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9. Termination. Any breach of this Agreement or failure by Customer to pay any applicable fees due shall result in automatic termination of the license granted hereunder. Upon such termination, Customer shall destroy or return to Juniper all copies of the Software and related documentation in Customer’s possession or control.

10. Taxes. All license fees payable under this Agreement are exclusive of tax. Customer shall be responsible for paying Taxes arising from the purchase of the license, or importation or use of the Software. If applicable, valid exemption documentation for each taxing jurisdiction shall be provided to Juniper prior to invoicing, and Customer shall promptly notify Juniper if their exemption is revoked or modified. All payments made by Customer shall be net of any applicable withholding tax. Customer will provide reasonable assistance to Juniper in connection with such withholding taxes by promptly: providing Juniper with valid tax receipts and other required documentation showing Customer’s payment of any withholding taxes; completing appropriate applications that would reduce the amount of withholding tax to be paid; and notifying and assisting Juniper in any audit or tax proceeding related to transactions hereunder. Customer shall comply with all applicable tax laws and regulations, and Customer will promptly pay or reimburse Juniper for all costs and damages related to any liability incurred by Juniper as a result of Customer’s non-compliance or delay with its responsibilities herein. Customer’s obligations under this Section shall survive termination or expiration of this Agreement.

11. Export. Customer agrees to comply with all applicable export laws and restrictions and regulations of any United States and any applicable foreign agency or authority, and not to export or re-export the Software or any direct product thereof in violation of any such restrictions, laws or regulations, or without all necessary approvals. Customer shall be liable for any such violations. The version of the Software supplied to Customer may contain encryption or other capabilities restricting Customer’s ability to export the Software without an export license.

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15. Miscellaneous. This Agreement shall be governed by the laws of the State of California without reference to its conflicts of laws principles. The provisions of the U.N. Convention for the International Sale of Goods shall not apply to this Agreement. For any disputes arising under this Agreement, the Parties hereby consent to the personal and exclusive jurisdiction of, and venue in, the state and federal courts within Santa Clara County, California. This Agreement constitutes the entire and sole agreement between Juniper and the Customer with respect to the Software, and supersedes all prior and contemporaneous
agreements relating to the Software, whether oral or written (including any inconsistent terms contained in a purchase order), except that the terms of a separate written agreement executed by an authorized Juniper representative and Customer shall govern to the extent such terms are inconsistent or conflict with terms contained herein. No modification to this Agreement nor any waiver of any rights hereunder shall be effective unless expressly assented to in writing by the party to be charged. If any portion of this Agreement is held invalid, the Parties agree that such invalidity shall not affect the validity of the remainder of this Agreement. This Agreement and associated documentation has been written in the English language, and the Parties agree that the English version will govern. (For Canada: Les parties aux présentes confirment leur volonté que cette convention de même que tous les documents y compris tout avis qui s’y rattache, soient rédigés en langue anglaise. (Translation: The parties confirm that this Agreement and all related documentation is and will be in the English language)).
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Part 1

Using the NSM Appliance

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About This Guide

About This Guide contains the following sections:

- Objectives on page xv
- Audience on page xv
- Conventions on page xv
- Documentation on page xvii
- Documentation Feedback on page xviii
- Requesting Technical Support on page xviii

Objectives

Juniper Networks NSMXpress and NSM3000 are appliance versions of Network and Security Manager (NSM), a software application that centralizes control and management of your Juniper Networks devices. With NSM, Juniper Networks delivers integrated, policy-based security and network management for network and security devices. NSMXpress and NSM3000 run NSM 2009.1.

NSM appliances simplify the complexity of device administration by providing single, integrated management interfaces that control device parameters. Each appliance is preconfigured as either a regional server or central manager.

This guide describes how you can install NSM onto your NSM appliances. In addition, this guide describes how to manage the appliance using the NSM command-line interface (CLI) or the Web interface.

Audience

This guide is intended for system administrators responsible for the security infrastructure of their organization. Specifically, this book provides procedures for firewall and VPN administrators, network/security operations center administrators, and system administrators responsible for user permissions on the network.

Conventions

The sample screens used throughout this guide are representations of the screens that appear when you install and configure the NSM software. The actual screens you see may differ.
All examples show default file paths. If you do not accept the installation defaults, your paths will vary from the examples.

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

**Table 1: Notice Icons**

<table>
<thead>
<tr>
<th>Icon</th>
<th>Meaning</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>📃</td>
<td>Informational note</td>
<td>Indicates important features or instructions.</td>
</tr>
<tr>
<td>🔴</td>
<td>Caution</td>
<td>Indicates a situation that might result in loss of data or hardware damage.</td>
</tr>
<tr>
<td>⚠️</td>
<td>Warning</td>
<td>Alerts you to the risk of personal injury or death.</td>
</tr>
<tr>
<td>🌟</td>
<td>Laser warning</td>
<td>Alerts you to the risk of personal injury from a laser.</td>
</tr>
</tbody>
</table>

Table 2 on page xvi defines text conventions used in this guide.

**Table 2: Text Conventions**

<table>
<thead>
<tr>
<th>Convention</th>
<th>Description</th>
<th>Examples</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Bold typeface like this</strong></td>
<td>Represents commands and keywords in text.</td>
<td>• Issue the clock source command.</td>
</tr>
<tr>
<td></td>
<td>Represents keywords</td>
<td>• Specify the keyword exp-msg</td>
</tr>
<tr>
<td></td>
<td>Represents UI elements</td>
<td>• Click User Objects</td>
</tr>
<tr>
<td><strong>Bold typeface like this</strong></td>
<td>Represents text that the user must type.</td>
<td>user input</td>
</tr>
</tbody>
</table>
| **fixed-width font** | Represents information as displayed on the terminal screen. | host1# show ip ospf  Routing Process OSPF 2 with Router ID 5.5.0.250  
Router is an area Border Router (ABR) |
| Key names linked with a plus (+) sign | Indicates that you must press two or more keys simultaneously. | Ctrl + d |
| **Italics** | Emphasizes words | • The product supports two levels of access, user and privileged. |
| | Identifies variables | • clusterID, ipAddress. |
| The angle bracket (>) | Indicates navigation paths through the UI by clicking menu options and links. | Object Manager > User Objects > Local Objects |
Table 3 defines syntax conventions used in this guide.

### Table 3: Syntax Conventions

<table>
<thead>
<tr>
<th>Convention</th>
<th>Description</th>
<th>Examples</th>
</tr>
</thead>
<tbody>
<tr>
<td>Words in plain text</td>
<td>Represent keywords</td>
<td>terminal length</td>
</tr>
<tr>
<td>Words in italics</td>
<td>Represent variables</td>
<td>mask, accessListName</td>
</tr>
<tr>
<td>Words separated by the pipe (</td>
<td>) symbol</td>
<td>Represent a choice to select one keyword or variable to the left or right of this symbol. The keyword or variable can be optional or required.</td>
</tr>
<tr>
<td>Words enclosed in brackets ( [ ] )</td>
<td>Represent optional keywords or variables.</td>
<td>[ internal</td>
</tr>
<tr>
<td>Words enclosed in brackets followed by and asterisk ( [ ]*)</td>
<td>Represent optional keywords or variables that can be entered more than once.</td>
<td>[ level1</td>
</tr>
<tr>
<td>Words enclosed in braces ( { } )</td>
<td>Represent required keywords or variables.</td>
<td>{ permit</td>
</tr>
</tbody>
</table>

### Documentation

Table 4 describes documentation for NSM.

### Table 4: Network and Security Manager Publications

<table>
<thead>
<tr>
<th>Book</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Network and Security Manager Installation Guide</td>
<td>Describes the steps to install the NSM management system on a single server or on separate servers. It also includes information on how to install and run the NSM user interface. This guide is intended for IT administrators responsible for the installation or upgrade of NSM.</td>
</tr>
<tr>
<td>Network and Security Manager Administration Guide</td>
<td>Describes how to use and configure key management features in the NSM. It provides conceptual information, suggested workflows, and examples. This guide is best used in conjunction with the NSM Online Help, which provides step-by-step instructions for performing management tasks in the NSM user interface (UI). This guide is intended for application administrators or those individuals responsible for owning the server and security infrastructure and configuring the product for multiuser systems. It is also intended for device configuration administrators, firewall and VPN administrators, and network security operation center administrators.</td>
</tr>
<tr>
<td>Network and Security Manager Configuring ScreenOS Devices Guide</td>
<td>Describes NSM features related to device configuration and management. It also explains how to configure basic and advanced NSM functionality, including deploying new device configurations, managing security policies and VPNs, and general device administration.</td>
</tr>
</tbody>
</table>
Table 4: Network and Security Manager Publications (continued)

<table>
<thead>
<tr>
<th>Book</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Network and Security Manager Online Help</td>
<td>Provides procedures for basic tasks in the NSM user interface. It also includes a brief overview of the NSM system and a description of the GUI elements.</td>
</tr>
<tr>
<td>Network and Security Manager API Guide</td>
<td>Provides complete syntax and a description of the Simple Object Access Protocol (SOAP) messaging interface to NSM.</td>
</tr>
<tr>
<td>Network and Security Manager Release Notes</td>
<td>Provides the latest information about features, changes, known problems, resolved problems, and system maximum values. If the information in the Release Notes differs from the information found in the documentation set, follow the Release Notes. Release Notes are included on the corresponding software CD and are available on the Juniper Networks Website.</td>
</tr>
<tr>
<td>NSMXpress and NSM3000 User Guide</td>
<td>Describes how to set up and manage an NSM appliance as a central manager or regional server.</td>
</tr>
</tbody>
</table>

Documentation Feedback

We encourage you to provide feedback, comments, and suggestions so that we can improve the documentation. You can send your comments to techpubs-comments@juniper.net, or fill out the documentation feedback form at https://www.juniper.net/cgi-bin/docbugreport/. If you are using e-mail, be sure to include the following information with your comments:

- Document name
- Document part number
- Page number
- Software release version (not required for Network Operations Guides [NOGs])

Requesting Technical Support

Technical product support is available through the Juniper Networks Technical Assistance Center (JTAC). If you are a customer with an active J-Care or JNASC support contract, or are covered under warranty, and need postsales technical support, you can access our tools and resources online or open a case with JTAC.

- JTAC policies—For a complete understanding of our JTAC procedures and policies, review the JTAC User Guide located at http://www.juniper.net/customers/support/downloads/7100059-EN.pdf .
- 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.
**Self-Help Online Tools and Resources**

For quick and easy problem resolution, Juniper Networks has designed an online self-service portal called the Customer Support Center (CSC) that provides you with the following features:

- Find CSC offerings: [http://www.juniper.net/customers/support/](http://www.juniper.net/customers/support/)
- Search for known bugs: [http://www2.juniper.net/kb/](http://www2.juniper.net/kb/)
- Find product documentation: [http://www.juniper.net/techpubs/](http://www.juniper.net/techpubs/)
- Find solutions and answer questions using our Knowledge Base: [http://kb.juniper.net/](http://kb.juniper.net/)
- Download the latest versions of software and review release notes: [http://www.juniper.net/customers/csc/software/](http://www.juniper.net/customers/csc/software/)
- Search technical bulletins for relevant hardware and software notifications: [https://www.juniper.net/alerts/](https://www.juniper.net/alerts/)
- Join and participate in the Juniper Networks Community Forum: [http://www.juniper.net/company/communities/](http://www.juniper.net/company/communities/)
- Open a case online in the CSC Case Management tool: [http://www.juniper.net/cm/](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/](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/](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, visit us at [http://www.juniper.net/support/requesting-support.html](http://www.juniper.net/support/requesting-support.html)
Part 1

Using the NSM Appliance

Part 1 contains the following chapters:

■ Getting Started on page 3
■ Installing and Configuring NSM from the CLI on page 13
■ Configuring NSM from the Web Interface on page 33
Chapter 1
Getting Started

This version of the NSM appliance comes preconfigured as a regional server or central manager.

This chapter contains the following sections:
- About the NSM Appliances on page 3
- Hardware Installation on page 4
- Initial Setup Configuration on page 8

About the NSM Appliances

NSMXpress and NSM3000 are appliance versions of Network and Security Manager (NSM) and run NSM 2009.1. NSM appliances simplify the complexity of network administration by providing single, integrated management interfaces that control device parameters.

These robust hardware management systems install in minutes with full high availability (HA) support, making it easy to scale and deploy. Enterprise customers with limited resources can benefit significantly from NSM appliances because it eliminates the need to have dedicated resources for maintaining a network and security management solution.

NSM appliances make it easy for administrators to control device configuration, network settings, and security policy settings for multiple families of Juniper Networks devices including:
- IDP Series Intrusion Detection and Prevention Appliances and Firewall and VPN devices running ScreenOS.
- Devices running JUNOS software, such as J Series Services Routers, SRX Series Services Gateways, EX Series Ethernet Switches, M Series Multiservice Edge Routers, and MX Series Ethernet Services routers.
- SA Series SSL VPN Appliances
- IC Series Unified Access Control Appliances

For a complete list of supported device families and platforms, see the Network and Security Manager Administration Guide.

Up to 10 administrators can log into an NSM appliance concurrently.
**Installation and Configuration Workflow**

This guide explains the steps for installing and configuring an NSM appliance and for configuring NSM.

1. Install the NSM appliance hardware.
2. Set up the NSM appliance using the serial port.
3. Configure the NSM appliance software using either the CLI or the Web interface.
4. Configure the NSM software which is preinstalled in the NSM appliance, with site-specific parameters.

**Hardware Installation**

We recommend that you install the NSM appliance on your LAN to ensure that it can communicate with your applicable resources, such as authentication servers, DNS servers, internal Web servers through HTTP/HTTPS, external Web sites through HTTP/HTTPS (optional), the Juniper update server via HTTP, Network File System (NFS) file servers (optional), and client/server applications (optional).

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**NOTE:** If you decide to install an NSM appliance in your DMZ, ensure that it can connect to your internal resources.

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**NSM Appliance Ports**

Table 5 on page 5 provides required port information on the NSM appliances.
### Table 5: Required Ports on an NSM Appliance

<table>
<thead>
<tr>
<th>Direction</th>
<th>Port</th>
<th>Description</th>
<th>LAN</th>
<th>Internet</th>
<th>Depends on Configuration</th>
</tr>
</thead>
<tbody>
<tr>
<td>In</td>
<td>22</td>
<td>SSH command-line management</td>
<td>Yes</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td></td>
<td>443</td>
<td>Web interface for administrator login</td>
<td>Yes</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td></td>
<td>8443</td>
<td>Web interface for listening for NSM API messages.</td>
<td>LAN</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td></td>
<td>7800</td>
<td>Connections from managed devices to the NSM appliance</td>
<td>Yes</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td></td>
<td>7801</td>
<td>Connections from the NSM GUI Client to NSM</td>
<td>Yes</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td></td>
<td>7802</td>
<td>Heartbeat between peers in an HA cluster</td>
<td>Yes</td>
<td>No</td>
<td>Yes</td>
</tr>
<tr>
<td></td>
<td>7803</td>
<td>Connections from managed IDP devices to NSM</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td></td>
<td>7804</td>
<td>Connections from devices running JUNOS, Secure Access devices, or Infranet Controller devices</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Out</td>
<td>22</td>
<td>SSH connection to new managed device</td>
<td>Yes</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td></td>
<td>23</td>
<td>Telnet connection to new managed device</td>
<td>Yes</td>
<td>No</td>
<td>Yes</td>
</tr>
<tr>
<td></td>
<td>53</td>
<td>DNS lookups</td>
<td>Yes</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td></td>
<td>80</td>
<td>System Security Updates from Juniper Networks</td>
<td>No</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td></td>
<td>111</td>
<td>Shared Disk portmap lookup</td>
<td>Yes</td>
<td>No</td>
<td>Yes</td>
</tr>
<tr>
<td></td>
<td>123</td>
<td>Network Time Protocol (NTP) time synchronization</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td></td>
<td>2049</td>
<td>Shared Disk NFS connection</td>
<td>Yes</td>
<td>No</td>
<td>Yes</td>
</tr>
</tbody>
</table>

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

### Installing the NSMXpress Hardware

Follow these steps to unpack the NSMXpress appliance and connect it to your network.

To install NSMXpress:
1. Place the shipping container on a flat surface and remove the hardware components with care.

2. Remove the NSMXpress device from the shipping container and place it on a flat surface.

3. Mount NSMXpress in your server rack using the attached mounting brackets.

4. Plug the power cord into the AC receptacle on the rear panel.
   If your NSMXpress contains two power supplies, plug a power cord into each AC receptacle.

5. Plug the other end of the power cord into a wall socket.
   If your NSMXpress contains two power supplies, plug each power cord into a separate power circuit to ensure that the NSMXpress continues to receive power if one of the power circuits fails.

6. Plug the Ethernet cable into the port marked ETH0 on the front panel. See Figure 3 on page 8.

7. Plug the null modem serial cable into the console port. See Figure 3 on page 8.
   This cable was shipped with your NSMXpress. If you do not have this cable, use any other null modem serial cable.

8. Push the power button in the upper left corner of the front panel.
   The green LED below the power button turns on. The NSMXpress hard disk LED turns on whenever the appliance reads data from or writes data to an NSMXpress hard disk.
   The internal port uses two LEDs to indicate the LAN connection status, which is described in Table 6 on page 6.

Hardware installation is now complete. The next step is to set up the software, as described in “Initial Setup Configuration” on page 8.

Table 6 on page 6 provides LED information for the Ethernet ports.

Table 6: Ethernet Port LEDs

<table>
<thead>
<tr>
<th>LAN Status</th>
<th>LED 1</th>
<th>LED2</th>
</tr>
</thead>
<tbody>
<tr>
<td>10 Mbps connection</td>
<td>Off</td>
<td>Off</td>
</tr>
<tr>
<td>100 Mbps connection</td>
<td>Green</td>
<td>Off</td>
</tr>
</tbody>
</table>
### Table 6: Ethernet Port LEDs (continued)

<table>
<thead>
<tr>
<th>LAN Status</th>
<th>LED 1</th>
<th>LED2</th>
</tr>
</thead>
<tbody>
<tr>
<td>1000 Mbps connection</td>
<td>Orange</td>
<td>Off</td>
</tr>
<tr>
<td>Data is being transferred</td>
<td>Orange, Green, or Off</td>
<td>Blinking</td>
</tr>
<tr>
<td>No connection</td>
<td>Off</td>
<td>Off</td>
</tr>
</tbody>
</table>

#### Installing the NSM3000 Hardware

Follow these steps to unpack the NSM3000 appliance and connect it to your network.

To install NSM3000:

1. Place the shipping container on a flat surface and remove the hardware components with care.
2. Remove the NSM appliance from the shipping container and place it on a flat surface.
3. Mount the NSM appliance in your server rack using the attached mounting brackets.
4. Plug the power cord into the AC receptacle on the rear panel.

#### Figure 2: Rear Panel of NSM3000

If your NSM appliance contains two power supplies, plug a power cord into each AC receptacle.

5. Plug the other end of the power cord into a wall socket.

   If your NSM appliance contains two power supplies, plug each power cord into a separate power circuit to ensure that the NSM appliance continues to receive power if one of the power circuits fails.

6. Plug the Ethernet cable into the port marked ETH0 on the front panel.
7. Plug the null modem serial cable into the console port.
   
   This cable was shipped with your NSM3000. If you do not have this cable, use any other null modem serial cable.

8. Push the power button in the upper left corner of the front panel.
   
   The green LED below the power button turns on. The NSM3000 hard disk LED turns on whenever the appliance reads data from or writes data to an NSM3000 hard disk.

The internal port uses two LEDs to indicate the LAN connection status, which is described in Table 6 on page 6.

Table 6 on page 6 provides LED information for the Ethernet ports.

**Initial Setup Configuration**

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

This section describes the required serial console setup and the tasks you need to perform when connecting to your NSM appliance for the first time:

- Boot the NSM Appliance on page 8
- Set Up Your Appliance on page 9

**Boot the NSM Appliance**

To configure the NSM appliance for the first time, you must attach your NSM 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. Connect the terminal or laptop to the null modem serial cable plugged into the NSM appliance console port.

3. Turn on the NSM appliance.

When the NSM appliance is powered on, the serial console displays diagnostic information before proceeding to the boot countdown. When complete, the serial console displays the login prompt terminal emulator.

NSMXpress.juniper.net login:

4. Enter **admin** as your default login name.

5. Enter **abc123** as your default password.

6. Change your default password when prompted. Enter the default password first, followed by your new password. All passwords are case-sensitive.

**Set Up Your Appliance**

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

To set up your appliance either as a regional server or a central manager, follow these steps:

1. Enter the IP address for interface eth0 and press Enter.
2. Enter the subnet mask for interface eth0 and press Enter.
3. Enter the default route or default gateway address for interface eth0 and press Enter.

```
Applying changes...
Re-loading database
ip_tables: (C) 2000–2002 Netfilter core team
ip_tables: (C) 2000–2002 Netfilter core team
ip_tables: (C) 2000–2002 Netfilter core team
Done!
```

Your NSMXpress is now active on the network.

To configure your system via a web browser, connect to:

```
https://10.150.43.205/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@NSMXpress ~]$ 
```
To complete the setup process using the CLI, go to “CLI Configuration” on page 10. To complete the setup process using the Web interface, go to “Web Interface Configuration” on page 11.

**CLI Configuration**

To finish initial setup from the CLI, use the following steps. If you are logged in, enter `nsm_setup` at the command prompt.

If you are not logged on, follow these steps:

1. Enter your admin username, and then press Enter.
2. Enter your password and then press Enter.

   ```
   Juniper NSMXpress OS build 2.105498
   NSM 2009.1r1Kernel 2.6.9-55.0.2.ELsmp on an i686
   NSMXpress.Juniper.net login: admin
   Password:
   Last login: Tue May 27 17:20:25 on ttyS0
   Run NSMXpress system setup? [y/N]
   ```

3. Enter `y` to run the system setup program from the CLI.

   **NOTE:** 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.

4. Go to “Installing and Configuring NSM from the CLI” on page 13 for information about how to install and configure NSM on your NSM appliance from the CLI.

**NSM Appliance Users**

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 into 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 $ nsm prompt, then enter the “admin” password you set when logging into the NSM appliance. To return to the “admin” user, enter `exit` at the $ prompt.
- **“root” user**—Administers advanced system settings. To change to “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 into the NSM appliance. To return to the “admin” user, enter `exit` from the # prompt.
Web Interface Configuration

To finish initial setup from a Web interface, use the following steps.

1. Copy the URL (starting with `https://`) from the terminal emulator after installing the NSM appliance:

   Your NSMXpress is now active on the network.
   To configure your system via a web browser, connect to:
   `https://10.150.43.205/administration`

2. Open a Web browser and paste the URL into the address text box.
3. Press Enter to open the NSM appliance login page.
4. Enter the admin user name and password and then click Login.
5. See “Configuring NSM from the Web Interface” on page 33 for details about how to install and configure NSM on your NSM appliance from the Web interface.
Chapter 2

Installing and Configuring NSM from the CLI

This chapter describes how to install and configure NSM on your NSM appliance from the command-line interface (CLI). It contains the following sections:

- Navigating the Menus on page 13
- Configuring the NSM Software on page 15
- Configuring a Regional Server on page 16
- Configuring the Central Manager on page 21
- Configuring Standard Configuration Options on page 25
- The NSM Appliance Default Restoration on page 30

Navigating the Menus

As you configure NSM on your NSM 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. These options include:

- General Options on page 13
- Using nsm_setup on page 14

General Options

The NSM Configuration Main Menu has the following options:

NSM Configuration Main Menu

1> Management IP [10.150.43.205]
   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> NSM License type []
Specify a license file, or select "Base Install"
to use the built-in limited device license.

A> Apply settings
C> Cancel all changes and quit
R> Redraw menu

Choice [1-4,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

**Using nsm_setup**

After initial setup, you can cancel out of the setup program and later return to it.
Follow these steps to return to the NSMappliance setup program. The steps in this
procedure assume the NSMappliance is connected to a computer running a terminal
emulation program. If not, see “Initial Setup Configuration” on page 8 for details.

NOTE: Run nsm_setup with your “admin” user login only. Do not run nsm_setup
as an “nsm” user.

To return to the setup program after the initial setup:
1. Turn on the NSM appliance and wait for the login prompt:

```
Juniper NSMXpress NSM 2009.1r1
Kernel 2.6.9-42.0.8.ELsmp on an i686

NSMXpress.juniper.net logon: admin
Password:
Last Login: Tue May 17 09:43:50 on tty50
Run NSMXpress system setup? [y/N] N

To start system setup manually, type:
nsm_setup

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

[admin@NSMXpress ~]$```

2. Log in using your “admin” user name and password.
3. Enter **nsm_setup** at the prompt.
4. Enter your password and press Enter.
5. From the Settings menu:
   - For a regional server, enter 9, and then enter 1 to display the NSM Configuration Main Menu for typical settings, or enter 2 for custom settings.
   - For a central manager, enter 9 to display the Configuration Main Menu.

---

### Configuring the NSM Software

After you log in as an “admin” user, an initial setup script walks you through additional configuration system settings before finalizing the NSM installation. This section describes that setup process.

The steps in this procedure assume you:

- Have completed all appropriate steps in “Getting Started” on page 3.
- Have a console terminal or terminal emulation utility running.
- See the following command output in the emulation utility window:

```
Your NSMXpress is now active on the network.
To configure your system via a web browser, connect to:
    https://10.150.43.205/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@NSMXpress ~]$
```
Your NSM appliance comes preconfigured as a regional server or a central manager, as described in the following sections:

- Configuring a Regional Server on page 16
- Configuring the Central Manager on page 21

**Configuring a Regional Server**

For details on using the general setup menu items, see “Navigating the Menus” on page 13.

To configure the regional server, select one of the following options by number:

- **Typical Settings**—Enter 1 to select typical settings. This option provides a simplified menu to install a regional server. When using these options neither HA nor statistical report server (SRS) can be in use.

- **Custom Settings**—Enter 2 to select custom settings. This option provides full access to all configuration options including HA and SRS for regional server.

The following sections provide details of these options:

- Configuring Typical Settings on page 16
- Configuring Custom Settings on page 17

**Configuring Typical Settings**

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

NSM Configuration Main Menu

1> Management IP [10.150.43.205]
   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> NSM License type []
   Specify a license file, or select "Base Install" to use the built-in limited device license.

A> Apply settings
C> Cancel all changes and quit
R> Redraw menu

Choice [1-4,A,C,R]:
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 superuser (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, and to the central manager.

- **NSM License type [Base Install]**—Enter 4 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 Custom 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> **Menu: High Availability [Off]**

6> **Menu: Advanced Options**

You have the following options:

- **High Availability**—Enter 5 to open a menu to configure HA.

- **Advanced Options**—Enter 6 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 17

- **Configuring Advanced Options** on page 19

### Configuring High Availability

**NOTE:** When installing NSM regional server in a high availability configuration with a shared disk, you must first revert the system to factory default values using the boot menu. See “The NSM Appliance Default Restoration” on page 30 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 NSM 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. NSM 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*.

1> Shared Disk: Gui Server [n]
   If ‘y’, data directory for GUI Server is a shared disk partition

2> Shared Disk: Device Server [n]
   If ‘y’, data directory for Device Server is a shared disk partition

3> Shared Disk Source (NFS) []
   Source of shared disk, e.g. /dev/sdc1 or server:/share

4> Shared Disk NFS Mount Options [rw]
   Options when mounting shared disk e.g. rw, intr, tcp, soft, timeo=2

5> Return to High Availability menu

- **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” on page 26 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.

1> HA Link count [2]
   Number of heartbeat links between the Primary and Secondary Servers.

2> HA Link 2 Local IP []
   IP address for this machine’s secondary heartbeat link
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.

1> HA Heartbeat Frequency [15]
Time interval in seconds between heartbeat messages (Default is 15 seconds)

2> HA Heartbeat Failure Threshold [4]
Number of missing heartbeat messages before automatic switchover occurs (Default is 4 missing messages)

3> HA Data Replication Timeout [1800]
Rsync Command Replication Timeout (Default is 1800 seconds)

4> Return to high Availability menu

Configuring Advanced Options

The Advanced Options menu provides the following configuration options:

Menu: Advanced Options

1> https port for NBI service [8443]
The port number to listen for NBI
(Default is 8443)

2> Menu: Remote Replication of Database [Off]

3> Menu: SRS [Off]

M> Main Menu
R> Redraw menu

Choice [1-3,M,R]:

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 timeout value.

- Menu: SRS—Enter 3 to open a menu to configure 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 20
- Enabling and Configuring the Statistical Report Server on page 20

**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:

1> Remote Replication of Database [n]
   If 'y', local backups will be sent to a remote backup machine

2> Hour of day to Replicate Database [02]
   Hour to start a backup

3> Remote backup IP [ ]
   IP address of a remote backup machine

4> Remote Replication Timeout (seconds) [1800]
   Rsync Command Backup Timeout (seconds)
   (Default is 1800 seconds)

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 to configure the statistical report server (SRS):

- **NOTE:** SRS must be installed on a separate server from NSM.
Database Type

4> SRS Database Name [netscreen]
Database name

5> SRS DB Owner Name [netscreen]
Database user name

6> SRS DB Owner Password []
Database password

You have the following options:

- **SRS**—Enter 1 to turn the statistical report server 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.

Click **Submit** to save the options and return to the NSM Configuration Main Menu.

**Configuring the Central Manager**

For details about using the general setup menu items, see “Navigating the Menus” on page 13.

This section describes the options that are available for a central manager configuration. The central manager main menu options are:

**NSM Configuration Main Menu**

1> Management IP [10.150.43.205]
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 for authentication between HA peers and to all Regional Servers

4> Menu: High Availability [Off]

5> Menu: Advanced Options
A> Apply settings  
C> Cancel all changes and quit  
R> Redraw menu

Choice [1-5,A,C,R]:

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 superuser (also referred to as the NSM administrator). This user has the highest level of privileges in NSM.

- **GUI Server one-time password**—Enter 3 to specify this password. This password authenticates this server to its peer in a high-availability configuration, and to regional servers.

- **Menu: High Availability**—Enter 4 to open a menu to configure HA. See “Configuring High Availability” on page 22.

- **Menu: Advanced Options**—Enter 5 to open a menu of additional options, including the port number for receiving messages through the NSM API, and remote database replication details.

The following sections provide procedures for configuring HA and advanced options:

- Configuring High Availability on page 22
- Configuring Advanced Options on page 24

**Configuring High Availability**

To configure high availability (HA), from the NSM Configuration Main menu, enter 4. The NSM appliance displays the High Availability menu:

1> High Availability [n]  
Whether to enable HA on this server or not

2> Primary Status [y]  
If 'y', this machine is a Primary Server  
and if 'n' this machine is a Secondary Server

3> HA Remote IP []  
IP address for the peer's primary heartbeat link

4> HA Link Failure Detection IP []  
IP address outside the HA cluster

5> HA Inter-server password []  
Shared password for heartbeat
The following options are available to configure HA.

- **High Availability**—Enter 1 to turn HA on or off.

- **Primary Status**—Enter 2 to set the NSM appliance as either the primary or secondary server. At the next prompt, enter y for a primary server; enter n for a secondary server.

- **HA Remote IP**—Enter 3 to set the IP address for the HA peer in the HA cluster.

- **HA Link Failure Detection IP**—Enter 4 to set the IP address of a computer outside the HA cluster that you can ping to verify connection status.

- **HA Inter-server password**—Enter 5 to set the heartbeat password used between the primary and secondary servers.

- **Menu: Shared Disk**—Enter 6 to open the Shared Disk menu.

The options in this menu help you configure a shared disk. NSM supports shared disk via NFS only. Due to the data-intensive nature of NSM, we recommend gigabit speed links (1000 Mbps) for shared disk use. For more information on custom settings, refer to the *Network and Security Manager Installation Guide*.

1> **Shared Disk: Gui Server [n]**
If 'y', data directory for GUI Server is a shared disk partition

2> **Shared Disk Source (NFS) []**
Source of shared disk, e.g. /dev/sdc1 or server:/share

3> **Shared Disk NFS Mount Options []**
Options when mounting shared disk e.g. rw,intr,tcp,soft,timeo=2

4> **Return to High Availability menu**

- **Menu: HA Links**—Enter 7 to open the HA Links menu.

The options in this menu help you configure the second HA link in 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” on page 26 for details). 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 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.

1> **HA Link count [2]**
Number of heartbeat links between the Primary and Secondary Server.

2> **HA Link 2 Local IP []**
IP address for this machine's secondary heartbeat link
3> HA Link 2 Remote IP []
IP address for the peer's secondary heartbeat link
4> HA Remote Replication IP []
IP address used for remote HA replications
5> Return to High Availability menu

Menu: HA Advanced Settings—Enter 8 to open the HA Advanced Settings menu. For more information about HA advanced settings, refer to the Network and Security Manager Installation Guide.

1> HA Heartbeat Frequency [15]
Time interval in seconds between heartbeat messages (Default is 15 seconds)
2> HA Heartbeat Failure Threshold [4]
Number of missing heartbeat messages before automatic switchover occurs (Default is 4 missing messages)
3> HA Data Replication Timeout [1800]
Rsync Command Replication timeout (Default is 1800 seconds)
4> Return to High Availability menu

Configuring Advanced Options

To configure advanced options, from the NSM Configuration Main menu, enter 5. The NSM appliance displays the Advanced Options menu:

Menu: Advanced Options

1> https port for NBI service [8443]
The port number to listen for NBI
(Default is 8443)
2> Menu: Remote Replication of Database [Off]

M> Main Menu
R> Redraw menu
Choice [1-2,M,R]:

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 timeout value. See “Enabling and Configuring Remote Replication of the Database” on page 25.
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:

1> Remote Replication of Database [n]
   If 'y', local backups will be sent to a remote backup machine

2> Hour of day to Replicate Database [02]
   Hour to start backup

3> Remote Backup IP []
   IP address of a remote backup machine

4> Remote Replication Timeout (seconds) [1800]
   Rsync Command Backup Timeout (seconds)
   (Default is 1800 seconds)

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, and then specify the hour to start the backup. The valid range is 00 through 23.
- Remote Backup IP—Enter 3 to specify the IP address of the remote backup server. 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 change the timeout period for the remote backup. The valid range is 1 through 65535 seconds.

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 NSM appliance Settings Menu:

- Changing the Password on page 26
- Setting Interface Options on page 26
- Setting Routing Options on page 27
- Changing the NSM Appliance Hostname on page 27
- Adding DNS Servers on page 27
- Setting the System Time on page 28
Changing the Password

To change your password:
1. On the NSM 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 NSM appliance Settings menu.

Setting Interface Options

The NSM appliance has two ports labeled ETH0 and ETH1. During initial setup, you specify the eth0 interface options. Use this menu to set interface options for eth1 or modify either interface.

NOTE: If you are going to use a second link, you need to configure an IP address for eth1 before configuring this setting.

To set or modify interface options:
1. On the NSM 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. Make the following selection for interface options by selecting one of the following options:
   ■ 1 to change the IP address and return to the NSM 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 autonegotiate 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. Enter 1 for full duplex or 2 for half duplex, and then return to the NSM appliance Settings menu.

**Setting Routing Options**

To set or modify routing options:

1. On the NSM 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 NSM appliance Settings menu.
   - 2 to change the static routing options.

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

**Changing the NSM Appliance Hostname**

To change the hostname:

1. On the NSM 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 NSM appliance Settings menu, enter 5 at the prompt.
2. Enter 1 to add a name server.
3. When prompted, enter the new nameserver 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 NSM 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 NSM 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 NSM 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 NSM 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 NSM appliance operating system-level patches that protect the system against any future reported security vulnerabilities. The NSM appliance checks for new updates daily by connecting to Juniper Networks.

To manage system security updates:
1. On the NSM 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 NSM 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.

Saving Setup Options

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

Select a change to cancel it:
1> IP Change: eth1 is 192.168.1.78 / 255.255.255.0
2> Add route: 192.168.0.0 /255.255.0.0 -> eth1 : [192.168.1.254]
3> DNS add: 192.168.2.2
4> Enable NTP
5> Security updates: automatic check Disabled

A> Apply all changes
B> Make more changes
C> Cancel all changes and quit
R> Redraw menu

Choice [1-5,A,M,C,R]:

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 or the central manager.
  - C to cancel all new changes and quit the NSM 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.
The NSM Appliance Default Restoration

When you reinstall the NSM appliance, it is completely reimaged. No user data remains on the system. If you want to preserve your database, back it up before reinstalling.

To reinstall an NSM appliance, use the following procedure. The steps in the procedure assume the NSM appliance is connected to the computer with a null-modem cable. If not, refer to the section “Initial Setup Configuration” on page 8 for details.

To reinstall the NSM appliance configuration:

1. Turn on the NSM appliance.
2. Press any key while the Booting NSMXpress countdown scrolls through the screen to access the boot menu:
   - Press any key to enter the menu
   - Booting NSMXpress
   - Booting NSMXpress
   - Booting NSMXpress
   - Booting NSMXpress
   - Booting NSMXpress
   - Booting NSMXpress
   - in 4 seconds...
3. Use the arrow keys to select Re-Install current-version-number, and then press Enter:
   - NSMXpress
   - Rescue
   - Re-Install <current-version-number>
   - Re-Install <previous-version-number>
   - Rescue Boot from Secondary Drive

**NOTE:** If you have not updated the recovery partition through the Web UI, only the Re-install option (option to install the previous version) is displayed.

4. Read the paragraph, and then press Enter.
   - Booting 'Re-Install'
   - Using this option will completely erase your appliance and load the factory default image. No data recovery is possible after re-installing. To confirm erase and re-install, type "erase" as the password prompt. To abort and boot into Rescue mode, just hit <Enter> at the password prompt. Press any key.

5. Enter erase at the prompt to erase the disk. This task will take a few minutes.
When reinstallation is finished, you are prompted to login.
Chapter 3

Configuring NSM from the Web Interface

This chapter describes how to configure NSM from the NSM appliance Web interface. It contains the following sections:

- Configuring the NSM Software on page 33
- Managing NSM Administration on page 42
- Managing System Administration on page 47
- Maintaining NSM Appliances on page 66
- Troubleshooting on page 68
- Viewing System Information on page 74

Configuring the NSM Software

After logging in as an “admin” user, an initial setup script walks you through additional configuration system settings before finalizing the NSM installation. This chapter describes that setup process.

Your NSM appliance comes preconfigured as a regional server or a central manager. Most installation and configuration steps in this section are identical for both types of server. All exceptions are noted.

After logging into the NSM appliance Web interface, you have the following installation options:

- Configuring Basic Settings on page 33
- Configuring High Availability on page 36
- Advanced Options on page 38
- Installing NSM Software on page 41

Configuring Basic Settings

To install the regional server or central manager software using the minimum requirements:

1. Complete all appropriate steps in “Getting Started” on page 3.
2. Enter the https://<ip>/administration URL for your appliance in a Web browser. See “Web Interface Configuration” on page 11 for details.
3. Log into the Web interface as an “admin” user to open the Install NSM Regional Server window (see Figure 4 on page 34) or the Install NSM Central Manager window (see Figure 5 on page 35).

**NOTE:** The “admin” user default username is *admin* and the password is the one you created in Step 6 of “Boot the NSM Appliance” on page 8.
4. Enter the primary IP address of your management server for eth0 (the default).
   You can use the default IP address next to the first radio button or select the second radio button and then enter a different IP address. Each IP address you add (in addition to the default IP address) will be available in the drop-down list after you click the second radio button.

5. Enter the NSM superuser password in the top text box, and then reenter it in the text box below it.
   This password must be at least eight characters long and is case-sensitive. This password is used by the NSM superuser (also referred to as the NSM administrator). This user has the highest level of privileges in NSM.

6. Enter the GUI Server one-time password in the top text box, and then reenter it in the text box below it. This password is used to authenticate this NSM server with other NSM servers with which it communicates. Regional servers use this password to authenticate peer servers in an HA configuration and to authenticate the central manager. The central manager uses this password to authenticate its peer server in an HA configuration and any regional servers it manages. NSM servers must have the same GUI Server one-time password, or the authentication will fail.

7. Select the license option. (This option is available only for regional servers.)
   a. Select **Base Install** to use the built-in limited device license for as many as 25 devices.
   b. Click **Upload license file** to upload the license file you generated using the Juniper License Management System (LMS), which permits you to manage more than 25 devices. This license file must be located on your local hard drive.
See the Network and Security Manager installation Guide for more information about NSM licensing.

8. Click Submit to save any changes, and then click Install to install the software.

Configuring High Availability

To configure high availability (HA) settings:

1. On the NSM Configuration Main Menu, click Menu next to High Availability to access HA options. See Figure 6 on page 36.

**Figure 6: High Availability Options**

<table>
<thead>
<tr>
<th>Menu: High Availability</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>High Availability</strong></td>
</tr>
<tr>
<td><strong>Primary Status</strong></td>
</tr>
<tr>
<td><strong>HA Remote IP</strong></td>
</tr>
<tr>
<td><strong>HA Link Failure Detection IP</strong></td>
</tr>
<tr>
<td><strong>HA Inter-server password</strong></td>
</tr>
<tr>
<td><strong>Shared Disk</strong></td>
</tr>
<tr>
<td><strong>HA Links</strong></td>
</tr>
<tr>
<td><strong>HA Advanced Settings</strong></td>
</tr>
</tbody>
</table>

2. Use the High Availability option to turn HA on (y) or off (n). The default is off.

3. Use the Primary Status option to set your NSM appliance as either the primary or secondary server in the HA cluster. If you select y, it is the primary server (the default). If you select n, it is the secondary server.

4. Use the HA Remote IP option to enter the IP address for the HA peer in the HA cluster.

5. Use the HA Link Failure Detection IP option to enter the IP address of a computer outside the HA cluster that you can ping to verify connection status.

6. Use the HA Inter-server password option to enter the heartbeat password used between the primary and secondary servers.

7. Click Submit to save the changes.

8. (Optional) Click Menu next to Shared Disk (see Figure 6 on page 36) to configure a shared disk for regional servers (see Figure 7 on page 37) or for central managers (see Figure 8 on page 37).
The NSM appliance supports shared disk via NFS only. Due to the data-intensive nature of NSM, we recommend gigabit speed links (1000 Mbps) for shared disk use. For more information about custom settings, refer to the *Network and Security Manager Installation Guide*.

9. (Optional) Click **Menu** next to HA Links (see Figure 6 on page 36) to configure the second link in the HA cluster (see Figure 9 on page 37).

Use the options 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 “Configuring the Network” on page 48 for details). Setting a redundant link is optional. For more information about 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 you set the HA link count to 2, an expanded menu appears to configure the second link as shown below:

**Figure 10: Redundant Links**

<table>
<thead>
<tr>
<th>Menu: HA Links</th>
</tr>
</thead>
<tbody>
<tr>
<td>HA Link count</td>
</tr>
<tr>
<td>Number of heartbeat links between the Primary and Secondary Servers</td>
</tr>
<tr>
<td>HA Link 2 Local IP</td>
</tr>
<tr>
<td>IP address for this machine’s secondary heartbeat link</td>
</tr>
<tr>
<td>HA Link 2 Remote IP</td>
</tr>
<tr>
<td>IP address for the peer’s secondary heartbeat link</td>
</tr>
<tr>
<td>HA Remote Replication IP</td>
</tr>
<tr>
<td>IP address used for remote HA replications</td>
</tr>
</tbody>
</table>

10. (Optional) Click **Menu** next to HA Advanced Settings (see Figure 6 on page 36) to configure HA advanced settings (see Figure 11 on page 38).

    For more information about custom settings, refer to the *Network and Security Manager Installation Guide*.

**Figure 11: HA Advanced Settings**

<table>
<thead>
<tr>
<th>Menu: HA Advanced Settings</th>
</tr>
</thead>
<tbody>
<tr>
<td>HA Heartbeat Frequency</td>
</tr>
<tr>
<td>Time interval in seconds between heartbeat messages (Default is 15 seconds) (Range is 5 to 3600)</td>
</tr>
<tr>
<td>HA Heartbeat Failure Threshold</td>
</tr>
<tr>
<td>Number of missing heartbeat messages before automatic switchover occurs (Default is 4 missing messages) (Range is 1 to 10000)</td>
</tr>
<tr>
<td>HA Data Replication Timeout</td>
</tr>
<tr>
<td>Rsync Command Replication Timeout (Default is 1800 seconds) (Range is 1 to 86556)</td>
</tr>
</tbody>
</table>

11. Click **Submit** to save the HA options and return to the NSM Configuration Main Menu.

**Advanced Options**

To display the Advanced Options menu, on the NSM Configuration Main Menu, select **Menu** next to Advanced Options. The Advanced Options menu appears as shown in Figure 12 on page 39.
Advanced installation options include:

- **https port for NBI service**—Allows you to configure a port to listen for messages for the NSM API. By default, this value is 8443. You can configure it to any port number from 1025 to 65535.

- **Remote Replication of Database**—Mirrors 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.

- **SRS Enabled Options (regional server only)**—Opens a menu to enable and configure Statistical Report Server (SRS). These options enable the NSM appliance to interface with SRS. You can toggle it on or off. When it is on, a menu with additional options is available.

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

The following sections provide details about the remote replication and SRS options:

- Enabling and Configuring Remote Replication of the Database on page 39
- Enabling and Configuring SRS (Regional Server Only) on page 40

### Enabling and Configuring Remote Replication of the Database

To configure remote replication of database settings:
1. On the Advanced Options menu, click Menu next to Remote Replication of Database (see Figure 6 on page 36) to configure daily backups (see Figure 13 on page 40).

**Figure 13: Remote Replication of Database Options**

<table>
<thead>
<tr>
<th>Menu: Remote Replication of Database</th>
</tr>
</thead>
<tbody>
<tr>
<td>Remote Replication of Database</td>
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</tbody>
</table>

2. Use the Remote Replication of Database option to turn remote replication on (y) or off (n). The default is off.

3. Use the Hour of day to Replicate Database option to start the backup. The valid range (in hours) is 00-23. The default is 2 AM.

4. Use the Remote Backup IP option to enter the IP address of the remote backup server.

   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.

5. Use the Remote Replication Timeout option to set up a timeout for Rsync. The valid range (in seconds) is 1-65535. The default is 1800 seconds.

6. Click Submit to save the options and return to the main menu or continue with the other advanced installation options.

**Enabling and Configuring SRS (Regional Server Only)**

(This option is not available on a central manager.) To configure statistical report server (SRS) settings:
1. On the Advanced Options menu, click **Menu** next to SRS (see Figure 6 on page 36) to open the SRS menu (see Figure 14 on page 41).

**Figure 14: SRS Menu**

<table>
<thead>
<tr>
<th>Menu: SRS</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>SRS</strong></td>
</tr>
<tr>
<td>Statistical Report Server will be used with this GUI Server</td>
</tr>
<tr>
<td><strong>SRS DB IP</strong></td>
</tr>
<tr>
<td>Database server IP address</td>
</tr>
<tr>
<td><strong>SRS DB Type</strong></td>
</tr>
<tr>
<td>Database type</td>
</tr>
<tr>
<td><strong>SRS Database Name</strong></td>
</tr>
<tr>
<td>Database name</td>
</tr>
<tr>
<td><strong>SRS DB Owner Name</strong></td>
</tr>
<tr>
<td>Database user name</td>
</tr>
<tr>
<td><strong>SRS DB Owner Password</strong></td>
</tr>
<tr>
<td>Database password</td>
</tr>
</tbody>
</table>

2. Use the **SRS** options to turn SRS on (**y**) or off (**n**). The default is off. If you turn on this feature, the server is used with the GUI Server.

3. Use the **SRS DB IP** option to enter the IP address for the server on which you have installed the SRS database server.

4. Use the **SRS DB Type** option to select the database type. The values are **pgsql** (the default), **oracle**, or **mssql**.

5. Use the **SRS Database Name** option to enter the name of the SRS database. The default value is netscreen. To enter another name, click the radio button next to the blank text box and enter the name in the text box.

6. Use the **SRS DB Owner Name** option to enter the owner’s name of the SRS database. The default value is netscreen. To enter another name, click the radio button next to the blank text box and enter the name in the text box.

7. Use the **SRS DB Owner Password** option to enter the SRS database password. The password requires a minimum of eight characters and is case-sensitive. Reenter the password in the second text box.

8. Click **Submit** to save the options and return to the NSM Configuration Main Menu.

**Installing NSM Software**

After you submit all your configuration options, click **Install** to install the NSM software on your NSM appliance. Installation takes a few minutes. A status indicator shows
the progress of the installation. Wait until installation is finished before continuing
to use the Web interface.

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 Superuser Password on page 42
■ Downloading NSM MIBS (Regional Server Only) on page 42
■ Exporting Audit Logs on page 43
■ Exporting Device Logs (Regional Server Only) on page 43
■ Generating Reports (Regional Server Only) on page 44
■ Modifying NSM Configuration Files on page 44
■ Backing Up the NSM Database on page 45
■ Changing the NSM Management IP on page 46
■ Scheduling Security Updates on page 46

Changing the Superuser Password

To change the superuser password, select NSM Administration > NSM Super User
Password. See Figure 15 on page 42.

Figure 15: Change Superuser Password

![Change Password for Super User](image)

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 43. This option is not
available on the central manager.
Exporting Audit Logs

To export audit logs, select NSM Administration > Export Audit Logs. See Figure 17 on page 43.

Exporting Device Logs (Regional Server Only)

To export device logs, select NSM Administration > Export Device Logs. See Figure 18 on page 43. This option is not available on the central manager.
Generating Reports (Regional Server Only)

To generate reports, select NSM Administration > Generate Reports. See Figure 19 on page 44. This option is not available on the central manager.

Figure 19: Generate Reports

```
<table>
<thead>
<tr>
<th>Generate Reports</th>
</tr>
</thead>
<tbody>
<tr>
<td>The Reports need to be created by logging in through the UI, before running the script below.</td>
</tr>
<tr>
<td>Domain:</td>
</tr>
<tr>
<td>Eg: global</td>
</tr>
<tr>
<td>User:</td>
</tr>
<tr>
<td>Eg: global/super</td>
</tr>
<tr>
<td>Schedule Reports:</td>
</tr>
<tr>
<td>Minutes: 0</td>
</tr>
<tr>
<td>Generate Reports</td>
</tr>
</tbody>
</table>
```

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

Modifying NSM Configuration Files

To manually edit the GuiSvr.cfg, DevSvr.dfg and HaSvr.cfg files, select NSM Administration > Modify NSM Configuration Files. The example in Figure 20 on page 45 shows the option to modify the GuiSvr.cfg file.
### Figure 20: NSM Configuration Files

NSM Configuration Files

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

getuid.user        NSM
clientId           0
peerGuiSvrId       2
clientOneTimePasswd NSM

default.printLevel warn
default.printProperties where=file, sync=0, maxfilenum=15
#statusMonitor.printLevel debug
#statusMonitor.printProperties where=file, sync=1, maxfilenum=15
#guiSvrDirectiveHandler.printLevel debug
#guiSvrLicenseManager.printLevel /usr/netscreen/GuiSvr/var/license/license.
txt
#guiSvrManager.printLevel debug
```

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

---

**Back Up the NSM Database**

To configure backups of the NSM database, select **NSM Administration > NSM Database Backup** link under NSM Administration. See Figure 21 on page 46.
Figure 21: Database Backup

Database Backup

<table>
<thead>
<tr>
<th>NSM Backup Configuration Parameters</th>
</tr>
</thead>
<tbody>
<tr>
<td>Local Backup Enabled</td>
</tr>
<tr>
<td>Remote Backup enabled</td>
</tr>
<tr>
<td>Hour of Day to Replicate Database</td>
</tr>
<tr>
<td>Remote Backup IP</td>
</tr>
</tbody>
</table>

Submit

Execute Backup Now

Apply

Download Database Backup Files

File to Download: /var/netscreen/dbbackup/

Download Backups

Changing the NSM Management IP

To change the IP address of the NSM management server, select NSM Administration > NSM Management IP link under NSM Administration. See Figure 22 on page 46.

Figure 22: Change Management IP

Scheduling Security Updates

To schedule security updates, select NSM Administration > Schedule Security Updates. See Figure 23 on page 47.
Figure 23: Schedule Security Updates

Security Update

Select Post Action:
- update-devices
- skip

Update Devices after Attack: Select update device action; Skip/not update of unconnected device

User: Password:

E: global/super

Schedule Security Updates:

Minutes: 0

Hour: Day: Month: Week:

Run Security Update

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 NSM Appliance on page 47
- Changing the User Password on page 48
- Configuring the Network on page 48
- Managing RADIUS Servers on page 51
- Monitoring with SNMP on page 54
- Forwarding Syslog Messages on page 57
- Changing the System Time on page 61
- Installing Updates on page 61
- Managing Users on page 62
- Configuring the Web Interface on page 65

Rebooting or Shutting Down the NSM Appliance

To reboot or shut down the NSM appliance, select System Administration > Bootup and Shutdown, and then click either Reboot System or Shutdown System. See Figure 24 on page 47.

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 48, and then click Change.

![Figure 25: Change User Password](image)

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 48.

![Figure 26: Network Interfaces Options](image)

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

- Network Interfaces on page 49
- Routing and Gateways on page 49
- Hostname and DNS Clients on page 50
- Host Addresses on page 50
Network Interfaces

Use this option to manage the network interfaces. See Figure 27 on page 49.

Figure 27: Network Interfaces

Routing and Gateways

Use this option to configure and manage routes and gateways. See Figure 28 on page 50.
**Figure 28: Routes and Gateways**

Routing configuration activated at boot time

<table>
<thead>
<tr>
<th>Default routes</th>
<th>Interface</th>
<th>Gateway</th>
</tr>
</thead>
<tbody>
<tr>
<td>eth0</td>
<td></td>
<td>172.24.88.1</td>
</tr>
</tbody>
</table>

Act as router?  ○ Yes  ○ No

<table>
<thead>
<tr>
<th>Static routes</th>
<th>Interface</th>
<th>Network</th>
<th>Netmask</th>
<th>Gateway</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Local routes</th>
<th>Interface</th>
<th>Network</th>
<th>Netmask</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Save

---

**Active Routes**

<table>
<thead>
<tr>
<th>Destination</th>
<th>Gateway</th>
<th>Netmask</th>
<th>Interface</th>
</tr>
</thead>
<tbody>
<tr>
<td>172.24.88.0</td>
<td>None</td>
<td>255.255.252.0</td>
<td>eth0</td>
</tr>
<tr>
<td>169.254.0.0</td>
<td>None</td>
<td>255.255.0.0</td>
<td>eth0</td>
</tr>
<tr>
<td>Default Route</td>
<td>172.24.88.1</td>
<td></td>
<td>eth0</td>
</tr>
</tbody>
</table>

---

**Hostname and DNS Clients**

Use this option to configure and manage hostnames and DNS clients. See Figure 29 on page 50.

**Figure 29: DNS Client Options**

<table>
<thead>
<tr>
<th>Hostname</th>
<th>Resolution order</th>
<th>Hosts</th>
<th>DNS</th>
</tr>
</thead>
<tbody>
<tr>
<td>NSMXpress juniper.net</td>
<td>Use update host in host addresses if changed?</td>
<td>○ None ○ Listed</td>
<td></td>
</tr>
</tbody>
</table>

**Host Addresses**

Use this option to manage host addresses. See Figure 30 on page 50.

**Figure 30: Host Address**

<table>
<thead>
<tr>
<th>IP Address</th>
<th>Hostnames</th>
</tr>
</thead>
<tbody>
<tr>
<td>127.0.0.1</td>
<td>NSMXpress juniper.net, NSMXpress, localhost, localdomain, localhost</td>
</tr>
</tbody>
</table>

Select all, Invert selection, Add a new host address, Delete Selected Host Addresses
Managing RADIUS Servers

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

When a user logs into the NSM 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 WebUI 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 authenticates the user, the user login fails.

**NOTE:** The NSM 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 NSM 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 NSM appliance: `ATTRIBUTE Juniper-Nsmxpress-Profile Juniper-VSA(6, string) r` . You also need to add NSM appliance users with their associated user profiles (SysAdmin, NSMAdmin, Operator, Guest), to the RADIUS database. For more details see Steel-Belted Radius Documentation.

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

The following sections explain how to manage a RADIUS server.

- Adding a RADIUS Server on page 52
- Changing the Priority of RADIUS Servers on page 53
- Deleting a RADIUS Server on page 53
- Editing RADIUS Server Parameters on page 53
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 52.

Figure 31: RADIUS Servers Dialog Box

<table>
<thead>
<tr>
<th>Radius Servers</th>
</tr>
</thead>
<tbody>
<tr>
<td>Name</td>
</tr>
<tr>
<td>RadiusServer1</td>
</tr>
<tr>
<td>RadiusServer2</td>
</tr>
</tbody>
</table>

2. Click Add to add a RADIUS Server to the WebUI. The Add RADIUS Server dialog box appears. See Figure 32 on page 52.

Figure 32: Add RADIUS Server Dialog Box

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 NSM 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 time out 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 54.
3. Edit the parameters you want to change and click **Save**.

**Monitoring with SNMP**

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

You configure SNMP on the NSM appliances with access credentials for either SNMP v2c or SNMP v3. NSM 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 NSM appliance, select **System Administration > SNMP Monitoring**. The SNMP window appears. This window contains the tabs described in the following sections:

- **SNMP Configuration** on page 54
- **SNMP System Information** on page 55
- **SNMP Trap Configuration** on page 56

**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 55.
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 NSM 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 NSM 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 55.

**Figure 35: Configuring SNMP System Information**

3. Enter the following information, with is required for any SNMP-managed device:
   - Contact—Contact information for 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 56.

![Figure 36: Configuring SNMP Traps](image)

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 NSM appliances provide a simple mechanism for configuring syslog messaging between the NSM 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 57
- Adding and Configuring Syslog Receivers on page 59
- Editing Syslog Receiver Configurations on page 61
- Deleting Syslog Receivers on page 61

**Viewing Syslog Receivers**

To view the syslog receivers configured on your NSM appliance, follow these steps:
1. Select **System Administration > Syslog Forwarding**. The Syslog Forwarding window appears. Figure 37 on page 60 shows an example.

### Syslog Forwarding

<table>
<thead>
<tr>
<th>Receiver/Address</th>
<th>Type</th>
<th>System</th>
</tr>
</thead>
<tbody>
<tr>
<td>server1</td>
<td>UDP</td>
<td>updates</td>
</tr>
<tr>
<td>server2</td>
<td>UDP</td>
<td>messages</td>
</tr>
</tbody>
</table>

Table 7 on page 58 describes the fields.

2. View the configured syslog receivers in the table in the top portion of the window. Table 7 on page 58 describes the fields.

### Table 7: Viewing Syslog Receivers

<table>
<thead>
<tr>
<th>Field</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Receiver</td>
<td>A name provided by the network administrator to identify the syslog receiver</td>
</tr>
<tr>
<td>IP Address</td>
<td>The IP address of the syslog receiver</td>
</tr>
<tr>
<td>Type</td>
<td>The protocol used for forwarding messages: UDP, TCP, SSL</td>
</tr>
<tr>
<td>Data sources</td>
<td>The data sources configured for forwarding</td>
</tr>
<tr>
<td>System</td>
<td>The system logs configured to be sent to this receiver.</td>
</tr>
<tr>
<td>Device Server</td>
<td>The Device Server logs configured to be sent to this receiver.</td>
</tr>
<tr>
<td>GUI Server</td>
<td>The GUI Server logs configured to be sent to this receiver.</td>
</tr>
<tr>
<td>HA Server</td>
<td>The HA Server logs configured to be sent to this receiver.</td>
</tr>
</tbody>
</table>
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 37 on page 60.
5. 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.

6. In the IP field, enter the IP address of the syslog receiver.

7. 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 NSM 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 NSM 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:
Managing Users

The NSM 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 NSM 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 NSM Appliance Users on page 62
- Deleting a User on page 63
- Editing User Attributes on page 64
- Understanding User Profiles on page 64

**Creating New NSM Appliance Users**

To create a local OS user:

1. Select **System Administration > User Management**. The NSMXpress Users dialog box appears listing all NSMXpress users. See Figure 38 on page 62.

**Figure 38: NSMXpress Users Dialog Box**

```
<table>
<thead>
<tr>
<th>NSMXpress Users</th>
</tr>
</thead>
<tbody>
<tr>
<td>User Name</td>
</tr>
<tr>
<td>User Profile</td>
</tr>
<tr>
<td>User Authentication</td>
</tr>
<tr>
<td>User Name</td>
</tr>
<tr>
<td>User Profile</td>
</tr>
<tr>
<td>User Authentication</td>
</tr>
</tbody>
</table>
```

2. Click **Create a new NSMXpress User**. The Create NSMXpress user dialog box appears. See Figure 39 on page 63.
3. Enter the user name 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 NSMXpress Users dialog box appears with the new NSM appliance user listed.

**To create a WebUI user:**

1. Select **System Administration > User Management**. The NSMXpress Users dialog box appears listing all the NSM appliance users. See Figure 40 on page 65.

2. Click **Create a new NSMXpress User**. The Create NSMXpress user dialog box appears.

3. Enter a user name 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 NSMXpress Users dialog box appears with the new NSM appliance user listed.

**Deleting a User**

To delete a user:

1. Select **System Administration > User Management**. The NSMXpress Users dialog box appears listing all NSM 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 NSMXpress Users dialog box appears, with all the NSM appliance users listed.
2. Click on the name of the user whose attributes you want to edit. The Edit NSMXpress 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

NSM appliances provide four predefined user profiles that allow you to implement role-based access control over the NSM 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 NSM 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 NSM 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 8 on page 64.

### Table 8: NSM Appliance WebUI User Profiles and Permissions

<table>
<thead>
<tr>
<th>NSM Appliance Modules</th>
<th>System Administrator</th>
<th>NSM Administrator</th>
<th>Network Operator</th>
<th>Guest User</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>System Administration</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bootup and Shutdown</td>
<td>Yes</td>
<td>No</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>Change User Password</td>
<td>Yes</td>
<td>No</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>Network Configuration</td>
<td>Yes</td>
<td>No</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>RADIUS Management</td>
<td>Yes</td>
<td>Yes</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>SNMP Monitoring</td>
<td>Yes</td>
<td>No</td>
<td>No</td>
<td>No</td>
</tr>
</tbody>
</table>
Table 8: NSM Appliance WebUI User Profiles and Permissions (continued)

<table>
<thead>
<tr>
<th>NSM Appliance Modules</th>
<th>System Administrator</th>
<th>NSM Administrator</th>
<th>Network Operator</th>
<th>Guest User</th>
</tr>
</thead>
<tbody>
<tr>
<td>Syslog Forwarding</td>
<td>Yes</td>
<td>No</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>System Time</td>
<td>Yes</td>
<td>No</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>System Update</td>
<td>Yes</td>
<td>No</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>User Management</td>
<td>Yes</td>
<td>No</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>WebUI Configuration</td>
<td>Yes</td>
<td>No</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td><strong>NSM Administration</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Change NSM Super User Password</td>
<td>Yes</td>
<td>Yes</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>Download NSM MIBs</td>
<td>Yes</td>
<td>Yes</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>Export Audit Logs</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>Export Device Logs</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>Generate Reports</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>NSM Configuration Files</td>
<td>Yes</td>
<td>Yes</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>NSM Database Backup</td>
<td>Yes</td>
<td>Yes</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>NSM Management IP</td>
<td>Yes</td>
<td>Yes</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>Schedule Security Updates</td>
<td>Yes</td>
<td>Yes</td>
<td>No</td>
<td>No</td>
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<td><strong>Maintenance</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>System Statistics</td>
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<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
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<td><strong>Troubleshooting</strong></td>
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<td></td>
<td></td>
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<tr>
<td>Action Audit Logs</td>
<td>Yes</td>
<td>Yes</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>Error Logs</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>Network Utilities</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>No</td>
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<tr>
<td>Tech Support</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>System Information</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
</tbody>
</table>

**Configuring the Web Interface**

To specify which NSM client computers can access the NSM appliance through the Web interface, select System Administration > WebUI Configuration. The Allowed IP Addresses window appears as shown in Figure 41 on page 66.
Maintaining NSM Appliances

The Maintaining section of the NSM appliance navigation tree allows you to perform the tasks described in the following sections:

- Viewing System Statistics on page 66
- Upgrading the Recovery Partition on page 67

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 66.

**Figure 42: System Statistics**

![System Statistics Window]

**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.

---

**Upgrading the Recovery Partition**

The recovery partition contains all files necessary to perform a clean installation of the NSM appliance OS and its applications with default settings. It provides a last-resort recovery mechanism. When the NSM appliance is shipped from the factory, the recovery partition files match the version of the NSM appliance OS with factory default settings.

Using the Recovery Upgrade option, you can make the current version of the NSM appliance available for recovery, displacing the existing files in the recovery partition. The factory default recovery files are retained as an alternative recovery choice. Other versions are deleted.

Recovery upgrade uses two sets of packages to create a set of files from which you can perform a clean installation. One set makes up the NSM appliance OS, the other a set of upgrade script packages. Both sets are usually retained in the local file system. The NSM appliance OS set can also be downloaded from the Juniper Networks software repository.

The recovery upgrade process is split into a preparation phase and an upgrade phase. In the preparation phase, the NSM appliance assembles a copy of the current version
of the image files in a temporary workspace. In the upgrade phase, the NSM appliance replaces the old recovery image files, and installs the current version of the image files from the temporary workspace into the recovery partition. By splitting the process into two phases, the NSM appliance minimizes the period of vulnerability while the upgrade itself takes place.

To upgrade the recovery partition, follow these steps:

1. Select **System Administration > Maintenance > Update Recovery Partition**.
   - If the new recovery partition files have already been prepared, then the Upgrade screen appears. Proceed with the upgrade phase as described in step 5.
   - If the upgrade files have not yet been prepared, the Upgrade Preparation window appears. Proceed with the preparation phase in step 2.

2. Enter the location of the NSM appliance Regional server or Central Manager upgrade zip file, downloaded from the Juniper Customer Support Center when upgrading NSM, on the local file system.

3. If the NSM appliance Offline server upgrade file is available on the local file system, enter its location and name of the file in the System upgrade source field. If the NSM appliance offline server upgrade file is not available on the local file system and the appliance has access to the Juniper Update site, select **Online**.

4. Click **Prepare System**.
   - The Preparation Progress screen shows the progress of the operation.
   - Errors are reported if the required files are unavailable, disk space is not sufficient, or the previous version files are invalid.
   - When preparation is completed, the Upgrade window appears.

5. In the Upgrade window, enter the admin Web UI password and then click **Start Update**.
   - The upgrade process usually takes less than one minute.

⚠️ **CAUTION:** Do not interrupt the upgrade process. If you do, your NSM appliance might not boot normally.

---

**Troubleshooting**

Use the options in the Troubleshooting section to access the following information and utilities:

- Auditing User Operations on page 69
- Error Logs on page 70
- Network Utilities on page 71
- Tech Support on page 74
Auditing User Operations

You can audit all user operations performed in an NSM appliance. Users with System Administrator and NSM administrator permissions can view all Action Audit Logs in the NSM appliance.

To view Action Audit Logs:

1. Select Troubleshooting > Action Audit Logs. The NSMXpress Actions Log dialog box appears. See Figure 43 on page 69.

Figure 43: NSMXpress Actions Dialog Box

2. Select the Action Audit Logs that you want to view:

   - **Actions by NSMXpress 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 44 on page 70.

![Figure 44: Search Results Dialog Box](image)

### Error Logs

**To review error logs, select Troubleshooting > Error Logs.** Figure 45 on page 70 shows an example.

![Figure 45: Review Error Logs](image)
To view details of an individual error log, select the file you want to view and click **View**. Figure 46 on page 71 shows sample error log details.

**Figure 46: Error Log Detail**

View Logfile

```
Module Index

View Logfile

/usr/netscreen/Dev5vr/var/errorlog/gp0DVM.log

Last 20 lines of  Only show lines with text [ ]  Refresh

cat: /usr/netscreen/Dev5vr/var/errorlog/gp0DVM.log: No such file or directory

Last 20 lines of  Only show lines with text [ ]  Refresh
```

**Network Utilities**

To access basic network utilities (ping, traceroute, and nslookup) for TCP/IP Networking, select **Troubleshooting > Network Utilities**. These tools also provide an IP subnet calculator. See Figure 47 on page 71.

**Figure 47: Network Utilities Options**

<table>
<thead>
<tr>
<th>Ping</th>
<th>Traceroute</th>
<th>Lookup</th>
<th>IP Subnet Calculator</th>
</tr>
</thead>
</table>

**Ping**

Ping is a tool for checking network connectivity. The NSM appliance prompts you with questions so you can focus your search.

Figure 48 on page 72 shows an example.
Figure 48: Ping Utility

Ping

Hostname □ Verbose 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)?

Ping it!

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.

Verbose Output

The NSM 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 49 on page 73.

Figure 49: Traceroute Utility

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 50 on page 73). The query type drop-down list contains several types of records found in the DNS database. Enter a nameserver or select the default. If you choose the default, nslookup uses the server on which the NSM appliance is installed.

Figure 50: 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 51 on page 74). When you calculate a netmask by the number of hosts, the NSM appliance returns the smallest network available.

**Figure 51: IP Subnet Calculator**

<table>
<thead>
<tr>
<th>Calculate Netmask by Class and Bits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Class: C (192.x.x.x-223.x.x.x)</td>
</tr>
<tr>
<td>Subnet Bits: 0</td>
</tr>
<tr>
<td>Calculate Subnet</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Calculate Netmask by Number of Hosts</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of Hosts:</td>
</tr>
<tr>
<td>Calculate Subnet</td>
</tr>
</tbody>
</table>

**Tech Support**

To get contact information for Juniper Networks technical support, select **Troubleshooting > Tech Support**. To help analyze problems, select a detail type in the drop-down list box, and then click **Run Tech-Support Script**. The NSM appliance creates a file you can download and send to Juniper Networks technical support. See Figure 52 on page 74.

**Figure 52: Juniper Tech Support**

<table>
<thead>
<tr>
<th>Tech Support</th>
</tr>
</thead>
<tbody>
<tr>
<td>Details from GUI, Device and HA servers</td>
</tr>
<tr>
<td>Run Tech-Support Script</td>
</tr>
</tbody>
</table>

**JTAC WEBSITE**: https://support.juniper.net

**JTAC PHONE NUMBER**: 1-888-314-JTAC

**JTAC FTP SITE**: ftp.juniper.net

**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 53 on page 75.
### Figure 53: System Information

<table>
<thead>
<tr>
<th><strong>System hostname</strong></th>
<th>Juniper NSM/juniper.net</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Operating system</strong></td>
<td>Juniper NSM/juniper 2.0.0.1</td>
</tr>
<tr>
<td><strong>Server Local Time</strong></td>
<td>Tue Aug 12 06:47:00 2019</td>
</tr>
<tr>
<td><strong>Server Uptime</strong></td>
<td>0 days, 27 hours, 0 minutes, 0 seconds</td>
</tr>
<tr>
<td><strong>CPU load averages</strong></td>
<td>0.00 (1 min), 0.00 (5 mins), 0.00 (15 mins)</td>
</tr>
<tr>
<td><strong>Real memory</strong></td>
<td>3.96 GB total, 0.00 MB used</td>
</tr>
<tr>
<td><strong>Virtual memory</strong></td>
<td>7.81 GB total, 0 bytes used</td>
</tr>
</tbody>
</table>

#### CPU Usage

<table>
<thead>
<tr>
<th>Type</th>
<th>Max</th>
<th>Min</th>
<th>Average</th>
</tr>
</thead>
<tbody>
<tr>
<td>User</td>
<td>5.50</td>
<td>0.21</td>
<td>0.09</td>
</tr>
<tr>
<td>System</td>
<td>1.13</td>
<td>0.19</td>
<td>0.37</td>
</tr>
<tr>
<td>Nice</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
</tr>
</tbody>
</table>

**Created Tue Aug 12 06:47:00 2019**

#### Memory Usage

<table>
<thead>
<tr>
<th>Type</th>
<th>Max</th>
<th>Min</th>
<th>Average</th>
</tr>
</thead>
<tbody>
<tr>
<td>Buffers</td>
<td>3.21</td>
<td>1.09</td>
<td>1.15</td>
</tr>
<tr>
<td>Cached</td>
<td>84.34</td>
<td>84.30</td>
<td>84.32</td>
</tr>
<tr>
<td>Free</td>
<td>10.64</td>
<td>10.50</td>
<td>10.56</td>
</tr>
<tr>
<td>Swap</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
</tr>
</tbody>
</table>

**Created Tue Aug 12 06:47:00 2019**
Part 2
Appendixes

- NSMXpress LEDs on page 79
Appendix A
NSMXpress LEDs

This appendix describes the LEDs on the NSMXpress appliance.

NSMXpress LEDs on page 79

NSMXpress LEDs

The front panel of the NSMXpress appliance has the following LEDs:

- **TEMP**—temperature
- **PS FAIL**—power supply failure
- **HDD**—hard drive
- **PWR**—power

Table 9 on page 79 describes their states.

<table>
<thead>
<tr>
<th>LED</th>
<th>Color</th>
<th>Condition</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>TEMP</td>
<td>Unlit</td>
<td>The temperature is within normal the operating range.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Blinking red</td>
<td>A fan has failed, but the temperature is still within tolerance and the appliance continues to operate.</td>
<td>Replace the fan.</td>
</tr>
<tr>
<td></td>
<td>Solid red</td>
<td>The temperature has exceeded 120°C. The appliance powers down.</td>
<td>Replace the fan.</td>
</tr>
<tr>
<td>PS FAIL</td>
<td>Unlit</td>
<td>Power supplies are functioning normally.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Glows red and an audible alarm sounds</td>
<td>A power supply has failed.</td>
<td>Replace the power supply.</td>
</tr>
</tbody>
</table>
Table 9: NSMXpress LEDs *(continued)*

<table>
<thead>
<tr>
<th>LED</th>
<th>Color</th>
<th>Condition</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>HDD</td>
<td>Unlit</td>
<td>No hard drive activity.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Blinking amber</td>
<td>Hard drive activity.</td>
<td></td>
</tr>
<tr>
<td>PWR</td>
<td>Unlit</td>
<td>The power is off.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Green</td>
<td>The power is on.</td>
<td></td>
</tr>
</tbody>
</table>
Part 3
Index

- Index on page 83
# Index

<table>
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<th>A</th>
<th>admin user</th>
<th>10</th>
</tr>
</thead>
<tbody>
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<td></td>
<td>Advanced Options menu</td>
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<td></td>
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<td>C</td>
<td>central manager</td>
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<td>configuring with CLI</td>
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</tr>
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<td>CLI, configuring NSMXpress from</td>
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<td></td>
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<td>DMZ</td>
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<td>subnet mask</td>
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<td></td>
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