



NSM4000 Appliance

Hardware Guide



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NSM4000 Appliance Hardware Guide

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About the Documentation

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- Documentation Feedback on page xi
- Requesting Technical Support on page xii

Documentation and Release Notes

To obtain the most current version of all Juniper Networks® technical documentation, see the product documentation page on the Juniper Networks website at <http://www.juniper.net/techpubs/>.

If the information in the latest release notes differs from the information in the documentation, follow the product Release Notes.

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Documentation Conventions

Table 1 on page x defines notice icons used in this guide.

Table 1: Notice Icons

Icon	Meaning	Description
	Informational note	Indicates important features or instructions.
	Caution	Indicates a situation that might result in loss of data or hardware damage.
	Warning	Alerts you to the risk of personal injury or death.
	Laser warning	Alerts you to the risk of personal injury from a laser.
	Tip	Indicates helpful information.
	Best practice	Alerts you to a recommended use or implementation.

Table 2 on page x defines the text and syntax conventions used in this guide.

Table 2: Text and Syntax Conventions

Convention	Description	Examples
Bold text like this	Represents text that you type.	To enter configuration mode, type the configure command: user@host> configure
Fixed-width text like this	Represents output that appears on the terminal screen.	user@host> show chassis alarms No alarms currently active
<i>Italic text like this</i>	<ul style="list-style-type: none"> Introduces or emphasizes important new terms. Identifies guide names. Identifies RFC and Internet draft titles. 	<ul style="list-style-type: none"> A policy <i>term</i> is a named structure that defines match conditions and actions. <i>Junos OS CLI User Guide</i> RFC 1997, <i>BGP Communities Attribute</i>
<i>Italic text like this</i>	Represents variables (options for which you substitute a value) in commands or configuration statements.	Configure the machine's domain name: [edit] root@# set system domain-name <i>domain-name</i>

Table 2: Text and Syntax Conventions (*continued*)

Convention	Description	Examples
Text like this	Represents names of configuration statements, commands, files, and directories; configuration hierarchy levels; or labels on routing platform components.	<ul style="list-style-type: none">To configure a stub area, include the stub statement at the [edit protocols ospf area area-id] hierarchy level.The console port is labeled CONSOLE.
< > (angle brackets)	Encloses optional keywords or variables.	stub <default-metric <i>metric</i>>;
(pipe symbol)	Indicates a choice between the mutually exclusive keywords or variables on either side of the symbol. The set of choices is often enclosed in parentheses for clarity.	broadcast multicast (<i>string1</i> <i>string2</i> <i>string3</i>)
# (pound sign)	Indicates a comment specified on the same line as the configuration statement to which it applies.	rsvp { # Required for dynamic MPLS only
[] (square brackets)	Encloses a variable for which you can substitute one or more values.	community name members [<i>community-ids</i>]
Indentation and braces ({ })	Identifies a level in the configuration hierarchy.	<pre>[edit] routing-options { static { route default { nexthop <i>address</i>; retain; } } }</pre>
;(semicolon)	Identifies a leaf statement at a configuration hierarchy level.	
GUI Conventions		
Bold text like this	Represents graphical user interface (GUI) items you click or select.	<ul style="list-style-type: none">In the Logical Interfaces box, select All Interfaces.To cancel the configuration, click Cancel.
> (bold right angle bracket)	Separates levels in a hierarchy of menu selections.	In the configuration editor hierarchy, select Protocols>Ospf .

Documentation Feedback

We encourage you to provide feedback, comments, and suggestions so that we can improve the documentation. You can provide feedback by using either of the following methods:

- Online feedback rating system—On any page of the Juniper Networks TechLibrary site at <http://www.juniper.net/techpubs/index.html>, simply click the stars to rate the content, and use the pop-up form to provide us with information about your experience. Alternately, you can use the online feedback form at <http://www.juniper.net/techpubs/feedback/>.

- E-mail—Send your comments to techpubs-comments@juniper.net. Include the document or topic name, URL or page number, and software version (if applicable).

Requesting Technical Support

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- Product warranties—For product warranty information, visit <http://www.juniper.net/support/warranty/>.
- JTAC hours of operation—The JTAC centers have resources available 24 hours a day, 7 days a week, 365 days a year.

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- Search for known bugs: <http://www2.juniper.net/kb/>
- Find product documentation: <http://www.juniper.net/techpubs/>
- Find solutions and answer questions using our Knowledge Base: <http://kb.juniper.net/>
- Download the latest versions of software and review release notes: <http://www.juniper.net/customers/csc/software/>
- Search technical bulletins for relevant hardware and software notifications: <http://kb.juniper.net/InfoCenter/>
- Join and participate in the Juniper Networks Community Forum: <http://www.juniper.net/company/communities/>
- Open a case online in the CSC Case Management tool: <http://www.juniper.net/cm/>

To verify service entitlement by product serial number, use our Serial Number Entitlement (SNE) Tool: <https://tools.juniper.net/SerialNumberEntitlementSearch/>

Opening a Case with JTAC

You can open a case with JTAC on the Web or by telephone.

- Use the Case Management tool in the CSC at <http://www.juniper.net/cm/>.
- Call 1-888-314-JTAC (1-888-314-5822 toll-free in the USA, Canada, and Mexico).

For international or direct-dial options in countries without toll-free numbers, see <http://www.juniper.net/support/requesting-support.html>.

PART 1

NSM4000 Appliance Overview and Specifications

- [NSM4000 Appliance Overview on page 3](#)

CHAPTER 1

NSM4000 Appliance Overview

- [NSM4000 Appliance Overview on page 3](#)
- [Chassis Physical Specifications for the NSM4000 Appliance on page 4](#)
- [Front Panel of an NSM4000 Appliance on page 4](#)
- [Rear Panel of an NSM4000 Appliance on page 6](#)
- [NSM4000 Ethernet Interfaces Overview on page 7](#)
- [Synchronizing NTP Time Sources to Ensure Consistent Behavior Among Nodes on page 9](#)

NSM4000 Appliance Overview

The Juniper Networks NSM4000 appliance is a dedicated hardware device that is engineered to provide the computing power and meet specific requirements to be able to install and run the NSM4000 Network Management Platform. The NSM4000 Network Management Platform is an open, extensible platform that simplifies the management and orchestration of networks and allows you to develop and host applications that simplify network operations, scale services, and automate support. The all-in-one design of the NSM4000 appliance enables administrators to easily deploy the NSM4000 Network Management Platform.

The NSM4000 appliance can be configured in either a simple or an extended high availability (HA) configuration. HA configurations automatically recover management services in the event of a device failure, improving the overall fault tolerance.

NSM4000 Appliance Hardware Overview

The NSM4000 appliance has a 2-U, rack-mountable chassis with dimensions of 17.81 in. x 17.31 in. x 3.5 in. (45.2 cm x 44 cm x 8.89 cm). The NSM4000 appliance ships with a single AC power supply module; an additional power supply module can be installed in the power supply slot in the rear panel of the appliance. In addition, the NSM4000 appliance can also be powered on by using one or two DC power supply modules.

The appliance has six 1-TB hard drives in a RAID10 configuration. Two externally accessible cooling fans provide the required airflow and cooling for the appliance.

Related Documentation

- [Chassis Physical Specifications for the NSM4000 Appliance on page 4](#)
- [Front Panel of an NSM4000 Appliance on page 4](#)

- [Rear Panel of an NSM4000 Appliance on page 6](#)
- [NSM4000 Ethernet Interfaces Overview on page 7](#)

Chassis Physical Specifications for the NSM4000 Appliance

The NSM4000 appliance chassis is a rigid sheet-metal structure that houses the appliance hardware components. [Table 3 on page 4](#) summarizes the physical specifications of the NSM4000 appliance chassis.

Table 3: Physical Specifications of the NSM4000 Appliance Chassis

Description	Value
Height	3.5 in. (8.89 cm)
Width	17.31 in. (44 cm)
Depth	17.81 in. (45.2 cm)
Weight	28.05 lb (approximately 12.72 kg) with a single AC power supply installed

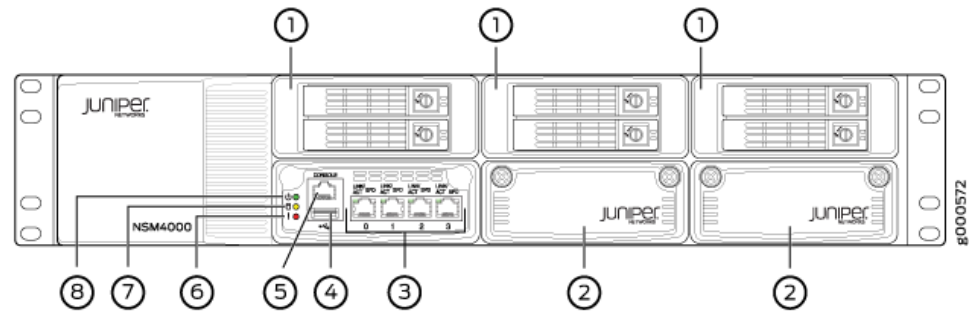
Related Documentation

- [Front Panel of an NSM4000 Appliance on page 4](#)
- [Rear Panel of an NSM4000 Appliance on page 6](#)
- [NSM4000 Appliance Rack Requirements on page 25](#)
- [Mounting the NSM4000 Appliance on page 30](#)

Front Panel of an NSM4000 Appliance

The front panel of the NSM4000 appliance, shown in [Figure 1 on page 5](#), consists of the components listed in [Table 4 on page 5](#).

Figure 1: NSM4000 Appliance Front Panel



1—Hard drive	5—Console port
2—I/O expansion slot	6—Hardware Fault LED
3—Network (Ethernet) ports	7—Hard Disk Activity LED
4—USB port	8—Power LED

Table 4: NSM4000 Appliance Front Panel Components

Component	Description
Hard drives	<p>The NSM4000 appliance has six hot-swappable 1-TB hard disk drives in a RAID 10 configuration. The hard drives are numbered (0 through 5) as follows:</p> <ul style="list-style-type: none"> Slot 3 (top left) and Slot 0 (bottom left) Slot 4 (top middle) and Slot 1 (bottom middle) Slot 5 (top right) and Slot 2 (bottom right)
I/O card (IOC) expansion slots	IOC expansion is currently not supported.
Network ports	Four RJ-45 Ethernet 10/100/1000 ports, labeled 0 through 3 from left to right
USB port	One USB port
Console port	One RJ-45 console port
Chassis LEDs	<p>The following chassis LEDs, located next to the console port, are present on the appliance:</p> <ul style="list-style-type: none"> Hardware Fault LED (red), which indicates that a fan, power supply, or temperature alarm has occurred. Hard Disk Activity LED (yellow), which indicates that the hard disk is in use. Power LED (green), which indicates that the appliance is powered on.

Table 4: NSM4000 Appliance Front Panel Components (*continued*)

Component	Description
Ethernet (LAN) port LEDs	<p>The following LEDs are present above each Ethernet port:</p> <ul style="list-style-type: none"> Link/Activity LED (green), which indicates the link (On) or link activity (Blinking) Speed LED, which indicates the link speed: <ul style="list-style-type: none"> Off—10 Mbps Green—100 Mbps Yellow—1000 Mbps or 1 Gbps
Hard drive LEDs	<p>In addition to the LEDs on the appliance chassis, there are two LEDs on each hard disk:</p> <ul style="list-style-type: none"> Hard Disk Activity LED (green), which indicates disk activity Hard Disk Failure LED (red), which indicates disk failure (On) or disk rebuilding (Blinking)

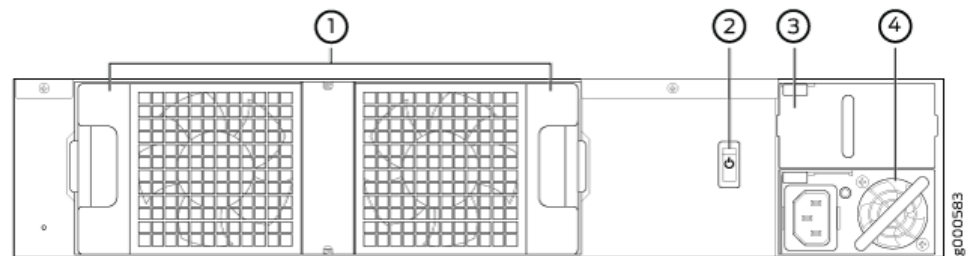
Related Documentation

- [Rear Panel of an NSM4000 Appliance on page 6](#)
- [NSM4000 Ethernet Interfaces Overview on page 7](#)
- [NSM4000 Appliance Overview on page 3](#)

Rear Panel of an NSM4000 Appliance

The rear panel of the NSM4000 appliance, shown in [Figure 2 on page 6](#), consists of the components listed in [Table 5 on page 6](#).

Figure 2: NSM4000 Rear Panel



1—Cooling fans	3—Redundant power supply module slot
2—Power switch	4—Power supply module

Table 5: NSM4000 Appliance Rear Panel Components

Component	Description
Cooling fans	The NSM4000 appliance has two hot-swappable cooling fans that provide the required airflow to cool the appliance.

Table 5: NSM4000 Appliance Rear Panel Components (*continued*)

Component	Description
Power switch	The appliance power switch is used to power on or power off the appliance.
Redundant power supply module slot	An empty power supply module slot is provided so that a second power supply module can be added, for redundancy, if needed.
Power supply module	A single AC power supply module is shipped with the appliance and provides power to the appliance. However, the appliance can also be run on DC by using the DC power supply module for the NSM4000 appliance.
Power Supply Module LED	One LED is present on the power supply module: <ul style="list-style-type: none"> Green indicates that the power supply module is powering the appliance. Amber indicates that the power supply module is on but it is not powering the appliance (standby mode).

Related Documentation

- [Front Panel of an NSM4000 Appliance on page 4](#)
- [NSM4000 Ethernet Interfaces Overview on page 7](#)
- [NSM4000 Appliance Overview on page 3](#)

NSM4000 Ethernet Interfaces Overview

An NSM4000 appliance has four Ethernet interfaces; three interfaces can be used and one is reserved for future use. The Ethernet interfaces are labeled **0**, **1**, **2**, and **3** for the NSM4000 appliance.

You can use the Ethernet interfaces as follows:

- **eth0**—Use the eth0 interface to configure the virtual IP (VIP) address of a fabric and the IP address of the node as well as to access the managed devices. The VIP address and the IP address of the node should be on the same subnet.

The eth0:0 subinterface provides access to the NSM4000 Network Management Platform GUI. You can access the GUI by using the VIP address of the fabric.

- **eth1**—Use the eth1 interface as an administrative interface for an NSM4000 node. Use SSH to access an NSM4000 node through this interface. The eth0 interface and the eth1 interface can be on different subnets.

If you configure eth1, you cannot access the NSM4000 nodes using the eth0 interface. You can access the CLI of the NSM4000 virtual appliance only through the eth1 interface.

- eth2—The eth2 interface is reserved for future use.
- eth3—Use the eth3 interface as the device management interface for SSH access to managed devices when the managed devices are on an out-of-band management subnet or on a subnet not accessible through the eth0 interface.



NOTE: If the managed devices are not accessible through the default gateway, you must configure static routes. Any static route configured manually is populated in the main routing table, which is used to route traffic through the eth0 interface.

- When you configure an appliance as an NSM4000 node, you can configure the Ethernet interfaces as follows:

- Configure only the eth0 interface.

When only Ethernet interface0 (eth0) is used, the NSM4000 nodes in the fabric, the virtual IP (VIP) address of the fabric, and the devices being managed by NSM4000 are on the same subnet.

- Configure the eth0 and eth3 interfaces.

When Ethernet interfaces eth0 and eth3 are used, the NSM4000 nodes in the fabric and VIP address of the fabric are on the same subnet and are reachable through eth0. The devices being managed by NSM4000 are on the same subnet, which is different from the one reachable through eth0, and are reachable through eth3.

- Configure the eth0 and eth1 interfaces.

When Ethernet interfaces eth0 and eth1 are used, the NSM4000 nodes in the fabric and the VIP address of the fabric might or might not be on the same subnet. The eth1 interface provides SSH access to the NSM4000 nodes.

The VIP address and the devices being managed by NSM4000 are on the same subnet.

- Configure the eth0, eth1, and eth3 interfaces.

When Ethernet interfaces eth0, eth1, and eth3 are used, the NSM4000 nodes in the fabric and the VIP address of the fabric might or might not be on the same subnet. The NSM4000 nodes are reachable (SSH access) only through the eth1 interface.

The managed devices can be reached through the eth0 interface if they are configured on the same subnet as the VIP address; on any other subnet, the managed devices can be reached through the eth3 interface.



NOTE: If the managed devices are not reachable through the default gateway configured for the eth3 interface, you must configure static routes for the eth3 interface. The eth3 interface refers to the devint routing table.

Any static route configured manually is populated in the main routing table, which is used to route traffic through the eth0 interface.

- When you configure an appliance as a specialized node used for fault monitoring and performance monitoring (FMPM), you can use only the Ethernet interfaces eth0 and eth1.

Ethernet interface eth1 provides SSH access to FMPM nodes.

Table 6 on page 9 summarizes the functions of Ethernet interfaces on the NSM4000 appliance.

Table 6: NSM4000 Appliance Ethernet Interfaces

Interface	Function
eth0	SSH and device management, if only the eth0 is used
eth0	GUI interface
eth1	SSH access to the NSM4000 nodes <i>NOTE:</i> SSH is disabled on the eth0 and eth3 interfaces when eth1 is configured.
eth2	Reserved for future use
eth3	Device management when managed devices are on an out-of-band management subnet and not reachable by the Ethernet interface eth0

Related Documentation

- [Troubleshooting NSM4000 Ethernet Interface eth0 Connectivity on page 91](#)
- [NSM4000 Appliance Overview on page 3](#)
- [Synchronizing NTP Time Sources to Ensure Consistent Behavior Among Nodes on page 9](#)

Synchronizing NTP Time Sources to Ensure Consistent Behavior Among Nodes

To ensure consistent behavior among all nodes in a multinode fabric, each node's time must be synchronized with every other node in the fabric. When you configure each NSM4000 appliance with an NTP server, you ensure that, if the first node (which is used to synchronize time for all nodes in the fabric) goes down, all other nodes in the fabric remain synchronized. To ensure this behavior, all nodes in a fabric must use the same external NTP source that you configure for the first appliance.



NOTE: By default, NSM4000 translates time so that the time displayed in the user interface corresponds to NSM4000 server time, but is mapped to the local time zone of your client computer.

The default system clock for an NSM4000 appliance might not be precise enough for some networks. To ensure time synchronization across all nodes in the fabric, we strongly recommend that you use the following guidelines:

- Add an NTP server to the first virtual appliance during initial setup.
- For each additional appliance, add the same NTP server that you specified for the first appliance.



NOTE: You must add the NTP server before you add the first node to the fabric from the user interface.

**Related
Documentation**

- [NSM4000 Appliance Ports on page 52](#)
- [NSM4000 Ethernet Interfaces Overview on page 7](#)
- [Chassis Console Port Pinouts on page 18](#)

PART 2

Planning for Appliance Installation

- [Component Descriptions and Specifications on page 13](#)
- [Site Preparation on page 21](#)
- [Mounting Requirements on page 25](#)

CHAPTER 2

Component Descriptions and Specifications

- [Field-Replaceable Units on the NSM4000 Appliance on page 13](#)
- [AC Power Cord Specifications for the NSM4000 Appliance on page 14](#)
- [AC Power Supply in the NSM4000 Appliance on page 15](#)
- [DC Power Supply in the NSM4000 Appliance on page 17](#)
- [Chassis Console Port Pinouts on page 18](#)

Field-Replaceable Units on the NSM4000 Appliance

Field-replaceable units (FRUs) are components that you can replace at your site. The FRUs in the NSM4000 appliance are of the following types:

- **Hot-swappable FRUs:** You can remove and replace these components without powering off the appliance.
- **Cold-swappable FRUs:** You must power off the appliance in order to remove, replace, or add these components.

The FRUs supported in the NSM4000 appliance are listed in [Table 7 on page 13](#).

Table 7: NSM4000 Appliance FRUs

FRU	Type
AC power supply	Cold-swappable, if the appliance has only one power supply module Hot-swappable, if the appliance has an additional redundant, functioning power supply module that is plugged into a separate power circuit
Cooling fans	Hot-swappable
DC power supply	Cold-swappable, if the appliance has only one power supply module Hot-swappable, if the appliance has an additional redundant, functioning power supply module that is plugged into a separate power circuit

Table 7: NSM4000 Appliance FRUs (*continued*)

FRU	Type
Hard disks	Hot-swappable

**Related
Documentation**

- [Unpacking the NSM4000 Appliance on page 29](#)
- [Installing and Removing NSM4000 Appliance Hardware Components on page 111](#)
- [Front Panel of an NSM4000 Appliance on page 4](#)
- [Rear Panel of an NSM4000 Appliance on page 6](#)

AC Power Cord Specifications for the NSM4000 Appliance

The NSM4000 appliance is shipped with an AC power supply module already installed. A power cord suitable for your region is shipped along with the NSM4000 appliance.

The coupler is type C13 as described by International Electrotechnical Commission (IEC) standard 60320. The plug at the male end of the power cord fits into the power source outlet that is standard for your geographical location.



CAUTION: The AC power cord provided with each power supply module is intended only for use with that power supply module and not for any other use.



NOTE: In North America, AC power cords must not exceed 4.5 meters (approximately 14.76 feet) in length to comply with National Electrical Code (NEC) Sections 400-8 (NFPA 75, 5-2.2) and 210-52 and Canadian Electrical Code (CEC) Section 4-010(3). The cords supplied with the appliance are in compliance.

Table 8 on page 14 lists AC power cord specifications provided for each country or region.

Table 8: AC Power Cord Specifications

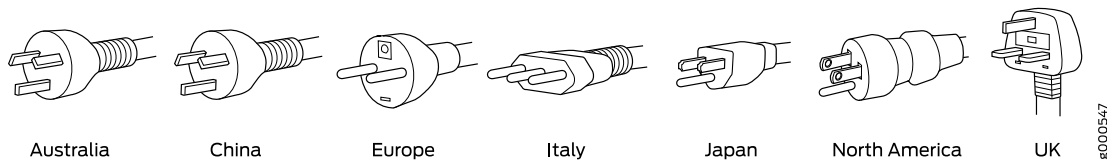
Country or Region	Electrical Specifications	Plug Standards	Juniper Model Number
Australia	250 VAC, 10 A, 50 Hz	AS/NZS 3112-1993 Type SAA/3	CBL-GP-JX-PWR-AU
China	250 VAC, 10 A, 50 Hz	GB 1002-1996 Type PRC/3	CBL-GP-JX-PWR-CH

Table 8: AC Power Cord Specifications (*continued*)

Country or Region	Electrical Specifications	Plug Standards	Juniper Model Number
Europe (except Italy, Switzerland, and United Kingdom)	250 VAC, 10 A, 50 Hz	CEE (7) VII Type VIIG	CBL-GP-JX-PWR-EU
Italy	250 VAC, 10 A, 50 Hz	CEI 23-16 Type I/3G	CBL-GP-JX-PWR-IT
Japan	125 VAC, 12 A, 50 Hz or 60 Hz	JIS 8303	CBL-GP-JX-PWR-JP
Korea	250 VAC, 10 A, 60 Hz	CEE (7) VII Type VIIGK	CBL-GP-JX-PWR-KR
Switzerland	250 VAC, 10 A, 50 Hz	SEV 6534/2 Type 12G	CBL-GP-JX-PWR-SZ
United Kingdom	250 VAC, 10 A, 50 Hz	BS 1363/A Type BS89/13	CBL-GP-JX-PWR-UK
United States	125 VAC, 10 A, 60 Hz	NEMA 5-15 Type N5/15	CBL-GP-JX-PWR-US

Figure 3 on page 15 illustrates the plug on the power cord for some of the countries or regions listed in Table 8 on page 14.

Figure 3: AC Plug Types



Related Documentation

- [AC Power Electrical Safety Guidelines on page 160](#)
- [AC Power Supply in the NSM4000 Appliance on page 15](#)
- [Replacing the AC Power Supply Cord on an NSM4000 Appliance on page 112](#)

AC Power Supply in the NSM4000 Appliance

An NSM4000 appliance ships with a single AC power supply module, shown in [Figure 4 on page 16](#). An additional AC power supply module can be installed to provide redundancy.



NOTE: While it is possible to provide redundancy in the NSM4000 appliance using a combination of AC and DC power supply modules, we recommend that you *do not* provide redundancy in this manner. Instead, use two AC power supply modules or two DC power supply modules if you want to provide redundancy.

Figure 4: AC Power Supply Module

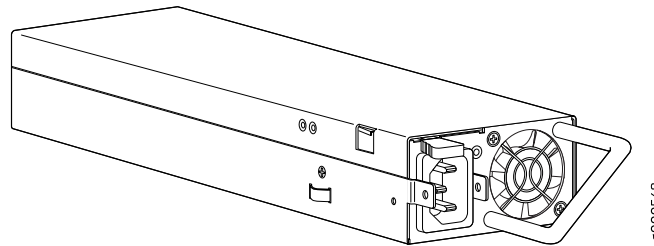


Table 9 on page 16 shows details of the AC power supply module for an NSM4000 appliance.

Table 9: Details of an AC Power Supply Module

Item	Details
Model number	UNIV-250W-PS-AC
Field replaceable unit type	<p>Cold-swappable, if the appliance has only one power supply module</p> <p>Hot-swappable, if the appliance has an additional redundant, functioning power supply module that is plugged into a separate power circuit</p>
Power supply module weight	2.05 lb. (0.93 kg)
Fans	One internal fan per power supply module
Airflow	From the front of the chassis to the back
Power Supply Module (Status) LED	<p>One Power Supply Module LED present on the power supply faceplate:</p> <ul style="list-style-type: none"> Green indicates that the power supply module is working properly; the module is powered on and is powering the appliance. Amber indicates that the power supply module is in standby mode; the module is powered on but it is not powering the appliance. Off indicates that the power supply module is not powered on or that the module is not working properly.
AC Input Voltage	100 to 240 VAC

Table 9: Details of an AC Power Supply Module (*continued*)

Item	Details
AC Input Line Frequency	50 to 60 Hz
Peak Inrush Current	<ul style="list-style-type: none"> 40 A maximum at 115 VAC and 77° F (25° C) 80 A maximum at 240 VAC and 77° F (25° C)
Maximum Output Power	250 W
Power Module Maximum Efficiency	80Plus 250 W AC

Related Documentation

- [AC Power Electrical Safety Guidelines on page 160](#)
- [Connecting AC Power to the NSM4000 Appliance on page 35](#)
- [Replacing the AC Power Supply Module on an NSM4000 Appliance on page 113](#)

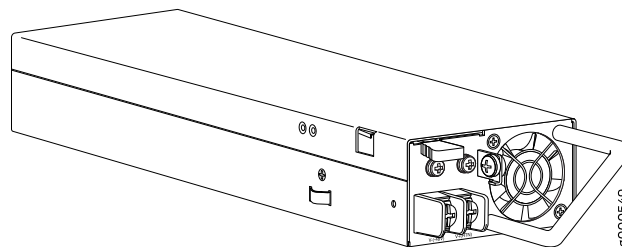
DC Power Supply in the NSM4000 Appliance

An NSM4000 appliance ships with a single AC power supply module. However, you can use a DC power supply, shown in [Figure 5 on page 17](#), to power the appliance.



NOTE: While it is possible to provide redundancy in the NSM4000 appliance using a combination of AC and DC power supply modules, we recommend that you *do not* provide redundancy in this manner. Instead, use two DC power supply modules or two AC power supply modules if you want to provide redundancy.

Figure 5: DC Power Supply Module



[Table 10 on page 17](#) shows details of the DC power supply module for an NSM4000 appliance.

Table 10: Details of a DC Power Supply Module

Item	Details
Model number	UNIV-560W-PS-DC

Table 10: Details of a DC Power Supply Module (*continued*)

Item	Details
Field-Replaceable Unit type	<p>Cold-swappable, if the appliance has only one power supply module</p> <p>Hot-swappable, if the appliance has an additional redundant, functioning power supply module that is plugged into a separate power circuit</p>
Power supply weight	2.60 lb (1.18 kg)
Fans	One internal fan per power supply module
Airflow	From the front of the chassis to the back
Power Supply Module (Status) LED	<p>One Power Supply Module LED present on the power supply faceplate:</p> <ul style="list-style-type: none"> Green indicates that the power supply module is working properly; the module is powered on and is powering the appliance. Amber indicates that the power supply module is in standby mode; the module is powered on but it is not powering the appliance. Off indicates that the power supply module is not powered on or that the module is not working properly.
Maximum Output Power	560 W
DC Maximum Current	20 A
DC Power Module	–45 V to –60 V
DC Power Supply Peak inrush	< 60 A
Power Module Maximum Efficiency	80Plus 560 W cDC

Related Documentation

- [DC Power Electrical Safety Guidelines on page 162](#)
- [Connecting DC Power to the NSM4000 Appliance on page 37](#)
- [Replacing the DC Power Supply Cable on an NSM4000 Appliance on page 115](#)
- [Replacing the DC Power Supply Module on an NSM4000 Appliance on page 117](#)

Chassis Console Port Pinouts

Table 11 on page 19 describes the details of the RJ-45 chassis console port pinouts for the NSM4000 appliances.

Table 11: RJ-45 Console Connector Pinouts for NSM4000 Appliances

Pin	Signal	Description
1	RTS Output	Request to Send
2	DTR Output	Data Terminal Ready
3	TxD Output	Transmit Data
4	GND	Chassis Ground
5	GND	Chassis Ground
6	RxD Input	Receive Data
7	DSR Input	Data Set Ready
8	CTS Input	Clear to Send

Related Documentation

- [Connecting an NSM4000 Appliance to a Management Console on page 39](#)
- [Connecting an NSM4000 Appliance to the Network on page 40](#)
- [Front Panel of an NSM4000 Appliance on page 4](#)

CHAPTER 3

Site Preparation

- [General Site Guidelines for the NSM4000 Appliance on page 21](#)
- [Site Electrical Wiring Guidelines on page 22](#)
- [Environmental Requirements and Specifications for the NSM4000 Appliance on page 23](#)

General Site Guidelines for the NSM4000 Appliance

The following precautions can help you plan an acceptable operating environment for your NSM4000 appliance and avoid environmentally caused equipment failures:

- Keep the area around the chassis free from dust and conductive material, such as metal flakes.
- 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 electrostatic discharge (ESD) procedures to avoid damaging the equipment. Static discharge can cause components to fail, either completely or intermittently over time.



NOTE: Install the appliance 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.

Related Documentation

- [Environmental Requirements and Specifications for the NSM4000 Appliance on page 23](#)
- [General Electrical Safety Guidelines and Warnings on page 157](#)
- [General Safety Guidelines and Warnings on page 135](#)
- [Preventing Electrostatic Discharge Damage on page 158](#)

Site Electrical Wiring Guidelines

Table 12 on page 22 describes the factors you must consider while planning the electrical wiring at your site.



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

Table 12: Site Electrical Wiring Guidelines

Site Wiring Factor	Guidelines
Signaling limitations	<p>If your site experiences any of the following problems, consult experts in electrical surge suppression and shielding:</p> <ul style="list-style-type: none"> Improperly installed wires cause radio frequency interference (RFI). Damage from lightning strikes occurs when wires exceed recommended distances or pass between buildings. Electromagnetic pulses (EMPs) caused by lightning damage unshielded conductors and electronic devices.
Radio frequency interference	<p>To reduce or eliminate radio frequency interference (RFI) from your site wiring:</p> <ul style="list-style-type: none"> Use a twisted-pair cable with a good distribution of grounding conductors. If you must exceed the recommended distances, use a high-quality twisted-pair cable with one ground conductor for each data signal when applicable.
Electromagnetic compatibility	<p>If your site is susceptible to problems with electromagnetic compatibility (EMC), particularly from lightning or radio transmitters, seek expert advice.</p> <p>Some of the problems caused by strong sources of electromagnetic interference (EMI) are as follows:</p> <ul style="list-style-type: none"> Destruction of the signal drivers and receivers in the appliance. Electrical hazards as a result of power surges conducted over the lines into the equipment.

Related Documentation

- [Environmental Requirements and Specifications for the NSM4000 Appliance on page 23](#)
- [General Electrical Safety Guidelines and Warnings on page 157](#)
- [General Safety Guidelines and Warnings on page 135](#)
- [General Site Guidelines for the NSM4000 Appliance on page 21](#)

Environmental Requirements and Specifications for the NSM4000 Appliance

The appliance must be installed in a rack housed in a dry, clean, well-ventilated, and temperature-controlled environment.

Ensure that the following environmental guidelines are followed:

- Keep the site as dust-free as possible, because dust can clog air intake vents and filters, reducing the efficiency of the appliance cooling system.
- Maintain ambient airflow for normal appliance operation. If the airflow is blocked or restricted, or if the intake air is too warm, the appliance might overheat.

[Table 13 on page 23](#) provides the required environmental conditions for normal appliance operation and [Table 14 on page 23](#) the environmental specifications for storing the appliance (nonoperational).

Table 13: Environmental Specifications for Appliance Operation

Description	Tolerance
Altitude	No performance degradation to 10,000 ft (3048 m)
Relative humidity	Normal operation ensured in the relative humidity range of 8% to 90%, noncondensing
Temperature	Normal operation ensured in the temperature range of 41° F to 104° F (5° C to 40° C)

Table 14: Environmental Specifications for Appliance Storage

Description	Tolerance
Altitude	The appliance can be stored safely up to 40,000 ft (12,192 m).
Relative humidity	The appliance can be stored safely in the relative humidity range of 5% to 95%, noncondensing.
Temperature	The appliance can be stored safely in the temperature range of –40° F to 158° F (–40° C to 70° C).

Related Documentation

- [General Safety Guidelines and Warnings on page 135](#)
- [General Site Guidelines for the NSM4000 Appliance on page 21](#)

CHAPTER 4

Mounting Requirements

- [NSM4000 Appliance Rack Requirements on page 25](#)
- [Tools and Parts Required to Install the NSM4000 Appliance on page 26](#)

NSM4000 Appliance Rack Requirements

The NSM4000 appliance can be installed in a rack. Many types of racks are acceptable, including front-mount racks and two-post (telco) racks.

[Table 15 on page 25](#) provides the details of requirements for rack size, clearance, airflow, spacing of mounting brackets and flange holes, and connecting to the building structure.

Table 15: Rack Requirements for the NSM4000 Appliance

Rack Requirement	Specifications
Size	<p>A 19-in. (48.3-cm) rack as defined in Cabinets, Racks, Panels, and Associated Equipment (document number EIA-310-D) published by the Electronic Components Industry Association (http://www.eciaonline.org/eiastandards/).</p> <p>A 600-mm rack as defined in the four-part Equipment Engineering (EE); European telecommunications standard for equipment practice (document numbers ETS 300 119-1 through 119-4) published by the European Telecommunications Standards Institute (http://www.etsi.org).</p> <p>The horizontal spacing between the rails in a rack that complies with this standard is wider than the appliance's mounting brackets, which measure 19 in. (48.3 cm) from outer edge to outer edge. Use approved wing devices to narrow the opening between the rails as required.</p>
Clearance	<ul style="list-style-type: none">• The outer edges of the mounting brackets extend the width of either chassis to 19 in. (48.3 cm).• The front of the chassis extends approximately 0.5 in. (1.27 cm) beyond the mounting ears.

Table 15: Rack Requirements for the NSM4000 Appliance (*continued*)

Rack Requirement	Specifications
Spacing of mounting bracket and flange holes	<ul style="list-style-type: none"> The holes within each rack set are spaced at 2-U [3.5 in. (8.9 cm)]. Therefore, the appliance can be mounted in a rack that provides holes or hole patterns spaced at 2-U [3.5 in. (8.9 cm)] increments, or in a rack that provides holes or hole patterns spaced at 1-U [1.75 in. (4.5 cm)] increments as long as there is 2x1-U space available in the rack. 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 2-U [3.5 in. (8.9 cm)] increments, or in a rack that provides holes or hole patterns spaced at 1-U [1.75 in. (4.5 cm)] increments as long as there is 2x1-U space available in the rack. The mounting holes in the mounting brackets provided with the device are spaced 1.25 in. (3.2 cm) apart (top and bottom mounting holes).
Connecting to the building structure	Always secure the rack in which you are installing the appliance 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.

- Related Documentation**
- [Mounting the NSM4000 Appliance on page 30](#)
 - [Rack-Mounting Warnings on page 147](#)
 - [Tools and Parts Required to Install the NSM4000 Appliance on page 26](#)

Tools and Parts Required to Install the NSM4000 Appliance

Table 16 on page 26 lists the tools and equipment required for installing and maintaining the NSM4000 appliance.

Table 16: Required Tools and Parts for Installing the NSM4000 Appliance

Task	Tools and Parts
Installing the appliance	<ul style="list-style-type: none"> • Phillips (+) screwdriver, number 2 • Phillips (+) screwdriver, number 3 • (Optional) Tie wrap
Connecting the appliance	(Optional) ESD grounding wrist strap Phillips (+) screwdriver, number 1 for connecting the power supply wires and the grounding wire for the DC power supply module
Packing the appliance	<ul style="list-style-type: none"> • Electrostatic bag or antistatic mat, for each component • (Optional) ESD grounding wrist strap

- Related Documentation**
- [NSM4000 Appliance Rack Requirements on page 25](#)
 - [Mounting the NSM4000 Appliance on page 30](#)

PART 3

Installing and Connecting the NSM4000 Appliance and Appliance Components

- [Installing the Appliance on page 29](#)
- [Connecting the Appliance on page 35](#)
- [Performing Initial Configuration on page 41](#)
- [Configuring NSM from the CLI on page 55](#)
- [Configuring NSM from the Web Interface on page 63](#)

CHAPTER 5

Installing the Appliance

- [Unpacking the NSM4000 Appliance on page 29](#)
- [Mounting the NSM4000 Appliance on page 30](#)
- [Front-and-Rear-Mounting the NSM4000 Appliance Flush to a Rack on page 30](#)
- [Front-and-Rear-Mounting the NSM4000 Appliance Recessed in a Rack on page 31](#)
- [Mid-Mounting the NSM4000 Appliance in a Two-Post Rack on page 32](#)

Unpacking the NSM4000 Appliance

The NSM4000 appliance is shipped in a cardboard carton along with the items listed in [Table 17 on page 30](#).



CAUTION: The NSM4000 appliance is maximally protected inside the shipping carton. Do not unpack it until you are ready to begin installation.



WARNING: The shipping dimensions of an NSM4000 appliance are 17.81 in. x 17.31 in. x 3.5 in. (45.2 cm x 44 cm x 8.89 cm), and the appliance shipping weight is 28.05 lb (12.72 kg). Use the correct lifting technique when you move the appliance. (Refer to [“Chassis Lifting Guidelines for the NSM4000 Appliance” on page 146](#) for more details.)

To unpack the appliance:

1. Move the shipping carton to a staging area as close to the installation site as possible, ensuring that you have enough room to remove the system components.
2. Position the carton so that the arrows are pointing up.
3. Open the top flaps on the shipping carton.
4. Pull out the packing material holding the appliance in place.
5. Read [“General Safety Guidelines and Warnings” on page 135](#) carefully.
6. Remove the appliance from the shipping carton.

7. Verify the appliance chassis components received against the packing list.
[Table 17 on page 30](#) lists the items provided with the appliance.
8. Save the shipping carton and packing materials in case you need to move or ship the appliance later.

Table 17: Items in the NSM4000 Appliance Shipping Carton

Component	Quantity
NSM4000 appliance chassis	1
Power cable	1
Mounting kits	2
RJ-45 to DB-9F cable with adapter, 7 ft console cable	1
7-ft, blue, Category 5e cable	2
Safety Information Reference for Hardware Platforms	1

Related Documentation

- [NSM4000 Appliance Rack Requirements on page 25](#)
- [Mounting the NSM4000 Appliance on page 30](#)
- [Tools and Parts Required to Install the NSM4000 Appliance on page 26](#)

Mounting the NSM4000 Appliance

You can mount the NSM4000 appliance in one of the following ways:

- Front and rear flush to a rack—Refer to [“Front-and-Rear-Mounting the NSM4000 Appliance Flush to a Rack” on page 30](#) for details.
- Front and rear recessed in a rack—Refer to [“Front-and-Rear-Mounting the NSM4000 Appliance Recessed in a Rack” on page 31](#) for details.
- Midmounted in a two-post rack—Refer to [“Mid-Mounting the NSM4000 Appliance in a Two-Post Rack” on page 32](#) for details.

Related Documentation

- [NSM4000 Appliance Rack Requirements on page 25](#)
- [Tools and Parts Required to Install the NSM4000 Appliance on page 26](#)

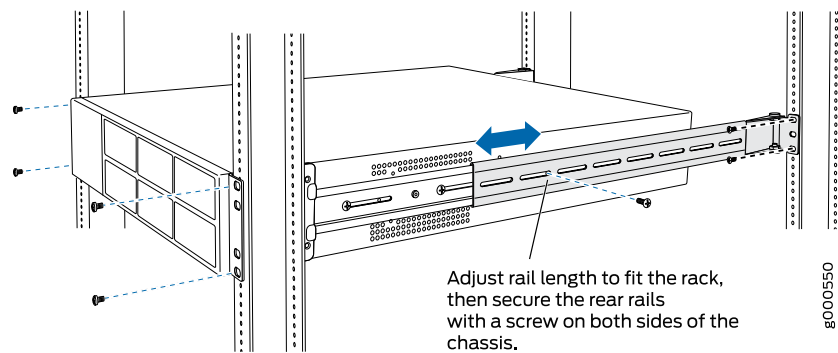
Front-and-Rear-Mounting the NSM4000 Appliance Flush to a Rack

This mounting option is used for larger chassis that require additional support when mounted on the rack-mount system.

To mount the NSM4000 appliance front and rear flush to a rack:

1. Insert four rack-mount screws on each side of the appliance to secure the front of the chassis to the equipment rack.
2. Slide the rear-mount rail brackets into the backs of the front rails on either side of the chassis and align with your rear equipment rack posts, as shown in [Figure 6 on page 31](#).
3. Secure the rear-mount rail brackets to your equipment rack with two rack-mount screws each.
4. Insert locking screws on the sides of the rear-mount brackets to secure the front and rear mounting brackets in place.

Figure 6: Front-and-Rear-Mounting Flush to a Rack



5. Verify that the mounting screws on one side of the rack are aligned with the mounting screws on the opposite side and that the appliance is level.

Related Documentation

- [Front-and-Rear-Mounting the NSM4000 Appliance Recessed in a Rack on page 31](#)
- [NSM4000 Appliance Rack Requirements on page 25](#)
- [Mid-Mounting the NSM4000 Appliance in a Two-Post Rack on page 32](#)
- [Tools and Parts Required to Install the NSM4000 Appliance on page 26](#)

Front-and-Rear-Mounting the NSM4000 Appliance Recessed in a Rack

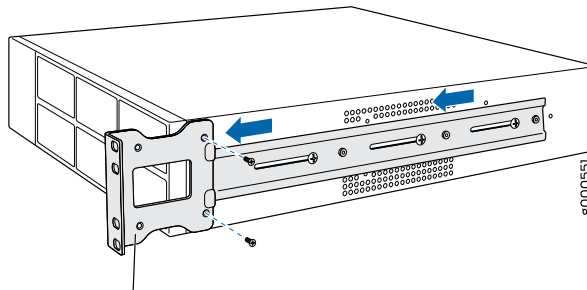
This mounting option provides additional front clearance in the equipment rack. It is used for a larger chassis that requires additional support when mounted on the rack-mount system.

To mount the NSM4000 appliance front and rear recessed in a rack:

1. Remove the rear screws on each side of the appliance's front rails and the two small screws toward the front of the chassis.
2. Loosen the side-rail screws of the chassis and slide the front rails of the system backward, as far as they will move.
3. Tighten the side-rail screws.

4. Insert the two small screws in the recessed holes on the front rails and tighten.
5. Slide the rear-mount rail brackets into the backs of the front rails on either side of the chassis and align with your rear equipment rack posts. Secure the rear-mount rail brackets to your equipment rack with two rack-mount screws each, as shown in [Figure 7 on page 32](#).

Figure 7: Front-and-Rear-Mounting Recessed in a Rack



Mounting bracket, positioned forward for recessed mounting.

6. Insert locking screws on the sides of the rear-mount brackets to secure the front and rear mounting brackets in place.
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 appliance is level.

The recessed position allows network and console cables to be routed through the sides of the equipment rack and through the holes of the recessed front rails on either side of the unit. This enables easy cable routing on the racks with limited cable management.

Related Documentation

- [Front-and-Rear-Mounting the NSM4000 Appliance Flush to a Rack on page 30](#)
- [NSM4000 Appliance Rack Requirements on page 25](#)
- [Mid-Mounting the NSM4000 Appliance in a Two-Post Rack on page 32](#)
- [Tools and Parts Required to Install the NSM4000 Appliance on page 26](#)

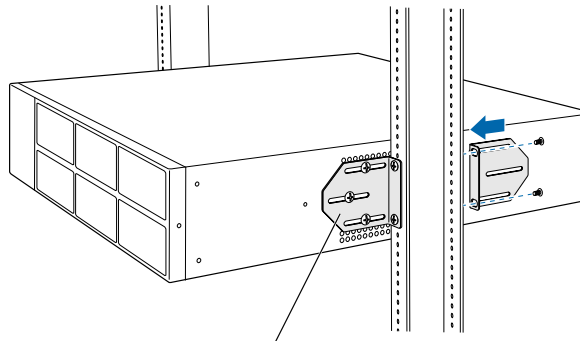
Mid-Mounting the NSM4000 Appliance in a Two-Post Rack

This option is suitable for a two-post equipment rack. It allows the appliance to be mounted so that there is even clearance on the front and rear of the rack.

To mount the appliance in a two-post rack:

1. Remove the two front-mount rails from either side of the chassis.
2. Insert one mid-mount bracket to the center on either side of the chassis.
3. Attach the chassis to the equipment rack and insert the other two mid-mount brackets on either side of the appliance to secure the chassis to the back of the post, as shown in [Figure 8 on page 33](#).

Figure 8: Mid-Mounting in a Two-Post Rack



Attach the front bracket to the chassis, and secure the chassis to the post. Attach the rear bracket to the other side of the post, and secure the chassis to the rear bracket, adjusting the bracket width as needed.

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4. Verify that the mounting screws on one side of the rack are aligned with the mounting screws on the opposite side and that the appliance is level.

Related Documentation

- [Front-and-Rear-Mounting the NSM4000 Appliance Flush to a Rack on page 30](#)
- [Front-and-Rear-Mounting the NSM4000 Appliance Recessed in a Rack on page 31](#)
- [NSM4000 Appliance Rack Requirements on page 25](#)
- [Tools and Parts Required to Install the NSM4000 Appliance on page 26](#)

CHAPTER 6

Connecting the Appliance

- [Connecting AC Power to the NSM4000 Appliance on page 35](#)
- [Connecting DC Power to the NSM4000 Appliance on page 37](#)
- [Connecting an NSM4000 Appliance to a Management Console on page 39](#)
- [Connecting an NSM4000 Appliance to the Network on page 40](#)

Connecting AC Power to the NSM4000 Appliance

Before you begin connecting AC power to an NSM4000 appliance:

- Ensure that you have grounded the appliance.



CAUTION: Grounding for NSM4000 appliances is provided through the power supply ground. Ensure that you connect the AC power supply module in the appliance into a grounded AC power outlet by using an AC power cord (with the grounding pin) appropriate for your geographical location. (See [“AC Power Cord Specifications for the NSM4000 Appliance” on page 14](#) for more information.)

- Install the power supply module in the chassis. For instructions on installing a power supply module in an NSM4000 appliance, see [“Replacing the AC Power Supply Module on an NSM4000 Appliance” on page 113](#).



NOTE: Each power supply module must be connected to a dedicated power source outlet.

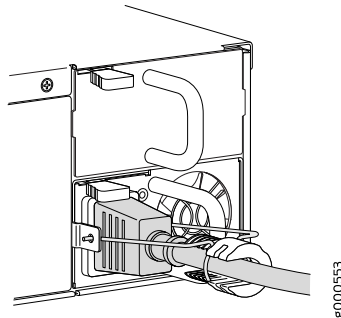
Ensure that you have the following parts and tools available:

- (Optional) Electrostatic discharge (ESD) grounding strap
- A power cord appropriate for your geographical location

To connect AC power to the NSM4000 appliance:

1. (Optional) Attach an electrostatic discharge (ESD) grounding strap to your bare wrist and connect the strap to an external ESD point.
2. Ensure that the power supply module is fully inserted into the chassis.
3. Squeeze the two sides of the power cord retainer clip and insert the L-shaped ends of the wire clip into the holes in the bracket on each side of the AC power cord inlet on the faceplate of the AC power supply module, as shown in [Figure 9 on page 36](#).

Figure 9: Connecting an AC Power Supply Module



4. Locate the power cord or cords shipped with the appliance; the cords have plugs appropriate for your geographical location



WARNING: Ensure that the power cord does not block access to appliance components or drape where people can trip on it.

5. Insert the coupler end of the power cord into the AC power cord inlet on the faceplate of the AC power supply module.
6. Push the cord into the slot in the adjustment nut of the power cord retainer. Turn the nut until it is tight against the base of the coupler and the slot in the nut is turned 90° from the top of the appliance, as shown in [Figure 9 on page 36](#).
7. If the AC power source outlet has a power switch, set it to the OFF position.
8. Insert the power cord plug into an AC power source outlet.
9. If the AC power source outlet has a power switch, set it to the ON position.

The NSM4000 appliance starts powering on when you supply power to the power supply module. If the power supply module is correctly installed and functioning normally, the LED on the power supply module displays green when the power supply module is powering the appliance, and amber when the power supply module is in standby mode (not powering the appliance).

Related Documentation

- [AC Power Supply in the NSM4000 Appliance on page 15](#)
- [General Electrical Safety Guidelines and Warnings on page 157](#)
- [Preventing Electrostatic Discharge Damage on page 158](#)

- [Replacing the AC Power Supply Module on an NSM4000 Appliance on page 113](#)

Connecting DC Power to the NSM4000 Appliance

Before connecting the NSM4000 appliance to a DC power source:

- Ensure that you have read the guidelines in [“DC Power Electrical Safety Guidelines” on page 162](#).
- Ensure that you have taken the necessary precautions to prevent ESD damage.
- Ensure that you have grounded the appliance by connecting the DC power supply grounding cable to earth ground.



CAUTION: Before you connect power to the NSM4000 appliance, in order to meet the safety requirements and ensure proper operation, get a licensed electrician to attach a cable lug to the grounding and power cables that you supply. A cable with an incorrectly attached lug can damage the appliance (for example, by causing a short circuit).

- Ensure that you have the following parts and tools available:
 - (Optional) Electrostatic discharge (ESD) grounding strap
 - DC power source cables (12-14 AWG) with ends of the wire stripped ~12mm and twisted
 - Phillips (+) screwdriver, number 1

You connect DC source power to the appliance by attaching power cables from external DC power sources to the terminal studs on the DC power supply module faceplates.



WARNING: DC-powered NSM4000 appliances are intended for installation only in restricted access locations.



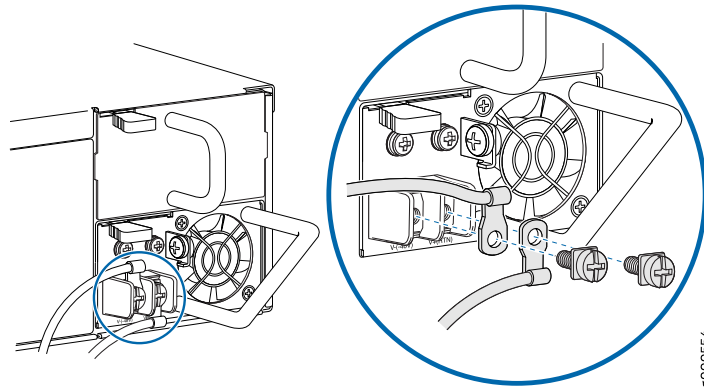
WARNING: Before you perform the following procedure, ensure that power is removed from the DC circuit. To ensure that all power is off, locate the circuit breaker on the panel board that services the DC circuit, switch the circuit breaker to the OFF position, and tape the switch handle of the circuit breaker in the OFF position.

To connect the DC source power to the NSM4000 appliance:

1. (Optional) Attach an electrostatic discharge (ESD) grounding strap to your bare wrist and connect the strap to an external ESD point.
2. Ensure that the power supply module is fully inserted in the chassis.

3. Ensure that the input circuit breaker is open so that the voltage across the DC power source cable leads is 0 V and that the cable leads will not become active when you connect the DC power.
4. Remove the clear plastic cover protecting the terminal on the faceplate.
5. Remove the screws on the terminals by using the screwdriver. Save the screws.
6. Connect the stripped and twisted wires to wire clamps under the DC terminal screws as shown in [Figure 10 on page 38](#).

Figure 10: Connecting a DC Power Supply Module

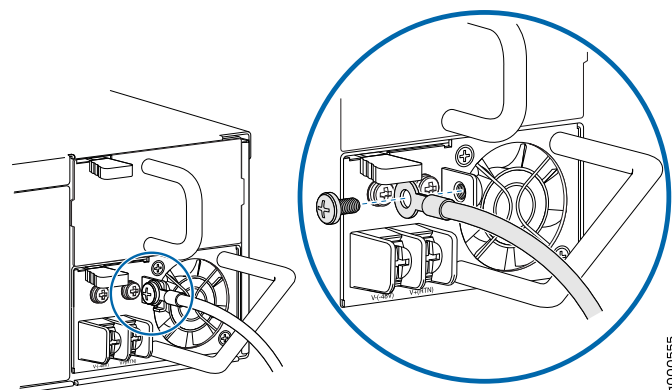


7. Use the terminal screws to secure the power source cables to the power feed on the appliance by attaching the twisted wires that are attached to the cables to the appropriate terminals.

8. Remove the screw on the grounding terminal by using the screwdriver. Save the screw.

The grounding terminal is located to the right and above the terminals, as shown in [Figure 11 on page 38](#).

Figure 11: DC Power Supply Grounding



9. Connect the grounding lug to the earthing terminal using the screw, as shown in [Figure 11 on page 38](#).

10. Attach the plastic safety cover.
11. Close the input circuit breaker.

The NSM4000 appliance starts powering on when you supply power to the power supply module. If the power supply module is correctly installed and functioning normally, the LED on the power supply module displays green when the power supply module is powering the appliance, and amber when the power supply module is in standby mode (not powering the appliance).

Related Documentation

- [DC Power Grounding Requirements and Warning on page 164](#)
- [DC Power Supply in the NSM4000 Appliance on page 17](#)
- [General Electrical Safety Guidelines and Warnings on page 157](#)
- [DC Power Disconnection Warning on page 163](#)
- [DC Power Wiring Sequence Warning on page 165](#)
- [DC Power Wiring Terminations Warning on page 167](#)
- [Preventing Electrostatic Discharge Damage on page 158](#)

Connecting an NSM4000 Appliance to a Management Console

You can configure and manage an NSM4000 appliance by using a dedicated console. Every appliance has a console port with an RJ-45 connector. Use the console port to connect the appliance to the management console or to a console server. Ensure that you have an Ethernet cable with an RJ-45 connector available. An RJ-45 cable, as shown in [Figure 12 on page 39](#), and an RJ-45 to DB-9 serial port adapter are supplied with the appliance.

Figure 12: Ethernet Cable Connector



To connect the appliance to a management console:

1. Connect the RJ-45 to DB-9 serial port adapter to the serial port of the management device (laptop or PC) that you will use to access the NSM4000 CLI.



NOTE: If your laptop or PC does not have a DB-9 male connector pin and you want to connect your laptop or PC directly to the appliance, use a combination of the RJ-45 to DB-9 female adapter supplied with the appliance and a USB to DB-9 male adapter. You must provide the USB to DB-9 male adapter.

2. Connect one end of the Ethernet cable into the console port (labeled **CONSOLE**) on the front panel of the appliance.

3. Connect the other end of the Ethernet cable into the RJ-45 to DB-9 serial port adapter.

Related Documentation

- [Connecting an NSM4000 Appliance to the Network on page 40](#)
- [Setting Up Your NSM4000 Appliance on page 42](#)
- [Chassis Console Port Pinouts on page 18](#)

Connecting an NSM4000 Appliance to the Network

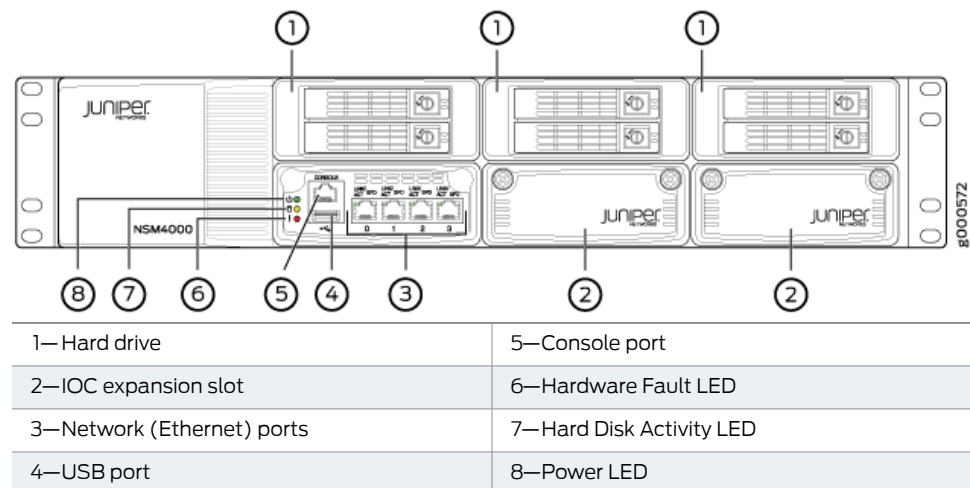
Although the NSM4000 appliance has four Ethernet interfaces, only two can be used; the other two Ethernet interfaces are reserved for future use.

- On the NSM4000 appliance, the Ethernet interfaces that can be used are labeled **3** and **2**. You can configure an NSM4000 appliance to use only the Ethernet interface **3**, or both Ethernet interfaces, **3** and **2**.

To connect the appliance to the network:

1. (Optional) Attach an electrostatic discharge (ESD) grounding strap to your bare wrist and connect the strap to an external ESD point.
2. Plug one end of the Ethernet cable into the port labeled **3**, as shown in [Figure 13 on page 40](#), on the front panel.

Figure 13: NSM4000 Appliance Front Panel



3. Plug the other end of the Ethernet cable into the network.
4. (Optional) If you are using both Ethernet interfaces, plug one end of the Ethernet cable into the port labeled **2**.

Related Documentation

- [Connecting an NSM4000 Appliance to a Management Console on page 39](#)
- [Booting the NSM4000 Appliance on page 41](#)
- [Setting Up Your NSM4000 Appliance on page 42](#)

CHAPTER 7

Performing Initial Configuration

- [Booting the NSM4000 Appliance on page 41](#)
- [Setting Up Your NSM4000 Appliance on page 42](#)
- [Configuring a Regional Server on page 45](#)
- [Powering Off the NSM4000 Appliance on page 49](#)
- [NSM4000 Appliance Ports on page 52](#)

Booting the NSM4000 Appliance

When you first turn on an unconfigured NSM4000 appliance, you need to enter basic network and machine information through the serial console to make your NSM4000 appliance accessible to the network. After entering these settings, you can continue configuring the appliance using the CLI. You are not prompted for the initial setup information again.

To configure the NSM4000 appliance for the first time, you must attach your NSM4000 appliance to a console terminal running an emulation utility such as HyperTerminal.

1. Configure a console terminal or terminal emulation utility to use the following serial connection parameters:
 - 9600 bits per second
 - 8-bit no parity (8N1)
 - 1 stop bit
 - No flow control
2. Connect the terminal or laptop to the null modem serial cable plugged into the NSM4000 appliance console port.
3. Turn on the NSM4000 appliance.

The NSM4000 appliance is shipped with a version of the NSM 2012.2R7 software installed. When the NSM4000 appliance is powered on, the serial console displays diagnostic information before proceeding to the boot countdown. When complete, the serial console displays the following login prompt terminal emulator:

```
Juniper NSMXpress Appliance  
NSM 2012.2R7
```

NSM4000.juniper.net login:

You are now ready to configure basic settings on the appliance.

- Related Documentation**
- [Setting Up Your NSM4000 Appliance on page 42](#)
 - [Configuring a Regional Server on page 45](#)
 - [NSM4000 Appliance Ports on page 52](#)

Setting Up Your NSM4000 Appliance

This section provides the minimum information necessary to make your NSM4000 appliance active on the network.

To log in and set up your NSM4000 appliance:

1. Enter **admin** as your default login name.
2. Enter **abc123** as your default password.
3. Change your default password when prompted. Enter the default password first, followed by your new password.



NOTE: All passwords are case-sensitive.

4. Enter the IP address for the interface eth0.



NOTE: The ports 3/2/1/0 in the NSM4000 appliance are used as interfaces eth0/eth1/eth2/eth3, respectively.

5. Enter the subnet mask for the interface eth0.
6. Enter the default gateway address for the interface eth0.

[Figure 14 on page 43](#) is an example of how to set up the NSM4000 appliance.

Figure 14: NSM4000 Serial Console

```

Juniper NSMExpress Appliance
NSM 2012.2R7

NSM4000.juniper.net login: admin
Password: *****

Welcome to NSM4000 Initial Installation Setup
...changing admin password
Enter current password: *****

Changing password for user admin.
New password: *****

BAD PASSWORD: it is too simplistic/systematic
BAD PASSWORD: is too simple
Retype new password: *****|
passwd: all authentication tokens updated successfully.

--- NSM operational mode ---
Your NSMExpress appliance is a Regional Server.

Please enter new IP address for interface eth0
10.204.92.111

Please enter new subnet mask for interface eth0
255.255.254.0

Enter the default gateway as a dotted-decimal IP address:
10.204.93.254

Applying Changes...
Re-loading database
ADDRCONF(NETDEV_UP): eth0: link is not ready
Determining if ip address 10.204.92.111 is already in use for device eth0...
RTNETLINK answers: File exists
Done!
Release version updated successfully
Upgrading the Postgresql packages to 8.4.10...

Your NSMExpress is now active on the network.
To configure your system via a web browser, connect to:
https://10.204.92.111/administration

To configure your system via command line, type:
nsm_setup

For operation of NSM server, switch to user "nsm".
Please consult NSM product documentation for details.

[admin@NSM4000 ~]$

```

**NOTE:**

- From your second login, the serial console displays the following prompt if you are not logged in:

```
Juniper NSMXpress Appliance
NSM 2012.2R7
NSM4000.juniper.net login: admin
Password:
Last login: Wed Oct 1 02:22:21 on ttyS0
Run NSM4000 system setup? [y/N]
```

Enter n to exit from the system setup program.

- These values are not case-sensitive. However, the uppercase N indicates it is the default value. Any keystroke, including Enter but not y or Y, accepts the default value.

-
7. Enter **sudo su -** at the command prompt to log in as a root user.

The serial console prompts to enter the admin password as displayed below:

```
[admin@NSM4000 ~]$ sudo su -
[sudo] password for admin:
[root@NSM4000 ~]#
```



NOTE: An NSM appliance has three user levels. All users log in as the admin user. To use the command line to administer NSM, change to the nsm user. For advanced administration, change to the root user.

The following users are available to manage an appliance:

- admin user—Logs in to the NSM appliance setup program and changes to nsm user or root user from the command line.
- nsm user—Administers NSM services. To change to the nsm user from the admin user, go to the \$ prompt, enter **sudo su - nsm** for the \$ prompt, then enter the admin password you set when logging in to the NSM appliance. To return to the admin user, enter **exit** at the \$ prompt.
- root user—Administers advanced system settings. To change to the root user from the admin user, go to the \$ prompt, enter **sudo su - root** for the # root prompt, then enter the admin password you set when logging in to the NSM appliance. To return to the admin user, enter **exit** from the # prompt.

-
8. Enter the admin password.
 9. Enter **nsm_setup** at the command prompt to configure the NSMXpress settings.

Related Documentation

- [Booting the NSM4000 Appliance on page 41](#)
- [Configuring a Regional Server on page 45](#)

- [NSM4000 Appliance Ports on page 52](#)

Configuring a Regional Server

This section describes the options that are available for reconfiguring the regional server.

After you enter **nsm_setup** at the command prompt, the serial console displays the following NSMXpress settings menu:

```
[root@NSM4000 ~]# nsm_setup
Welcome to the NSMXpress network settings utility.
Initializing, please wait NSMXpress Settings Menu
1> Change Password
2> Set Interfaces
3> Set Routing
4> Change Hostname
5> Set DNS Servers
6> Change Time Options
7> Forward Local Status Emails
8> System Security Update
9> Reconfigure NSM Regional Server
10> Configure Extended HA
Q> Quit
R> Redraw menu
```

For details on using the general setup menu items, see [“Navigating the Menus” on page 55](#).

From the NSMXpress settings menu, enter **9** to configure the NSM regional server.

The serial console displays the following options to configure the regional server:

```
NSM Configuration Main Menu
1> Management IP [10.204.92.114]
The IP address on this server that will be
used for management
2> NSM 'super' password []
Password for 'super' user
3> GUI server one-time password []
Password to initiate authentication
between HA peers and to Central Manager.
This password must be the same for all
NSM servers in this installation.
4> Cfmuser password []
CfmPassword for ConfigFileVersions directory
5> FIPS Support [n]
Enable FIPS Support or not
6> NSM License type []
Specify a license file, or select "Base Install"
to use the built-in limited device license.
```

7> Menu: High Availability [Off]
8> Menu: Advanced Options
A> Apply settings
C> Cancel all changes and quit
R> Redraw menu
Choice [1-8,A,C,R]:

The following sections provide details of these options:

- [Configuring Settings on page 46](#)
- [Configuring Optional Settings on page 46](#)

Configuring Settings

This section describes the options that are available for a typical installation for the regional server:

You have the following options:

- Management IP—Enter 1 to select interface eth0 or eth1 as the primary IP address for your management server. Once configured, the setup program displays the IP address for the interface you selected.
- NSM 'super' password—Enter 2 to specify an NSM super password. This password must be at least eight characters long and is case-sensitive. This password is used by the NSM super user (also referred to as the NSM administrator). This user has the highest level of privilege in NSM.
- GUI Server one-time password—Enter 3 to specify this password. This password authenticates this server to its peers in a high availability configuration.
- Cfmuser password—Enter 4 to specify a cfmuser password. This password is used to authenticate the **ConfigFileVersions** directory.
- NSM License type [] — Enter 6 to specify the license option. Enter **Base Install** to use the built-in limited device license for as many as 25 devices. This option is the default. Otherwise, enter the filename of the license file you purchased from Juniper Networks that permits you to manage more than 25 devices.

For additional details about NSM licensing, see the *Network and Security Manager Installation Guide*.

Configuring Optional Settings

This section describes the custom options that are available for a regional server configuration. The custom options include the typical options described in the previous section as well as the following two options:

5> FIPS Support [n]
Enable FIPS Support or not
7> Menu: High Availability [Off]
8> Menu: Advanced Options

You have the following options:

- FIPS Support—Enter **5** to enable or disable FIPS support.
- High Availability—Enter **7** to open a menu to configure HA.
- Advanced Options—Enter **8** to open a menu of additional configurable options, including the port number for receiving messages through the NSM API, remote database replication details, and the statistical report server (SRS).

The following sections provide details about these options:

- [Configuring High Availability on page 47](#)
- [Configuring Advanced Options on page 48](#)

Configuring High Availability



NOTE: When you install an NSM regional server in an HA configuration with a shared disk, you must first revert the system to factory default values using the boot menu. See [“Installing an NSM4000 ISO Image on the NSM4000 Appliance Using a USB Drive” on page 97](#) for details.

The following options are available to configure high availability (HA) on the regional server.

- High Availability—Enter **1** to turn HA on or off.
- Primary Status—Enter **2** to specify the NSM4000 appliance as either the primary or secondary server. At the next prompt, enter **y** for the primary server. Enter **n** for a secondary server.
- HA Remote IP—Enter **3** to specify the IP address for the HA peer in the HA cluster.
- HA Link Failure Detection IP—Enter **4** to specify the IP address of a machine outside the HA cluster that you can ping to verify connection status.
- HA Inter-server password—Enter **5** to specify the heartbeat password used between the primary and secondary servers.
- Menu: Shared Disk—Enter **6** to open a menu to help you configure a shared disk. NSM4000 appliances support shared disks with NFS only. Because of the data-intensive nature of NSM, we recommend gigabit speed links (1000 Mbps) for shared disk usage. For more information on options available to you for custom settings, refer to the *Network and Security Manager Installation Guide*.
- Menu: HA Links—Enter **7** to open a menu to help you configure the second HA link in the HA cluster. Use the items in this menu to set up a redundant link for the HA cluster. If you are going to use a second link, you need to set the IP address for `eth1` before configuring this setting (see “Setting Interface Options” in [“Configuring Standard Configuration Options” on page 56](#) for more information). Setting a redundant link is optional. For more information on options available to you for custom settings, refer to the *Network and Security Manager Installation Guide*.

If you configure HA with just one heartbeat link, then device management traffic and data replication traffic both use that link. If you configure two links, device management traffic uses the first link and data replication uses the second.

If the HA link count is set to 1, the only options available are to set the HA link count and to return to the High Availability menu. If the HA link count is set to 2, all options are available.

- Menu: HA Advanced Settings—Enter **8** to open a menu to configure HA advanced settings. For more information on options available to you for custom settings, refer to the *Network and Security Manager Installation Guide*.

Configuring Advanced Options

The Advanced Options menu provides the following configuration options:

You have the following options:

- https port for NBI service—Enter **1** to change the port number for listening for messages for the NSM API. In response to the prompt, enter a value in the range 1025 through 65535. Any number outside this range returns an error message. The default value is 8443.
- Menu: Remote Replication of Database—Enter **2** to display a menu of options for configuring the time of day to take the backup, the location of the backup, and the timeout value.
- Menu: SRS—Enter **3** to open a menu to configure the statistical report server (SRS).

The following sections provide details about configuring remote backup and SRS:

- [Enabling and Configuring Remote Replication of the Database on page 48](#)
- [Enabling and Configuring the Statistical Report Server on page 49](#)

Enabling and Configuring Remote Replication of the Database

On the Advanced Options menu, enter **2** to open a menu that allows you to mirror the daily backup to an external server. You can toggle it on or off. After you turn it on, use the menu options to configure this option.:

The screen always shows the current status of the remote backup database. If no status exists, the option has not yet been configured.

- Remote Replication of Database—Enter **1** to turn remote replication on or off. At the next prompt, enter **y** to change the state.
- Hour of day to Replicate Database—Enter **2** to start the backup at the specified time. The valid range is 00–23.
- Remote Backup IP—Enter **3** to specify the IP address of the remote backup machine. Backup information is copied to the `/var/netscreen/dbbackup` directory on the remote

server. The nsm user must exist on both servers and you must establish an SSH trust relationship. See the *Network and Security Manager Installation Guide* for details.

- Remote Replication Timeout—Enter **4** to time out the remote backup. The valid range is 1-65535 seconds.

Enabling and Configuring the Statistical Report Server

The following options are available for configuring the SRS:



NOTE: The SRS must be installed on a separate server from NSM.

You have the following options:

- SRS—Enter **1** to turn the SRS on or off. At the next prompt, enter **y** to turn it on or **n** to turn it off. If you turn it on, the SRS will be used with the GUI server.
- SRS DB IP—Enter **2** to specify the IP address for the server on which you have installed the SRS database server.
- SRS DB Type—Enter **3** to specify the database type. The options are `pgsql` (default), `oracle`, and `mssql`.
- SRS Database Name—Enter **4** to specify the name of the SRS database on the SRS server. The default value for this option is `netscreen`.
- SRS DB Owner Name—Enter **5** to specify the name of the SRS database owner. The default value for this option is `netscreen`.
- SRS DB Owner Password—Enter **6** to specify the owner password for the SRS database. At least eight characters are required. The password is case-sensitive.

Related Documentation

- [Navigating the Menus on page 55](#)
- [Configuring Standard Configuration Options on page 56](#)
- [NSM4000 Appliance Ports on page 52](#)

Powering Off the NSM4000 Appliance

The three ways to power off an NSM4000 appliance are:

- [Powering Off Using the Management Console on page 49](#)
- [Powering Off Using the WebUI on page 50](#)
- [Powering Off Using the Appliance Power Switch on page 50](#)

Powering Off Using the Management Console

You can power off the NSM4000 appliance from the NSM CLI by using the management console.

Before you begin:

- Connect the NSM4000 appliance to a management console. Refer to [“Connecting an NSM4000 Appliance to a Management Console” on page 39](#) for more information.
- Configure a console terminal or terminal emulation utility to use the following serial connection parameters:
 - Baud rate: 9600 bits per second
 - Data: 8 bits
 - Flow control: None
 - Parity: None
 - Stop bits: 1
- Ensure that the appliance is booted and the console displays the login prompt.

To power off the appliance using the management console:

1. At the console login prompt, enter the **sudo su-** command to log in to the appliance as the root user.
2. Enter the admin password.
3. Enter the following commands to perform the specified tasks:
 - Enter the **reboot** command to reboot the NSM4000 appliance.
 - Enter the **shutdown -h now** command to shut down the NSM4000 appliance.

The appliance displays output messages on the management console and then powers off. When the appliance is powered off, the green Power LED on the front panel of the appliance goes out; in addition, the Power Supply Module LED turns amber.

Powering Off Using the WebUI

For information on how to power off the NSM4000 appliance using the WebUI, see “Rebooting or Shutting Down the NSM4000 Appliance” in [“Managing System Administration” on page 68](#).

Powering Off Using the Appliance Power Switch

To power off the NSM4000 appliance using the appliance power switch:

1. Locate the appliance power switch on the back panel of the appliance chassis.
2. Press the power switch and release it.

The appliance displays output messages on the management console and then powers off.



.....

NOTE: If the appliance hangs or is not responding, then you can hard-power-off the appliance by pressing down the appliance power switch and holding it down for 10 seconds. After the appliance powers off, release the power switch.

.....

When the appliance is powered off, the green Power LED on the front panel of the appliance goes out; in addition, the Power Supply Module LED turns amber.

**Related
Documentation**

- [General Electrical Safety Guidelines and Warnings on page 157](#)
- [General Safety Guidelines and Warnings on page 135](#)
- [Installing and Removing NSM4000 Appliance Hardware Components on page 111](#)

NSM4000 Appliance Ports

Table 18 on page 52 provides required port information for the NSM4000 appliance.

Table 18: Required Ports on NSM4000

Direction	Port	Description	LAN	Internet	Depends on Configuration
In	22	SSH command-line management	Yes	No	No
	443	Web interface for administrator login	Yes	No	No
	8443	Web interface for listening for NSM API messages	LAN	Yes	Yes
	7800	Connections from managed devices to NSM4000	Yes	Yes	No
	7808	Connections from the NSM GUI client to NSM	Yes	No	No
	7802	Heartbeat between peers in an HA cluster	Yes	No	Yes
	7803	Connections from managed IDP devices to NSM	Yes	Yes	Yes
	7804	Connections from devices running Junos OS, Secure Access devices, or Infranet Controller devices	Yes	Yes	Yes
Out	22	SSH connection to new managed device	Yes	Yes	No
	23	Telnet connection to new managed device	Yes	No	Yes
	53	DNS lookups	Yes	No	No
	80	System security updates from Juniper Networks	No	Yes	Yes
	111	Shared disk portmap lookup	Yes	No	Yes
	123	Network Time Protocol (NTP) time synchronization	Yes	Yes	Yes
	2049	Shared disk NFS connection	Yes	No	Yes

For more information on ports, refer to the *Network and Security Manager Installation Guide*.

**Related
Documentation**

- [Installing an NSM4000 ISO Image on the NSM4000 Appliance Using a USB Drive on page 97](#)
- [Setting Up Your NSM4000 Appliance on page 42](#)
- [Configuring a Regional Server on page 45](#)

CHAPTER 8

Configuring NSM from the CLI

- [Navigating the Menus on page 55](#)
- [Configuring Standard Configuration Options on page 56](#)
- [Installing the Patch for the NSM4000 License Key File on page 61](#)

Navigating the Menus

As you configure NSM on your NSM4000 appliance, the following standard navigational menu options are available to you. This section provides information on general options you can use during setup and configuration.

The NSM Configuration main menu has the following options:

NSM Configuration Main Menu

1> Management IP [10.204.92.114]

The IP address on this server that will be used for management

2> NSM 'super' password []

Password for 'super' user

3> GUI server one-time password []

Password to initiate authentication between HA peers and to Central Manager. This password must be the same for all

NSM servers in this installation.

4> Cfmuser password []

CfmPassword for ConfigFileVersions directory

5> FIPS Support [n]

Enable FIPS Support or not

6> NSM License type []

Specify a license file, or select "Base Install" to use the built-in limited device license.

7> Menu: High Availability [Off]

8> Menu: Advanced Options

A> Apply settings

C> Cancel all changes and quit

R> Redraw menu

Choice [1-8,A,C,R]:

To select an option, enter the number at the prompt and then press **Enter**. The following options are available on most menus:

- Numbered Options — Enter setting options by number (1, 2, and so on) to access individual parameters or open menus.
- Apply settings — Enter **A** to apply and save any modifications you have made and take you out of the setup program.
- Cancel all changes and quit — Enter **C** to leave the setup program without saving any changes you made since you last saved.
- Redraw menu — Enter **R** to redraw the screen text.
- Main Menu/Return to Main Menu — Enter **M** to return to the main menu. This option is last on most menus.
- Quit — Enter **Q** to exit from the setup program. You will be prompted to save or cancel any changes you made since you last saved:

Q> Quit

R> Redraw menu

Choice [1–9,Q,R]: Q

**Related
Documentation**

- [Setting Up Your NSM4000 Appliance on page 42](#)
- [Configuring a Regional Server on page 45](#)
- [Configuring Standard Configuration Options on page 56](#)

Configuring Standard Configuration Options

After the initial setup, continue configuring typical options, including the following tasks. Follow the setup prompts on the main menu to set or modify these options. Your configuration options (with the exception of any password changes) will not take effect until you apply the changes.

Run `nsm_setup` to access these options on the NSM4000 appliance settings menu:

- [Changing the Password on page 57](#)
- [Setting Interface Options on page 57](#)
- [Setting Routing Options on page 58](#)
- [Changing the NSM4000 Appliance Hostname on page 58](#)
- [Adding DNS Servers on page 58](#)
- [Setting the System Time on page 59](#)
- [Forwarding Local Status E-Mails on page 59](#)
- [Updating System Security on page 60](#)
- [Configuring Extended HA on page 60](#)
- [Saving Setup Options on page 60](#)

Changing the Password

To change your password:

1. On the NSM4000 appliance settings menu, enter **1** at the prompt.
2. Enter **y** when prompted to change the password for an admin user.
3. Type the new password and press **Enter**.
4. Retype the new password and press **Enter**.

Your password is changed and the setup program returns you to the NSM4000 appliance settings menu.

Setting Interface Options

The NSM4000 appliance has four ethernet ports labeled **0**, **1**, **2**, and **3**. During initial setup, you specify the eth0 interface options. Use this menu to set interface options for any interface.



NOTE: If you are going to use another link, you need to configure an IP address for the corresponding interface using this setting.

To set or modify interface options:

1. On the NSM4000 appliance Settings menu, enter **2** at the prompt. The menu shows the existing status of each interface.
2. Set or modify options for one of the interfaces by selecting one of the following options:
 - 1 to modify eth0
 - 2 to set or modify eth1
 - 3 to set or modify eth2
 - 4 to set or modify eth3
3. Make the following selection for interface options by selecting one of the following options:
 - 1 to change the IP address and return to the NSM4000 appliance Settings menu
 - 2 to go to the next step
4. Make the following selection for physical parameters (such as interface speed) by selecting one of the following options:
 - 1 to set the auto-negotiate option and return to the main menu
 - 2 to set the physical parameters manually and go to the next step
5. Select the interface speed by entering one of the following options:
 - 1 for 10 Mbps and go to the next step

- 2 for 100 Mbps and go to the next step
 - 3 for 1000 Mbps and go to the next step
6. Enter 1 for full duplex or 2 for half duplex, and then return to the NSM4000 appliance Settings menu.

Setting Routing Options

To set or modify routing options:

1. On the NSM4000 appliance Settings menu, enter **3** at the prompt.
2. Enter one of the following options:
 - 1 to change default gateway options.
Follow the prompts to change the IP address of the default gateway and return to the NSM4000 appliance Settings menu.
 - 2 to change the static routing options.

Follow the prompts to add a new static route and return to the NSM4000 appliance Settings menu.

Changing the NSM4000 Appliance Hostname

To change the hostname:

1. On the NSM4000 appliance Settings menu, enter **4** at the prompt.
2. Enter **y** at the verification prompt to continue.
3. Enter the new hostname and press **Enter** to return to the settings menu.



NOTE: If a hostname consisting of 4 or more labels is changed to a different hostname, also with 4 or more labels, the previous hostname alias might remain in the `/etc/hosts` file. This condition can be corrected by manually editing the `/etc/hosts` file.

Adding DNS Servers

You can add up to three DNS servers. Enter each one using dotted decimal notation. Each addition returns you to the main menu. If you want to add more DNS servers, repeat the following procedure.

To add the DNS servers:

1. On the NSM4000 appliance Settings menu, enter **5** at the prompt.
2. Enter 1 to add a name server.
3. When prompted, enter the new name server in dotted decimal notation.

Setting the System Time

You can change time zones or the Network Time Protocol (NTP) configuration. The default time zone is set for Pacific Standard Time (PST)/Pacific Daylight Time (PDT). Select time zones in the following order:

- Continent or ocean
- Country
- Region



NOTE: NTP is disabled by default. We recommend that you enable this option to ensure that the time is always accurate.

To change time options:

1. On the NSM4000 appliance Settings menu, enter **6** at the prompt.
2. Enter **1** to change the time zone.

Follow the prompts to find the time zone you want based on the options listed earlier. The final selection returns you to the NSM4000 appliance Settings menu.

3. Enter **2** to set NTP servers.

NTP servers automatically set the system clock based on external time sources.

4. Enter one of the following values at the prompt:

- 1 to enable or disable NTP.
- 2 to add an NTP server.

The remaining numbered options allow you to remove an NTP server from the list.

5. Follow the prompts to enable, set, or delete the NTP servers and return to the NSM4000 appliance Settings menu.

Forwarding Local Status E-Mails

You can use this option to forward all local root e-mail messages to an e-mail address. You can add an unlimited number of e-mail addresses in addition to mailing lists to help manage large numbers of recipients.

To set the Forward Local Status:

1. On the NSM4000 appliance Settings menu, enter **7** at the prompt.
2. Enter **1** to add or change the recipient.
3. Enter **2** to remove the recipient.

Updating System Security

System security updates are NSM4000 appliance operating system-level patches that protect the system against any future reported security vulnerabilities. The NSM4000 appliance checks for new updates daily by connecting to Juniper Networks.

To manage system security updates:

1. On the NSM4000 appliance Settings menu, enter **8** at the prompt.
2. Enter one of the following values to select the option:
 - 1 to check for and install security updates now.
 - 2 to enable or disable automatic security updates.
 - 3 to check for and install the latest available NSM4000 appliance version.
 - 4 to set the proxy for security update check.
3. Follow the prompts to manage security updates and then return to the NSM appliance Settings menu.

Configuring Extended HA

The extended high availability configuration is the most extensive and complex configuration but has the greatest protection against component failure. A failure of the primary Device server would cause failover to the standby Device server. This new Device server would attempt connection with the primary GUI server. Failure of a GUI server would also cause failover to the standby GUI server. The current Device server would attempt to connect to the standby GUI server after a timeout period. In this configuration the failure of a single component has minimal impact on the system as a whole. In addition, the distributed system gives each service more system resource.

To configure extended HA:

1. On the NSM4000 appliance Settings menu, enter 10 at the prompt.
2. The serial console displays the following warning:
WARNING: Configuring for Extended HA will clean the existing build completely Do you want to continue(y/n):
3. Enter **y** to continue with the extended HA configuration.

For additional details about configuring extended HA, see the *Network and Security Manager Installation Guide*.

Saving Setup Options

Before you configure the regional server, the NSM4000 appliance opens the Apply Change submenu. If you quit out of a menu after making changes, the NSM4000 appliance also opens this screen and prompts you to save your changes. Updates are enabled by default.

You have three options for saving changes:

- At the prompt, enter one of the following menu options:
 - A to apply all the new changes.
 - M to make more changes before configuring the regional server.
 - C to cancel all new changes and quit the NSM4000 appliance setup program. After you cancel a change, the Change Apply submenu reappears.
- Enter the number next to a displayed change to cancel only the selected change.
- Highlight one of the options you modified and delete it.

**Related
Documentation**

- [Navigating the Menus on page 55](#)
- [Setting Up Your NSM4000 Appliance on page 42](#)
- [Configuring a Regional Server on page 45](#)

Installing the Patch for the NSM4000 License Key File

This section describes the procedure for installing the patch for the NSM4000 license key file.

The serial number of the NSM4000 appliance has a new format. In the 2012.2R7, 2012.2R8 and 2012.2R9 releases, you need to install a patch that enables NSM to identify the new format of the NSM4000 appliance serial number.



NOTE: You need not install the licensing patch for NSM2012.2R10 and later versions because this issue is addressed in these releases.

To install the patch for the NSM4000 license key file:

1. At the console login prompt, enter the **sudo su-** command to log in to the appliance as a root user.
2. Enter the admin password.
3. Enter the **/etc/init.d/guiSvr stop** command to stop the GUI server.
4. Enter the **cp <Jar_file_name> /usr/netscreen/GuiSvr/lib/classes/** command to copy the patch to **/usr/netscreen/GuiSvr/lib/classes/**.
5. Enter the **chown nsm:nsm <Jar_file_name>** command to change the patch ownership to NSM.
6. Enter the **vi /usr/netscreen/GuiSvr/bin/.guiSvrLicenseManager** command to add a patch entry to the **.guiSvrLicenseManager** file available at **/usr/netscreen/GuiSvr/bin**.

The console prompt displays the following output after the **.guiSvrLicenseManager** file has been modified:

```
#  
# Set up the JAVA CLASSPATH necessary to run this  
# application. Path is separated by colons (Unix).  
#  
CLASSPATH="$CLASS_DIR/<jar_file_name>:$CLASS_DIR/mail.jar:$CLASS_DIR/foxtrot.jar:  
$CLASS_DIR/log4j.jar:$CLASS_DIR/java_cup.jar:$CLASS_DIR/jlex.jar:$CLASS_DIR/jsafe.jar:  
$CLASS_DIR/certj.jar:$CLASS_DIR/backend.jar:$CLASS_DIR/sshtools.jar:$CLASS_DIR/jdom.jar:  
$CLASS_DIR/javachart.jar:$CLASS_DIR/jakarta-regexp-1.3.jar:$CLASS_DIR/com.ice.tar.jar:  
$CLASS_DIR/log4j-1.2.8.jar:$CLASS_DIR/cobertura.jar:$CLASS_DIR/velocity-dep-1.4.jar:  
$CLASS_DIR/bcprov-jdk16-141.jar:$CLASS_DIR/bcpg-jdk16-141.jar:$CLASS_DIR/commons-lang-2.6.jar"
```

7. Enter the `/etc/init.d/guiSvr start` command to start the GUI server.

For additional details about NSM licensing, see the *Network and Security Manager Installation Guide*.

**Related
Documentation**

- [Navigating the Menus on page 55](#)
- [Configuring Standard Configuration Options on page 56](#)

CHAPTER 9

Configuring NSM from the Web Interface

- [Managing NSM Administration on page 63](#)
- [Managing System Administration on page 68](#)
- [Viewing System Statistics on page 85](#)
- [Viewing System Information on page 87](#)

Managing NSM Administration

Expand NSM Administration in the left navigation tree to access the options described in this section. These options are available only after installing NSM.

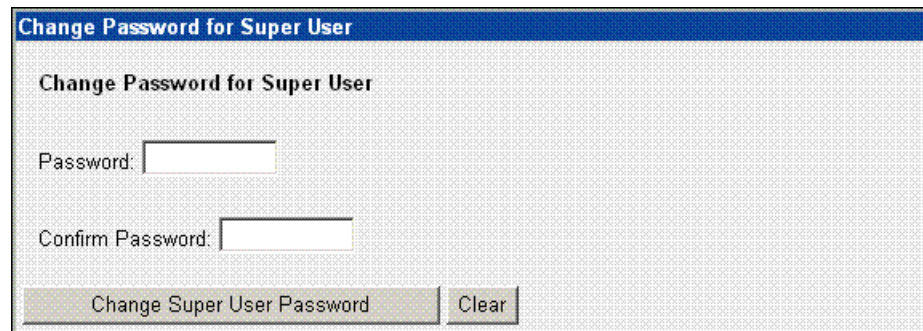
The following sections explain how to use each of the NSM Administration options:

- [Changing the Super User Password on page 63](#)
- [Downloading NSM MIBS \(Regional Server Only\) on page 64](#)
- [Exporting Audit Logs on page 64](#)
- [Exporting Device Logs \(Regional Server Only\) on page 64](#)
- [Generating Reports \(Regional Server Only\) on page 65](#)
- [Modifying NSM Configuration Files on page 65](#)
- [Backing Up the NSM Database on page 66](#)
- [Changing the NSM Management IP on page 67](#)
- [Scheduling Security Updates on page 67](#)

Changing the Super User Password

To change the super user password, select **NSM Administration > NSM Super User Password**. See [Figure 15 on page 64](#).

Figure 15: Change Super User Password



The screenshot shows a web form titled "Change Password for Super User" in a blue header bar. Below the header, the title is repeated. There are two text input fields: "Password:" and "Confirm Password:". At the bottom, there are two buttons: "Change Super User Password" and "Clear".

Downloading NSM MIBs (Regional Server Only)

To download any available MIBs, select **NSM Administration** > **Download NSM MIBs**, and then click **Download MIB**. See [Figure 16 on page 64](#).

Figure 16: Download NSM MIBs



The screenshot shows a web form titled "Download NSM MIBs" in a blue header bar. Below the header, there is a single button labeled "Download MIB".

Exporting Audit Logs

To export audit logs, select **NSM Administration** > **Export Audit Logs**. See [Figure 17 on page 64](#).

Figure 17: Export Audit Logs



The screenshot shows a web form titled "Export Audit Logs" in a blue header bar. Below the header, there is a section labeled "Select Export Type:" with a drop-down menu currently showing "csv". Below the drop-down is a text input field. A label "Enter csv file-name" is positioned below the text field. At the bottom, there is a button labeled "Export Audit Logs".

To export an audit log to a csv file, select **csv** in the drop-down list box, and then enter the csv filename in the text box.

To export an audit log to a system log server, select **syslog** in the drop-down list box, and then enter the server IP address, if it is not the local host.

Exporting Device Logs (Regional Server Only)

To export device logs, select **NSM Administration** > **Export Device Logs**. See [Figure 18 on page 65](#).

Figure 18: Export Device Logs

Generating Reports (Regional Server Only)

To generate reports, select **NSM Administration** > **Generate Reports**. See [Figure 19 on page 65](#).

Figure 19: Generate Reports



NOTE: The user is an NSM administrator and not an NSM4000 appliance user. Enter a username as domain/user, such as global/super.

Modifying NSM Configuration Files

To manually edit the **GuiSrv.cfg**, **DevSvr.dfg** and **HaSvr.cfg** files, select **NSM Administration** > **Modify NSM Configuration Files**. The example in [Figure 20 on page 66](#) shows the option to modify the **GuiSrv.cfg** file.

Figure 20: NSM Configuration Files

NSM Configuration Files

GuiSvr.cfg **DevSvr.cfg** **HaSvr.cfg**

The page allows you to manually edit the /usr/netscreen/GuiSvr/var/guiSvr.cfg . Be careful, as no syntax checking will be done on your edits.

The server will be restarted once the changes are made.

```
# this file contains just enough info for the processes
# to start up. Each process should pull its complete
# configuration from the NML DB

setuid.user          nsm
clientId             0
peerGuiSvrId         2
clientOneTimePassword dk2003ns

default.printLevel    warn
default.printProperties where=file, sync=0, maxfilenum=25
#statusMonitor.printLevel debug
#statusMonitor.printProperties where=file, sync=1, maxfilenum=250
#guiSvrDirectiveHandler.printLevel debug
#guiSvrLicenseManager.printLevel debug
#guiSvrMasterController debug
guiSvrLicenseManager.licenseFile /usr/netscreen/GuiSvr/var/license/license.
txt

#guiSvrManager.printLevel debug
```



NOTE: If you subsequently change the NSM4000 appliance configuration by using the nsm-setup utility, all manual changes to the configuration files are lost.

Backing Up the NSM Database

To configure backups of the NSM database, select **NSM Administration > NSM Database Backup** under **NSM Administration**. See [Figure 21 on page 67](#).

Figure 21: Database Backup

The screenshot shows the 'Database Backup' configuration page. It has a title bar 'Database Backup'. Below it is a section 'NSM Backup Configuration Parameters' with four rows: 'Local Backup Enabled' with radio buttons for 'y' (selected) and 'n', and a dropdown for 'y'; 'Remote Backup enabled' with radio buttons for 'n' (selected) and 'y', and a dropdown for 'y'; 'Hour of Day to Replicate Database' with radio buttons for '02' (selected) and another empty one, and a dropdown for '00'; and 'Remote Backup IP' with an empty text field. Below this is a 'Submit' button. The next section is 'Execute Backup Now' with an 'Apply' button. The final section is 'Download Database Backup Files' with a 'File to Download' text field containing '/var/netscreen/dbbackup/' and a file explorer icon, followed by a 'Download Backups' button.

Changing the NSM Management IP

To change the IP address of the NSM management server, select **NSM Administration > NSM Management IP** under **NSM Administration**. See [Figure 22 on page 67](#).

Figure 22: Change Management IP

The screenshot shows the 'NSM Management IP' configuration page. It has a title bar 'NSM Management IP'. Below it is a row 'Management Ip' with radio buttons for '172.24.68.111' (selected) and an empty text field.

Scheduling Security Updates

To schedule security updates, select **NSM Administration > Schedule Security Updates**. See [Figure 23 on page 67](#).

Figure 23: Schedule Security Updates

The screenshot shows the 'Schedule Security Updates' configuration page. It has a title bar 'Security Update'. Below it is a 'Select Post Action:' section with a dropdown 'update-devices' and a 'skip' button. Below that is a note 'Update Devices after Attack' and 'Select update device action: Skip(skips update of unconnected device)'. There are 'User:' and 'Password:' text fields. Below them is a note 'Eg: global/super'. There is a 'Schedule Security Updates:' checkbox. Below that are 'Minutes:' (0), 'Hour:' (*), 'Day:' (*), 'Month:' (*), and 'Week Day:' (*) dropdowns. At the bottom are 'Run Security Update' and 'Cancel Security Update' buttons.

- Related Documentation**
- [Setting Up Your NSM4000 Appliance on page 42](#)
 - [Managing System Administration on page 68](#)

- [Viewing System Statistics on page 85](#)
- [Viewing System Information on page 87](#)

Managing System Administration

Use the options on the System Administration menu to perform the tasks described in the following sections:

- [Rebooting or Shutting Down the NSM4000 Appliance on page 68](#)
- [Changing the User Password on page 68](#)
- [Configuring the Network on page 69](#)
- [Managing RADIUS Servers on page 70](#)
- [Monitoring with SNMP on page 73](#)
- [Forwarding Syslog Messages on page 76](#)
- [Changing the System Time on page 80](#)
- [Installing Updates on page 80](#)
- [Managing Users on page 81](#)
- [Configuring the Web Interface on page 85](#)

Rebooting or Shutting Down the NSM4000 Appliance

To reboot or shut down the NSM4000 appliance, select **System Administration > Bootup and Shutdown**, and then click either **Reboot System** or **Shutdown System**. See [Figure 24 on page 68](#).

Figure 24: Reboot or Shut Down



Changing the User Password

To change the user password, select **System Administration > Change User Password**, fill out the form shown in [Figure 25 on page 68](#), and then click **Change**.

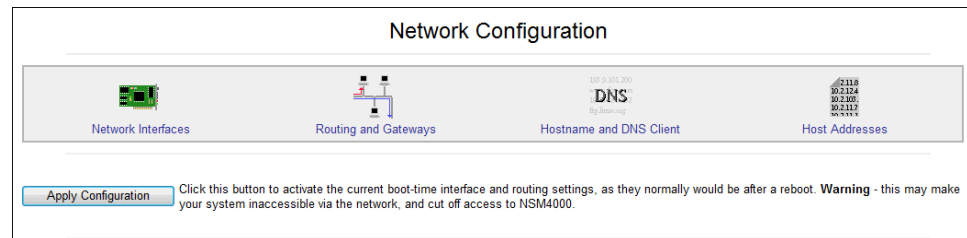
Figure 25: Change User Password

A screenshot of a web form titled "Changing NSM4000 user password" in a blue header bar. The form is for changing the password for the "admin" user. It contains three input fields: "Old password", "New password", and "New password (again)". At the bottom left of the form are two buttons: "Clear form" and "Change".

Configuring the Network

To access options that allow you to configure the network, select **System Administration** > **Network Configuration**. The Network Configuration window appears as shown in [Figure 26 on page 69](#).

Figure 26: Network Configuration Options



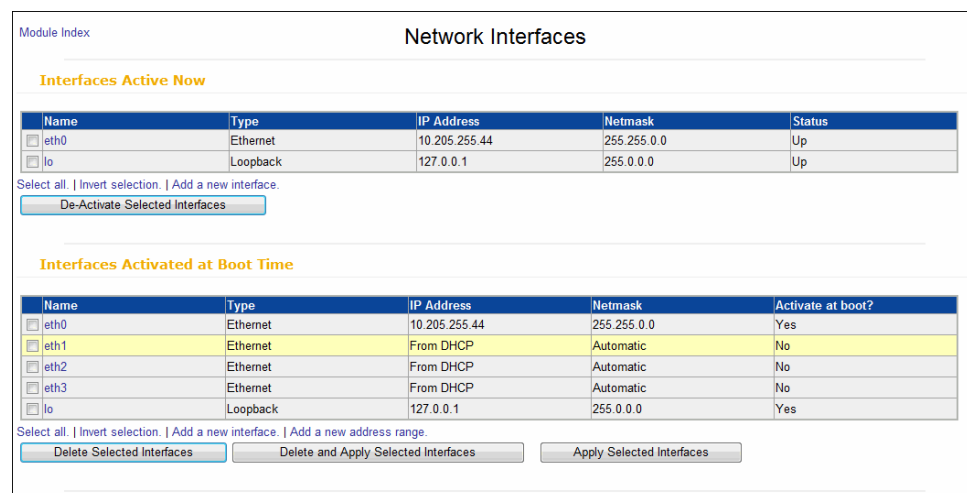
The following sections describe each of the options available in the Network Configuration window:

- [Network Interfaces on page 69](#)
- [Routing and Gateways on page 69](#)
- [Hostnames and DNS Clients on page 70](#)
- [Host Addresses on page 70](#)

Network Interfaces

Use this option to manage the network interfaces. See [Figure 27 on page 69](#).

Figure 27: Network Interfaces



Routing and Gateways

Use this option to configure and manage routes and gateways. See [Figure 28 on page 70](#).

Figure 28: Routes and Gateways

Module Index Routing and Gateways

Routing configuration activated at boot time

Default routes

Interface	Gateway
eth0	10.205.255.254

Act as router? ☐ Yes ☒ No

Static routes

Interface	Network	Netmask	Gateway

Local routes

Interface	Network	Netmask

[Save](#)

Active Routes

Destination	Gateway	Netmask	Interface
<input type="checkbox"/> 10.205.0.0	None	255.255.0.0	eth0
<input type="checkbox"/> 169.254.0.0	None	255.255.0.0	eth0
<input type="checkbox"/> Default Route	10.205.255.254		eth0

[Delete Selected Routes](#)

Create active route

Route destination ☒ Default route ☐

Netmask for destination ☐ Default ☒ 255.255.255.255

Route via ☒ Network interface lo ☐ Gateway

[Create](#)

Hostnames and DNS Clients

Use this option to configure and manage hostnames and DNS clients. See [Figure 29 on page 70](#).

Figure 29: DNS Client Options

DNS Client Options

Hostname Resolution order Hosts ☒ DNS ☐

☒ Update hostname in host addresses if changed?

DNS servers Search domains ☒ None ☐ Listed ..

[Save](#)

Host Addresses

Use this option to manage host addresses. See [Figure 30 on page 70](#).

Figure 30: Host Address

IP Address	Hostnames
<input type="checkbox"/> 192.168.0.2	NSM4000.juniper.net, NSM4000.juniper.net, NSM4000.juniper.net, localhost4.localdomain4
<input type="checkbox"/> 127.0.0.1	localhost

Select all | Invert selection | Add a new host address.

[Delete Selected Host Addresses](#)

Managing RADIUS Servers

The NSM4000 appliance WebUI supports authentication of users defined in the RADIUS servers, in addition to authentication of locally defined admin users.

When a user logs in to the NSM4000 appliance using the WebUI, the software first checks the UNIX user database and then the WebUI user database to authenticate the user. If the user is not a locally defined admin user, the software contacts the RADIUS servers added to the RADIUS server list in the Web UI to authenticate the user. The RADIUS servers are contacted in the order of priority set in the RADIUS server list. If any of the RADIUS servers authenticates the user, the user is logged in with the privileges that are associated with the user profile. If none of the servers authenticate the user, the user login fails.



NOTE: The NSM4000 appliance must be configured as a RADIUS client on a RADIUS server so that the RADIUS server responds to authentication requests from the appliance. Select any Juniper make or model in the Make/Model field while adding an NSM4000 appliance as a RADIUS client. You will need to update the Juniper dictionary file (juniper.dct) in the RADIUS server with the Juniper defined Vendor-Specific Attribute (VSA) for the NSM4000 appliance: ATTRIBUTE Juniper-Nsmxpress-Profile Juniper-VSA(6, string) r. You also need to add NSM4000 appliance users with their associated user profiles (SysAdmin, NSMAdmin, Operator, Guest), to the RADIUS database. For more details, see the Steel-Belted Radius Documentation.



NOTE: You need System Administration or NSM Administration permission to manage RADIUS servers in the NSM4000 appliance WebUI.

The following sections explain how to manage a RADIUS server.

- [Adding a RADIUS Server on page 71](#)
- [Changing the Priority of RADIUS Servers on page 72](#)
- [Deleting a RADIUS Server on page 73](#)
- [Editing RADIUS Server Parameters on page 73](#)

Adding a RADIUS Server

To add a RADIUS server:

1. Select **System Administration > RADIUS Management**. The RADIUS servers dialog box appears listing the RADIUS Servers that have been added. See [Figure 31 on page 71](#).

Figure 31: RADIUS Servers Dialog Box

Radius Servers							
RADIUS Servers							
<input type="checkbox"/>	Name	Host	Auth Port	Accounting Port	COA Port	Retries	Timeout
<input type="checkbox"/>	RadiusSvr2	10.204.77.118	1812	1813	4600	1	3
<input type="checkbox"/>	RadiusSvr1	jghosh-dc.jnpr.net	1812	1813	4564	1	3
<input type="button" value="Add"/> <input type="button" value="Delete Selected"/> <input type="button" value="Move Up"/> <input type="button" value="Move Down"/> <input type="button" value="Select All"/>							

2. Click **Add** to add a RADIUS server to the WebUI. The Add RADIUS Server dialog box appears. See [Figure 32 on page 72](#).

Figure 32: Add RADIUS Server Dialog Box

Add Radius Server

Add RADIUS Server

Name	server1
Server address	10.206.144.154
Shared secret
Auth port	1645
Acct port	1646
Disconnect/CoA port	1700
Timeout(secs)	3
Retries	1

Add Clear

[Return to Radius Servers list](#)

3. Configure the following parameters in the Add RADIUS Server dialog box:
 - a. Name: The name of the user to be authenticated by the RADIUS server
 - b. Server address: The IP address or the hostname of the RADIUS server.
 - c. Shared secret: The shared secret the NSM4000 appliance and the RADIUS server use for secure authentication.
 - d. Auth Port: The RADIUS authentication software port. (We recommend UDP port 1812.)
 - e. Acct Port: The RADIUS accounting software port. (We recommend UDP port 1813.)
 - f. Disconnect/CoA port: The change of authorization or disconnect port.
 - g. Timeout (sec): Automatic timeout in second(s) of the RADIUS access request, after which the request is retransmitted, if applicable. Enter a value between 1 and 10 seconds.
 - h. Retries: The number of times the RADIUS access request must be retransmitted for RADIUS authentication. Enter a value between 1 and 5.
4. Click Add. The RADIUS Servers dialog box appears with the RADIUS server you added listed.

Changing the Priority of RADIUS Servers

To change the priority of RADIUS servers:

1. Select **System Administration > RADIUS Management**. The RADIUS Servers dialog box appears listing the RADIUS Servers that have been added.
2. To increase the priority of a RADIUS server, select the check box next to the name of the server whose priority you want to increase, and click **Move Up**.

To decrease the priority of a RADIUS server, select the check box next to the name of the server whose priority you want to decrease, and click **Move Down**.

Deleting a RADIUS Server

To delete a RADIUS server:

1. Select **System Administration > RADIUS Management**. The RADIUS Servers dialog box appears listing the RADIUS servers that have been added.
2. Select the check box next to the name of the server you want to delete, and click **Delete Selected**.



NOTE: You need System Administration permissions to delete RADIUS servers.

Editing RADIUS Server Parameters

To edit the parameters of a RADIUS server:

1. Select **System Administration > RADIUS Management**. The RADIUS Servers dialog box appears listing the RADIUS Servers that have been added.
2. Select the name of the server whose properties you want to edit. The Edit RADIUS Server dialog box appears. See [Figure 33 on page 73](#).

Figure 33: Edit RADIUS Server Dialog Box

Edit Radius Server	
Name	server1
Server address	10.206.144.154
Shared secret
Auth port	1645
Acct port	1646
Disconnect/CoA port	1700
Timeout(secs)	3
Retries	1

Save Clear

← [Return to Radius Servers list](#)

3. Edit the parameters you want to change and click **Save**.

Monitoring with SNMP

You can configure your NSM4000 appliance for SNMP monitoring from a network operations server. The server can then issue periodic SNMP Get instructions to return the status of the NSM4000 appliance.

You configure SNMP on the NSM4000 appliances with access credentials for either SNMP v2c or SNMP v3. NSM4000 appliances support read-only access to the System Descriptor (sysDescr) and Host Resource MIB.

This section provides instructions for configuring NSM appliances for SNMP monitoring. You must provide access credentials for the SNMP server, a list of IP addresses from which logon requests will be accepted, and the trap conditions to be reported to the SNMP server.

To configure SNMP monitoring of your NSM4000 appliance, select **System Administration > SNMP Monitoring**. The SNMP window appears. This window contains the tabs described in the following sections:

- [SNMP Configuration on page 74](#)
- [SNMP System Information on page 75](#)
- [SNMP Trap Configuration on page 75](#)

SNMP Configuration

To configure SNMP:

1. Select **System Administration > SNMP Monitoring**.
2. Select the **SNMP Config** tab, which is shown in [Figure 34 on page 74](#).

Figure 34: Configuring SNMP

The screenshot shows the 'SNMP Config' tab selected. The 'SNMP Configuration' section has three radio buttons: 'Off', 'v2c' (which is selected), and 'v3'. Below these are three input fields: 'User / Community:', 'Password:', and 'Manager IP:'. The 'Manager IP:' section has two radio buttons: 'Any' (selected) and 'Only:', followed by an input field. A 'Save' button is located at the bottom left of the configuration area.

3. Select the version of SNMP to be used, either v2c or v3.
4. Provide authentication information:
 - If you selected SNMP v2c, enter a username.
 - If you selected SNMP v3, enter a username and password.

The password must be at least 8 characters long.

The NSM4000 appliances implement a single username and password, which is effective only for SNMP communication and is not related to any other username and password used on the NSM4000 appliance.

5. To limit SNMP Get requests to specific servers, select **Only**, and then enter the IP addresses of the permitted servers.
6. Click **Save**.

SNMP System Information

To configure SNMP system information:

1. Select **System Administration > SNMP Monitoring**.
2. Select the **System Info** tab, which is shown in [Figure 35 on page 75](#).

Figure 35: Configuring SNMP System Information

3. Enter the following information, which is required for any SNMP-managed device:
 - Contact—Contact information for the appliance.
 - Location—Location of the appliance.
 - Description—A brief description of the appliance.
4. Click **Save**.

SNMP Trap Configuration

To configure SNMP trap conditions:

1. Select **System Administration > SNMP Monitoring**.
2. Select the **SNMP Traps** tab, which is shown in [Figure 36 on page 75](#).

Figure 36: Configuring SNMP Traps

Trigger	Value
<input checked="" type="checkbox"/> Disk space low	15 percent
<input checked="" type="checkbox"/> Memory low	20 percent
<input checked="" type="checkbox"/> CPU high	85 percent
<input checked="" type="checkbox"/> NSM start / stop	
<input checked="" type="checkbox"/> Admin Logon / Logoff	
<input checked="" type="checkbox"/> External IP Unreachable	

3. In the Manager IP field, enter the IP address of the SNMP management server.

4. Select from the following trap conditions:

- Disk space low

Enter the percentage of free disk space below which SNMP issues a trap.

- Memory low

Enter the percentage of free memory below which SNMP issues a trap.

- CPU high

Enter the percentage of CPU use over which SNMP issues a trap.

- NSM start/stop

- Admin Logon/Logoff

- External IP unreachable

Enter the IP address of the required device.

5. Click **Save**.

Forwarding Syslog Messages

The NSM4000 appliances provide a simple mechanism for configuring syslog messaging between the NSM4000 appliance and a syslog receiver running rsyslog, syslog-NG, or basic syslog. This mechanism simplifies choosing syslog receivers, data sources of the messages you want to log, and the message transport used.

For the type of message transport, you can choose among TCP, SSL, and UDP. For rsyslog or syslog-NG implementations use TCP or SSL. SSL adds security to TCP; if you select SSL, the NSM appliance creates a secure tunnel to the syslog receiver. UDP messaging is available for basic syslog implementations.

The following sections provide procedures for managing syslog message forwarding:

- [Viewing Syslog Receivers on page 76](#)
- [Adding and Configuring Syslog Receivers on page 78](#)
- [Editing Syslog Receiver Configurations on page 80](#)
- [Deleting Syslog Receivers on page 80](#)

Viewing Syslog Receivers

To view the syslog receivers configured on your NSM4000 appliance, follow these steps:

1. Select **System Administration > Syslog Forwarding**. The **Syslog Forwarding** window appears. [Figure 37 on page 77](#) shows an example.

Figure 37: Syslog Forwarding Window

Select all | Invert selection | Add new Receiver

Receiver	Address	Type	System	Device Server	GUI Server	HA Server
Select all Invert selection Add new Receiver						
Delete selected receivers						

NSM Data Sources

GUI Server Log	Syslog facility
fingerprintMPK.0	user ▼
generateMPK.0	user ▼
gproGDM.log	user ▼
guiDaemon.0	user ▼
license.log	user ▼
nblservice.log	user ▼
pro.mic.log	user ▼
statusMonitor.0	user ▼
webproxy.log	user ▼
xdbservice.log	user ▼

Device Server Log	Syslog facility
datacollector.log	user ▼
ddhnap.log	user ▼
deviceDaemon.0	user ▼
deviceservice.log	user ▼
gproDDM.log	user ▼
newLogWalker.0	user ▼
pro.dc.log	user ▼
profilerMgr.0	user ▼
statusMonitor.0	user ▼

HA Server Log	Syslog facility
backup.log	user ▼
ha.log	user ▼
highAvail.0	user ▼

[Save](#)

- View the configured syslog receivers in the table in the top portion of the window.
[Table 19 on page 77](#) describes the fields.

Table 19: Viewing Syslog Receivers

Field	Description
Receiver	A name provided by the network administrator to identify the syslog receiver
IP Address	The IP address of the syslog receiver
Type	The protocol used for forwarding messages: UDP, TCP, SSL
Data sources	The data sources configured for forwarding
System	The system logs configured to be sent to this receiver.
Device Server	The device server logs configured to be sent to this receiver.
GUI Server	The GUI server logs configured to be sent to this receiver.
HA Server	The HA server logs configured to be sent to this receiver.

Adding and Configuring Syslog Receivers

To add and configure a syslog receiver, follow these steps:

1. Select **System Administration > Syslog Forwarding**.
2. In the Data Sources section, select the syslog facility for each GUI server log, Device server log, and HA server log. The syslog facility is a field included in the syslog message to help identify the data source.
3. Click **Save**.
4. Click **Add new Receiver**.

The Syslog Receiver configuration window appears, as shown in [Figure 38 on page 79](#).

Figure 38: Configuring a Syslog Receiver

Syslog Receiver

Name:

IP:

Transport: ☒ UDP ☐ TCP ☐ SSL

Data Sources

System Logs

☐ Console messages

☒ Mail log

☒ System updates

NSM

GUI Server Log	Syslog facility
<input type="checkbox"/> fingerprintMPK.0	user
<input checked="" type="checkbox"/> generateMPK.0	user
<input checked="" type="checkbox"/> gproGDM.log	user
<input type="checkbox"/> guiDaemon.0	user
<input checked="" type="checkbox"/> license.log	user
<input type="checkbox"/> nbiservice.log	user
<input type="checkbox"/> pro.mc.log	user
<input checked="" type="checkbox"/> statusMonitor.0	user
<input type="checkbox"/> webproxy.log	user
<input type="checkbox"/> xdbservice.log	user

Device Server Log	Syslog facility
<input checked="" type="checkbox"/> datacollector.log	user
<input checked="" type="checkbox"/> ddhnsd.log	user
<input checked="" type="checkbox"/> deviceDaemon.0	user
<input checked="" type="checkbox"/> deviceservice.log	user
<input checked="" type="checkbox"/> gproDDM.log	user
<input type="checkbox"/> newLogWalker.0	user
<input type="checkbox"/> pro.dc.log	user
<input type="checkbox"/> profilerMgr.0	user
<input type="checkbox"/> statusMonitor.0	user

HA Server Log	Syslog facility
<input type="checkbox"/> backup.log	user
<input type="checkbox"/> ha.log	user
<input checked="" type="checkbox"/> highAvail.0	user

- In the Name field, enter a name for the syslog receiver. This is the name that the syslog receiver will be known by within NSM.
- In the IP field, enter the IP address of the syslog receiver.
- In the Transport field, select the type of syslog receiver:
 - Select **UDP** for basic syslog implementations.
 - Select **TCP** for rsyslog or syslog-NG implementations.

- Select **SSL** to create a secure tunnel to a syslog receiver in rsyslog or syslog-NG implementations.
 - In the System Logs section of the Data Sources table, select the sources of data from which system messages will be forwarded to the syslog receiver. These sources can include NSM4000 appliance system messages, package updates, and mail logs.
 - In the NSM section of the Data sources table, select each GUI server log, device server log, and HA server log to be forwarded to the syslog receiver.
8. Click **Save** to save and apply the configuration.

Editing Syslog Receiver Configurations

To edit a syslog receiver configuration, follow these steps:

1. Select **System Administration > Syslog Forwarding**.
2. In the Syslog Receivers window, click the name of the syslog receiver you want to edit.
The syslog receiver configuration window appears for the selected receiver.
3. Make the desired changes to the configuration.
4. Click **Save** to save and apply your edits to the configuration of this syslog receiver.

Deleting Syslog Receivers

To delete a syslog receiver configuration, follow these steps:

1. Select **System Administration > Syslog Forwarding**.
2. In the Syslog Receivers window, check the box next to each syslog receiver you want to delete.
3. Click **Delete selected receivers**.

The NSM4000 appliance deletes the selected syslog receivers and any secure tunnels configured for their use.

Changing the System Time

To set the system time, select **System Administration > System Time**. From the System Time window, you can perform the following functions:

- Set or change the system time.
- Set the time zone.
- Configure an NTP server to synchronize the system time with an external clock.

Installing Updates

Select **System Administration > System Update** to perform the following tasks:

- Check for updates and install them.

- Enable or disable automatic updates.
- Add or modify proxy settings for the Yum server.

Managing Users

The NSM4000 appliance WebUI allows you to create multiple users with role-based access control to the WebUI. You can create a user in the WebUI and associate the user to a predefined user profile. You can also map a user created in the NSM4000 appliance OS to a predefined user profile in the WebUI. However, this user profile is only applicable to the local OS user in the WebUI.



NOTE: You need System Administration permission to create users.

This topic contains the following sections:

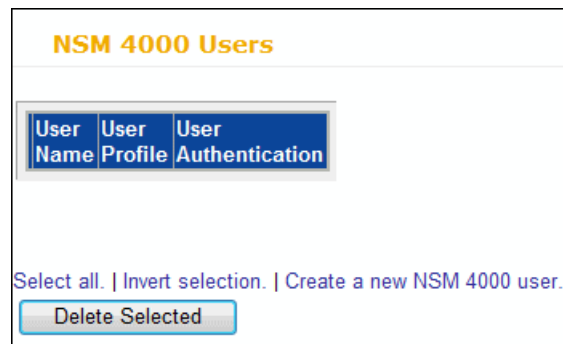
- [Creating New NSM4000 Appliance Users on page 81](#)
- [Deleting a User on page 82](#)
- [Editing User Attributes on page 83](#)
- [Understanding User Profiles on page 83](#)

Creating New NSM4000 Appliance Users

To create a local OS user:

1. Select **System Administration > User Management**. The NSM4000 Users dialog box appears listing all NSM4000 users. See [Figure 39 on page 81](#).

Figure 39: NSM4000 Users Dialog Box



2. Click **Create a new NSM4000 User**. The Create NSM4000 user dialog box appears. See [Figure 40 on page 82](#).

Figure 40: Create NSM4000 User Dialog Box

3. Enter the username in the Username text box.
4. Select **Unix authentication** from the Password drop-down list. The Password and Confirm Password text boxes are then disabled since the password is fetched from the local OS.
5. From the User Profile drop-down list box, select the user profile you want to associate with the local user in the WebUI.
6. Click **Submit**. The NSM4000 Users dialog box appears with the new NSM4000 appliance user listed.

To create a WebUI user:

1. Select **System Administration > User Management**. The NSM4000 Users dialog box appears listing all the NSM4000 appliance users. See [Figure 39 on page 81](#).
2. Click **Create a new NSM4000 User**. The Create NSM4000 user dialog box appears.
3. Enter a username in the Username text box.
4. Select **Set to** from the password drop-down list and enter the password you want to set in the password text box.
5. Reenter the password in the Confirm Password text box.
6. Select the user profile you want to associate with this user from the User Profile drop-down list box.
7. Click **Submit**. The NSM4000 Users dialog box appears with the new NSM4000 appliance user listed.

Deleting a User

To delete a user:

1. Select **System Administration > User Management**. The NSM4000 Users dialog box appears listing all NSM4000 appliance users.
2. Select the check box next to the name of the user you want to delete and click **Delete Selected**. Click **Delete User** in the Delete Users confirmation dialog box that appears.



NOTE: You cannot delete admin users or change their user profiles.

Editing User Attributes

To edit user attributes:

1. Select **System Administration > User Management**. The NSM4000 Users dialog box appears, with all the NSM4000 appliance users listed.
2. Click on the name of the user whose attributes you want to edit. The Edit NSM4000 Users dialog box appears.
3. Edit the parameters you want to change and click **Submit**. You can change the password and the user profile.

Understanding User Profiles

NSM4000 appliances provide four predefined user profiles that allow you to implement role-based access control over the NSM4000 appliance WebUI. A user created via the WebUI or in the RADIUS server can be associated with any one of the following profiles:

- **System Administrator**—System administrators are superusers who have full access to all the modules in the NSM4000 appliance WebUI.
- **NSM Administrator**—NSM administrators have access to NSM Administration, RADIUS Management, Maintenance and Troubleshooting modules.
- **Network Operator**—Network operators have access to Network Utilities and Report Generation modules.
- **Guest User**—Guest users have read access to System Information and System Statistics modules.

When a user logs in, the NSM4000 appliance modules are displayed or hidden based on the user profile and the permissions associated with the profile. For more details about user profiles and permissions, see [Table 20 on page 83](#).

Table 20: NSM4000 Appliance WebUI User Profiles and Permissions

NSM4000 Appliance Modules	System Administrator	NSM Administrator	Network Operator	Guest User
System Administration				
Bootup and Shutdown	Yes	No	No	No
Change User Password	Yes	Yes	No	No
Network Configuration	Yes	No	No	No
RADIUS Management	Yes	No	No	No
SNMP Monitoring	Yes	No	No	No
Syslog Forwarding	Yes	No	No	No

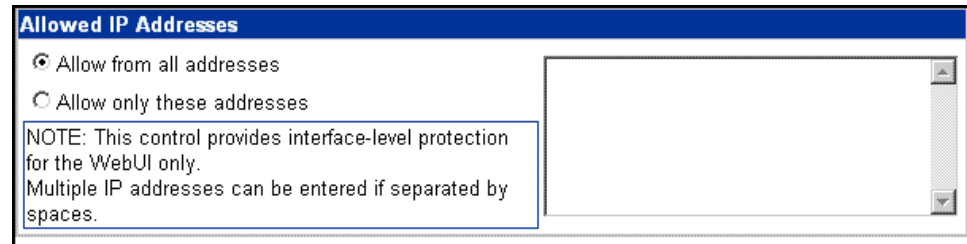
Table 20: NSM4000 Appliance WebUI User Profiles and Permissions (*continued*)

NSM4000 Appliance Modules	System Administrator	NSM Administrator	Network Operator	Guest User
System Time	Yes	No	No	No
System Update	Yes	No	No	No
User Management	Yes	No	No	No
WebUI Configuration	Yes	No	No	No
NSM Administration				
Change NSM Super User Password	Yes	Yes	No	No
Download NSM MIBs	Yes	Yes	No	No
Export Audit Logs	Yes	Yes	Yes	No
Export Device Logs	Yes	Yes	Yes	No
Generate Reports	Yes	Yes	Yes	No
NSM Configuration Files	Yes	Yes	No	No
NSM Database Backup	Yes	Yes	No	No
NSM Management IP	Yes	Yes	No	No
Schedule Security Updates	Yes	Yes	No	No
Maintenance				
System Statistics	Yes	Yes	Yes	Yes
Troubleshooting				
Action Audit Logs	Yes	Yes	No	No
Error Logs	Yes	Yes	Yes	No
Network Utilities	Yes	Yes	Yes	No
Tech Support	Yes	Yes	Yes	No
System Information	Yes	Yes	Yes	Yes

Configuring the Web Interface

To specify which NSM client computers can access the NSM4000 appliance through the Web interface, select **System Administration > WebUI Configuration**. The Allowed IP Addresses window appears as shown in [Figure 41 on page 85](#).

Figure 41: Web Interface Access



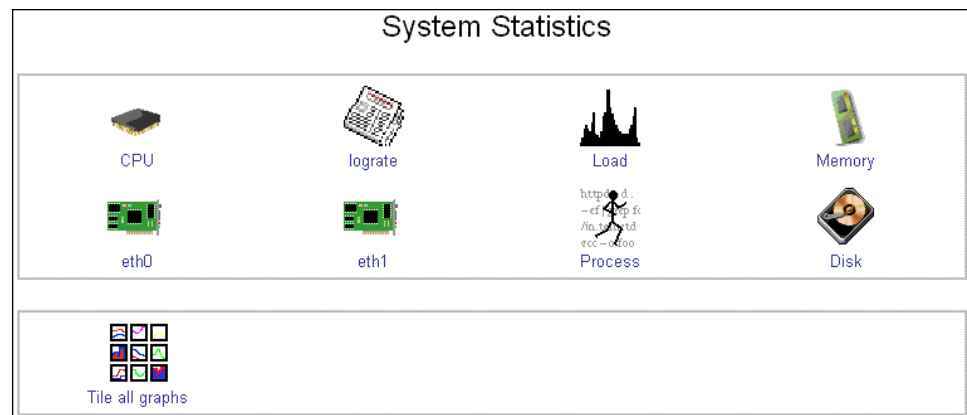
Related Documentation

- [Setting Up Your NSM4000 Appliance on page 42](#)
- [Managing NSM Administration on page 63](#)
- [Viewing System Statistics on page 85](#)
- [Viewing System Information on page 87](#)

Viewing System Statistics

To view system statistics, select **System Administration > Maintenance > System Statistics**. The System Statistics window appears as shown in [Figure 42 on page 85](#).

Figure 42: System Statistics



You can view the statistics of the following components:

- [CPU on page 86](#)
- [Log Rate on page 86](#)
- [CPU Load on page 86](#)
- [Memory Data on page 86](#)

- [Network Data on page 86](#)
- [Process Count on page 86](#)
- [Disk Data on page 86](#)
- [Tile All Graphs on page 86](#)

CPU

Select **CPU** to view graphs that monitor the CPU activity hourly, daily, weekly, monthly, or on a customizable basis.

Log Rate

Select **lograte** to view graphs that monitor the log rate hourly, daily, weekly, monthly, or on a customizable basis.

CPU Load

Select **Load** to view graphs that monitor the CPU load hourly, daily, weekly, monthly, or on a customizable basis.

Memory Data

Select **Memory** to view graphs that monitor the memory activity hourly, daily, weekly, and monthly.

Network Data

Select either **eth0** or **eth1** to view graphs that monitor network activity hourly, daily, weekly, and monthly.

Process Count

Select **Process** to view graphs that monitor the number of processes hourly, daily, weekly, and monthly.

Disk Data

Select **Disk** to view graphs that monitor the file system disk space usage hourly, daily, weekly, and monthly.

Tile All Graphs

Select **Tile all graphs** to display all the statistical graphs for the system in one window.

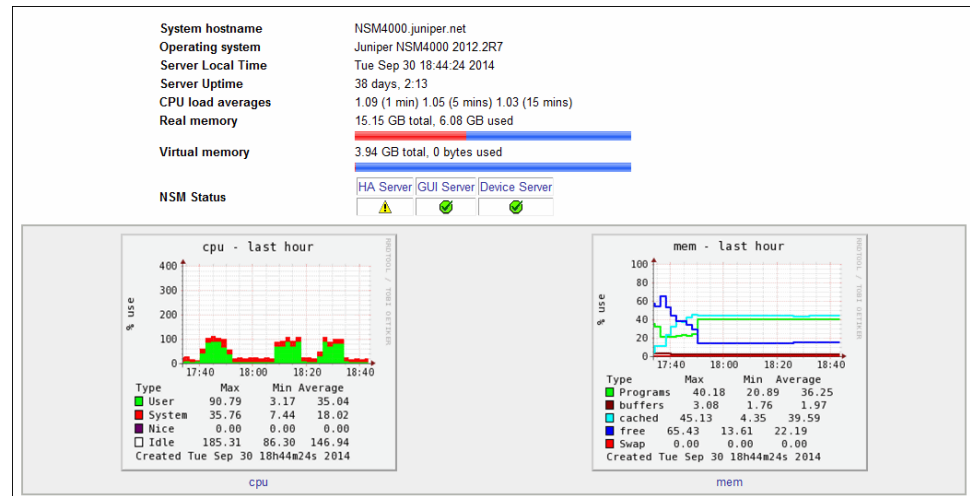
Related Documentation

- [Setting Up Your NSM4000 Appliance on page 42](#)
- [Managing NSM Administration on page 63](#)
- [Managing System Administration on page 68](#)
- [Viewing System Information on page 87](#)

Viewing System Information

Use the System Information menu item to display information about the server, including CPU load and memory use, as shown in [Figure 43 on page 87](#).

Figure 43: System Information



Related Documentation

- [Managing NSM Administration on page 63](#)
- [Managing System Administration on page 68](#)
- [Viewing System Statistics on page 85](#)

PART 4

Hardware Troubleshooting

- [Troubleshooting the NSM4000 Appliance on page 91](#)

CHAPTER 10

Troubleshooting the NSM4000 Appliance

- [Troubleshooting NSM4000 Ethernet Interface eth0 Connectivity on page 91](#)
- [Auditing User Operations on page 92](#)
- [Reviewing Error Logs on page 93](#)
- [Checking Network Routes, Addresses, and Connections Using TCP/IP Network Utilities on page 94](#)
- [Installing an NSM4000 ISO Image on the NSM4000 Appliance Using a USB Drive on page 97](#)

Troubleshooting NSM4000 Ethernet Interface eth0 Connectivity

Purpose If you have connectivity issues with the NSM4000 Ethernet interface eth0, you can use this procedure to troubleshoot the connectivity issues.

Action Before you begin:

- Connect a management device (PC or laptop) to the appliance using the management console and power on both the appliance and the management device. Alternatively, you can connect to the appliance via telnet or SSH if the appliance is accessible via the network.
- Log in to the appliance using the administrator username (**admin**) and password.

To troubleshoot connectivity issues from the eth0 interface:

1. Enter the **ifconfig eth0** command to verify that the IP address is correctly assigned to the eth0 interface.
2. Enter the **ping <NSM4000 IP address>** command on the management device (laptop or PC) to verify the communication between the NSM4000 appliance and the management device.
3. If no packets are received:
 - Verify the gateway IP address in the devint routing table by executing the following command from the shell:

ip route show table devint

The gateway IP address should be the one configured for routing device management traffic. See “Setting Routing Options” in [“Configuring Standard Configuration](#)

[Options](#)” on [page 56](#) for information about changing the default gateway for device management traffic.

- Check the physical connectivity of Ethernet interface eth0.

Related Documentation

- [NSM4000 Ethernet Interfaces Overview on page 7](#)
- [Auditing User Operations on page 92](#)
- [Reviewing Error Logs on page 93](#)
- [Checking Network Routes, Addresses, and Connections Using TCP/IP Network Utilities on page 94](#)
- [Installing an NSM4000 ISO Image on the NSM4000 Appliance Using a USB Drive on page 97](#)

Auditing User Operations

Purpose You can audit all user operations performed in an NSM4000 appliance. Users with system administrator and NSM administrator permissions can view all actions logs in the NSM4000 appliance.

Action To view action audit logs:

1. Select **Troubleshooting > Action Audit Logs**. The NSM4000 Actions Log dialog box appears. See [Figure 44 on page 92](#).

Figure 44: NSM4000 Actions Dialog Box

NSM 4000 Actions Log

Search the NSM 4000 log for actions ...

Actions by user profile

- ☒ By any profile
- ☐ By profile NsmAdmin
- ☐ By any profile except NsmAdmin

Actions by authentication mechanism

- ☒ By any authentication
- ☐ By authentication Unix
- ☐ By any authentication except Unix

Actions in module

- ☒ In any module
- ☐ In module Action Audit Logs

Actions on dates

- ☐ At any time
- ☒ For today only
- ☐ For yesterday only
- ☐ During the last week
- ☐ Between / Jan / and / Jan /

Search

2. Select the action audit logs that you want to view:
 - Actions by NSM4000 Users — Select the **By any user** check box to select actions by all users. Select the **By user** check box and choose a username from the drop-down list to specify actions by a particular user. Select **By any user except** and choose a username from the drop-down list to exclude actions by a specific user.

- Actions by User Profile — Select the **By any profile** check box to select actions by all user profiles. Select the **By profile** check box and choose a profile from the drop-down list to specify actions by a specific user profile. Select **By any profile except** and choose a profile from the drop-down list to exclude actions by a user profile.
 - Actions by authentication mechanism — Select the **By any authentication** check box to select actions by all authentication mechanisms. Select the **By authentication** check box and choose an authentication mechanism from the drop-down list to specify actions by a specific authentication mechanism. Select **By any authentication except** and choose a profile from the drop-down list to exclude actions by an authentication mechanism.
 - Actions in module — Select the **In any module** check box to select actions in all modules. Select the **In module** check box and choose a module from the drop-down list to specify actions in a particular module.
 - Actions on dates — Select the **At any time** check box to select actions at any time. Select the **For today only** check box to select today's actions. Select the **For yesterday only** check box to select yesterday's actions. Select the **During the last week** check box to select last week's actions. Select the **Between** check box and enter the start date and end date in the drop-down list to view actions within the specified time period.
3. Click **Search**. The Search Results dialog box appears with the result of your query. See [Figure 45 on page 93](#).

Figure 45: Search Results Dialog Box

Module Index

Search Results

Logged actions by user admin on 30/Sep/2014 ...

Action	Module	User	User profile	User Authentication	Client Address	Date	Time
admin user downloaded NSM MIBS	Download NSM MIBS	admin	SysAdmin	Unix	10.206.145.219	30/Sep/2014	06:03

Related Documentation

- [Troubleshooting NSM4000 Ethernet Interface eth0 Connectivity on page 91](#)
- [Reviewing Error Logs on page 93](#)
- [Checking Network Routes, Addresses, and Connections Using TCP/IP Network Utilities on page 94](#)
- [Installing an NSM4000 ISO Image on the NSM4000 Appliance Using a USB Drive on page 97](#)

Reviewing Error Logs

Purpose To review error logs, select **Troubleshooting > Error Logs**. [Figure 46 on page 94](#) shows an example.

Figure 46: Review Error Logs

System Logs		
Log File	Description	
File /usr/netscreen/DevSvr/var/errorLog/deviceDaemon.0	Device Server Error Log	View..
File /usr/netscreen/DevSvr/var/errorLog/pro.dc.log	Data Collector Error Log	View..
File /usr/netscreen/DevSvr/var/errorLog/gproDDM.log	Device Directive Manager Error Log	View..
File /usr/netscreen/DevSvr/var/errorLog/newLogWalker.0	Log Walker Error Log	View..
File /usr/netscreen/DevSvr/var/errorLog/profilerMgr.0	Profiler Manager Error Log	View..
File /usr/netscreen/DevSvr/var/errorLog/statusMonitor.0	Status Monitor	View..
File /usr/netscreen/GuiSvr/var/errorLog/guiDaemon.0	Gui Server Error Log	View..
File /usr/netscreen/GuiSvr/var/errorLog/pro.mc.log	Master Controller Error Log	View..
File /usr/netscreen/GuiSvr/var/errorLog/gproGDM.log	Gui Directive Manager Error Log	View..
File /usr/netscreen/GuiSvr/var/errorLog/statusMonitor.0	GuiSvr Status Monitor Error Log	View..
File /usr/netscreen/HaSvr/var/errorLog/highAvail.0	High Avail Error Log	View..

Action To view details of an individual error log, select the file you want to view and click **View**. Figure 47 on page 94 shows sample error log details.

Figure 47: Error Log Detail

Module Index
View Logfile

/usr/netscreen/DevSvr/var/errorLog/gproDDM.log

Last lines of Only show lines with text

cat: /usr/netscreen/DevSvr/var/errorLog/gproDDM.log: No such file or directory

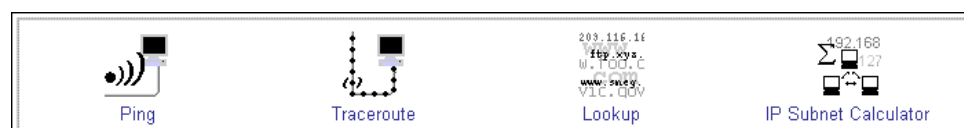
Last lines of Only show lines with text

- Related Documentation**
- [Troubleshooting NSM4000 Ethernet Interface eth0 Connectivity on page 91](#)
 - [Auditing User Operations on page 92](#)
 - [Checking Network Routes, Addresses, and Connections Using TCP/IP Network Utilities on page 94](#)
 - [Installing an NSM4000 ISO Image on the NSM4000 Appliance Using a USB Drive on page 97](#)

Checking Network Routes, Addresses, and Connections Using TCP/IP Network Utilities

To access basic network utilities for TCP/IP Networking, select **Troubleshooting > Network Utilities**. See Figure 48 on page 94.

Figure 48: Network Utilities Options



This tool allows you to access the following options:

- [Ping on page 95](#)
- [Traceroute on page 96](#)
- [Lookup on page 96](#)
- [IP Subnet Calculator on page 97](#)

Ping

Ping is a tool for checking network connectivity. The NSM4000 appliance prompts you with questions so you can focus your search. [Figure 49 on page 95](#) shows an example.

Figure 49: Ping Utility

Module Index
Help..

Ping

Hostname

☐ Verbosity Output? ☐ Numeric Output only? ☐ Bypass routing tables?

How many Packets?

Packet Size?

Pattern(s) to send (Hex)?

How many sec between sending each packet?

Pattern(s) to send (Hex)?

- *How Many Packets*

Enter the number of packets this ping command will send. The default is 5. The values range from 1-99.

- *Packet Size*

Enter the packet size (in bytes) this ping command will send. The default is 56. The values range from 1-9999.

- *How Many Sec Between Sending Each Packet*

Enter how much time (in seconds) ping should wait between sending each packet.

- *Patterns to Send (Hex)*

The data sent by ping contains a hexadecimal pattern. If you leave this option blank, ping will fill it with random data. This option is useful if you do not have problems with connectivity itself but with data loss.

- *Verbosity Output*

The NSM4000 appliance lists the ICMP packets (other than ECHO_Response) that have been received.

- *Numeric Output Only*

Check this option if you do not want any attempts to be made to look up symbolic names for host addresses.

- *Bypass Routing Tables*

If the host is not a directly attached network, an error is returned. This option can be used to ping a local host through an interface that has no route through it.

Traceroute

Traceroute is a tool to print the route a packet takes to a network host. See [Figure 50 on page 96](#).

Figure 50: Traceroute Utility

Module Index
Help..

Traceroute

Hostname:

☐ Verbosity Output? How many Hops?

☐ Numeric Output only? Packet Length?

☐ Bypass routing tables? How many sec between sending each packet?

☐ Use ICMP instead of UDP? Initial time-to-live?

☐ Toggle Checksums? Interface:

☐ Socket level debugging?



NOTE: The only required field is Hostname. The value can be either a hostname or an IP address.

Lookup

Use the lookup tool to obtain the IP address from a hostname and the hostname from an IP address (see [Figure 51 on page 97](#)). The query type drop-down list contains several types of records found in the DNS database. Enter a name server or select the default. If you choose the default, nslookup uses the server on which the NSM4000 appliance is installed.

Figure 51: Lookup Utility

IP Subnet Calculator

Use the IP subnet calculator to calculate the netmask for a TCP/IP network. You can calculate a netmask by class and subnet bits or by the number of hosts (see [Figure 52 on page 97](#)). When you calculate a netmask by the number of hosts, the NSM4000 appliance returns the smallest network available.

Figure 52: IP Subnet Calculator

Related Documentation

- [Troubleshooting NSM4000 Ethernet Interface eth0 Connectivity on page 91](#)
- [Auditing User Operations on page 92](#)
- [Reviewing Error Logs on page 93](#)
- [Installing an NSM4000 ISO Image on the NSM4000 Appliance Using a USB Drive on page 97](#)

Installing an NSM4000 ISO Image on the NSM4000 Appliance Using a USB Drive

You can install an NSM4000 ISO image on the NSM4000 appliance using a standard USB 2.0 and USB 3.0 drive. You can use this procedure to either reinstall the current NSM4000 ISO image or revert to the factory default version on the NSM4000 appliance.



NOTE:

- The NSM4000 appliance is shipped with NSM 2012.2R7 already installed on it.
 - We recommend that you install only NSM 2012.2R7 or later versions on the NSM4000 appliance.
-

Before you begin, ensure that:

- You have a laptop or PC (running Windows) that is connected to the Internet.
 - You install the Rufus software on your computer to enable the software image to be written on the USB drive. You can download this software for free from <http://rufus.akeo.ie/>.
 - You have a USB drive with at least 2 GB of free space for images.
 - You can connect to the NSM4000 appliance using the management console.
 - You have configured a console terminal or terminal emulation utility to use the following serial connection parameters:
 - Baud rate: 9600 bits per second
 - Data: 8 bits
 - Flow control: None
 - Parity: None
 - Stop bits: 1
-



NOTE: The console terminal or terminal emulation utility maps every key on the keyboard to a code that it then sends through the management console. In some cases, the Delete key on a PC keyboard does not send a DEL or Control-? character. You must ensure that the terminal utility that you are using to connect to the NSM4000 appliance maps a key to the DEL or Control-? character. Typically, this is accomplished by configuring the terminal utility to send a DEL or Control-? character when the Backspace key on the keyboard is pressed.

Installing an NSM4000 ISO Image on the NSM4000 appliance using a USB drive involves the following steps:

- [Downloading the NSM4000 ISO Image from the Juniper Networks Support Site on page 99](#)
- [Creating a Bootable USB Drive on page 99](#)
- [Ensuring that the NSM4000 Appliance's BIOS Boots from the USB Drive on page 102](#)
- [Installing the NSM4000 ISO Image on the NSM4000 Appliance on page 103](#)

Downloading the NSM4000 ISO Image from the Juniper Networks Support Site

This section provides the information necessary to download the NSM4000 ISO image from the Juniper Networks support site.

To download the NSM4000 ISO image:

1. Plug the USB drive to the USB port of a laptop or PC that is connected to the Internet.
2. Using a Web browser, navigate to the Juniper Networks software download site (<http://www.juniper.net/support/downloads/>), and click **Network Management > Network & Security Manager**.
3. On the subsequent page, click the **Software** tab and then click **NSM4000 Appliance ISO CentOS6.5_v1** under **Tools** to download the NSM4000 ISO image.

The filename of the downloaded image is in the **NSM4000_RS_CentOS_version_vspin-number.iso** format, where *version* refers to the CentOS version number and *spin-number* refers to the ISO release spin number; for example, **CentOS_6.5_v1.0.iso**.



CAUTION: Do not modify the filename of the software image that you download from the Juniper Networks support site. If you modify the filename, the installation fails.

Creating a Bootable USB Drive

This section provides the information necessary to create a bootable USB drive using Rufus, a third-party software utility, and copy the NSM4000 ISO image file.

If the USB drive has files that you would like to keep, save the files to your PC or laptop.

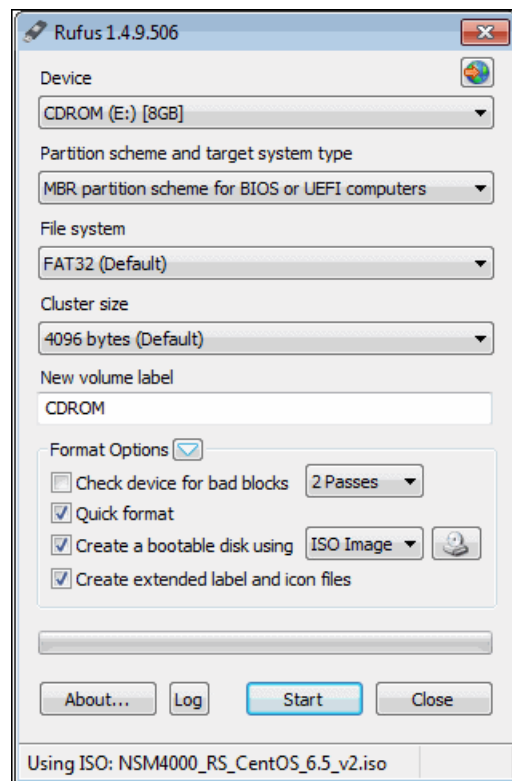


NOTE: The bootable USB drive that you create using these procedures will not be usable as a normal USB drive. If you want to use the USB drive for storing files, you must reformat the drive.

To create a bootable USB drive:

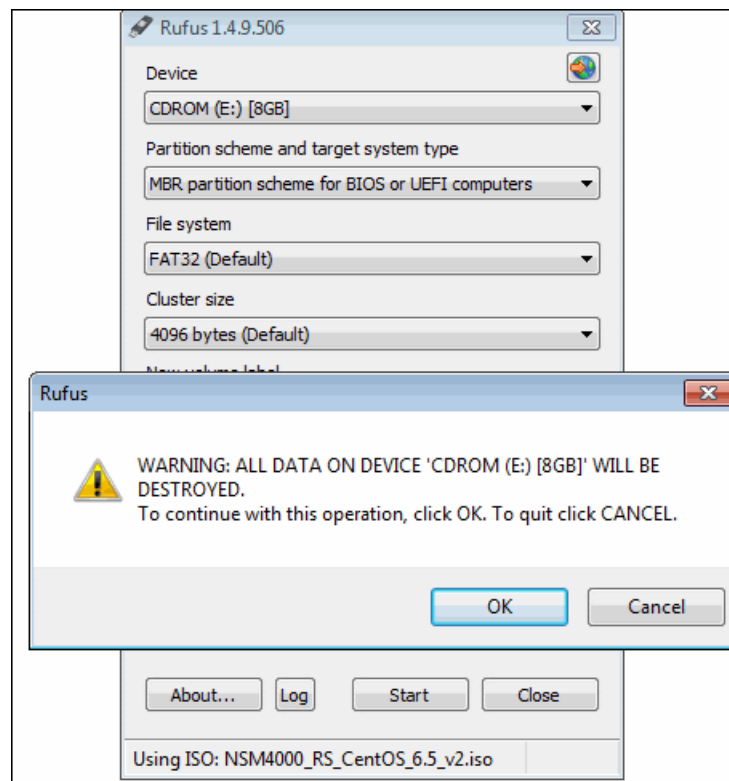
1. Connect the USB drive to your computer.
2. Open the Rufus software that you previously installed on your computer.
(You can download the Rufus software for free from <http://rufus.akeo.ie/>.)
3. Perform the following steps in the Rufus window. The Rufus window appears as shown in Figure 53 on page 100.

Figure 53: Rufus Window



- a. Verify that the drive letter displayed in the **Device** drop-down box matches the chosen USB drive. If a different drive letter is displayed, select the drive letter that matches the USB device from the **Device** list.
- b. In the drop-down menu near the bottom of the window, to the right of the **Create a bootable disk using** check box, select **ISO Image**.
- c. On that same line, to the right of the **ISO Image** drop-down menu, click the CD-ROM icon.
- d. Select the NSM4000 ISO image file that you want to copy to the USB drive.
- e. Click **Start**.
- f. Click **OK** in the Warning dialog box to format the USB drive and copy the NSM4000 ISO image. See [Figure 54 on page 101](#).

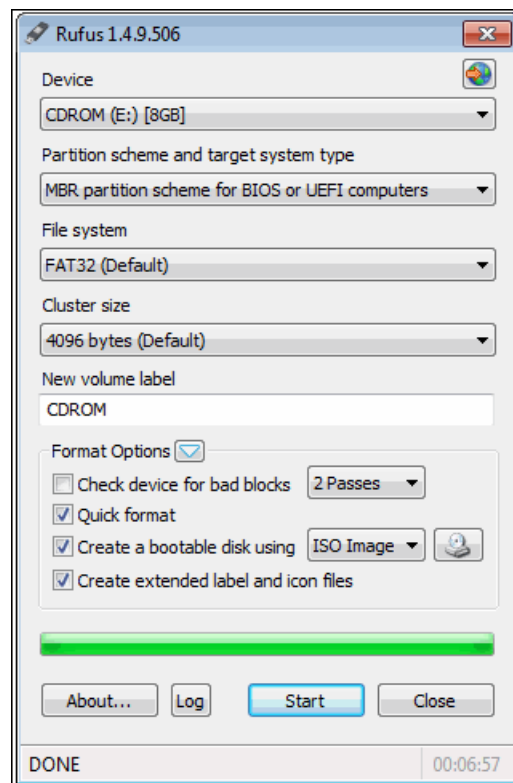
Figure 54: Rufus Warning Dialog Box



A progress bar in the Rufus window displays the status; if the start operation is successful, a message is displayed.

- g. Click **Close** to exit the Rufus window. [Figure 55 on page 102](#) displays the Rufus window as it appears after you have successfully created a bootable USB drive.

Figure 55: Rufus Window After Completing Installation



4. Eject the USB drive, and unplug it from the computer.

Ensuring that the NSM4000 Appliance's BIOS Boots from the USB Drive

This section provides the information necessary to boot the NSM4000 appliance from the USB drive that contains a copy of the NSM4000 ISO image file.

To boot the NSM4000 appliance from the USB drive:

1. Plug the USB drive into the USB port of the NSM4000 appliance on which you want to install the software image.



NOTE: To install the software image from the USB drive, the boot priority order in the NSM4000 appliance must have USB boot at the top. By default, the NSM4000 appliance attempts to boot from the USB drive first and then from the RAID volume or hard drive. However, if you have changed the default boot order in the BIOS of the NSM4000 appliance, you must access the boot menu and change the boot order to make USB the first option. You do this by pressing the DEL or Control-? character three times as soon as you power the on the NSM4000 appliance.

2. To access the NSM4000 appliance boot menu:

- a. Power on the NSM4000 appliance.
- b. As soon as the NSM4000 appliance starts powering on, press the key that you have mapped in the terminal emulation utility to send the DEL character. In a few cases, this would be the Backspace key.



NOTE: If the hard disk LEDs begin to flash at this point for more than a few seconds, the NSM4000 appliance is booting from the hard disk instead of the USB drive, and the BIOS menu will not be loaded. In this case, you need to power down the NSM4000 appliance and repeat this step.

If you are successful in accessing the BIOS setup, the boot menu appears after about one minute.

3. Ensure that the USB boot is at the top of the NSM4000 appliance boot priority order. If the USB label is not at the top of the list:
 - Use the down arrow to select the USB label and use the + key to move the entry to the top of the list.
 - Press the F10 key to save your changes and exit the BIOS setup.

The NSM4000 appliance automatically restarts and uses the new boot order, thereby booting from the USB drive.

Installing the NSM4000 ISO Image on the NSM4000 Appliance

This section provides the information necessary to install the NSM4000 ISO Image using the USB drive on the NSM4000 appliance.

The boot prompt displays the NSM4000 appliance installation menu as displayed in [Figure 56 on page 104](#).

Figure 56: NSM4000 Appliance Installer Boot Prompt

```
welcome to the Juniper Management Appliance 6.0 installer

*** WARNING ***

This procedure will overwrite your hard disk drive with a new factory default
Juniper Management Appliance installation.
If you DO NOT WISH to ERASE your system and lose all of its data
please TURN OFF the device NOW.

- To enter rescue mode, press:
  <ENTER>

- To reset your system to factory defaults and loose all of its data, type:
  erase-reinstall <ENTER>

- To reset your system to factory defaults through USB and loose all of its da
  ta, type:
  usb-reinstall <ENTER>

- To test the memory of your appliance type:
  memtest86 <ENTER>

boot: usb-reinstall
```



WARNING: The `usb-reinstall` command explained in the next step overwrites your hard disk drive with a new factory default NSM4000 installation, erasing the previous installation and configuration. If you do not want to proceed, power off the NSM4000 appliance immediately.

To install the NSM4000 ISO Image using the USB drive:

1. At the boot prompt, type `usb-reinstall` and press **Enter**.



NOTE: If no input is provided for 30 seconds, the NSM4000 appliance boots from the local disk by default.

2. Remove the USB drive while the NSM4000 appliance is rebooting, approximately 1 hour and 15 minutes into the reinstallation process.



NOTE: Because the NSM4000 appliance boot order was changed earlier in this procedure, the NSM4000 appliance will try to boot from the USB drive before choosing the next option. You can revert to boot from the local disk using the method explained in [“Ensuring that the NSM4000 Appliance’s BIOS Boots from the USB Drive” on page 102](#).

The NSM4000 appliance boots from the local disk and continues the reinstallation process. The installation wizard freezes at the **Starting NSM installation – This might take a while to complete** screen for approximately 30-35 minutes. After the reinstallation is complete, the serial console displays the following terminal emulator login prompt.

Juniper NSMXpress Appliance**NSM 2012.2R7****NSM4000.juniper.net login:**

For information on how to configure the basic settings for the NSM4000 appliance before you can use it to manage devices, see [“Setting Up Your NSM4000 Appliance” on page 42](#) and [“Configuring a Regional Server” on page 45](#).

**Related
Documentation**

- [Booting the NSM4000 Appliance on page 41](#)
- [Setting Up Your NSM4000 Appliance on page 42](#)
- [Powering Off the NSM4000 Appliance on page 49](#)

PART 5

Hardware Maintenance and Replacement

- [Maintaining the Hardware on page 109](#)
- [Replacing Hardware Components on page 111](#)

CHAPTER 11

Maintaining the Hardware

- [Maintaining an NSM4000 Appliance on page 109](#)

Maintaining an NSM4000 Appliance

Purpose	For optimum performance of the NSM4000 appliance, perform preventive maintenance procedures.
Action	<p>On a regular basis, ensure that you:</p> <ul style="list-style-type: none">• Keep the site as dust-free as possible; dust can clog air intake vents and filters, reducing the efficiency of the appliance cooling system.• Inspect the site to ensure that the grounding and power cables connected to the NSM4000 appliance are securely in place and that there is no moisture accumulating near the appliance.• Ensure that the power and grounding cables are arranged so that they do not obstruct access to other components.• Keep the area around the chassis free from dust and conductive material, such as metal flakes.• Maintain ambient airflow for normal appliance operation. If the airflow is blocked or restricted, or if the intake air is too warm, the appliance might overheat.
Related Documentation	<ul style="list-style-type: none">• Installing and Removing NSM4000 Appliance Hardware Components on page 111• Troubleshooting NSM4000 Ethernet Interface eth0 Connectivity on page 91

Replacing Hardware Components

- [Installing and Removing NSM4000 Appliance Hardware Components on page 111](#)
- [Replacing the AC Power Supply Cord on an NSM4000 Appliance on page 112](#)
- [Replacing the AC Power Supply Module on an NSM4000 Appliance on page 113](#)
- [Replacing the DC Power Supply Cable on an NSM4000 Appliance on page 115](#)
- [Replacing the DC Power Supply Module on an NSM4000 Appliance on page 117](#)
- [Replacing the Fan on an NSM4000 Appliance on page 119](#)
- [Replacing the Hard Disk on an NSM4000 Appliance on page 121](#)

Installing and Removing NSM4000 Appliance Hardware Components

The NSM4000 appliance chassis is a rigid sheet-metal structure that houses the hardware components. The field-replaceable units (FRUs) in the NSM4000 appliance are as follows:

- AC power supply
- Cooling fan
- DC power supply
- Hard disk



NOTE: Remove the fan module only when you need to replace a fan.

Refer to the following topics for instructions on how to install and remove hardware components:

- [Replacing the AC Power Supply Module on an NSM4000 Appliance on page 113](#)
- [Replacing the AC Power Supply Cord on an NSM4000 Appliance on page 112](#)
- [Replacing the DC Power Supply Module on an NSM4000 Appliance on page 117](#)
- [Replacing the DC Power Supply Cable on an NSM4000 Appliance on page 115](#)
- [Replacing the Fan on an NSM4000 Appliance on page 119](#)
- [Replacing the Hard Disk on an NSM4000 Appliance on page 121](#)

- Related Documentation**
- [AC Power Supply in the NSM4000 Appliance on page 15](#)
 - [DC Power Supply in the NSM4000 Appliance on page 17](#)
 - [Field-Replaceable Units on the NSM4000 Appliance on page 13](#)

Replacing the AC Power Supply Cord on an NSM4000 Appliance



NOTE: If only one power supply module is installed in your NSM4000 appliance, you must power off the appliance before replacing the power supply cord.

This topic contains the following sections:

- [Disconnecting the AC Power Supply Cord on page 112](#)
- [Connecting the AC Power Supply Cord on page 112](#)

Disconnecting the AC Power Supply Cord

To disconnect an AC power supply cord from an NSM4000 appliance:

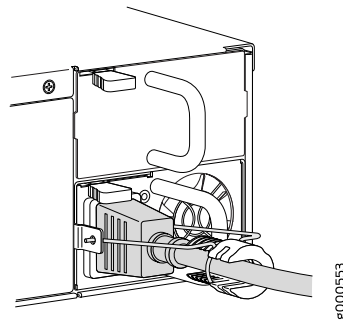
1. (Optional) Attach an electrostatic discharge (ESD) grounding strap to your bare wrist, and connect the strap to an external ESD point.
2. If the AC power source outlet has a power switch, set it to the OFF position. If the AC power source outlet does not have a power switch, gently pull out the male end of the power cord connected to the power source outlet.
3. If the power cord has the retainer clip and adjustment nut installed, turn the adjustment nut so that the power cord can be removed from the slot in the adjustment nut.
4. Unplug the power cord from the power supply module.

Connecting the AC Power Supply Cord

To connect an AC power supply cord to an NSM4000 appliance:

1. (Optional) Attach an electrostatic discharge (ESD) grounding strap to your bare wrist, and connect the strap to an external ESD point.
2. If the power cord retainer clip is not installed on the power supply module, squeeze the two sides of the power cord retainer clip and insert the L-shaped ends of the wire clip into the holes in the bracket on each side of the AC power cord inlet on the power supply module, as shown in [Figure 57 on page 113](#).

Figure 57: AC Power Supply Cord with Retainer



3. Locate a replacement power cord with the type of plug appropriate for your geographical location.
4. If the AC power source outlet has a power switch, set it to the OFF position.
5. Insert the power cord plug into an external AC power source outlet.
6. If the AC power source outlet has a power switch, set it to the ON position.
7. Push the power cord into the slot in the adjustment nut of the power cord retainer clip. Turn the nut until it is tight against the base of the coupler and the slot in the nut is turned 90° from the top of the appliance, as shown in [Figure 57 on page 113](#).
8. Connect the power cord to the power supply module.
9. Verify that the power cord does not block the air exhaust and access to device components, or drape where people could trip on it.

The NSM4000 appliance starts powering on when you supply power to the power supply module. If the power supply cord is correctly installed, the LED on the power supply module displays green when the power supply module is powering the appliance, and amber when the power supply module is in standby mode (not powering the appliance).

Related Documentation

- [AC Power Cord Specifications for the NSM4000 Appliance on page 14](#)
- [AC Power Supply in the NSM4000 Appliance on page 15](#)
- [Field-Replaceable Units on the NSM4000 Appliance on page 13](#)
- [Replacing the AC Power Supply Module on an NSM4000 Appliance on page 113](#)

Replacing the AC Power Supply Module on an NSM4000 Appliance

Ensure that you have the following parts and tools available to remove the power supply module from the appliance chassis:

- (Optional) Electrostatic discharge (ESD) grounding strap
- An antistatic bag or an antistatic mat



NOTE: If only one power supply module is installed in your NSM4000 appliance, you must power off the appliance before removing the power supply module.

This topic contains the following sections:

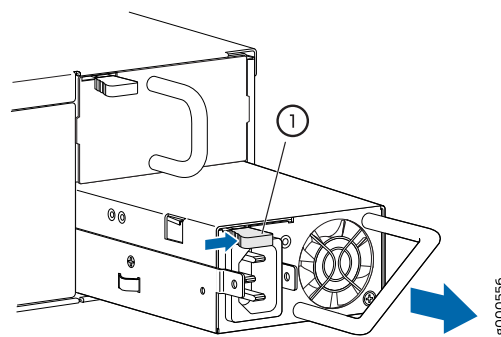
- [Removing the AC Power Supply Module on page 114](#)
- [Installing the AC Power Supply Module on page 115](#)

Removing the AC Power Supply Module

To remove the AC power supply module:

1. Place an antistatic bag or an antistatic mat on a flat, stable surface.
2. (Optional) Attach an electrostatic discharge (ESD) grounding strap to your bare wrist, and connect the strap to an external ESD point.
3. If the AC power source outlet has a power switch, set it to the OFF position.
4. Gently pull out the male end of the power cord connected to the power source outlet.
5. Remove the power cord from the power supply faceplate by detaching the power cord retainer and gently pulling out the female end of the power cord connected to the power supply faceplate.
6. Slide the locking ejector lever to the right, as shown in [Figure 58 on page 114](#), until it is in its furthest position.

Figure 58: Removing the AC Power Supply Module



1— Power supply ejector lever

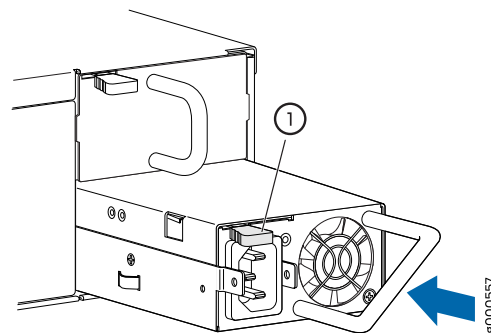
7. Grasp the power supply handle and pull firmly to slide the power supply module halfway out of the appliance.
8. Place one hand under the power supply module to support it and slide it completely out of the appliance. Take care not to touch power supply components, pins, leads, or solder connections.
9. Place the power supply module in the antistatic bag or on the antistatic mat on a flat, stable surface.

Installing the AC Power Supply Module

To install the AC power supply module:

1. Remove the replacement power supply module from its antistatic bag, taking care not to touch power supply pins, leads, or solder connections.
2. (Optional) Attach an electrostatic discharge (ESD) grounding strap to your bare wrist, and connect the strap to an external ESD point.
3. If the power supply slot has a cover panel on it, slide the ejector lever (on the cover panel) to the right and then take out the cover. Save the cover panel for later use.
4. Insert and push the new power supply module into the slot, as shown in [Figure 59 on page 115](#), until the ejector lever locks.

Figure 59: Installing the AC Power Supply Module



1— Power supply ejector lever

5. Connect the AC power cord to the power supply module. For more information, see [“Connecting AC Power to the NSM4000 Appliance” on page 35](#).
6. If the appliance is not powered on, power on the appliance by pressing the switch on the rear panel, next to the power supply module.

The NSM4000 appliance starts powering on when you supply power to the power supply module. If the power supply module is correctly installed and functioning normally, the LED on the power supply module displays green when the power supply module is powering the appliance, and amber when the power supply module is in standby mode (not powering the appliance).

Related Documentation

- [AC Power Cord Specifications for the NSM4000 Appliance on page 14](#)
- [AC Power Supply in the NSM4000 Appliance on page 15](#)
- [Field-Replaceable Units on the NSM4000 Appliance on page 13](#)

Replacing the DC Power Supply Cable on an NSM4000 Appliance

Ensure that you have the following parts and tools available to remove the power supply cable from the appliance chassis:

- (Optional) ESD grounding strap
- Phillips (+) screwdriver, number 2
- An antistatic bag or an antistatic mat



NOTE: If only one power supply module is installed in your NSM4000 appliance, you must power off the appliance before removing the power supply cable.

This topic contains the following sections:

- [Removing the DC Power Supply Cable on page 116](#)
- [Connecting the DC Power Supply Cable on page 117](#)

Removing the DC Power Supply Cable

To remove a DC power supply cable from an NSM4000 appliance:

1. (Optional) Attach an electrostatic discharge (ESD) grounding strap to your bare wrist, and connect the strap to an external ESD point.
2. Switch off the external circuit breakers, if they are present, for all the cables attached to the power supply module. 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 clear plastic cover over the terminal studs on the faceplate.
4. Remove the screws from the terminals, using a Phillips screwdriver, number 2, to loosen and remove the screws. Save the screws.
5. Remove the cable lugs from the terminals.
6. Remove the screw from the grounding terminal using a Phillips screwdriver, number 2, to loosen and remove the screw. Save the screw.
7. Remove the grounding lug from the terminal.
8. Carefully remove the power cable from the DC power source.



NOTE: Ensure that the cable is not touching or in the way of any components, and that it does not drape where people could trip on it.

Connecting the DC Power Supply Cable

To connect a DC power supply cable to an NSM4000 appliance:

1. (Optional) Attach an electrostatic discharge (ESD) grounding strap to your bare wrist, and connect the strap to an external ESD point.
2. Switch off the external circuit breakers, if they are present, 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 clear plastic cover over the terminal studs on the faceplate.
4. Attach the power cable to the DC power source. For more information on how to connect the DC power cables to the appliance, see [“Connecting DC Power to the NSM4000 Appliance” on page 37](#).
5. Replace the clear plastic cover over the terminal studs on the faceplate.
6. Connect the grounding lug to the grounding terminal.
7. Switch on the external circuit breakers, if they are present, for all the cables attached to the power supply.

The NSM4000 appliance starts powering on when you supply power to the power supply module. If the power supply module is correctly installed and functioning normally, the LED on the power supply module displays green when the power supply module is powering the appliance, and amber when the power supply module is in standby mode (not powering the appliance).

Related Documentation

- [DC Power Supply in the NSM4000 Appliance on page 17](#)
- [Field-Replaceable Units on the NSM4000 Appliance on page 13](#)
- [Replacing the DC Power Supply Module on an NSM4000 Appliance on page 117](#)

Replacing the DC Power Supply Module on an NSM4000 Appliance

Ensure that you have the following parts and tools available to replace the power supply module from the appliance chassis:

- (Optional) ESD grounding strap
- Phillips (+) screwdriver, number 2
- An antistatic bag or an antistatic mat



NOTE: If only one power supply module is installed in your NSM4000 appliance, you must power off the appliance before replacing the power supply module.

This topic contains the following sections:

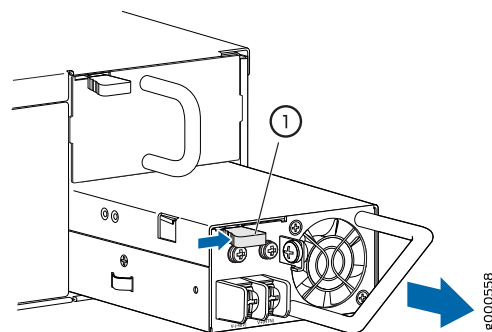
- [Removing the DC Power Supply Module on page 118](#)
- [Installing a DC Power Supply Module on page 119](#)

Removing the DC Power Supply Module

To remove the DC power supply module from an NSM4000 appliance:

1. Switch off the dedicated facility circuit breaker for the power supply module being removed.
2. (Optional) Attach an electrostatic discharge (ESD) grounding strap to your bare wrist, and connect the strap to an external ESD point.
3. 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.
4. Remove the clear plastic cover protecting the terminal studs on the faceplate.
5. Remove the screws from the terminals, using a Phillips screwdriver, number 2, to loosen and remove the screws. Save the screws.
6. Remove the cable lugs from the terminals.
7. Remove the screw on the grounding terminal by using the screwdriver. Save the screw.
8. Remove the grounding lug from the grounding terminal.
9. Carefully move the power cables out of the way.
10. Slide the ejector lever to the right, as shown in [Figure 60 on page 118](#), until it is in its furthest position.

Figure 60: Removing a DC Power Supply Module



1— Power supply ejector lever

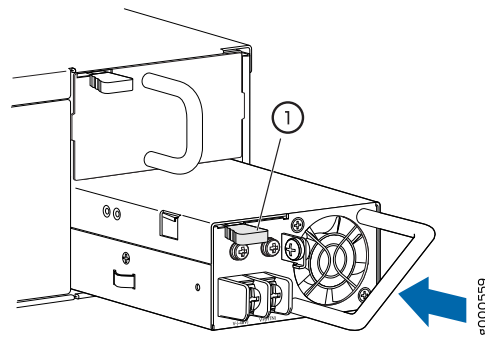
11. Grasp the handle of the power supply module and pull firmly to slide the power supply module halfway out of the chassis.
12. Place one hand under the power supply module to support it and slide it completely out of the appliance. Take care not to touch power supply components, pins, leads, or solder connections.
13. Place the power supply module in the antistatic bag or on the antistatic mat placed on a flat, stable surface.

Installing a DC Power Supply Module

To install a DC power supply module:

1. (Optional) Attach an electrostatic discharge (ESD) grounding strap to your bare wrist, and connect the strap to an external ESD point.
2. Taking care not to touch power supply pins, leads, or solder connections, remove the replacement power supply module from the bag.
3. Using both hands, slide the replacement power supply module straight into the chassis, as shown in [Figure 61 on page 119](#), until the power supply is fully seated in the chassis slot and the ejector lever locks.

Figure 61: Installing a DC Power Supply Module



1— Power supply ejector lever

4. Connect the DC source power to the appliance. For more information, see [“Connecting DC Power to the NSM4000 Appliance” on page 37](#).

Related Documentation

- [DC Power Supply in the NSM4000 Appliance on page 17](#)
- [Field-Replaceable Units on the NSM4000 Appliance on page 13](#)
- [Replacing the DC Power Supply Cable on an NSM4000 Appliance on page 115](#)

Replacing the Fan on an NSM4000 Appliance

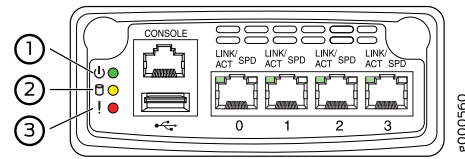
The NSM4000 appliance ships with two field-replaceable fans that are hot-swappable. You can remove and replace a fan without powering off the appliance or disrupting any functions.

When a fan fails, the full cooling load switches to the remaining fan and the red Hardware Fault LED on the front panel of the appliance blinks and an alarm sounds.



NOTE: The LEDs on the front panel of the NSM4000 are arranged vertically, as shown in [Figure 62 on page 120](#).

Figure 62: NSM4000 Appliance Front Panel Status LEDs



1— Power LED

3— Hardware Fault LED

2— Hard Disk Activity LED



CAUTION: The NSM4000 appliance should not run on one fan for an extended period of time. Failed fans should be replaced as soon as possible.

Ensure that you have the following parts and tools available to remove the fan from the appliance chassis:

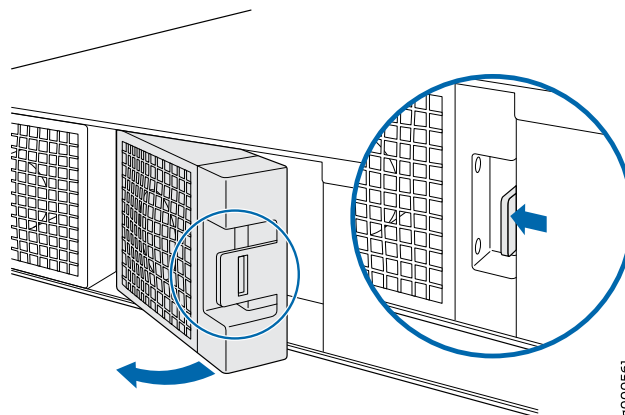
- (Optional) Electrostatic discharge (ESD) grounding strap
- (Optional) An antistatic bag or an antistatic mat
- [Removing the Fan on page 120](#)
- [Installing the Fan on page 121](#)

Removing the Fan

To remove a fan from an NSM4000 appliance:

1. (Optional) Place the antistatic bag or antistatic mat on a flat, stable surface.
2. (Optional) Attach an ESD grounding strap to your bare wrist, and connect the strap to an external ESD point.
3. Press the latch at the side of the fan, as shown [Figure 63 on page 120](#) to release the fan.

Figure 63: Removing a Fan



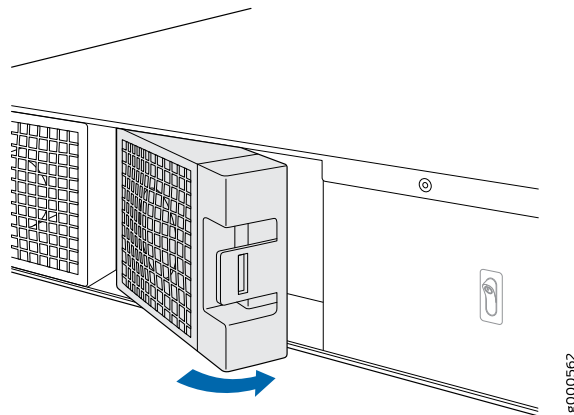
4. Pull the fan module out of the chassis.
5. (Optional) Place the fan module in the antistatic bag or on the antistatic mat placed on a flat, stable surface.

Installing the Fan

To install a fan in an NSM4000 appliance:

1. (Optional) Attach an electrostatic discharge (ESD) grounding strap to your bare wrist, and connect the strap to an external ESD point.
2. Remove the replacement fan module from its antistatic bag.
3. Insert the replacement fan into the slot for the fan module, as shown in [Figure 64 on page 121](#), until the latch locks and you hear a clicking sound.

Figure 64: Installing a Fan

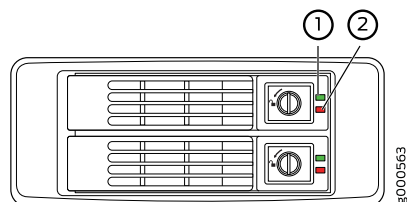


When you install a replacement fan, the cooling load is distributed back evenly across both the fans, and the Hardware Fault LED stops blinking and the alarm turns off.

- Related Documentation**
- [Field-Replaceable Units on the NSM4000 Appliance on page 13](#)
 - [Installing and Removing NSM4000 Appliance Hardware Components on page 111](#)

Replacing the Hard Disk on an NSM4000 Appliance

The NSM4000 appliance ships with six hard disk drives in a RAID 10 array configuration. The hot-swappable drives are externally accessible in field-replaceable trays. You can remove and replace a hard disk without powering off the appliance or disrupting any functions performed by the appliance. If a hard drive fails, the Hard Disk Fault LED on the hard disk turns on and an alarm sounds.

Figure 65: NSM4000 Appliance Hard Disk Status LEDs

1— Hard Disk Activity LED

2— Hard Disk Fault LED

Ensure that you have the following parts and tools available to remove the hard disk from the appliance chassis:

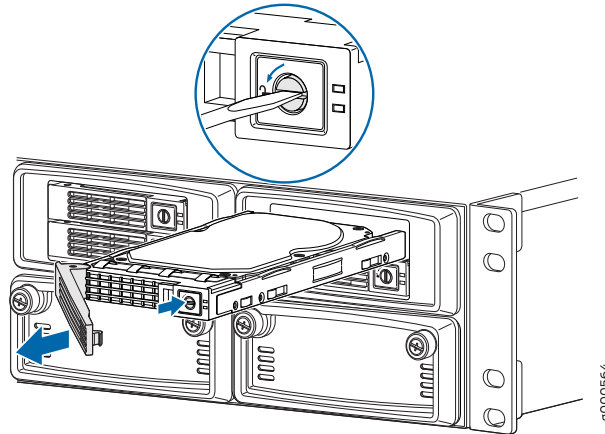
- (Optional) Electrostatic discharge (ESD) grounding strap
- Flat screwdriver
- An antistatic bag or an antistatic mat
- [Removing the Hard Disk on page 122](#)
- [Installing the Hard Disk on page 123](#)

Removing the Hard Disk

To remove a hard disk from the NSM4000 appliance:

1. Place the antistatic bag or antistatic mat on a flat, stable surface.
2. (Optional) Attach an ESD grounding strap to your bare wrist, and connect the strap to an external ESD point.
3. Turn the hard disk locking screw counterclockwise to the unlock position, as shown in [Figure 66 on page 123](#), to unlock the hard disk lever.
4. Push the screw knob (button) in so that the hard disk lever is released.
5. Gently pull the hard disk lever outwards, and slide the hard disk out of the slot. Keep one hand underneath the hard disk to support it while removing it from the chassis.
6. Place the hard drive in the antistatic bag or on the antistatic mat placed on a flat, stable surface.

Figure 66: Removing a Hard Disk

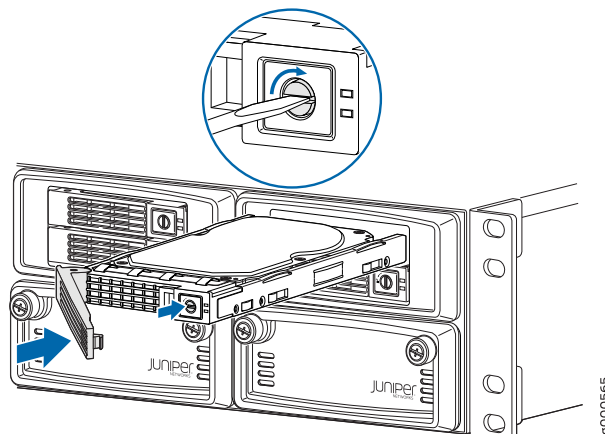


Installing the Hard Disk

To install a hard disk in the NSM4000 appliance:

1. (Optional) Attach an ESD grounding strap to your bare wrist, and connect the strap to an external ESD point.
2. Remove the replacement hard disk from its antistatic bag.
3. Slide the hard disk into the hard disk slot.
4. Push the hard disk lever, as shown in [Figure 67 on page 123](#), until it closes with a click to ensure that the hard disk is secured firmly in the slot.
5. Using a flat screwdriver, turn the screw clockwise to the locked position so that the notch in the screw is oriented vertically.

Figure 67: Installing a Hard Disk



When you install a replacement hard disk, the alarm shuts off when the new drive is sensed and the red Hard Disk Fault LED on the new hard drive starts blinking, which indicates that the drive is being rebuilt. When the drive is rebuilt, the red LED goes out.

- Related Documentation**
- [Field-Replaceable Units on the NSM4000 Appliance on page 13](#)
 - [Installing and Removing NSM4000 Appliance Hardware Components on page 111](#)

PART 6

Returning Hardware

- [Returning the Appliance or Appliance Components on page 127](#)

Returning the Appliance or Appliance Components

- [Returning an NSM4000 Appliance or Component for Repair or Replacement on page 127](#)
- [Locating the Serial Number on an NSM4000 Appliance or Component on page 128](#)
- [Contacting Customer Support to Obtain Return Materials Authorization for NSM4000 Appliances on page 129](#)
- [Packing an NSM4000 Appliance or Component for Shipping on page 130](#)

Returning an NSM4000 Appliance or Component for Repair or Replacement

If you need to return an NSM4000 appliance or hardware component (field-replaceable unit [FRU]) to Juniper Networks for repair or replacement:

1. Determine the serial number of the appliance or component. For instructions, see [“Locating the Serial Number on an NSM4000 Appliance or Component” on page 128](#).
2. Obtain a Return Materials Authorization (RMA) number from JTAC as described in [“Contacting Customer Support to Obtain Return Materials Authorization for NSM4000 Appliances” on page 129](#).



NOTE: Do not return 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 number. Refused shipments are returned to the customer through collect freight.

3. Pack the appliance or component for shipping as described in [“Packing an NSM4000 Appliance or Component for Shipping” on page 130](#).

For more information about return and repair policies, see the customer support page at <http://www.juniper.net/support/guidelines.html>.

**Related
Documentation**

- [Field-Replaceable Units on the NSM4000 Appliance on page 13](#)
- [Unpacking the NSM4000 Appliance on page 29](#)

Locating the Serial Number on an NSM4000 Appliance or Component

If you are returning an NSM4000 appliance or hardware component to Juniper Networks for repair or replacement, you need to provide the serial number of the appliance or component to the Juniper Networks Technical Assistance Center (JTAC) when you contact them to obtain Return Materials Authorization (RMA) number. If the NSM4000 appliance is operational and you can access the NSM4000 CLI, you can list serial number of the appliance using the **dmidecode --type 1** command. If you do not have access to the NSM4000 CLI, you can find the serial number on the ID label present on the physical appliance or component.



NOTE: To find the serial number on the physical appliance component, you need to remove the component from the appliance chassis, for which you must have the required parts and tools available. See [“Installing and Removing NSM4000 Appliance Hardware Components” on page 111](#) for more information.

- [Listing the NSM4000 Appliance Details using the NSM4000 CLI on page 128](#)
- [Locating the Chassis Serial Number ID Label on an NSM4000 Appliance on page 129](#)
- [Locating the Serial Number ID Labels on FRUs in the NSM4000 Appliance on page 129](#)

Listing the NSM4000 Appliance Details using the NSM4000 CLI

Before you begin, ensure that you have connected the NSM4000 appliance to a management console. For more information, refer to [“Connecting an NSM4000 Appliance to a Management Console” on page 39](#).

To find the appliance serial number:

1. Enter the **sudo su -** command to login as a root user.
2. Type the password for the admin user and press Enter.
3. To view the information about the appliance, execute the following command:

```
[root@host ~]# dmidecode --type 1
```

The serial number is displayed in the output of the command, as shown in the following sample output.

```
# dmidecode 2.12
SMBIOS 2.7 present.
Handle 0x0001, DMI type 1, 27 bytes
System Information
    Manufacturer: Juniper Networks
    Product Name: NSM4000
    Version: 1.0
    Serial Number: CR3614AL0001
    UUID: C85F0DB8-423F-11E4-B777-6CFA88FA6800
    Wake-up Type: Power Switch
    SKU Number: NSM4000
    Family: Juniper Appliance
```


For instructions on locating the serial number of the appliance or hardware component you want to return, see [“Locating the Serial Number on an NSM4000 Appliance or Component” on page 128](#).

Before you request an RMA number from JTAC, be prepared to provide the following information:

- Your existing case number, if you have one
- Serial number of the appliance or component
- Your name, organization name, telephone number, fax number, and shipping address
- Details of the failure or problem
- Type of activity being performed on the appliance when the problem occurred

You can contact JTAC 24 hours a day, seven days a week through the Web or by telephone:

- Case Manager at CSC: <http://www.juniper.net/cm/>
- Telephone: +1-888-314-5822, toll free in U.S., Canada, and Mexico



NOTE: For international or direct-dial options in countries without toll free numbers, see <http://www.juniper.net/support/requesting-support.html>.

If you are contacting JTAC by telephone, enter your 11-digit case number followed by the pound (#) key for an existing case, or press the star (*) key to be routed to the next available support engineer.

The support engineer validates your request and issues an RMA number for the return of the component.

**Related
Documentation**

- [Locating the Serial Number on an NSM4000 Appliance or Component on page 128](#)
- [Packing an NSM4000 Appliance or Component for Shipping on page 130](#)

Packing an NSM4000 Appliance or Component for Shipping

If you are returning an NSM4000 appliance or component (field-replaceable unit [FRU]) to Juniper Networks for repair or replacement, pack the item as described in this topic.

Before you begin packing the appliance or component:

- Obtain a Return Materials Authorization (RMA) number for the appliance or the component. For more information, see [“Contacting Customer Support to Obtain Return Materials Authorization for NSM4000 Appliances” on page 129](#).
- Retrieve the original shipping carton and packing materials. Contact your JTAC representative if you do not have these materials, to learn about approved packing materials.

- Ensure that you understand how to prevent electrostatic discharge (ESD) damage. See [“Preventing Electrostatic Discharge Damage” on page 158](#).
- [Packing an NSM4000 Appliance for Shipping on page 131](#)
- [Packing Components of the NSM4000 Appliance for Shipping on page 131](#)

Packing an NSM4000 Appliance for Shipping

If you need to transport the NSM4000 appliance to another location or return the appliance to Juniper Networks, you need to pack the appliance securely in its original packaging to prevent damage during transportation.

Before you pack the NSM4000 appliance:

1. Power off the appliance. Refer to [“Powering Off the NSM4000 Appliance” on page 49](#) for details.
2. Disconnect power from the appliance.
3. Remove the cables that connect the appliance to all external devices.

Ensure that you have the following parts and tools available to pack the appliance:

- Phillips (+) screwdriver, number 2
- ESD grounding strap
- Antistatic bag

To pack the NSM4000 appliance:

1. If the appliance is installed in a rack, have one person support the weight of the appliance while another person unscrews and removes the mounting screws.
2. Remove the appliance from the rack and place the appliance on a flat, stable surface.
3. Use the screwdriver to remove the rack-mounting brackets from the appliance chassis.
4. Place the appliance in an antistatic bag.
5. Place the appliance inside the shipping carton.
6. Place packaging foam or a cardboard tray on top of and around the appliance to ensure adequate padding.
7. If you are returning accessories or field-replaceable units (FRUs) with the appliance, pack them as instructed in [“Packing Components of the NSM4000 Appliance for Shipping” on page 131](#).
8. Close the top of the cardboard carton and seal it with packing tape.
9. Write the RMA number on the exterior of the shipping carton to ensure proper tracking.

Packing Components of the NSM4000 Appliance for Shipping

To pack the components (FRUs) of the NSM4000 appliance, follow the instructions here.

Ensure that you have the following parts and tools available:

- Antistatic bags, one for each component
- ESD grounding strap



CAUTION: Do not stack the components of the NSM4000 appliance. Return individual components in separate boxes if you cannot pack them side by side in the shipping box.

To pack the components of the NSM4000 appliance:

- Place individual components in antistatic bags.
- Use the original packing materials if they are available. If the original packing materials are not available, ensure that the component is adequately packed to prevent damage during transit. The packing material that you use must be able to support the weight of the component.
- Ensure that the components are adequately protected by wrapping them well with packing materials. Pack the component in an oversized box (if the original box is not available) with extra packing material around the unit so that the component is prevented from moving around inside the box.
- Securely tape the box closed.
- Write the RMA number on the exterior of the box to ensure proper tracking.

**Related
Documentation**

- [Contacting Customer Support to Obtain Return Materials Authorization for NSM4000 Appliances on page 129](#)
- [Locating the Serial Number on an NSM4000 Appliance or Component on page 128](#)

PART 7

Safety Information

- General Safety Information on page 135
- Radiation and Laser Warnings on page 141
- Installation and Maintenance Safety Information on page 145
- Power and Electrical Safety Information on page 157

CHAPTER 14

General Safety Information

- [General Safety Guidelines and Warnings on page 135](#)
- [Definitions of Safety Warning Levels on page 136](#)
- [Fire Safety Requirements on page 138](#)
- [Qualified Personnel Warning on page 139](#)
- [Warning Statement for Norway and Sweden on page 140](#)

General Safety Guidelines and Warnings

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

- Perform only the procedures explicitly described in the hardware documentation for this product. Make sure that only authorized service personnel perform other system services.
- Keep the area around the chassis 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 can get caught in the chassis.
- 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 appliance only when it is properly grounded.

- Ensure that the separate protective earthing terminal provided on this product is permanently connected 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 product. 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 on the appliance. Such an action could cause electrical shock or damage the appliance.
- Avoid touching uninsulated electrical wires or terminals that are not disconnected from their power source. Such an action can cause electrical shock.
- Always ensure that all modules, power supplies, and blanks are fully inserted and that the installation screws are fully tightened.

**Related
Documentation**

- [AC Power Electrical Safety Guidelines on page 160](#)
- [DC Power Electrical Safety Guidelines on page 162](#)
- [General Electrical Safety Guidelines and Warnings on page 157](#)
- [Grounded Equipment Warning on page 151](#)
- [Installation Instructions Warning on page 145](#)
- [Maintenance and Operational Safety Guidelines and Warnings on page 151](#)

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 avoid minor injury or discomfort to you or severe damage to the device.
.....



.....
WARNING: This symbol alerts you to the risk of personal injury from a 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 be familiar 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.

Attention 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 være 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.

.....

**Related
Documentation**

- [General Safety Guidelines and Warnings on page 135](#)
- [Grounded Equipment Warning on page 151](#)
- [Installation Instructions Warning on page 145](#)
- [Laser and LED Safety Guidelines and Warnings for the NSM4000 Appliance on page 141](#)
- [Maintenance and Operational Safety Guidelines and Warnings on page 151](#)
- [Warning Statement for Norway and Sweden on page 140](#)

Fire Safety Requirements

In the event of a fire emergency involving appliances and other network equipment, 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 an NSM4000 appliance or other network device provided by Juniper Networks. 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.

Related Documentation

- [Action to Take After an Electrical Accident on page 169](#)
- [General Electrical Safety Guidelines and Warnings on page 157](#)
- [General Safety Guidelines and Warnings on page 135](#)

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.

Attention 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.

- Related Documentation**
- [AC Power Electrical Safety Guidelines on page 160](#)
 - [DC Power Electrical Safety Guidelines on page 162](#)
 - [General Electrical Safety Guidelines and Warnings on page 157](#)
 - [General Safety Guidelines and Warnings on page 135](#)

Warning Statement for Norway and Sweden



WARNING: The equipment must be connected to an earthed mains socket-outlet.

Advarsel Apparatet skal kobles til en jordet stikkontakt.

Varning! Apparaten skall anslutas till jordat nätuttag.

- Related Documentation**
- [General Safety Guidelines and Warnings on page 135](#)
 - [Definitions of Safety Warning Levels on page 136](#)

CHAPTER 15

Radiation and Laser Warnings

- [Laser and LED Safety Guidelines and Warnings for the NSM4000 Appliance on page 141](#)
- [Radiation from Open Port Apertures Warning on page 144](#)

Laser and LED Safety Guidelines and Warnings for the NSM4000 Appliance

Observe the following guidelines and warnings:

- [General Laser Safety Guidelines on page 141](#)
- [Class 1 Laser Product Warning on page 141](#)
- [Class 1 LED Product Warning on page 142](#)
- [Laser Beam Warning on page 142](#)

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.



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.

Class 1 Laser Product Warning



WARNING: Class 1 laser product.

Waarschuwing Klasse-1 laser produkt.

Varoitus Luokan 1 lasertuote.

Attention Produit laser de classe I.

Warnung Laserprodukt der Klasse 1.



WARNING: 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



WARNING: Class 1 LED product.

Waarschuwing Klasse 1 LED-product.

Varoitus Luokan 1 valodiodituote.

Attention Alarme de produit LED Class I.

Warnung Class 1 LED-Produktwarnung.



WARNING: 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



WARNING: Do not stare into the laser beam or view it directly with optical instruments.



WARNING: Waarschuwing Niet in de straal staren of hem rechtstreeks bekijken met optische instrumenten.



WARNING: Varoitus Älä katso säteeseen äläkä tarkastele sitä suoraan optisen laitteen avulla.



WARNING: Attention Ne pas fixer le faisceau des yeux, ni l'observer directement à l'aide d'instruments optiques.



WARNING: Warnung Nicht direkt in den Strahl blicken und ihn nicht direkt mit optischen Geräten prüfen.



WARNING: Avvertenza Non fissare il raggio con gli occhi né usare strumenti ottici per osservarlo direttamente.



WARNING: Advarsel Stirr eller se ikke direkte p strlen med optiske instrumenter.



WARNING: Aviso Não olhe fixamente para o raio, nem olhe para ele directamente com instrumentos ópticos.



WARNING: ¡Atención! No mirar fijamente el haz ni observarlo directamente con instrumentos ópticos.



WARNING: Varning! Rikta inte blicken in mot strålen och titta inte direkt på den genom optiska instrument.

Related Documentation

- [General Safety Guidelines and Warnings on page 135](#)
- [Grounded Equipment Warning on page 151](#)
- [Installation Instructions Warning on page 145](#)
- [Radiation from Open Port Apertures Warning on page 144](#)

Radiation from Open Port Apertures Warning



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.

Attention 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 emitteres 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 a 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.

Related Documentation

- [General Safety Guidelines and Warnings on page 135](#)
- [Grounded Equipment Warning on page 151](#)
- [Installation Instructions Warning on page 145](#)
- [Laser and LED Safety Guidelines and Warnings for the NSM4000 Appliance on page 141](#)

CHAPTER 16

Installation and Maintenance Safety Information

- [Installation Instructions Warning on page 145](#)
- [Chassis Lifting Guidelines for the NSM4000 Appliance on page 146](#)
- [Ramp Warning on page 146](#)
- [Rack-Mounting Warnings on page 147](#)
- [Grounded Equipment Warning on page 151](#)
- [Maintenance and Operational Safety Guidelines and Warnings on page 151](#)

Installation Instructions Warning



WARNING: Read the installation instructions before you connect the device to a power source.

Waarschuwing Raadpleeg de installatie-aanwijzingen voordat u het systeem met de voeding verbindt.

Varoitus Lue asennusohjeet ennen järjestelmän yhdistämistä virtälähteeseen.

Attention Avant de brancher le système sur la source d'alimentation, consulter les directives d'installation.

Warnung Lesen Sie die Installationsanweisungen, bevor Sie das System an die Stromquelle anschließen.

Avvertenza Consultare le istruzioni di installazione prima di collegare il sistema all'alimentatore.

Advarsel Les installasjonsinstruksjonene før systemet kobles til strømkilden.

Aviso Leia as instruções de instalação antes de ligar o sistema à sua fonte de energia.

¡Atención! Ver las instrucciones de instalación antes de conectar el sistema a la red de alimentación.

Varning! Läs installationsanvisningarna innan du kopplar systemet till dess strömförsörjningsenhet.

**Related
Documentation**

- [General Safety Guidelines and Warnings on page 135](#)
- [Laser and LED Safety Guidelines and Warnings for the NSM4000 Appliance on page 141](#)
- [Grounded Equipment Warning on page 151](#)
- [Connecting AC Power to the NSM4000 Appliance on page 35](#)
- [Connecting DC Power to the NSM4000 Appliance on page 37](#)

Chassis Lifting Guidelines for the NSM4000 Appliance

The approximate weights of the NSM4000 appliance is 28.05 lb (12.72 kg).

Observe the following guidelines for lifting and moving an NSM4000 appliance:

- Before installing an NSM4000 appliance, read the guidelines in [“General Site Guidelines for the NSM4000 Appliance” on page 21](#).
- Before lifting or moving the appliance, disconnect all external cables.
- As when lifting any heavy object, lift most of the weight with your legs rather than your back. Keep your knees bent and your back relatively straight and avoid twisting your body as you lift. Balance the load evenly and be sure that your footing is solid.

**Related
Documentation**

- [General Safety Guidelines and Warnings on page 135](#)
- [Installation Instructions Warning on page 145](#)
- [Mounting the NSM4000 Appliance on page 30](#)

Ramp Warning



WARNING: When installing the device, do not use a ramp inclined at more than 10 degrees.

Waarschuwing Gebruik een oprijplaat niet onder een hoek van meer dan 10 graden.

Varoitus Älä käytä sellaista kaltevaa pintaa, jonka kaltevuus ylittää 10 astetta.

Attention Ne pas utiliser une rampe dont l'inclinaison est supérieure à 10 degrés.

Warnung Keine Rampen mit einer Neigung von mehr als 10 Grad verwenden.

Avvertenza Non usare una rampa con pendenza superiore a 10 gradi.

Advarsel Bruk aldri en rampe som heller mer enn 10 grader.

Aviso Não utilize uma rampa com uma inclinação superior a 10 graus.

¡Atención! No usar una rampa inclinada más de 10 grados

Varning! Använd inte ramp med en lutning på mer än 10 grader.

Related Documentation

- [General Safety Guidelines and Warnings on page 135](#)
- [Grounded Equipment Warning on page 151](#)
- [Installation Instructions Warning on page 145](#)

Rack-Mounting Warnings

Ensure that the rack or cabinet in which the device is installed is evenly and securely supported. Uneven mechanical loading could lead to a hazardous condition.



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

- The device must be installed in a rack that is secured to the building structure.
- The device should be mounted at the bottom of the rack if it is the only unit in the rack.
- When mounting the device on 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 equipment, install the stabilizers before mounting or servicing the device 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 device 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 vältetään loukkaantumisia. Noudata seuraavia turvallisuusohjeita:

- Juniper Networks device 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 device 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 device 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 device 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 device 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 device 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 device 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 device 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.

**Related
Documentation**

- [General Safety Guidelines and Warnings on page 135](#)
- [Grounded Equipment Warning on page 151](#)
- [Installation Instructions Warning on page 145](#)

- [Mounting the NSM4000 Appliance on page 30](#)

Grounded Equipment Warning



WARNING: The device is intended to be grounded. During normal use, ensure that you have connected earth ground to the chassis.

Waarschuwing Deze apparatuur hoort geaard te worden. Zorg dat de host-computer tijdens normaal gebruik met aarde is verbonden.

Varoitus Tämä laitteisto on tarkoitettu maadoitettavaksi. Varmista, että isäntälaitte on yhdistetty maahan normaalikäytön aikana.

Attention Cet équipement doit être relié à la terre. S'assurer que l'appareil hôte est relié à la terre lors de l'utilisation normale.

Warnung Dieses Gerät muß geerdet werden. Stellen Sie sicher, daß das Host-Gerät während des normalen Betriebs an Erde gelegt ist.

Avvertenza Questa apparecchiatura deve essere collegata a massa. Accertarsi che il dispositivo host sia collegato alla massa di terra durante il normale utilizzo.

Advarsel Dette utstyret skal jordes. Forviss deg om vertsterminalen er jordet ved normalt bruk.

Aviso Este equipamento deverá estar ligado à terra. Certifique-se que o host se encontra ligado à terra durante a sua utilização normal.

¡Atención! Este equipo debe conectarse a tierra. Asegurarse de que el equipo principal esté conectado a tierra durante el uso normal.

Varning! Denna utrustning är avsedd att jordas. Se till att värdenheten är jordad vid normal användning.

Related Documentation

- [General Electrical Safety Guidelines and Warnings on page 157](#)
- [General Safety Guidelines and Warnings on page 135](#)

Maintenance and Operational Safety Guidelines and Warnings

While performing the maintenance activities for devices, observe the following guidelines and warnings:

- [Battery Handling Warning on page 152](#)
- [Jewelry Removal Warning on page 153](#)
- [Lightning Activity Warning on page 154](#)

- [Operating Temperature Warning on page 154](#)
- [Product Disposal Warning on page 156](#)

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 ontplofingsgevaar 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.

Attention 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 batería 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.

Attention 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.

Attention 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 of 104° F (40° C) for network devices of Juniper Networks. To prevent airflow

restriction, allow at least 6 in. (15.2 cm) of clearance around the ventilation openings.

Waarschuwing Om te voorkomen dat welke device 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.

Varoituis Ettei Juniper Networks device-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.

Attention Pour éviter toute surchauffe des routeurs de la gamme Juniper Networks device, 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 device der device 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 device, 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 device. 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 device, 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 encaminhador de la serie Juniper Networks device 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 device 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.

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Product Disposal Warning

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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.

Attention 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 descarte 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.

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Related Documentation

- [AC Power Electrical Safety Guidelines on page 160](#)
- [DC Power Electrical Safety Guidelines on page 162](#)
- [General Electrical Safety Guidelines and Warnings on page 157](#)
- [General Safety Guidelines and Warnings on page 135](#)
- [Grounded Equipment Warning on page 151](#)
- [Installation Instructions Warning on page 145](#)
- [Laser and LED Safety Guidelines and Warnings for the NSM4000 Appliance on page 141](#)

Power and Electrical Safety Information

- General Electrical Safety Guidelines and Warnings on page 157
- Preventing Electrostatic Discharge Damage on page 158
- AC Power Electrical Safety Guidelines on page 160
- AC Power Disconnection Warning on page 161
- DC Power Electrical Safety Guidelines on page 162
- DC Power Disconnection Warning on page 163
- DC Power Grounding Requirements and Warning on page 164
- DC Power Wiring Sequence Warning on page 165
- DC Power Wiring Terminations Warning on page 167
- Multiple Power Supplies Disconnection Warning on page 168
- TN Power Warning on page 169
- Action to Take After an Electrical Accident on page 169

General Electrical Safety Guidelines and Warnings



WARNING: Certain ports on the device are designed for use as intrabuilding (within-the-building) interfaces only (Type 2 or Type 4 ports as described in *GR-1089-CORE*, Issue 4) and require isolation from the exposed outside plant (OSP) cabling. To protect against lightning surges and commercial power disturbances, the intrabuilding ports *must not* be metalically connected to interfaces that connect to the OSP or its wiring. The intrabuilding ports on the device are suitable for connection to intrabuilding or unexposed wiring or cabling only. The addition of primary protectors is not sufficient protection for connecting these interfaces metalically to OSP wiring.



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

- Install the device in compliance with the following local, national, and international electrical codes:
 - United States—National Fire Protection Association (NFPA 70), United States National Electrical Code.
 - Other countries—International Electromechanical Commission (IEC) 60364, Part 1 through Part 7.
 - Evaluated to the TN power system.
 - Canada—Canadian Electrical Code, Part 1, CSA C22.1.
- 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.
- Make sure that grounding surfaces are cleaned and brought to a bright finish before grounding connections are made.
- 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 device within marked electrical ratings and product usage instructions.
- To ensure that the device and peripheral equipment function safely and correctly, use the cables and connectors specified for the attached peripheral equipment, and make certain they are in good condition.

You can remove and replace many device components without powering off or disconnecting power to the device, as explained in the hardware documentation for this device. Never install an equipment that appears to be damaged.

**Related
Documentation**

- [AC Power Electrical Safety Guidelines on page 160](#)
- [Action to Take After an Electrical Accident on page 169](#)
- [DC Power Electrical Safety Guidelines on page 162](#)
- [General Safety Guidelines and Warnings on page 135](#)
- [Multiple Power Supplies Disconnection Warning on page 168](#)
- [TN Power Warning on page 169](#)

Preventing 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 grounding 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 [Figure 69 on page 159](#)) in one hand and touch the exposed, bare metal of the device with the other hand immediately before inserting the component into the device.



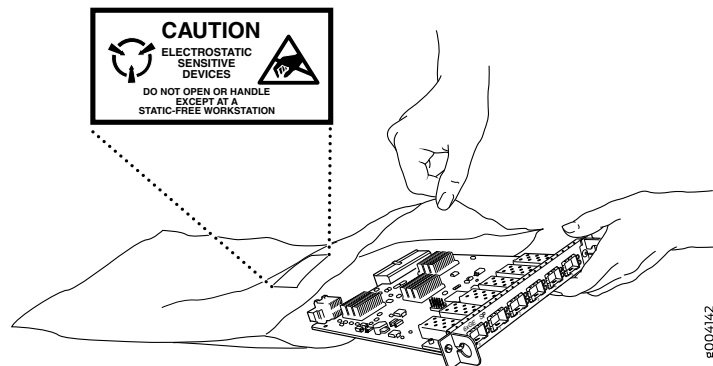
WARNING: For safety, periodically check the resistance value of the ESD grounding strap. The measurement must be in the range 1 through 10 Mohms.

- 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 grounding 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 69 on page 159](#)). If you are returning a component, place it in an antistatic bag before packing it.

Figure 69: Place 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.

Related Documentation

- [General Electrical Safety Guidelines and Warnings on page 157](#)
- [General Safety Guidelines and Warnings on page 135](#)

AC Power Electrical Safety Guidelines



CAUTION: For devices with AC power supplies, an external surge protective device (SPD) must be used at the AC power source.

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 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 avoid electric shock. To disconnect power, unplug all power cords (one for each power supply module).

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。

g017253

Related Documentation

- [General Electrical Safety Guidelines and Warnings on page 157](#)
- [General Safety Guidelines and Warnings on page 135](#)
- [Multiple Power Supplies Disconnection Warning on page 168](#)
- [Connecting AC Power to the NSM4000 Appliance on page 35](#)

AC Power Disconnection Warning



WARNING: Before working on the device or near power supplies, unplug all the power cords from the appliance.

Waarschuwing Voordat u aan een frame of in de nabijheid van voedingen werkt, dient u bij wisselstroom toestellen de stekker van het netsnoer uit het stopcontact te halen.

Varoitus Kytke irti vaihtovirtalaitteiden virtajohto, ennen kuin teet mitään asennuspohjalle tai työskentelet virtalähteiden läheisyydessä.

Attention Avant de travailler sur un châssis ou à proximité d'une alimentation électrique, débrancher le cordon d'alimentation des unités en courant alternatif.

Warnung Bevor Sie an einem Chassis oder in der Nähe von Netzgeräten arbeiten, ziehen Sie bei Wechselstromeinheiten das Netzkabel ab bzw.

Avvertenza Prima di lavorare su un telaio o intorno ad alimentatori, scollegare il cavo di alimentazione sulle unità CA.

Advarsel Før det utføres arbeid på kabinettet eller det arbeides i nærheten av strømforsyningsenheter, skal strømledningen trekkes ut på vekselstrømsenheter.

Aviso Antes de trabalhar num chassis, ou antes de trabalhar perto de unidades de fornecimento de energia, desligue o cabo de alimentação nas unidades de corrente alternada.

¡Atención! Antes de manipular el chasis de un equipo o trabajar cerca de una fuente de alimentación, desenchufar el cable de alimentación en los equipos de corriente alterna (CA).

Varning! Innan du arbetar med ett chassi eller nära strömförsörjningsenheter skall du för växelströmsenheter dra ur nätsladden.

Related Documentation

- [AC Power Electrical Safety Guidelines on page 160](#)
- [General Electrical Safety Guidelines and Warnings on page 157](#)
- [General Safety Guidelines and Warnings on page 135](#)

DC Power Electrical Safety Guidelines

- A DC-powered device is equipped with a DC terminal block that is rated for the power requirements of a maximally configured device.



NOTE: To supply sufficient power, terminate the DC input wiring on a facility DC source that is capable of supplying a maximum inrush current of 30 A at power-up

Incorporate an easily accessible disconnect device into the facility wiring. 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. (The range supported by the DC power supply is –45 VDC to –60 VDC.)
- A DC-powered device 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 must protect against excess currents, short circuits, and earth grounding faults in accordance with NEC ANSI/NFPA 70.

- 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 device and the supply side of the DC wiring.
- The marked input voltage of –45 VDC for a DC-powered device 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 device is a positive ground system, you must connect the positive lead to the terminal labeled RTN, the negative lead to the terminal labeled –45 VDC, and the earth ground to the device grounding points.

Related Documentation

- [DC Power Disconnection Warning on page 163](#)
- [DC Power Grounding Requirements and Warning on page 164](#)
- [DC Power Wiring Sequence Warning on page 165](#)
- [DC Power Wiring Terminations Warning on page 167](#)
- [General Electrical Safety Guidelines and Warnings on page 157](#)
- [General Safety Guidelines and Warnings on page 135](#)

- [Multiple Power Supplies Disconnection Warning on page 168](#)
- [Connecting DC Power to the NSM4000 Appliance on page 37](#)

DC Power Disconnection Warning



WARNING: Before performing any of the DC power 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, and tape the device handle of the circuit breaker in the OFF position.

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 schakelaarhandel 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.

Related Documentation

- [DC Power Electrical Safety Guidelines on page 162](#)
- [DC Power Grounding Requirements and Warning on page 164](#)
- [DC Power Wiring Sequence Warning on page 165](#)
- [DC Power Wiring Terminations Warning on page 167](#)
- [General Electrical Safety Guidelines and Warnings on page 157](#)
- [General Safety Guidelines and Warnings on page 135](#)

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 is identifiable by green and yellow stripes is installed as part of the branch circuit that supplies the device. The grounding conductor is a separately derived system at the supply transformer or motor generator set.



WARNING: When you install the device, the ground connection must always be made first and disconnected 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 Erdschluß 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.

**Related
Documentation**

- [DC Power Electrical Safety Guidelines on page 162](#)
- [DC Power Disconnection Warning on page 163](#)
- [DC Power Wiring Sequence Warning on page 165](#)
- [DC Power Wiring Terminations Warning on page 167](#)
- [General Electrical Safety Guidelines and Warnings on page 157](#)
- [General Safety Guidelines and Warnings on page 135](#)

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 –45 V to –60 V. When disconnecting power, the proper wiring sequence is –45 V to –60 V, +RTN to +RTN, then ground to ground. Note that the ground wire must always be connected first and disconnected last.

Waarschuwing De juiste bedradingsvolgorde verbonden is aarde naar aarde, +RTN naar +RTN, en –45 V naar –60 V. De juiste bedradingsvolgorde losgemaakt is en –45 naar –60 V, +RTN naar +RTN, aarde naar aarde.

Varoitus Oikea yhdistettävä kytkentäjäjestys on maajohto maajohtoon, +RTN varten +RTN, –45 V varten –60 V. Oikea irrotettava kytkentäjäjestys on –45 V varten –60 V, +RTN varten +RTN, maajohto maajohtoon.

Attention Câblez l'alimentation 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 –45 V à –60 V. En débranchant la puissance, l'ordre approprié de câblage est –45 V à –60 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 –45 V zu –60V. Die richtige Sequenz zum Abtrennen der Stromversorgung ist –45 V zu –60 V, +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, –45 V til –60 V. Riktig frakoples tilkoplingssekvens er –45 V til –60 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 –45 V a –60 V. Al desconectar potencia, la secuencia apropiada del cableado es –45 V a –60 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 sequência apropriada da fiação é moída para moer, +RTN a +RTN, então –45 V a –60 V. Ao desconectar a potência, a sequência apropriada da fiação é –45 V a –60 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, –45 V till –60 V. Korrekt kopplas kopplingssekvens ar –45 V till –60 V, +RTN till +RTN, jord till jord.

Related Documentation • [DC Power Electrical Safety Guidelines on page 162](#)

- [DC Power Disconnection Warning on page 163](#)
- [DC Power Grounding Requirements and Warning on page 164](#)
- [DC Power Wiring Terminations Warning on page 167](#)
- [General Electrical Safety Guidelines and Warnings on page 157](#)
- [General Safety Guidelines and Warnings on page 135](#)

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 must be the appropriate size for the wires and must clamp both the insulation and 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 johdinliitääntää, esimerkiksi suljettua silmukkaa tai kourumaista liitääntää, jossa on ylöspäin käännetyt kiinnityskorvat. Tällaisten liitääntöjen 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 Verdrahtungsabschlüsse, z.B. für einen geschlossenen Regelkreis oder gabelförmig, mit nach oben gerichteten Kabelschuhen 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 forcilla 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.

**Related
Documentation**

- [DC Power Electrical Safety Guidelines on page 162](#)
- [DC Power Disconnection Warning on page 163](#)
- [DC Power Grounding Requirements and Warning on page 164](#)
- [DC Power Wiring Sequence Warning on page 165](#)
- [General Electrical Safety Guidelines and Warnings on page 157](#)
- [General Safety Guidelines and Warnings on page 135](#)

Multiple Power Supplies Disconnection Warning



WARNING: For a device that has 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.

**Related
Documentation**

- [AC Power Electrical Safety Guidelines on page 160](#)
- [DC Power Electrical Safety Guidelines on page 162](#)
- [General Electrical Safety Guidelines and Warnings on page 157](#)
- [General Safety Guidelines and Warnings on page 135](#)

TN Power Warning



WARNING: The device is designed to work with a TN power system.

Waarschuwing Het apparaat is ontworpen om te functioneren met TN energiesystemen.

Varoitus Koje on suunniteltu toimimaan TN-sähkövoimajärjestelmien yhteydessä.

Attention Ce dispositif a été conçu pour fonctionner avec des systèmes d'alimentation TN.

Warnung Das Gerät ist für die Verwendung mit TN-Stromsystemen ausgelegt.

Avvertenza Il dispositivo è stato progettato per l'uso con sistemi di alimentazione TN.

Advarsel Utstyret er utfomet til bruk med TN-strømsystemer.

Aviso O dispositivo foi criado para operar com sistemas de corrente TN.

¡Atención! El equipo está diseñado para trabajar con sistemas de alimentación tipo TN.

Varning! Enheten är konstruerad för användning tillsammans med elkraftssystem av TN-typ.

Related Documentation

- [General Electrical Safety Guidelines and Warnings on page 157](#)
- [General Safety Guidelines and Warnings on page 135](#)
- [Grounded Equipment Warning on page 151](#)
- [Multiple Power Supplies Disconnection Warning on page 168](#)

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, then call for help.

Related Documentation

- [AC Power Electrical Safety Guidelines on page 160](#)
- [DC Power Electrical Safety Guidelines on page 162](#)

- [General Electrical Safety Guidelines and Warnings on page 157](#)
- [General Safety Guidelines and Warnings on page 135](#)

PART 8

Compliance Information

- [Compliance Information on page 173](#)

CHAPTER 18

Compliance Information

- [Agency Approvals for the NSM4000 Appliance on page 173](#)
- [Compliance Statements for EMC Requirements for the NSM4000 Appliance on page 174](#)
- [Compliance Statements for Acoustic Noise for the NSM4000 Appliance on page 176](#)

Agency Approvals for the NSM4000 Appliance

The NSM4000 appliance complies with the following standards:

- Safety
 - CAN/CSA-C22.2 No. 60950-1 (2007) Information Technology Equipment
 - UL 60950-1 (2nd Ed.) Information Technology Equipment
 - EN 60950-1 (2006) Information Technology Equipment
 - IEC 60950-1 (2005) Information Technology Equipment
 - EN 60825-1 (2007) Safety of Laser Products - Part 1: Equipment classification and requirements
- EMC
 - FCC 47CFR Part 15 Class A (USA)
 - EN 55022 Class A Emissions (Europe)
 - ICES-003 Class A
 - VCCI Class A (Japan)
 - AS/NZS CISPR 22 Class A (Australia/New Zealand)
 - CISPR 22 Class A
 - EN 55024
 - EN 300386
 - EN 61000-3-2 Power Line Harmonics
 - EN 61000-3-3 Voltage Fluctuations and Flicker
 - EN 61000-4-2 ESD
 - EN 61000-4-3 Radiated Immunity

- [EN 61000-4-4 EFT](#)
- [EN 61000-4-5 Surge](#)
- [EN 61000-4-6 Low Frequency Common Immunity](#)
- [EN 61000-4-11 Voltage Dips and Sags](#)

Related Documentation

- [Compliance Statements for EMC Requirements for the NSM4000 Appliance on page 174](#)
- [Compliance Statements for Acoustic Noise for the NSM4000 Appliance on page 176](#)

Compliance Statements for EMC Requirements for the NSM4000 Appliance

This topic describes the electromagnetic compatibility (EMC) requirements for the NSM4000 appliance:

- [Canada on page 174](#)
- [European Community on page 175](#)
- [Japan on page 175](#)
- [Korea on page 175](#)
- [United States on page 175](#)
- [FCC Part 15 Statement on page 176](#)

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.

The Industry Canada label identifies certified equipment. This certification means that the equipment meets certain telecommunications network protective, operational, and safety requirements. Industry Canada does not guarantee the equipment will operate to the users' satisfaction.

Before installing this equipment, users should ensure that it is permissible to connect the equipment to the facilities of the local telecommunications company. The equipment must also be installed using an acceptable method of connection. In some cases, the inside wiring associated with a single line individual service can be extended by means of a certified connector assembly. The customer should be aware that compliance with the above conditions might not prevent degradation of service in some situations.

Repairs to certified equipment should be made by an authorized Canadian maintenance facility designated by the supplier. Any repairs or alterations made by the user to this equipment, or equipment malfunctions, might give the telecommunications company cause to request the user to disconnect the equipment.



CAUTION: Users should not attempt to make electrical ground connections by themselves, but should contact the appropriate inspection authority or an electrician, as appropriate.

Users should ensure for their own protection that the electrical ground connections of the power utility, telephone lines, and internal metallic water pipe system, if present, are connected together. This precaution might be particularly important in rural areas.

European Community

This is a Class A device. In a domestic environment this device might cause radio interference, in which case the user needs to take adequate measures.

Japan

この装置は、クラス A 情報技術装置です。この装置を家庭環境で使用する
と電波妨害を引き起こすことがあります。この場合には使用者が適切な対策
を講ずるよう要求されることがあります。 VCCI-A

The preceding translates as follows:

This is a Class A device. In a domestic environment this device might cause radio interference, in which case the user needs to take adequate measures.

VCCI-A

Korea

이 기기는 업무용(A급) 전자파적합기기로서 판
매자 또는 사용자는 이 점을 주의하시기 바라
며, 가정외의 지역에서 사용하는 것을 목적으로
합니다.

Korean Class A Warning 9040913

The preceding translates as follows:

This equipment is Industrial (Class A) electromagnetic wave suitability equipment and the seller or user should take notice of it, and this equipment is to be used in places other than the home

United States

The device has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 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 users need to correct the interference at their own expense.

FCC Part 15 Statement

This equipment has been tested and found to comply with the limits for a Class A digital device pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, might cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation.

If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try and correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and the receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio or TV technician for help.

Related Documentation

- [Agency Approvals for the NSM4000 Appliance on page 173](#)
- [Compliance Statements for Acoustic Noise for the NSM4000 Appliance on page 176](#)

Compliance Statements for Acoustic Noise for the NSM4000 Appliance

This topic applies to the NSM4000 appliance.

Maschinenlärminformations-Verordnung - 3. GPSGV, der höchste Schalldruckpegel beträgt 70 dB(A) oder weniger gemäss EN ISO 7779

Translation:

The emitted sound pressure is below 70 dB(A) per EN ISO 7779.

Related Documentation

- [Agency Approvals for the NSM4000 Appliance on page 173](#)
- [Compliance Statements for EMC Requirements for the NSM4000 Appliance on page 174](#)

PART 9

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- [Index on page 179](#)

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