

NETSCREEN-5000 SERIES

User's Guide

Version 5.0

P/N 093-1698-000

Rev. D



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- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Consult the dealer or an experienced radio/TV technician for help.
- Connect the equipment to an outlet on a circuit different from that to which the receiver is connected.

Caution: Changes or modifications to this product could void the user's warranty and authority to operate this device.

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Preface

The Juniper Networks NetScreen-5000 Series consists of purpose-built, high-performance security systems that provide IPSec VPN and firewall services for large-scale carrier, enterprise, and data-center networks. Built around NetScreen's third-generation ASIC technology and distributed system architecture, the NetScreen-5000 Series offers excellent scalability and flexibility.

The NetScreen-5000 Series includes the following device models:

- The NetScreen-5200, a chassis-based, two-slot network security device.
- The NetScreen-5400, a chassis-based, four-slot network security device.

NetScreen-5000 Series architecture features multiple processing modules. These include a management module that provides overall system control, and security processing modules that allow a variety of port configurations. Together, these modules provide a wide range of performance and security gateway configurations. Because the modules can work in many combinations, you can customize the NetScreen-5000 Series to accommodate the specific requirements of your organization.

The NetScreen-5000 Series also employs a switch fabric for data exchange and a separate multi-bus channel for control information, thus delivering scalable performance for the most demanding environments.

GUIDE ORGANIZATION

This manual has four chapters and two appendices:

Chapter 1, [Overview](#) provides a detailed overview of the system, its modules, Fast Ethernet (FE) and mini-GBIC connectors, power supplies, and fan tray.

Chapter 2, [Installing the Device](#) details how to rack mount the NetScreen-5000 Series, connect the power supplies, and connect the modules to the network in addition to providing desktop site requirements and guidelines for rack mounting.

Chapter 3, [Configuring the Device](#) details how to obtain an IP address for an interface on one of the modules and how to aggregate ports on one of the modules.

Chapter 4, [Servicing the Device](#) provides procedures on how to replace your module and power supplies.

Appendix A, [Specifications](#) provides a list of physical specifications about the NetScreen-5000 Series, the modules, and power supplies.

Appendix B, [Port Descriptions and LED Status](#) provides descriptions of port and LED behavior.

COMMAND LINE INTERFACE (CLI) CONVENTIONS

The following conventions are used when presenting the syntax of a command line interface (CLI) command:

- Anything inside square brackets [] is optional.
- Anything inside braces { } is required.
- If there is more than one choice, each choice is separated by a pipe (|). For example,

```
set interface { ether1/1 | ether1/2 | ether2/2 } manage
```

means “set the management options for the ether1/1, ether1/2, or ether2/2 interface”.
- Variables appear in *italic*. For example:

```
set admin user name1 password xyz
```

When a CLI command appears within the context of a sentence, it is in **bold** (except for variables, which are always in *italic*). For example: “Use the **get system** command to display the serial number of a NetScreen device.”

Note: When typing a keyword, you only have to type enough letters to identify the word uniquely. For example, typing **set adm u joe j12fmt54** is enough to enter the command **set admin user joe j12fmt54**. Although you can use this shortcut when entering commands, all the commands documented here are presented in their entirety.

JUNIPER NETWORKS NETSCREEN PUBLICATIONS

To obtain technical documentation for any Juniper Networks NetScreen product, visit www.juniper.net/techpubs/.

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

If you find any errors or omissions in the following content, please contact us at the e-mail address below:

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Overview

1

This chapter provides detailed descriptions of the NetScreen-5000 Series, modules, power supplies, and fan assemblies.

Topics explained in this chapter include:

- [“NetScreen-5000 Series” on page 2](#)
 - [“NetScreen-5200” on page 2](#)
 - [“NetScreen-5400” on page 2](#)
- [“Power Supplies” on page 3](#)
 - [“NetScreen-5200 Power Recommendations” on page 3](#)
 - [“NetScreen-5400 Power Recommendations” on page 3](#)
 - [“The DC Power Supply” on page 4](#)
 - [“The AC Power Supply” on page 4](#)
- [“Fan Modules” on page 5](#)
- [“NetScreen-5000 Modules” on page 5](#)
 - [“Management Modules” on page 6](#)
 - [“Secure Port Modules” on page 8](#)

NETSCREEN-5000 SERIES

This section describes the NetScreen-5000 Series, which currently includes the NetScreen-5200 and the NetScreen-5400.

NetScreen-5200

The NetScreen-5200 is a chassis-based, two-slot network security device with a 2U (rack unit) chassis. Slot 1 is for the management module and Slot 2 is for the Secure Port Module (SPM). The device has two hot-swappable power supplies for power redundancy and a removable fan module.

The figure below shows a NetScreen-5200 with a management module in slot 1 (top) and an SPM in slot 2 (bottom).



NetScreen-5400

The NetScreen-5400 is a chassis-based, four-slot network security device with a 5U (rack unit) chassis. The top slot (slot 1) holds the management module, and the bottom slots (slots 2-4) hold up to three Secure Port Modules (SPMs) for flexible, high-density port configurations. The device has three hot-swappable power supplies for power redundancy and a removable fan module.

The figure below shows a NetScreen-5400 fully populated with a management module in slot 1 (top) and SPMs in slots 2 through 4.



Management,
slot 1
SPM, slot 2
SPM, slot 3
SPM, slot 4

POWER SUPPLIES

The NetScreen-5000 Series can use two kinds of power supplies:

- Direct Current (DC) Power Supply
- Alternating Current (AC) Power Supply

The slots for these power supplies are located in the back of the NetScreen-5200 and on the front of the NetScreen-5400.

Note: You can order a NetScreen-5000 Series that runs on DC power. For DC-powered units, the power supply has a DC terminal block with three sockets.

When two or more power supplies are in service, they share the power load equally. The power supplies are hot-swappable, so you can remove one and replace it without affecting device operation. Each power supply is intended to receive power from separate feeds.

When one power supply fails, the other(s) automatically assume the full load and the device logs a system alarm. This alarm is viewable through the WebUI or a console accessing the NetScreen Command Line Interface (CLI). The Alarm LED on the management module glows red in response to any power supply failure.

Warning: You must replace the failed power supply as soon as possible; otherwise, system damage can occur. See [“Servicing the Device” on page 35](#) for instructions on how to replace a power supply.

NetScreen-5200 Power Recommendations

Although the NetScreen-5200 can run with one power supply, it is advisable to install both. This practice minimizes the likelihood of system failure due to individual power supply failure.

When either power supply fails, the Alarm LED on the management module glows red. If both are operational, then the Alarm LED is off. For more information on power supply LEDs, see Appendix B, [Port Descriptions and LED Status](#).

NetScreen-5400 Power Recommendations

When the NetScreen-5400 contains only two modules, it can operate with one power supply. However, if the system contains three or four modules, the system *requires* at least two power supplies. In either case, it is advisable to install all three power supplies. This practice minimizes the likelihood of system failure due to individual power supply failure.

When any power supply fails, the Alarm LED on the management module glows red. While all three are operational, the Alarm LED is off. For more information on power supply LEDs, see Appendix B, [Port Descriptions and LED Status](#).

The DC Power Supply

The DC power supply weighs about three pounds. The faceplate contains a power LED, a power switch, a cooling fan vent, and three DC power terminal blocks that connect to power cables.

The figure below shows the NetScreen-5200 DC power supply.



The AC Power Supply

The AC power supply weighs about three pounds. The faceplate contains a power LED, a power switch, a male power outlet, and a cooling fan vent.

The figure below shows the NetScreen-5200 AC power supply.



FAN MODULES

The NetScreen-5200 has a three-fan module and the NetScreen-5400 has a two-fan module. You can access the fan module from the left front side of each chassis.

- To remove the NetScreen-5200 fan module, turn the fan knob in the unlock position, then gently pull the fan module lever toward you to slide the module out.
- To remove the NetScreen-5400 fan module, loosen the two thumb screws that secure the fan module, then gently slide the module out.

If a fan stops operating due to failure or removal, then the system continues to run and generates an alarm. When you replace the fan, do not leave the fan tray empty for more than two minutes. See “[Replacing the Fan Module](#)” on page 37 for more information.

NETSCREEN-5000 MODULES

The NetScreen-5000 Series systems support two module types:

- NetScreen-5000 management modules
- NetScreen-5000 Secure Port Modules (SPMs)

The following table shows the modules supported by each slot.

	slot 1	slot 2	slot 3	slot 4
NetScreen-5200	Management Module	Secure Port Module	N/A	N/A
NetScreen-5400	Management Module	Secure Port Module	Secure Port Module	Secure Port Module

The following table shows the configurations for each Management Modules and Secure Port Module and shows if the firmware version is included on the Management Module or needs to be downloaded.

	Configuration 1	Configuration 2	Configuration 3
Management Module	5000-MGT	5000-MGT2	5000-MGT2
Secure Port Module	5000-8G and/or 5000-2G24FE	5000-8G and/or 5000-2G24FE	5000-8G2 and/or 5000-2XGE
Software Version	Software is installed on the shipping management module.	Software is installed on the shipping management module	Must download from the support site. www.juniper.net/support

Management Modules

The management module provides general-purpose CPU delivery, and contains dedicated High Availability (HA) and management interfaces. It handles tasks such as management access, session setup and termination, and Internet Key Exchange (IKE) negotiation. There are currently two management modules: The 5000-M and 5000-M2.

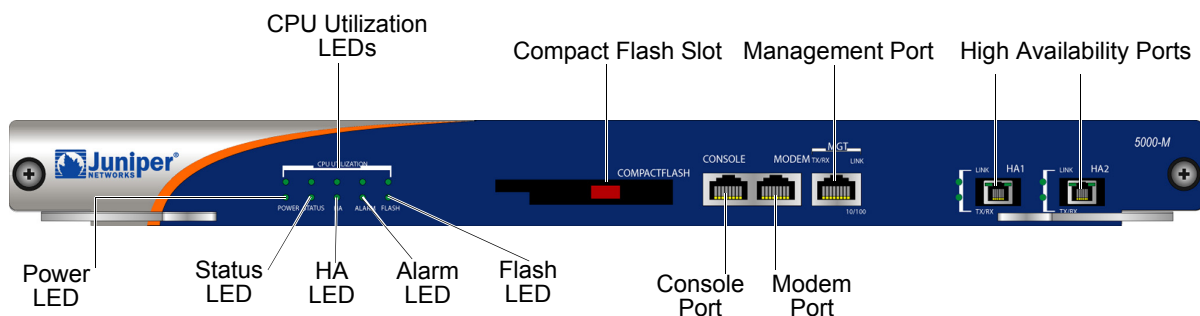
The 5000-M Management Module

The 5000-M management module is based around a powerful, 600-MHz PowerPC CPU, which assists other system elements, primarily with non-flow related tasks. The 5000-M management module provides overall management and control of the system. Although it performs system management, the primary function of the 5000-M is to support the other modules.

Features of the 5000-M management module include:

- A management port, for WebUI management or Command Line Interface sessions.
- An RJ-45 console port, for connecting serial terminal emulation programs such as HyperTerminal.
- Two High Availability (HA) ports.
- A modem port.

The 5000-M management module also has port Link and Activity LEDs, CPU utilization indicators, a High Availability (HA) LED, an Alarm LED, a Status LED, a Flash LED, and a Power LED. In addition, it has a compact flash slot for flash memory card installation.



The 5000-M2 Management Module

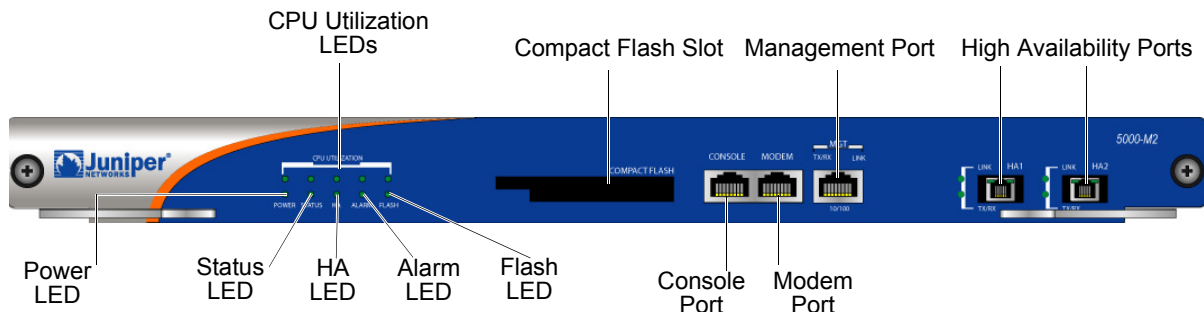
The 5000-M2 management module is based around powerful, dual 1GHz PowerPC CPUs, which assist other system elements, primarily with non-flow related tasks. The 5000-M2 management module provides overall management and control of the system. Although it performs system management, the primary function of the 5000-M2 is to support the other modules.

Features of the 5000-M2 management module include:

- A management port, for WebUI management or Command Line Interface sessions.
- An RJ-45 console port, for connecting serial terminal emulation programs such as HyperTerminal.
- Two High Availability (HA) ports.
- A modem port.

The 5000-M2 management module also has port Link and Activity LEDs, CPU utilization indicators, a High Availability (HA) LED, an Alarm LED, a Status LED, a Flash LED, and a Power LED. In addition, it has a compact flash slot for flash memory card installation. See [Port Descriptions and LED Status](#) for descriptions of the LED lights.

Note: The 5000-M2 is not currently FIPS, NEBS, or Common Criteria Certified.



Secure Port Modules

Secure Port Modules (SPMs) perform general packet processing and device connection tasks for devices that communicate with the NetScreen-5000 Series. These modules are based around the GigaScreen-II ASIC.

SPMs handle packets as they enter and exit the system, providing packet parsing, classification, and flow-level processing. SPMs also provide encryption, decryption, Network Address Translation (NAT), and session lookup features. When packets require processing beyond that provided by an SPM, the NetScreen-5000 Series hands them off to the management module for further processing.

There are currently four SPM models:

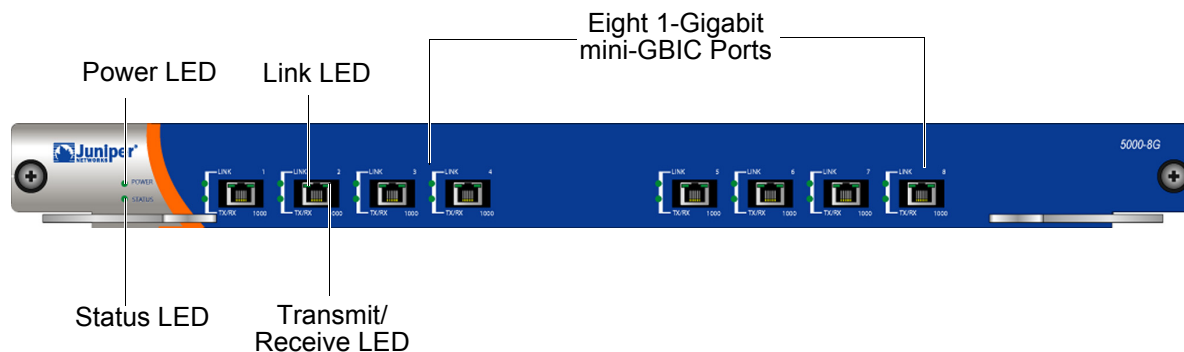
- The 5000-8G SPM provides eight 1-Gigabit Small Form Factor Pluggable (SFP) mini-Gigabit Interface Converter (GBIC) Ethernet ports. This SPM is supplied with SX gigabit fiber transceivers.
- The 5000-2G24FE SPM provides two mini-GBIC Gigabit Ethernet ports and 24 10/100 Ethernet ports. This SPM is supplied with two SX gigabit fiber transceivers.
- The 5000-8G2 SPM provides eight 1-Gigabit mini-GBIC Ethernet ports. This SPM is supplied with SX gigabit fiber transceivers.
- The 5000-2XGE SPM provides two 10-Gigabit Form Factor Pluggable (XFP) mini-GBIC Ethernet ports. The transceivers for this SPM must be purchased separately.

The 5000-8G SPM

The 5000-8G SPM provides eight 1-Gigabit SFP mini-GBIC Ethernet ports using hot-swappable transceivers. The 5000-8G SPM delivers up to 4 Gigabits-per-second (Gbps) of firewall and up to 2 Gbps of Virtual Private Network (VPN) capacity. This module is also capable of supporting a total of four aggregate interfaces, with up to two ports for each aggregate interface.

(For details on connecting or removing a mini-GBIC transceiver and connecting and disconnecting a Gigabit Ethernet cable, see Chapter 4, [Servicing the Device](#).)

The 5000-8G SPM provides port Link and Activity LEDs in addition to Power and Status LEDs.

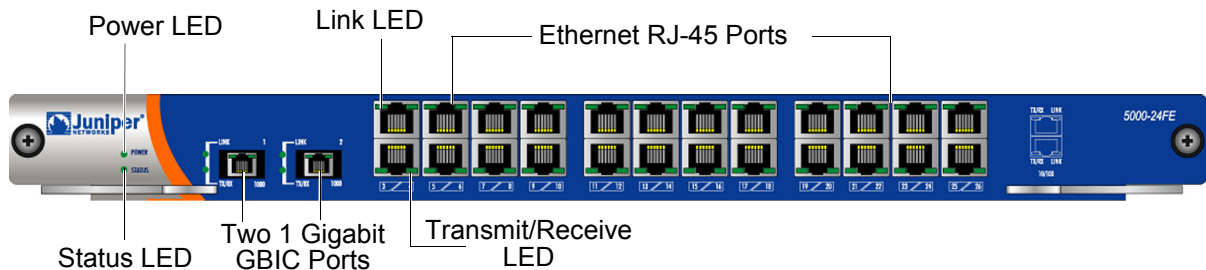


The 5000-2G24FE SPM

The 5000-2G24FE SPM provides two 1-Gigabit Ethernet ports and 24 Fast Ethernet (FE) ports with up to 2 Gbps of firewall and up to 1 Gbps of VPN process capacity. This module is capable of supporting a total of six aggregate interfaces. This total consists of one aggregate interface for the two 1-Gigabit ports, and five aggregate interfaces for the 24 10/100 Ethernet ports. Only similar ports can be aggregated together. For example, you cannot aggregate a Gigabit port to a 10/100 FE port. This SPM cannot be mixed with the 5000-8G2 or 5000-2XGE SPMs.

The 5000-2G24FE provides port Link and Activity LEDs, in addition to Power and Status LEDs.

Mini-GBIC transceivers are hot-swappable. For details on connecting or removing a mini-GBIC transceiver and connecting or disconnecting a Gigabit Ethernet cable, see Chapter 4, [Servicing the Device](#).

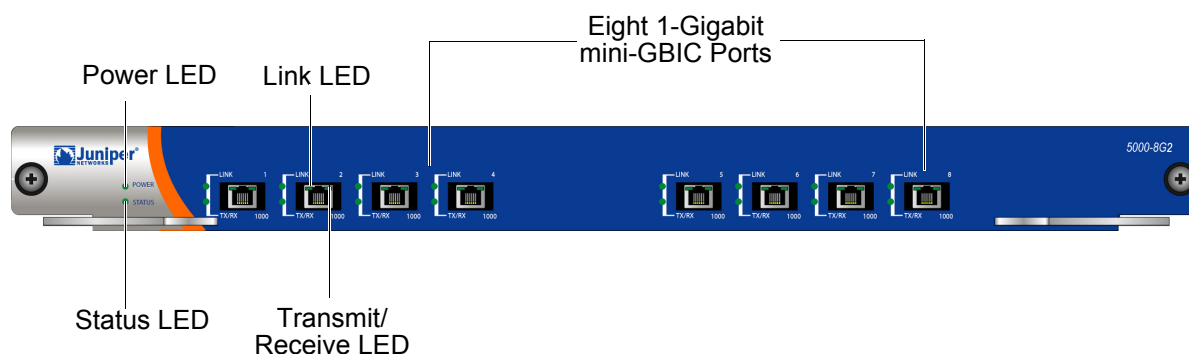


The 5000-8G2 SPM

The 5000-8G2 SPM provides eight 1-Gigabit mini-GBIC Ethernet ports using hot-swappable transceivers. The 5000-8G2 SPM delivers up to 8 Gbps of firewall and up to 4 Gbps of VPN capacity. This module is also capable of supporting a total of four aggregate interfaces, with up to four ports for each aggregate interface. This SPM cannot be mixed with the 5000-8G or 5000-2G24FE SPMs.

(For details on connecting or removing a mini-GBIC transceiver and connecting and disconnecting a Gigabit Ethernet cable, see Chapter 4, [Servicing the Device](#).)

The 5000-8G2 SPM provides port Link and Activity LEDs in addition to Power and Status LEDs.



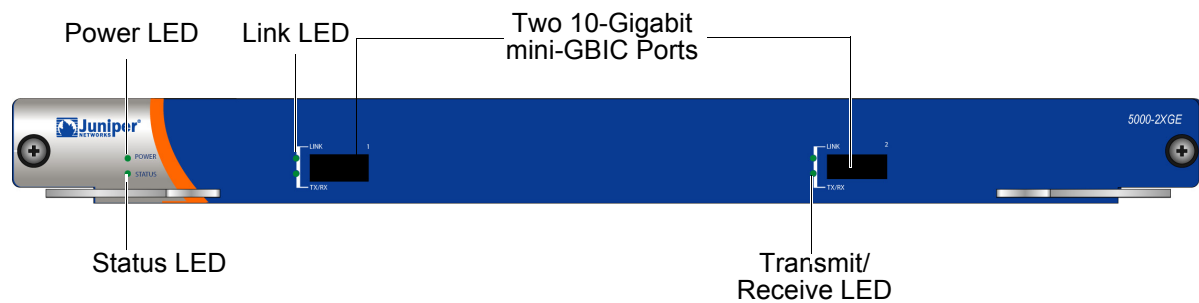
Note: The 5000-8G2 SPM can only be managed by the 5000-M2 management module.

The 5000-2XGE SPM

The 5000-2XGE SPM provides two 10-Gigabit mini-GBIC Ethernet ports using hot-swappable transceivers. The 5000-2XGE SPM delivers up to 10 Gbps of firewall and up to 5 Gbps of VPN capacity. This SPM cannot be mixed with the 5000-8G or 5000-2G24FE SPMs.

(For details on connecting or removing a mini-GBIC transceiver and connecting and disconnecting a Gigabit Ethernet cable, see Chapter 4, [Servicing the Device](#).)

The 5000-2XGE SPM provides port Link and Activity LEDs in addition to Power and Status LEDs.



Note: The 5000-2XGE SPM can only be managed by the 5000-M2 management module.

The following table shows the transceivers that are available with the 5000-2XGE SPM.

Part Number	Description	Distance	Fiber Type
NS-SYS-GBIC-MXSR	Transceiver, 300m 10 G, XFP	Short Reach	Multi-Mode Fiber
NS-SYS-GBIC-MXLR	Transceiver, 10km 10 G, XFP	Long Reach	Single-Mode Fiber
NS-SYS-GBIC-MXER	Transceiver, 40km 10 G, XFP	Extended Reach	Single-Mode Fiber

Installing the Device

2

This chapter describes how to install a NetScreen-5000 Series in an equipment rack or on a desktop and how to configure the device on a network. Topics in this chapter include:

- [“General Installation Guidelines” on page 14](#)
- [“Equipment Rack Installation Guidelines” on page 14](#)
- [“Mounting the NetScreen-5000 Series” on page 15](#)
 - [“NetScreen-5200 Front and Rear Mount” on page 15](#)
 - [“NetScreen-5200 Mid-Mount” on page 16](#)
 - [“NetScreen-5400 Front Mount” on page 16](#)
- [“Installing and Connecting the AC Power Supply” on page 17](#)
- [“Installing and Wiring a DC Power Supply” on page 17](#)
- [“Establishing an HA Connection” on page 19](#)
- [“Connecting the NetScreen-5000 Series to a Router or Switch” on page 19](#)

GENERAL INSTALLATION GUIDELINES

Observing the following precautions can prevent injuries, equipment failures, and shutdowns:

- Never assume that the power supply is disconnected from a power source. *Always* check first.
- Room temperature might not be sufficient to keep equipment at acceptable temperatures without an additional circulation system. Ensure that the room in which you operate the NetScreen-5000 Series has adequate air circulation.
- Do not work alone if potentially hazardous conditions exist.
- Look carefully for possible hazards in your work area, such as moist floors, ungrounded power extension cables, frayed power cords, and missing safety grounds.

Important: *Although you can place the NetScreen-5000 Series on a desktop for operation, NetScreen does not recommend deploying it in this manner.*

Important: *To prevent abuse and intrusion by unauthorized personnel, it is extremely important to install the NetScreen device in a locked-room environment.*

EQUIPMENT RACK INSTALLATION GUIDELINES

The location of the chassis and the layout of your equipment rack or wiring room are crucial for proper system operation.

Use the following guidelines while configuring your equipment rack:

- Enclosed racks must have adequate ventilation. An enclosed rack should have louvered sides and a fan to provide cooling air.
- When mounting a chassis in an open rack, ensure that the rack frame does not block the intake or exhaust ports. If you install the chassis on slides, then check the position of the chassis when it is seated all the way into the rack.
- In an enclosed rack with a ventilation fan in the top, equipment higher in the rack can draw heat from the lower devices. Always provide adequate ventilation for equipment at the bottom of the rack.
- Baffles can isolate exhaust air from intake air. The best placement of the baffles depends on the airflow patterns in the rack.

You can mount the device in a standard 19-inch equipment rack. Rack mounting requires the following tools:

- 1 Phillips-head screwdriver
- Rack-compatible screws
- The included rear slide kit (for the rear and front mount method) on the NetScreen-5200
- Front-mount brackets

There are two ways to rack mount the NetScreen-5200:

- Rear and front mount
- Mid-mount

Note: *Juniper Networks strongly recommends the rear and front rack mount configuration for the NetScreen-5200.*

You can only front-mount the NetScreen-5400.

MOUNTING THE NETSCREEN-5000 SERIES

The following sections describe how to rack mount the NetScreen-5000 Series.

- [NetScreen-5200 Front and Rear Mount](#)
- [NetScreen-5200 Mid-Mount](#)
- [NetScreen-5400 Front Mount](#)

NetScreen-5200 Front and Rear Mount

To mount the NetScreen-5200 with support from the front and rear, you need four fitted screws, a Phillips-head screwdriver, the rear slide kit, and brackets.

To mount the NetScreen-5200:

1. Screw the rear mount bracket to the rear rack posts.
2. With the indented groove of each slide facing outward, screw the slides to the middle of each side of the chassis.
3. Slip the slides into the rear mount brackets, then push the NetScreen-5200 forward until the left and right brackets contact the front rack posts, as shown below.



4. Screw the left and right brackets to the rack.

NetScreen-5200 Mid-Mount

To mid-mount the NetScreen-5200, you need four fitted screws, a Phillips-head screwdriver, and brackets.

To mid-mount the NetScreen-5200:

1. Screw the left and right brackets to the middle of each side of the chassis.
2. Screw the left and right brackets to the rack, shown below.



NetScreen-5400 Front Mount

To front mount the NetScreen-5400, you need four fitted screws, a Phillips-head screwdriver, and brackets.

To front mount the device:

1. Screw the front mount bracket to the front of the chassis, as shown below.



2. Screw the left and right brackets to the rack.

INSTALLING AND CONNECTING THE AC POWER SUPPLY

To install and connect the AC power supply to the NetScreen-5000 Series:

1. On the NetScreen-5200, slide the power supply into one of the power compartments in the back of the system.
On the NetScreen-5400, slide the power supply into one of the power compartments on the front of the system.
2. Fasten the power supply to the system by tightening the corner screws into the eyelets on the sides of the power supply.
3. If you want to install two power supplies in the NetScreen-5200 or three power supplies in the NetScreen-5400, then repeat steps 1 and 2 for the remaining power supplies.
4. Connect the female end of a standard power cord to the male connector on the back of each power supply.
5. Connect each power cord to a standard 100-240-Volt power outlet.

Note: Whenever you deploy two or more power supplies to a NetScreen-5000 Series system, connect each to a different power source. Each power supply is intended to receive power from separate feeds.

6. Turn the power switches on.

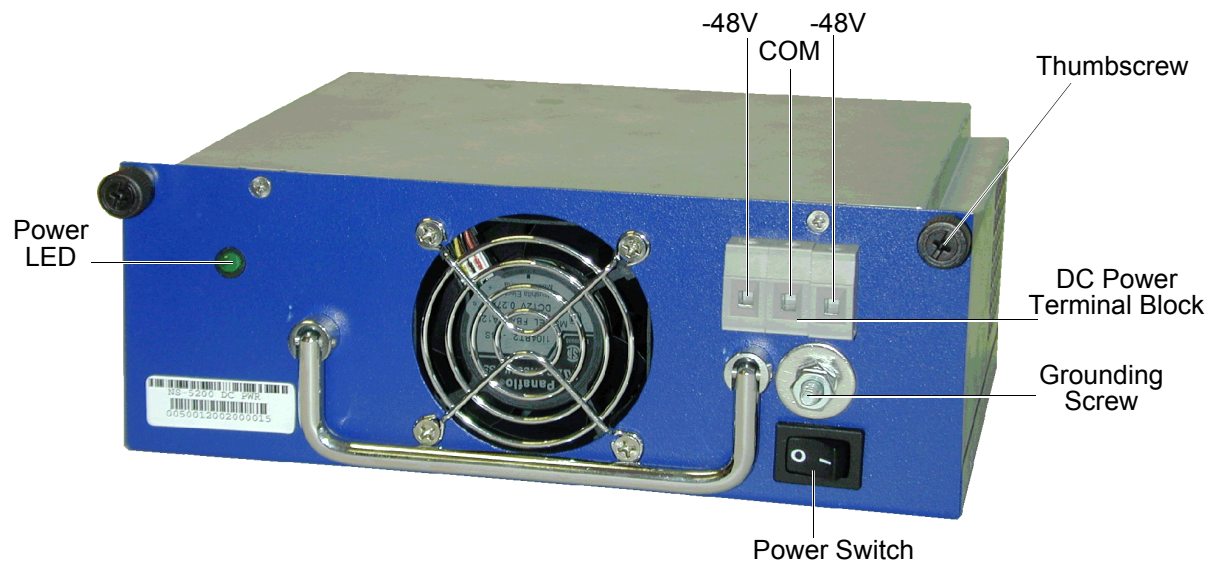
Note: If there are multiple power supplies in the NetScreen-5000 Series system and any of them are off, then the Alarm LED on the management module glows red. This alarm indicates that maximum system stability requires all installed power supplies to be operational.

INSTALLING AND WIRING A DC POWER SUPPLY

To install and connect the DC power supply to the NetScreen-5000 Series system:

1. On the NetScreen-5200, slide the power supply into one of the power compartments in the back of the system.
On the NetScreen-5400, slide the power supply into one of the power compartments on the front of the system.
2. Fasten the power supply to the system by tightening the corner screws into the eyelets on the sides of the power supply.
3. If you want to install two power supplies in the NetScreen-5200 or three power supplies in the NetScreen-5400, then repeat steps 1 and 2 for the remaining power supplies.

The DC power supply, power switch, grounding screw, and terminal blocks, are located on the faceplate of the power supply unit.



Warning: You must shut off the electric current to the DC feed wires before connecting the wires to the power supplies. Also, make sure that the power switch is in the off position.

To connect the DC power supply to a grounding point at your site:

1. Remove the hex nut on the grounding screw.
2. Place the ground lug on the screw and tighten the hex nut securely.
3. Connect the other end of the grounding lug wire to a grounding point at your site.

To connect DC power feeds to the terminal blocks:

1. Loosen the retaining screws on each terminal block.
2. Insert the 0V DC (positive voltage) return wire into the center COM connector and the -48V DC power feed wire into either the left or right connector.
3. Fasten the screws over the connectors.
4. Turn the power switches on.

Note: If there are multiple power supplies in the NetScreen-5000 Series system and any of them are off, then the Alarm LED on the Management Module glows red. This alarm indicates that maximum system stability requires all installed power supplies to be operational.

ESTABLISHING AN HA CONNECTION

To assure continuous traffic flow in the event of a system failure, you can cable and configure two NetScreen devices in a redundant cluster, with one device acting as a master and the other as its backup. The master propagates all its network, configuration and session information to the backup. Should the master fail, the backup is promoted to master and takes over the traffic processing.

To physically connect the master and backup devices, the 5000-M and 5000-M2 management modules provide a pair of High Availability (HA) ports. To connect the NetScreen-5000 Series systems, you can use the provided Gigabit Ethernet mini-GBIC cable. Use this cable to connect the HA1 port on one system to the HA1 port on another system. Though you cannot connect HA ports between 5000-M and 5000-M2 management modules, you can connect HA ports between the same type of management module. For example, a 5000-M management module to another 5000-M management module.

For information on setting up HA configurations, see the *NetScreen Concepts & Examples ScreenOS Reference Guide*.

CONNECTING THE NETSCREEN-5000 SERIES TO A ROUTER OR SWITCH

You can establish a high-speed connection to a router or switch, and provide firewall and general security for your network, by connecting a Secure Port Module (SPM) to a fiber-optic or copper wire backbone. There are two ways to create this connection:

- Connect a Fiber Optic cable from one of the mini-GBIC ports to the router (or switch).
- Connect an Unshielded Twisted Pair (UTP) CAT5 cable from an FE port to the router (or switch).

Configuring the Device

3

This chapter describes how to perform initial configuration on the NetScreen-5000 Series once you have mounted it in a rack or desktop, plugged in the necessary cables, and turned the power on. Topics in this chapter include:

- “Operational Modes” on page 22
 - “Transparent Mode” on page 22
 - “Route Mode” on page 22
- “The NetScreen-5000 Interfaces” on page 23
 - “NetScreen-5200 Interfaces” on page 23
 - “NetScreen-5400 Interfaces” on page 24
 - “Configurable Interfaces” on page 24
- “Performing Initial Connection and Configuration” on page 25
 - “Establishing a Terminal Emulator Connection” on page 25
 - “Upgrading the Firmware During the Boot Process” on page 26
 - “Changing Your Admin Name and Password” on page 27
 - “Setting Port and Interface IP Addresses” on page 27
- “Configuring the Device for Telnet and WebUI Sessions” on page 29
 - “Starting a Console Session Using Telnet” on page 29
 - “Starting a Console Session Using Dialup” on page 30
 - “Establishing a GUI Management Session” on page 30
- “Configuring the Chassis Alarm” on page 31
- “Configuring Jumbo Frames” on page 32
- “Configuring Aggregate Interfaces” on page 32
- “Using CLI Commands to Reset the Device” on page 33

Note: You must register your product at www.juniper.net/support so that certain ScreenOS services, such as the Deep Inspection Signature Service, can be activated on the device. After registering your product, use the WebUI or CLI to obtain the subscription for the service. For more information about registering your product and obtaining subscriptions for specific services, see the “System Parameters” chapter in the NetScreen Concepts & Examples ScreenOS Reference Guide.

OPERATIONAL MODES

The NetScreen-5000 Series supports two operational modes: Transparent and Route. The default mode is Route.

Transparent Mode

In Transparent mode, a NetScreen-5000 Series system operates as a Layer-2 bridge. Because the device cannot translate packet IP addresses, it cannot perform Network Address Translation (NAT). Consequently, for the device to access the Internet, any IP address in your trusted (local) networks must be routable and accessible from untrusted (external) networks.

In Transparent mode, the IP addresses for the Layer-2 Trust and Untrust zones are 0.0.0.0, thus making the NetScreen-5000 Series system invisible to the network. However, the device can still perform firewall, VPN, and traffic management according to configured security policies.

Route Mode

In Route mode, a NetScreen-5000 Series system operates at Layer 3. Because you can configure each interface using an IP address and subnet mask, you can configure individual interfaces to perform NAT.

- When the interface performs NAT services, the NetScreen-5000 Series system translates the source IP address of each outgoing packet into the IP address of the untrusted interface. It also replaces the source port number with a randomly-generated value.
- When the interface does *not* perform NAT services, the source IP address and port number in each packet header remain unchanged. Therefore, to reach the Internet your local hosts must have routable IP addresses.

For more information on NAT, see the *NetScreen Concepts & Examples ScreenOS Reference Guide*.

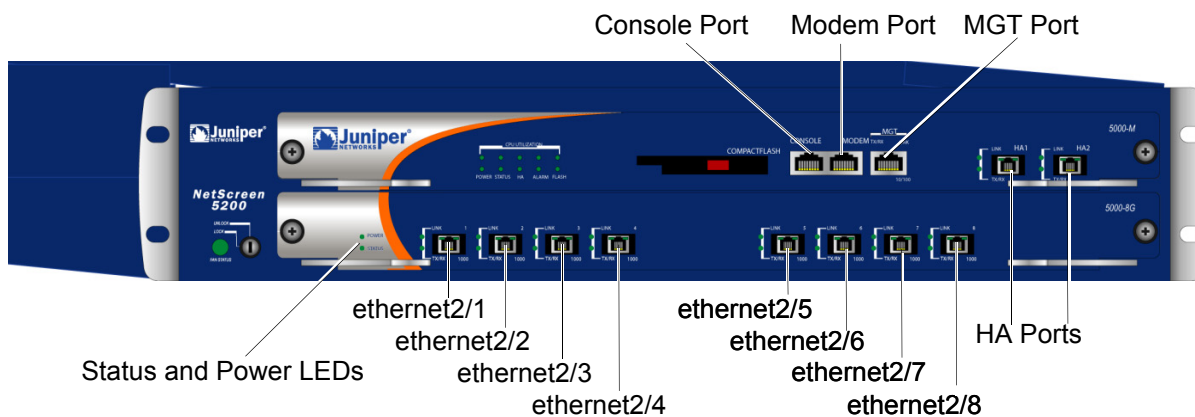
THE NETSCREEN-5000 INTERFACES

Each Secure Port Module (SPM) for the NetScreen-5000 Series system provides 2, 8, or 26 physical ethernet ports. Each of these ports can serve as a physical interface. In addition, you can configure the ethernet ports to host multiple virtual (*logical*) interfaces.

NetScreen-5200 Interfaces

The NetScreen-5200 below contains one management module (in slot 1) and one 5000-8G SPM (in slot 2). You can use a 5000-M or a 5000-M2 management module in slot 1.

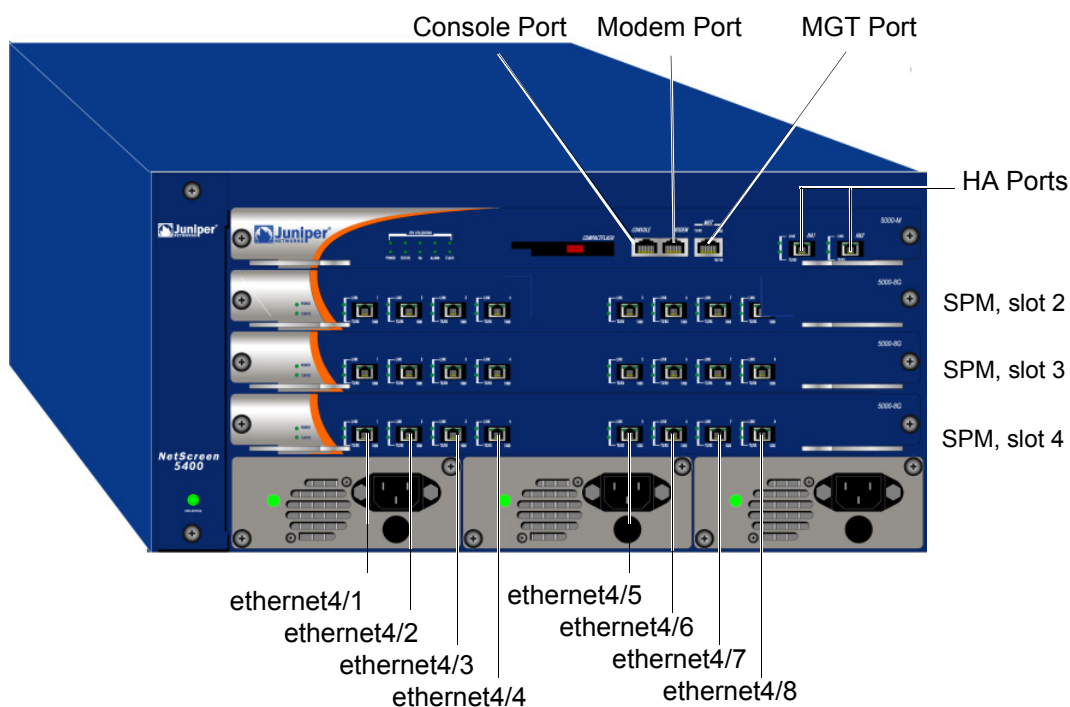
Note: The 5000-8G2 and 5000-2XGE SPMs only work with the 5000-M2 management module.



NetScreen-5400 Interfaces

A NetScreen-5400 contains one management module (in slot 1) and up to three SPMs. You can use a 5000-M or a 5000-M2 management module in slot 1. In the illustrations below, the device contains three 5000-8G SPMs.

Note: The 5000-8G2 and 5000-2XGE SPMs only work with the 5000-M2 management module.



Configurable Interfaces

The configurable interfaces available on the NetScreen-5000 Series are as follows:

Interface Type	Description
Ethernet interfaces	ethernet$n1$$n2$ specifies a physical ethernet interface, denoted by an interface module in a slot ($n1$) and a physical port ($n2$) on the module.
	ethernet$n1$$n2$.$n3$ specifies a logical interface, denoted by an interface module in a slot ($n1$), a physical port ($n2$) on the module, and a logical interface number ($n3$). You create logical interfaces using the set interface command.
Layer-2 interfaces	vlan$n1$ specifies the interface used for management and VPN while the NetScreen-5000 Series system is in Transparent mode.

Tunnel interfaces	tunnel.n specifies a tunnel interface. Use this interface for VPN traffic.
Function interfaces	mgt specifies a dedicated management interface bound to the MGT zone.
	ha1 and ha2 specify the names of the dedicated HA ports.

PERFORMING INITIAL CONNECTION AND CONFIGURATION

To establish the first console session with the NetScreen-5000 Series system, use a vt100 terminal emulator program through the provided RJ-45/DB9 serial port connector.

Establishing a Terminal Emulator Connection

To establish an initial console session:

1. Plug the DB-9 end of the supplied RJ-45/DB-9 serial cable into the serial port of your workstation. (Be sure that the DB-9 is seated properly and secured with the screws.)
2. Plug the RJ-45 end of the cable into the Console port of the NetScreen-5000 Series system. (Be sure that the RJ-45 clip snaps into the port and is seated properly.)
3. Launch a Command Line Interface (CLI) session between your workstation and the NetScreen-5000 Series system using a standard serial terminal emulation program such as Hilgraeve HyperTerminal (provided with the Microsoft Windows operating system). The settings should be as follows:
 - Baud Rate to **9600**
 - Parity to **No**
 - Data Bits to **8**
 - Stop Bit to **1**
 - Flow Control to **none**
4. At the HyperTerminal window, press the enter key to display the login prompt.
5. At the login prompt, type **netscreen**.
6. At the password prompt, type **netscreen**.

Note: Use lowercase letters only. Both login and password are case-sensitive.

7. (Optional) By default, the console times out and terminates automatically after 10 minutes of idle time. To change this timeout interval, execute the following command:

set console timeout *number*

where *number* is the length of idle time in minutes before session termination. To prevent any automatic termination, specify a value of **0**.

Upgrading the Firmware During the Boot Process

1. Connect your computer to the NetScreen-5000 Series system:
 - a. Using a serial cable, connect the serial port on your computer to the console port on the NetScreen-5000 Series system. This connection, in combination with a terminal application, enables you to manage the NetScreen device.
 - b. Using an Ethernet cable, connect the network port on your computer to the management port on the NetScreen-5000 Series system. This connection enables the transfer of data between the computer, the TFTP server, and the NetScreen device.
2. Make sure that you have the new ScreenOS image file stored in the TFTP server directory on your computer. For information on obtaining the new firmware, see the *NetScreen Concepts & Examples Reference Guide*.
3. Run the TFTP server on your computer by double-clicking on the TFTP server application. You can minimize its window but it must be active in the background.
4. Log in to the NetScreen-5000 Series system using a terminal emulator such as HyperTerminal. See “[Establishing a Terminal Emulator Connection](#)” on page 25. Log in as the root admin or an admin with read-write privileges.
5. Power on or reboot the NetScreen-5000 Series system.
6. Keep your eyes on the terminal emulator screen, then when you see “Hit any key to load new firmware”, press any key on your computer keyboard to interrupt the startup.

Note: *If you do not interrupt the NetScreen-5000 Series system in time, it proceeds to load the firmware saved in flash memory.*

7. At the Boot File Name prompt, enter the file name of the ScreenOS firmware you want to load.
8. At the Self IP Address prompt, enter the IP address of the NetScreen-5000 Series system that is used to communicate to the TFTP server.
9. At the TFTP IP Address prompt, enter the IP address of the TFTP server.

An indication that the firmware is loading successfully is the display of the series of “rtatatatatata...” running on the terminal emulator screen and a series of symbols running on the TFTP server window. When the firmware installation is complete, a message informs you of the success of the installation.
10. Answer **Yes** to the following question: “Program to on-board flash” ([y]/n)”

Answering “yes” saves the firmware you installed to flash memory.
11. Answer **Yes** to the following question: “Run downloaded program?” ([y]/n)”

Answering “yes” instructs the NetScreen-5000 Series system to start running the new ScreenOS firmware.

Changing Your Admin Name and Password

Because all NetScreen products use the same admin name and password (**netscreen**), it is highly advisable to change your admin name and password immediately. Enter the following commands:

```
set admin name name_str
set admin password pswd_str
save
```

For information on creating different levels of administrators, see the *NetScreen Concepts & Examples ScreenOS Reference Guide*.

Setting Port and Interface IP Addresses

Through the CLI, you can execute commands that set IP address and subnet mask values for most of the physical interfaces.

Viewing Current Interface Settings

To begin the configuration process, it is advisable to view existing port settings by executing the following command:

```
get interface
```

This command displays current port names, IP addresses, MAC addresses, and other useful information.

Setting the IP Address of the Management Interface

The default IP address and subnet mask settings for the MGT interface are 192.168.1.1 and 255.255.255.0, respectively. To access the MGT interface, you must change the IP address and subnet mask of the MGT interface to match your current network. NetScreen recommends using the MGT interface exclusively for out of band management.

Note: The MGT interface is on the 5000-M or 5000-M2 management modules, which are always in slot 1.

To set the IP address of the MGT interface:

1. Choose an unused IP address within the current address range of your Local Area Network.
2. Set the MGT interface to this unused IP address by executing the following command:

```
set interface mgt ip ip_addr/mask
```

For example, to set the IP address and subnet mask of the MGT interface to 10.100.2.183 and 16, respectively:

```
set interface mgt ip 10.100.2.183/16
```

3. To confirm the new port settings, execute the following command:

```
get interface mgt
```

Setting the IP Address for the Trust Zone Interface

The NetScreen-5000 Series system usually communicates with your protected network through an interface bound to the Trust zone. To allow an interface to communicate with internal devices, you must assign it the IP address and subnet mask for your protected network.

To set up the **ethernet2/2** interface to communicate with your trusted network:

1. Determine the IP address and subnet mask of your trusted network.
2. Set the ethernet2/2 interface to the Trust zone by executing the following command:

```
set interface ethernet2/2 zone trust
```

3. Set the IP address and subnet mask by executing the following command:

```
set interface ethernet2/2 ip ip_addr/mask
```

where *ip_addr* is the IP address and *mask* is the subnet *mask*. For example, to set the IP address and subnet mask of the **ethernet2/2** interface to 10.250.2.1/16:

```
set interface ethernet2/2 ip 10.250.2.1/16
```

4. (Optional) To confirm the new port settings, execute the following command:

```
get interface ethernet2/2
```

Setting the IP Address for the Untrust Zone Interface

The NetScreen-5000 Series system usually communicates with external (untrusted) devices through an interface bound to the Untrust zone. To allow an interface to communicate with external devices, you must assign it a public IP address.

To set up the **ethernet2/3** interface to communicate with external devices:

1. Choose an unused public IP address and subnet mask.
2. Set the **ethernet2/3** interface to the Untrust zone by executing the following command:

```
set interface ethernet2/3 zone untrust
```

3. Set the IP address and subnet mask by executing the following command:
set interface ethernet2/3 ip *ip_addr/mask*
where *ip_addr* is the IP address and *mask* is the subnet *mask*. For example, to set the IP address and subnet mask of the **ethernet2/3** interface to 172.16.20.1/16:
set interface ethernet2/3 ip 172.16.20.1/16
4. (Optional) To confirm the new interface settings, execute the following command:
get interface ethernet2/3

Allowing Outbound Traffic

By default, the NetScreen-5000 Series system does not allow inbound or outbound traffic, nor does it allow traffic to or from the DMZ. To permit (or deny) traffic, you must create access policies.

The following CLI command creates an access policy that permits all kinds of outbound traffic, from any host in your trusted LAN to any device on the untrusted network.

set policy from trust to untrust any any any permit

Save your access policy configuration with the following command:

save

Important: Your network might require a more restrictive policy than the one created in the example above. The example is NOT a requirement for initial configuration. For detailed information about access policies, see the NetScreen Concepts & Examples ScreenOS Reference Guide.

CONFIGURING THE DEVICE FOR TELNET AND WEBUI SESSIONS

In addition to terminal emulator programs, you can use Telnet (or dialup) to establish console sessions with a NetScreen-5000 Series system. You can also start management sessions using the NetScreen WebUI, a web-based GUI management application.

Starting a Console Session Using Telnet

To establish a Telnet session with the NetScreen-5000 Series system:

1. Connect an RJ-45 cable from the MGT interface to the internal switch, router, or hub in your LAN.
2. Open a Telnet session, specifying the current MGT interface IP address. For example, in Windows, click **Start > Run**, enter **telnet *ip_addr*** (where *ip_addr* is the address of the MGT interface), then click **OK**.

For example, if the MGT interface has an address of 10.100.2.183, then enter:

telnet 10.100.2.183

3. At the Username prompt, type your user name (default is **netScreen**).
4. At the Password prompt, type your password (default is **netScreen**).

***Note:** Use lowercase letters only. Both username and password are case-sensitive.*

5. (Optional) By default, the console times out and terminates automatically after 10 minutes of idle time. To change this timeout interval, execute the following command:

set console timeout *number*

where *number* is the length of idle time in minutes before session termination. To prevent any automatic termination, specify a value of **0**.

Starting a Console Session Using Dialup

Each NetScreen-5000 Series system provides a modem port that allows you to establish a remote console session using a dialup connection through a 9600 bps modem. Dialing into the modem establishes a dialup console connection.

***Note:** The Terminal type for dialup sessions must be vt100. For example, in Hilgreave HyperTerminal (a commonly-used terminal application), select the **File** menu, select **Properties**, select the **Settings** tab, and then under the **Emulation** drop-down menu, select **VT100**.*

Establishing a GUI Management Session

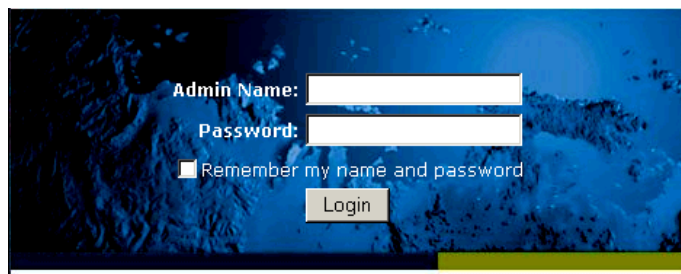
To access a NetScreen-5000 Series system with the WebUI management application:

1. Connect your computer (or your LAN hub) to the MGT interface using a Category-5 Ethernet cable. (The MGT interface is on the 5000-M or 5000-M2 management modules, which always reside in slot 1.)
2. Launch your browser, enter the IP address of the MGT interface in the URL field, and then press **Enter**.

For example, if you assigned the MGT interface an IP address of 10.100.2.183/16, then enter:

http://10.100.2.183

The NetScreen WebUI software displays the login prompt.



3. Enter **netscreen** in both the **Admin Name** and **Password** fields, and then click **Login**. (Use lowercase letters only. The Admin Name and Password fields are both case sensitive.)

The NetScreen WebUI application window appears.

CONFIGURING THE CHASSIS ALARM

The NetScreen-5000 Series system allows you to configure the chassis alarm, an audible warning that sounds when a system failure or hazardous event occurs. To determine which failures and events trigger the chassis alarm:

1. Configure the audible alarms by executing the following command:

```
set chassis audible-alarm string
```

where *string* can be any of the following keywords:

all	Enables all chassis alarms.
battery	Sets the chassis alarm to sound when a battery fails.
fan-failed	Sets the chassis alarm to sound when a fan fails.
power-failed	Sets the chassis alarm to sound when a power supply fails.
temperature	Sets the chassis alarm to sound when the temperature goes outside of the acceptable range.

2. After configuring the alarm, it is advisable to view alarm environment information by executing the following command:

```
get chassis
```

CONFIGURING JUMBO FRAMES

The 5000-8G2 and 5000-2XGE SPMs support jumbo frames that are up to 9,830 bytes. To set jumbo frames, use the **set environment max-frame-size=9830** CLI command. You must reboot the system before this feature can take effect.

CONFIGURING AGGREGATE INTERFACES

The NetScreen-5000 Series system allows you to combine two or more physical ports into a single virtual port. This virtual port is known as an *aggregate interface*. Only Secure Port Modules (SPMs) support this feature.

- On a 5000-8G SPM, you can create up to four aggregate interfaces.
- On a 5000-8G2 SPM, you can create up to four aggregate interfaces.
- On a 5000-2G24FE SPM, you can create up to five aggregate interfaces.

The 5000-8G SPM and 5000-8G2 SPM support only certain combinations of ports for aggregate interfaces. For example, a 5000-8G SPM residing in slot 2 only supports the following port combinations:

- ethernet2/1 and ethernet2/2
- ethernet2/3 and ethernet2/4
- ethernet2/5 and ethernet2/6
- ethernet2/7 and ethernet2/8

You must assign one of the following names to the aggregate interface: **aggregate1**, **aggregate2**, **aggregate3**, or **aggregate4**.

In the following example, you combine two Gigabit Ethernet mini-GBIC ports, each running at 1 Gbps, into an aggregate interface running at 2 Gbps. The aggregate interface consists of Ethernet ports 1 and 2 on a 5000-8G SPM (residing in slot 2).

To create the aggregate interface:

1. (Optional) To see what physical ports are available on your NetScreen-5000 Series system:
get interface
2. To create an aggregate interface name:
set interface *string* zone *zonename*
where *string* is a legal aggregate interface name (**aggregate1**, **aggregate2**, **aggregate3**, or **aggregate4**).
For example, to create the aggregate interface name **aggregate1**:
set interface aggregate1 zone *zonename*
3. To assign ports ethernet2/1 and ethernet2/2 to the **aggregate1** interface name:
set interface ethernet2/1 aggregate aggregate1
set interface ethernet2/2 aggregate aggregate1

4. (Optional) To see the updated port list and details about the new aggregate interface:

```
get interface
get interface aggregat1
```

Notice that the listing contains **aggregat1**, an aggregate interface comprised of ethernet2/1 and ethernet2/2. This aggregate interface runs with a throughput rate of 2 Gbps. Use the following command to bind the aggregate interface, **aggregat1**, to the trust zone:

```
set interface aggregat1 zone trust
```

Note: *As with most other interfaces, you must assign the aggregate interface an IP address so that other nodes on the network can reach it.*

USING CLI COMMANDS TO RESET THE DEVICE

If you lose the admin password, then you can use the following procedure to reset the NetScreen-5000 Series system to its default settings. This procedure destroys any existing configurations, but restores access to the device. To perform this operation, you need to make a console connection, as described in “[Establishing a Terminal Emulator Connection](#)” on page 25.

Warning: *Resetting the NetScreen-5000 Series system deletes all existing configuration settings, and the firewall and VPN services is rendered inoperative.*

Note: *After you successfully reset and reconfigure the NetScreen-5000 Series, you should back up the new configuration setting. As a precaution against lost passwords, you should back up a new configuration that contains the NetScreen default password. This will ensure a quick recovery of a lost configuration. You should change the password on the system as soon as possible. For detailed information about configuration backups, see the System Parameters section in the NetScreen Concepts & Examples ScreenOS Reference Guide.*

Note: *By default the device recovery feature is enabled. You can disable it by entering the following CLI command: **unset admin device-reset**.*

1. At the login prompt, type the serial number of the NetScreen-5000 Series system.
2. At the password prompt, type the serial number again.

The following message appears:

```
!!! Lost Password Reset !!! You have initiated a command to reset the device to
factory defaults, clearing all current configuration, keys and settings. Would you
like to continue? y/[n]
```

3. Press the **y** key.

The following message appears:

!! Reconfirm Lost Password Reset !! If you continue, the entire configuration of the device will be erased. In addition, a permanent counter will be incremented to signify that this device has been reset. This is your last chance to cancel this command. If you proceed, the device will return to factory default configuration, which is: System IP: 192.168.1.1; username: netscreen; password: netscreen. Would you like to continue? y/[n]

4. Press the **y** key to reset the device.

You can now login in using **netscreen** as the default admin name and password.

Servicing the Device

4

This chapter details service and maintenance of various components in your NetScreen-5000 Series system. Topics in this chapter include:

- [“Removing and Reseating Modules” on page 36](#)
- [“Replacing a DC Power Supply” on page 36](#)
- [“Replacing an AC Power Supply” on page 37](#)
- [“Replacing the Fan Module” on page 37](#)
- [“Connecting and Disconnecting Gigabit Ethernet Cables” on page 43](#)
- [“Removing and Installing a Mini-GBIC Transceiver” on page 43](#)

REMOVING AND RESEATING MODULES

Although NetScreen-5000 Series modules are pre-installed before shipping, you may find it necessary to remove or reseat modules to suit the special security needs of your network.

Warning: *Always be sure the chassis power switch is off before you remove or install a Secure Port Module (SPM) or management module.*

To remove a module from a NetScreen-5000 Series system:

1. Release the module from the chassis by loosening the screws.
2. Rotate the ejector/injector levers to disengage the module from the backplane.
3. Gently slide the module card out of the chassis.

To install a module in a NetScreen-5000 Series system:

1. Be sure the module is right-side-up and the ejector/injector levers are extended.
2. Slide the module into the appropriate slot of the chassis, until it is seated in the backplane.
3. To secure the module in the chassis, close the ejector/injector levers by pushing on them toward the center of the module.
4. Tighten the screws using a #2 Phillips-head screwdriver.

REPLACING A DC POWER SUPPLY

Warning: *Before replacing a power supply, you MUST shut off current to the DC feed wires that lead to the power supply. Also, be sure that the power switch is in the off position (right side pressed in).*

To replace a DC power supply:

1. Turn off the power supply.
2. Loosen the retaining screws on the terminal block.
3. Remove the feed wires.
4. Turn the thumbscrew counterclockwise to release the power supply.
5. Lift and grip the lever, and then gently pull the power supply straight out.
6. Insert the new power supply into the bay.
7. Secure the power supply in place by tightening the thumbscrew clockwise.
8. Reconnect the wires as explained in [“Installing and Wiring a DC Power Supply” on page 17](#).

REPLACING AN AC POWER SUPPLY

To replace an AC power supply:

1. Turn off the power supply.
2. Lift the AC power cord retainer clip.
3. Unplug the cord from the power supply.
4. Turn the thumbscrew counterclockwise to release the power supply.
5. Lift and grip the lever, and then gently pull the power supply straight out.
6. Insert the new power supply into the bay.
7. Secure the power supply in place by tightening the thumbscrew clockwise.
8. Lift the retainer clip, and then plug the power cord into the power supply.
9. Press the retainer clip over the cord, securing it in place.

REPLACING THE FAN MODULE

The front panel of each device includes an air vent for cooling purposes. The NetScreen-5000 Series fan modules differ according to the device model:

- The NetScreen-5200 fan module has three fans
- The NetScreen-5400 fan module has two fans

When a fan or fan module fails, the Fan LED glows red, and the system generates an event alarm and a SNMP trap. Although a NetScreen-5000 Series system can operate with a fan out of service, it is advisable to replace the fan module as soon as possible.

When you remove the fan module, you must reinstall it (or replace it) within two minutes, or system failure can occur.

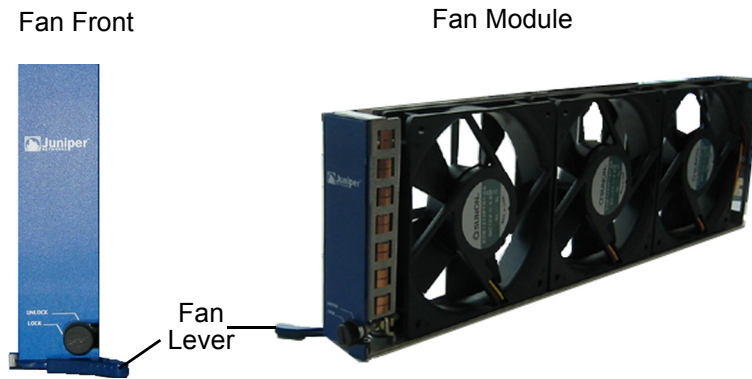
If the temperature alarm continues to display, we recommend inspecting the fan filter. To remove a filter cover and replace a filter, use the procedures described in this section.

Warning: *If the device becomes too hot, then the system shuts down automatically.*

Note: *During the one-year warranty period, you can obtain a replacement fan module by contacting Juniper Networks Technical support. After the warranty period, contact the Juniper Networks Sales department to renew your support contract.*

Note: *Depending on the working environment where the device is located, we recommend changing the fan filter every six months. The fan filter SKU number is NS-5200-FLTR or NS-5400-FLTR.*

NetScreen-5200 Fan Module



To remove the fan module on a NetScreen-5200:

1. Pull the fan lever until it is fully extended.
2. Grip the sides, then gently slide the assembly straight out.

Warning: Do not remove the fan module while the fans are still spinning.



3. Insert the new fan module in the fan bay, then push it straight in.
4. Secure the fan module in place by pushing the fan lever flat against the front panel.

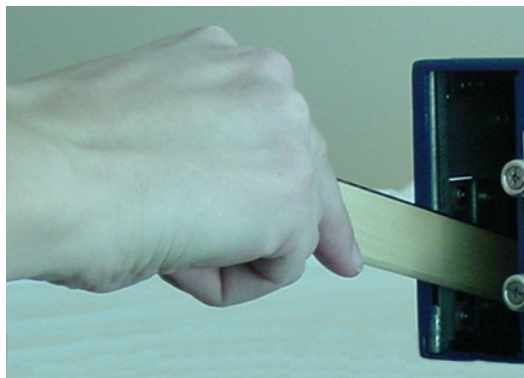
NetScreen-5200 Fan Tray Filter

Before you replace the fan tray filter, make sure you have the following tools:

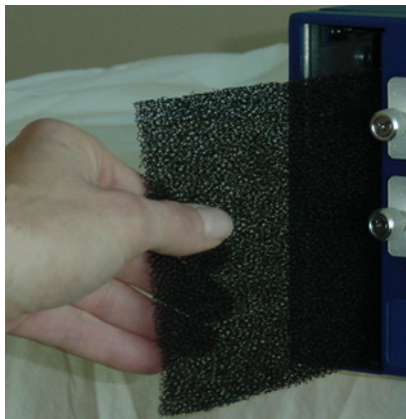
- Flashlight or other light source
- 18-inch wooden ruler

To replace the fan tray filter:

1. Remove the fan tray (See [“NetScreen-5200 Fan Module” on page 38](#)).
2. Pull the front edge of the filter from the Velcro backing.
3. Insert a wooden ruler between the filter and the chassis wall.



4. Push the wooden ruler towards the back of the chassis, gently lifting the filter as you proceed.
5. Once the filter is separated from the Velcro backing, use your fingers to pull the filter out of the fan tray slot.



6. Carefully insert a new filter into the chassis. Use the wooden ruler as an aid to guide the back edge of the filter to reach the end of the Velcro wall.

7. Once the filter is fully inserted, push the wooden ruler against the filter's surface several times to ensure that the filter is secure against the chassis wall.

Note: Make sure that the filter is secure against the Velcro wall; otherwise the filter will tear when you reinstall the fan.

8. Insert the fan tray into the chassis.
9. Lock the fan lever.

NetScreen-5400 Fan Module

Fan Front



Fan Module



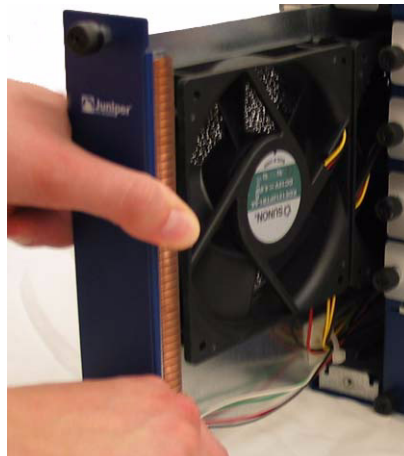
To replace the fan module on a NetScreen-5400:

1. Loosen the top and bottom thumbscrews with a Phillips-head screwdriver, turning them counterclockwise.

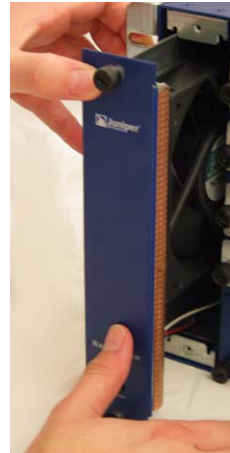


2. Grip the screws, and then gently slide the fan module out.

Warning: Do not remove the fan module while the fans are still spinning.



3. Align the new fan module in the fan bay, and then push it straight in.



4. Secure the fan module in place by tightening the thumbscrews clockwise.

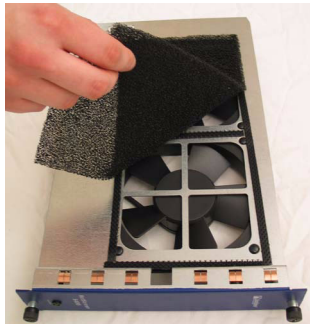
NetScreen-5400 Fan Tray Filter

To replace the fan tray filter:

1. Remove the fan tray (See [“NetScreen-5400 Fan Module” on page 40](#)).
2. Lay the fan tray filter up.



3. Pull the filter from the Velcro backing.



4. Replace the filter.
5. Align the new fan module in the fan bay, and then push it straight in.
6. Secure the fan module in place by tightening the thumbscrews clockwise.

CONNECTING AND DISCONNECTING GIGABIT ETHERNET CABLES

To connect a Gigabit Ethernet cable to a mini-GBIC connector transceiver port:

1. Hold the cable clip firmly but gently between your thumb and forefinger, with your thumb on top of the clip and your finger under the clip. (Do not depress the clip ejector on top of the clip.)
2. Slide the clip into the transceiver port until it clicks into place. Because the fit is close, you may have to apply some force to seat the clip. Apply force evenly and gently to avoid clip breakage.

To remove the cable from the transceiver port:

1. Make sure the black transceiver ejector under the port is not pressed in; otherwise, when you attempt to remove the cable, the transceiver might come out with the cable still attached.
2. Hold the cable clip firmly but gently between your thumb and forefinger, with your thumb on top of the clip and your finger under the clip.
3. Use your thumb to gently press the clip ejector on top of the clip, down, and then forward. This action loosens the clip from the transceiver port.
4. Pull the clip from the transceiver port.

REMOVING AND INSTALLING A MINI-GBIC TRANSCEIVER

To remove a mini-GBIC transceiver from a module:

1. Push in the black ejector (located on the underside of the transceiver) until it locks into place, disengaging the transceiver.
2. Grasp the transceiver at both sides, and then pull the transceiver toward you to remove it from the module.

To install a mini-GBIC transceiver into a module:

1. Grasp the transceiver with the label facing up, and then insert it into the transceiver slot until seated.
2. Check to see if the black transceiver ejector extends fully out to the front of the ejector slot, flush with the port portion of the transceiver.

Specifications

A

This appendix provides general system specifications for the NetScreen-5000 Series.

- [“NetScreen-5200 Attributes” on page A-II](#)
- [“NetScreen-5400 Attributes” on page A-II](#)
- [“Electrical Specification” on page A-II](#)
- [“NEBS Certifications” on page A-III](#)
- [“Safety Certifications” on page A-III](#)
- [“EMI Certifications” on page A-III](#)
- [“Connectors” on page A-III](#)

NETSCREEN-5200 ATTRIBUTES

Height: 3.4 inches (8.6 cm)

Depth: 19.5 inches (49.5 cm)

Width: 17.5 inches (44.5 cm)

Weight: 32 pounds (without power supply) (15 kg)

NETSCREEN-5400 ATTRIBUTES

Height: 8.62 inches (21.89 cm)

Depth: 14 inches (35 cm)

Width: 17.5 inches (44.5 cm)

Weight: 42 pounds (without power supply) (19 kg)

ELECTRICAL SPECIFICATION

AC voltage: 100-240 VAC +/- 10%

DC voltage: -36 to -60 VDC

AC Watts: 150 Watts

DC Watts: 150 Watts

Fuse Rating: AC: 3.15 Amps / 250 Volts

DC: 6 Amps / 250 Volts (NetScreen-5200) and 12 Amps / 250 Volts (NetScreen-5400)

ENVIRONMENTAL

The following table presents the environmental specifications.

Environment	Operating	Non-operating
Temperature	32-105°F, 0°-40° C	-40°-158° F, -40°-70° C
Relative humidity	10-90%	5-95%
Non-condensing	10-90%	5-95%

The maximum normal altitude is 12,000 ft. (0-3,660 m)

NEBS CERTIFICATIONS

Level 3 NetScreen-5200 with DC power supply.

GR-63-Core: NEBS, Environmental Testing

GR-1089-Core: EMC and Electrical Safety for Network Telecommunications Equipment

***Note:** NEBS certification is currently not available on the 5000-M2 management module.*

SAFETY CERTIFICATIONS

UL, CUL, CSA, CE, CB

EMI CERTIFICATIONS

FCC class A, CE class A, C-Tick, VCCI class A

CONNECTORS

The RJ-45 twisted-pair ports are compatible with the IEEE 802.3 Type 10/100 Base-T standard.

The mini-Gigabit transceivers used in NetScreen-5000 Series modules are Shortwave or SX type, so they are capable of distances up to 550 meters. (This varies by manufacturer.) The limit is 850 meters for the optic LC-type connector. The mini-Gigabit transceivers are compatible with the IEEE 802.3z Gigabit Ethernet standard.

The following table lists 1-Gigabit media types and distances for the different types of connectors used with the NetScreen-5000 Series systems.

Standard	Media Type	Mhz/Km Rating	Maximum Distance
1000 Base-SX	50/125µm Multimode Fiber	400	500 m
	50/125µm Multimode Fiber	500	550 m
	62.5/125µm Multimode Fiber	160	220 m
	62.5/125µm Multimode Fiber	200	275 m
1000 Base-LX	50/125µm Multimode Fiber	400	550 m
	62.5/125µm Multimode Fiber	500	550 m
	9/125µm Single-mode Fiber		10,000 m
100 Base-TX	Category 5 and higher Unshielded Twisted Pair (UTP) Cable		100 m

The following table shows the 10-Gigabit media types and distances for the different types of connectors used with the NetScreen-5000 Series systems.

Standard	Media Type	Mhz/Km Rating	Maximum Distance
1000 Base-SR	62.5/125µm Multimode Fiber	160	220 m
	62.5/125µm Multimode Fiber	200	275 m
1000 Base-LR	9/125µm Single-mode Fiber		10,000 m

Port Descriptions and LED Status B

This appendix provides detail on port descriptions and LED status for the NetScreen-5000 Series modules.

- [“Module Port Descriptions” on page B-II](#)
- [“Module LED Descriptions” on page B-III](#)
- [“Status LED States” on page B-IV](#)
- [“Power Supply LEDs” on page B-VI](#)
- [“Fan LED” on page B-VII](#)

MODULE PORT DESCRIPTIONS

The following table describes the ports on the 5000-M and 5000-M2 management modules.

Port	Description	Type	Speed/Protocol
Console	Enables a serial connection, to establish terminal sessions with the system. Used for launching Command Line Interface (CLI) sessions.	RJ-45	9600 Bps/ RS-232
Modem	Enables a serial modem connection for establishing dial-up sessions.	RJ-45	9600 Bps/ RS-232
MGT	Enables a connection for establishing out-of-band management sessions from outside of the network.	RJ-45	10/100 Mbps/ Ethernet
HA1	Enables connection with another device in a redundancy cluster, where one device serves as the master (primary) device, and the other serves as the backup (secondary) device.	mini-GBIC	1 Gbps/ Gigabit Ethernet
HA2	Enables connection with another device in a redundancy cluster, where one device serves as the master (primary) device, and the other serves as the backup (secondary) device.	mini-GBIC	1 Gbps/ Gigabit Ethernet

The following table describes the ports on the 5000-8G Secure Port Module (SPM).

Port	Description	Type	Speed/Protocol
Network Ports 1-8	Eight 1 Gigabit ports with an aggregate throughput of 4 Gbps.	mini-GBIC	1 Gbps/ Gigabit Ethernet

The following table details the ports on the 5000-2G24FE SPM.

Port	Description	Type	Speed/Protocol
Network Ports 1-2	Two high-speed network ports for general connection to the network.	mini-GBIC	1 Gbps Gigabit Ethernet
Network Ports 3-26	24 network ports for general connection to the network.	RJ-45	10/100 Mbps/ Ethernet

The following table details the ports on the 5000-8G2 SPM.

Port	Description	Type	Speed/Protocol
Network Ports 1-8	Eight 2-Gigabit ports with an aggregate throughput of 8 Gbps.	mini-GBIC	2 Gbps/ Gigabit Ethernet

The following table details the ports on the 5000-2XGE SPM.

Port	Description	Type	Speed/Protocol
Network Ports 1 and 2	Two 10-Gigabit Ethernet mini-GBICs with a throughput of 10Gbps.	mini-GBIC	10 Gbps/ Gigabit Ethernet

MODULE LED DESCRIPTIONS

This section provides descriptions of the LEDs on NetScreen-5000 Series modules. Two types of LEDs exist on the modules:

- Status LEDs. These LEDs reflect certain conditions that exist on the system at large and do not explicitly refer to a given port.
- Port LEDs. These LEDs reflect basic conditions (for example, a link connection status) that exist for a specific port.

STATUS LED STATES

This section describes Status LED states on all modules.

Interpreting Status LEDs for the Management Modules

The Status LEDs indicate whether the management module is operating properly. The following table describes the status possibilities for each.

LED	LED Color	Meaning of the LED
CPU Utilization	green	Consists of an array of five LEDs that indicate the current level of CPU utilization. Utilization is defined as the amount of traffic detected on the device at any given time. The CPU utilization LEDs represent the following percentages of possible utilization: 5%, 10%, 25%, 50%, and 90%.
	off	When all are off, indicates less than 5 percent CPU use.
POWER	green	Indicates the system is receiving power.
	off	Indicates the system is not receiving power.
	red	Indicates the power has a problem.
STATUS	blinking green	Indicates the system is operational.
	blinking amber	Indicates the system is booting up.
	off	Indicates the module is not operational.
HA	green	Indicates the module is a master in a redundancy cluster.
	red	Indicates the module is ineligible to be a backup.
	amber	Indicates the module is a backup in a redundancy cluster.
	off	Indicates that no HA activity has been defined.
ALARM	red	Indicates an alarm which could mean a system failure.
	blinking red	Indicates a self-test failure during the bootup process.
	off	Indicates the system has not detected an event or error at the current time.
FLASH	green	Indicates the flash card is installed.
	blinking green	Indicates flash card activity.
	off	Indicates no flash card loaded in the flash card slot.

Interpreting Status LEDs for the Secure Port Module

The Status LEDs indicate whether the Secure Port Module is operating properly. The following table describes the status possibilities for each.

LED	LED Color	Meaning of the LED
POWER	green	Indicates the system is receiving power.
	off	Indicates the system is not receiving power.
	amber	Indicates the system has initially received power.
STATUS	blinking green	Indicates the system is up and operational and that the power source is working properly.
	green	Indicates the system has a problem.
	off	Indicates the Secure Port Module is not operational.

Interpreting Ethernet Port Status LEDs for All Modules

The port Status LEDs indicate whether any of the ports on the modules are operating properly. The following table describes the status possibilities for each.

LED	LED Color	Meaning of the LED
LINK	green	Indicates a successful link has been established.
	blinking green	Indicates the port is attempting to establish a link.
	off	Indicates the port has not established a link with another device.
TX/RX	green	Indicates the port is successfully passing packets back and forth to a destination device.
	blinking green	Indicates the port is attempting to pass packets back and forth to a destination device.
	off	Indicates the port does not have a device connected to it.

POWER SUPPLY LEDs

The following tables describe LED behaviors on the 5000-M and 5000-M2 for different combinations of functioning power supplies.

Interpreting Power Supply LED Status for the NetScreen-5200

The following table details the LED behaviors on the 5000-M and 5000-M2 for different combinations of functioning power supplies on the NetScreen-5200.

Power Supply 1 Present	Power Supply 2 Present	Power LED	Alarm LED
Yes	No	Green	Off
Yes	Yes. Not functioning or turned off.	Green	Red
Yes	Yes	Green	Off

Interpreting Power Supply LED Status for the NetScreen-5400

The status of the Power and Alarm LEDs depend upon whether the NetScreen-5400 contains a single Secure Port Module (SPM) or multiple SPMs.

Single SPM Installed

The following table describes the LED behaviors for different combinations of functioning power supplies when there is only one SPM installed.

Power Supply 1 Present	Power Supply 2 Present	Power Supply 3 Present	Power LED	Alarm LED
Yes	No	No	Green	Off
Yes	Yes. Not functioning or turned off.	No	Green	Red
Yes	Yes	No	Green	Off
Yes	Yes	Yes. Not functioning or turned off.	Green	Red
Yes	Yes	Yes	Green	Off

Note: If the NetScreen-5400 contains more than one SPM, then the system requires at least two functioning power supplies. If a second power supply is not present or is present but not turned on, then the Alarm LED is off, but a console message directing you to install and turn on another power supply appears.

FAN LED

The following table describes the Fan LED on both the NetScreen-5200 and NetScreen-5400 chassis.

LED Color	Meaning of the LED
green	Fans are operating.
off	Power is off.

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