX550 High Memory Services Gateway Back Panel Components

Number	Component	Location	Description	Usage
1	Power supply slot 1	Left side of back panel	The power supply provides power to the services gateway and its components. When the services gateway is equipped with the two power supply option, they work together to provide redundancy and load-sharing. The following power supplies are available: • 645 W AC power supply with PoE power • 645 W DC power supply with PoE power	Power supplies are hot-swappable and support single- or dual-redundant power supply versions. If you need to power off the services gateway after it finishes booting, first use the CLI to halt the device.
6	Power supply slot 0			
2	ACE Slot	Top center of the back panel	**NOTE**: This slot is not used.	
3	Air filter cover	Right of the back panel	Provides access to the optional air filter. **NOTE**: The air filter is not currently orderable.	The optional air filter helps keep the services gateway and its components free from dust particles. The air filter is hot-swappable. **NOTE**: The air filter is required for NEBS compliance.
4	Electrostatic discharge (ESD) outlet	Right side of the back panel	Connector for an ESD wrist band.	While working on the services gateway, use the ESD outlet to plug in an ESD grounding strap to prevent any damage to the services gateway.

Table 6: SRX550 High Memory Services Gateway Back Panel Components *(Continued)*

Number	Component	Location	Description	Usage
5	Storage slot	Center of the back panel, lower edge	Slot where you can install an extra data storage device.	Supplements the data storage capacity of the services gateway.
7	Grounding point	Left side of the back panel	Contains two M5 screws that you use to connect the grounding cable to the services gateway chassis.	Connects the services gateway chassis to earth ground.

RELATED DOCUMENTATION

SRX550 HM Cooling System

The SRX550 High Memory Services Gateway cooling system consists of four fixed fans. The fans provide cooling to the components installed in the services gateway. To function properly, the entire cooling system requires an unobstructed airflow and proper clearance around the site.

The fan controller constantly monitors the temperature of the services gateway and all modules (Mini-PIMs and GPIMs) installed in the device. Under normal operating conditions, the fans function at lower than full speed.

If any one of the four fans fails, the services gateway generates a warning but keeps the system running. If the temperature keeps rising, the services gateway lowers the power consumption by reducing the performance or shutting down some of the chassis components. However, if the ambient maximum temperature specification exceeds the warning limit and the system cannot be adequately cooled, then the services gateway shuts down the system and hardware components completely.

SRX550 HM Power System

SRX550 High Memory Services Gateway Power Supply

The SRX550 High Memory Services Gateway uses either one AC or one DC power supply unit (PSU). The services gateway is equipped with one AC power supply (see Figure 6 on page 26) for non-power redundancy. A second PSU is optional (sold separately) for power redundancy.

A second PSU can be used to meet power requirements exceeding the wattage provided by a single PSU (a nonredundant configuration). The two power supplies, either both AC or both DC, will load-share and provide power redundancy to the services gateway, increasing its availability and reliability. If one power supply fails or is removed, the other power supply redistributes the electrical load without interruption. The services gateway reassesses the power required to support its configuration and issues errors if the available power is insufficient. Figure 7 on page 26 shows the DC power supply.

⚠️ **CAUTION**: Do not mix AC and DC power supplies within the same services gateway because this can damage the device.

All power supplies are hot-swappable and support single or dual redundant power supply versions. Each power supply is cooled by the system's fans.

Figure 6: AC Power Supply
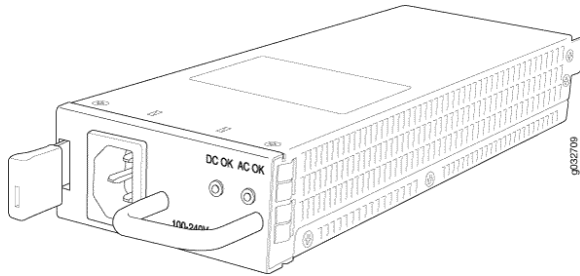
Figure 7: DC Power Supply
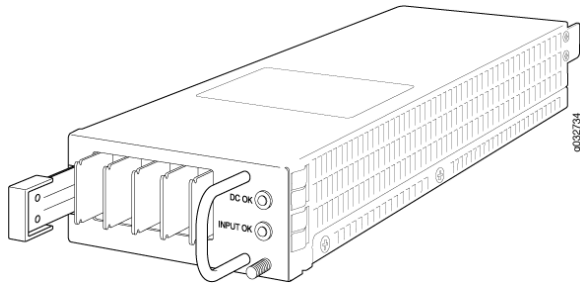
The power supplies provide different output wattage to the services gateway components according to the voltage requirements of the components.

The power supply components are listed in .

Table 7: Component Power Output/Consumption

Power Supply	Output/Consumption
645 W AC power supply	This power supply can provide: • 390 W at 12 V • 255 W PoE on a single power supply, or with redundancy using the two power supplies • 510 W PoE using the two power supply option operating as nonredundant **NOTE**: Using the two power supply option operating as nonredundant for up to 510 W PoE power, the administrator has the ability to prioritize the PoE ports that will receive power if an outage should occur to either the power source or to one of the power supplies.
645 W DC power supply	This power supply can provide: • 390 W at 12 V • 255 W PoE on a single power supply, or with redundancy using the two power supply option • 510 W PoE using the two power supply option operating as nonredundant **NOTE**: Using the two power supply options operating as nonredundant for up to 510 W PoE, the administrator has the ability to prioritize the PoE ports that will receive power if an outage should occur to either the power source or to one of the power supplies.

The DC power supply has connections for two DC power feeds labeled A and B, each with a positive (+) and a negative (-) terminal. You can connect the DC power supply to both the feeds. If either feed fails, the power supply draws all its power from the other feed. This configuration provides the commonly deployed A/B feed redundancy for the system. describes the connection terminals on the DC power supply.

Table 8: DC Power Supply Terminals

Feed	Label	Description
Feed A	**A+**	RTN connection for Feed A
	A-	-48VDC connection for Feed A
Feed B	**B+**	RTN connection for Feed B
	B-	-48VDC connection for Feed B

SRX550 High Memory Services Gateway Supported AC Power Cords

⚠️ **WARNING**: The AC power cord for the services gateway is intended for use with the services gateway only and not for any other use.

NOTE: In North America, AC power cords must not exceed 4.5 m (approximately 14.75 ft) in length, to comply with National Electrical code (NEC) Section 400-8 (NFPA 75, 5-2.2) and 210-52, and Canadian Electrical Code (CEC) Section 4-010(3).

Table 9 on page 28 provides power cord specifications, and Figure 8 on page 29 depicts the plug on the AC power cord provided for each country or region.

Table 9: AC Power Cord Specifications

Country	Electrical Specification	Plug Standards
Australia	250 VAC, 10 A, 50 Hz	AS/NZ 3112-1993
China	250 VAC, 10 A, 50 Hz	GB2099.1 1996 and GB 1002 1996 (CH1-10P)

Table 9: AC Power Cord Specifications *(Continued)*

Country	Electrical Specification	Plug Standards
Europe (except Italy and United Kingdom)	250 VAC, 10 A, 50 Hz	CEE (7) VII
Italy	250 VAC, 10 A, 50 Hz	CEI 23-16/VII
Japan	125 VAC, 12 A, 50 or 60 Hz	JIS 8303
North America	125 VAC, 10 A, 60 Hz	NEMA 5-15
United Kingdom	250 VAC, 10 A, 50 Hz	BS 1363A

Figure 8: AC Plug Types

> **NOTE**: Power cords and cables must not block access to services gateway components or drape where people might trip on them.

SRX550 High Memory Services Gateway AC Power Supply Electrical Specifications

The AC power supply electrical specifications for the SRX550 High Memory Services Gateway are listed in .

Table 10: AC Power Supply Electrical Specifications for the SRX550 High Memory Services Gateway

Power Requirement	Specification
AC input voltage	100 to 240 VAC
AC input line frequency	50 to 60 Hz
AC system current rating	7.6 to 3.8 A

SRX550 High Memory Services Gateway DC Power Cable Specifications

The DC power supply in slot **0** must be powered by dedicated power feeds derived from feed **A**, and the DC power supply in slot **1** must be powered by dedicated power feeds derived from feed **B**. This configuration provides the commonly deployed **A/B** feed redundancy for the system.

> **CAUTION**: You must ensure that power connections maintain the proper polarity. The power source cables might be labeled **(+)** and **(−)** to indicate their polarity. There is no standard color coding for DC power cables. The color coding used by the external DC power source at your site determines the color coding for the leads on the power cables that attach to the terminal studs on each power supply.

> **WARNING**: For field-wiring connections, use copper conductors only.
> For other electrical safety information, see "SRX550 High Memory Services Gateway Electrical Wiring Guidelines" on page 41.

> **CAUTION**: Power cords and cables must not block access to services gateway components or drape where people could trip on them.

Table 11 on page 31 summarizes the specifications for the power cable(s), which you must supply.

Table 11: DC Power Cable Specifications

Cable Type	Quantity and Specification
Power	8 AWG, minimum 60°C wire, or as permitted by the local code

SRX550 High Memory Services Gateway DC Power Supply Electrical Specifications

Table 12 on page 31 lists the DC power supply electrical specifications for the SRX550 High Memory Services Gateway.

Table 12: DC Power Supply Electrical Specifications for the SRX550 High Memory Services Gateway

Power Requirement	Specification
DC input voltage	Operating range: –40 to –72 VDC
DC system current rating	16 A at –48 VDC

RELATED DOCUMENTATION

Clearance Requirements for Airflow and Hardware Maintenance of the SRX550 High Memory Services Gateway | **45**

SRX550 High Memory Services Gateway Electrical Wiring Guidelines | **41**

Connecting the SRX550 HM to Power | **66**

SRX550 HM Interface Modules

SRX550 High Memory Services Gateway Gigabit-Backplane Physical Interface Modules

A Gigabit-Backplane *Physical Interface Module* (GPIM) is a network interface card (NIC) that installs in the front slots of the services gateway to provide physical connections to a LAN or a WAN. The GPIM receives incoming packets from a network and transmits outgoing packets to a network. These modules complement the onboard Ethernet interfaces to extend the types and port counts of network connections for the LAN or WAN.

Interface Module Terminology:

- GPIM—The Gigabit-Backplane Interface Module (GPIM) includes standard GPIMs that can be installed in a single-high, single-wide GPIM slot that has gigabit connectivity to the system backplane.

- XPIM—The XPIM can be installed only in the 10-gigabit GPIM slot 3 or in the 20-gigabit GPIM slot 6. It could be:

  - A single-high, single-wide LAN switch XPIM that uses one slot

  - A double-high, single-wide LAN switch XPIM that uses two standard slots vertically

  - A double-high, double-wide LAN switch XPIM that uses two standard slots vertically and two standard slots horizontally

  NOTE: When installing the 24-Port Gigabit Ethernet XPIM, which uses four slots, you must install it in the 20-gigabit GPIM slot 6, which refers to the top four slots 5 through 8.

shows how the slots on the front panel of the SRX550 Services Gateway are numbered.

Figure 9: SRX550 Services Gateway Slot Numbers
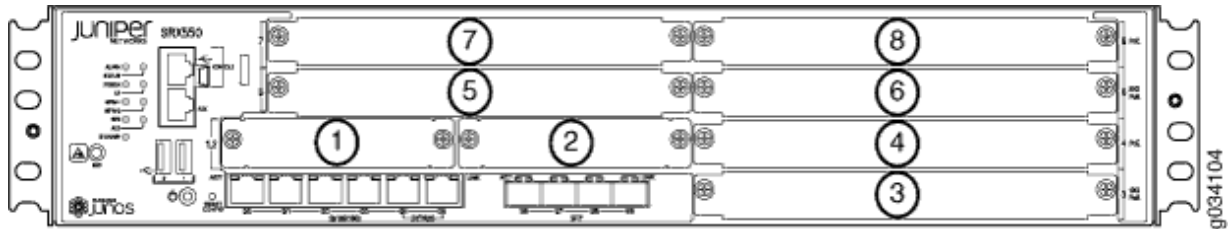
> ⚠️ **CAUTION**: SRX550 Services Gateway does not support hot-swappable functionality for GPIMs.

For more information about supported GPIMs and the minimum supported Junos OS release, see SRX Series Services Gateway Interface Modules and Compatibility

For details about the supported GPIMs and XPIMs, see the SRX Series Services Gateways for the Branch Physical Interface Modules Hardware Guide.

Figure 10 on page 34, Figure 11 on page 34, and Figure 12 on page 34 show the three form factors for the services gateway GPIMs.

Figure 10: Example of a Standard GPIM (Installs in One Standard Slot)
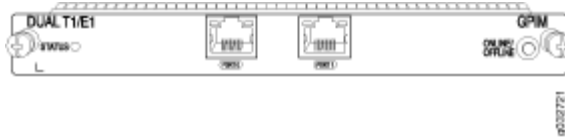
Figure 11: Example of a Double-High, Single-Wide XPIM
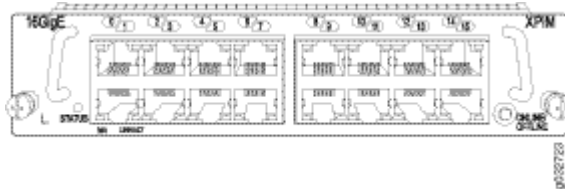
Figure 12: Example of a Double-High, Double-Wide XPIM
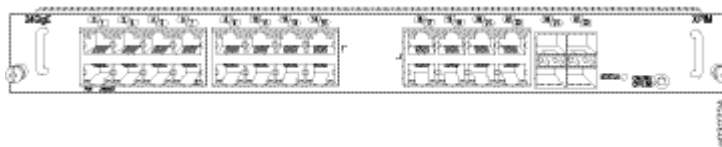
Because the services gateway GPIMs communicate with the backplane at various performance levels, you must install them in the correct slots.

> **NOTE**: Remove the GPIM adapter before you install double-high, double-wide XPIM.

SRX550 High Memory Services Gateway Mini-Physical Interface Modules

The SRX550 High Memory Services Gateway has two slots (slots 1 and 2) for installing Mini-Physical Interface Modules (Mini-PIMs).

A Mini-PIM is a network interface card that is installed in the services gateway to provide physical connections to a LAN or WAN. The Mini-PIMs supported on the services gateway are field-replaceable units (FRUs); which you can remove or replace at your site. You can install Mini-PIMs into the two Mini-PIM slots on the front panel of the services gateway chassis.

The SRX550 High Memory Services Gateway supports the following Mini-PIMs:

- 1-Port Serial Mini-Physical Interface Module (SRX-MP-1SERIAL-R)

- 1-Port T1/E1 Mini-Physical Interface Module (SRX-MP-1T1E1-R)

- 1-Port VDSL2 (Annex A) Mini-Physical Interface Module (SRX-MP-1VDSL2-R)

- LTE Mini-Physical Interface Module (SRX-MP-LTE-AE and SRX-MP-LTE-AA)

- Wi-Fi Mini-Physical Interface Module (SRX-MP-WLAN-US, SRX-MP-WLAN-IL, and SRX-MP-WLAN-WW)

For more information on the Mini-PIMs, see the SRX300 Series and SRX550 High Memory Gateway Interface Modules Reference.

RELATED DOCUMENTATION

SRX550 High Memory Services Gateway Front Panel | 14

2
CHAPTER

Site Planning, Preparation, and Specifications

Site Preparation Checklist for the SRX550 HM Services Gateway

The checklist in Table 13 on page 37 summarizes the tasks you need to perform when preparing a site for installing the SRX550 High Memory Services Gateway.

Table 13: Site Preparation Checklist for SRX550 High Memory Services Gateway Installation

Item or Task	Additional Information	Performed By	Date	Notes
Power				
Measure distance between external power sources and device installation site.	"SRX550 High Memory Services Gateway Electrical Wiring Guidelines" on page 41			
Locate sites for connection of system grounding.	"Connecting the SRX550 HM Grounding Cable" on page 66			
Calculate the power consumption and requirements.	"SRX550 High Memory Services Gateway AC Power Supply Electrical Specifications" on page 29 and "SRX550 High Memory Services Gateway DC Power Supply Electrical Specifications" on page 31			
Environment				
Verify that environmental factors such as temperature and humidity do not exceed device tolerances.	"SRX550 High Memory Services Gateway Environmental Specifications" on page 40			

Table 13: Site Preparation Checklist for SRX550 High Memory Services Gateway Installation
(Continued)

Item or Task	Additional Information	Performed By	Date	Notes
Rack Installation				
Verify that your rack meets the minimum requirements.	"SRX550 High Memory Services Gateway Rack Size and Strength Requirements" on page 51			
Plan rack location, including required space clearances.	"SRX550 High Memory Services Gateway Spacing of Mounting Bracket and Flange Holes" on page 51			
Secure the rack to the floor and building structure.	"SRX550 High Memory Services Gateway Rack Size and Strength Requirements" on page 51			
Cabinet Installation				
Verify that your cabinet meets the minimum requirements.	"SRX550 High Memory Services Gateway Cabinet Size and Clearance Requirements" on page 52			
Plan the cabinet location, including required space clearances.	"SRX550 High Memory Services Gateway Cabinet Airflow Requirements" on page 52			
Cables				
Acquire cables and connectors.	"Interface Cabling and Wiring Specifications for the SRX550 High Memory Services Gateway" on page 53			

Table 13: Site Preparation Checklist for SRX550 High Memory Services Gateway Installation *(Continued)*

Item or Task	Additional Information	Performed By	Date	Notes
Review the maximum distance allowed for each cable. Choose the length of cable based on the distance between the hardware components being connected.				
Plan the cable routing and management.				

RELATED DOCUMENTATION

SRX550 HM Site Guidelines and Requirements

IN THIS SECTION

General Site Installation Guidelines for the SRX550 High Memory Services Gateway

The following precautions help you plan an acceptable operating environment for your SRX550 High Memory Services Gateway and avoid environmentally caused equipment failures:

- For the cooling system to function properly, the airflow around the chassis must be unrestricted. Allow sufficient clearance between the front and back of the chassis and adjacent equipment. Ensure that there is adequate circulation in the installation location.

- Follow the ESD procedures to prevent any damage equipment. Static discharge can cause components to fail completely or intermittently over time. For more information, see Preventing Electrostatic Discharge Damage to the SRX550 Services Gateway.

- Ensure that the blank panels are installed into empty slots to prevent any interruption or reduction in the flow of air across internal components.

NOTE: Install the services gateway only in restricted areas, such as dedicated equipment rooms and equipment closets, in accordance with Articles 110–16, 110–17, and 110–18 of the National Electrical Code, ANSI/NFPA 70.

SRX550 High Memory Services Gateway Environmental Specifications

Table 14 on page 41 provides the required environmental conditions for normal SRX550 High Memory Services Gateway operations. In addition, the site must be as dust-free as possible because dust can clog air intake vents, reducing the efficiency of the cooling system.

Table 14: SRX550 High Memory Services Gateway Environmental Specifications

Description	Value
Altitude	No performance degradation to 13,000 ft (3962.4 m)
Relative humidity	Normal operation ensured in relative humidity range of 5% to 90%, noncondensing
Temperature	Normal operation ensured in temperature range of 32° F (0° C) to 104° F (40° C) Nonoperating storage temperature in shipping container: –40° F (–40° C) to 158° F (70° C)
Seismic	Designed to meet Telcordia Technologies Zone 4 earthquake requirements
Maximum power consumption	AC power: 1289 W (4400 BTU/hour) DC power with one 645 W power supply unit: 644 W (2200 BTU/hour) DC power with two 645 W power supply units, nonredundant: 1289 W (4400 BTU/hour) **NOTE**: These specifications are estimates and subject to change.

NOTE: Install the services gateway only in restricted areas, such as dedicated equipment rooms and equipment closets, in accordance with Articles 110–16, 110–17, and 110–18 of the National Electrical Code, ANSI/NFPA 70.

SRX550 High Memory Services Gateway Electrical Wiring Guidelines

Table 15 on page 42 describes the factors you must consider while planning the electrical wiring for the SRX550 High Memory Services Gateway at your site.

> ⚠️ **CAUTION**: It is particularly important to provide a properly grounded and shielded environment and to use electrical surge-suppression devices.

Table 15: Site Electrical Wiring Guidelines for the SRX550 High Memory Services Gateway

Site Wiring Factor	Guideline

Signaling limitations	To ensure that signaling functions optimally:
	
	• Install wires correctly.
	
	  Improperly installed wires can emit radio interference.
	
	• Do not exceed the recommended distances or pass wires between buildings.
	
	  The potential for damage from lightning strikes increases if wires exceed recommended distances or if wires pass between buildings.
	
	• Shield all conductors.
	
	  The electromagnetic pulse (EMP) caused by lightning can damage unshielded conductors and destroy electronic devices.

Radio frequency interference (RFI)	To reduce or eliminate the emission of RFI from your site wiring: • Use twisted-pair cable with a good distribution of grounding conductors. • Use a high-quality twisted-pair cable with one ground conductor for each data signal when applicable, if you must exceed the recommended distances.
Electromagnetic compatibility (EMC)	Provide a properly grounded and shielded environment and use electrical surge-suppression devices. Strong sources of electromagnetic interference (EMI) can cause the following damage: • Destroy the signal drivers and receivers in the device. • Conduct power surges over the lines into the equipment, resulting in an electrical hazard. **TIP**: If your site is susceptible to problems with EMC, particularly from lightning or radio transmitters, you might want to seek expert advice.

> ⚠️ **CAUTION**: Some ports are designed for use as intrabuilding interfaces only (Type 2 or Type 4 ports, the battery return connection is to be treated as an Isolated DC return (that is, DC-I), as defined in GR-1089-CORE) and require isolation from the exposed OSP cabling. To comply the NEBS requirements and protect against lightening surges and commercial power disturbances, the intrabuilding port(s) of the device MUST NOT be metallically connected to interfaces that connect to the OSP or its wiring. The intrabuilding port(s) of the device is suitable for connection to intrabuilding or unexposed wiring or cabling only. The addition of primary protectors is not sufficient protection to connect these interfaces metallically to OSP wiring.

SRX550 High Memory Services Gateway Grounding Specifications

To meet safety and electromagnetic interference (EMI) requirements and to ensure proper operation, the SRX550 High Memory Services Gateway must be adequately grounded before power is connected. You must provide a grounding lug to connect the services gateway to earth ground.

You must install the SRX550 HM in a restricted-access location and ensure that the chassis is always properly grounded. The SRX550 HM has a two-hole protective grounding terminal provided on the chassis.We recommend that you use this protective grounding terminal as the preferred method for grounding the chassis regardless of the power supply configuration. However, if additional grounding methods are available, you can also use those methods. For example, you can use the grounding wire in the AC power cord or use the grounding terminal or lug on a DC power supply. This tested system meets or exceeds all applicable EMC regulatory requirements with the two-hole protective grounding terminal.

> ⚠️ **WARNING**: Before services gateway installation begins, a licensed electrician must attach a cable lug to the grounding and power cables that you supply. A cable with an incorrectly attached lug can damage the services gateway (for example, by causing a short circuit).

To ground the services gateway before connecting power, you connect the grounding cable to earth ground and then attach the lug on the cable to the chassis grounding point, using the screw.

lists the specifications of the grounding cable used with the device.

Table 16: Grounding Cable Specifications for the SRX550 High Memory Services Gateway

Grounding Requirement	Specification
Grounding cable	14 AWG single-strand wire cable
Amperage of grounding cable	Up to 25 A
Grounding lug	Ring-type, Panduit LCC6-10A-L lug, or equivalent

SEE ALSO

SRX550 High Memory Services Gateway Physical Specifications

Table 17 on page 44 provides information about the physical specifications for the services gateway.

Table 17: Physical Specifications for the SRX550 High Memory Services Gateway

Physical Specification	Value
Chassis height	3.5 in. (8.8 cm)
Chassis width	17.5 in. (44.4 cm)
Chassis depth	18.2 in. (46.2 cm)
Chassis weight (includes one power supply without any GPIMs or Mini-PIMs)	21.96 lb. (9.96 kg)

Clearance Requirements for Airflow and Hardware Maintenance of the SRX550 High Memory Services Gateway

When planning the installation site for the SRX550 High Memory Services Gateway, you need to allow sufficient clearance around the rack.

When planning the installation site for the services gateway, consider the following:

- For the cooling system to function properly, the airflow around the chassis must be unrestricted. shows the direction of airflow through the chassis.

Figure 13: Airflow Through the Chassis
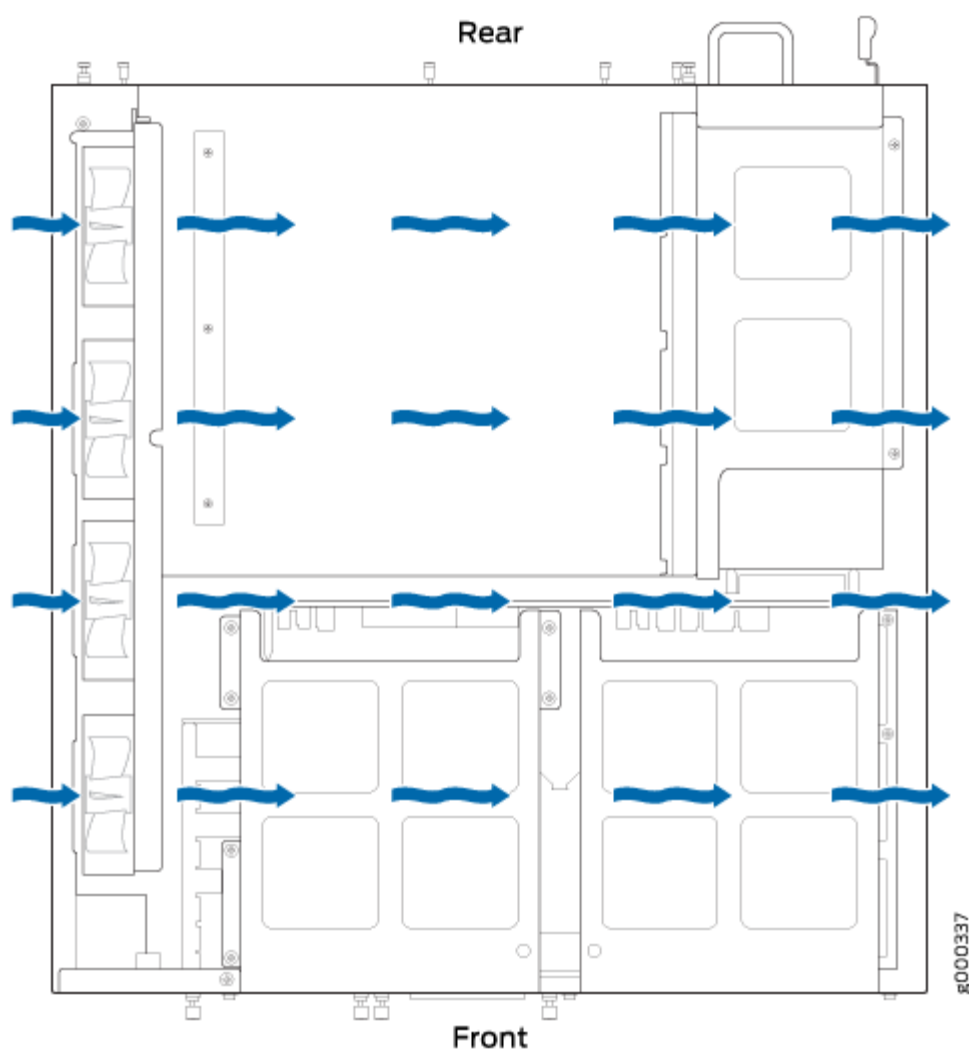
- For service personnel to remove and install hardware components, there must be adequate space at the front and back of the services gateway as indicated in .

- If you are mounting the services gateway in a rack with other equipment, ensure that the exhaust from other equipment does not blow into the intake vents of the chassis.

provides information about the clearance requirements for maintaining optimum airflow and the distances to facilitate easy maintenance of the services gateway.

Table 18: Clearance Requirements for the SRX550 High Memory Services Gateway

Location	Recommended Clearance	Requirement for Clearance
Front of the chassis	8.7 in. (22 cm)	Space for service personnel to remove and install hardware components
Rear of the chassis	17.4 in. (44.2 cm)	Space for service personnel to remove and install hardware components
Between front-mounting flange and rack or cabinet edge	2.5 in. (6.35 cm)	Space for cable management and organization
Between both sides of the chassis and any non-heat-producing surface such as a wall or cabinet side	6.0 in. (15.24 cm)	Space for the cooling system to function properly and to maintain unrestricted airflow around the chassis

Rack Requirements for the SRX550 High Memory Services Gateway

IN THIS SECTION

Rack-Mounting Requirements and Warnings

Ensure that the equipment rack into which the services gateway is installed is evenly and securely supported to avoid hazardous conditions that could result from uneven mechanical loading.

WARNING: To prevent bodily injury when mounting or servicing the services gateway in a rack, take the following precautions to ensure that the system remains stable. The following directives help maintain your safety:

- The services gateway must be installed in a rack that is secured to the building structure.

- The services gateway should be mounted at the bottom of the rack if it is the only unit in the rack.

- When mounting the services gateway in a partially filled rack, load the rack from the bottom to the top with the heaviest component at the bottom of the rack.

- If the rack is provided with stabilizing devices, install the stabilizers before mounting or servicing the services gateway in the rack.

Waarschuwing Om lichamelijk letsel te voorkomen wanneer u dit toestel in een rek monteert of het daar een servicebeurt geeft, moet u speciale voorzorgsmaatregelen nemen om ervoor te zorgen dat het toestel stabiel blijft. De onderstaande richtlijnen worden verstrekt om uw veiligheid te verzekeren:

- De Juniper Networks services gateway moet in een stellage worden geïnstalleerd die aan een bouwsel is verankerd.

- Dit toestel dient onderaan in het rek gemonteerd te worden als het toestel het enige in het rek is.

- Wanneer u dit toestel in een gedeeltelijk gevuld rek monteert, dient u het rek van onderen naar boven te laden met het zwaarste onderdeel onderaan in het rek.

- Als het rek voorzien is van stabiliseringshulpmiddelen, dient u de stabilisatoren te monteren voordat u het toestel in het rek monteert of het daar een servicebeurt geeft.

Varoitus Kun laite asetetaan telineeseen tai huolletaan sen ollessa telineessä, on noudatettava erityisiä varotoimia järjestelmän vakavuuden säilyttämiseksi, jotta vältytään loukkaantumiselta. Noudata seuraavia turvallisuusohjeita:

- Juniper Networks services gateway on asennettava telineeseen, joka on kiinnitetty rakennukseen.

- Jos telineessä ei ole muita laitteita, aseta laite telineen alaosaan.

- Jos laite asetetaan osaksi täytettyyn telineeseen, aloita kuormittaminen sen alaosasta kaikkein raskaimmalla esineellä ja siirry sitten sen yläosaan.

- Jos telinettä varten on vakaimet, asenna ne ennen laitteen asettamista telineeseen tai sen huoltamista siinä.

Attention Pour éviter toute blessure corporelle pendant les opérations de montage ou de réparation de cette unité en casier, il convient de prendre des précautions spéciales afin de maintenir la stabilité du système. Les directives ci-dessous sont destinées à assurer la protection du personnel:

- Le rack sur lequel est monté le Juniper Networks services gateway doit être fixé à la structure du bâtiment.

- Si cette unité constitue la seule unité montée en casier, elle doit être placée dans le bas.

- Si cette unité est montée dans un casier partiellement rempli, charger le casier de bas en haut en plaçant l'élément le plus lourd dans le bas.

- Si le casier est équipé de dispositifs stabilisateurs, installer les stabilisateurs avant de monter ou de réparer l'unité en casier.

Warnung Zur Vermeidung von Körperverletzung beim Anbringen oder Warten dieser Einheit in einem Gestell müssen Sie besondere Vorkehrungen treffen, um sicherzustellen, daß das System stabil bleibt. Die folgenden Richtlinien sollen zur Gewährleistung Ihrer Sicherheit dienen:

- Der Juniper Networks services gateway muß in einem Gestell installiert werden, das in der Gebäudestruktur verankert ist.

- Wenn diese Einheit die einzige im Gestell ist, sollte sie unten im Gestell angebracht werden.

- Bei Anbringung dieser Einheit in einem zum Teil gefüllten Gestell ist das Gestell von unten nach oben zu laden, wobei das schwerste Bauteil unten im Gestell anzubringen ist.

- Wird das Gestell mit Stabilisierungszubehör geliefert, sind zuerst die Stabilisatoren zu installieren, bevor Sie die Einheit im Gestell anbringen oder sie warten.

Avvertenza Per evitare infortuni fisici durante il montaggio o la manutenzione di questa unità in un supporto, occorre osservare speciali precauzioni per garantire che il sistema rimanga stabile. Le seguenti direttive vengono fornite per garantire la sicurezza personale:

- Il Juniper Networks services gateway deve essere installato in un telaio, il quale deve essere fissato alla struttura dell'edificio.

- Questa unità deve venire montata sul fondo del supporto, se si tratta dell'unica unità da montare nel supporto.

- Quando questa unità viene montata in un supporto parzialmente pieno, caricare il supporto dal basso all'alto, con il componente più pesante sistemato sul fondo del supporto.

- Se il supporto è dotato di dispositivi stabilizzanti, installare tali dispositivi prima di montare o di procedere alla manutenzione dell'unità nel supporto.

Advarsel Unngå fysiske skader under montering eller reparasjonsarbeid på denne enheten når den befinner seg i et kabinett. Vær nøye med at systemet er stabilt. Følgende retningslinjer er gitt for å verne om sikkerheten:

- Juniper Networks services gateway må installeres i et stativ som er forankret til bygningsstrukturen.

- Denne enheten bør monteres nederst i kabinettet hvis dette er den eneste enheten i kabinettet.

- Ved montering av denne enheten i et kabinett som er delvis fylt, skal kabinettet lastes fra bunnen og opp med den tyngste komponenten nederst i kabinettet.

- Hvis kabinettet er utstyrt med stabiliseringsutstyr, skal stabilisatorene installeres før montering eller utføring av reparasjonsarbeid på enheten i kabinettet.

Aviso Para se prevenir contra danos corporais ao montar ou reparar esta unidade numa estante, deverá tomar precauções especiais para se certificar de que o sistema possui um suporte estável. As seguintes directrizes ajudá-lo-ão a efectuar o seu trabalho com segurança:

- O Juniper Networks services gateway deverá ser instalado numa prateleira fixa à estrutura do edifício.

- Esta unidade deverá ser montada na parte inferior da estante, caso seja esta a única unidade a ser montada.

- Ao montar esta unidade numa estante parcialmente ocupada, coloque os itens mais pesados na parte inferior da estante, arrumando-os de baixo para cima.

- Se a estante possuir um dispositivo de estabilização, instale-o antes de montar ou reparar a unidade.

¡Atención! Para evitar lesiones durante el montaje de este equipo sobre un bastidor, o posteriormente durante su mantenimiento, se debe poner mucho cuidado en que el sistema quede bien estable. Para garantizar su seguridad, proceda según las siguientes instrucciones:

- El Juniper Networks services gateway debe instalarse en un bastidor fijado a la estructura del edificio.

- Colocar el equipo en la parte inferior del bastidor, cuando sea la única unidad en el mismo.

- Cuando este equipo se vaya a instalar en un bastidor parcialmente ocupado, comenzar la instalación desde la parte inferior hacia la superior colocando el equipo más pesado en la parte inferior.

- Si el bastidor dispone de dispositivos estabilizadores, instalar éstos antes de montar o proceder al mantenimiento del equipo instalado en el bastidor.

Varning! För att undvika kroppsskada när du installerar eller utför underhållsarbete på denna enhet på en ställning måste du vidta särskilda försiktighetsåtgärder för att försäkra dig om att systemet står stadigt. Följande riktlinjer ges för att trygga din säkerhet:

- Juniper Networks services gateway måste installeras i en ställning som är förankrad i byggnadens struktur.

- Om denna enhet är den enda enheten på ställningen skall den installeras längst ned på ställningen.

- Om denna enhet installeras på en delvis fylld ställning skall ställningen fyllas nedifrån och upp, med de tyngsta enheterna längst ned på ställningen.

- Om ställningen är försedd med stabiliseringsdon skall dessa monteras fast innan enheten installeras eller underhålls på ställningen.

SRX550 High Memory Services Gateway Rack Size and Strength Requirements

When installing the SRX550 High Memory Services Gateway in a rack, you must ensure that the rack complies with a 2U (19 in. or 45.6 cm) rack as defined in *Cabinets, Racks, Panels, and Associated Equipment* (document number EIA-310-D) published by the Electronic Industries Alliance (http://www.ecaus.org/eia/site/index.html).

When selecting a rack, ensure that the physical characteristics of the rack comply with the following specifications:

- The outer edges of the mounting brackets extend the width of the chassis to 19 in. (45.6 cm).

- The front of the chassis extends approximately 0.5 in. (1.27 cm) beyond the mounting ears.

Always secure the rack in which you are installing the SRX550 High Memory Services Gateway to the structure of the building. If your geographical area is subject to earthquakes, bolt the rack to the floor. For maximum stability, also secure the rack to ceiling brackets.

SRX550 High Memory Services Gateway Spacing of Mounting Bracket and Flange Holes

The spacing of the mounting brackets and flange holes on the rack and device mounting brackets are as follows:

- The holes within each rack set are spaced at 2U (3.5 in. or 8.89 cm). The services gateway can be mounted in any rack that provides holes or hole patterns spaced at 1U (1.75 in. or 4.5 cm) increments.

- The mounting brackets and front-mount flanges used to attach the chassis to a rack are designed to fasten to holes spaced at rack distances of 2U (3.5 in.).

- The mounting holes in the mounting brackets provided with the device chassis are spaced 1.25 in. (3.2 cm) apart, measured from the center of each hole.

Cabinet Requirements for the SRX550 High Memory Services Gateway

IN THIS SECTION

SRX550 High Memory Services Gateway Cabinet Size and Clearance Requirements

You can install the SRX550 High Memory Services Gateway in a 19 in. (48.3 cm) cabinet as defined in *Cabinets, Racks, Panels, and Associated Equipment* (document number EIA-310-D) published by the Electronic Industries Alliance (http://www.ecaus.org/eia/site/index.html). You must mount the services gateway horizontally in the cabinet.

> **NOTE**: The holes in the mounting brackets chassis are spaced 1.25 in (3.2 cm) apart, measured from the center of the hole.

When selecting a cabinet, ensure that the physical characteristics of the cabinet comply with the following specifications:

- The cabinet is at least 2U (3.50 in. or 8.89 cm) and can accommodate the services gateway.

- The outer edges of the mounting brackets extend the width of either chassis to 19 in. (48.2 cm), and the front of the chassis extends approximately 0.5 in (1.27 cm) beyond the mounting brackets.

- The minimum total clearance inside the cabinet is 30.7 in. (78 cm) between the inside of the front door and the inside of the rear door.

> **NOTE**: A cabinet larger than the minimum required provides better airflow and reduces the chance of overheating.

SRX550 High Memory Services Gateway Cabinet Airflow Requirements

When you mount the SRX550 High Memory Services Gateway in a cabinet, you must ensure that ventilation through the cabinet is sufficient to prevent overheating. Consider the following when planning for chassis cooling:

- Ensure that the cool air supply you provide through the cabinet can adequately dissipate the thermal output of the services gateway.

- Install the services gateway as close as possible to the front of the cabinet so that the cable management system clears the inside of the front door. Installing the chassis close to the front of the cabinet maximizes the clearance in the rear of the cabinet for critical airflow.

- Route and dress all cables to minimize the blockage of airflow to and from the chassis.

SRX550 HM Cable Specifications and Pinouts

IN THIS SECTION

Interface Cabling and Wiring Specifications for the SRX550 High Memory Services Gateway

The network interfaces supported on the services gateway accept different kinds of network cables. Table 19 on page 53 lists the specifications for the cables that connect to ports on the services gateway.

Table 19: Cable and Wire Specifications for Ports and Alarm Interfaces

Port	Cable Specification	Cable/Wire Supplied	Maximum Length	Device Receptacle
Console	RS-232 (EIA-232) serial cable	One 6-ft (1.83-m) length with DB-9/DB-9 connectors	6 ft (1.83 m)	RJ-45
USB console	USB	One 6-ft (1.83-m) length with Mini-B and Type A plugs	6 ft (1.83 m)	Mini-B USB Socket
Ethernet	Category 5 cable or equivalent suitable for 100Base-T operation	One 15-ft (4.57-m) length with RJ-45/RJ-45 connectors	328 ft (100 m)	RJ-45 autosensing

NOTE: The Auxiliary port is not supported on the SRX550 Services Gateway.

RJ-45 Connector Pinouts for the SRX550 High Memory Services Gateway Ethernet Port

The port on the front panel labeled ETHERNET is an autosensing 10/100-Mbps Ethernet RJ-45 receptacle that accepts an Ethernet cable for connecting the services gateway to a management LAN (or other device that supports out-of-band management). Table 20 on page 54 describes the RJ-45 connector pinouts for the Ethernet port.

Table 20: RJ-45 Connector Pinouts for Services Gateway Ethernet Port

Pin	Signal
1	TX+
2	TX-
3	RX+
4	Termination network
5	Termination network
6	RX-
7	Termination network
8	Termination network

RJ-45 Connector Pinouts for the SRX550 High Memory Services Gateway Console Port

The port on the front panel labeled CONSOLE is an autosensing 10/100-Mbps Ethernet RJ-45 receptacle that accepts an RJ-45 cable for connecting the services gateway to a management LAN (or other device that supports out-of-band management). Table 21 on page 55 describes the RJ-45 connector pinouts for the console port.

Table 21: RJ-45 Connector Pinouts for the Services Gateway Console Port

Pin	Signal	Description
1	RTS	Request to Send
2	DTR	Data Terminal Ready
3	TXD	Transmit Data
4	Ground	Signal Ground
5	Ground	Signal Ground
6	RXD	Receive Data
7	DSR/DCD	Data Set Ready
8	CTS	Clear to Send

SRX550 HM Network Cable and Transceiver Planning

IN THIS SECTION

- SRX550 HM Transceiver Support | 56

SRX550 HM Transceiver Support

You can find information about the pluggable transceivers supported on your Juniper Networks device by using the Hardware Compatibility Tool. In addition to transceiver and connector type, the optical and cable characteristics—where applicable—are documented for each transceiver. The Hardware Compatibility Tool enables you to search by product, displaying all the transceivers supported on that device, or category, by interface speed or type. The list of supported transceivers for the SRX550 HM is located at https://apps.juniper.net/hct/product/#prd=SRX550%20HM.

3

CHAPTER

Initial Installation and Configuration

SRX550 HM Installation Overview

SRX550 High Memory Services Gateway Installation Overview

After you have prepared the site for installation and unpacked the SRX550 High Memory Services Gateway, you are ready to install the device. It is important to proceed through the installation process in the following order:

1. Review the safety guidelines explained in *General Electrical Safety Guidelines and Warnings*.

2. Prepare the services gateway for installation as described in "Preparing the SRX550 High Memory Services Gateway for Rack-Mount Installation" on page 62.

3. Install the services gateway as described in "Installing the SRX550 High Memory Services Gateway in a Rack" on page 63.

4. Connect cables to external devices.

5. Connect the grounding cable as described in "Connecting the SRX550 HM Grounding Cable" on page 66.

6. Power on the services gateway as described in "Powering On the SRX550 High Memory Services Gateway" on page 72.

SRX550 High Memory Services Gateway Autoinstallation Overview

Autoinstallation provides automatic configuration for a new SRX550 High Memory Services Gateway that you connect to the network and turn on, or for a services gateway configured for autoinstallation. The autoinstallation process begins whenever a services gateway is powered on and cannot locate a valid configuration file in the CompactFlash. Typically, a configuration file is unavailable when a services gateway is powered on for the first time or if the configuration file is deleted from the CompactFlash.

The autoinstallation feature enables you to deploy multiple services gateways from a central location in the network.

If you are setting up many services gateways, autoinstallation can help automate the configuration process by loading configuration files onto new or existing devices automatically over the network. You can use the CLI to configure a services gateway for autoinstallation. The J-Web interface does not include pages for the autoinstallation feature.

For the autoinstallation feature to work, you must store one or more host-specific or default configuration files on a configuration server in the network and have a service available—typically Dynamic Host Configuration Protocol (DHCP)—to assign an IP address to the services gateway.

Autoinstallation begins automatically when you connect to the Ethernet port labeled **0/0** (interface ge-0/0/0) on a new services gateway connected to the network and power on the services gateway. To simplify the process, you can explicitly enable autoinstallation on a services gateway and specify a configuration server, an autoinstallation interface, and a protocol for IP address acquisition.

> **NOTE**: Autoinstallation is enabled on all ports of the services gateway. If you do not want to use the autoinstallation feature, you must delete it using the CLI. For more information about the autoinstallation feature, see the Installation and Upgrade Guide for Security Devices.

Unpacking and Mounting the SRX550 HM

IN THIS SECTION

Unpacking the SRX550 High Memory Services Gateway

Ensure that you have the following parts and tools available:

- Phillips (+) screwdriver, number 2

- 1/2 in. (13 mm) open-end or socket wrench to remove bracket bolts from the shipping pallet

- Blank panels to cover any slots not occupied by a component

The SRX550 High Memory Services Gateway is shipped in a cardboard carton and secured with foam packing material. The carton also contains an accessory box and quick start instructions.

> **NOTE**: The services gateway is maximally protected inside the cardboard carton. Do not unpack it until you are ready to begin installation.

To unpack the SRX550 High Memory Services Gateway:

1. Move the cardboard carton to a staging area as close to the installation site as possible, where you have enough room to remove the components from the chassis.
2. Position the cardboard carton with the arrows pointing up.
3. Carefully open the top of the cardboard carton.
4. Remove the foam covering the top of the services gateway.
5. Remove the accessory box.
6. Verify the parts received against the lists in "Verifying Parts Received with the SRX550 High Memory Services Gateway" on page 60.
7. Store the brackets and bolts inside the accessory box.
8. Save the shipping carton and packing materials in case you need to move or ship the services gateway at a later time.

Verifying Parts Received with the SRX550 High Memory Services Gateway

The SRX550 High Memory Services Gateway shipment package contains a packing list. Check the parts in the shipment against the items on the packing list. The packing list specifies the part numbers and carries a brief description of each part in your order.

If any part on the packing list is missing, contact your customer service representative or contact Juniper customer care from within the U.S. or Canada by telephone at 1-888-314-5822. For international-dial or direct-dial options in countries without toll-free numbers, see https://www.juniper.net/support/requesting-support.html.

A fully configured services gateway contains the chassis with installed components, listed in Table 22 on page 61, and an accessory box, which contains the parts listed in Table 23 on page 61.

> **NOTE**: The parts shipped with your services gateway can vary depending on the configuration you ordered.

Table 22: Parts List for a SRX550 High Memory Services Gateway

Component	Quantity
2U SRX550 High Memory Services Gateway chassis with 6 GPIM slots, 2 Mini-PIM slots, 1 ACE slot, 2 power supply slots, 6 10/100/1000 base-T ports, and 4 Gigabit Ethernet SFP ports. Includes blank covers for GPIM slots (6 covers for GPIM slots), Mini-PIM slots, ACE slot, and power supply slots. **NOTE**: The ACE slot is not used.	1
CAT 5e cable	1
USB console cable with Type-A and Mini-B USB plugs	1
AC Power cord	1

Two power supplies must be installed in the services gateway for redundancy. A second power supply and additional power supplies are separately orderable and do not include the power cord. Additional power cords must be ordered separately.

Table 23: Accessory/Upgrade Parts List for the SRX550 High Memory Services Gateway

Part	Quantity
Product Registration	1
End User License Agreement	1
Quick Start Guide	1
Safety Guide	1

Table 23: Accessory/Upgrade Parts List for the SRX550 High Memory Services Gateway *(Continued)*

Part	Quantity
Warranty card	1
Rack-mount brackets	2
Flat-head mounting screws	8
DB9-to-RJ-45 cable	1

Preparing the SRX550 High Memory Services Gateway for Rack-Mount Installation

You can mount an SRX550 High Memory Services Gateway on four-post (telco) racks, enclosed cabinets, and open-frame racks. Center-mount racks are not supported.

Before mounting the SRX550 High Memory Services Gateway in a rack:

- Verify that the site meets the requirements described in "Site Preparation Checklist for the SRX550 HM Services Gateway" on page 37.

- Verify that you have the following parts available in your rack-mounting kit for the SRX550 High Memory Services Gateway:

  - Rack-mounting brackets

  - Eight mounting screws to attach the mounting brackets to the chassis of the services gateway

  - Four mounting screws to attach the mounting brackets to the rack rail

- Verify that the racks or cabinets meet the specific requirements described in "SRX550 High Memory Services Gateway Rack Size and Strength Requirements" on page 51.

- Place the rack or cabinet in its permanent location, allowing adequate clearance for airflow and maintenance, and secure it to the building structure. For more information, see "SRX550 High Memory Services Gateway Cabinet Airflow Requirements" on page 52.

- Remove the gateway chassis from the shipping carton. For unpacking instructions, see "Unpacking the SRX550 High Memory Services Gateway" on page 59.

Installing the SRX550 High Memory Services Gateway in a Rack

You can front-mount the SRX550 High Memory Services Gateway in a rack. Many types of racks are acceptable, including four-post (telco) racks, enclosed cabinets, and open-frame racks.

NOTE: If you are installing multiple devices in one rack, install the lowest one first and proceed upward in the rack.

To install the services gateway in a rack:

1. Position a mounting bracket on each side of the chassis.

2. Use a Phillips (+) screwdriver, number 2 to install the screws that secure the mounting brackets to the chassis. Use either the front mount position, as shown in Figure 14 on page 64, or the center mount position as shown in Figure 15 on page 64.

Figure 14: Installing the Rack Mount Brackets (Front Mount Position)
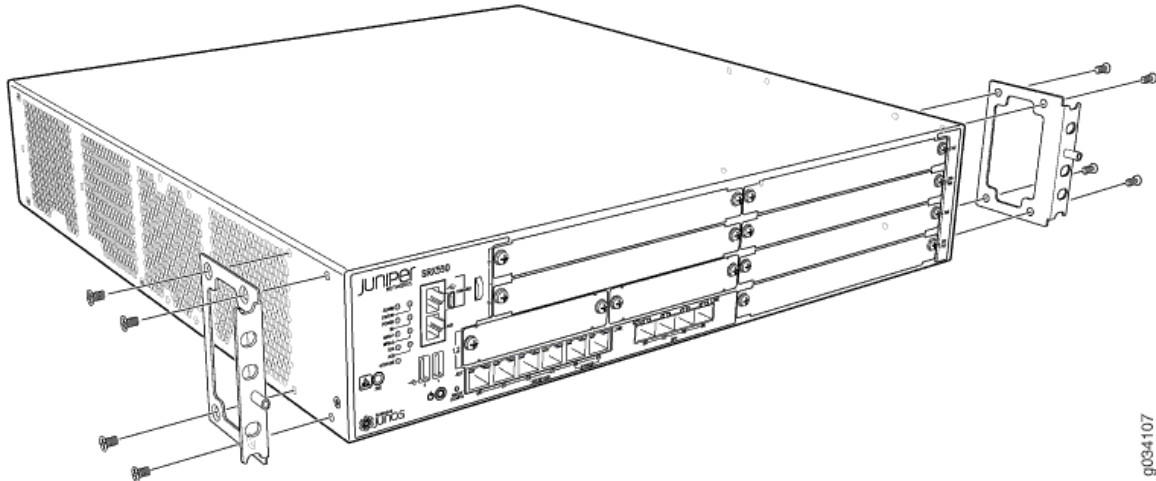
Figure 15: Installing the Rack Mount Brackets (Center Mount Position)
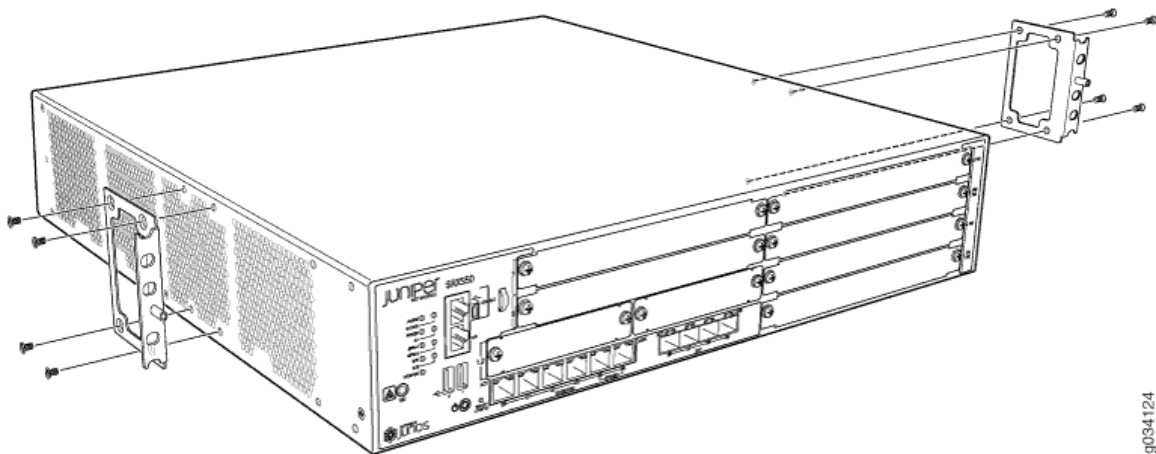
3. Have one person grasp the sides of the services gateway, lift it, and position it in the rack.

4. Align the bottom hole in each mounting bracket with a hole in each rack rail, making sure the chassis is level.

5. Have a second person install a mounting screw into each of the two aligned holes. Use a Phillips (+) screwdriver, number 2 to tighten the screws.

6. Install the second screw in each mounting bracket.

Figure 16: Installing the Services Gateway in the Rack (Front Mount Shown, Center Mount Similar)

g0034108
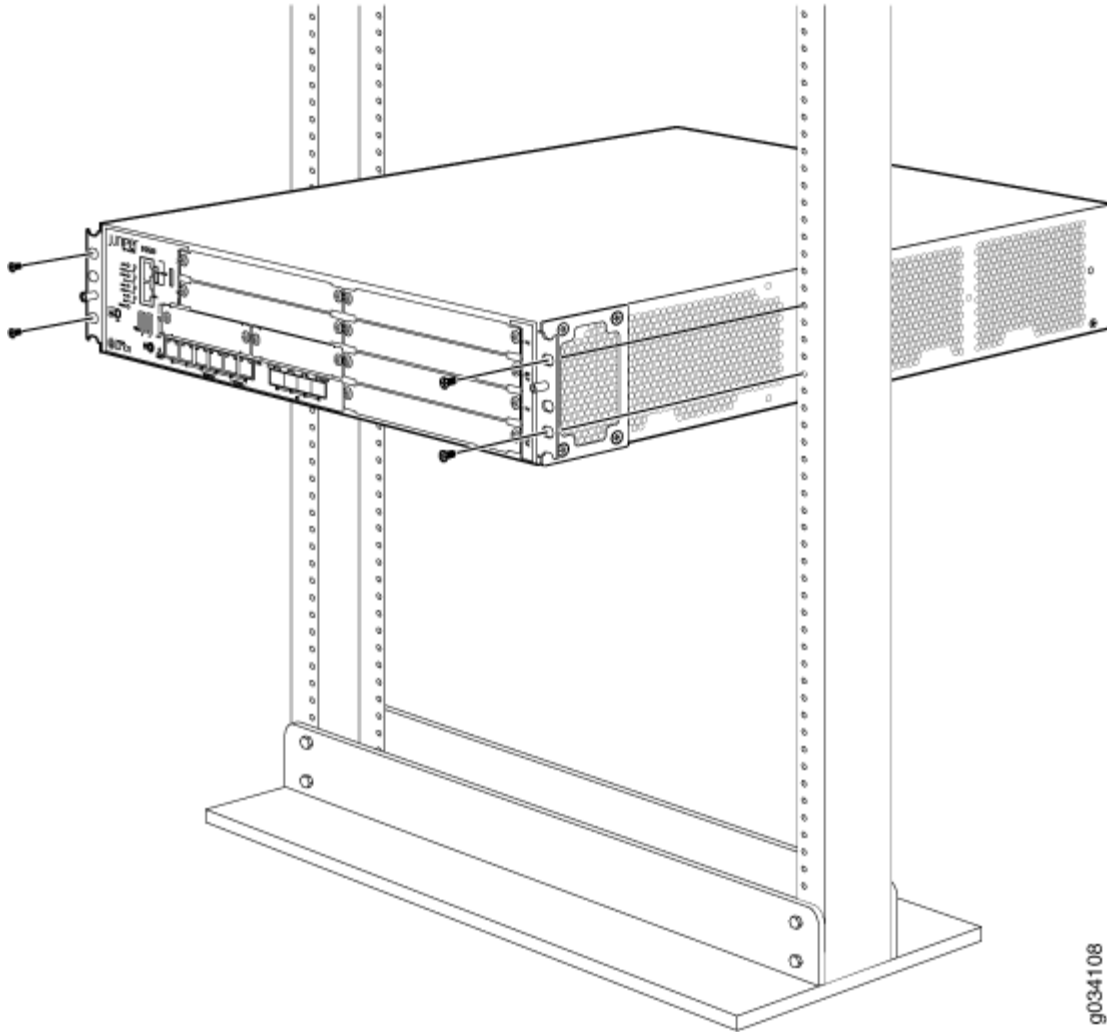
7. Verify that the mounting screws on one side of the rack are aligned with the mounting screws on the opposite side and that the services gateway is level.

Connecting the SRX550 HM to Power

Connecting the SRX550 HM Grounding Cable

You ground the services gateway by connecting a grounding cable to earth ground and then attaching it to the chassis grounding points located on the right side of the device (if you are facing the front of the chassis).

You must install the SRX550 High Memory Services Gateway in a restricted-access location and ensure that the chassis is always properly grounded. The SRX550 High Memory Services Gateway has a two-hole protective grounding terminal provided on the chassis. We recommend that you use this protective grounding terminal as the preferred method for grounding the chassis regardless of the power supply configuration. However, if additional grounding methods are available, you can also use those methods. For example, you can use the grounding wire in the AC power cord or use the grounding terminal or lug on a DC power supply. This tested system meets or exceeds all applicable EMC regulatory requirements with the two-hole protective grounding terminal.

Ensure that you have the following parts and tools available:

- Phillips (+) screwdrivers, numbers 1 and 2

- Two M5 grounding screws

- Grounding cable

- Cable lug (for example, Panduit LCC6-10A-L)

> ⚠️ **CAUTION**: Before services gateway installation begins, a licensed electrician must attach a cable lug to the grounding and power cables that you supply. A cable with an incorrectly attached lug can damage the services gateway (for example, by causing a short circuit).

To ground the services gateway:

1. Attach an electrostatic discharge (ESD) grounding strap to your bare wrist, and connect the strap to the ESD point on the chassis. For more details, see *Prevention of Electrostatic Discharge Damage*.

2. Ensure that all grounding surfaces are clean, free from accumulated dust or debris, and brought to a bright finish before grounding connections are made.

   > **NOTE**: The surface of the grounding points are suitably plated for conductivity.

3. Connect the grounding cable to a proper earth ground.

4. Place the grounding cable lug over the grounding point (sized for M5 screws) on the left side of the back panel.

5. Secure the grounding cable lug to the grounding point, first with the washers, then with the screws.

6. Dress the grounding cable and verify that it does not touch or block access to the services gateway components and that it does not drape where people could trip on it.

SEE ALSO

| General Safety Guidelines and Warnings | **140**

Connecting the SRX550 High Memory Services Gateway to the AC Power Source

> ⚠️ **CAUTION**: Do not mix AC and DC power supplies within the same services gateway because this can damage the device.

A 645 W AC power supply with PoE support ships with the SRX550 High Memory Services Gateway. You connect AC power to the services gateway by attaching the power cord from the AC power source to the AC appliance inlet located on the power supply. The power cord is not provided.

To connect the services gateway to an AC power supply:

> ⚠ **CAUTION**: You need an electrostatic discharge (ESD) grounding wrist strap while connecting the services gateway to an AC power supply.

1. Attach an electrostatic discharge (ESD) grounding strap to your bare wrist, and connect the strap to the ESD point on the side of the chassis.
2. Locate the power cord or cords you will use to connect the services gateway to AC power.
3. Insert the appliance coupler end of the power cord into the appliance inlet on the power supply.
4. Insert the power cord plug into an external AC power source receptacle.

> **NOTE**: Each power supply must be connected to a dedicated AC power feed and a dedicated external circuit breaker. We recommend that you use a 15 A (250 VAC) minimum, or as permitted by local code.

Figure 17: Connecting an AC Power Cord
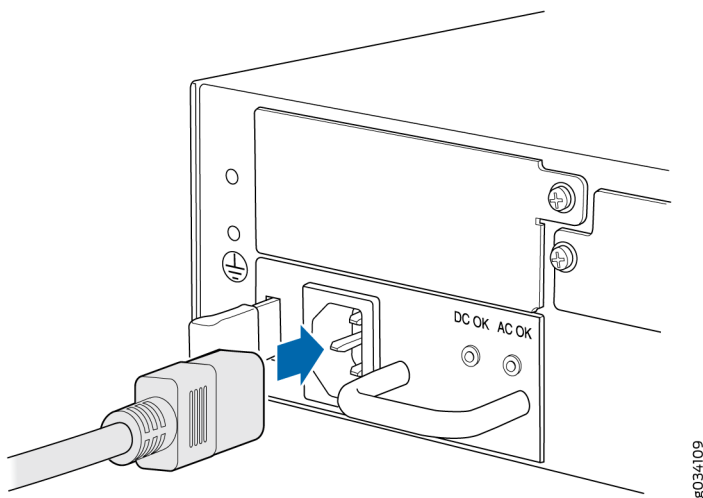
5. Dress the power cord appropriately. Verify that the power cord does not block the air exhaust and access to services gateway components or drape where people could trip on it.

> **NOTE**: The services gateway must be connected to earth ground during normal operation. The protective earthing terminal on the side of the chassis is provided to connect the services gateway to ground.

> ⚠️ **CAUTION**: We recommend using a surge protector for the power connection.

Connecting the SRX550 High Memory Services Gateway to a DC Power Source

> ⚠️ **CAUTION**: Do not mix AC and DC power supplies within the same services gateway. Damage to the device might occur.

A 645 W DC power supply with PoE support is available for the SRX550 Services Gateway.

> ⚡ **WARNING**: Before performing the following procedure, ensure that power is removed from the DC circuit. To ensure that all power is off, locate the circuit breaker on the panel board that services the DC circuit, switch the circuit breaker to the off position (**O**), and tape the switch handle of the circuit breaker in the off position.

You connect DC power to the device by attaching power cables from the external DC power sources to the terminals on the power supply faceplate. You must provide the power cables.

The power supply has two sets of terminals, to accommodate a redundant DC power feed. If one feed fails, the services gateway draws its power from the other feed. The terminals for Feed A are labeled **A+** and **A-** . The terminals for Feed B are labeled **B+** and **B-**. You do not need to use both feeds; if you only have one DC power source, or if you do not want to use feed redundancy, you can connect just one feed.

To connect the DC source power cables to the services gateway power supply:

1. Switch off the dedicated facility circuit breakers. Ensure that the voltage across the DC power source cable leads is 0 V and that there is no chance that the cable leads might become active during installation.
2. Attach an electrostatic discharge (ESD) grounding strap to your bare wrist, and connect the strap to the ESD point on the back panel of the chassis.
3. Install heat-shrink tubing insulation around the power cables:

   a. Slide the tubing over the portion of the cable where it is attached to the lug barrel. Ensure that the tubing covers the end of the wire and the barrel of the lug attached to it.

   b. Shrink the tubing with a heat gun. Ensure that you heat all sides of the tubing evenly so that it shrinks around the cable tightly.

> **NOTE**: Do not overheat the tubing.

Figure 18 on page 70 shows how to install heat-shrink tubing.

Figure 18: How to Install Heat-Shrink Tubing
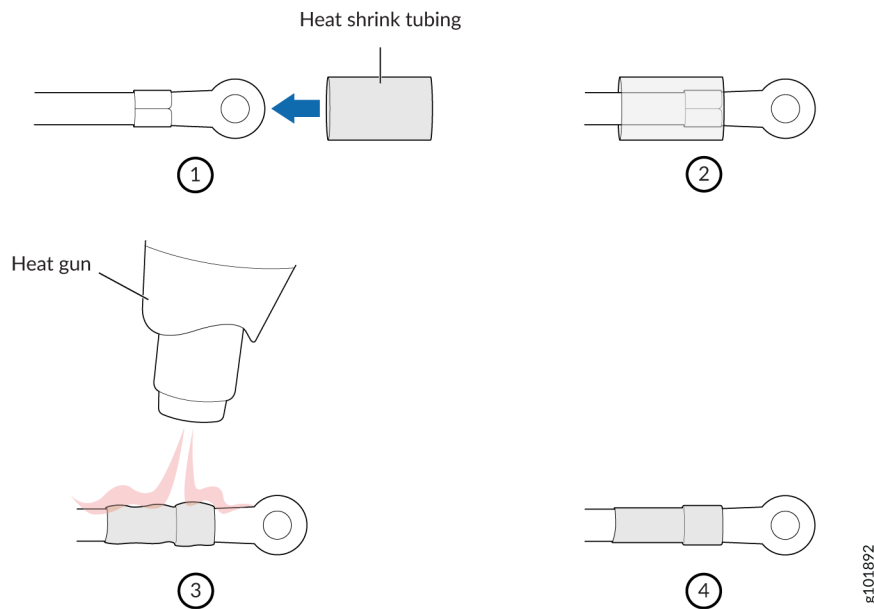
4. Remove the clear plastic cover protecting the terminals on the power supply faceplate.

5. Verify that the DC power cables are correctly labeled before making connections to the power supply. In a typical power distribution scheme where the return is connected to chassis ground at the battery plant, you can use a multimeter to verify the resistance of the **–48V** and **RTN** DC cables to chassis ground:

   - The cable with very large resistance (indicating an open circuit) to chassis ground will be **–48V**.

   - The cable with very low resistance (indicating a closed circuit) to chassis ground will be **RTN**.

> **NOTE**: The DC cable should be of minimum 14 AWG.

> ⚠ **CAUTION**: You must ensure that power connections maintain the proper polarity. The power source cables might be labeled **(+)** and **(–)** to indicate their polarity. There is no

> standard color coding for DC power cables. The color coding used by the external DC power source at your site determines the color coding for the leads on the power cables that attach to the terminals on the power supply.

6. Connect DC power cables to the **A+** and **A-** terminals:

   a. Remove the screws and square washers from the **A+** and **A-** terminals. Use a Phillips (+) screwdriver, number 2. The square washers are permanently attached to the screws.

   b. Secure each power cable lug to the appropriate terminal with a screw. Apply between 23 lb-in. (2.6 Nm) and 25 lb-in. (2.8 Nm) of torque to each screw.

   - Secure the positive (+) DC source power cable lug to the **A+** (return) terminal.

   - Secure the negative (–) DC source power cable lug to the **A-** (input) terminal.

Figure 19: Connecting DC Power Cables
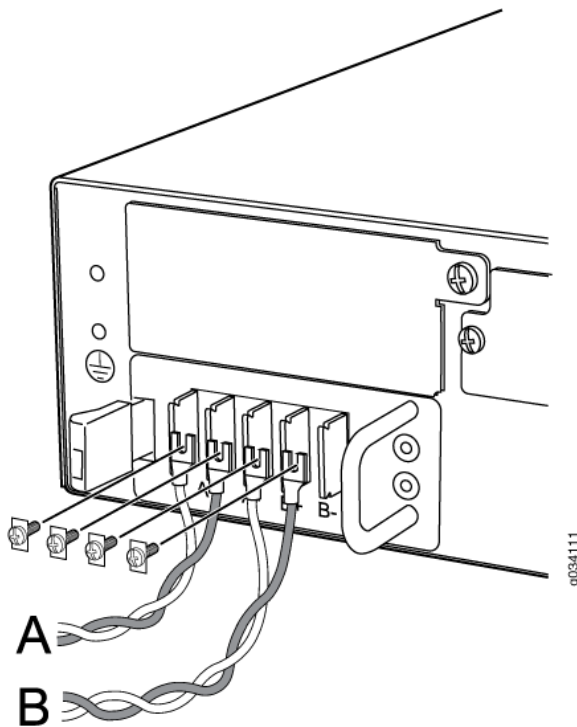
7. (Optional) If you have two DC power sources and wish to deploy A/B feed redundancy for the services gateway, connect the DC power cables to **B+** and **B-** terminals also.

8. Replace the clear plastic cover over the terminal studs on the faceplate.

9. Verify that the power cables are connected correctly, that they are not touching or blocking access to services gateway components, and that they do not drape where people could trip on them.

> **NOTE**: The services gateway must be connected to earth ground during normal operation. The protective earthing terminal on the back panel of the chassis is provided to connect the services gateway to ground.

Powering On the SRX550 High Memory Services Gateway

To power on the services gateway:

1. Ensure that you have connected the power supply to the device.
2. Insert the plug of the power supply adapter into an AC or DC power source receptacle.

   a. Using AC Power supply—Insert the appliance coupler end of the power cord into the appliance inlet on the power supply and the power cord plug into an external AC power source receptacle.

   b. Using DC power supply—Connect DC power cables to the **A+** and **A-** terminals and the other ends to an external DC power source. If you have two DC power sources and wish to deploy A/B feed redundancy for the services gateway, also connect DC power cables to the **B+** and **B-** terminals and the other ends to an external DC power source.

   > ⚠ **CAUTION**: You must ensure that power connections maintain the proper polarity. The power source cables might be labeled (+) and (–) to indicate their polarity. There is no standard color coding for DC power cables. The color coding used by the external DC power source at your site determines the color coding for the leads on the power cables that attach to the terminals on the power supply.

3. Turn on the power to the AC or DC power receptacle.

The device starts automatically as the power supply completes its startup sequence. The POWER LED (on the front panel of the chassis) lights during startup and remains on steadily when the services gateway is operating normally.

Powering Off the SRX550 High Memory Services Gateway

To power off the services gateway, press the Power button on the front of the services gateway and hold it for 10 seconds. The services gateway immediately shuts down.

> **NOTE**: Graceful shutdown is not supported on the SRX550 High Memory Services Gateway.

To remove power completely from the services gateway, unplug the AC power cord or DC power supply cable.

After powering off a power supply, wait at least 60 seconds before turning it back on. After powering on a power supply, wait at least 10 seconds before turning it off.

When the system is completely powered off and you turn on the power supply, the services gateway starts as the power supply completes its startup sequence. If the services gateway finishes starting and you need to power off the system again, first issue the **request system halt** CLI command.

After a power supply is turned on, it can take up to 60 seconds for status indicators—such as the POWER LED (on the front panel of the chassis) and the **show chassis** command display—to indicate that the power supply is functioning normally. Ignore error indicators that appear during the first 60 seconds.

> **NOTE**: When you power off a SRX550 High Memory Services Gateway with a LTE Mini-PIM installed, the LEDs on the LTE Mini-PIM may still be lit. This is because the Power button does not shut off power to the power supplies or the midplane on a SRX550 High Memory Services Gateway. You must remove the power cables or power cords to completely shut down the services gateway.

Connecting the SRX550 HM to External Devices

IN THIS SECTION

Connecting the Modem to the Console Port on the SRX550 High Memory Services Gateway

To connect the dial-up modem to the console port on the SRX550 High Memory Services Gateway:

1. Turn off power to the services gateway.
2. Turn off power to the modem.
3. Plug one end of the Ethernet cable into the console port on the services gateway. (Figure 20 on page 74 shows the console cable connector).

Figure 20: Console Cable Connector
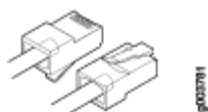
4. Plug the other end of the Ethernet cable into the RJ-45 to DB-9 serial port adapter.

> **NOTE**: Most modems have an RS-232 DB-25 connector. You must separately purchase an adapter to connect your modem to the RJ-45 to DB-9 adapter and Ethernet cable.

5. Connect the serial port adapter to a separately purchased DB-9 socket to DB-25 plug adapter or other adapter appropriate for your modem.
6. Plug the modem adapter into the DB-25 connector on the modem.
7. Connect the modem to your telephone network.
8. Turn on the power to the modem.
9. Power on the services gateway by pressing the Power button on the front of the services gateway. Verify that the POWER LED on the front panel turns green.

Connecting to the SRX550 High Memory Services Gateway from the CLI with the USB Console Port

You can connect your management station to the USB console port on the services gateway and use the CLI to configure the services gateway, as shown in Figure 21 on page 75.

Figure 21: Connecting to the USB Console Port on the SRX550 Services Gateway
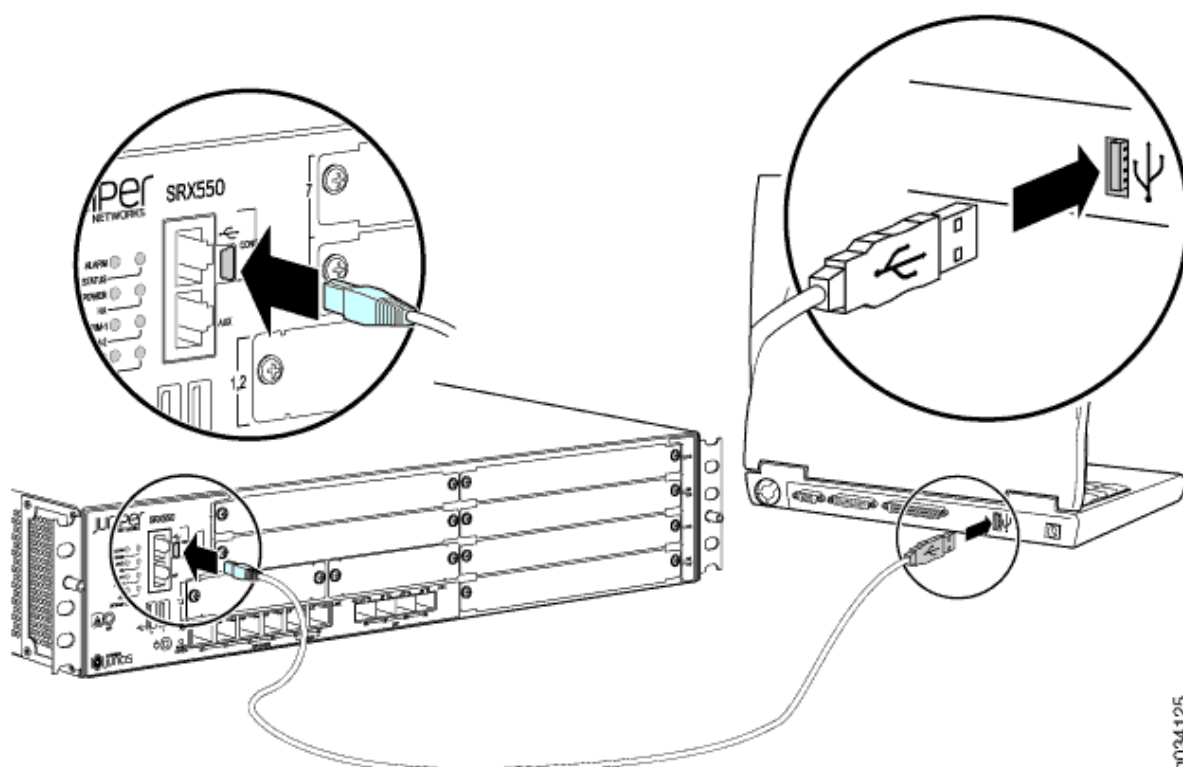
To connect to the CLI using a local management device through the USB console port on the services gateway:

1. If you have not already done so, install the USB console driver software.

    Download the USB driver to the management device from the Downloads page. To download the driver for Windows OS, select **6.5** from the **Version** drop-down list. To download the driver for macOS, select **4.10** from the **Version** drop-down list.

> ⚠️ **CAUTION**: Install the USB console driver software before attempting to establish a physical connection between the services gateway and the management device, otherwise the connection will fail.

2. Plug the large end of the USB cable supplied with the services gateway into a USB port on the management device (see Figure 21 on page 75).

3. Connect the other end of the USB cable to the USB console port on the services gateway (see Figure 21 on page 75).

4. Start your asynchronous terminal emulation application (such as Microsoft Windows HyperTerminal), and select the new **COM** port installed by the USB Console driver software. In most cases, this is the highest-numbered **COM** port in the selection menu.

5. Configure the port settings, as shown in Table 24 on page 76.

Table 24: Port Settings

Port Settings	Value
Bits per second	9600
Data bits	8
Parity	None
Stop bits	1
Flow control	None

6. If you have not already done so, power on the services gateway by pressing the Power button on the front of the services gateway. Verify that the POWER LED on the front panel turns green.

   The terminal emulation screen on your management device displays the startup sequence. When the services gateway has finished starting up, a login prompt appears.

7. Log in as the user **root**. No password is required at initial connection, but you must assign a root password before committing any configuration settings.

Connecting the CLI at the User End for the SRX550 High Memory Services Gateway

To connect to the CLI through a dial-up modem connected to the console port on the SRX550 High Memory Services Gateway:

1. Connect a modem at your remote location to a management device.
2. Start your asynchronous terminal emulation application (such as Microsoft Windows HyperTerminal) on the management device.
3. Select the **COM** port to which the modem is connected (for example, **COM1**).
4. Configure the port settings shown in Table 25 on page 77.

   Table 25: Port Settings

Port Settings	Value
Bits per second	9600
Data bits	8
Parity	None
Stop bits	1
Flow control	None

5. In the HyperTerminal window, type **AT**.

   For more information on the AT commands, see the Installation and Upgrade Guide for Security Devices.

   An **OK** response indicates that the modem can communicate successfully with the **COM** port on the management device.

6. To dial the modem that is connected to the console port on the services gateway, type **ATDT** *remote-modem-number*. For example, if the phone number of the modem connected to the console port on the services gateway is **0019785551234**, type **ATDT 0019785551234**.

   The services gateway login prompt appears.

7. Log in as the user **root**. No password is required at initial connection, but you must assign a root password before you commit any configuration settings.

Configuring the Modem at the SRX550 High Memory Services Gateway End

Before you can connect a dial-up modem to the console port on the SRX550 High Memory Services Gateway, you must configure the modem to accept a call on the first ring and to accept DTR signals. You must also disable flow control on the modem.

> **NOTE**: These instructions use Hayes-compatible modem commands to configure the modem. If your modem is not Hayes-compatible, refer to the documentation for your modem and enter equivalent modem commands.

To configure the modem on the services gateway end:

1. Connect the modem to the management device (a desktop or laptop computer).
2. Power on the modem.
3. From the management device, start your asynchronous terminal emulation application (such as Microsoft Windows HyperTerminal), and select the **COM** port to which the modem is connected (for example, **COM1**).
4. Configure the port settings, as shown in Table 26 on page 78.

   Table 26: Port Settings

Port Settings	Value
Bits per second	9600
Data bits	8
Parity	None
Stop bits	1
Flow control	None

5. In the HyperTerminal window, type **AT**.

   For more information on the AT commands, see the Network Management and Monitoring Guide.

An **OK** response verifies that the modem can communicate successfully with the **COM** port on the management device.

6. To configure the modem to answer a call on the first ring, type **ATS0=1**.

7. To configure the modem to accept modem control DTR signals, type **AT&D1**.

8. To disable flow control, type **AT&K0**.

9. To save modem settings, type **AT&W**.

Configuring Junos OS on the SRX550 HM

SRX550 High Memory Services Gateway Basic Connectivity Overview

The Juniper Networks Junos operating system (Junos OS) is preinstalled on the SRX550 High Memory Services Gateway. When the services gateway is powered on, it is ready to be configured.

If you are setting up a services gateway for the first time, you can use the command-line interface (CLI) and the J-Web interface to configure basic connectivity.

If you are setting up many services gateways, autoinstallation can help automate the configuration process. See "SRX550 High Memory Services Gateway Autoinstallation Overview" on page 58.

Before you configure the services gateway for the first time, you must complete the prerequisite tasks listed in Table 27 on page 80.

Table 27: Services Gateway Prerequisite Tasks

Task	Details
Gather information on:	- Device name - Password for the root user - Time zone information - System time and zone for services gateway location - IP address of a Network Time Protocol (NTP) server, if NTP is used to set the time on the services gateway
If you are performing the initial configuration with the CLI, gather the following equipment:	- Management device, such as a desktop or laptop computer, with a serial port and an asynchronous terminal application (such as Microsoft Windows HyperTerminal) - Serial cable - For a remote connection, gather the following equipment: - Two dial-up modems - An adapter appropriate for your modem; for example, DB-25 plug or similar

Built-In Ethernet Ports for the SRX550 High Memory Services Gateway

Before initial configuration, when the factory default configuration is active, the services gateway attempts to perform autoinstallation by obtaining a device configuration through all its connected interfaces, including the interface ge-0/0/0. All interfaces are configured as Layer 3 interfaces. See Table 28 on page 81 and Table 29 on page 82 for the default interface configuration.

Table 28: Default Ethernet Interface Configuration for the SRX550 HM Services Gateway

Port Label	Interface	Connector	Security Zone	DHCP State	Address
0/0	ge-0/0/0 **NOTE**: If chassis clustering is enabled, use this port as the management port (fxp0).	RJ-45	Untrust	Client	Dynamically assigned
0/1	ge-0/0/1 (if used) **NOTE**: If chassis clustering is enabled, use this port as the control port (fxp1).	RJ-45	Trust	Server	192.168.1.1/24
0/2	ge-0/0/2 (if used) **NOTE**: Use this port as a fabric port.	RJ-45	Trust	Server	192.168.2.1/24
0/3	ge-0/0/3 (if used) **NOTE**: Use this port as a fabric port.	RJ-45	Trust	Server	192.168.3.1/24
0/4	ge-0/0/4	RJ-45	Trust	Server	192.168.4.1/24
0/5	ge-0/0/5	RJ-45	Trust	Server	192.168.5.1/24
0/6	ge-0/0/6	No default configuration			

Table 28: Default Ethernet Interface Configuration for the SRX550 HM Services Gateway *(Continued)*

Port Label	Interface	Connector	Security Zone	DHCP State	Address
0/7	ge-0/0/7				
0/8	ge-0/0/8				
0/9	ge-0/0/9				

> **NOTE**: If chassis clustering is enabled, we recommend using the port labeled **0/0** port as the management port (fxp0) and using the **0/1** port (if used) as the control port (fxp1). The fxp0 and fxp1 ports are created only when chassis clustering is enabled. You can use the other ports as fabric ports.

Table 29: LTE Interfaces

Interface	Security Zone	IP Address
cl-1/0/0	N/A	N/A
dl0 (logical)	untrust	ISP assigned*

Only if the LTE Mini-PIM is present

By default, the security policies and NAT rules in and are created on the SRX Series security policies.

Table 30: Security Policies

Source Zone	Destination Zone	Policy Action
trust	untrust	permit
trust	trust	permit

Table 31: NAT Rule

Source Zone	Destination Zone	NAT Action
Trust	Untrust	Source NAT to untrust zone interface

For example, a common default firewall configuration includes the following assumptions:

- The protected network is connected to the interfaces ge-0/0/1 (port **0/1**) through interface ge-0/0/5 (port **0/5**) in the trust zone.

- Connectivity to the Internet is through the interface ge-0/0/0 (port **0/0**) in the untrust zone.

- The IP address of the ge-0/0/0 interface is assigned through DHCP.

How to View Factory-Default Settings of the SRX550 High Memory Services Gateway

To view the factory-default configuration:

1. Log in as the root user and provide your credentials.
2. View the list of default configuration files:

```
user@host> file list /etc/config
```

3. View the required default configuration file.

```
user@host> file show /etc/config/config file
name
```

Management Access for the SRX550 High Memory Services Gateway

Telnet allows you to connect to the SRX550 High Memory Services Gateway and access the CLI to execute commands from a remote system. Telnet connections are not encrypted and therefore can be intercepted.

> **NOTE**: You cannot use Telnet to access the root account. You must use more secure methods, such as SSH, to log in as root.

SSH provides the following features:

- Allows you to connect to the services gateway and to access the CLI to execute commands from a remote system

- Unlike Telnet, encrypts traffic so that it cannot be intercepted

- Can be configured so that connections are authenticated by a digital certificate

- Uses public–private key technology for both connection and authentication

The SSH client software must be installed on the machine where the client application runs. If the SSH private key is encrypted (for greater security), the SSH client must be able to access the passphrase used to decrypt the key.

For information about obtaining SSH software, see http://www.ssh.com and http://www.openssh.com.

If you are using a Junos XML protocol server to configure and monitor devices, you can activate cleartext access on the services gateway to allow unencrypted text to be sent directly over a TCP connection without using any additional protocol (such as SSH, SSL, or Telnet). For more information about the Junos XML management protocol, see the Junos XML Management Protocol Guide.

> **NOTE**: Information sent in cleartext is not encrypted and therefore can be intercepted.

If the services gateway is operating in a Common Criteria environment, see the Configuration Guides for Junos OS Public Sector Certifications.

SRX550 High Memory Services Gateway Secure Web Access Overview

You can manage a services gateway remotely through the J-Web interface. To communicate with the services gateway, the J-Web interface uses Hypertext Transfer Protocol (HTTP). HTTP allows easy Web access but does not include encryption. The data transmitted between the client and the services gateway by means of HTTP is vulnerable to interception and attack. To enable secure Web access, a services gateway supports HTTP over Secure Sockets Layer (HTTPS). You can enable HTTP or HTTPS access on specific interfaces and ports as needed.

The services gateway uses the SSL protocol to provide secure management of services gateways through the J-Web interface. SSL uses public-private key technology, which requires a paired private key and an authentication certificate to provide the SSL service. SSL encrypts communication between your device and the Web browser with a session key negotiated by the SSL server certificate.

An SSL certificate includes identifying information such as a public key and a signature made by a certificate authority (CA). When you access the services gateway through HTTPS, an SSL handshake authenticates the server and the client and begins a secure session. If the information does not match or if the certificate has expired, your access to the services gateway through HTTPS is restricted.

Without SSL encryption, communication between your services gateway and the browser is sent in the open and can be intercepted. We recommend that you enable HTTPS access on your WAN interfaces.

On services gateways, HTTP access is enabled by default on the built-in management interfaces. By default, HTTPS access is supported on any interface with an SSL server certificate.

You can use the J-Web interface or the CLI to configure secure Web access.

Before you configure secure Web access for the first time, you must complete the following tasks:

- Establish basic connectivity.

- Obtain an SSL certificate from a trusted signing authority.

For more details about configuring secure web access on your services gateway, see the User Access and Authentication Guide.

Initial Configuration Using J-Web

IN THIS SECTION

Configure Using J-Web

To configure the device by using J-Web:

1. Connect any of the network ports numbered **0/1** through **0/5** on the services gateway to the Ethernet port on the management device, using an RJ-45 cable.

   > **NOTE**: The ge-0/0/0 and ge-0/0/9 interfaces (ports **0/0** and **0/9**) are WAN interfaces. Do not use these ports for the initial configuration procedure.

2. Connect the other end of the Ethernet cable to the management device.

   Figure 22: Connect the SRX550 HM to a Management Device
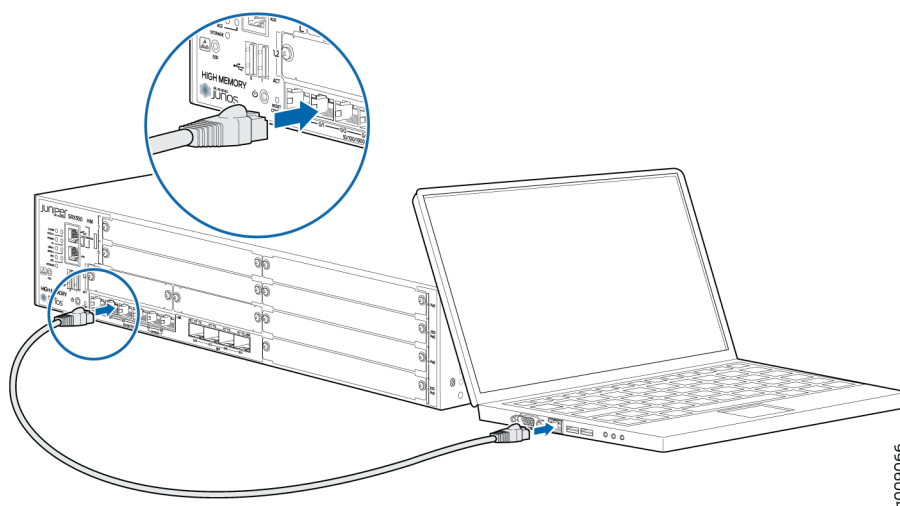
3. Ensure that the management device acquires an IP address. The IP address should be on the corresponding IP subnet for the interface you connected to in Step 1. The device functions as a DHCP server and will assign an IP address to the management device.

   For example, if you are connected to port **0/1**, then the IP address of the management device should be from the 192.168.1.x network. If an IP address is not assigned to the management device, manually configure an IP address. You can use the `ipconfig` (or `ifconfig` for Macintosh or Linux users) command to verify the IP address.

   > **NOTE**: Do not assign the IP address 192.168.1.1 (if connected to port 0/1) to the management device, as this IP address is assigned to the SRX550 HM.
   >
   > Refer to the factory-default settings for information on the subnet for each interface.

4. Open a browser and type https://192.168.1.1 (if connected to port 0/1). For ports other than 0/1, access the services gateway using the URL https://192.168.x.1, where x is the port number.

   The Phone Home Client screen appears.
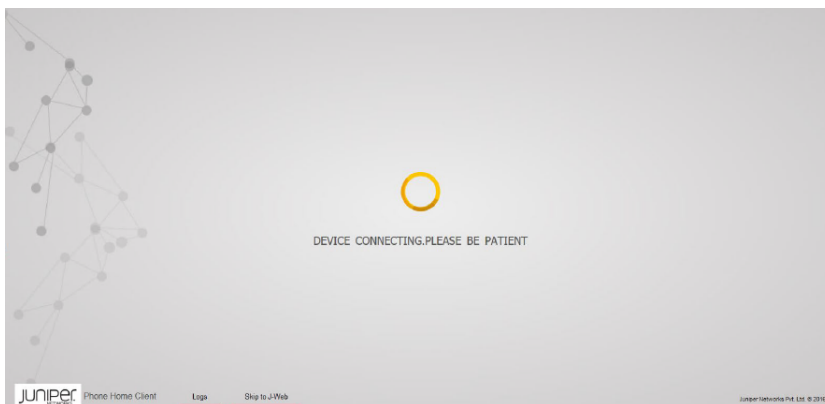
5. To configure the device using zero touch provisioning (ZTP), follow the procedure in "Configure the Device Using ZTP with Juniper Networks Network Service Controller" on page 94.

6. To configure the device using J-Web, click **Skip to J-Web**.

7. Set a root authentication password in the Skip to J-Web screen and click **Submit**.
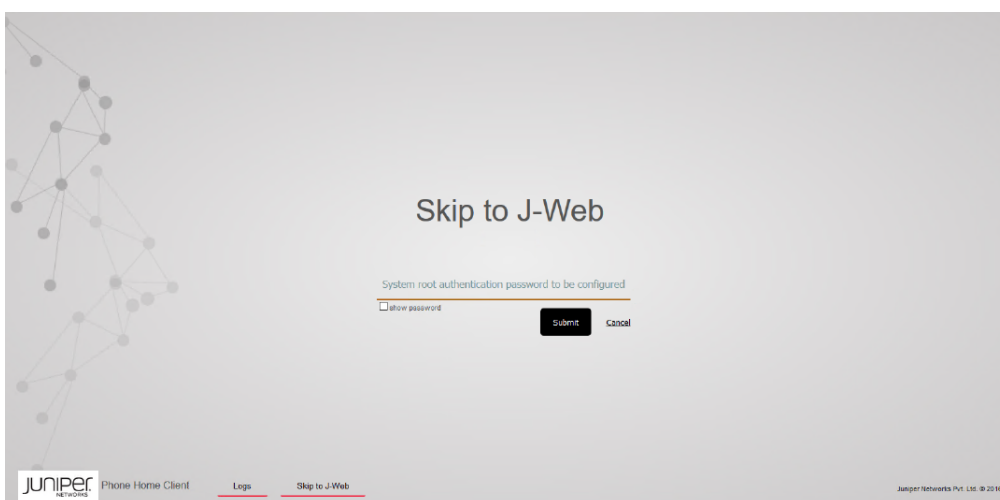
The J-Web login page appears. The SRX550 HM already has factory-default settings configured to make it a plug-and-play device. So all you have to do to get the SRX550 HM up and running is connect it to your LAN and WAN networks.

8. Connect the WAN network to port **0/0** to obtain a dynamic IP address.

9. Connect the LAN network to any of the ports from **0/1** through **0/5**.

10. Check to see if the SRX550 HM is connected to the Internet. Go to http://www.juniper.net. If the page does not load, check the Internet connection.

After you complete these steps, you can start using the SRX550 HM on your network right away.

You can continue to customize the settings by logging into J-Web and selecting the configuration mode that's right for you and then follow the screens as they appear in the Setup wizard.

- To customize the configuration in Junos OS Release 19.2, see "Customize the Configuration for Junos OS Release 19.2" on page 88.

- To customize the configuration in Junos OS Release 15.1X49-D170, see "Customize the Configuration for Junos OS Release 15.1X49-D170" on page 88.

Customize the Configuration for Junos OS Release 19.2

You can select any one of the configuration modes to customize the configuration:

- Standard—Configure basic security settings for the SRX550 HM.

- Cluster (HA)—Set up the SRX550 HM in chassis cluster mode.

- Passive—Set up the SRX550 HM in Tap mode. Tap mode enables the SRX550 HM to passively monitor traffic flows across a network.
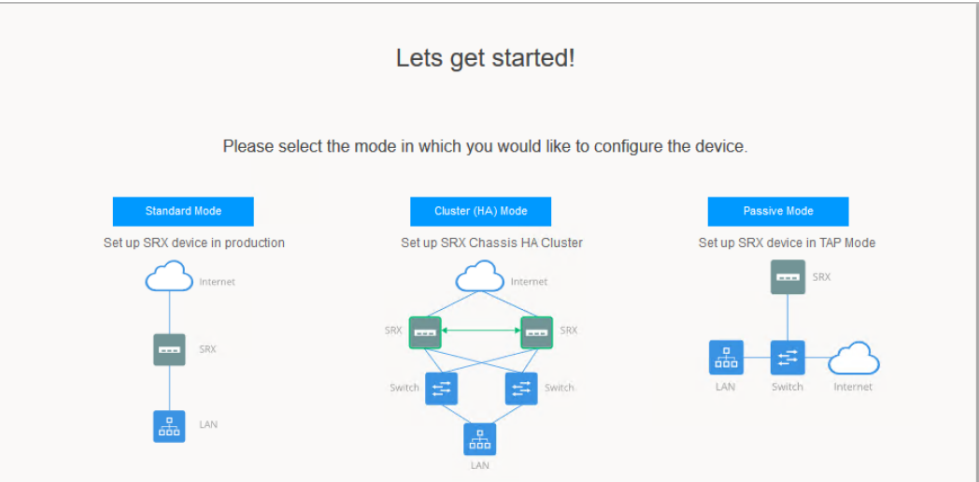
Customize the Configuration for Junos OS Release 15.1X49-D170

You can select any one of the configuration modes to customize the configuration:

- Guided Setup (uses a dynamic IP address)—Enables you to set up the SRX550 HM in a custom security configuration. You can select either the Basic or the Expert option.

  The following table compares the Basic and Expert levels:

Options	Basic	Expert
Number of internal zones allowed	3	≥ 3

(Continued)

Options	Basic	Expert
Internet zone configuration options	- Static IP - Dynamic IP	- Static IP - Static pool - Dynamic IP
Internal zone service configuration	Allowed	Allowed
Internal destination NAT configuration	Not Allowed	Allowed

NOTE: If you change the IP address of the port to which the laptop is connected, you might lose connectivity to the device when applying the configuration in the Guided Setup mode. To access J-Web again, open a new browser window and type https://*new IP address*.

- Default Setup (uses a dynamic IP address)—Enables you to quickly set up the SRX550 HM with the default configuration. Any additional configuration can be done after the wizard setup is completed.

- High Availability—Enables you to set up a chassis cluster with a default basic configuration.
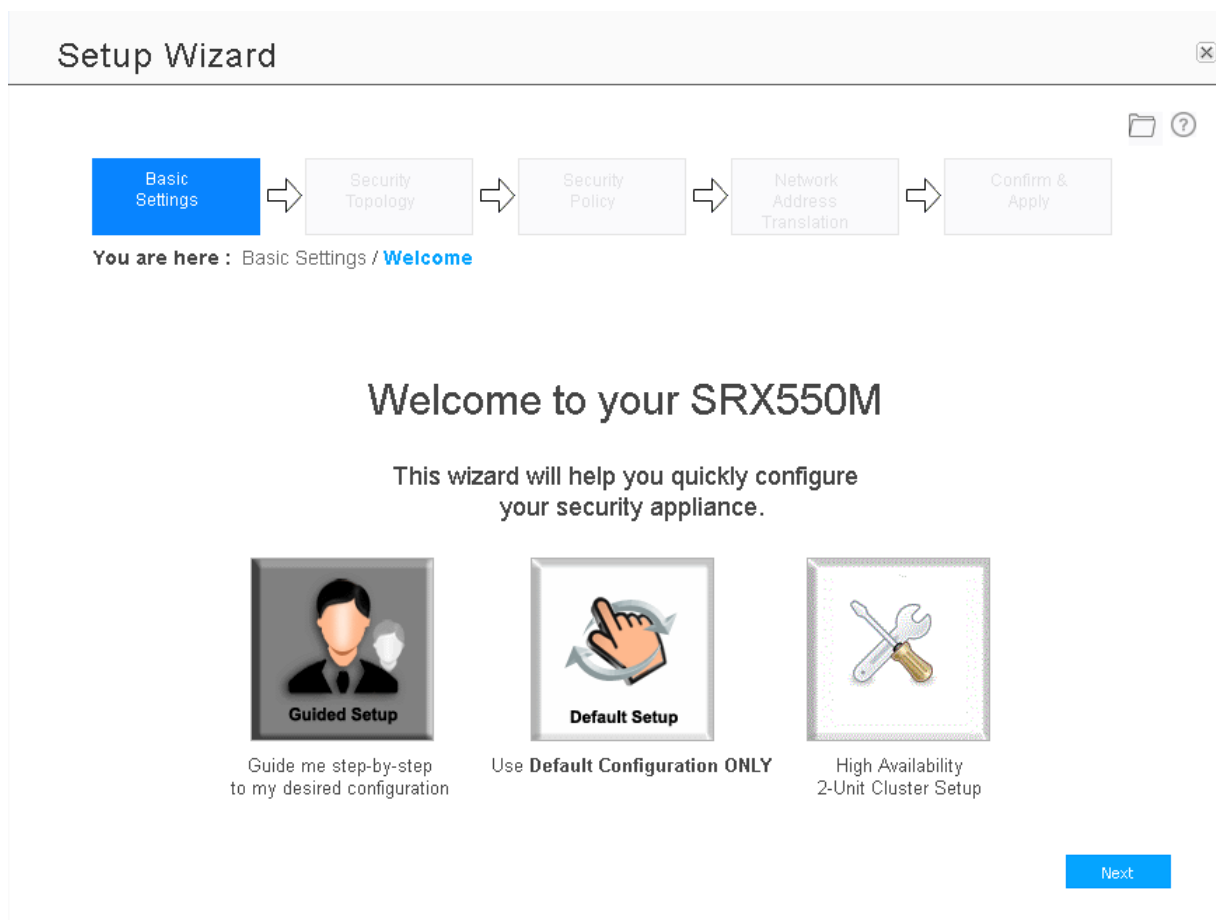
Initial Configuration Using the CLI

IN THIS SECTION

You can use either the serial or the mini-USB console port on the device.

Connecting to the Serial Console Port on the SRX550 High Memory Services Gateway

To connect to the serial console port:

1. Plug one end of the Ethernet cable into the RJ-45 to DB-9 serial port adapter supplied with your SRX550 HM.

2. Plug the RJ-45 to DB-9 serial port adapter into the serial port on the management device.

3. Connect the other end of the Ethernet cable to the serial console port on the services gateway.

Figure 23: Connecting to the Console Port on the SRX550 High Memory Services Gateway
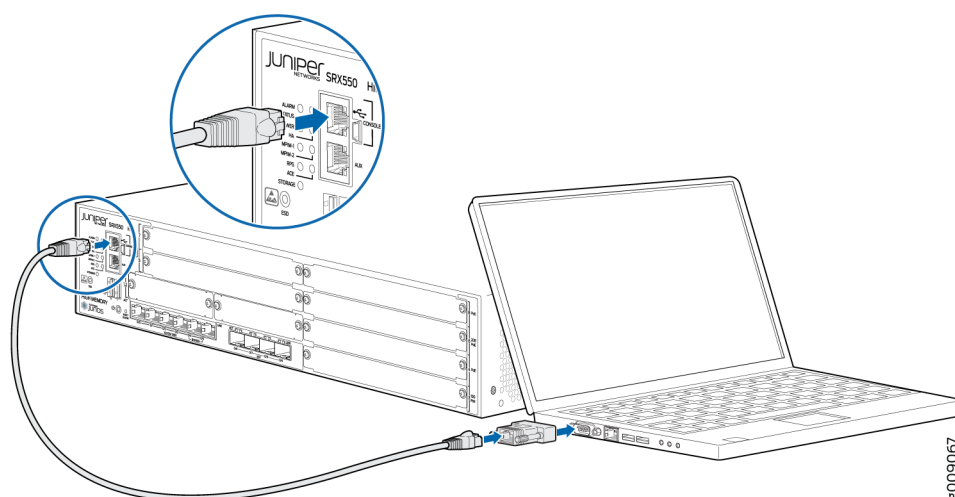
> **NOTE**: shows a connection to a local management device. A remote connection to the services gateway through a modem requires the cable and connector shown (RJ-45 to a DB-9 serial port adapter), along with an adapter for your modem, which you must purchase separately.
>
> You can connect to the SRX550 High Memory Services Gateway from a remote location through two dial-up modems:
>
> - A modem that is connected to the console port on the services gateway
>
> - A second modem that is connected to a remote management device
>
> The modem connection lets you remotely perform the same console operations that you can perform locally.

4. Start your asynchronous terminal emulation application (such as Microsoft Windows HyperTerminal) and select the appropriate COM port to use (for example, COM1).

5. Configure the serial port settings with the following values:

- Baud rate—9600

- Parity—N

- Data bits—8

- Stop bits—1

- Flow control—none

The terminal emulation screen on your management device displays the startup sequence. When the services gateway has finished starting up, a login prompt appears.

Connect to the Mini-USB Console Port

To connect to the mini-USB console port:

1. Download the USB driver to the management device from the Downloads page. To download the driver for Windows OS, select **6.5** from the **Version** drop-down list. To download the driver for macOS, select **4.10** from the **Version** drop-down list.

2. Install the USB console driver software:

> **NOTE**: Install the USB console driver software before attempting to establish a physical connection between the SRX550 HM and the management device, otherwise the connection will fail.

   a. Copy and extract the **.zip** file to your local folder.

   b. Double-click the **.exe** file. The installer screen appears.

   c. Click **Install**.

   d. Click **Continue Anyway** on the next screen to complete the installation.

   If you chose to stop the installation at any time during the process, then all or part of the software will fail to install. In such a case, we recommend that you uninstall the USB console driver and then reinstall it.

   e. Click **OK** when the installation is complete.

3. Plug the large end of the USB cable supplied with the SRX550 HM into a USB port on the management device.

4. Connect the other end of the USB cable to the mini-USB console port on the SRX550 HM.

5. Start your asynchronous terminal emulation application (such as Microsoft Windows HyperTerminal) and select the new COM port installed by the USB console driver software. In most cases, this is the highest-numbered COM port in the selection menu.

   You can locate the COM port under **Ports (COM & LPT)** in **Windows Device Manager** after the driver is installed and initialized. This might take several seconds.

6. Configure the port settings with the following values:

   - Bits per second—9600

   - Parity—None

   - Data bits—8

   - Stop bits—1

   - Flow control—None

7. If you have not already done so, power on the SRX550 HM by pressing the **Power** button on the front panel. Verify that the **PWR** LED on the front panel turns green.

   The terminal emulation screen on your management device displays the startup sequence. When the SRX550 HM has finished starting up, a login prompt appears.

Configure the SRX550 High Memory Using the CLI

This procedure connects the device to the network but does not enable it to forward traffic. For complete information about enabling the device to forward traffic, including examples, see the appropriate Junos OS configuration guides.

To configure the software:

1. Log in as the root user. There is no password.
2. Start the CLI.

```
root@% cli
root>
```

3. Enter configuration mode.

```
configure
[edit]
root#
```

4. Set the root authentication password by entering a cleartext password, an encrypted password, or an SSH public key string (DSA or RSA).

```
[edit]
root# set system root-authentication plain-text-password
New password: password
Retype new password: password
```

5. Commit the configuration to activate it on the device.

```
[edit]
root# commit
```

Configure the Device Using ZTP with Juniper Networks Network Service Controller

> **NOTE**: You can configure using ZTP for Junos OS Release 19.2 and earlier releases.

You can use ZTP to complete the initial configuration of the SRX550 HM in your network automatically, with minimum intervention.

Network Service Controller is a component of the Juniper Networks Contrail Service Orchestration platform that simplifies and automates the design and implementation of custom network services that use an open framework.

For more information, refer to the Network Service Controller section in the datasheet at http://www.juniper.net/assets/us/en/local/pdf/datasheets/1000559-en.pdf.

To configure the device automatically using ZTP:

> **NOTE**: To complete the ZTP process, ensure that the SRX550 HM is connected to the Internet.

- If you already have the authentication code, enter the code in the webpage displayed.

Figure 24: Authentication Code Page
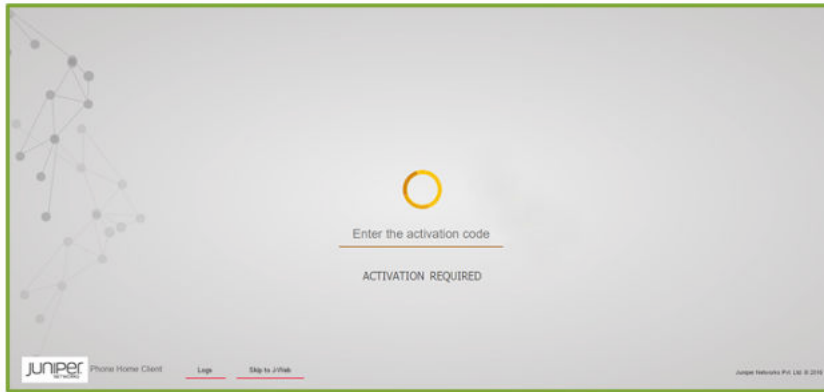
On successful authentication, the initial configuration is applied and committed on the SRX550 HM. Optionally, the latest Junos OS image is installed on the SRX550 HM before the initial configuration is applied.

- If you do not have the authentication code, you can use the J-Web setup wizard to configure the SRX550 HM. Click **Skip to J-Web** and configure the SRX550 HM using J-Web.

Configuring Gigabit-Backplane Physical Interface Modules

To configure Gigabit-Backplane Physical Interface Modules (GPIMs) on the SRX550 High Memory Services Gateway:

1. Verify that the GPIM is installed in the services gateway:

   `user@host >show chassis hardware`

   The following is a sample output of the command.

   ```
   root> show chassis hardware
   Hardware inventory:
   Item            Version  Part number  Serial number    Description
   Chassis                               DA3515AK0016     SRX550M
   Midplane        REV 03   750-063950   ACMW7426
   Routing Engine  REV 03   711-062269   ACMT8374         RE-SRX550M
   FPC 0                                                  FPC
   ```

```
   PIC 0                                                  6x GE, 4x GE SFP Base PIC
     Xcvr 6      REV 02   740-011613   PLN4Q4R            SFP-SX
     Xcvr 7      REV 02   740-011613   PLH5R83            SFP-SX
     Xcvr 8      REV 02   740-011613   PPF68ZA            SFP-SX
     Xcvr 9      REV 02   740-011613   AM1301SZEZL        SFP-SX
 FPC 1          REV 00   750-064611   ACMX2090           FPC
   PIC 0                                                  1x T1E1 mPIM (RoHS)
 FPC 2          REV 00   750-064613   ACMW2386           FPC
   PIC 0                                                  1x Serial mPIM (RoHS)
 FPC 3          REV 00   750-064614   ACMZ1330           FPC
   PIC 0                                                  16x GE POE gPIM (RoHS)
 FPC 6          REV 02   750-064615   ACMS8119           FPC
   PIC 0                                                  8x SFP gPIM (RoHS)
     Xcvr 0      REV 01   740-013111   92244027           SFP-T
     Xcvr 1      REV 02   740-011613   PLH5KLM            SFP-SX
     Xcvr 2      REV 02   740-011613   PPF68YU            SFP-SX
     Xcvr 3      REV 02   740-011613   PN356ST            SFP-SX
     Xcvr 4      REV 02   740-011613   PLN54T1            SFP-SX
     Xcvr 5      REV 01   740-020465   DDK2008229         SFP-1000BASE-BX10-D
     Xcvr 6      REV 02   740-011613   PPF68YV            SFP-SX
     Xcvr 7      REV 02   740-011613   PPF68YW            SFP-SX
 Power Supply 0  Rev 04   740-028131   WG02251            PS 645W DC
 Power Supply 1  Rev 04   740-028131   WH02925            PS 645W DC
```

2. Verify that the PIC on the XPIM is online:

    `user@host> show chassis fpc pic-status`

3. Verify that the network interface that you want to configure on the XPIM is up:

    `user@host> show interfaces terse`

4. Assign the interface an IP address:

    `[edit]`
    `user@host# set interfaces interface-name unit 0 family inet address interface address/destination prefix`

5. Add or select a security zone; for example, Trust:

    `[edit]`
    `user@host# set security zones security-zone trust interfaces ge-0/0/x.0 host-inbound-traffic system-services all`

    where x is less than or equal to 16

6. Add or select security zones for host inbound traffic protocol options:

    `[edit]`
    `user@host# set security zones security-zone trust interfaces ge-0/0/x.0 host-inbound-traffic protocols all`

    where x is less than or equal to 16

7. Set security policies:

```
[edit]
user@host# set security policies default-policy permit-all
```

Configuring Mini-Physical Interface Modules

IN THIS SECTION

- Using the J-Web Interface | 97
- Using the CLI | 98

To enable the Mini-Physical Interface Module (Mini-PIM) installed on the services gateway, you must configure the basic settings for the Mini-PIM. You can perform the configuration tasks for this using either the J-Web interface or the CLI.

Using the J-Web Interface

To perform basic configuration for the Mini-PIM and to configure network interfaces for the services gateway using the J-Web interface:

1. In the J-Web interface, select **Configure>Interfaces**.

   The Interfaces page displays and lists the network interfaces present on the services gateway, along with configuration information (if configured).

2. Select the interface name and click **Add > Logical Interfaces**. Enter the details and click **OK**. To use the port on the Mini-PIM, assign an IP address to the port and assign it to a security zone, other than the Null zone. If there are no security zones listed, proceed to the next step to add a security zone.

3. Add a security zone to the interface:

   a. Select **Configure>Security>Zones/Screens**.

   b. Add or select a security zone other than Null; for example, **Trust**. Assign the interface to the zone.

   c. For Host Inbound Traffic-Zone, set the following:

      - System Services=**Allow All**

      - Protocols=**Allow All**

   d. Click **OK** to save changes, and select **Commit>Commit** to apply the configuration and other pending changes (if any).

4. To use the port on the Mini-PIM, you must also set security policies. Select the following settings:

   a. Select **Configure>Security>Security Policy**.

   b. Select **Global Options > Policy Options**.

   c. Set Policy Option: Default Policy Action=**Permit-All**.

   d. Click **OK** to save changes, and select **Commit>Commit** to apply the configuration and other pending changes (if any).

Using the CLI

To perform basic configuration for Mini-PIM and to configure network interfaces for the services gateway using the CLI:

1. Verify that the Mini-PIM is installed on the device:

   `show chassis hardware`

2. Verify the status of the interface:

   `show interfaces terse`

3. Assign the port an IP address:

   For T1 interfaces:

   `set interfaces t1-1/0/0 unit 0 family inet address interface address/destination prefix`

   For E1 interfaces:

   `set interfaces e1-1/0/0 unit 0 family inet address interface address/destination prefix`

   For the 1-Port Serial Mini-PIM:

   `set interfaces se-1/0/0 unit 0 family inet address interface address/destination prefix`

4. Add or select a security zone; for example, Trust:

   For T1 interfaces:

   `set security zones security-zone trust interfaces t1-1/0/0.0 host-inbound-traffic system-services all`

   For E1 interfaces:

   `set security zones security-zone trust interfaces e1-1/0/0.0 host-inbound-traffic system-services all`

   For the 1-Port Serial Mini-PIM:

   `set security zones security-zone trust interfaces se-1/0/0.0 host-inbound-traffic system-services all`

5. Add or select security zones for host inbound traffic protocol options:

   For T1 interfaces:

   ```
   set security zones security-zone trust interfaces t1-1/0/0.0 host-inbound-traffic protocols all
   ```

   For E1 interfaces:

   ```
   set security zones security-zone trust interfaces e1-1/0/0.0 host-inbound-traffic protocols all
   ```

   For the 1-Port Serial Mini-PIM:

   ```
   set security zones security-zone trust interfaces se-1/0/0.0 host-inbound-traffic protocols all
   ```

6. Set security policies:

   ```
   set security policies default-policy permit-all
   ```

> **NOTE**: You can use the CLI commands `set interfaces t1-1/0/0` or `set interfaces e1-1/0/0` to enable the 1-Port T1/E1 Mini-PIM to function as a T1 or an E1 interface.

4
CHAPTER

Maintaining Components

Maintaining the SRX550 HM Components

IN THIS SECTION

Required Tools and Parts for Maintaining the SRX550 High Memory Services Gateway Hardware Components

The following tools and parts are required to maintain the hardware components of the services gateway:

- Electrostatic bag or antistatic mat

- Electrostatic discharge (ESD) grounding wrist strap

- Flat-blade screw-blade screwdriver, approximately 1/8 in. (3 mm)

- Phillips (+) screwdrivers, number 1 and number 2

Routine Maintenance Procedures for the SRX550 High Memory Services Gateway

For optimum performance of the services gateway, perform the following preventive maintenance procedures regularly:

- Inspect the installation site for moisture, loose wires or cables, and excessive dust.

- Make sure that airflow is unobstructed around the services gateway and into the air intake vents.

- Check the status LEDs on the front and back panels of the services gateway.

Maintaining the SRX550 HM Cooling System Components

The services gateway fan controller works to maintain an optimal temperature for the services gateway. If the fan controller fails, the services gateway temperature will exceed the maximum working temperature and it will fail. Make sure that you maintain the recommended clearances behind the services gateway to enable the fan controller to function optimally.

Maintaining the SRX550 HM Power System

Maintaining the SRX550 High Memory Services Gateway Power Supply

To maintain the power supplies of the services gateway:

- Make sure that all power and grounding cables are arranged so that they do not obstruct access to other services gateway components.

- Routinely check the POWER LED on the front panel. If this LED is solid green, the power supplies are functioning normally.

- Periodically inspect the site to ensure that the grounding and power cables connected to the services gateway are securely in place and that there is no moisture accumulating near the services gateway.

Replacing the AC Power Supply on the SRX550 High Memory Services Gateway

You can replace the AC power supply on the SRX550 High Memory Services Gateway after disconnecting the AC power cord and removing the power supply already installed. However, redundant AC power supplies are hot-swappable. You need not power off the services gateway for replacing them.

NOTE: To maintain proper cooling and prevent thermal shutdown of the operating power supply unit, each power supply slot must contain either a power supply or a blank panel. If you remove a power supply, you must install a replacement power supply or a blank panel shortly after the removal.

This topic describes:

Disconnecting an AC Power Cord from the SRX550 High Memory Services Gateway

WARNING: Before working on an AC-powered device or near power supplies, unplug the power cord.

To disconnect the AC power cord:

1. Unplug the power cord from the power source receptacle.
2. Attach an electrostatic discharge (ESD) grounding strap to your bare wrist and connect the strap to one of the ESD points on the chassis. For more information about ESD, see *Prevention of Electrostatic Discharge Damage*.
3. Unplug the power cord from the appliance inlet on the power supply.

Removing an AC Power Supply from the SRX550 High Memory Services Gateway

Up to two power supplies can be located at the rear of the chassis on the right side. Each AC power supply weighs 2 lb (1.32 kg).

> ⚠️ **CAUTION**: Do not leave a power supply slot empty for more than 30 minutes while the services gateway is operational. For proper airflow, the power supply must remain in the chassis, or a blank panel must be used in an empty slot.

> **NOTE**: After powering off a power supply, wait at least 60 seconds before turning it back on.

To remove an AC power supply:

1. Switch off the dedicated facility circuit breaker for the power supply, and remove the power cord from the AC power source. Follow the electrostatic discharge (ESD) and disconnection instructions for your site.
2. Attach an ESD grounding strap to your bare wrist and connect the strap to one of the ESD points on the chassis. For more information about ESD, see *Prevention of Electrostatic Discharge Damage*.
3. Press the latch to the left of the power outlet (see Figure 1).
4. After the power supply is unlatched, remove the power cord from the power supply.
5. Pull the power supply straight out of the chassis.

Figure 25: Removing an AC Power Supply from the SRX550 High Memory Services Gateway
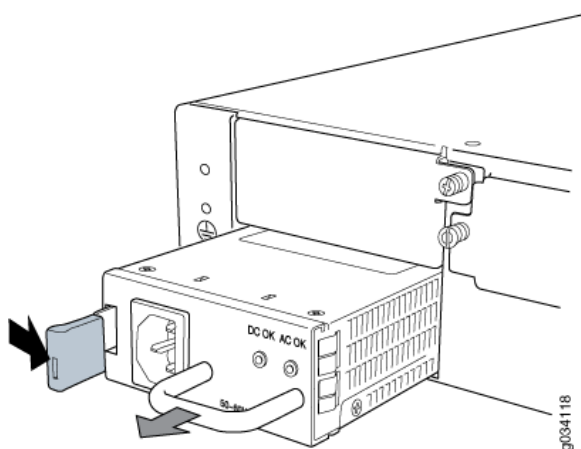
Installing an AC Power Supply on the SRX550 High Memory Services Gateway

To install an AC power supply:

1. Attach an electrostatic discharge (ESD) grounding strap to your bare wrist and connect the strap to one of the ESD points on the chassis. For more information about ESD, see *Prevention of Electrostatic Discharge Damage*.

2. Using both hands, slide the power supply straight into the chassis until the power supply is fully seated in the chassis slot. The power supply faceplate should be flush with any adjacent power supply faceplate.

3. Attach the power cord to the power supply.

4. Route the power cord along the cable restraint toward the left or right corner of the chassis. If they are needed to hold the power cord in place, thread plastic cable ties, which you must provide, through the openings on the cable restraint.

5. Attach the power cord to the AC power source, and switch on the dedicated facility circuit breaker for the power supply. Follow the ESD and connection instructions for your site. If the power supply is correctly installed and functioning normally, the POWER LED lights steadily.

Figure 26: Installing an AC Power Supply on the SRX550 High Memory Services Gateway
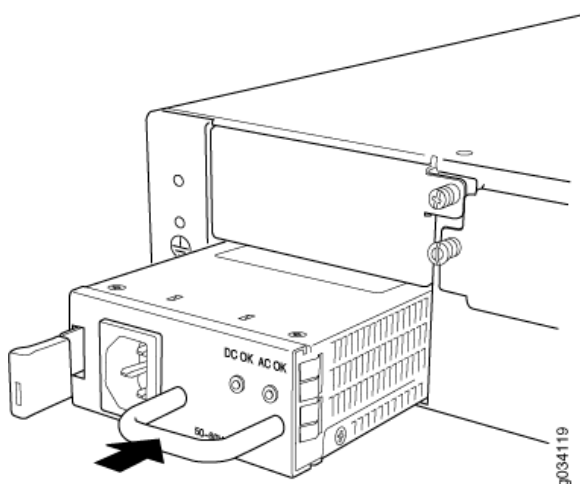
NOTE: If both power supplies are plugged in and receiving power, the RPS LED glows solid green.

Connecting an AC Power Cord to the SRX550 High Memory Services Gateway

To connect the AC power cord:

1. Locate a replacement power cord with the type of plug appropriate for your geographical location.

2. Connect the power cord to the power supply, as shown in Figure 3.

Figure 27: Connecting an AC Power Cord on the SRX550 High Memory Services Gateway
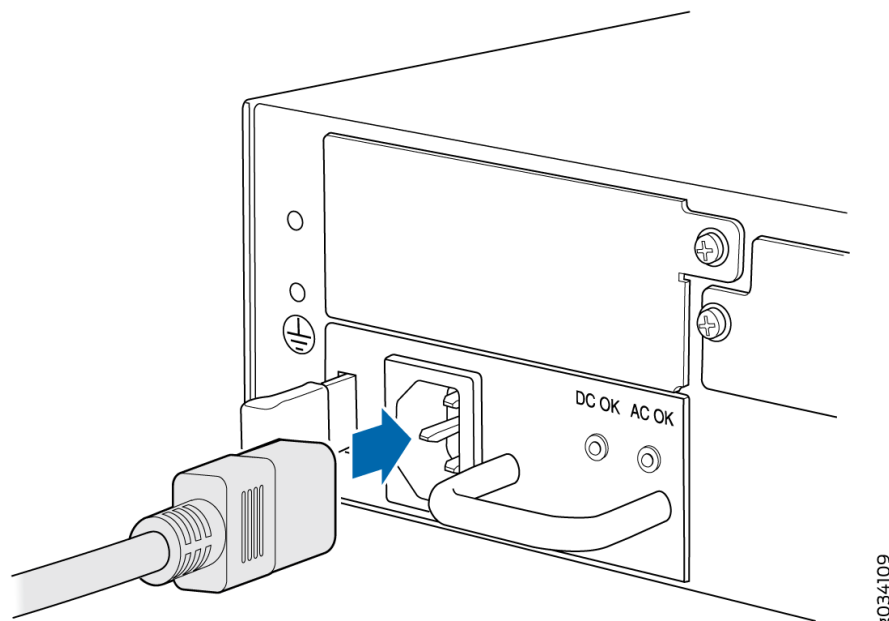
3. Insert the power cord plug into an external AC power source receptacle.

4. Route the power cord along the cable restraint toward the left or right corner of the chassis. If they are needed to hold the power cord in place, thread plastic cable ties, which you must provide, through the openings on the cable restraint.

5. Verify that the power cord does not block the air exhaust and access to services gateway components, or drape where people could trip on it. If the power supply is correctly installed and functioning normally, the POWER LED lights steadily.

Replacing a DC Power Supply on the SRX550 High Memory Services Gateway

IN THIS SECTION

You can replace the DC power supply on the SRX550 High Memory Services Gateway after disconnecting the power cord and removing the power supply already installed. However, redundant DC power supplies are hot-swappable. You need not power off the services gateway for replacing them.

> **NOTE**: To maintain proper cooling and prevent thermal shutdown of the operating power supply unit, each power supply slot must contain either a power supply or a blank panel. If you remove a power supply, you must install a replacement power supply or a blank panel shortly after the removal.

This topic describes:

Removing a DC Power Supply Cable from the SRX550 High Memory Services Gateway

To remove a power supply cable connected to a DC power supply:

1. Attach an electrostatic discharge (ESD) grounding strap to your bare wrist and connect the strap to an approved site ESD grounding point. For more information about ESD, see *Prevention of Electrostatic Discharge Damage*.
2. Switch off the external circuit breakers for all the cables attached to the power supply. Make sure that the voltage across the DC power source cable leads is 0 V and that there is no chance that the cables might become active during the removal process.
3. Remove the power cable from the DC power source.
4. Make sure the cable is not touching or in the way of any services gateway components and that it does not drape where people could trip on it.
5. Remove the clear plastic cover protecting the terminal studs on the faceplate.

Removing a DC Power Supply from the SRX550 High Memory Services Gateway

Up to two power supplies can be installed at the rear of the chassis on the right side. Each DC power supply weighs approximately 2 lb (1.29 kg).

> ⚠ **CAUTION**: Do not leave a power supply slot empty for more than 30 minutes while the services gateway is operational. For proper airflow, the power supply must remain in the chassis, or a blank panel must be used in an empty slot.

> **NOTE**: After powering off a power supply, wait at least 60 seconds before turning it back on.

To remove a DC power supply, see Figure 4.

1. Switch off the dedicated facility circuit breaker for the power supply. Follow the electrostatic discharge (ESD) and disconnection instructions for your site.

2. Make sure that the voltage across the DC power source cable leads is 0 V and that there is no chance that the cables might become active during the removal process.

3. Attach an ESD grounding strap to your bare wrist and connect the strap to one of the ESD points on the chassis. For more information about ESD, see *Prevention of Electrostatic Discharge Damage*.

4. Remove the clear plastic cover protecting the terminal studs on the faceplate.

5. Remove the screws and washers from the terminals. Use a Phillips (+) screwdriver, number 2 to loosen and remove the screws.

6. Remove the cable lugs from the terminal studs.

7. Carefully move the power cables out of the way.

8. Push the tab on the left edge of the power supply to the right.

9. Pull the power supply straight out of the chassis.

**Figure 28: Removing a DC Power Supply from the SRX550 High Memory Services Gateway**
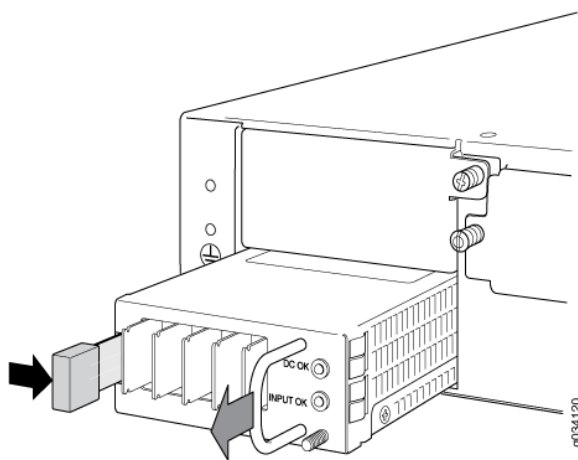
Installing a DC Power Supply on the SRX550 High Memory Services Gateway

To install a DC power supply:

1. Ensure that the voltage across the DC power source cable leads is 0 V and that there is no chance that the cable leads might become active during installation. To ensure that all power is off, locate

the circuit breaker on the panel board that services the DC circuit, switch the circuit breaker to off position (**O**), and tape the switch handle of the circuit breaker in the off position.

2. Attach an electrostatic discharge (ESD) grounding strap to your bare wrist and connect the strap to one of the ESD points on the chassis. For more information about ESD, see *Prevention of Electrostatic Discharge Damage*.

3. Orient the power supply so that the locking lever is on the left.

Figure 29: Installing a DC Power Supply on an SRX550 High Memory Services Gateway
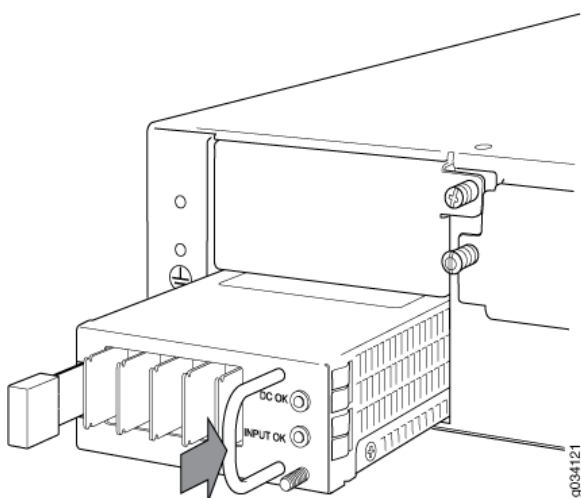
4. Using both hands, slide the power supply straight into the chassis until the power supply is fully seated in the chassis slot. The power supply faceplate should be flush with any adjacent power supply faceplate.

5. Tighten the captive screws on the lower edge of the power supply faceplate.

6. Remove the clear plastic cover protecting the terminal studs on the faceplate.

7. Verify that the DC power cables are correctly labeled before making connections to the power supply. In a typical power distribution scheme where the return is connected to chassis ground at the battery plant, you can use a multimeter to verify the resistance of the **−48V** and **RTN** DC cables to chassis ground:

   - The cable with very large resistance (indicating an open circuit) to chassis ground will be **−48V**.

   - The cable with very low resistance (indicating a closed circuit) to chassis ground will be **RTN**.

   ⚠️ **CAUTION**: You must ensure that power connections maintain the proper polarity. The power source cables might be labeled **(+)** and **(−)** to indicate their polarity. There is no standard color coding for DC power cables. The color coding used by

> the external DC power source at your site determines the color coding for the leads on the power cables that attach to the terminals on the power supply.

8. Connect DC power cables to the **A+** and **A-** terminals, as shown in Figure 6:

   a. Remove the screws and square washers from the **A+** and **A-** terminals. Use a Phillips (+) screwdriver, number 2. The square washers are permanently attached to the screws.

   b. Secure each power cable lug to the appropriate terminal with a screw. Apply between 23 lb-in. (2.6 Nm) and 25 lb-in. (2.8 Nm) of torque to each screw.

   - Secure the positive (+) DC source power cable lug to the **A+** (return) terminal.

   - Secure the negative (–) DC source power cable lug to the **A-** (input) terminal.

Figure 30: Connecting DC Power Cables
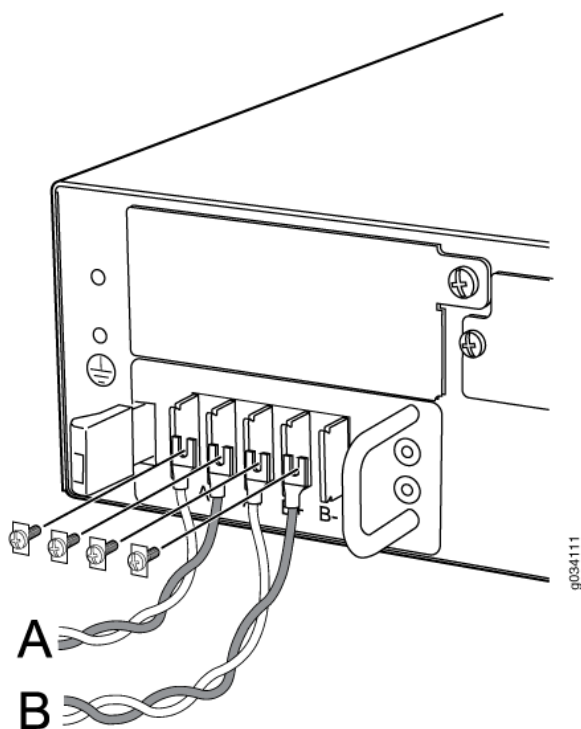
9. Replace the clear plastic cover over the terminal studs on the faceplate.

10. Verify that the power cables are connected correctly, that they are not touching or blocking access to services gateway components, and that they do not drape where people could trip on them.

11. Remove the tape from the switch handle of the circuit breaker on the panel board that services the DC circuit and switch the circuit breaker to the on position (|). Observe the status LEDs on the power supply faceplate. If the power supply is correctly installed and functioning normally, the POWER LED lights green steadily on the services gateway front panel.

> **NOTE**: If more than one power supply is installed, turn on all power supplies at the same time. If both power supplies are plugged in and receiving power, the RPS LED glows solid green.

Prevention of Electrostatic Discharge Damage

Maintaining the SRX550 HM Interface Modules

IN THIS SECTION

- Replacing Mini-Physical Interface Modules on the SRX550 High Memory Services Gateway | **111**
- Replacing Gigabit-Backplane Physical Interface Modules on the SRX550 High Memory Services Gateway | **114**

Replacing Mini-Physical Interface Modules on the SRX550 High Memory Services Gateway

IN THIS SECTION

- Removing a Mini-Physical Interface Module | **112**
- Installing a Mini-Physical Interface Module | **112**
- Removing a Blank Mini-Physical Interface Module Faceplate | **113**
- Installing a Blank Mini-Physical Interface Module Faceplate | **113**

Before you begin, power off the services gateway.

⚠️ **CAUTION**: The Mini-Physical Interface Modules (Mini-PIMs) available are not hot-swappable. You must power off the services gateway before removing or installing Mini-PIMs.

To maintain proper airflow through the services gateway, cover any empty Mini-PIM slot with a blank faceplate.

⚠️ **CAUTION**: Do not remove a blank faceplate unless you are installing a Mini-PIM in the empty slot.

Removing a Mini-Physical Interface Module

To remove a Mini-PIM from the services gateway:

1. Place an electrostatic bag or antistatic mat on a flat, stable surface on which you intend to place the Mini-PIM.
2. Attach an ESD grounding strap to your bare wrist, and connect the strap to the grounding point on the back of the device.
3. Unplug the power adapter from the services gateway. Verify that the Power LED is off.
4. Label the cables connected to the Mini-PIM so that you can later reconnect each cable to the correct Mini-PIM.
5. Disconnect the cables from the Mini-PIM.
6. If necessary, arrange the cables to prevent them from dislodging or developing stress points.
7. Remove the screws on each side of the Mini-PIM faceplate using a 1/8-in. (3-mm) flat-blade (–) screwdriver.
8. Grasp the screws on each side of the Mini-PIM faceplate and slide the Mini-PIM out of the services gateway.
9. Place the Mini-PIM in the electrostatic bag or on the antistatic mat.
10. If you are not reinstalling a Mini-PIM into the empty slot, install a blank faceplate over the slot to maintain proper airflow.

Installing a Mini-Physical Interface Module

To install a Mini-Physical Interface Module (Mini-PIM) in the services gateway.

1. Attach an electrostatic discharge (ESD) grounding strap to your bare wrist, and connect the strap to the grounding point on the back of the services gateway.
2. Power off the services gateway by briefly pressing the Power button on the front panel. Wait for the Power LED to turn off before proceeding. Disconnect the services gateway from its power source.

3. Remove the Mini-PIM from the electrostatic bag.

4. Grasp the screws on each side of the Mini-PIM faceplate and align the notches in the connector at the rear of the Mini-PIM with the notches in the Mini-PIM slot in the device.

> ⚠ **CAUTION**: Slide the Mini-PIM straight into the slot to avoid damaging the components on the Mini-PIM.

5. Slide the Mini-PIM in until it lodges firmly in the services gateway.

6. Using a 1/8-in. (3-mm) flat-blade (–) screwdriver, tighten the screws on each side of the Mini-PIM faceplate.

7. Insert the appropriate cables into the cable connectors on the Mini-PIM.

8. If necessary, arrange the cables to prevent them from dislodging or developing stress points:

   - Secure the cables so that they are not supporting their own weight as they hang to the floor.

   - Place any excess cables out of the way in neatly coiled loops.

   - Use fasteners to maintain the shape of the cable loops.

9. Reconnect the power adapter to the services gateway. Verify that the Power LED glows steadily green after you press the power button.

10. Verify that the Mini-PIM LED on the system dashboard glows steadily green to confirm that the Mini-PIM is online.

Removing a Blank Mini-Physical Interface Module Faceplate

To remove a blank faceplate from the SRX Series Services Gateway:

1. Attach an electrostatic discharge (ESD) grounding strap to your bare wrist, and connect the strap to the ESD point on the services gateway.

2. If the device is powered on, power off the device. Verify that the Power LED is off.

3. Loosen the screws on each side of the faceplate.

   - On faceplates with handles, use a 1/8-in. (3-mm) flat-blade (–) screwdriver to loosen but not remove the captive screws.

   - On faceplates without handles, use a Phillips number 1 screwdriver to remove the noncaptive screws.

4. Remove the faceplate.

Installing a Blank Mini-Physical Interface Module Faceplate

To install a blank faceplate on the SRX Series Services Gateway:

1. Align the captive screws on the blank faceplate with the screw holes on the chassis.

2. Tighten the screws on each side of the faceplate.

- On faceplates with handles, use a 1/8-in. (3-mm) flat-blade (–) screwdriver to tighten the captive screws.

- On faceplates without handles, use a Phillips number 1 screwdriver to tighten the noncaptive screws.

Replacing Gigabit-Backplane Physical Interface Modules on the SRX550 High Memory Services Gateway

IN THIS SECTION

Removing a Gigabit-Backplane Physical Interface Module

To remove a GPIM from the services gateway:

1. Attach an electrostatic discharge (ESD) grounding strap to your bare wrist, and connect the strap to one of the ESD points on the chassis.

2. Push the OFFLINE button to turn the GPIM offline. After the STATUS LED light turns off, it is safe to remove the GPIM. See Table 1 for a description of LED indications for hot-swappable GPIM components.

Table 32: LED Indications for Hot-Swappable GPIM Components

Number	Component	Description
1	STATUS LED	The STATUS LED has the following indicators: - Solid green indicates that the GPIM is functioning normally. - Solid yellow indicates that the GPIM is starting up, running diagnostics, or going offline. - Solid red indicates that the GPIM has failed. - Off indicates that the GPIM is not powered on, is offline, or is not configured.
2	ONLINE/OFFLINE button	Push the button to turn the GPIM offline. After the STATUS LED light goes off, it is safe to remove the GPIM from the services gateway.

3. Label the cables connected to the GPIM so that you can later reconnect each cable to the correct GPIM.

4. Disconnect the cables from the GPIM.

5. If necessary, arrange the cables to prevent them from dislodging or developing stress points.

6. Using a Phillips (+) screwdriver, loosen the captive screws on each side of the GPIM faceplate.

7. Grasp the handles on each side of the GPIM faceplate, and slide the GPIM out of the services gateway.

8. Place the GPIM in an electrostatic bag or on an antistatic mat.

9. If you are not reinstalling a GPIM into an empty slot, install a blank GPIM faceplate in the empty slot to maintain proper airflow.

> **NOTE**: When installing a blank GPIM faceplate, make sure that the padded side of the faceplate is facing up.

Installing a Gigabit-Backplane Physical Interface Module

Before you begin:

- Ensure that the services gateway is powered off.

- Ensure that the GPIM is installed in the appropriate GPIM slot.

NOTE: To maintain proper airflow through the services gateway, leave blank faceplates in place over slots that do not contain GPIMs. Do not remove a blank faceplate unless you are immediately installing a GPIM in the empty slot.

To install a GPIM:

1. Attach an electrostatic discharge (ESD) grounding strap to your bare wrist, and connect the strap to one of the ESD points on the chassis.
2. Grasp the handles on each side of the GPIM faceplate, and align the edges of the GPIM circuit board with the guide rails at each side of the GPIM slot.
3. Slide the GPIM into the services gateway until it seats firmly in the device.

⚠ **CAUTION**: Slide the GPIM straight into the slot to avoid damaging the components on the GPIM.

4. Using a Phillips (+) screwdriver, tighten the captive screws on each side of the GPIM faceplate.
5. Insert the appropriate cables into the cable connectors on the GPIM.
6. If necessary, arrange the cables to prevent them from dislodging or developing stress points:

   - Secure the cable so that it is not supporting its own weight as it hangs to the floor.

   - Place excess cable out of the way in a neatly coiled loop.

   - Use fasteners to maintain the shape of the cable loops.

After the STATUS LED light turns green and glows steadily on, the GPIM is online and functioning normally. See for hot-swappable components and their descriptions.

Table 33: Hot-Swappable Component Descriptions for GPIMs

Number	Component	Description
1	STATUS LED	The STATUS LED has the following indicator s: • Steady green indicates that the GPIM is functioning normally. • Steady yellow indicates that the GPIM is starting up, running diagnostics, or going offline. • Steady red indicates that the GPIM has failed. • Off indicates that the GPIM is not powered on, is offline, or is not configured.
2	ONLINE/OFFLINE button	**NOTE**: You need not press this button when installing a GPIM. The services gateway automatically recognizes when a GPIM has been inserted into a slot.

Removing a Blank Gigabit-Backplane Physical Interface Module Faceplate

To maintain proper airflow through the services gateway, leave blank faceplates in place over slots that do not contain Gigabit-Backplane Physical Interface Modules (GPIMs). Do not remove a blank faceplate unless you are immediately installing a GPIM in the empty slot.

To remove a blank faceplate:

1. Using a Phillips (+) screwdriver, loosen the captive screws on each side of the blank faceplate.
2. Using a flat-blade (–) screwdriver, gently pry out one side of the faceplate and pull it out.

> **NOTE**: When installing a blank GPIM faceplate, make sure that the padded side of the faceplate is facing up.

Installing a Blank Gigabit-Backplane Physical Interface Module Faceplate

To maintain proper airflow through the services gateway, install blank faceplates in slots that do not contain Gigabit-Backplane Physical Interface Modules (GPIMs).

To install a blank faceplate:

1. Align the captive screws on the blank faceplate with the screw holes on the chassis.

2. Using a Phillips (+) screwdriver, tighten the captive screws on each side of the blank faceplate until the faceplate is flush with the chassis.

5
CHAPTER

Troubleshooting Hardware

Troubleshooting the SRX550 HM

IN THIS SECTION

Troubleshooting with the CLI on the SRX550 High Memory Services Gateway

The Junos OS command-line interface (CLI) is the primary tool for controlling and troubleshooting services gateway hardware, Junos OS, routing protocols, and network connectivity. The CLI commands display information from routing tables, information specific to routing protocols, and information about network connectivity derived from the ping and trace route utilities.

You need to enter the CLI commands on one or more external management devices connected to the services gateway to display the information.

Troubleshooting with LEDs on the SRX550 High Memory Services Gateway

The LEDs available on the services gateway display the status of various components. describes the LEDs on the chassis.

Table 34: Component LEDs on the Services Gateway Chassis

LED	Location	Usage
ALARM	Left side of the front chassis panel	The ALARM LED has the following indicators: • Solid red indicates a hardware component or software module failure. • Solid amber indicates a major alarm, such as low memory (less than 10% remaining), session full, maximum number of VPN tunnels reached, high availability (HA) status change, or redundant group member not found. • Off indicates that the device is starting up. **NOTE**: When the system is running, if the ALARM LED is off, it indicates that no alarms are present on the device.
STATUS	Left side of the front chassis panel	The STATUS LED has the following indicators: • Solid green indicates that the services gateway is functioning normally. • Solid red indicates that the services gateway has failed. • Solid amber indicates that the services gateway is starting up, running diagnostics, or shutting down. • Off indicates that the device is not receiving power.

Table 34: Component LEDs on the Services Gateway Chassis *(Continued)*

LED	Location	Usage
POWER	Left side of the front chassis panel	The POWER LED has the following indicators: • Solid green indicates that all power supply units (PSUs) are functioning normally. • Solid red indicates a failure of one or more PSUs. • Solid amber indicates that the Power button has been pressed. The services gateway will shut down. • Off indicates that the device is not receiving power.
HA	Left side of the front chassis panel	The HA LED has the following indicators: • Solid green indicates that all configured high availability links are available. • Solid red indicates that a cluster member is missing or unreachable. • Solid amber indicates that some configured high availability links are down, but enough links are still active for full high availability functionality. In this situation, performance might be reduced, current bandwidth could cause packet drops, or single point of failure might now exist. • Off indicates that HA is not enabled.
ACE	Left side of the front chassis panel	**NOTE**: ACE LED is not functional.

Table 34: Component LEDs on the Services Gateway Chassis *(Continued)*

LED	Location	Usage
RPS	Left side of the front chassis panel	Solid green indicates that the redundant power supply is operating normally. Solid red indicates that one of the following conditions has occurred: • The primary power supply has failed, and the device is being powered by the redundant power supply. • The redundant power supply has been installed, but is not connected to a power source.
MPIM-1 and MPIM-2	Left side of the front chassis panel	Solid green indicates that the Mini-PIM in the corresponding slot is functioning normally. Solid red indicates that the Mini-PIM hardware in the corresponding slot has failed or its anti-counterfeit check failed. Off indicates that there is no Mini-PIM in the corresponding slot, or that the Mini-PIM is not detected by the device.

SEE ALSO

SRX550 High Memory Services Gateway Front Panel | **14**

Troubleshooting with Chassis and Interface Alarm Messages on the SRX550 High Memory Services Gateway

When the services gateway detects an alarm condition, it lights the red or yellow alarm LED on the front panel as appropriate. For a detailed description of the alarm condition, issue the `show chassis alarms` CLI command.

There are two classes of alarm messages:

- Chassis alarms—Indicate a problem with a chassis component such as the cooling system or power supply.

- Interface alarms—Indicate a problem with a specific network interface.

For more information about the `show chassis alarms` command, see Network Management and Monitoring Guide.

Table 35 on page 124 describes alarms that can occur for a services gateway chassis component.

Table 35: Alarms for Services Gateway Chassis Components

Component	Alarm Conditions	Action	Alarm Severity
Boot media	The services gateway boots from an alternate boot device.	If the internal flash fails at startup, the services gateway automatically boots itself from the alternative boot device (USB storage device). If you configured your services gateway to boot from an alternative boot device, ignore this alarm condition. If you did not configure the services gateway to boot from an alternative boot device, contact JTAC.	Yellow (minor)
Gigabit-Backplane Physical Interface Module (GPIM)	A GPIM has failed.	Contact JTAC. See Juniper Networks Technical Assistance Center	Red (major)

Table 35: Alarms for Services Gateway Chassis Components *(Continued)*

Component	Alarm Conditions	Action	Alarm Severity
Hardware components on the services gateway	The services gateway chassis temperature is too high.	• Check the room temperature. See "SRX550 High Memory Services Gateway Environmental Specifications" on page 40. • Check the air flow. See "SRX550 High Memory Services Gateway Cabinet Airflow Requirements" on page 52. • Check the fans. See "Maintaining the SRX550 HM Cooling System Components" on page 102. If you must replace a fan, contact JTAC. See Juniper Networks Technical Assistance Center	Yellow (minor)
	The services gateway fan has failed.	Place your hand near the exhaust vents at the side of the chassis to determine whether the fan is pushing air out of the chassis. If you must replace a fan, contact JTAC. See Juniper Networks Technical Assistance Center	Red (major)

NOTE: For more information about alarms, see the Network Management and Monitoring Guide.

Troubleshooting the Power System on the SRX550 High Memory Services Gateway

The LEDs on the services gateway enable you to determine the performance and operation of the power system. The POWER LED located on the front panel of the services gateway, as described in Table 36 on page 126, indicates the different status settings with respect to the power system. The LEDs on the faceplate of each power supply also show power supply status as described in Table 37 on page 128.

Table 36: POWER LED Description

LED Status	LED State	Meaning	Possible Cause and Corrective Action
Green	On	The services gateway is receiving power, and all power supply units (PSUs) are working properly.	Normal indication. No action is required.
Red	On	Indicates failure of one or more PSUs.	If you cannot determine the cause of the problem or need additional assistance while troubleshooting a services gateway, open a support case using the Case Manager link at https://www.juniper.net/support/, or call 1-888-314-JTAC (within the United States) or 1-408-745-9500 (outside the United States).
Amber	On	Power button has been pressed. The services gateway will shut down.	Once the services gateway is running again, continue troubleshooting.

Table 36: POWER LED Description *(Continued)*

LED Status	LED State	Meaning	Possible Cause and Corrective Action
	Off	Indicates that the services gateway is not receiving power.	If a red alarm condition occurs, issue the `show chassis alarms` command to determine the source of the problem. • Verify that the AC power cord or DC power supply cable is not damaged. If the insulation is cracked or broken, immediately replace the cord or cable. • Verify that the source circuit breaker has the proper current rating. Each power supply must be connected to a separate source circuit breaker. • Ensure that the power socket is in working condition. • Connect the power supply to a different power source with a new power cord or power cable. If the power supply status LEDs indicate that the power supply is not functioning normally, the power supply is the source of the problem. Replace the power supply with a spare. **NOTE**: If the system temperature exceeds the threshold, Junos OS shuts down all power supplies so that no status is displayed. Junos OS also can shut down one of the power supplies for other reasons. In this case, the remaining power supplies provide power to the services gateway, and you can still view the system status through the CLI.

Table 37: Power Supply Faceplate LEDs

Power Supply Type	LED Label	Color	Meaning	Possible Cause and Corrective Action
AC	DC OK	Green	The DC output voltages produced by the power supply are within tolerance.	Normal indication. No action is required.
		Red	One or more of the DC output voltages produced by the power supply are outside of tolerance.	
		Unlit	The power supply is not receiving input power.	
	AC OK	Green	The AC input power provided to the power supply is within tolerance.	Normal indication. No action is required.
		Amber	The AC input power provided to the power supply is outside of tolerance.	
		Unlit	The power supply is not receiving input power.	
DC	DC OK	Green	The DC output voltages produced by the power supply are within tolerance.	Normal indication. No action is required.
		Red	One or more of the DC output voltages produced by the power supply are outside of tolerance.	
		Unlit	The power supply is not receiving input power.	

Table 37: Power Supply Faceplate LEDs *(Continued)*

Power Supply Type	LED Label	Color	Meaning	Possible Cause and Corrective Action
	INPUT OK	Green	The DC input power provided to the power supply is within tolerance.	Normal indication. No action is required.
		Amber	The DC input power provided to the power supply is outside of tolerance.	
		Unlit	The power supply is not receiving input power.	

Using the RESET CONFIG Button on the SRX550 High Memory Services Gateway

If a configuration fails or denies management access to the services gateway, you can use the RESET CONFIG button to restore the services gateway to the factory-default configuration or a rescue configuration. For example, if someone inadvertently commits a configuration that denies management access to a services gateway, you can delete the invalid configuration and replace it with a rescue configuration by pressing the RESET CONFIG button. The button is recessed to prevent it from being pressed accidentally.

The rescue configuration is a previously committed, valid configuration. You must have previously set the rescue configuration through the J-Web interface or the CLI.

To press the RESET CONFIG button, insert a small probe (such as a straightened paper clip) into the pinhole on the front panel.

> ⚠️ **CAUTION:**

- By default, pressing and quickly releasing the RESET CONFIG button loads and commits the rescue configuration through the J-Web interface or the CLI. (For details, see the CLI Explorer.)

- By default, pressing and holding the RESET CONFIG button for 15 seconds or more —until the STATUS LED blinks red—deletes all configurations on the services gateway, including the backup configurations and rescue configuration, and loads and commits the factory configuration.

For details about factory-default settings, see "How to View Factory-Default Settings of the SRX550 High Memory Services Gateway" on page 83.

Changing the RESET CONFIG Button Behavior

You can change the default operation of the RESET CONFIG button by limiting how the button resets the services gateway:

- To prevent the RESET CONFIG button from setting the device to the factory-default configuration and deleting all other configurations:

  admin@host# **set chassis config-button no-clear**

  You can still press and quickly release the button to reset it to the rescue configuration.

- To prevent the RESET CONFIG button from setting the device to the rescue configuration:

  admin@host# **set chassis config-button no-rescue**

  You can still press and hold the button for 15 seconds or more to reset the gateway to the factory-default configuration.

- To disable the button and prevent the device from resetting to either the factory-default or rescue configuration:

  admin@host# **set chassis config-button no-clear no-rescue**

The **no-clear** option prevents the RESET CONFIG button from deleting all configurations on the services gateway. The **no-rescue** option prevents the RESET CONFIG button from loading the rescue configuration.

To return the function of the RESET CONFIG button to its default behavior, remove the **config-button** statement from the device configuration.

6

CHAPTER

Contacting Customer Support and Returning the Chassis or Components

Returning the SRX550 HM Chassis or Components

Contacting Customer Support

Once you have located the serial numbers of the device or component, you can return the device or component for repair or replacement. For this, you need to contact Juniper Networks Technical Assistance Center (JTAC).

You can contact JTAC 24 hours a day, 7 days a week, using any of the following methods:

- On the Web: Using the Service Request Manager link at https://support.juniper.net/support/

- By telephone:

  - From the US and Canada: 1-888-314-JTAC

  - From all other locations: 1-408-745-9500

    > **NOTE**: If contacting JTAC by telephone, enter your 12-digit service request number followed by the pound (#) key if this is an existing case, or press the star (*) key to be routed to the next available support engineer.

When requesting support from JTAC by telephone, be prepared to provide the following information:

- Your existing service request number, if you have one

- Details of the failure or problem

- Type of activity being performed on the services gateway when the problem occurred

- Configuration data displayed by one or more `show` commands

- Your name, organization name, telephone number, fax number, and shipping address

The support representative validates your request and issues a Return Materials Authorization (RMA) number for return of the device or component.

Return Procedure for the SRX550 High Memory Services Gateway

To return an SRX550 High Memory Services Gateway or component to Juniper Networks for repair or replacement:

1. Determine the part number and serial number of the services gateway or component.
2. Obtain a Return Materials Authorization (RMA) number from JTAC.

> **NOTE**: Do not return the services gateway or any component to Juniper Networks unless you have first obtained an RMA number. Juniper Networks reserves the right to refuse shipments that do not have an RMA. Refused shipments are returned to the customer via collect freight.

3. Pack the SRX550 High Memory Services Gateway or component for shipping.

For more information about return and repair policies, see the customer support webpage at https:// www.juniper.net/support/guidelines.html.

For product problems or technical support issues, open a support case using the Case Manager link at https://www.juniper.net/support/ or call 1-888-314-JTAC (within the United States) or 1-408-745-9500 (outside the United States).

Locating the SRX550 High Memory Services Gateway Chassis Serial Number and Agency Label

The SRX550 High Memory Services Gateway serial number is located on the bottom of the device on the compliance/agency label.

Locating the SRX550 High Memory Services Gateway Mini-PIM and GPIM Serial Number Labels

Mini-Physical Interface Modules (Mini-PIMs) and Gigabit-Backplane Physical Interface Modules (GPIMs) are field-replaceable on the SRX Series Services Gateway. Each Mini-PIM and GPIM has a unique serial number. The serial number label is located on the right side of the Mini-PIM, when the Mini-PIM is horizontally oriented (as it would be installed on the device). The exact location might be slightly different on different Mini-PIMs and GPIMs (XPIMs or GPIMs), depending on the placement of components on the Mini-PIM and GPIM.

Listing the SRX550 High Memory Services Gateway Component Serial Numbers with the CLI

Before contacting Juniper Networks to request a Return Materials Authorization (RMA), you must find the serial number on the SRX550 High Memory Services Gateway or component.

To list all of the SRX550 High Memory Services Gateway components and their serial numbers, enter the following command-line interface (CLI) command:

user@host> show chassis hardware

```
Hardware inventory:
Item            Version  Part number  Serial number    Description
Chassis                               DA3515AK0016     SRX550M
Midplane        REV 03   750-063950   ACMW7426
Routing Engine  REV 03   711-062269   ACMT8374         RE-SRX550M
FPC 0                                                  FPC
  PIC 0                                                6x GE, 4x GE SFP Base PIC
    Xcvr 6      REV 02   740-011613   PLN4Q4R          SFP-SX
    Xcvr 7      REV 02   740-011613   PLH5R83          SFP-SX
    Xcvr 8      REV 02   740-011613   PPF68ZA          SFP-SX
    Xcvr 9      REV 02   740-011613   AM1301SZEZL      SFP-SX
FPC 1           REV 00   750-064611   ACMX2090         FPC
  PIC 0                                                1x T1E1 mPIM (RoHS)
FPC 2           REV 00   750-064613   ACMW2386         FPC
  PIC 0                                                1x Serial mPIM (RoHS)
FPC 3           REV 00   750-064614   ACMZ1330         FPC
  PIC 0                                                16x GE POE gPIM (RoHS)
FPC 6           REV 02   750-064615   ACMS8119         FPC
```

```
  PIC 0                                            8x SFP gPIM (RoHS)
    Xcvr 0      REV 01    740-013111   92244027     SFP-T
    Xcvr 1      REV 02    740-011613   PLH5KLM       SFP-SX
    Xcvr 2      REV 02    740-011613   PPF68YU       SFP-SX
    Xcvr 3      REV 02    740-011613   PN356ST       SFP-SX
    Xcvr 4      REV 02    740-011613   PLN54T1       SFP-SX
    Xcvr 5      REV 01    740-020465   DDK2008229    SFP-1000BASE-BX10-D
    Xcvr 6      REV 02    740-011613   PPF68YV       SFP-SX
    Xcvr 7      REV 02    740-011613   PPF68YW       SFP-SX
Power Supply 0  Rev 04    740-028131   WG02251       PS 645W DC
Power Supply 1  Rev 04    740-028131   WH02925       PS 645W DC
```

NOTE: In the `show chassis hardware` command, the Gigabit-Backplane Physical Interface Module (GPIM) slot number is reported as an FPC number, and the GPIM number (always 0) is reported as the PIC number.

Most components also have a serial number ID label attached to the component body.

Required Tools and Parts for Packing the SRX550 High Memory Services Gateway

To remove the components from the SRX550 High Memory Services Gateway or to remove the services gateway from a rack, you need the following tools and parts:

- Blank panels to cover empty slots

- Electrostatic bag or antistatic mat for each component

- Electrostatic discharge (ESD) grounding wrist strap

- Flat-blade screwdriver, approximately 1/4 in. (6 mm)

- Phillips (+) screwdrivers, numbers 1 and 2

Packing the SRX550 High Memory Services Gateway for Shipment

To pack the SRX550 High Memory Services Gateway for shipment:

1. Retrieve the shipping carton and packing materials in which the services gateway was originally shipped. If you do not have these materials, contact your Juniper Networks representative about approved packaging materials.

2. Attach an electrostatic discharge (ESD) grounding strap to your bare wrist and connect the strap to the ESD point on the chassis or to an outside ESD point if the device is disconnected from earth ground. For more information about ESD, see Preventing Electrostatic Discharge Damage to the SRX550 High Memory Services Gateway.

3. On the console or other management device connected to the services gateway, enter the CLI operational mode and issue the following command to shut down the services gateway software:

   user@host> request system halt

   Wait until a message appears on the console confirming that the operating system has halted.

4. Shut down power to the services gateway by pressing the Power button on the front of the services gateway.

5. Disconnect power from the services gateway.

6. Remove the cables that connect to all external devices.

7. Remove any GPIMs or Mini-PIMs that have been installed in the services gateway.

8. If the services gateway is installed in a rack, have one person support the weight of the services gateway while another person unscrews and removes the mounting screws.

9. Place the services gateway in the shipping carton.

10. Cover the services gateway with an ESD bag, and place the packing foam on top of and around the device.

11. Replace the accessory box on top of the packing foam.

12. Securely tape the box closed.

13. Write the Return Materials Authorization (RMA) number on the exterior of the box to ensure proper tracking.

Packing SRX550 High Memory Services Gateway Components for Shipment

Follow these guidelines for packing and shipping individual components of the services gateway:

- When you return a component, make sure that it is adequately protected with packing materials and packed so that the pieces are prevented from moving around inside the carton.

- Use the original shipping materials if they are available.

- Place the individual component in an electrostatic bag.

- Write the Return Materials Authorization (RMA) number on the exterior of the box to ensure proper tracking.

CAUTION: Do not stack any of the services gateway components during packing.

7
CHAPTER

Safety and Compliance Information

Definitions of Safety Warning Levels

The documentation uses the following levels of safety warnings (there are two *Warning* formats):

NOTE: You might find this information helpful in a particular situation, or you might overlook this important information if it was not highlighted in a Note.

CAUTION: You need to observe the specified guidelines to prevent minor injury or discomfort to you or severe damage to the device.

Attention Veillez à respecter les consignes indiquées pour éviter toute incommodité ou blessure légère, voire des dégâts graves pour l'appareil.

LASER WARNING: This symbol alerts you to the risk of personal injury from a laser.

Avertissement Ce symbole signale un risque de blessure provoquée par rayon laser.

WARNING: This symbol means danger. You are in a situation that could cause bodily injury. Before you work on any equipment, be aware of the hazards involved with electrical circuitry, and familiarize yourself with standard practices for preventing accidents.

Waarschuwing Dit waarschuwingssymbool betekent gevaar. U verkeert in een situatie die lichamelijk letsel kan veroorzaken. Voordat u aan enige apparatuur gaat werken, dient u zich bewust te zijn van de bij elektrische schakelingen betrokken risico's en dient u op de hoogte te zijn van standaard maatregelen om ongelukken te voorkomen.

Varoitus Tämä varoitusmerkki merkitsee vaaraa. Olet tilanteessa, joka voi johtaa ruumiinvammaan. Ennen kuin työskentelet minkään laitteiston parissa, ota selvää sähkökytkentöihin liittyvistä vaaroista ja tavanomaisista onnettomuuksien ehkäisykeinoista.

Avertissement Ce symbole d'avertissement indique un danger. Vous vous trouvez dans une situation pouvant causer des blessures ou des dommages corporels. Avant de travailler sur un équipement, soyez conscient des dangers posés par les circuits électriques et familiarisez-vous avec les procédures couramment utilisées pour éviter les accidents.

Warnung Dieses Warnsymbol bedeutet Gefahr. Sie befinden sich in einer Situation, die zu einer Körperverletzung führen könnte. Bevor Sie mit der Arbeit an irgendeinem Gerät beginnen, seien Sie sich der mit elektrischen Stromkreisen verbundenen Gefahren und der Standardpraktiken zur Vermeidung von Unfällen bewußt.

Avvertenza Questo simbolo di avvertenza indica un pericolo. La situazione potrebbe causare infortuni alle persone. Prima di lavorare su qualsiasi apparecchiatura, occorre conoscere i pericoli relativi ai circuiti elettrici ed essere al corrente delle pratiche standard per la prevenzione di incidenti.

Advarsel Dette varselsymbolet betyr fare. Du befinner deg i en situasjon som kan føre til personskade. Før du utfører arbeid på utstyr, må du vare oppmerksom på de faremomentene som elektriske kretser innebærer, samt gjøre deg kjent med vanlig praksis når det gjelder å unngå ulykker.

Aviso Este símbolo de aviso indica perigo. Encontra-se numa situação que lhe poderá causar danos físicos. Antes de começar a trabalhar com qualquer equipamento, familiarize-se com os perigos relacionados com circuitos eléctricos, e com quaisquer práticas comuns que possam prevenir possíveis acidentes.

¡Atención! Este símbolo de aviso significa peligro. Existe riesgo para su integridad física. Antes de manipular cualquier equipo, considerar los riesgos que entraña la corriente eléctrica y familiarizarse con los procedimientos estándar de prevención de accidentes.

Varning! Denna varningssymbol signalerar fara. Du befinner dig i en situation som kan leda till personskada. Innan du utför arbete på någon utrustning måste du vara medveten om farorna med elkretsar och känna till vanligt förfarande för att förebygga skador.

General Safety Guidelines and Warnings

The following guidelines help ensure your safety and protect the device from damage. The list of guidelines might not address all potentially hazardous situations in your working environment, so be alert and exercise good judgment at all times.

- Perform only the procedures explicitly described in the hardware documentation for this device. Make sure that only authorized service personnel perform other system services.

- Keep the area around the device clear and free from dust before, during, and after installation.

- Keep tools away from areas where people could trip over them while walking.

- Do not wear loose clothing or jewelry, such as rings, bracelets, or chains, which could become caught in the device.

- Wear safety glasses if you are working under any conditions that could be hazardous to your eyes.

- Do not perform any actions that create a potential hazard to people or make the equipment unsafe.

- Never attempt to lift an object that is too heavy for one person to handle.

- Never install or manipulate wiring during electrical storms.

- Never install electrical jacks in wet locations unless the jacks are specifically designed for wet environments.

- Operate the device only when it is properly grounded.

- Follow the instructions in this guide to properly ground the device to earth.

- Replace fuses only with fuses of the same type and rating.

- Do not open or remove chassis covers or sheet-metal parts unless instructions are provided in the hardware documentation for this device. Such an action could cause severe electrical shock.

- Do not push or force any objects through any opening in the chassis frame. Such an action could result in electrical shock or fire.

- Avoid spilling liquid onto the chassis or onto any device component. Such an action could cause electrical shock or damage the device.

- Avoid touching uninsulated electrical wires or terminals that have not been disconnected from their power source. Such an action could cause electrical shock.

- Some parts of the chassis, including AC and DC power supply surfaces, power supply unit handles, SFB card handles, and fan tray handles might become hot. The following label provides the warning for hot surfaces on the chassis:

- Always ensure that all modules, power supplies, and cover panels are fully inserted and that the installation screws are fully tightened.

Restricted Access Warning

WARNING: This unit is intended for installation in restricted access areas. A restricted access area is an area to which access can be gained only by service personnel through the use of a special tool, lock and key, or other means of security, and which is controlled by the authority responsible for the location.

Waarschuwing Dit toestel is bedoeld voor installatie op plaatsen met beperkte toegang. Een plaats met beperkte toegang is een plaats waar toegang slechts door servicepersoneel verkregen kan worden door middel van een speciaal instrument, een slot en sleutel, of een ander veiligheidsmiddel, en welke beheerd wordt door de overheidsinstantie die verantwoordelijk is voor de locatie.

Varoitus Tämä laite on tarkoitettu asennettavaksi paikkaan, johon pääsy on rajoitettua. Paikka, johon pääsy on rajoitettua, tarkoittaa paikkaa, johon vain huoltohenkilöstö pääsee jonkin erikoistyökalun, lukkoon sopivan avaimen tai jonkin muun turvalaitteen avulla ja joka on paikasta vastuussa olevien toimivaltaisten henkilöiden valvoma.

Avertissement Cet appareil est à installer dans des zones d'accès réservé. Ces dernières sont des zones auxquelles seul le personnel de service peut accéder en utilisant un outil spécial, un mécanisme de verrouillage et une clé, ou tout autre moyen de sécurité. L'accès aux zones de sécurité est sous le contrôle de l'autorité responsable de l'emplacement.

Warnung Diese Einheit ist zur Installation in Bereichen mit beschränktem Zutritt vorgesehen. Ein Bereich mit beschränktem Zutritt ist ein Bereich, zu dem nur Wartungspersonal mit einem Spezialwerkzeugs, Schloß und Schlüssel oder anderer Sicherheitsvorkehrungen Zugang hat, und der von dem für die Anlage zuständigen Gremium kontrolliert wird.

Avvertenza Questa unità deve essere installata in un'area ad accesso limitato. Un'area ad accesso limitato è un'area accessibile solo a personale di assistenza tramite un'attrezzo speciale, lucchetto, o altri dispositivi di sicurezza, ed è controllata dall'autorità responsabile della zona.

Advarsel Denne enheten er laget for installasjon i områder med begrenset adgang. Et område med begrenset adgang gir kun adgang til servicepersonale som bruker et spesielt verktøy, lås og nøkkel, eller en annen sikkerhetsanordning, og det kontrolleres av den autoriteten som er ansvarlig for området.

Aviso Esta unidade foi concebida para instalação em áreas de acesso restrito. Uma área de acesso restrito é uma área à qual apenas tem acesso o pessoal de serviço autorizado,

que possua uma ferramenta, chave e fechadura especial, ou qualquer outra forma de segurança. Esta área é controlada pela autoridade responsável pelo local.

¡Atención! Esta unidad ha sido diseñada para instalarse en áreas de acceso restringido. Área de acceso restringido significa un área a la que solamente tiene acceso el personal de servicio mediante la utilización de una herramienta especial, cerradura con llave, o algún otro medio de seguridad, y que está bajo el control de la autoridad responsable del local.

Varning! Denna enhet är avsedd för installation i områden med begränsat tillträde. Ett område med begränsat tillträde får endast tillträdas av servicepersonal med ett speciellt verktyg, lås och nyckel, eller annan säkerhetsanordning, och kontrolleras av den auktoritet som ansvarar för området.

Qualified Personnel Warning

WARNING: Only trained and qualified personnel should install or replace the device.
Waarschuwing Installatie en reparaties mogen uitsluitend door getraind en bevoegd personeel uitgevoerd worden.

Varoitus Ainoastaan koulutettu ja pätevä henkilökunta saa asentaa tai vaihtaa tämän laitteen.

Avertissement Tout installation ou remplacement de l'appareil doit être réalisé par du personnel qualifié et compétent.

Warnung Gerät nur von geschultem, qualifiziertem Personal installieren oder auswechseln lassen.

Avvertenza Solo personale addestrato e qualificato deve essere autorizzato ad installare o sostituire questo apparecchio.

Advarsel Kun kvalifisert personell med riktig opplæring bør montere eller bytte ut dette utstyret.

Aviso Este equipamento deverá ser instalado ou substituído apenas por pessoal devidamente treinado e qualificado.

> **¡Atención!** Estos equipos deben ser instalados y reemplazados exclusivamente por personal técnico adecuadamente preparado y capacitado.
>
> **Varning!** Denna utrustning ska endast installeras och bytas ut av utbildad och kvalificerad personal.

Prevention of Electrostatic Discharge Damage

Device components that are shipped in antistatic bags are sensitive to damage from static electricity. Some components can be impaired by voltages as low as 30 V. You can easily generate potentially damaging static voltages whenever you handle plastic or foam packing material or if you move components across plastic or carpets. Observe the following guidelines to minimize the potential for electrostatic discharge (ESD) damage, which can cause intermittent or complete component failures:

- Always use an ESD wrist strap when you are handling components that are subject to ESD damage, and make sure that it is in direct contact with your skin.

  If a grounding strap is not available, hold the component in its antistatic bag (see) in one hand and touch the exposed, bare metal of the device with the other hand immediately before inserting the component into the device.

  > ⚠️ **WARNING:** For safety, periodically check the resistance value of the ESD grounding strap. The measurement must be in the range 1 through 10 Mohms.
  >
  > **Avertissement** Par mesure de sécurité, vérifiez régulièrement la résistance du bracelet antistatique. Cette valeur doit être comprise entre 1 et 10 mégohms (Mohms).

- When handling any component that is subject to ESD damage and that is removed from the device, make sure the equipment end of your ESD wrist strap is attached to the ESD point on the chassis.

  If no grounding strap is available, touch the exposed, bare metal of the device to ground yourself before handling the component.

- Avoid contact between the component that is subject to ESD damage and your clothing. ESD voltages emitted from clothing can damage components.

- When removing or installing a component that is subject to ESD damage, always place it component-side up on an antistatic surface, in an antistatic card rack, or in an antistatic bag (see Figure 31 on page 145). If you are returning a component, place it in an antistatic bag before packing it.

Figure 31: Placing a Component into an Antistatic Bag
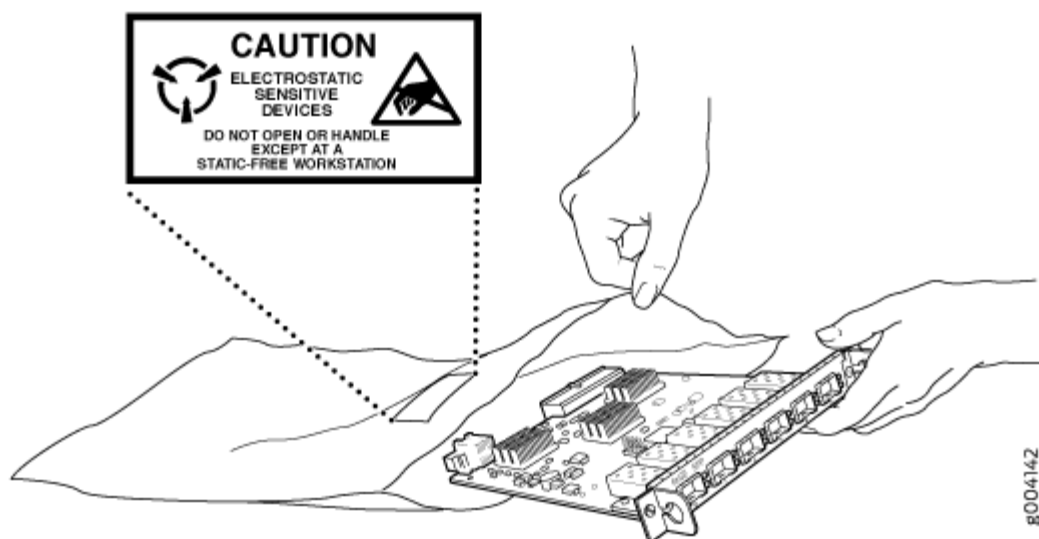
> ⚠️ **CAUTION**: ANSI/TIA/EIA-568 cables such as Category 5e and Category 6 can get electrostatically charged. To dissipate this charge, always ground the cables to a suitable and safe earth ground before connecting them to the system.
>
> **Attention** Les câbles ANSI/TIA/EIA-568, par exemple Cat 5e et Cat 6, peuvent emmagasiner des charges électrostatiques. Pour évacuer ces charges, reliez toujours les câbles à une prise de terre adaptée avant de les raccorder au système.

Fire Safety Requirements

IN THIS SECTION

- Fire Suppression | 146

In the event of a fire emergency, the safety of people is the primary concern. You should establish procedures for protecting people in the event of a fire emergency, provide safety training, and properly provision fire-control equipment and fire extinguishers.

In addition, you should establish procedures to protect your equipment in the event of a fire emergency. Juniper Networks products should be installed in an environment suitable for electronic equipment. We recommend that fire suppression equipment be available in the event of a fire in the vicinity of the equipment and that all local fire, safety, and electrical codes and ordinances be observed when you install and operate your equipment.

Fire Suppression

In the event of an electrical hazard or an electrical fire, you should first turn power off to the equipment at the source. Then use a Type C fire extinguisher, which uses noncorrosive fire retardants, to extinguish the fire.

Fire Suppression Equipment

Type C fire extinguishers, which use noncorrosive fire retardants such as carbon dioxide and Halotron™, are most effective for suppressing electrical fires. Type C fire extinguishers displace oxygen from the point of combustion to eliminate the fire. For extinguishing fire on or around equipment that draws air from the environment for cooling, you should use this type of inert oxygen displacement extinguisher instead of an extinguisher that leaves residues on equipment.

Do not use multipurpose Type ABC chemical fire extinguishers (dry chemical fire extinguishers). The primary ingredient in these fire extinguishers is monoammonium phosphate, which is very sticky and difficult to clean. In addition, in the presence of minute amounts of moisture, monoammonium phosphate can become highly corrosive and corrodes most metals.

Any equipment in a room in which a chemical fire extinguisher has been discharged is subject to premature failure and unreliable operation. The equipment is considered to be irreparably damaged.

> **NOTE**: To keep warranties effective, do not use a dry chemical fire extinguisher to control a fire at or near a Juniper Networks device. If a dry chemical fire extinguisher is used, the unit is no longer eligible for coverage under a service agreement.

We recommend that you dispose of any irreparably damaged equipment in an environmentally responsible manner.

Laser and LED Safety Guidelines and Warnings

IN THIS SECTION

Juniper Networks devices are equipped with laser transmitters, which are considered a Class 1 Laser Product by the U.S. Food and Drug Administration and are evaluated as a Class 1 Laser Product per IEC/EN 60825-1 requirements.

Observe the following guidelines and warnings:

General Laser Safety Guidelines

When working around ports that support optical transceivers, observe the following safety guidelines to prevent eye injury:

- Do not look into unterminated ports or at fibers that connect to unknown sources.

- Do not examine unterminated optical ports with optical instruments.

- Avoid direct exposure to the beam.

⚠ **LASER WARNING**: Unterminated optical connectors can emit invisible laser radiation. The lens in the human eye focuses all the laser power on the retina, so focusing the eye directly on a laser source—even a low-power laser—could permanently damage the eye.

Avertissement Les connecteurs à fibre optique sans terminaison peuvent émettre un rayonnement laser invisible. Le cristallin de l'œil humain faisant converger toute la puissance du laser sur la rétine, toute focalisation directe de l'œil sur une source laser, —même de faible puissance—, peut entraîner des lésions oculaires irréversibles.

Class 1 Laser Product Warning

⚠ **LASER WARNING**: Class 1 laser product.
Waarschuwing Klasse-1 laser produkt.

Varoitus Luokan 1 lasertuote.

Avertissement Produit laser de classe I.

Warnung Laserprodukt der Klasse 1.

Avvertenza Prodotto laser di Classe 1.

Advarsel Laserprodukt av klasse 1.

Aviso Produto laser de classe 1.

¡Atención! Producto láser Clase I.

Varning! Laserprodukt av klass 1.

Class 1 LED Product Warning

⚠ **LASER WARNING**: Class 1 LED product.
Waarschuwing Klasse 1 LED-product.

Varoitus Luokan 1 valodioituote.

Avertissement Alarme de produit LED Class I.

Warnung Class 1 LED-Produktwarnung.

Avvertenza Avvertenza prodotto LED di Classe 1.

Advarsel LED-produkt i klasse 1.

Aviso Produto de classe 1 com LED.

¡Atención! Aviso sobre producto LED de Clase 1.

Varning! Lysdiodprodukt av klass 1.

Laser Beam Warning

LASER WARNING: Do not stare into the laser beam or view it directly with optical instruments.
Waarschuwing Niet in de straal staren of hem rechtstreeks bekijken met optische instrumenten.

Varoitus Älä katso säteeseen äläkä tarkastele sitä suoraan optisen laitteen avulla.

Avertissement Ne pas fixer le faisceau des yeux, ni l'observer directement à l'aide d'instruments optiques.

Warnung Nicht direkt in den Strahl blicken und ihn nicht direkt mit optischen Geräten prüfen.

Avvertenza Non fissare il raggio con gli occhi né usare strumenti ottici per osservarlo direttamente.

Advarsel Stirr eller se ikke direkte p strlen med optiske instrumenter.

Aviso Não olhe fixamente para o raio, nem olhe para ele directamente com instrumentos ópticos.

¡Atención! No mirar fijamente el haz ni observarlo directamente con instrumentos ópticos.

Varning! Rikta inte blicken in mot strålen och titta inte direkt på den genom optiska instrument.

Radiation from Open Port Apertures Warning

LASER WARNING: Because invisible radiation might be emitted from the aperture of the port when no fiber cable is connected, avoid exposure to radiation and do not stare into open apertures.

Waarschuwing Aangezien onzichtbare straling vanuit de opening van de poort kan komen als er geen fiberkabel aangesloten is, dient blootstelling aan straling en het kijken in open openingen vermeden te worden.

Varoitus Koska portin aukosta voi emittoitua näkymätöntä säteilyä, kun kuitukaapelia ei ole kytkettynä, vältä säteilylle altistumista äläkä katso avoimiin aukkoihin.

Avertissement Des radiations invisibles à l'il nu pouvant traverser l'ouverture du port lorsqu'aucun câble en fibre optique n'y est connecté, il est recommandé de ne pas regarder fixement l'intérieur de ces ouvertures.

Warnung Aus der Port-Öffnung können unsichtbare Strahlen emittieren, wenn kein Glasfaserkabel angeschlossen ist. Vermeiden Sie es, sich den Strahlungen auszusetzen, und starren Sie nicht in die Öffnungen!

Avvertenza Quando i cavi in fibra non sono inseriti, radiazioni invisibili possono essere emesse attraverso l'apertura della porta. Evitate di esporvi alle radiazioni e non guardate direttamente nelle aperture.

Advarsel Unngå utsettelse for stråling, og stirr ikke inn i åpninger som er åpne, fordi usynlig stråling kan emiteres fra portens åpning når det ikke er tilkoblet en fiberkabel.

Aviso Dada a possibilidade de emissão de radiação invisível através do orifício da via de acesso, quando esta não tiver nenhum cabo de fibra conectado, deverá evitar an EXposição à radiação e não deverá olhar fixamente para orifícios que se encontrarem a descoberto.

¡Atención! Debido a que la apertura del puerto puede emitir radiación invisible cuando no existe un cable de fibra conectado, evite mirar directamente a las aperturas para no exponerse a la radiación.

Varning! Osynlig strålning kan avges från en portöppning utan ansluten fiberkabel och du bör därför undvika att bli utsatt för strålning genom att inte stirra in i oskyddade öppningar.

Maintenance and Operational Safety Guidelines and Warnings

While performing the maintenance activities for devices, observe the following guidelines and warnings:

Battery Handling Warning

WARNING: Replacing a battery incorrectly might result in an explosion. Replace a battery only with the same or equivalent type recommended by the manufacturer. Dispose of used batteries according to the manufacturer's instructions.

Waarschuwing Er is ontploffingsgevaar als de batterij verkeerd vervangen wordt. Vervang de batterij slechts met hetzelfde of een equivalent type dat door de fabrikant aanbevolen is. Gebruikte batterijen dienen overeenkomstig fabrieksvoorschriften weggeworpen te worden.

Varoitus Räjähdyksen vaara, jos akku on vaihdettu väärään akkuun. Käytä vaihtamiseen ainoastaan saman- tai vastaavantyyppistä akkua, joka on valmistajan suosittelema. Hävitä käytetyt akut valmistajan ohjeiden mukaan.

Avertissement Danger d'explosion si la pile n'est pas remplacée correctement. Ne la remplacer que par une pile de type semblable ou équivalent, recommandée par le fabricant. Jeter les piles usagées conformément aux instructions du fabricant.

Warnung Bei Einsetzen einer falschen Batterie besteht Explosionsgefahr. Ersetzen Sie die Batterie nur durch den gleichen oder vom Hersteller empfohlenen Batterietyp. Entsorgen Sie die benutzten Batterien nach den Anweisungen des Herstellers.

Advarsel Det kan være fare for eksplosjon hvis batteriet skiftes på feil måte. Skift kun med samme eller tilsvarende type som er anbefalt av produsenten. Kasser brukte batterier i henhold til produsentens instruksjoner.

Avvertenza Pericolo di esplosione se la batteria non è installata correttamente. Sostituire solo con una di tipo uguale o equivalente, consigliata dal produttore. Eliminare le batterie usate secondo le istruzioni del produttore.

Aviso Existe perigo de explosão se a bateria for substituída incorrectamente. Substitua a bateria por uma bateria igual ou de um tipo equivalente recomendado pelo fabricante. Destrua as baterias usadas conforme as instruções do fabricante.

¡Atención! Existe peligro de explosión si la batería se reemplaza de manera incorrecta. Reemplazar la baterían EXclusivamente con el mismo tipo o el equivalente recomendado por el fabricante. Desechar las baterías gastadas según las instrucciones del fabricante.

Varning! Explosionsfara vid felaktigt batteribyte. Ersätt endast batteriet med samma batterityp som rekommenderas av tillverkaren eller motsvarande. Följ tillverkarens anvisningar vid kassering av använda batterier.

Jewelry Removal Warning

WARNING: Before working on equipment that is connected to power lines, remove jewelry, including rings, necklaces, and watches. Metal objects heat up when connected to power and ground and can cause serious burns or can be welded to the terminals.

Waarschuwing Alvorens aan apparatuur te werken die met elektrische leidingen is verbonden, sieraden (inclusief ringen, kettingen en horloges) verwijderen. Metalen voorwerpen worden warm wanneer ze met stroom en aarde zijn verbonden, en kunnen ernstige brandwonden veroorzaken of het metalen voorwerp aan de aansluitklemmen lassen.

Varoitus Ennen kuin työskentelet voimavirtajohtoihin kytkettyjen laitteiden parissa, ota pois kaikki korut (sormukset, kaulakorut ja kellot mukaan lukien). Metalliesineet kuumenevat, kun ne ovat yhteydessä sähkövirran ja maan kanssa, ja ne voivat aiheuttaa vakavia palovammoja tai hitsata metalliesineet kiinni liitäntänapoihin.

Avertissement Avant d'accéder à cet équipement connecté aux lignes électriques, ôter tout bijou (anneaux, colliers et montres compris). Lorsqu'ils sont branchés à l'alimentation et reliés à la terre, les objets métalliques chauffent, ce qui peut provoquer des blessures graves ou souder l'objet métallique aux bornes.

Warnung Vor der Arbeit an Geräten, die an das Netz angeschlossen sind, jeglichen Schmuck (einschließlich Ringe, Ketten und Uhren) abnehmen. Metallgegenstände erhitzen sich, wenn sie an das Netz und die Erde angeschlossen werden, und können schwere Verbrennungen verursachen oder an die Anschlußklemmen angeschweißt werden.

Avvertenza Prima di intervenire su apparecchiature collegate alle linee di alimentazione, togliersi qualsiasi monile (inclusi anelli, collane, braccialetti ed orologi). Gli oggetti metallici si riscaldano quando sono collegati tra punti di alimentazione e massa: possono causare ustioni gravi oppure il metallo può saldarsi ai terminali.

Advarsel Fjern alle smykker (inkludert ringer, halskjeder og klokker) før du skal arbeide på utstyr som er koblet til kraftledninger. Metallgjenstander som er koblet til kraftledninger og jord blir svært varme og kan forårsake alvorlige brannskader eller smelte fast til polene.

Aviso Antes de trabalhar em equipamento que esteja ligado a linhas de corrente, retire todas as jóias que estiver a usar (incluindo anéis, fios e relógios). Os objectos metálicos aquecerão em contacto com a corrente e em contacto com a ligação à terra, podendo causar queimaduras graves ou ficarem soldados aos terminais.

¡Atención! Antes de operar sobre equipos conectados a líneas de alimentación, quitarse las joyas (incluidos anillos, collares y relojes). Los objetos de metal se calientan cuando se conectan a la alimentación y a tierra, lo que puede ocasionar quemaduras graves o que los objetos metálicos queden soldados a los bornes.

Varning! Tag av alla smycken (inklusive ringar, halsband och armbandsur) innan du arbetar på utrustning som är kopplad till kraftledningar. Metallobjekt hettas upp när de kopplas ihop med ström och jord och kan förorsaka allvarliga brännskador; metallobjekt kan också sammansvetsas med kontakterna.

Lightning Activity Warning

WARNING: Do not work on the system or connect or disconnect cables during periods of lightning activity.

Waarschuwing Tijdens onweer dat gepaard gaat met bliksem, dient u niet aan het systeem te werken of kabels aan te sluiten of te ontkoppelen.

Varoitus Älä työskentele järjestelmän parissa äläkä yhdistä tai irrota kaapeleita ukkosilmalla.

Avertissement Ne pas travailler sur le système ni brancher ou débrancher les câbles pendant un orage.

Warnung Arbeiten Sie nicht am System und schließen Sie keine Kabel an bzw. trennen Sie keine ab, wenn es gewittert.

Avvertenza Non lavorare sul sistema o collegare oppure scollegare i cavi durante un temporale con fulmini.

Advarsel Utfør aldri arbeid på systemet, eller koble kabler til eller fra systemet når det tordner eller lyner.

Aviso Não trabalhe no sistema ou ligue e desligue cabos durante períodos de mau tempo (trovoada).

¡Atención! No operar el sistema ni conectar o desconectar cables durante el transcurso de descargas eléctricas en la atmósfera.

Varning! Vid åska skall du aldrig utföra arbete på systemet eller ansluta eller koppla loss kablar.

Operating Temperature Warning

WARNING: To prevent the device from overheating, do not operate it in an area that exceeds the maximum recommended ambient temperature. To prevent airflow restriction, allow at least 6 in. (15.2 cm) of clearance around the ventilation openings.

Waarschuwing Om te voorkomen dat welke switch van de Juniper Networks router dan ook oververhit raakt, dient u deze niet te bedienen op een plaats waar de maximale aanbevolen omgevingstemperatuur van 40° C wordt overschreden. Om te voorkomen dat de luchtstroom wordt beperkt, dient er minstens 15,2 cm speling rond de ventilatie-openingen te zijn.

Varoitus Ettei Juniper Networks switch-sarjan reititin ylikuumentuisi, sitä ei saa käyttää tilassa, jonka lämpötila ylittää korkeimman suositellun ympäristölämpötilan 40° C. Ettei ilmanvaihto estyisi, tuuletusaukkojen ympärille on jätettävä ainakin 15,2 cm tilaa.

Avertissement Pour éviter toute surchauffe des routeurs de la gamme Juniper Networks switch, ne l'utilisez pas dans une zone où la température ambiante est supérieure à 40° C. Pour permettre un flot d'air constant, dégagez un espace d'au moins 15,2 cm autour des ouvertures de ventilations.

Warnung Um einen Router der switch vor Überhitzung zu schützen, darf dieser nicht in einer Gegend betrieben werden, in der die Umgebungstemperatur das empfohlene Maximum von 40° C überschreitet. Um Lüftungsverschluß zu verhindern, achten Sie darauf, daß mindestens 15,2 cm lichter Raum um die Lüftungsöffnungen herum frei bleibt.

Avvertenza Per evitare il surriscaldamento dei switch, non adoperateli in un locale che ecceda la temperatura ambientale massima di 40° C. Per evitare che la circolazione dell'aria sia impedita, lasciate uno spazio di almeno 15.2 cm di fronte alle aperture delle ventole.

Advarsel Unngå overoppheting av eventuelle rutere i Juniper Networks switch Disse skal ikke brukes på steder der den anbefalte maksimale omgivelsestemperaturen overstiger 40° C (104° F). Sørg for at klaringen rundt lufteåpningene er minst 15,2 cm (6 tommer) for å forhindre nedsatt luftsirkulasjon.

Aviso Para evitar o sobreaquecimento do encaminhador Juniper Networks switch, não utilize este equipamento numa área que exceda a temperatura máxima recomendada de 40° C. Para evitar a restrição à circulação de ar, deixe pelo menos um espaço de 15,2 cm à volta das aberturas de ventilação.

¡**Atención!** Para impedir que un encaminador de la serie Juniper Networks switch se recaliente, no lo haga funcionar en un área en la que se supere la temperatura ambiente máxima recomendada de 40° C. Para impedir la restricción de la entrada de aire, deje un espacio mínimo de 15,2 cm alrededor de las aperturas para ventilación.

Varning! Förhindra att en Juniper Networks switch överhettas genom att inte använda den i ett område där den maximalt rekommenderade omgivningstemperaturen på 40° C överskrids. Förhindra att luftcirkulationen inskränks genom att se till att det finns fritt utrymme på minst 15,2 cm omkring ventilationsöppningarna.

Product Disposal Warning

WARNING: Disposal of this device must be handled according to all national laws and regulations.

Waarschuwing Dit produkt dient volgens alle landelijke wetten en voorschriften te worden afgedankt.

Varoitus Tämän tuotteen lopullisesta hävittämisestä tulee huolehtia kaikkia valtakunnallisia lakeja ja säännöksiä noudattaen.

Avertissement La mise au rebut définitive de ce produit doit être effectuée conformément à toutes les lois et réglementations en vigueur.

Warnung Dieses Produkt muß den geltenden Gesetzen und Vorschriften entsprechend entsorgt werden.

Avvertenza L'eliminazione finale di questo prodotto deve essere eseguita osservando le normative italiane vigenti in materia

Advarsel Endelig disponering av dette produktet må skje i henhold til nasjonale lover og forskrifter.

Aviso A descartagem final deste produto deverá ser efectuada de acordo com os regulamentos e a legislação nacional.

¡**Atención!** El desecho final de este producto debe realizarse según todas las leyes y regulaciones nacionales

Varning! Slutlig kassering av denna produkt bör skötas i enlighet med landets alla lagar och föreskrifter.

Action to Take After an Electrical Accident

If an electrical accident results in an injury, take the following actions in this order:

1. Use caution. Be aware of potentially hazardous conditions that could cause further injury.

2. Disconnect power from the device.

3. If possible, send another person to get medical aid. Otherwise, assess the condition of the victim, and then call for help.

General Electrical Safety Guidelines and Warnings

- Install the services gateway in compliance with the following local, national, or international electrical codes:

  - United States—National Fire Protection Association (NFPA 70), United States National Electrical Code

  - Canada—Canadian Electrical Code, Part 1, CSA C22.1

  - Other countries—International Electromechanical Commission (IEC) 60364, Part 1 through Part 7

  - Evaluated to the TN power system

- Locate the emergency power-off switch for the room in which you are working so that if an electrical accident occurs, you can quickly turn off the power.

- Do not work alone if potentially hazardous conditions exist anywhere in your workspace.

- Never assume that power is disconnected from a circuit. Always check the circuit before starting to work.

- Carefully look for possible hazards in your work area, such as moist floors, ungrounded power extension cords, and missing safety grounds.

- Operate the services gateway within marked electrical ratings and product usage instructions.

- For the services gateway and peripheral equipment to function safely and correctly, use the cables and connectors specified for the attached peripheral equipment, and make certain they are in good condition.

AC Power Electrical Safety Guidelines

The following electrical safety guidelines apply to AC-powered devices:

- Note the following warnings printed on the device:

  "**CAUTION:** THIS UNIT HAS MORE THAN ONE POWER SUPPLY CORD. DISCONNECT ALL POWER SUPPLY CORDS BEFORE SERVICING TO AVOID ELECTRIC SHOCK."

  "**ATTENTION:** CET APPAREIL COMPORTE PLUS D'UN CORDON D'ALIMENTATION. AFIN DE PRÉVENIR LES CHOCS ÉLECTRIQUES, DÉBRANCHER TOUT CORDON D'ALIMENTATION AVANT DE FAIRE LE DÉPANNAGE."

- AC-powered devices are shipped with a three-wire electrical cord with a grounding-type plug that fits only a grounding-type power outlet. Do not circumvent this safety feature. Equipment grounding must comply with local and national electrical codes.

- You must provide an external certified circuit breaker (2-pole circuit breaker or 4-pole circuit breaker based on your device) rated minimum 20 A in the building installation.

- The power cord serves as the main disconnecting device for the AC-powered device. The socket outlet must be near the AC-powered device and be easily accessible.

- For devices that have more than one power supply connection, you must ensure that all power connections are fully disconnected so that power to the device is completely removed to prevent electric shock. To disconnect power, unplug all power cords (one for each power supply).

Power Cable Warning (Japanese)

WARNING: The attached power cable is only for this product. Do not use the cable for another product.

注意

附属の電源コードセットはこの製品専用です。
他の電気機器には使用しないでください。

DC Power Electrical Safety Guidelines and Warnings

When working with DC-powered equipment, observe the following guidelines and warnings:

- DC Power Electrical Safety Guidelines

- DC Power Disconnection Warning

- DC Power Grounding Requirements and Warning

- DC Power Wiring Sequence Warning

- DC Power Wiring Terminations Warning

DC Power Electrical Safety Guidelines

The following electrical safety guidelines apply to a DC-powered services gateway:

- A DC-powered services gateway is equipped with a DC terminal block that is rated for the power requirements of a maximally configured services gateway. To supply sufficient power, terminate the DC input wiring on a facility DC source capable of supplying at least 65 A at –48 VDC for the system, or at least 48 A at –48 VDC for each power supply. We recommend that the 48 VDC facility DC source be equipped with a circuit breaker rated at 60 A (–48 VDC) minimum, or as required by local code. Incorporate an easily accessible disconnect device into the facility wiring. In the United States and Canada, the –48 VDC facility should be equipped with a circuit breaker rated a minimum of 125% of the power provisioned for the input in accordance with the National Electrical Code in the USA and the Canadian Electrical Code in Canada. Be sure to connect the ground wire or conduit to a solid office (earth) ground. A closed loop ring is recommended for terminating the ground conductor at the ground stud.

- Run two wires from the circuit breaker box to a source of 48 VDC. Use appropriate gauge wire to handle up to 60 A.

- A DC-powered services gateway that is equipped with a DC terminal block is intended only for installation in a restricted access location. In the United States, a restricted access area is one in accordance with Articles 110-16, 110-17, and 110-18 of the National Electrical Code ANSI/NFPA 70.

  NOTE: Primary overcurrent protection is provided by the building circuit breaker. This breaker should protect against excess currents, short circuits, and earth faults in accordance with NEC ANSI/NFPA70.

- Ensure that the polarity of the DC input wiring is correct. Under certain conditions, connections with reversed polarity might trip the primary circuit breaker or damage the equipment.

- For personal safety, connect the green and yellow wire to safety (earth) ground at both the services gateway and the supply side of the DC wiring.

- The marked input voltage of –48 VDC for a DC-powered services gateway is the nominal voltage associated with the battery circuit, and any higher voltages are only to be associated with float voltages for the charging function.

- Because the services gateway is a positive ground system, you must connect the positive lead to the terminal labeled **RETURN**, the negative lead to the terminal labeled **–48V**, and the earth ground to the chassis grounding points.

DC Power Disconnection Warning

WARNING: Before performing any of the following procedures, ensure that power is removed from the DC circuit. To ensure that all power is off, locate the circuit breaker on the panel board that services the DC circuit, switch the circuit breaker to the off position (**O**), and tape the switch handle of the circuit breaker in the off position (**O**).

Waarschuwing Voordat u een van de onderstaande procedures uitvoert, dient u te controleren of de stroom naar het gelijkstroom circuit uitgeschakeld is. Om u ervan te verzekeren dat alle stroom UIT is geschakeld, kiest u op het schakelbord de stroomverbreker die het gelijkstroom circuit bedient, draait de stroomverbreker naar de UIT positie en plakt de schakelaarhendel van de stroomverbreker met plakband in de UIT positie vast.

Varoitus Varmista, että tasavirtapiirissä ei ole virtaa ennen seuraavien toimenpiteiden suorittamista. Varmistaaksesi, että virta on KATKAISTU täysin, paikanna tasavirrasta huolehtivassa kojetaulussa sijaitseva suojakytkin, käännä suojakytkin KATKAISTU-asentoon ja teippaa suojakytkimen varsi niin, että se pysyy KATKAISTU-asennossa.

Attention Avant de pratiquer l'une quelconque des procédures ci-dessous, vérifier que le circuit en courant continu n'est plus sous tension. Pour en être sûr, localiser le disjoncteur situé sur le panneau de service du circuit en courant continu, placer le disjoncteur en position fermée (OFF) et, à l'aide d'un ruban adhésif, bloquer la poignée du disjoncteur en position OFF.

Warnung Vor Ausführung der folgenden Vorgänge ist sicherzustellen, daß die Gleichstromschaltung keinen Strom erhält. Um sicherzustellen, daß sämtlicher Strom abgestellt ist, machen Sie auf der Schalttafel den Unterbrecher für die Gleichstromschaltung ausfindig, stellen Sie den Unterbrecher auf AUS, und kleben Sie den Schaltergriff des Unterbrechers mit Klebeband in der AUS-Stellung fest.

Avvertenza Prima di svolgere una qualsiasi delle procedure seguenti, verificare che il circuito CC non sia alimentato. Per verificare che tutta l'alimentazione sia scollegata (OFF), individuare l'interruttore automatico sul quadro strumenti che alimenta il circuito CC, mettere l'interruttore in posizione OFF e fissarlo con nastro adesivo in tale posizione.

Advarsel Før noen av disse prosedyrene utføres, kontroller at strømmen er frakoblet likestrømkretsen. Sørg for at all strøm er slått AV. Dette gjøres ved å lokalisere strømbryteren på brytertavlen som betjener likestrømkretsen, slå strømbryteren AV og teipe bryterhåndtaket på strømbryteren i AV-stilling.

Aviso Antes de executar um dos seguintes procedimentos, certifique-se que desligou a fonte de alimentação de energia do circuito de corrente contínua. Para se assegurar que toda a corrente foi DESLIGADA, localize o disjuntor no painel que serve o circuito de corrente contínua e coloque-o na posição OFF (Desligado), segurando nessa posição a manivela do interruptor do disjuntor com fita isoladora.

¡Atención! Antes de proceder con los siguientes pasos, comprobar que la alimentación del circuito de corriente continua (CC) esté cortada (OFF). Para asegurarse de que toda la alimentación esté cortada (OFF), localizar el interruptor automático en el panel que alimenta al circuito de corriente continua, cambiar el interruptor automático a la posición de Apagado (OFF), y sujetar con cinta la palanca del interruptor automático en posición de Apagado (OFF).

Varning! Innan du utför någon av följande procedurer måste du kontrollera att strömförsörjningen till likströmskretsen är bruten. Kontrollera att all strömförsörjning är BRUTEN genom att slå AV det överspänningsskydd som skyddar likströmskretsen och tejpa fast överspänningsskyddets omkopplare i FRÅN-läget.

DC Power Grounding Requirements and Warning

An insulated grounding conductor that is identical in size to the grounded and ungrounded branch circuit supply conductors, but that is identifiable by green and yellow stripes, is installed as part of the branch circuit that supplies the unit. The grounding conductor is a separately derived system at the supply transformer or motor generator set.

WARNING: When you install the services gateway, you must always make the ground connection first and disconnect it last.

Waarschuwing Bij de installatie van het toestel moet de aardverbinding altijd het eerste worden gemaakt en het laatste worden losgemaakt.

Varoitus Laitetta asennettaessa on maahan yhdistäminen aina tehtävä ensiksi ja maadoituksen irti kytkeminen viimeiseksi.

Attention Lors de l'installation de l'appareil, la mise à la terre doit toujours être connectée en premier et déconnectée en dernier.

Warnung Der Erdanschluß muß bei der Installation der Einheit immer zuerst hergestellt und zuletzt abgetrennt werden.

Avvertenza In fase di installazione dell'unità, eseguire sempre per primo il collegamento a massa e disconnetterlo per ultimo.

Advarsel Når enheten installeres, må jordledningen alltid tilkobles først og frakobles sist.

Aviso Ao instalar a unidade, a ligação à terra deverá ser sempre a primeira a ser ligada, e a última a ser desligada.

¡Atención! Al instalar el equipo, conectar la tierra la primera y desconectarla la última.

Varning! Vid installation av enheten måste jordledningen alltid anslutas först och kopplas bort sist.

DC Power Wiring Sequence Warning

WARNING: Wire the DC power supply using the appropriate lugs. When connecting power, the proper wiring sequence is ground to ground, +RTN to +RTN, then –48 V to –48 V. When disconnecting power, the proper wiring sequence is –48 V to –48 V, +RTN to +RTN, then ground to ground. Note that the ground wire should always be connected first and disconnected last.

Waarschuwing De juiste bedradingsvolgorde verbonden is aarde naar aarde, +RTN naar +RTN, en –48 V naar – 48 V. De juiste bedradingsvolgorde losgemaakt is en –48 V naar – 48 V, +RTN naar +RTN, aarde naar aarde.

Varoitus Oikea yhdistettava kytkentajarjestys on maajohto maajohtoon, +RTN varten +RTN, –48 V varten – 48 V. Oikea irrotettava kytkentajarjestys on –48 V varten – 48 V, +RTN varten +RTN, maajohto maajohtoon.

Attention Câblez l'approvisionnement d'alimentation CC En utilisant les crochets appropriés à l'extrémité de câblage. En reliant la puissance, l'ordre approprié de câblage est rectifié pour rectifier, +RTN à +RTN, puis –48 V à –48 V. En débranchant la puissance, l'ordre approprié de câblage est –48 V à –48 V, +RTN à +RTN, a alors rectifié pour rectifier. Notez que le fil de masse devrait toujours être relié d'abord et débranché

pour la dernière fois. Notez que le fil de masse devrait toujours être relié d'abord et débranché pour la dernière fois.

Warnung Die Stromzufuhr ist nur mit geeigneten Ringösen an das DC Netzteil anzuschliessen. Die richtige Anschlusssequenz ist: Erdanschluss zu Erdanschluss, +RTN zu +RTN und dann −48V zu −48V. Die richtige Sequenz zum Abtrennen der Stromversorgung ist −48V zu −48V, +RTN zu +RTN und dann Erdanschluss zu Erdanschluss. Es ist zu beachten dass der Erdanschluss immer zuerst angeschlossen und als letztes abgetrennt wird.

Avvertenza Mostra la morsettiera dell'alimentatore CC. Cablare l'alimentatore CC usando i connettori adatti all'estremità del cablaggio, come illustrato. La corretta sequenza di cablaggio è da massa a massa, da positivo a positivo (da linea ad L) e da negativo a negativo (da neutro a N). Tenere presente che il filo di massa deve sempre venire collegato per primo e scollegato per ultimo.

Advarsel Riktig tilkoples tilkoplingssekvens er jord til jord, +RTN til +RTN, −48 V til − 48 V. Riktig frakoples tilkoplingssekvens er −48 V til − 48 V, +RTN til +RTN, jord til jord.

Aviso Ate con alambre la fuente de potencia cc Usando los terminales apropiados en el extremo del cableado. Al conectar potencia, la secuencia apropiada del cableado se muele para moler, +RTN a +RTN, entonces −48 V a −48 V. Al desconectar potencia, la secuencia apropiada del cableado es −48 V a −48 V, +RTN a +RTN, entonces molió para moler. Observe que el alambre de tierra se debe conectar siempre primero y desconectar por último. Observe que el alambre de tierra se debe conectar siempre primero y desconectar por último.

¡Atención! Wire a fonte de alimentação de DC Usando os talões apropriados na extremidade da fiação. Ao conectar a potência, a seqüência apropriada da fiação é moída para moer, +RTN a +RTN, então −48 V a −48 V. Ao desconectar a potência, a seqüência apropriada da fiação é −48 V a −48 V, +RTN a +RTN, moeu então para moer. Anote que o fio à terra deve sempre ser conectado primeiramente e desconectado por último. Anote que o fio à terra deve sempre ser conectado primeiramente e desconectado por último.

Varning! Korrekt kopplingssekvens ar jord till jord, +RTN till +RTN, −48 V till − 48 V. Korrekt kopplas kopplingssekvens ar −48 V till −48 V, +RTN till +RTN, jord till jord.

DC Power Wiring Terminations Warning

WARNING: When stranded wiring is required, use approved wiring terminations, such as closed-loop or spade-type with upturned lugs. These terminations should be the appropriate size for the wires and should clamp both the insulation and the conductor.

Waarschuwing Wanneer geslagen bedrading vereist is, dient u bedrading te gebruiken die voorzien is van goedgekeurde aansluitingspunten, zoals het gesloten-lus type of het grijperschop type waarbij de aansluitpunten omhoog wijzen. Deze aansluitpunten dienen de juiste maat voor de draden te hebben en dienen zowel de isolatie als de geleider vast te klemmen.

Varoitus Jos säikeellinen johdin on tarpeen, käytä hyväksyttyä johdinliitäntää, esimerkiksi suljettua silmukkaa tai kourumaista liitäntää, jossa on ylöspäin käännetyt kiinnityskorvat. Tällaisten liitäntöjen tulee olla kooltaan johtimiin sopivia ja niiden tulee puristaa yhteen sekä eristeen että johdinosan.

Attention Quand des fils torsadés sont nécessaires, utiliser des douilles terminales homologuées telles que celles à circuit fermé ou du type à plage ouverte avec cosses rebroussées. Ces douilles terminales doivent être de la taille qui convient aux fils et doivent être refermées sur la gaine isolante et sur le conducteur.

Warnung Wenn Litzenverdrahtung erforderlich ist, sind zugelassene Verdrahtungsanschlüsse, z.B. Ringoesen oder gabelförmige Kabelschuhe mit nach oben gerichteten Enden zu verwenden. Diese Abschlüsse sollten die angemessene Größe für die Drähte haben und sowohl die Isolierung als auch den Leiter festklemmen.

Avvertenza Quando occorre usare trecce, usare connettori omologati, come quelli a occhiello o a forcella con linguette rivolte verso l'alto. I connettori devono avere la misura adatta per il cablaggio e devono serrare sia l'isolante che il conduttore.

Advarsel Hvis det er nødvendig med flertrådede ledninger, brukes godkjente ledningsavslutninger, som for eksempel lukket sløyfe eller spadetype med oppoverbøyde kabelsko. Disse avslutningene skal ha riktig størrelse i forhold til ledningene, og skal klemme sammen både isolasjonen og lederen.

Aviso Quando forem requeridas montagens de instalação eléctrica de cabo torcido, use terminações de cabo aprovadas, tais como, terminações de cabo em circuito fechado e planas com terminais de orelha voltados para cima. Estas terminações de cabo deverão ser do tamanho apropriado para os respectivos cabos, e deverão prender simultaneamente o isolamento e o fio condutor.

¡Atención! Cuando se necesite hilo trenzado, utilizar terminales para cables homologados, tales como las de tipo "bucle cerrado" o "espada", con las lengüetas de conexión vueltas hacia arriba. Estos terminales deberán ser del tamaño apropiado para los cables que se utilicen, y tendrán que sujetar tanto el aislante como el conductor.

Varning! När flertrådiga ledningar krävs måste godkända ledningskontakter användas, t.ex. kabelsko av sluten eller öppen typ med uppåtvänd tapp. Storleken på dessa

> kontakter måste vara avpassad till ledningarna och måste kunna hålla både isoleringen och ledaren fastklämda.

SRX550 High Memory Services Gateway Agency Approvals

IN THIS SECTION

- Compliance Statement for Argentina | 166

The services gateway complies with the following standards:

- Safety

  - CSA 60950-1 (2003) Safety of Information Technology Equipment

  - UL 60950-1 (2003) Safety of Information Technology Equipment

  - EN 60950-1 (2001) Safety of Information Technology Equipment

  - IEC 60950-1 (2001) Safety of Information Technology Equipment (with country deviations)

  - EN 60825-1 +A1+A2 (1994) Safety of Laser Products - Part 1: Equipment Classification

- EMC

  - EN 300 386 V1.3.3 (2005) Telecom Network Equipment - EMC requirements

- EMI

  - FCC Part 15 Class A (2007) USA Radiated Emissions

  - EN 55022 Class A (2006) European Radiated Emissions

- VCCI Class A (2007) Japanese Radiated Emissions

- Immunity

  - EN 55024 +A1+A2 (1998) Information Technology Equipment Immunity Characteristics

  - EN-61000-3-2 (2006) Power Line Harmonics

  - EN-61000-3-3 +A1 +A2 +A3 (1995) Power Line Voltage Fluctuations

  - EN-61000-4-2 +A1 +A2 (1995) Electrostatic Discharge

  - EN-61000-4-3 +A1+A2 (2002) Radiated Immunity

  - EN-61000-4-4 (2004) Electrical Fast Transients

  - EN-61000-4-5 (2006) Surge

  - EN-61000-4-6 (2007) Immunity to Conducted Disturbances

  - EN-61000-4-11 (2004) Voltage Dips and Sags

- Environmental

  - Reduction of Hazardous Substances (ROHS) 2

Compliance Statement for Argentina

EQUIPO DE USO IDÓNEO.

RELATED DOCUMENTATION

SRX550 High Memory Services Gateway General Safety Guidelines and Warnings

SRX550 High Memory Services Gateway Acoustic Noise Compliance Statements

The maximum emitted sound pressure level is 70 dB(A) or less per EN ISO 7779.

German Translation:

Maschinenlärminformations-Verordnung - 3. GPSGV, der höchste Schalldruckpegel beträgt 70 dB(A) oder weniger gemäss EN ISO 7779.

RELATED DOCUMENTATION

SRX550 High Memory Services Gateway General Safety Guidelines and Warnings

SRX550 High Memory Services Gateway Compliance Statements for EMC Requirements

IN THIS SECTION

This section includes the following topics:

Canada

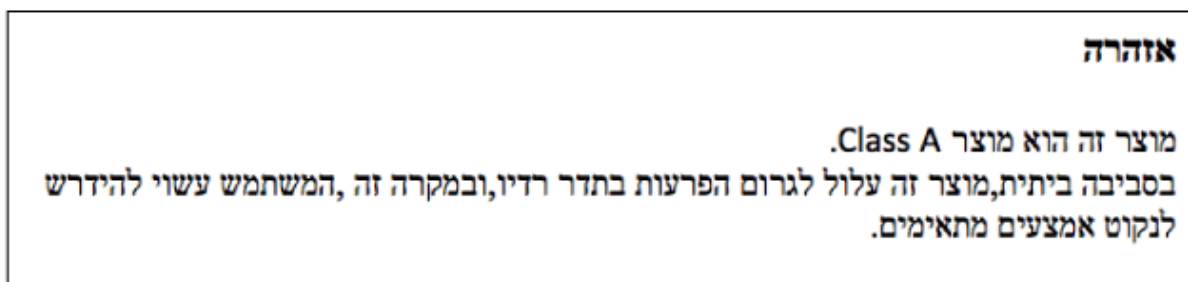This Class A digital apparatus complies with Canadian ICES-003.

Cet appareil numérique de la classe A est conforme à la norme NMB-003 du Canada.

European Community

This is a Class A product. In a domestic environment this product might cause radio interference in which case the user might be required to take adequate measures.
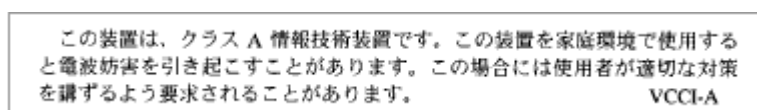
Israel

The preceding translates as follows:

This product is Class A. In residential environments, the product may cause radio interference, and in such a situation, the user may be required to take adequate measures.

Japan

The preceding translates as follows:

This is a Class A product. In a domestic environment this product may cause radio interference in which case the user may be required to take adequate measures.

VCCI-A

United States

The services gateway has been tested and found to comply with the limits for a Class A digital device of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference

when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, might cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference, in which case the user will be required to correct the interference at his own expense.

RELATED DOCUMENTATION

SRX550 High Memory Services Gateway General Safety Guidelines and Warnings

SRX550 High Memory Services Gateway Acoustic Noise Compliance Statements | **166**

Lithium Battery

Batteries in this product are not based on mercury, lead, or cadmium substances. The batteries used in this product are in compliance with EU Directives 91/157/EEC, 93/86/EEC, and 98/101/EEC. The product documentation includes instructional information about the proper method of reclamation and recycling.

RELATED DOCUMENTATION

SRX550 High Memory Services Gateway General Safety Guidelines and Warnings