

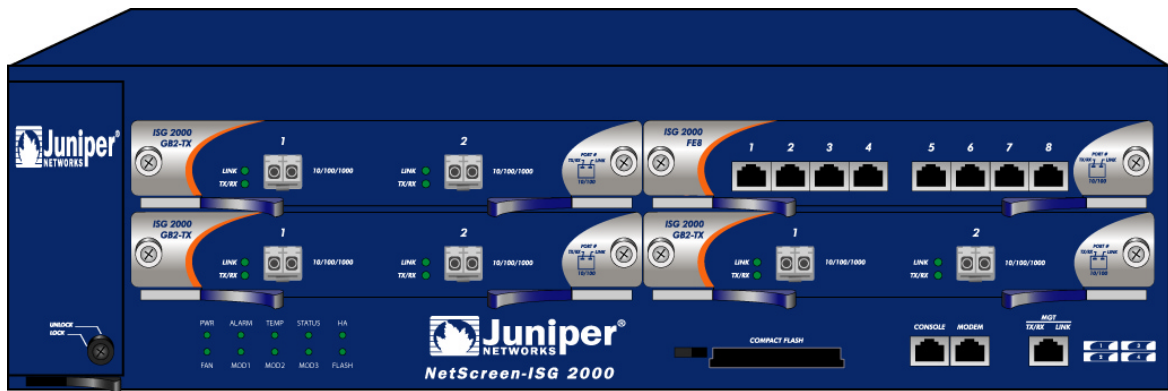
NETSCREEN-ISG 2000

User's Guide

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Rev. A



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If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- 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-ISG 2000 is a purpose-built, high-performance security system designed to provide a flexible solution to medium and large enterprise central sites and service providers. The NetScreen-ISG 2000 security system integrates firewall, deep inspection, VPN, and traffic management functionality in a low-profile, modular chassis.

The NetScreen-ISG 2000 is built around NetScreen's custom, third-generation purpose-built GigaScreen³ ASIC, which provides accelerated encryption algorithms. The NetScreen-ISG 2000 supports flexible interface configuration with 4-port and 8-port 10/100 and 2-port gigabit modules.

This manual introduces the NetScreen-ISG 2000, describes how to install and service the device, and shows how to perform initial configuration. It also lists device requirements and performance specifications.

GUIDE ORGANIZATION

This manual has four chapters and one appendix.

Chapter 1, "[Overview](#)" provides a detailed overview of the system and its modules, power supplies, and fan tray.

Chapter 2, "[Installing the Device](#)" provides instructions for you to rack mount the NetScreen-ISG 2000, 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](#)" provides instructions for you to obtain an IP address for an interface and how to aggregate ports on one of the modules.

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

Appendix A, "[Specifications](#)" provides a list of physical specifications about the NetScreen-ISG 2000, the modules, and power supplies.

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.netscreen.com/resources/manuals/.

To obtain the latest software version, visit: www.netscreen.com/services/download_soft. Select a category of software product from the dropdown list, then follow the displayed instructions. (You must be a registered user to download Juniper Networks Netscreen software.)

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Overview

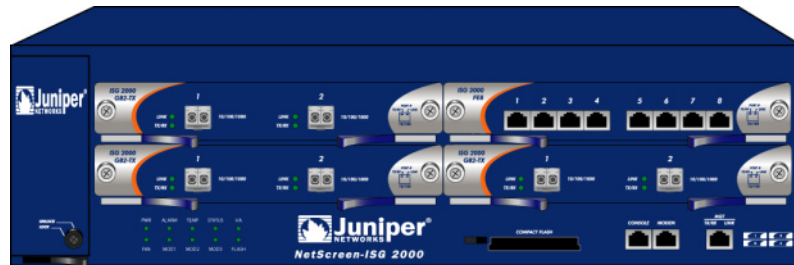
This chapter provides detailed descriptions of the NetScreen-ISG 2000 chassis. Topics in this chapter include:

- [“The Front Panel” on page 2](#)
 - [“LED Dashboard” on page 2](#)
 - [“Interface Modules” on page 4](#)
 - [“Compact Flash” on page 6](#)
 - [“Management Interfaces” on page 6](#)
 - [“High Availability Interfaces” on page 7](#)
 - [“The Fan Module” on page 7](#)
- [“The Rear Panel” on page 8](#)
 - [“Power Supplies” on page 8](#)

THE FRONT PANEL

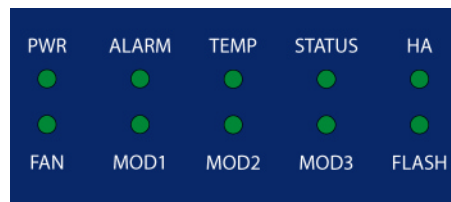
The front panel of the NetScreen-ISG 2000 has the following:

- An LED dashboard
- Four removable, replaceable interface modules
- A compact flash card slot
- Management, console, and modem ports
- A fan module



LED Dashboard

The LED dashboard displays up-to-date information about critical NetScreen-ISG 2000 functions.



The LEDs in the dashboard are as follows:

LED	Purpose	Color	Meaning
POWER	Power Supply	green	Power supply is functioning correctly.
		off	System is not receiving power.
		red	There is a problem with the power.
ALARM	System Alarm	blinking red	<ul style="list-style-type: none"> Continuous blinking indicates a self-test failure during the ScreenOS bootup. May also occur due to certain algorithm and ACL failures. Blinks once for each software attack.
		amber	One of the following failures has occurred: <ul style="list-style-type: none"> Power supply is turned off. Hardware failure. Error with software module.
		off	No alarm condition present.
TEMP	Temperature	green	Temperature is within safety range.
		orange	Temperature is outside normal alarm range. >132°F or 56°C
		red	Temperature is outside severe alarm range. >150°F or 66°C
STATUS	System Status	blinking green	The system is active.
		amber	The system is booting.
		off	The system is off.
HA	High Availability Status	green	Unit is master.
		amber	Unit is a backup.
		red	HA has been defined, but unit is not the backup system.
		off	No HA activity defined.
FAN	Fan Status	green	All fans functioning properly.
		red	One or more fans failed or fan subsystem is not receiving power.
MOD1		green	Security module is installed.
		off	No card installed.
MOD2		green	Security module is installed.
		off	No card installed.

LED	Purpose	Color	Meaning
MOD3		green	Security module is installed.
		off	No card installed.
FLASH	Compact Flash Status	green	PC card is installed in compact flash slot.
		blinking green	Read-write activity is detected.
		off	Compact flash slot is empty.

Note: To change the Alarm LED from red to green but keep the alarm message(s) in the menu system, use the CLI command **clear led alarm**.

When you turn on the NetScreen-ISG 2000, the Status LED changes from off to blinking green. Startup takes around 90 seconds to complete. If you want to turn the NetScreen-ISG 2000 off and on again, wait a few seconds between shutting it down and powering it back up.

Interface Modules

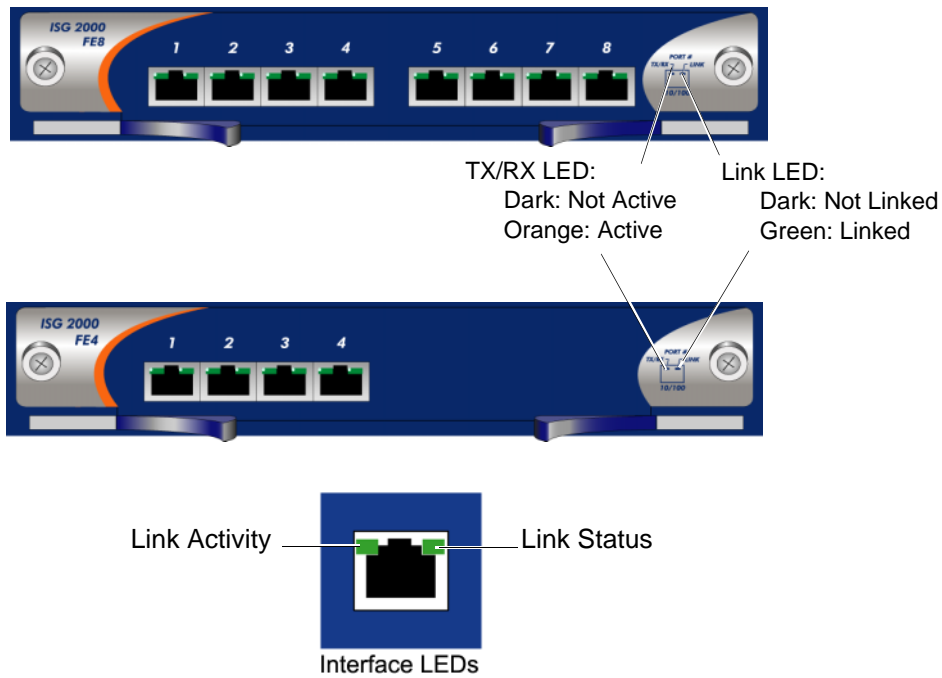
The front of the NetScreen-ISG 2000 has four interface module bays. Each interface module has two, four, or eight ports, and each port has a pair of LEDs.

Note: You can use both 10/100 and GBIC cards simultaneously for the same NetScreen-ISG 2000; there are no combination restrictions. However, the cards are not hot-swappable.

10/100 Mbps Interface Module

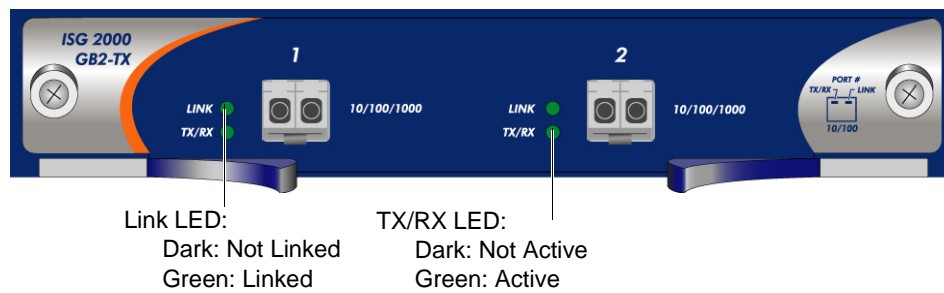
The 10/100 Mbps interface module is appropriate for a 10/100 Base-T LAN. Connect the ports using a twisted pair cable with RJ-45 connectors. (See [“Connecting the Device to a Network” on page 22](#) for cabling guidelines.)

Note: The NetScreen-ISG 2000 supports a maximum port count of 28. If there are 8-port 10/100 modules in each I/O slot, then ports five through eight, in slot 4, are disabled. Under this circumstance, these ports are unavailable for firewall and HA functions.



The Mini-GBIC Interface Connector Module

The mini-GBIC interface module provides connectivity to fiber-based, gigabit ethernet LANs. Connect the module using an optical single mode or multi mode cable.



Compact Flash

The compact flash slot is for downloading or uploading system software or configuration files, and for saving log files to a compact flash card.

To download or upload, execute the CLI command **save**:

```
save
  { software | config }
    from { flash | slot1 filename } to
        { flash | slot1 filename }
```

where **flash** refers to internal flash memory, **slot1** refers to the compact flash slot, and *filename* is the name of the software or configuration file on the card.

For example, the following command downloads the current device configuration to a file named **ns2000_config** on a card in the compact flash slot:

```
save config from flash to slot1 ns2000_config
```

Management Interfaces

The NetScreen-ISG 2000 offers three management interfaces:

Port	Description
Console	This RJ-45 serial port is for local configuration and administration using the CLI. Connect the console port to your workstation using an RJ-45 female to DB-9 male straight-through serial cable.
Modem	This RJ-45 serial port is for connecting to a modem, allowing the user to control the device remotely. (For security reasons, it is advisable to use a modem only for troubleshooting or for a one-time configuration, not for regular remote administration.)
10/100 MGT	This management port has a fixed 10/100 Base-T interface and provides a dedicated, out-of-band connection for management traffic. It has a separate IP address and netmask, configurable with the CLI or WebUI. (For security reasons, do not pass session traffic through this interface.) The MGT port is not capable of routing traffic to other interfaces. This port is only to be used for management purposes. The default IP address for the MGT port is 192.168.1.1.

High Availability Interfaces

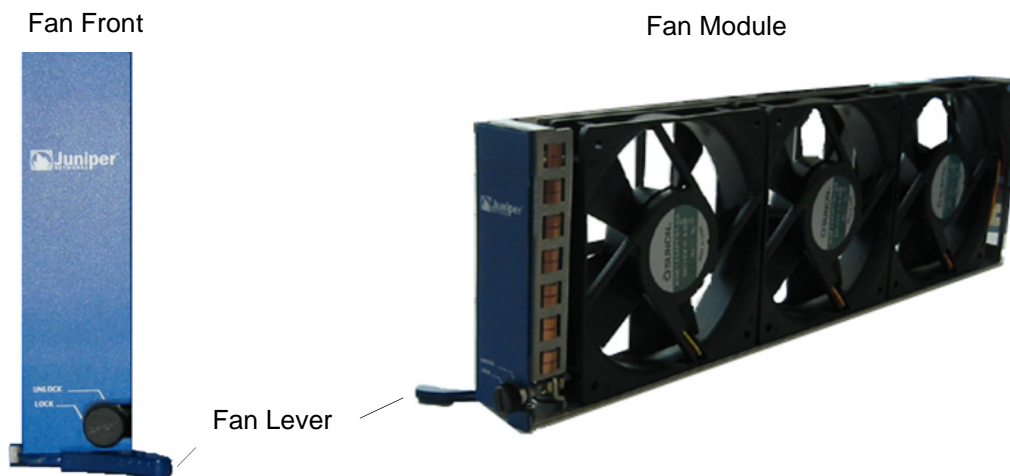
There are no dedicated High Availability (HA) interfaces on the NetScreen-ISG 2000; therefore, you must select and configure the HA ports once the system is running. The HA ports allow you to cable two devices together, and configure them to work as a *redundant group*. A redundant group consists of a master device and one backup device. If the master device fails, the backup device takes over as the new master, thus avoiding interruption of services. Any number and type of interfaces, from the four interface modules, can be used as an HA port.

Note: It is recommended that you use mini-GBIC interface modules when possible. Do not mix mini-GBIC and 10/100 Mbps ports as HA ports. If you do not have a mini-GBIC interface module, you should use at least two 10/100 Mbps interfaces. For more information on HA configuration, see the NetScreen Concepts & Examples ScreenOS Reference Guide.

For information on cabling for High Availability, see [“Connecting the NetScreen-ISG 2000 for High Availability” on page 24](#).

The Fan Module

The NetScreen-ISG 2000 has a three-fan module, which you can access on the left front side of the chassis.



Warning: If a fan stops operating due to failure or removal, the system continues to run. Be sure that the fan tray is not empty for more than two minutes; otherwise, heat failure or permanent damage can occur.

THE REAR PANEL

The rear panel of the NetScreen-ISG 2000 contains the power supplies.

Power Supplies

The NetScreen-ISG 2000 supports two redundant, fault-tolerant and auto-switching power supplies. The power supplies are hot-swappable, so you can remove or replace one power supply without interrupting device operation.



You can order the NetScreen-ISG 2000 with one or two power supplies: DC and AC. Although the NetScreen-ISG 2000 can run with one power supply, it is advisable to install two. This practice minimizes the chance of system failure due to an individual power supply failure.

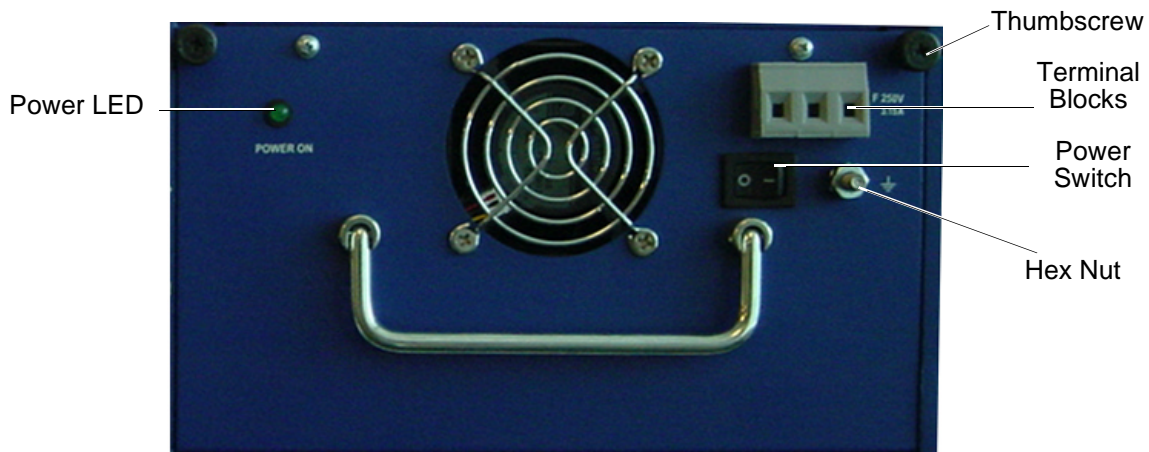
Important: Do not mix the power supply types because it could seriously damage the device.

When the NetScreen-ISG 2000 contains two power supplies, they share the power load equally. If one power supply fails, the other assumes the full load automatically and the device sends a system alarm. The Power LED only displays two colors: green, indicating that the power supply is functioning correctly and red, which indicates that the power supply has failed.

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.

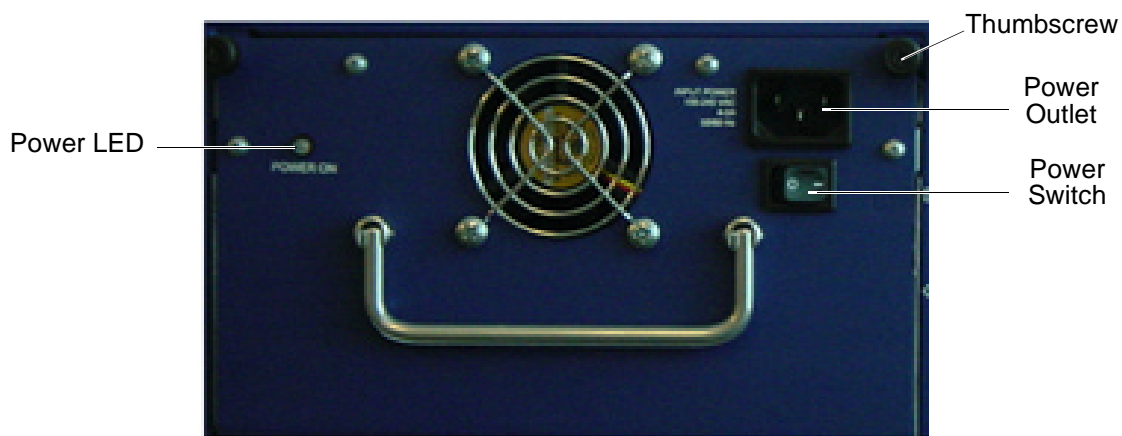
The following figure shows the NetScreen-ISG 2000 DC power supply.



The AC Power Supply

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

The figure below shows the NetScreen-ISG 2000 AC power supply.



Installing the Device

This chapter describes how to install a NetScreen-ISG 2000 in an equipment rack. Topics in this chapter include:

- “General Installation Guidelines” on page 12
- “Equipment Rack Mounting” on page 12
 - “Equipment Rack Installation Guidelines” on page 12
 - “Equipment Rack Accessories and Required Tools” on page 13
 - “Mid-Mount” on page 14
 - “Rear-and-Front Mount” on page 15
- “Installing and Connecting the AC Power Supply” on page 16
- “Installing and Wiring a DC Power Supply” on page 16

Note: For safety warnings and instructions, please refer to the NetScreen Safety Guide. The instructions in this guide warn you about situations that could cause bodily injury. Before working on any equipment, be aware of the hazards involved with electrical circuitry and be familiar with standard practices for preventing accidents.

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 device 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 device on a desktop for operation, it is not advisable to deploy a NetScreen-ISG 2000 in this manner. The best deployment technique is equipment rack mounting, described below.*

Warning: *To prevent abuse and intrusion by unauthorized personnel, install the NetScreen-ISG 2000 in a locked-room environment.*

EQUIPMENT RACK MOUNTING

The NetScreen-ISG 2000 comes with accessories for mounting the device in a standard 19-inch equipment rack.

Equipment Rack Installation Guidelines

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

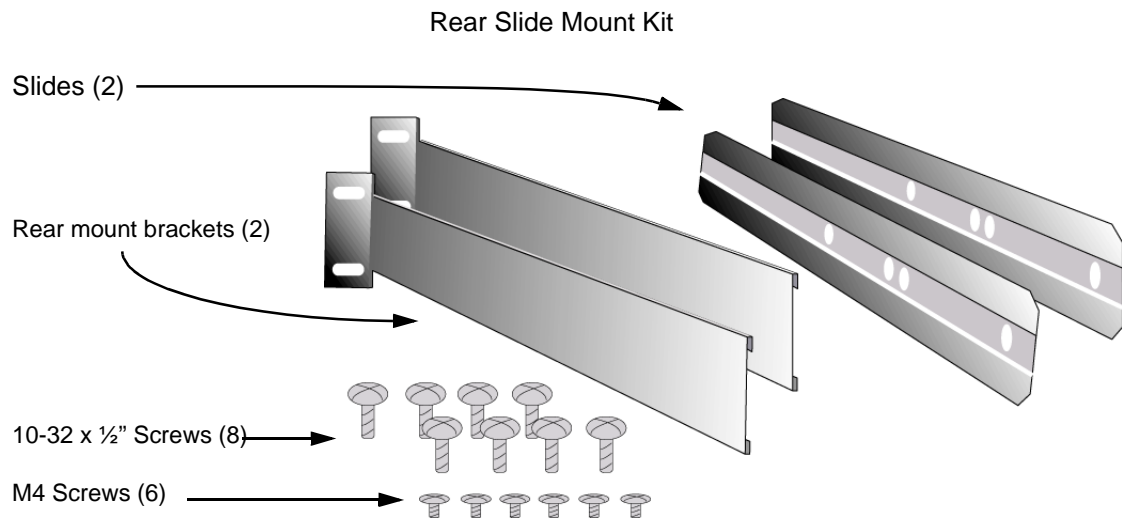
Use the following guidelines while configuring your equipment rack.

- Enclosed racks must have adequate ventilation. Such ventilation requires louvered sides and a fan to provide cooling air.
- When mounting a chassis in an open rack, be sure that the rack frame does not block the intake or exhaust ports. If you install the chassis on slides, 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.

Equipment Rack Accessories and Required Tools

Rack mounting requires the following accessories and tools:

- 1 Phillips-head screwdriver (not provided)
- 4 screws to match the rack (if the thread size of the screws provided in the NetScreen-ISG 2000 product package do not fit the thread size of the rack)
- The included rear slide mount kit (for the rear-and-front-mount method)



There are two ways to rack mount the NetScreen-ISG 2000:

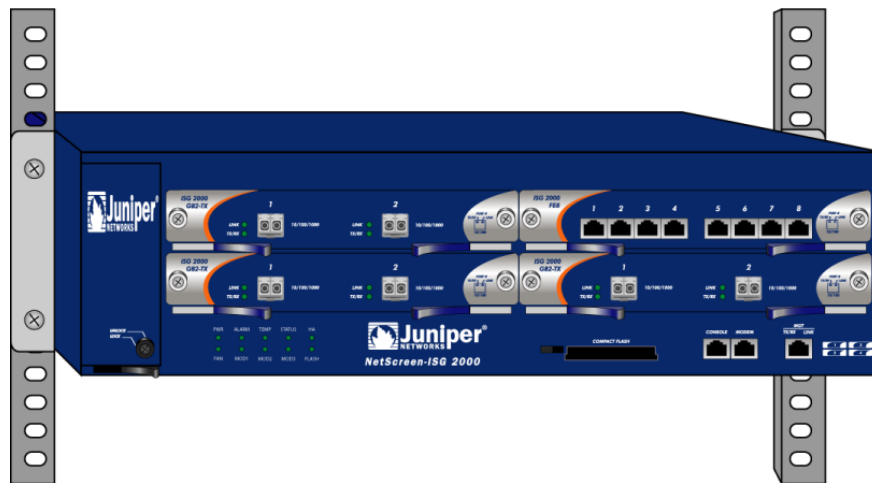
- Mid-mount
- Rear-and-front mount

Note: NetScreen strongly recommends the rear-and-front rack mount configuration.

Mid-Mount

To mid-mount the NetScreen-ISG 2000:

1. Screw the left and right plates to the middle of each side of the NetScreen-ISG 2000 chassis.
2. Slide the NetScreen-ISG 2000 in the rack.
3. Screw the left and right plates to the rack.



Rear-and-Front Mount

To mount the NetScreen-ISG 2000 with support from the rear and front, use the rear slide mount kit.

1. Screw the left and right plates to the front of each side of the NetScreen-ISG 2000 chassis.
2. Screw the rear mount bracket to the rear rack posts.
3. With the indented groove that runs the length of each slide facing outward, screw the slides to the middle of each side of the NetScreen-ISG 2000 chassis.

Note: Depending on the depth of your equipment rack, you can attach the slides along the length of the sides or extend them over the rear of the chassis.

4. Slip the slides into the rear mount brackets.
5. Push the NetScreen-ISG 2000 forward until the left and right plates contact the front rack posts.
6. Screw the left and right plates to the rack.



INSTALLING AND CONNECTING THE AC POWER SUPPLY

To install and connect the AC power supply to the NetScreen-ISG 2000:

1. Slide the power supply into one of the power compartments in the back 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. (If you want to install two power supplies, repeat steps 1 and 2 for the other power supply.)
3. Connect the female end of a standard power cord to the male connector on the back of each power supply.
4. Connect each power cord to a standard 100-240-volt power outlet.

Note: Whenever you deploy two power supplies to a NetScreen-ISG 2000, connect each to a different power source. Each power supply is intended to receive power from separate feeds.

5. Turn on the power switch.

Note: If there are multiple power supplies in the NetScreen-ISG 2000 and any of them are off, the Alarm LED on the management module glows red. This warning indicates that maximum system reliability 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-ISG 2000:

1. Slide the power supply into one of the power compartments in the back 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, repeat steps 1 and 2 for the remaining power supply.
4. Turn on the power switch.

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

Warning: You must shut off current to the DC feed wires before connecting the wires to the power supplies. Also, make sure that the ON/OFF 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 on the power switch.

Note: *If there are multiple power supplies in the NetScreen-ISG 2000 and any of them are off, the Alarm LED on the management module glows red. This warning indicates that maximum system reliability requires all installed power supplies to be operational.*

Configuring the Device

This chapter describes how to connect a NetScreen-ISG 2000 to your network and perform initial configuration on the device. Topics in this chapter include:

- “Operational Modes” on page 20
 - “Transparent Mode” on page 20
 - “Route Mode” on page 20
- “The NetScreen-ISG 2000 Interfaces” on page 21
 - “Configurable Interfaces” on page 21
 - “The Ethernet Interfaces” on page 21
 - “Interfaces to Change During Initial Configuration” on page 22
- “Connecting the Device to a Network” on page 22
 - “Connecting the NetScreen-ISG 2000 as a Single Security System” on page 23
 - “Connecting the NetScreen-ISG 2000 for High Availability” on page 24
- “Performing Initial Connection and Configuration” on page 27
 - “Establishing a Terminal Emulator Connection” on page 27
 - “Changing Your Admin Name and Password” on page 28
 - “Setting Port and Interface IP Addresses” on page 29
- “Configuring the Device for Telnet and WebUI Sessions” on page 31
 - “Starting a Console Session Using Telnet” on page 31
 - “Starting a Console Session Using Dialup” on page 32
 - “Establishing a WebUI Management Session” on page 32
 - “Configuring the Chassis Alarm” on page 33
- “Using CLI Commands to Reset the Device” on page 33

Note: You must register your product at www.netscreen.com/cso so that certain ScreenOS services, such as 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 Volume 2 in the NetScreen Concepts & Examples ScreenOS Reference Guide.

OPERATIONAL MODES

The NetScreen-ISG 2000 supports two device modes: Transparent mode and Route mode. The default mode is Route.

Note: Because you enable NAT capability by configuring interfaces and creating security policies, NAT is not considered a device mode. To configure your device for NAT, the device must be in Route mode.

Transparent Mode

In Transparent mode, the NetScreen-ISG 2000 operates as a Layer-2 bridge. Because the device cannot translate packet IP addresses, it cannot perform Network Address Translation (NAT). Consequently, any IP address in your trusted (local) networks must be public, routable, and accessible from untrusted (external) networks.

In Transparent mode the NetScreen device is 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, the NetScreen-ISG 2000 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 device translates the source IP address of each outgoing packet into the IP address of the untrusted port. It also replaces the source port number with a randomly-generated value. You can also perform translations using either Mapped IP (MIP) or Virtual IP (VIP) addresses.
- When the interface does *not* perform NAT services, the source IP address and port number in each packet header remain unchanged. Therefore, your local hosts must have public IP addresses.

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

THE NETSCREEN-ISG 2000 INTERFACES

The NetScreen-ISG 2000 provides physical ports, each of which can serve as a physical interface. In addition, you can configure Ethernet ports to serve as virtual (*logical*) interfaces.

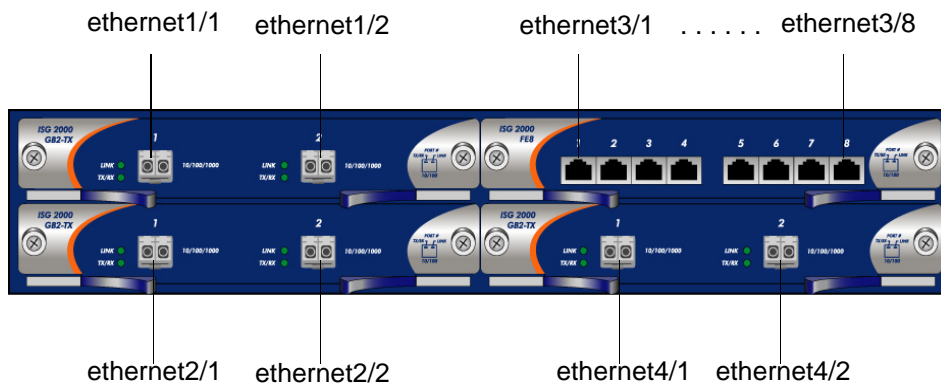
Configurable Interfaces

The interfaces available on the NetScreen-ISG 2000 are as follows:

Interface Type	Description
Ethernet interfaces	ethernet <i>n1/n2</i> specifies a physical Ethernet interface, denoted by an interface module in a slot (<i>n1</i>) and a physical port (<i>n2</i>) on the module.
	ethernet <i>n1/n2.n3</i> specifies a logical interface, denoted by an interface module in a slot (<i>n1</i>), a physical port (<i>n2</i>) on the module, and a logical interface number (<i>.n3</i>). You create logical interfaces using the set interface command.
Layer-2 interfaces	vlan <i>n</i> specifies the interface used for VPNs while the NetScreen device is in Transparent mode.
Tunnel interfaces	tunnel. <i>n</i> specifies a tunnel interface. Use this interface for VPN traffic.
Function interfaces	mgt specifies an interface bound to the MGT zone. The default IP address of this interface is 192.168.1.1.

The Ethernet Interfaces

The ethernet interfaces are located on the interface modules (see “[Interface Modules](#)” on [page 4](#)). The interface names are as follows:



Interfaces to Change During Initial Configuration

The default IP address and subnet mask settings for NetScreen-ISG 2000 interfaces are 0.0.0.0 and 0.0.0.0, respectively. The exception is **MGT**, a special interface used only for device management. The default IP address and subnet mask settings for the **MGT** interface are 192.168.1.1 and 255.255.255.0, respectively.

- For all operational modes, it is advisable to change the IP address and subnet mask for the **MGT** interface, and to use it exclusively for out of band management.
- To access the **vlan1** interface in Transparent mode, you must change the IP address and subnet mask of **vlan1** to match your current network.
- In Transparent mode, *only* the **MGT** and **vlan1** interfaces may have a new IP address and subnet mask. All others must keep their default IP address and subnet mask settings (0.0.0.0 and 0.0.0.0, respectively).
- In Route mode (with or without NAT), at least two Ethernet interfaces must have new IP addresses and subnet masks.

***Note:** For more information on setting IP addresses, see “Setting Port and Interface IP Addresses” on page 29*

CONNECTING THE DEVICE TO A NETWORK

The NetScreen-ISG 2000 has four interface module bays, which can contain the following types of modules:

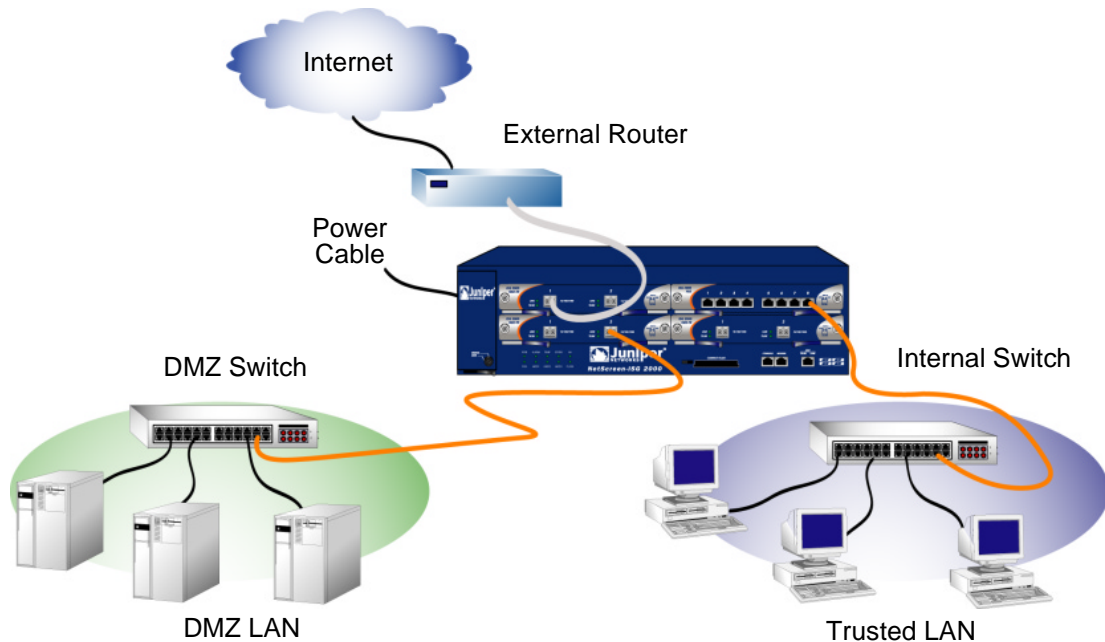
- 10/100 Mbps interface module, for 10/100 Base-T connections (4 and 8 ports)
- Mini-GBIC interface module, for fiber-optic connections (2 ports)

The type of network used by your organization determines the kind of interface needed to connect the NetScreen-ISG 2000. (For more information on interface modules, see “Interface Modules” on page 4.)

***Note:** Because of the wide variety of available routers, hubs, and switches, the cabling configuration presented here might not satisfy your network connection requirements. If the cabling suggested in this chapter does not work, try other cable configurations until a link light indicates an active link.*

Connecting the NetScreen-ISG 2000 as a Single Security System

The following illustration shows typical cabling for 10/100 Base-T networks. (For fiber optic networks, use optical cables for all network connections.)



Note: The cabling instructions given below reproduce the configuration shown here. However, this is not the only possible configuration. In addition, the instructions assume that all physical ports and interfaces are still set at their default settings. If you have changed the port and interface configurations, the instructions below might not work properly.

To add a NetScreen-ISG 2000 to your network:

1. (Optional) Install the NetScreen-ISG 2000 in an equipment rack (see [“Equipment Rack Mounting”](#) on page 12).
2. Make sure that the NetScreen-ISG 2000 ON/OFF switch is turned off.
3. Connect the power cable, included in the product package, to the NetScreen-ISG 2000 power supply and to a power source.

Note: Whenever you deploy both power supplies in a NetScreen-ISG 2000, connect each power supply to a different power source, if possible. If one power source fails, the other source might still be operative.

4. Connect an RJ-45 cross-over cable from the far right interface of Module 3 (**ethernet3/8**) to the internal switch, router, or hub.

Note: Check your router, hub, switch, or computer documentation to see if these devices require any further configuration for your trust and untrust zones. In addition, see if it is necessary to switch off the power to any new device you add to the LAN.

5. Connect an optical cable from the upper left interface of Module 1 (**ethernet1/1**) to the external router.
6. Connect an optical cable from the DMZ interface at the lower right interface of Module 2 (**ethernet2/2**) to the DMZ switch, router, or hub.
7. Flip the ON/OFF switch to the on position.
8. After the NetScreen-ISG 2000 boots up, the Power, Status, and Link LEDs should light up as follows:
 - The Power LED for each deployed power supply glows green.
 - The Status LED blinks green.
 - The top Link Status LEDs for each interface glows or blinks green. (For more details about interpreting the Link Status LEDs, see “[Interface Modules](#)” on page 4.)

Connecting the NetScreen-ISG 2000 for High Availability

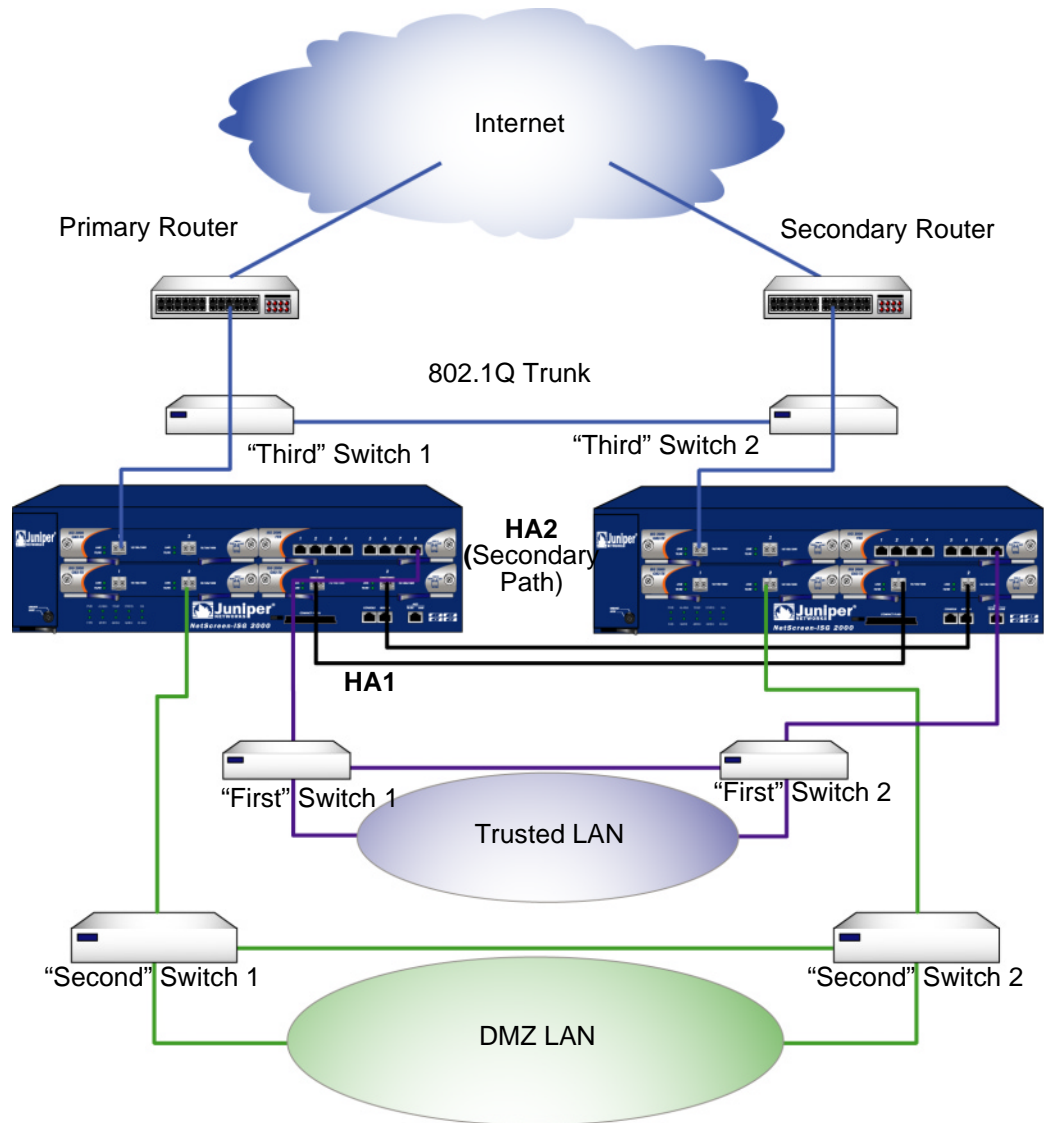
There are no dedicated High Availability (HA) interfaces on the NetScreen-ISG 2000; therefore, you must select and configure the HA ports once the system is running. The HA ports allow you to cable two or more devices together, and configure them to work as a *redundant group*. A redundant group consists of a master device and at least one backup device. If the master device fails, a backup device takes over as the new master, thus avoiding interruption of services. Any number and type of interfaces, from the four interface modules, can be used as an HA port.

Set the HA interfaces by executing the following command on each device, for example:

```
set interface ethernet4/1 zone ha
set interface ethernet4/2 zone ha
```

Note: It is recommended that you use mini-GBIC interface modules when possible. Do not mix mini-GBIC and 10/100 Mbps ports. If you do not have a mini-GBIC interface module, you should use at least two 10/100 Mbps interfaces. For more information on HA configuration, see the NetScreen Concepts & Examples ScreenOS Reference Guide.

Note: The NetScreen-ISG 2000 supports a maximum port count of 28. If there are 8-port 10/100 modules in each I/O slot then ports five through eight, in slot 4, are disabled. Under this circumstance, these ports are unavailable for firewall and HA functions.



Note: The provided cabling instructions reproduce the configuration shown above; however, this is not the only possible HA configuration. In addition, the instructions assume that all physical ports and interfaces are still set at their default settings. If you have changed the port and interface configurations, the instructions might not work properly.

To cable two NetScreen-ISG 2000 together for HA and connect them to the network:

1. (Optional) Install each NetScreen-ISG 2000 in an equipment rack (see [“Equipment Rack Mounting”](#) on page 12).
2. Make sure that all ON/OFF power supply switches are off.

3. Connect the power cables to each NetScreen-ISG 2000 power supply and connect them to a power source.

***Note:** Whenever you deploy both power supplies in a NetScreen-ISG 2000, connect each power supply to a different power source, if possible. If one power source fails, the other source might still be operational.*

4. Connect a 10/100 Base-T cross-over cable from the preferred HA1 port on one device to the preferred HA1 on the second device.
5. Connect a 10/100 Base-T cross-over cable from the preferred HA2 port on one device to the preferred HA2 on the second device.

Configuring HA Ports

6. Set the HA interface by executing the following command on each device, for example:

```
set interface ethernet4/1 zone ha
set interface ethernet4/2 zone ha
```

Master Unit

7. If your network is 10/100 Base-T, connect a cross-over cable from **ethernet3/8** to the switch labeled “First Switch 1” in the previous diagram.
8. If your network is fiber optic, connect an optical cable from **ethernet2/2** to the switch labeled “Second Switch 1” in the previous diagram.
9. If your network is fiber optic, connect an optical cable from **ethernet1/1** to the switch labeled “Third Switch 1” in the previous diagram.

Backup Unit

10. If your network is 10/100 Base-T, connect a cross-over cable from **ethernet3/8** to the switch labeled “First Switch 2” in the previous diagram.
11. If your network is fiber optic, connect an optical cable from **ethernet2/2** to the the switch labeled “Second Switch 2” in the previous diagram.
12. If your network is fiber optic, connect an optical cable from **ethernet1/1** to the switch labeled “Third Switch 2” in the previous diagram.

Switches

13. Cable together the “First” switches (which are connected to the **ethernet3/8** ports).
14. Cable together the “Second” switches (which are connected to the **ethernet2/2** ports).
15. Cable together the “Third” switches (which are connected to the **ethernet1/1** ports).

16. Cable the routers to the “Third” switches (which are connected to the **ethernet1/1** ports).

***Note:** The switch ports must be defined as 802.1Q trunk ports, and the external routers must be able to use either Hot Standby Router Protocol (HSRP) or Virtual Router Redundancy Protocol (VRRP). For the best configuration method, see the documentation for your switch or router.*

17. Turn on both NetScreen-ISG 2000.

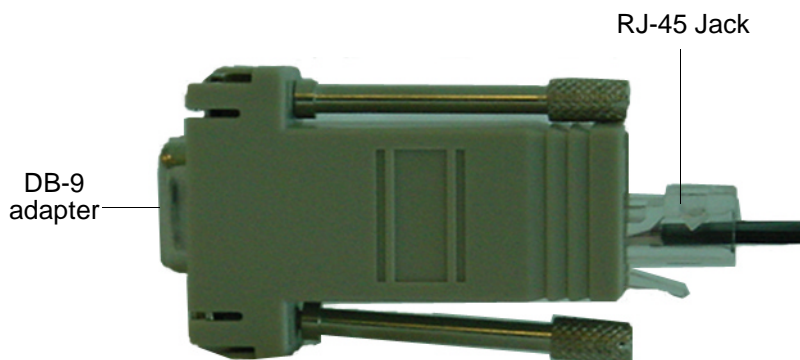
PERFORMING INITIAL CONNECTION AND CONFIGURATION

To establish the first console session with the NetScreen-ISG 2000, use a vt100 terminal emulator program through the console port.

Establishing a Terminal Emulator Connection

To establish an initial console session:

1. Plug the female end of the supplied DB-9 adapter into the serial port of your computer. (Be sure that the DB-9 is inserted properly and secured.)
2. Plug the RJ-45 CAT5 cable into the console port of the NetScreen-ISG 2000. (Be sure that the other end of the CAT5 cable is inserted properly and secured in the DB-9 adapter.)



3. Launch a Command Line Interface (CLI) session between your computer and the NetScreen-ISG 2000 using a standard serial terminal emulation program such as Hilgraeve Hyperterminal (provided with your 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. Press the enter key to see the login prompt.
5. At the login prompt, type **netscreen**.
6. At the password prompt, type **netscreen**.

***Note:** 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:
`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**.

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. To change your login information:

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

For information on creating different levels of administrators, see the *NetScreen Concepts and 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. Use the CLI **save** command to store your configuration.

Viewing Current Interface Settings

To view current interface settings:

```
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. If you do not want to use this default IP address, you need to assign a new interface address that matches your current network. NetScreen recommends using the MGT interface exclusively for out of band management. To set the IP address of the MGT port:

1. Choose an unused IP address within the current address range of your Local Area Network.
2. To set the MGT port to this unused IP address:

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

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

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

3. To confirm the new port settings:

```
get interface mgt
```

Setting the IP Address for the Trust Zone Interface

The NetScreen-ISG 2000 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 **ethernet3/8** interface to communicate with your trusted network:

1. Determine the IP address and subnet mask of your trusted network.
2. To bind the **ethernet3/8** interface to the Trust zone:

```
set interface ethernet3/8 zone trust
```

3. To set the IP address and subnet mask:

```
set interface ethernet3/8 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 **ethernet3/8** interface to 10.250.2.1/16:

```
set interface ethernet3/8 ip 10.250.2.1/16
```

4. (Optional) To confirm the new interface settings:

```
get interface ethernet3/8
```

Setting the IP Address for the Untrust Zone Interface

The NetScreen-ISG 2000 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 **ethernet1/1** interface to communicate with external devices:

1. Choose an unused public IP address and subnet mask.
2. To bind the **ethernet1/1** interface to the Untrust zone:

```
set interface ethernet1/1 zone untrust
```

3. To set the IP address and subnet mask:

```
set interface ethernet1/1 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 **ethernet1/1** interface to 172.16.20.1/16:

```
set interface ethernet1/1 ip 172.16.20.1/16
```

4. (Optional) To confirm the new interface settings:

```
get interface ethernet1/1
```

Allowing Outbound Traffic

By default, the NetScreen-ISG 2000 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
```

Use the **save** command to store changed information.

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

Note: Once you have set the port and interface IP address, it is highly advisable to change the admin name and password immediately. For more information, see “[Changing Your Admin Name and Password](#)” on page 28.

CONFIGURING THE DEVICE FOR TELNET AND WEBUI SESSIONS

You can also use Telnet (or dialup) to establish console sessions with the NetScreen-ISG 2000. You can 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-ISG 2000:

1. Connect an RJ-45 cable from the MGT interface to the internal switch, router, or hub in your LAN (see “[Setting the IP Address for the Trust Zone Interface](#)” on page 29).
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 IP address of the MGT interface), then click **OK**.

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

```
telnet 10.100.2.183
```

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

Note: Both admin name 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:

```
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-ISG 2000 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 Hilgraeve HyperTerminal (a commonly-used terminal application), select **Connect > Remote System > vt100** from the Term Type menu.

Establishing a WebUI Management Session

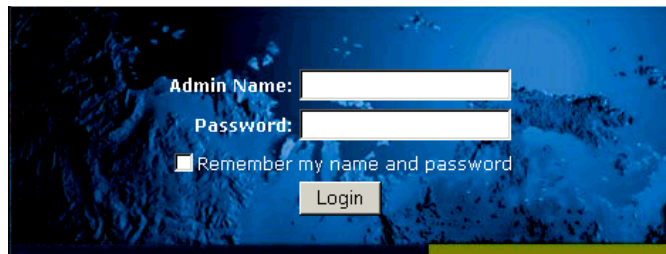
To access the NetScreen-ISG 2000 device with the WebUI management application:

1. Connect your computer (or your LAN hub) to the MGT interface using a CAT5 Ethernet cable.
2. Launch your browser, enter the IP address of the MGT interface in the URL field, then press enter.

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

`http://10.100.2.183`

The NetScreen WebUI software displays the login prompt.



3. Enter **netscreen** in both the **Admin Name** and **Password** fields, 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-ISG 2000 allows you to configure the chassis alarm, an audible warning that sounds when a system failure or hazardous event occurs.

To specify 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. (Optional) Confirm the new alarm settings by executing the following command:

```
get chassis
```

Using CLI Commands to Reset the Device

If you lose the admin password, you can use the following procedure to reset the NetScreen device to its default settings. This 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 27.

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 device.
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 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

This chapter describes service and maintenance procedures for your NetScreen-ISG 2000. Topics in this chapter include:

- “Removing and Inserting Interface Modules” on page 36
 - “Removing Interface Modules” on page 36
 - “Inserting Interface Modules” on page 37
- “Installing Power Supplies” on page 38
 - “Wiring the DC Power Supplies” on page 38
 - “Replacing a DC Power Supply” on page 39
 - “Replacing an AC Power Supply” on page 39
- “Replacing the Fan Module” on page 40
 - “Replacing the Fan Tray Filter” on page 41
- “Connecting and Disconnecting Gigabit Ethernet Cables” on page 42
- “Removing and Installing a Mini-GBIC Transceiver” on page 43

Note: For safety warnings and instructions, please refer to the NetScreen Safety Guide. The instructions in this guide warn you about situations that could cause bodily injury. Before working on any equipment, be aware of the hazards involved with electrical circuitry and be familiar with standard practices for preventing accidents.

REMOVING AND INSERTING INTERFACE MODULES

The NetScreen-ISG 2000 has four interface module bays. The supplied modules are pre-installed, although they are removable and replaceable.

There are three types of interface modules:

- 10/100 Base-T module (four ports)
- 10/100 Base-T module (eight ports)
- Mini-GBIC interface connector module (two ports)

You can use these interface modules in whatever combination and arrangement suits the needs of your network infrastructure.

Removing Interface Modules

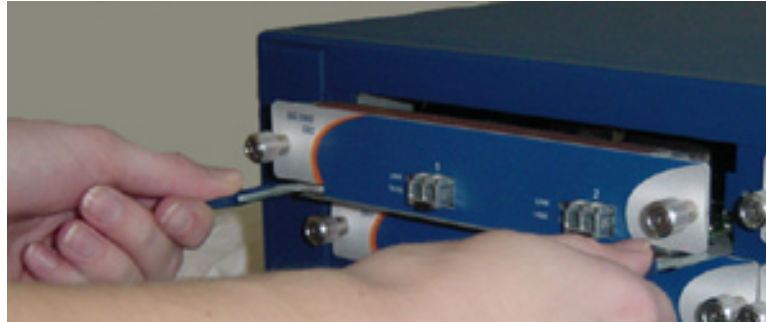
To remove an interface module from a bay:

Warning: When inserting or removing interface modules, be sure that the power is off.

1. Unscrew the thumbscrews on each side of the interface module.
2. With your thumbs, pull the blue locking levers out.



3. Grip the levers, then gently slide the card straight out.



Warning: When inserting and removing a card in bay 2, take care that the electromagnetic interference (EMI) fingers located along the top edge of the front wall of the interface module do not catch on the lower edge of the card above it in bay 1.

Inserting Interface Modules

To insert an interface module into a module bay:

Warning: When inserting or removing interface modules, be sure that the power is off.

1. Align the side edges of the card with the grooves in the side walls of the bay.



2. Slide the card in until the card is forced to stop.

Warning: When inserting and removing a card in bay 2, take care that the electromagnetic interference (EMI) fingers located along the top edge of the front wall of the interface module do not catch on the lower edge of the card above it in bay 1.

3. With your thumbs, push in the locking levers to secure the module.



Important: If you push the latch before it contacts the ridge on the bay wall, the locking tab clicks into place prematurely and you will not be able to seat the interface module properly.

4. Screw in the thumbscrews on each side of the interface module.

INSTALLING POWER SUPPLIES

Although the NetScreen-ISG 2000 can run with one power supply, it is advisable to install two. Two power supplies minimize the chance of a system failure due to a failure in one of the individual power supplies. Do not mix power supplies.

Warning: You must shut off any current to the DC feed wires before connecting the wires to the power supplies. Make sure that the ON/OFF power supply switches are in the off position.

Wiring the DC Power Supplies

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 on the power switches.

Note: *If there are multiple power supplies in the NetScreen-ISG 2000 and any of them are off, the Alarm LED on the management module glows red. This warning indicates that maximum system stability requires all installed power supplies to be operational.*

Replacing a DC Power Supply

Warning: *You must shut off current to the DC feed wires leading to the power supply that you want to replace. Also, make sure that the ON/OFF switch on the power supply is in the off position.*

To replace one of the DC power supplies:

1. Loosen the three retaining screws on the terminal block.
2. Remove the feed wires.
3. Turn the thumbscrew counterclockwise to release the power supply.
4. Lift the handle and, gripping the handle, pull the power supply straight out.
5. Insert the new power supply into the bay.
6. Secure the power supply in place by tightening the thumbscrew clockwise.
7. Turn on the power supply.

Reconnect the wires as explained in [“Wiring the DC Power Supplies” on page 38](#).

Replacing an AC Power Supply

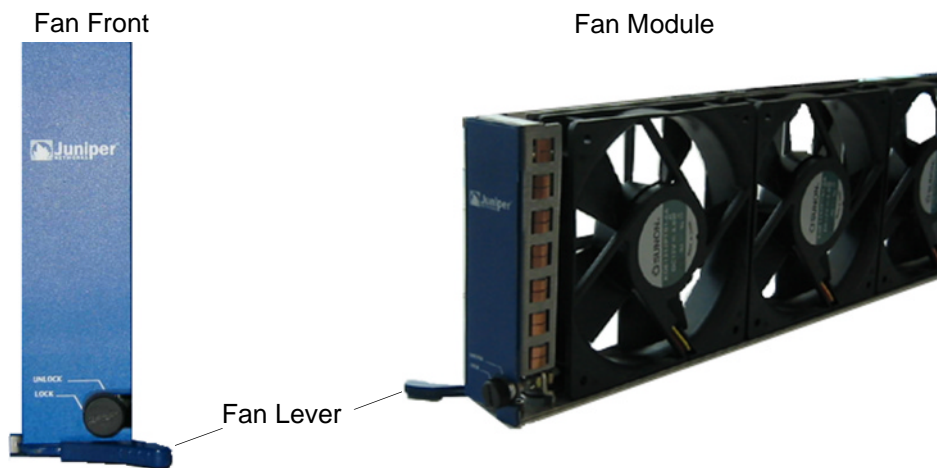
To replace an AC power supply:

1. Turn off the power supply.
2. Unplug the cord from the power supply.
3. Turn the thumbscrew counterclockwise to release the power supply.
4. Lift the handle and, gripping the handle, gently pull the power supply straight out.
5. Insert the new power supply into the bay.
6. Secure it in place by tightening the thumbscrews clockwise.
7. Plug the power cord into the power supply.
8. Turn on the power supply.

REPLACING THE FAN MODULE

Note: During the one-year warranty period, you can obtain a replacement fan module by contacting NetScreen Technical support. After the warranty period, contact the NetScreen Sales department.

You only need to replace the fan module when a failure occurs. When this happens, the Fan LED glows red, and the device generates an event alarm and an SNMP trap.



To remove the fan module:

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.

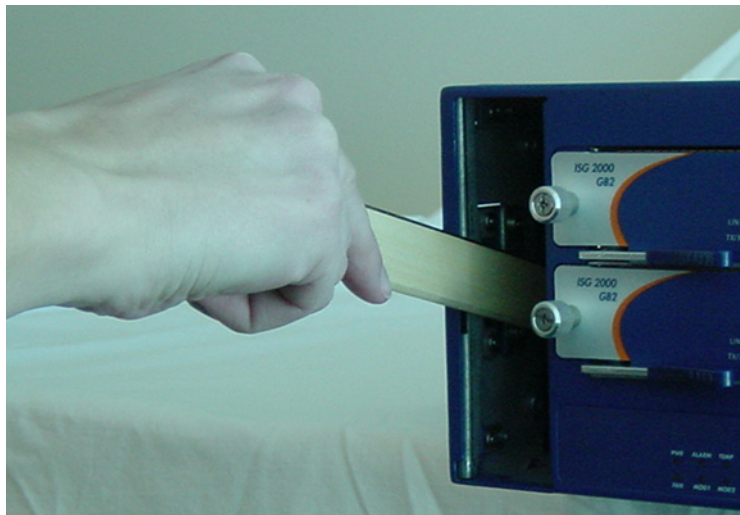
Replacing the Fan Tray Filter

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 [“Replacing the Fan Module” on page 40](#)).
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 insure 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 latch.

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 insert the clip. To avoid clip breakage, apply force evenly and gently.

To remove the cable from the transceiver port:

1. Make sure the blue transceiver ejector is in a secured locked position (the blue lever is flat against the front panel). 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. Using your thumb, gently press the clip ejector on top of the clip, down, then forward. This action loosens the clip from the transceiver port.
4. Gently but firmly, 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 blue ejector (located on the underside of the transceiver) until it locks into place, disengaging the transceiver.
2. Grasp the transceiver at both sides and firmly but gently 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, then insert it into the transceiver slot.
2. Check to see if the black transceiver ejector extends fully out to the front of the ejector slot, align it with the port portion of the transceiver.

Specifications



This appendix provides general system specifications for the NetScreen-ISG 2000:

- [“NetScreen-ISG 2000 Attributes” on page A-II](#)
- [“Electrical Specification” on page A-II](#)
- [“Environmental” on page A-II](#)
- [“NEBS Certifications” on page A-II](#)
- [“Safety Certifications” on page A-II](#)
- [“EMI Certifications” on page A-III](#)
- [“Connectors” on page A-III](#)

NETSCREEN-ISG 2000 ATTRIBUTES

Height: 3.5 inches (8.9 centimeters)

Depth: 23.25 inches (59 centimeters)

Width: 17.5 inches (44.5 centimeters)

Weight: 42 pounds (19 kilograms)

ELECTRICAL SPECIFICATION

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

DC voltage: -36 to -60 VDC

AC Power: 250 Watts

DC Power: 250 Watts

AC Input frequency: 47 - 63 Hz

Fuse Rating: DC PS: 12 Amps / 250 Volts; AC PS: 6.3 Amps / 250 Volts

ENVIRONMENTAL

The following table provides the environmental specifications.

Temperature	Operating
Normal altitude	32-113°F, 0°- 45° C
Humidity	10-90% RH, non-condensing

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

NEBS CERTIFICATIONS

Level 3 NS-ISG 2000 with DC power supply.

GR-63-Core: NEBS, Environmental Testing

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

SAFETY CERTIFICATIONS

CSA

EMI CERTIFICATIONS

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

CONNECTORS

The following table lists the RJ-45 connector pin out.

Pin	Signal	DIR
1	RTS	OUT
2	DTR	OUT
3	TX	OUT
4	GDN	
5	N.C.	
6	RX	IN
7	DSR	IN
8	CTS	IN

The mini-Gigabit transceivers are compatible with the IEEE 802.3z Gigabit Ethernet standard. The following table lists media types and distances for the different types of interfaces used in the NetScreen-ISG 2000.

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

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