

NOKIA

Nokia IP1200 Series Security Platform Installation Guide

SECURED BY CHECK POINT™
Software Technologies



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About this Guide

This manual provides information for the installation and use of the Nokia IP1200 Series Security Platforms. Installation and maintenance should be performed by experienced technicians or Nokia-approved service providers only.

This preface provides the following information:

- [In This Guide](#)
- [Conventions This Guide Uses](#)
- [Related Documentation](#)

In This Guide

This guide is organized into the following chapters and appendixes:

- [Chapter 1, “Overview”](#) presents a general overview of the Nokia IP1200 Series Security Platform.
- [Chapter 3, “Installing the Nokia IP1200 Series Security Platform”](#) describes how to rack mount the security platform.
- [Chapter 2, “Performing the Initial Configuration”](#) describes how to physically connect it to a network and to a power source and how to make the security platform available on the network.
- [Chapter 4, “Installing and Replacing Network Interface Cards”](#) describes how to install, monitor, and replace network interface cards (NICs).

- [Chapter 5, “Connecting PMC Network Interface Cards”](#) describes how to connect to and use each of the supported NICs.
- [Chapter 6, “Using the Boot Manager”](#) describes how to use the boot manager, which is part of the IPSO software.
- [Chapter 7, “Troubleshooting”](#) discusses problems you might encounter and proposes solutions to these problems.
- [Chapter 8, “Installing and Replacing Other Components”](#) describes how to install or replace memory, hard disk drives, and power supplies.
- [Appendix A, “Technical Specifications”](#) provides technical specifications such as interface characteristics.
- [Appendix B, “Compliance Information”](#) provides compliance and regulatory information.

Conventions This Guide Uses

The following sections describe the conventions this guide uses, including notices, text conventions, and command-line conventions.

Notices



Warning

Warnings advise the user that either bodily injury might occur because of a physical hazard, or that damage to a structure, such as a room or equipment closet, might occur because of equipment damage.



Caution

Cautions indicate potential equipment damage, equipment malfunction, loss of performance, loss of data, or interruption of service.

Note

Notes provide information of special interest or recommendations.

Text Conventions

[Table 1](#) describes the text conventions this guide uses.

Table 1 Text Conventions

Convention	Description
monospace font	Indicates command syntax, or represents computer or screen output, for example: Log error 12453
bold monospace font	Indicates text you enter or type, for example: # configure nat
Key names	Keys that you press simultaneously are linked by a plus sign (+): Press Ctrl + Alt + Del.
Menu commands	Menu commands are separated by a greater than sign (>): Choose File > Open.
The words enter and type	Enter indicates that you type something and then press the Return or Enter key. Do not press the Return or Enter key when an instruction says <i>type</i> .
<i>Italics</i>	<ul style="list-style-type: none"> Emphasizes a point or denotes new terms at the place where they are defined in the text. Indicates an external book title reference. Indicates a variable in a command: delete interface <i>if_name</i>

Related Documentation

You can find this guide in PDF on the Nokia support Web site (<https://support.nokia.com/>) and on the Nokia IPSO Operating System CD-ROM issued with your Nokia IP1200 Series Security Platform.

In addition to this guide, documentation for this product includes the following:

- *Getting Started Guide and Release Notes* for the version of Nokia IPSO you are using
- *Nokia Network Voyager Reference Guide*
- *Nokia Network Voyager inline help*
- *Nokia IP Security Platform Quick Setup Guide*
- *Clustering Configuration Guide* for the version of IPSO you are using
- *IPSO Boot Manager Reference Guide*

You can access the Network Voyager inline help and the *Nokia Network Voyager Reference Guide* from the Network Voyager application.

To access inline help for a specific subject, click Help next to the subject.

To access the *Nokia Network Voyager Reference Guide* for tasks, examples, and more information, click Doc.

Check Point documentation is available from the Check Point Web site at www.checkpoint.com.

1 Overview

This chapter provides an overview of the Nokia IP1200 Series Security Platform and the requirements for its use. The following topics are covered:

- [About the Nokia IP1200 Series Security Platform](#)
- [Managing the Nokia IP1200 Series Security Platform](#)
- [Nokia IP1200 Series Security Platform Overview](#)
- [Site Requirements, Warnings, and Cautions](#)
- [Software Requirements](#)

About the Nokia IP1200 Series Security Platform

The Nokia IP1200 Series Security Platform combines the power of the Nokia IPSO operating system with the Nokia Secure Access System and firewall applications. The Nokia IP1260 Security Platform is a high-end, multi port security platform that is ideally suited for the enterprise data center. The Nokia IP1220 Security Platform is a mid-range security platform that is ideally suited for a smaller data center. Both IP1200 Series Security Platforms support an encryption accelerator card to further enhance VPN performance.

[Table 2](#) presents specifics about the Nokia IP1200 Series Security Platforms.

Table 2 Nokia IP1200 Series Security Platform Specifics

IP Security Platform	IPSO Version	Software	Initial Memory Configuration	Upgradeable RAM
IP1260	v3.7 or later	Check Point NG FP3 (hf2) Nokia Secure Access System v1.02 or later	1 GB	2 GB
IP1220	v3.8 or later	Check Point NG with Application Intelligence R55	512 MB	1 GB

The IP1200 Series is a two-rack unit appliance that incorporates a serviceable slide-out tray into the chassis design. The front panel of the IP1200 Series has two I/O slots that support hot-swapping operations. A PMC carrier is provided for the I/O slots. Each PMC carrier supports two PMC network interface cards (NICs) for a total of four NICs. These network interfaces provide exceptional data forwarding and monitoring performance when used with Nokia and partner applications. The front panel of the IP1200 Series also contains:

- two storage device slots
- two PCMCIA slots
- a console port
- a serial port
- a four-port Ethernet management interface

The network interfaces in the external PMC slot are designated for management, monitoring, and high-availability traffic. Partner application and operating system storage is provided on mirrored hard disks in the two storage device slots.

The IP1200 Series is designed to meet other mid- to high-end availability requirements, including port density for connections to redundant internal, external, DMZ, and management networks. In addition, the IP1200 Series

provides redundant power supplies, N + 1 cooling, and hot swapping from the storage and PMC NIC slots.

As a network device, the IP1200 Series supports a comprehensive suite of IP-routing functions and protocols, including:

- RIPv1/RIPv2
- IGRP
- OSPF
- BGP4 for unicast traffic
- DVMRP for multicast traffic

The integrated router functionality eliminates the need for separate intranet and access routers in security applications.

Managing the Nokia IP1200 Series Security Platform

You can manage the Nokia IP1200 Series Security Platform by using the following interfaces:

- **Nokia Network Voyager**—an SSL-secured, Web-based element management interface to Nokia IP security platforms. Network Voyager is preinstalled on the IP1200 Series and enabled through the IPSO operating system. With Network Voyager, you can manage, monitor, and configure the IP1200 Series from any authorized location within the network by using a standard Web browser. Use one of the four Ethernet management ports to access the Network Voyager interface.

For information about how to access Network Voyager and the related reference materials, see [“Using Nokia Network Voyager to Manage Your Security Platform”](#) on page 47.

- **The IPSO command-line interface (CLI)**—an SSHv2-secured interface that enables you to easily configure Nokia IP security platforms from the command line. Everything that you can accomplish with Network

Voyager—manage, monitor, and configure the IP1200 Series—you can also do with the CLI.

For information about how to access the CLI, see the *Nokia CLI Reference Guide* for IPSO v3.6 or later.

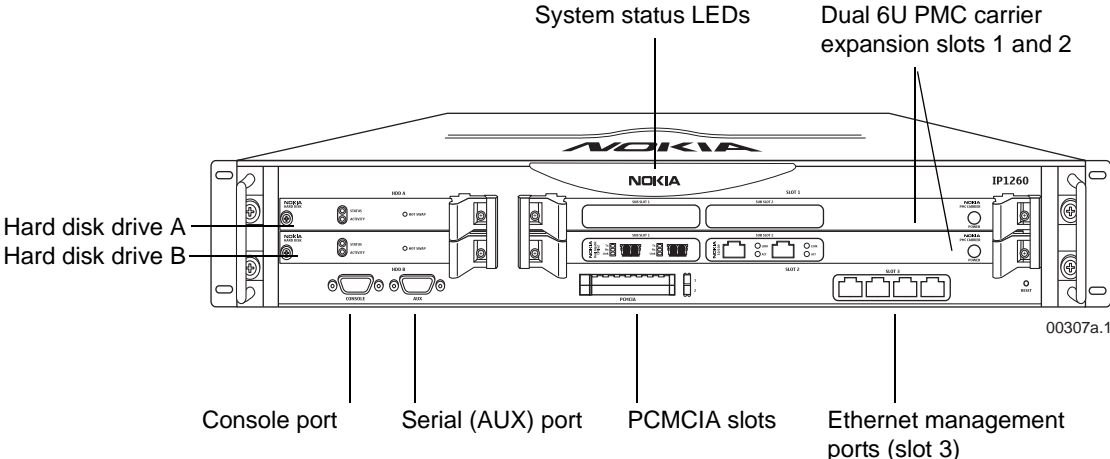
- **Nokia Horizon Manager**—a secure GUI-based software image management application. With Horizon Manager, you can securely install and upgrade the Nokia proprietary IPSO operating system, plus hardware and third-party applications such as Check Point VPN-1/FireWall-1 for Nokia. Horizon Manager can perform installations and upgrades on up to 2,500 Nokia IP security platforms, offering administrators the most rapid and dependable upgrade to Check Point NG.

For information about how to obtain Horizon Manager, contact your Nokia solution provider or see the [“Nokia Contact Information”](#) on page 3.

Nokia IP1200 Series Security Platform Overview

Figure 1 shows the component locations for the Nokia IP1200 Series Security Platform.

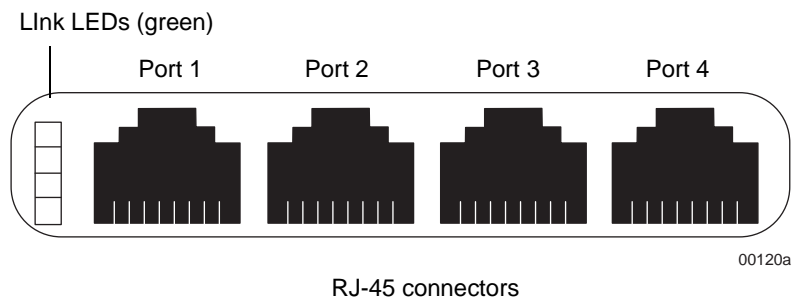
Figure 1 Component Locations Front View



Ethernet Management Ports

The Ethernet management ports are located in slot 3. [Figure 2](#) shows the layout of the Ethernet management ports and link LEDs. The top link LED represents the left-most port (port 1). The remaining LEDs represent the remaining ports from top to bottom and left to right.

Figure 2 Ethernet Management Ports Details



PMC Expansion Slots

The IP1200 Series uses two 6U dual PMC carriers in slot 1 and slot 2 to provide up to four expansion subslots for the NICs listed in [Table 3](#).

Note

The Nokia IP security platforms are LAN devices that can also use Nokia NICs for wide area or out-of-band network connections. In the latter case this must be done with local country approval for Nokia T1, E1, ISDN, or other NICs. Refer to your reseller or distributor to determine if these NICs are approved for the desired country. Specific NICs might not be available for use in a particular country.

Table 3 PMC Expansion Slots

Interface	NIC Type		For details, see...
	LAN	WAN	
Four-port Ethernet (10 or 100 Mbps)	X		“Four-Port and Dual-Port 10/100 Ethernet NICs” on page 75
Dual-port Ethernet (10 or 100 Mbps)	X		“Four-Port and Dual-Port 10/100 Ethernet NICs” on page 75
Dual-port fiber-optic Gigabit Ethernet	X		“Dual-Port Fiber-Optic Gigabit Ethernet NIC” on page 78
Dual-port copper Gigabit Ethernet (10/100/1000 Mbps)	X		“Dual-Port Copper Gigabit Ethernet NIC” on page 80
Single-port ISDN S/T		X	“Single-Port ISDN S/T NIC” on page 85
Single-port V.35 or X.21		X	“Single-Port V.35 or X.21 NIC” on page 87
Single-port E1		X	“Single-Port E1 NIC” on page 95
Single-port T1		X	“Single-Port T1 NIC” on page 91

Note

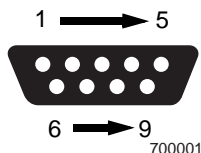
Nokia products only support NICs purchased from Nokia or Nokia-approved resellers. The Nokia Global Support Services group can only provide support for Nokia products that use Nokia-approved accessories.

For sales or reseller information, contact a Nokia service provider listed in the [“Nokia Contact Information”](#) on page 3.

Console Port

Use the built-in console port, shown in [Figure 1](#), to supply information that makes the appliance available on the network. [Figure 3](#) provides pin assignment information for console connections. If you need to access the devices locally, you must use the console port.

Figure 3 Pin Assignments for Console Connection

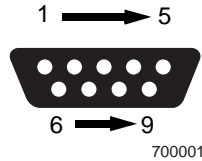


Pin	Assignment	Input/Output
1	DCD	Input
2	RXD	Input
3	TXD	Output
4	DTR	Output
5	GND	
6	DSR	Input
7	RTS	Output
8	CTS	Input
9	DTR	Output

Serial (AUX) Port

Use the built-in serial (AUX) port, shown in [Figure 1](#), to establish a modem connection for managing the appliance remotely or out-of-Band. [Figure 4](#) provides pin assignment information for modem connections.

Figure 4 Pin Assignments for Modem Connection

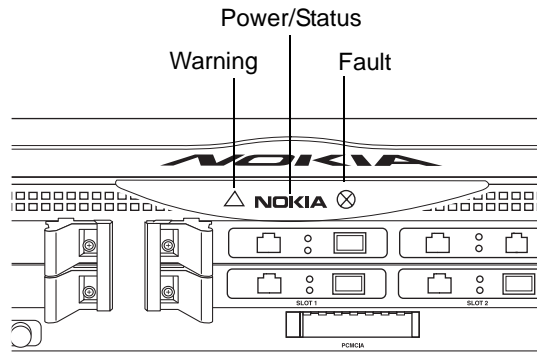


Pin	Input/Output	To DB25 Cable Out	To DB9 Cable Out
1 (DCD)	Input	8 (DCD)	7 (RTS) 8 (CTS)
2 (RXD)	Input	2 (TXD)	3 (TXD)
3 (TXD)	Output	3 (RXD)	2 (RXD)
4 (DTR)	Output	20 (DTR)	6 (DSR) 9 (RI)
5 (GND)		7 (GND)	5 (GND)
6 (DSR)	Input	6 (DSR)	4 (DTR)
7 (RTS)	Output	4 (RTS)	1 (DCD)
8 (CTS)	Input	5 (CTS)	1 (DCD)
9 (RI)	Output	22 (RI)	4 (DTR)

System Status LEDs


You can visually monitor the status of the Nokia IP1200 Series Security Platform by checking the system status LEDs. The system status LEDs are located on the center of the front panel, as shown in [Figure 5](#).

Figure 5 Nokia IP1200 Series Security Platform System Status LEDs





[Table 4](#) shows the system status LEDs and describes their meaning.

Table 4 System Status LEDs

Status Indicator	Meaning	Symbol
Solid blue	Power on	NOKIA
Solid yellow	Appliance is experiencing an internal voltage problem.	

[Table 4](#) shows the system status LEDs and describes their meaning.

Table 4 System Status LEDs (*continued*)

Status Indicator	Meaning	Symbol
Blinking yellow	Appliance is experiencing a temperature problem.	
Solid red	One or more fans are not operating properly.	

The location and meaning of the status LEDs for the installed network interface cards (NICs) is described in [Chapter 5, “Connecting PMC Network Interface Cards.”](#)

Note

The symbols in Table 3 are visibly only if there is an alarm condition, as specified.

Hard Disk Drives

The Nokia IP1200 Series Security Platform supports up to two hard disk drives. The IP1260 comes with two hard disk drives as the standard package. The IP1220 comes with one hard disk drive; a second one is optional. The hard disk drives support hot swapping, and an optional disk-mirroring feature, described in the following section.

Disk Mirroring

The Nokia disk-mirroring feature provides fault tolerance by allowing the IP1200 Series to continue working in the event of a disk failure. You can create mirror sets that consist of a source hard disk drive (which holds the active copy of the operating system) and mirror hard disk drive. The mirror

hard disk drive contains a copy of all of the files on the source hard disk drive, and if the source hard disk drive fails, the mirror hard disk drive immediately takes over. The IP1200 Series continues to operate normally, and the switchover to the secondary mirror drive should be transparent to your data connections.

You can use Nokia Network Voyager, the command-line interface (CLI), or Lynx to create and delete mirror sets.

Note

If your IP1200 Series contains two hard disk drives when you receive it, the disk-mirroring feature is already enabled.

For more information about disk mirroring, including configuration details, see the *Nokia Network Voyager Reference Guide* and the *IPSO Release Notes and Getting Started Guide* for the version of IPSO you are running.

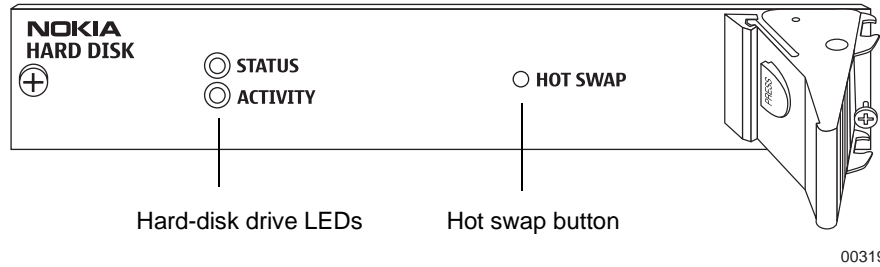
Hard-Disk Drive Hot Swap Feature

If you configure disk mirroring, you can use the hot swap button, shown in [Figure 6](#), to remove or replace a hard disk drive without shutting the system down. For information about how to remove and replace a hard disk drive, see [“Replacing a Hard Disk Drive”](#) on page 120.

Hard-Disk Drive LEDs

The hard-disk drive LEDs are located on the front panel of each hard disk drive, as shown in [Figure 6](#). The LEDs provide the status of the hard disk drives as described in [Table 5](#).

Figure 6 Hard-Disk Drive Front Panel



Caution

To avoid damage to the ejection lever, loosen the two retaining screws before you remove the hard disk drive. Once screw is located behind the ejection lever, and the other screw is on the opposite side.

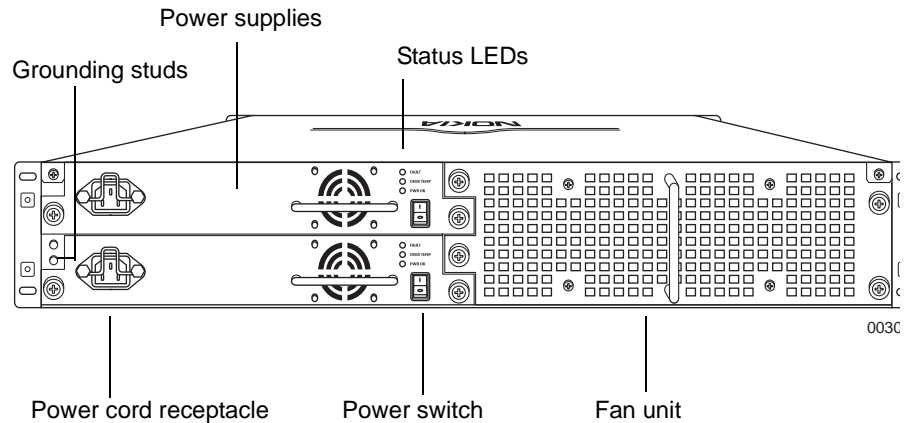
Table 5 Hard-Disk Drive LEDs

LED	LED State	Meaning
Activity	Off	No current disk activity.
	Blinking green	Current disk activity.
Status	Solid red	Hard disk drive is turned on but is malfunctioning.
	Solid green	Hard disk drive is turned on and is functioning.
	Off	One of the following: <ul style="list-style-type: none">• Hard disk drive failed its test and was powered off.• Hard disk drive is ready to be removed using the hot swap feature.
	Blinking green	One of the following: <ul style="list-style-type: none">• System is booting.• Hard disk drive is starting up.• System is testing the hard disk drive.

Note
Do not remove the hard disk drive if the Status LED is blinking green.

Power Supplies and Fan Unit

The power supplies and fan unit are located at the rear of the IP1200 Series, as shown in [Figure 7](#).

Figure 7 Power Supply and Fan Unit Locations

Power Supplies

The Nokia IP1200 Series Security Platform supports up to two power supplies for power sharing and redundancy. The IP1260 comes with two power supplies as the standard package. The IP1220 comes with power supply; a second one is optional. The power supplies are hot swappable and perform load sharing while two active power supplies are installed, increasing the life of the power supplies.

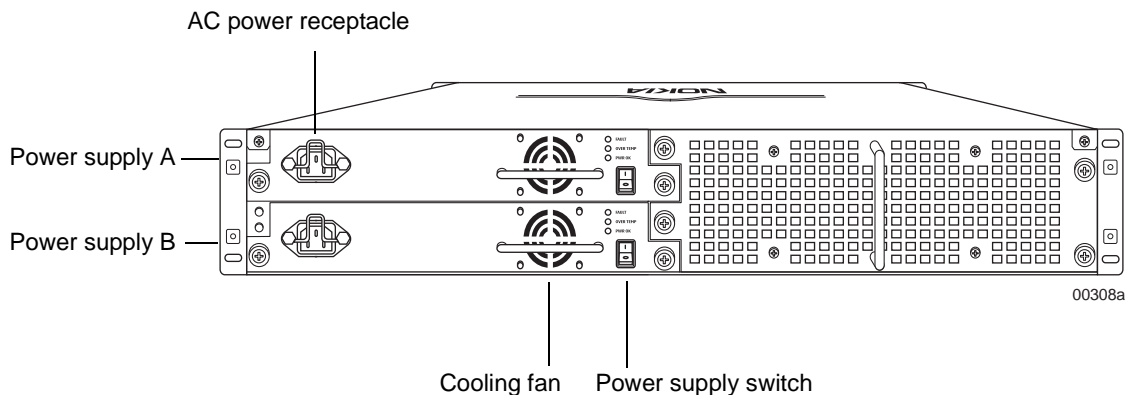
Note

On an appliance with two active power supplies installed, both power supplies should be turned on for load sharing and redundancy. If both power supplies are not turned on, the Fault LED illuminates. For more information about the power supply status LEDs, see [“Power Supply Status LEDs”](#) on page 34.

The power supplies are autosensing and can accept input voltages between 85 VAC and 264 VAC. The power supply output is regulated to a tolerance of ± 5 percent of the specified output voltage.

**Caution**

The Nokia IP1200 Series power supply might be hot to the touch when the power supply unit is plugged in to an AC power source and the power supply is not turned on. This is because the internal cooling fan for each power supply runs only when the unit is turned on.

Figure 8 Power Supply, Cooling Fan, and Power Switch Locations

For information about how to install or remove and replace a failed power supply, see [“Installing or Replacing a Power Supply”](#) on page 141.

Power Supply Status LEDs

The power supply status LEDs provide the status of the power supplies as described in [Table 6](#).

Table 6 Power Supply Status LEDs

LED	LED status	Meaning
Fault	Red	Power supply has a voltage problem and power was turned off. <i>or</i> One power supply in a redundant system is not turned on.
Over Temp	Yellow	Power supply has an internal temperature problem. All power to the unit is turned off. After the internal temperature returns to normal, power will be turned back on.
PWR OK	Green	Power is on and the power supply is functioning properly.

Fan Unit

The IP1200 Series fan unit is a single unit made up of eight individual fans to provide the air flow required to maintain a proper operating temperature. The fan unit can provide proper airflow for a short time even if an individual fan fails.



Caution

If an individual fan fails, replace the fan unit as soon as possible. For information about how to replace a failed fan unit, see [“Installing a Fan Unit”](#) on page 140.

The system status LEDs on the front panel of the appliance show the status of the fan unit. For more information about the system status LEDs, see [“System Status LEDs”](#) on page 28.

Site Requirements, Warnings, and Cautions

Before you install an IP1200 Series, ensure that your computer room or wiring closet conforms to the environmental specifications listed in [Appendix A, “Technical Specifications.”](#)



Warning

Hazardous radiation exposure can occur if you use controls, make performance adjustments, or follow procedures that are not described in this document.



Warning

To reduce the risk of fire, electric shock, and injury when you use telephone equipment, follow basic safety precautions. Do not use the product near water.



Warning

On IP1200 Series intended for shipment outside of the United States, the cord set might be optional. If a cord set is not provided, use a power cord rated at 10A, 250V, maximum 15 feet long, made of HAR cordage and IEC fittings approved by the country of end use.



Caution

Replace the battery only with the same or equivalent type battery recommended by the manufacturer. Dispose of used batteries according to the manufacturer's instructions.



Caution

Do not block any of the ventilation holes on the appliance. The components might overheat and become damaged.

Software Requirements

The Nokia IP1260 Security Platform supports the following operating system and applications as of the publication date for this guide:

- Nokia operating system software requirements—IPSO v3.7 or later.
- Firewall and VPN software requirements—Check Point NG FP3 (hf2) VPN-1/FireWall-1 or later.
- Nokia Secure Access System v1.02 or later

The Nokia IP1220 Security Platform supports the following operating system and applications as of the publication date for this guide:

- Nokia operating system software requirements—IPSO v3.8 or later.
- Firewall and VPN software requirements—Check Point NG with Application Intelligence (R55).

For information about updates to the software requirements or additional applications that have become available since this guide was published, contact your Nokia service provider, as listed in [“Nokia Contact Information”](#) on page 3.

2

Performing the Initial Configuration

The first time you turn on power to a Nokia IP1200 Series Security Platform, the initial configuration process begins. This process enables you to configure the network settings and provides access to the *admin* account.

You can perform the initial configuration in two ways:

- Configure a DHCP server to provide the initial configuration information the first time the appliance is started.
- Perform the initial configuration manually by using a console connection.

This chapter describes how to perform the initial configuration manually by using a console connection. It includes the following sections:

- [Using a Console Connection](#)
- [Connecting Power and Turning the Power On](#)
- [Performing the Initial Configuration](#)
- [Connecting Network Interfaces](#)
- [Accessing Nokia Network Voyager Reference Information](#)
- [Using Nokia Horizon Manager](#)

For information about how to use the DHCP client for initial configuration, see the *Read Me First* document, *Using DHCP to Configure Your Appliance*, included with the appliance.

Note

Nokia recommends that you physically install all NICs and other hardware components before you perform the initial configuration procedure this chapter describes. For information about how to install NICs, see [Chapter 4, “Installing and Replacing Network Interface Cards.”](#) For information about how to install other components, see [Chapter 8, “Installing and Replacing Other Components.”](#)

Using a Console Connection

If you do not use DHCP to perform the initial configuration of your Nokia IP1200 Series Security Platform, you must use a serial console connection (cable included). After you perform the initial configuration, you no longer need the console connection.

You can use any standard VT100-compatible terminal with an RS-232 data terminal equipment (DTE) interface or terminal-emulation program configured with the following settings for the console:

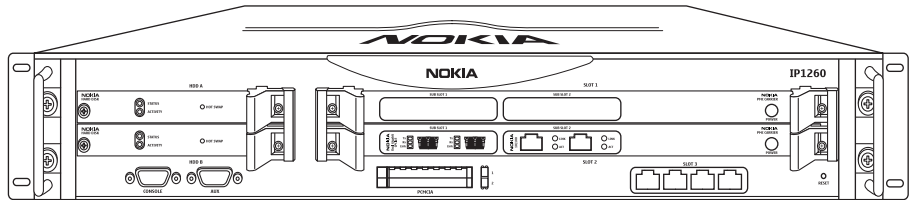
- 9600 bps
- 8 data bits
- No parity
- 1 stop bit

To connect to the console

1. Connect the supplied null-modem cable (console cable) to the console port on the front panel of the IP1200 Series.

Use only the DB9 port labeled Console on the front panel; the serial (AUX) port is an auxiliary modem port.

If you connect the console port to a data communications equipment (DCE) device, use a straight-through cable.



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Console port

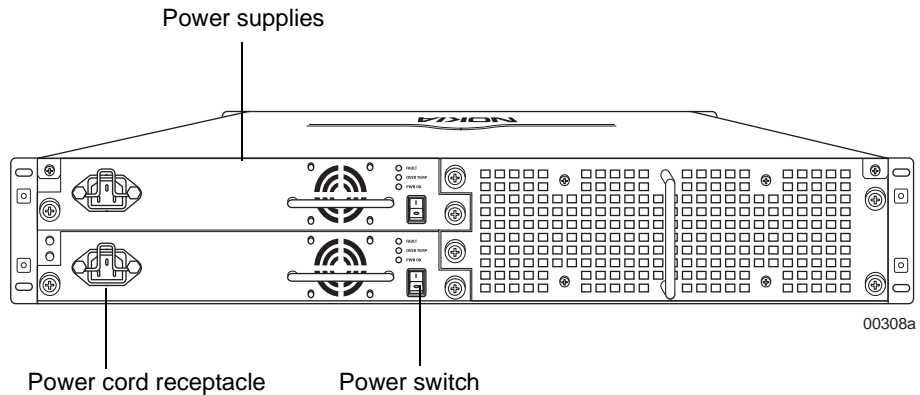
For cable pin assignments for the console connection, see [“Console Port”](#) on page 26.

2. Connect the other end of the cable to the VT100 console or to a system running a terminal-emulation program.

Connecting Power and Turning the Power On

A power switch and a receptacle for the power cord are located on each power supply on the back of the appliance as shown in [Figure 9](#).

Figure 9 Power Switch Location



Caution

To avoid potential service interruptions from momentary facility power interruptions and potential power spikes that might damage your equipment, Nokia strongly recommends that you use an uninterruptible power supply (UPS) with surge protection with your IP1200 Series.

To connect the power supply

1. Connect the power cord securely into the power cord receptacle on the power supply.
2. Plug the other end of the power cord into a three wire grounded power strip or wall outlet.
3. Toggle the I/O power switch to the 1 position to provide power to the IP1200 Series.

The fan unit on the power supply turns on when you press the power switch. Verify that the power supply fans are running after you press the switch.

Note

The IP1200 Series power supply automatically detects the input voltage (115 VAC or 220 VAC [85 to 264]) and configures itself appropriately.

4. Check the power LED (the Nokia logo) on the front panel of the appliance to ensure that the power supply is operating correctly.

The power LED should be illuminated. For more information about the system status LEDs, see [“System Status LEDs”](#) on page 28.

If the fans are not running, or if the power LED is not illuminated, make sure:

- The power cord is properly connected.
- The power supply switch is on.
- The chassis assembly is pushed all the way in from the front of the appliance.
- That power is turned on to the power strip or wall receptacle into which you plugged the appliance.

If the fans are still not running, or if the power LED does not illuminate, contact your Nokia service provider or Nokia Support as listed in [“Nokia Contact Information”](#) on page 3 for technical support.

Note

On an appliance with two active power supplies installed, connect and turn on both power supplies for load sharing and redundancy. If two power supplies are installed and both power supplies are not turned on, the Fault LED illuminates.

Performing the Initial Configuration

If you do not use DHCP to perform the initial configuration of your Nokia IP1200 Series Security Platform, you must use a serial console connection (cable included). After you perform the initial configuration, you no longer need the console connection.

To perform the initial configuration

1. Turn on the appliance.

At the console a series of startup messages appears, then the following prompt appears:

Type any character to enter command mode.

The prompt remains on the screen for about five seconds.

Note

For information about how to use the boot manager, see [Chapter 6, "Using the Boot Manager."](#)

After some miscellaneous output appears, the following prompt appears:

Hostname?

If the Hostname? prompt does not appear on the console, check the console port and console display connections to ensure that the serial cable is completely plugged in at both ends. If you verify the console connections and still do not see either the BOOTMGR> or Hostname? prompts, verify that the terminal or terminal emulator program settings are correct. If the settings are correct, contact your Nokia service provider as listed in ["Nokia Contact Information"](#) on page 3.

2. Respond to the Hostname? prompt within 30 seconds to prevent the DHCP client from starting.

If the DHCP client starts, it might configure the appliance with an incorrect host name and IP address (this could happen if a DHCP server

on your network is configured to respond to any request). To reset the incorrect host name and IP address:

- a. Establish a console connection to the system.
- b. Enter the following:

```
rm /config/active
```

or

```
mv /config/active /config/active.old
```
- c. Reboot the appliance.
- d. Respond to the Hostname? prompt within 30 seconds to prevent the DHCP client from restarting.

3. At each subsequent prompt, enter the requested configuration information.

For more information about how to respond to the prompts during the initial configuration process, see the release notes for the Nokia software release you are running.

4. When you are prompted to select an interface, Nokia recommends that you select one of the Ethernet management interface ports.

To select an interface, enter the number adjacent to the physical ID in the list of connected interfaces.

Note

A physical ID identifies the NIC type (*nic_type*) and provides information about its slot number (*slot_num*), subslot number (*subslot_num*) and port number (*port_num*). The physical ID syntax is:

`nic_type-sslot_num/ssubslot_numpport_num`

For example, the physical ID for the first port of a dual-port Ethernet NIC in slot 1, subslot 2 would be:

`eth-s1/s2p1`

The Ethernet management interface ports are numbered eth-s3p1 through eth-s3p4.

After you complete the initial configuration, you can use Nokia Network Voyager to configure the remaining network ports.

Connecting Network Interfaces

Connect at least one network interface to the network to use as the Nokia Network Voyager system-management interface. This interface is configured during the initial configuration process, which is described in [Chapter 2, “Performing the Initial Configuration.”](#)

You can also connect the remaining LAN and WAN interface cables at this point, although you are not required to do so.

Note

Nokia recommends that you use one of the four front-panel Ethernet management ports for this connection.

- To connect Ethernet devices, use a straight-through RJ-45 cable to connect to a 10-Mbps or 100-Mbps hub.

For details, see [“Ethernet NIC Connectors and Cables”](#) on page 77.

- To connect Gigabit Ethernet devices, use a fiber-optic cable with an LC connector for each NIC interface. The destination end of the cable can be either LC or SC, depending on the type of connector required for the destination Gigabit Ethernet device.

For details, see [“Fiber-Optic Gigabit Ethernet NIC Connectors and Cables”](#) on page 80.

- To connect ISDN devices, use category 5E unshielded twisted pair cable with an RJ-45 connector.

For details, see [“ISDN NIC Connectors and Cables”](#) on page 86.

- To connect X.21 devices, use X.21 DB-26 to X.21 adapter cable. To connect V.35 devices, use V.35 DB-26 to V.35 adapter cable.

For details, see [“V.35 and X.21 NIC Connectors and Cables”](#) on page 89.

Using Nokia Network Voyager to Manage Your Security Platform

Use Nokia Network Voyager to configure and monitor your IP1200 Series. For additional information about how to use Network Voyager, see [“Accessing Nokia Network Voyager Reference Information”](#) and [“Nokia Network Voyager Inline Help”](#) on page 49.

To open Nokia Network Voyager

1. Start a Web browser on the host you plan to use to configure or monitor your appliance.
2. In the Location or Address field, enter the IP address of the initial interface you configured for the appliance.

You are prompted to enter the admin username and the password you entered when you performed the initial configuration.

For more information, see the section in the appropriate installation guide about entering passwords.

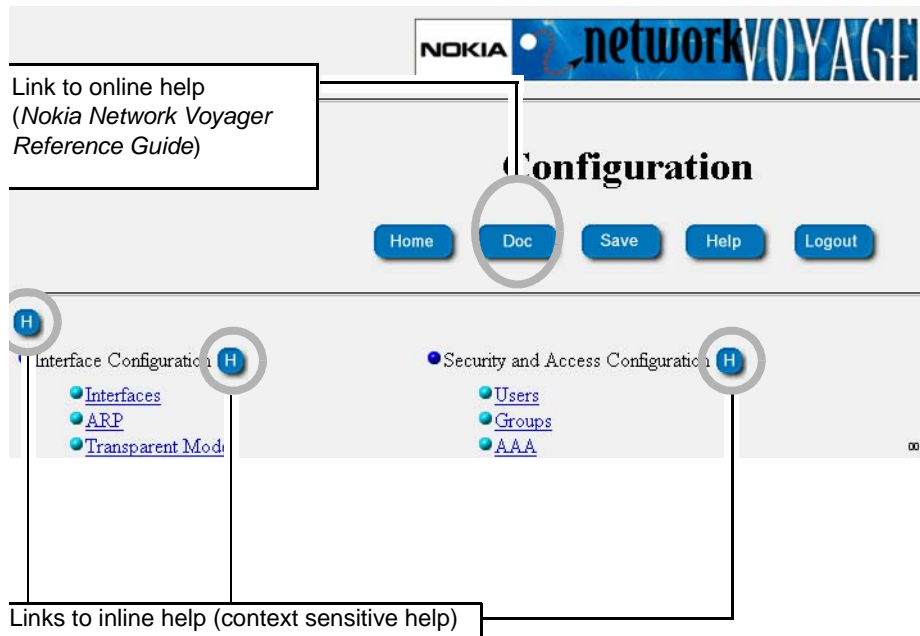
Note

If the username login screen does not appear, you might not have a physical network connection between the host and your appliance, or you might have a network routing problem. Confirm the information you entered during the initial configuration and check that all cables are firmly connected. For more information, see the troubleshooting chapter in the appropriate installation guide.

Accessing Nokia Network Voyager Reference Information

As you use Nokia Network Voyager, the *Nokia Network Voyager Reference Guide* and Voyager inline help are available for you to use.

You can access both information sources from the Network Voyager interface, as [Figure 10](#) shows.

Figure 10 Nokia Network Voyager Reference Access Points Example

Nokia Network Voyager Reference Guide

The *Nokia Network Voyager Reference Guide* is the comprehensive reference source for Voyager. To access this source, click Doc.

You can also access the *Nokia Network Voyager Reference Guide* and other Nokia IPSO documentation at the Nokia support site (<https://support.nokia.com>) or on the software CD that was delivered with your appliance (see the doc folder).

Nokia Network Voyager Inline Help

You can access inline help when you use Nokia Network Voyager. Inline help is the context-sensitive information source for Network Voyager.

To access inline help for a specific subject, click the Help icon next to the subject. You can also click Help at the top of the Network Voyager window to get inline help for the entire Network Voyager window. To close inline help, click Close.

Using Nokia Network Voyager to Monitor a Nokia IP1200 Series Security Platform

After you install and configure your Nokia IP1200 Series Security Platform, you can use Network Voyager to monitor its operation. Click Monitor from the Network Voyager home page to access the monitoring functions.

Using the Command-Line Interface to Manage Your Security Platform

You can also use the Nokia IPSO-SX command-line interface (CLI), an SSHv2-secured interface, to manage and configure Nokia IP security platforms from the command line. Everything that you can accomplish with Nokia Network Voyager you can also do with the CLI.

To enter the CLI mode

1. Connect to the security platform by using a terminal or console connection. For information about this procedure, see [“Using a Console Connection”](#) on page 40.
2. Enter your admin username and password.
3. Enter `clish` to access the CLI.

For further information about establishing a connection with and invoking the CLI, see the *Nokia CLI Reference Guide for IPSO-SX* for the version of IPSO-SX you are using.

Using Nokia Horizon Manager

You can use Horizon Manager to install and upgrade the Nokia proprietary Nokia IPSO operating system. For information about how to obtain Horizon Manager, see the [“Nokia Contact Information”](#) on page 3.

3

Installing the Nokia IP1200 Series Security Platform

This chapter describes how to install the Nokia IP1200 Series Security Platform. The following topic is discussed:

- [Rack Mounting the Security Platform](#)
- [Before You Begin](#)



Caution

To help guard against electrostatic discharge damage, make sure you are properly grounded by using a grounding wrist strap and following the instructions provided with the wrist strap before you handle the components or open the appliance. If you do not have a grounding wrist strap, make sure you are properly grounded before you touch any electronic component.

Rack Mounting the Security Platform

The Nokia IP1200 Series Security Platform mounts in a standard 19-inch equipment rack with four mounting screws, as [Figure 11](#) shows.

To ground the IP1200 Series

- 1.** Locate and remove from the package the #6 ring tongue lugs and kep nuts.
- 2.** Attach a 10 or 12 AWG insulated grounding cable to the lugs.
- 3.** Locate the two threaded grounding studs protruding from the rear panel of the appliance, as shown in [Figure 7](#) on page 33.
- 4.** Slide the grounding lug loops over each of the studs.
- 5.** Secure the grounding lugs by threading the nuts onto each of the studs until they are tight. You can use an adjustable wrench or similar tool to finish tightening the nut onto the stud. Do not over tighten the nuts.
- 6.** Attach the grounding cable to an earth ground or other grounding point to meet the specifications of your installation site.

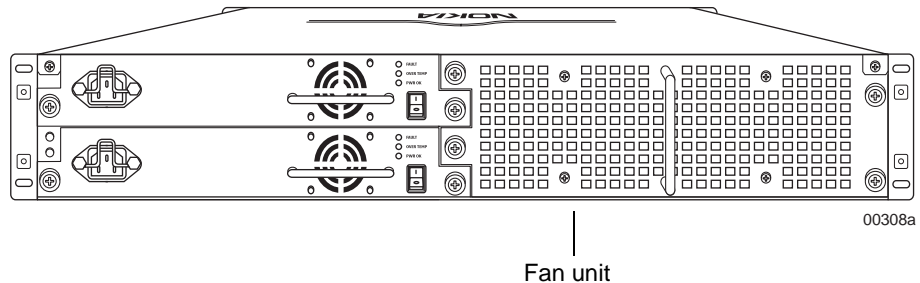
To rack mount the security platform



Caution

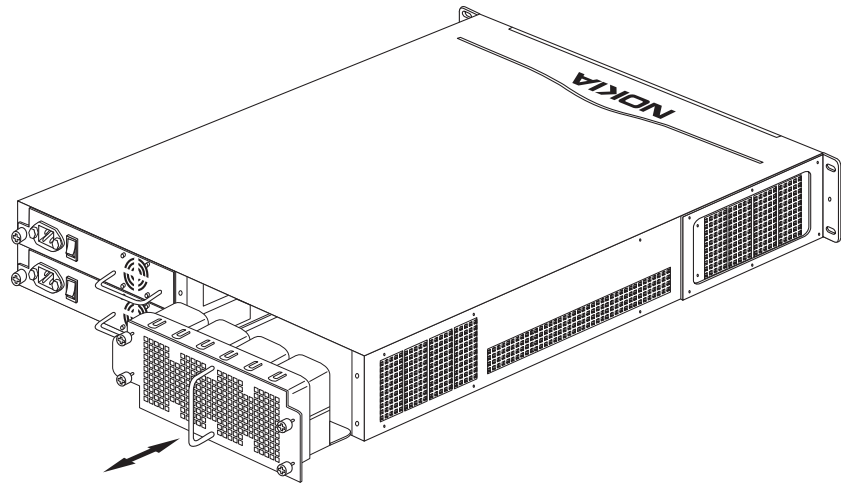
The security platform is heavy. Use care when you remove it from the packaging.

1. Remove the appliance from the packaging.
2. Optionally, remove the fan unit from the back of the appliance.
 - a. Locate the fan unit and the four retaining screws that secure it on the back of the IP1200 Series.



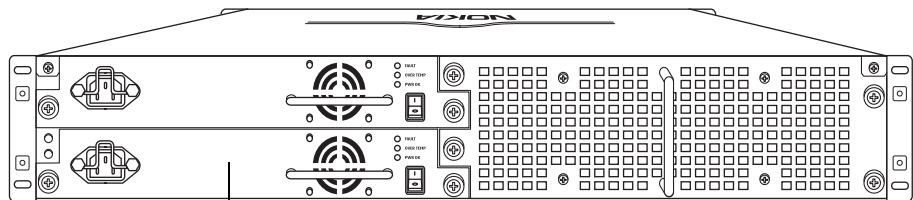
- b. Loosen the retaining screws by turning them counterclockwise.

- c. Slowly pull the fan unit out of the chassis toward the rear.



00318.1

- 3. Optionally, remove the power supplies from the rear of the appliance.
 - a. Locate the power supply on the back of the IP1200 Series and the two screws that secure it.

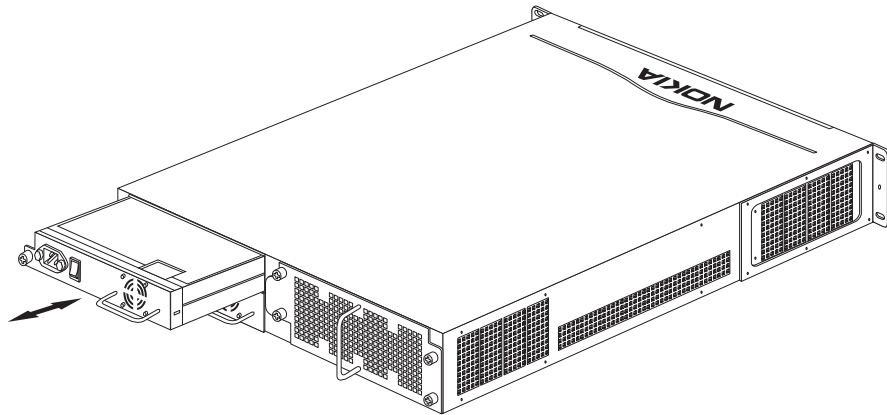


00308a

Power supplies

- b. Remove the two retaining screws.
- c. Remove the grounding lugs.

- d. Use the handles to gently pull the power supply out of the chassis.



00317.1

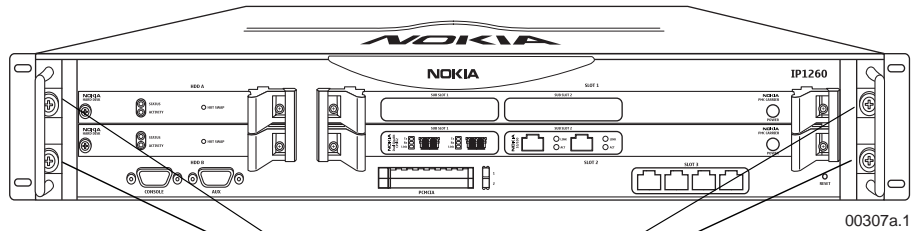
4. Optionally, remove the chassis assembly from the appliance.



Caution

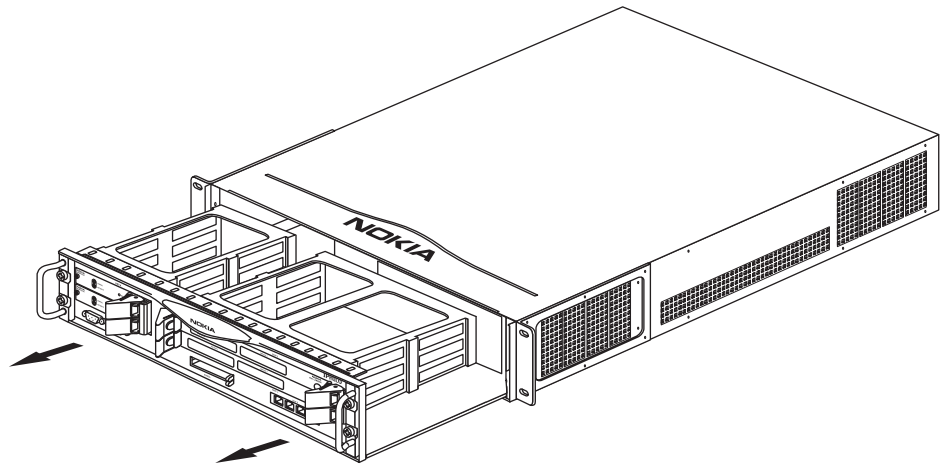
To help guard against electrostatic discharge damage, make sure you are properly grounded by using a grounding wrist strap and following the instructions provided with the wrist strap before you handle the components or open the appliance. If you do not have a grounding wrist strap, make sure you are properly grounded before you touch any electronic component.

- a. Loosen the four chassis assembly retaining screws from the front panel of the appliance.



Chassis assembly retaining screws

- b. Slide the chassis assembly forward and pull it entirely out of the appliance.



- c. Place the chassis assembly on a properly grounded surface.
5. Adjust the mounting brackets on the side of the appliance if necessary.

- 6.** Mount the appliance into a standard 19-inch rack by using the mounting screws located on the mounting brackets.
- 7.** Slide the chassis assembly back into the appliance until it clicks into place, and resecure the four chassis assembly retaining screws.
- 8.** Reinstall the fan unit into the rear of the appliance.
- 9.** Reinstall the power supplies.

4

Installing and Replacing Network Interface Cards

The Nokia IP1200 Series Security Platform may come with one of the network interface cards (NICs) you ordered already installed. All NICs installed in the IP1200 Series are housed in a 6U PMC carrier. Network interface cards in the 6U PMC carrier are hot swappable.

Note

The Nokia IP security platforms are LAN devices that can also use Nokia NICs for wide area or out-of-band network connections. In the latter case, this must be done with local country approval for Nokia T1, E1, ISDN, or other NICs. Refer to your reseller or distributor to determine if these NICs are approved for a particular country. Specific NICs might not be available for use in a particular country.

The IP1200 Series supports the following NICs:

- Four-port and dual-port 10/100 Ethernet
- Dual-port fiber-optic Gigabit Ethernet
- Dual-port copper Gigabit Ethernet
- Single-port ISDN S/T
- Single-port V.35 or X.21
- Single-port T1
- Single-port E1

This chapter describes the following topics:

- [Removing, Installing, and Replacing NICs](#)
- [Configuring and Activating Interfaces](#)
- [Monitoring Network Interface Cards](#)

For detailed information about specific network interface cards, see [Chapter 5, “Connecting PMC Network Interface Cards.”](#)



Caution

You should have a working knowledge of networking equipment before you attempt to service an IP1200 Series. Limit service of the appliance to the procedures described in this chapter.



Caution

To help guard against electrostatic discharge damage, make sure you are properly grounded by using a grounding wrist strap and following the instructions provided with the wrist strap before you handle the components or open the appliance. If you do not have a grounding wrist strap, make sure you are properly grounded before you touch any electronic component.

Removing, Installing, and Replacing NICs

The IP1200 Series has two slots on the front of the appliance that hold two 6U PMC carriers. All NICs installed in the IP1200 Series are housed in the 6U PMC carrier. You must first remove the 6U PMC carrier from its slot before you can remove or install a NIC.

Note

Because the IP1200 Series supports hot swapping of NICs, you do not have to turn off power from the system to remove, install, or replace a NIC.

Before You Begin

Before you install the card, make sure that the rubber gasket around the front of the card is installed properly.

To remove, install, or replace a NIC you need the following:

- Phillips-head screwdriver
- Suitable, grounded work surface on which to place the PMC carrier
- Replacement or new NIC

To replace a network interface card

1. Identify the location (PMC carrier and slot) of the NIC to be replaced.
2. Loosen the screws on each side of the PMC carrier. The screws are located behind the ejection levers.

**Caution**

To avoid damage to the ejection lever, loosen the retaining screw behind each ejection lever before you remove the PMC carrier.

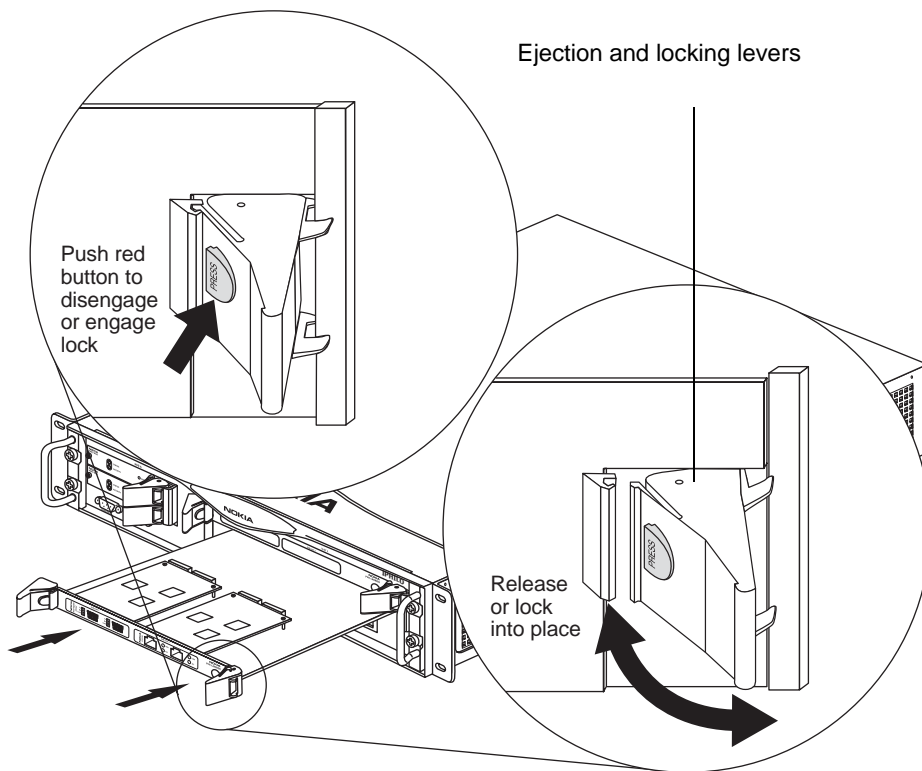
3. Press the red buttons on the ejection and locking levers on the PMC carrier.

The lock is released.

Note

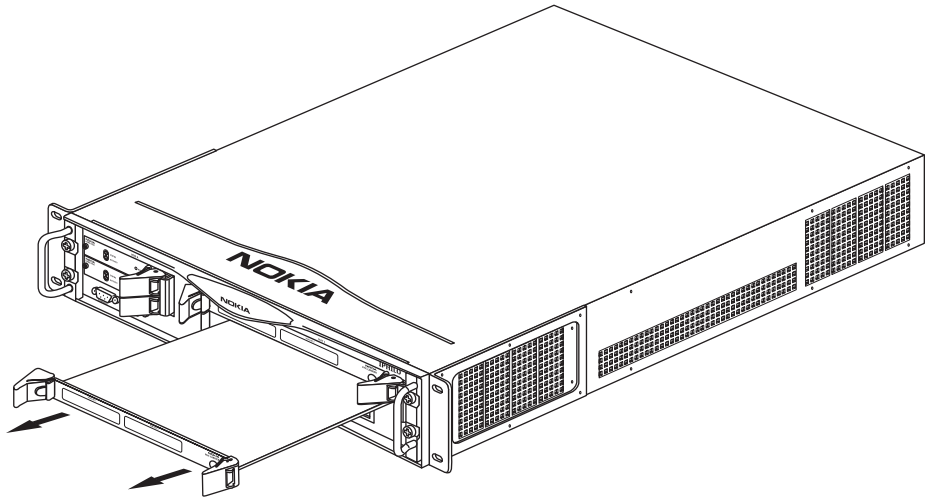
Pressing both red buttons on the front of the ejection or locking levers disengages the lock and removes power from the PMC carrier. The power LED on the front of the PMC carrier is extinguished when the power is removed.

4. Press or push the levers toward the outer edges of the IP1200 Series.



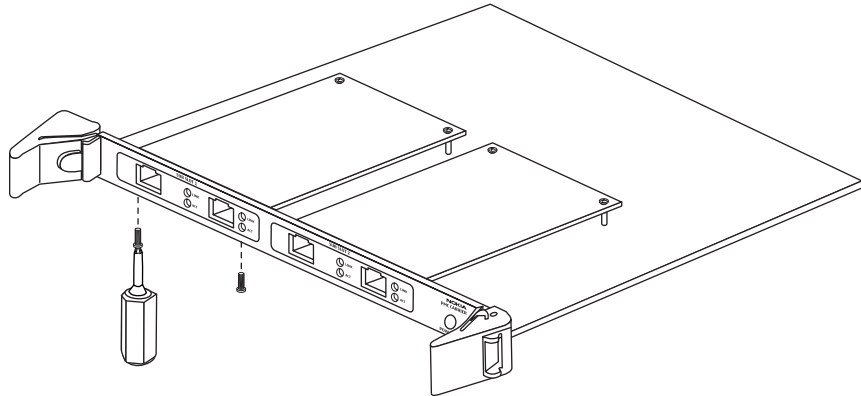
00310b.1

5. Continue to press or push the levers outward until the PMC carrier is released and extends slightly beyond the front panel of the IP1200 Series.
6. Gently pull the PMC carrier out from the slot and place it on a suitable, grounded work surface.



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7. Locate the bezel retaining screws, used to keep the NIC attached, on the underside of the PMC carrier.
8. Remove the two bezel retaining screws with a Phillips screwdriver.

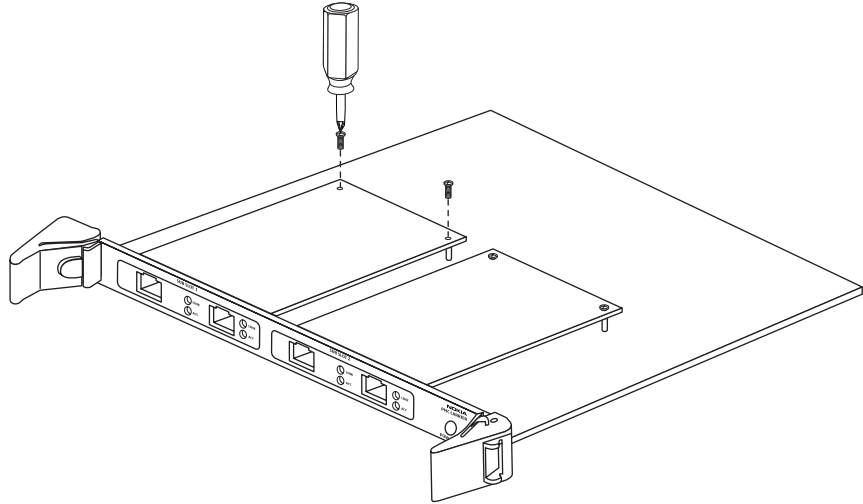


00311

Note

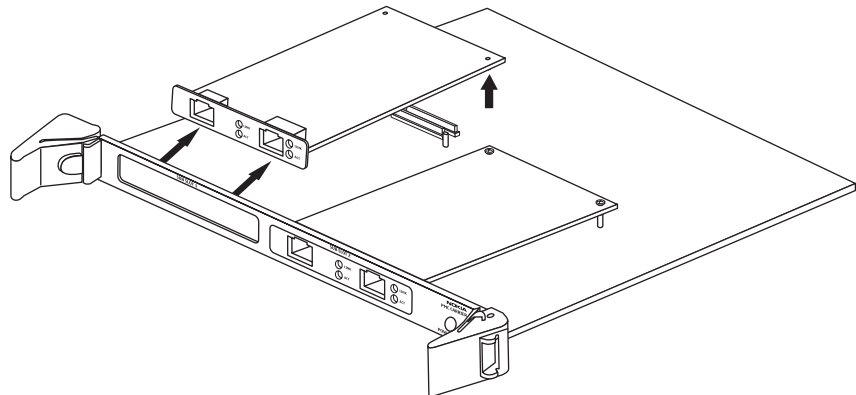
If you are installing a NIC in an unoccupied slot on the PMC carrier, remove the blank bezel that covers the slot and retain it for future use. Proceed to [step 11](#).

9. Locate and remove the two card retaining screws from the back of the NIC.



00312

10. Remove the NIC by lifting the back of the NIC away from the chassis assembly and pulling it gently away from the front panel.

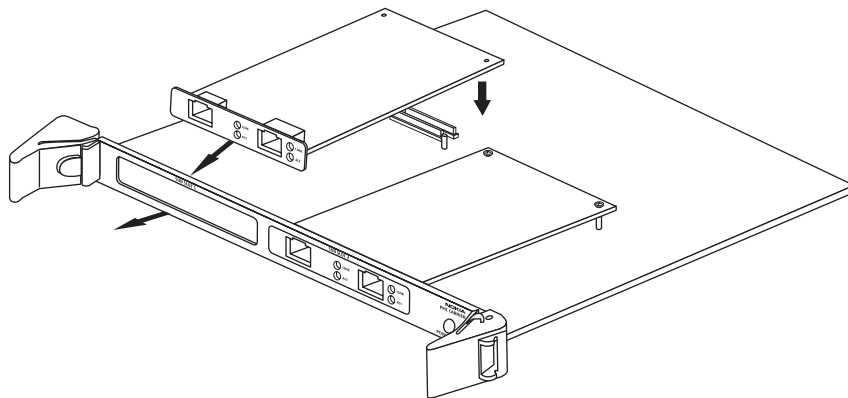


00313

11. Insert the new NIC or a blank bezel by doing one of the following:

- a.** Insert the NIC front bezel into the PMC carrier and gently push the back of the NIC down toward the chassis assembly.

Make sure that the NIC edge is completely seated into the connectors on the chassis assembly.



00314

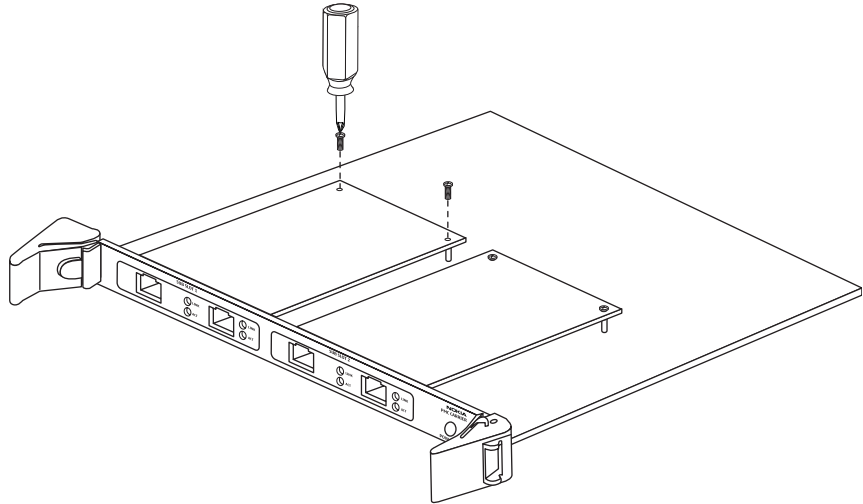
- b.** Insert a blank bezel onto the front of the empty slot formerly occupied by the NIC and push it gently into place.

Make sure that the bezel is completely seated onto the slot on the front of the PMC carrier and that the screw holes on the bottom of the bezel align with those on the bottom of the PMC carrier. Proceed to [step 13](#).

Note

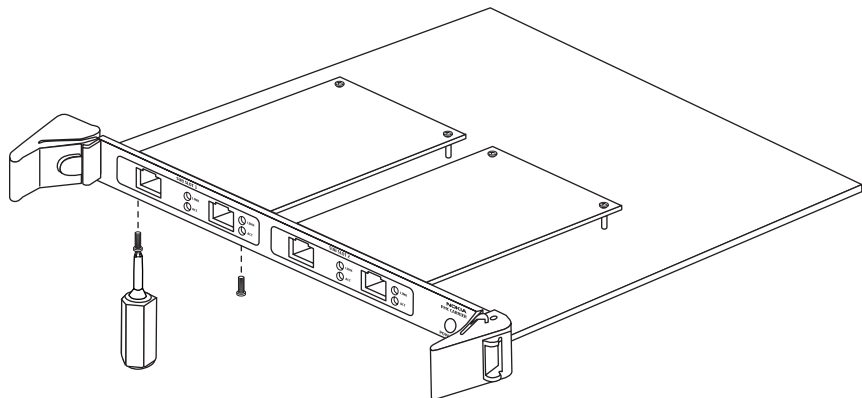
The blank bezel is required for the IP1200 Series to meet emissions requirements during operation.

12. From the top of the PMC carrier, screw the NIC retaining screws into the standoffs on the back of the NIC.



00312

13. From the underside of the PMC carrier, screw in the bezel retaining screws.

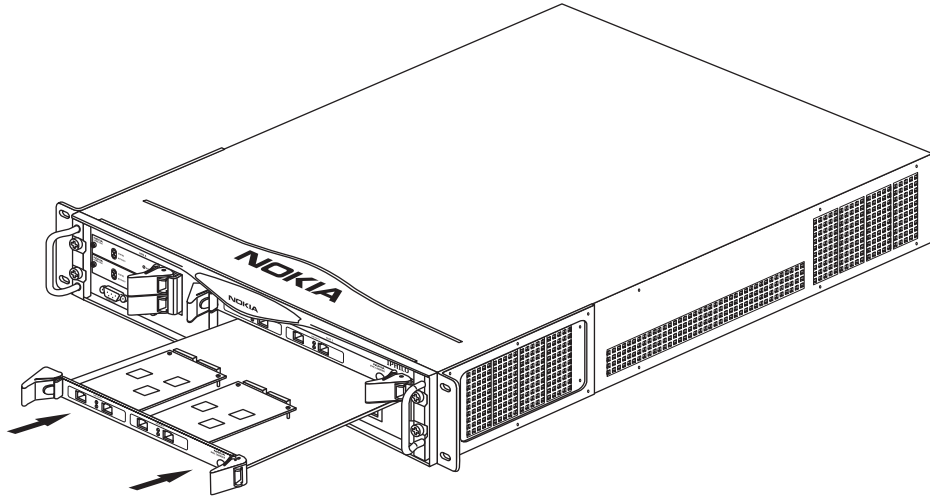


00311

14. Insert the PMC carrier back into its original slot on the front of the IP1200 Series until it clicks into place.

15. Press both levers to make sure that they are locked into place and power is restored to the card carrier.

The power indicator LED on the PMC carrier illuminates green.



00315.1

If you are replacing a NIC with a new NIC of the same type, the Nokia IPSO operating system automatically recognizes the NIC and applies the original configuration to the new NIC.

If you are installing a new or different NIC, configure the new NIC by using Nokia Network Voyager. For information about how to access Network Voyager, see [“To open Nokia Network Voyager”](#) on page 47.

Configuring and Activating Interfaces

The Nokia IP1200 Series Security Platform automatically detects any new NICs when the PMC carrier is completely installed. Use Nokia Network Voyager to configure and activate the logical and physical interfaces on the card.

For information about how to access Network Voyager and the related reference materials, see [“To open Nokia Network Voyager”](#) on page 47.

Monitoring Network Interface Cards

You can assess the general operating condition of the NICs in your appliance by looking at the LED status indicators on each NIC. The status indicators for each NIC are explained in [Chapter 5, “Connecting PMC Network Interface Cards.”](#)

Use Nokia Network Voyager to access detailed port information. For information about how to access Network Voyager, see [“Accessing Nokia Network Voyager Reference Information”](#) on page 48.

You can also use the IPSO tcpdump command to examine the traffic on a specific port.

5

Connecting PMC Network Interface Cards

This chapter describes the network interface cards available for the Nokia IP1200 Series Security Platform and how to connect those NICs to your network. The following NICs are described:

- [Four-Port and Dual-Port 10/100 Ethernet NICs](#)
- [Dual-Port Fiber-Optic Gigabit Ethernet NIC](#)
- [Dual-Port Copper Gigabit Ethernet NIC](#)
- [Single-Port ISDN S/T NIC](#)
- [Single-Port V.35 or X.21 NIC](#)
- [Single-Port T1 NIC](#)
- [Single-Port E1 NIC](#)

For instructions about how to add or replace NICs, see [Chapter 4, “Installing and Replacing Network Interface Cards.”](#)

The NICs supported in the IP1200 Series operate at the peripheral component interconnect (PCI) frequency listed in [Table 7](#).

Table 7 NIC PCI Frequency

NIC or interface port	Maximum PCI operation supported
Four-port 10/100 Ethernet	100 MHz
Dual-port 10/100 Ethernet	66 MHz
Dual-port fiber-optic Gigabit Ethernet	100 MHz
Dual-Port copper gigabit Ethernet (10/100/1000)	100 MHz
Single-port ISDN S/T	66 MHz
Single-port V.35 or X.21	33 MHz
Single-port T1 NIC	66 MHz
Single-port E1 NIC	66 MHz

Note

Any two NICs installed on a single PMC carrier will both operate at the PCI frequency of the least-capable NIC installed. For example, if a dual-port Ethernet NIC and a dual-port fiber-optic Gigabit Ethernet NIC are installed on the same PMC card carrier, they both operate at 66 Mhz. Use this information to plan your NIC installation to maximize data throughput on your appliance.

**Caution**

To protect the IP1200 Series and the memory modules from electrostatic discharge damage, make sure you are properly grounded before you touch these components. Use a grounding wrist strap and follow the instructions provided with the wrist strap before you handle the components or open the appliance. If you do

not have a grounding wrist strap, make sure you are properly grounded before you touch any electronic component.

Four-Port and Dual-Port 10/100 Ethernet NICs

The IP1200 Series supports Nokia-approved, four-port and dual-port UTP5 dual-mode (10-Mbps and 100-Mbps) Ethernet NICs installed in a 6U PMC carrier. When you purchase a 10/100 Ethernet NIC with your IP1200 Series, the NIC is installed before the appliance is delivered to you. For information about how to add or replace a NIC, see [Chapter 4, “Installing and Replacing Network Interface Cards.”](#)

10/100 Ethernet NIC Features

The four-port 10/100 Ethernet NIC supports PCI operation at 100 MHz and runs on Nokia IPSO v3.8 or higher.

The dual-port 10/100 Ethernet NIC supports PCI operation at 66 MHz.

Both the four-port and dual-port Ethernet NICs support the following features:

- Hot swappability
- Tracing through tcpdump
- PCI operation at 33 MHz and 66 MHz
- Compliance with IEEE 802.3z Gigabit Ethernet specification

You can configure and monitor Ethernet NIC interfaces by using Nokia Network Voyager. Specifically, you set the port speed and full-duplex or half-duplex mode with Network Voyager.

For information about how to access Network Voyager and the related reference materials, see [“Accessing Nokia Network Voyager Reference Information”](#) on page 48.

Figure 12 Four-Port 10/100 Ethernet NIC Front Panel Details

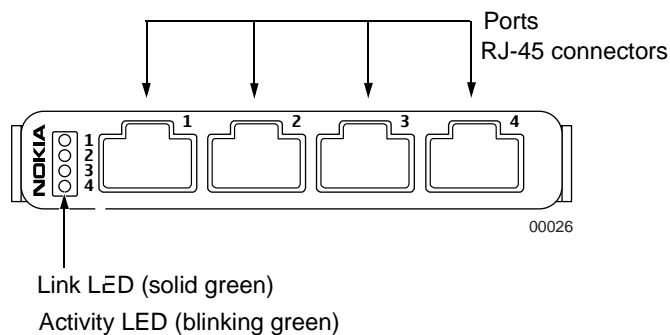
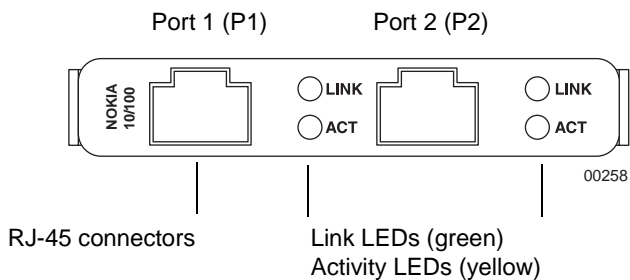


Figure 13 Dual-Port 10/100 Ethernet NIC Front Panel Details



After the power is turned on and the cables are connected, the Ethernet link LEDs on both the IP1200 Series and on the remote equipment illuminate to indicate the connection. As data is transmitted, the activity LEDs on the appliance illuminate.

Ethernet NIC Connectors and Cables

The Ethernet connectors on the dual-port and four-port 10/100 Ethernet NICs are RJ-45 connectors. Use a straight-through or crossover cable to connect the NIC to a 10-Mbps or 100-Mbps hub or switch or to connect directly to a host. An auto-detect crossover cable feature on this NIC automatically detects the correct cable type.

Use IEEE 802.3 10BASE-T, 100BASE-TX category-5 unshielded twisted-pair, full-duplex, or half-duplex cable.

You can order appropriate adapter cables separately from a cable vendor of your choice.

[Figure 14](#) shows the pin assignments for the RJ-45 cable. The RJ-45 cable output connector is numbered from right to left, with the copper tabs facing up and toward you.

Figure 14 Output Connector for the Ethernet Cable

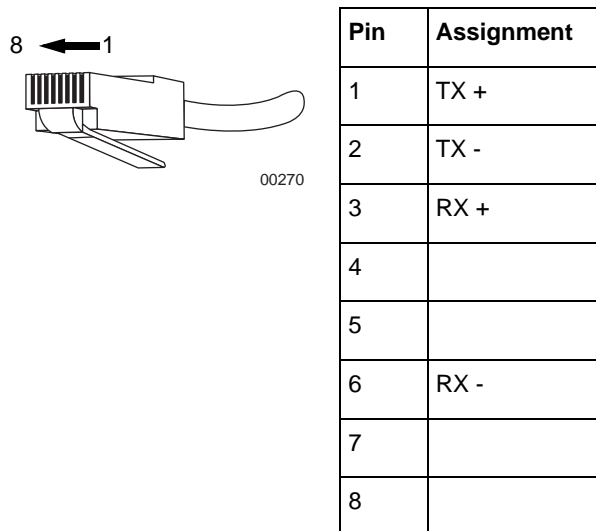
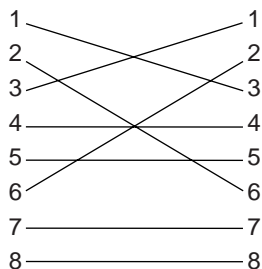


Figure 15 shows the pin assignments for the RJ-45 cross-over cable.

Figure 15 Ethernet Crossover-Cable Pin Connections



00017.1

Dual-Port Fiber-Optic Gigabit Ethernet NIC

The IP1200 Series supports Nokia-approved, dual-port fiber-optic Gigabit Ethernet NICs installed on a 6U PMC carrier. The IP1200 Series can accommodate up to four Gigabit Ethernet NICs.

When you purchase a Gigabit Ethernet NIC with your IP1200 Series, the NIC is installed before the appliance is delivered to you. For information about how to add or replace a NIC, see [Chapter 4, “Installing and Replacing Network Interface Cards.”](#)

Note

If you are using only two dual-port Gigabit Ethernet NICs in a IP1200 Series, you should place one NIC in each of the two 6U PMC card carrier units to get maximum system throughput. Each 6U PMC card carrier unit has a separate PCI bus connection to the main system board. In the configuration described here, each of the two dual-port Gigabit Ethernet NICs access a separate PCI bus.

Fiber-Optic Gigabit Ethernet NIC Features

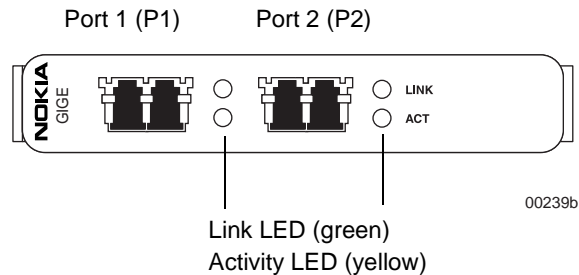
The fiber-optic Gigabit Ethernet NIC supports:

- High bandwidth
- Full-duplex mode operation up to 1 Gbps (no half-duplex support)
- Link speed auto advertising
- Hot swapping tracing through tcpdump
- Compliance with IEEE 802.3z Gigabit Ethernet specification

You can configure and monitor Gigabit Ethernet NIC interfaces with Nokia Network Voyager. Specifically, you set the port speed and full-duplex mode with Network Voyager.

For information about how to access Network Voyager and the related reference materials, see [“Accessing Nokia Network Voyager Reference Information”](#) on page 48.

Figure 16 Dual-Port Fiber-Optic Gigabit Ethernet NIC Front Panel Details



After the power is turned on and the cables are connected, the Ethernet link LEDs on both the IP1200 Series and on the remote equipment illuminate to indicate the connection. As data is transmitted, the activity LEDs on the appliance illuminate.

The IP1200 Series support packet tracing for analysis by using the tcpdump program in the IPSO operating system.

The dual-port Gigabit Ethernet NICs support PCI operation at 33 MHz, 66 MHz, and 100 Mhz.

Fiber-Optic Gigabit Ethernet NIC Connectors and Cables

To connect the fiber-optic Gigabit Ethernet NIC to other network components, use a fiber-optic cable with an LC connector for each NIC interface. The destination end of the cable can be either LC or SC, depending on the type of connector required for the destination Gigabit Ethernet device. You can also use a half-duplex LC-to-LC cable to loop back the transmit port of an interface to the receive port. Two LC-to-SC cables are included with dual-port Gigabit Ethernet NICs.

You can order appropriate adapter cables separately from a cable vendor of your choice.

Dual-Port Copper Gigabit Ethernet NIC

The Nokia IP1200 Series Security Platform supports Nokia-approved, dual-port copper Gigabit Ethernet NICs installed on a 6U PMC carrier. The IP1200 Series can accommodate up to four Gigabit Ethernet NICs.

When you purchase a copper Gigabit Ethernet NIC with your IP1200 Series, the NIC is installed before the appliance is delivered to you. For information about how to add or replace a NIC, see [Chapter 4, “Installing and Replacing Network Interface Cards.”](#)

Performance Considerations

If you are using two dual-port copper Gigabit Ethernet NICs in an IP1200 Series, place one NIC in each of the two 6U PMC card carrier units to get

maximum system throughput. Each 6U PMC card carrier unit has a separate PCI bus connection to the main system motherboard. In the configuration described here, each of the two copper dual-port Gigabit Ethernet NICs access a separate PCI bus.

For the IP1200 Series appliance, any two NICs installed on a single PMC carrier both operate at the PCI frequency of the least capable NIC installed.

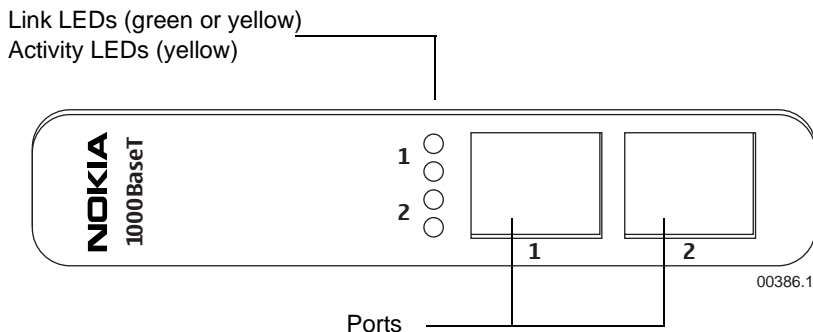
Copper Gigabit Ethernet NIC Features

The copper Gigabit Ethernet NIC supports:

- High bandwidth
- Full-duplex mode operation up to 1 Gbps
- Link speed auto advertising (10/100/1000)
- Hot swapping
- PCI operation at 33 MHz, 66 MHz, and 100 Mhz
- Compliance with IEEE 802.3z and 802.3ab Gigabit Ethernet specifications
- Cable autosensing

You can configure and monitor Gigabit Ethernet NIC interfaces with Nokia Network Voyager. Specifically, you can use Network Voyager to set the port speed and full-duplex mode to 1000, 100, or 10 Mbps.

For information about how to access Network Voyager and the related reference materials, see [“Accessing Nokia Network Voyager Reference Information”](#) on page 48.

Figure 17 Dual-Port Copper Gigabit Ethernet NIC Front Panel Details

After the power is turned on and the cables are connected, the Ethernet link LEDs on both the IP1200 Series and on the remote equipment illuminate to indicate the connection.

Note

The Link LED on the NIC is bicolored. A green LED indicates a 1 Gbps link speed, and a yellow LED indicates a 10/100 Mbps link speed. As the NIC transmits data, the activity LEDs on the appliance illuminate.

Dual-Port Copper Gigabit Ethernet NIC Connectors and Cables

The IP1200 Series receptacles are RJ45 connectors.



Warning

To reduce the risk of fire, use only 26 AWG or larger telecommunication line cord.

To connect to a 1-Gbps hub, switch, or router, use a straight-through RJ-45 cable (Category 5 type cable, or as required by your network configuration).

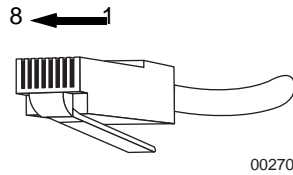
Note

Certain circumstances might require shielded Category 5 Ethernet cables to meet Class B emissions requirements.

Note

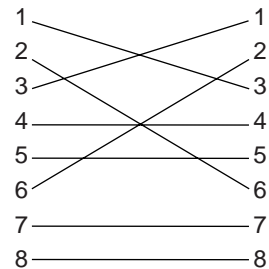
Nokia copper Gigabit Ethernet NICs support cable autosensing. You can use a straight-through or crossover cable to connect the NIC to a gigabit hub or switch or to connect directly to a host.

In [Figure 18](#), the RJ-45 cable output connector is numbered from right to left, with the copper pins facing up and toward you.

Figure 18 Ethernet Cable Connector Output Pin Assignments

Pin#	Gigabit Ethernet Assignment	10/100 Mbps Assignment
1	BI_DA+	TX
2	BI_DA-	TX
3	BI_DB+	RX
4	BI_DC+	
5	BI_DC-	
6	BI_DB-	RX
7	BI_DD+	
8	BI_DD-	

To connect directly to a host, use an RJ-45 crossover cable wired as [Figure 19](#) shows.

Figure 19 Ethernet Crossover Cable Pin Connections

00017.1

Note

After you turn on the appliance, the Ethernet link LEDs on both the appliance and on the remote equipment illuminate to indicate the connection. As data is transmitted or received, the activity LEDs on the appliance illuminate.

To connect the IP1200 Series to other network components, you can order appropriate adapter cables separately from a cable vendor of your choice.

Single-Port ISDN S/T NIC

The Nokia IP1200 Series Security Platform supports Nokia-approved, single-port ISDN S/T NICs installed on a 6U PMC carrier.

When you purchase an ISDN NIC with your IP1200 Series, the NIC is installed before the appliance is delivered to you. For information about how to add or replace a NIC, see [Chapter 4, “Installing and Replacing Network Interface Cards.”](#)

Note

The ISDN interface is not supported for use in the USA, Canada, or Japan.

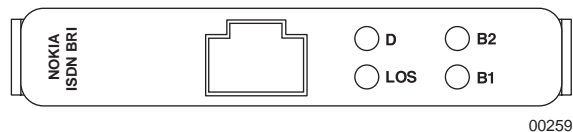
Single-Port ISDN S/T NIC Features

The NIC supports the following features:

- Point-to-point and multipoint connections through the S/T interface
- Two bearer channels at 64 Kbps (you can combine these for an overall rate of 128 Kbps)
- One signaling channel at 16 Kbps
- Tracing through tcpdump
- PCI operation at 33 MHz and 66 MHz

You can configure and monitor ISDN NIC interfaces with Nokia Network Voyager. For information about how to access Network Voyager and the related reference materials, see [“Accessing Nokia Network Voyager Reference Information”](#) on page 48.

Figure 20 Single-Port ISDN S/T Interface Front Panel Details



ISDN NIC Connectors and Cables

**Caution**

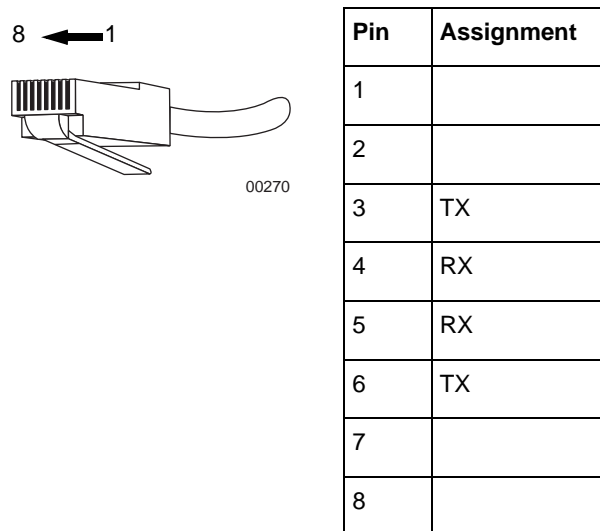
Cables connecting to the ISDN NIC must be at least 26 AWG wire.

The connector on the NIC is an RJ-45 connector.

To connect the NIC to an ISDN service, use the supplied ISDN cable. Use of another cable (not recommended) is at the customers discretion.

Figure 21 shows the RJ-45 connector output connector numbered from right to left, with the copper tabs facing up and toward you. Accordingly, the receptacle on the NIC is numbered from left to right.

Figure 21 Output Connector for the ISDN Cable



Single-Port V.35 or X.21 NIC

The Nokia IP1200 Series Security Platform supports a Nokia-approved, single-port V.35 or X.21 NIC. The port type is automatically determined by the type of cable attached to the NIC.

When you purchase a single-port V.35 or X.21 NIC with your IP1200 Series, the NIC is installed before the appliance is delivered to you and the appliance arrives with the appropriate cable.

When you order a NIC after you receive the appliance, the NIC arrives with the specified cable. For information about how to add or replace a NIC, see [Chapter 4, “Installing and Replacing Network Interface Cards.”](#)

Single-Port V.35 or X.21 NIC Features

The V.35 or X.21 NIC supports the following features:

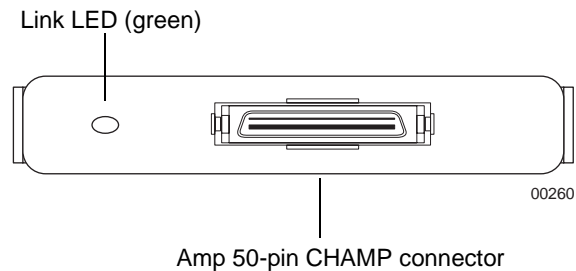
- Berkeley Packet Filtering (BPF)
- Conformance with RFC 1661 (PPP), 1662 (PPP in HDLC-like framing), 1332 (PPP-IPCP), 1490 (frame relay), and Cisco HDLC
- PCI operation at 33 MHz
- Link LED is green

To determine the running speed of a network interface card

1. Click Monitor on the Nokia Network Voyager home page.
2. Click the Slot Status link.

Each occupied slot is listed along with the supported and actual speed of the installed NIC.

You can configure and monitor V.35 or X.21 NICs with Nokia Network Voyager. For information about how to access Network Voyager and the related reference materials, see [“Accessing Nokia Network Voyager Reference Information”](#) on page 48.

Figure 22 Single-Port V.35 or X.21 NIC Front Panel Details

In most cases, you connect the NIC to a channel service unit/data service unit (CSU/DSU). If you are connecting the NIC to a CSU/DSU, and the CSU/DSU can provide a clock, select external clock (the default value) in the physical configuration section in the Network Voyager configuration program. For the clock configuration to function, the CSU/DSU or other DCE device must supply the clock.

On a Cisco network application, you can connect the NIC directly to a frame relay switch or to a platform serial port. You can also connect the NIC directly to any device that has a DCE serial port.

Note

Use the V.35 or X.21 NIC only as a DTE device.

V.35 and X.21 NIC Connectors and Cables

The connector on the NIC is an Amp 50-pin CHAMP female connector. The cable shipped with the NIC has a 50-pin male connector on one end and the appropriate V.35 or X.21 connector on the other end.

To connect the NIC to a CSU/DSU, use a straight-through V.35 or X.21 cable. To connect the NIC directly to a Cisco IP security platform, use a Cisco DCE cable. You can order appropriate adapter cables separately.

To determine the type of interface (V.35 or X.21), look at the connector on the front panel of the NIC. [Figure 23](#) and [Figure 24](#) show the physical configuration for each connector type.

Figure 23 Output Connector for the V.35 Cable

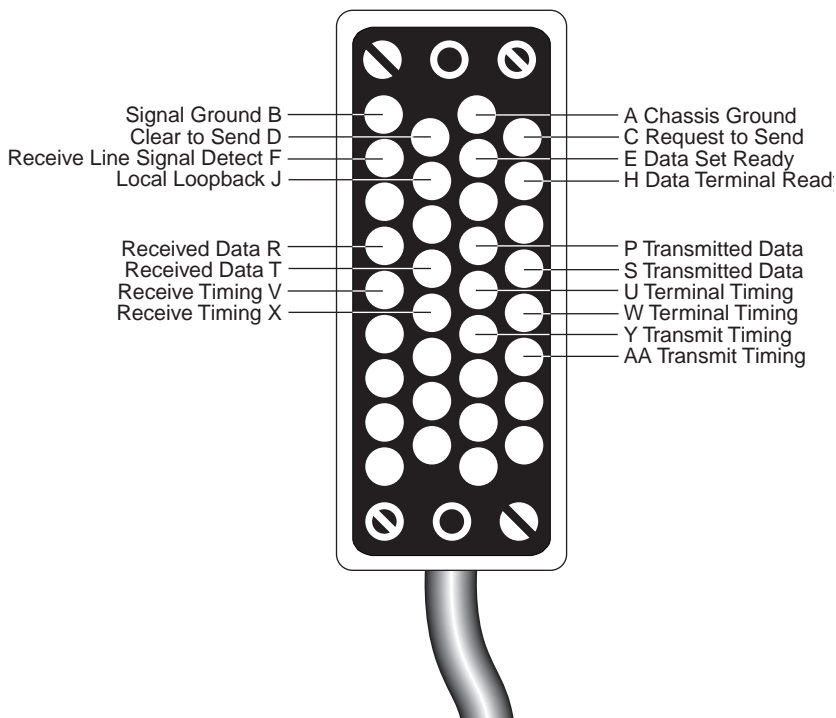
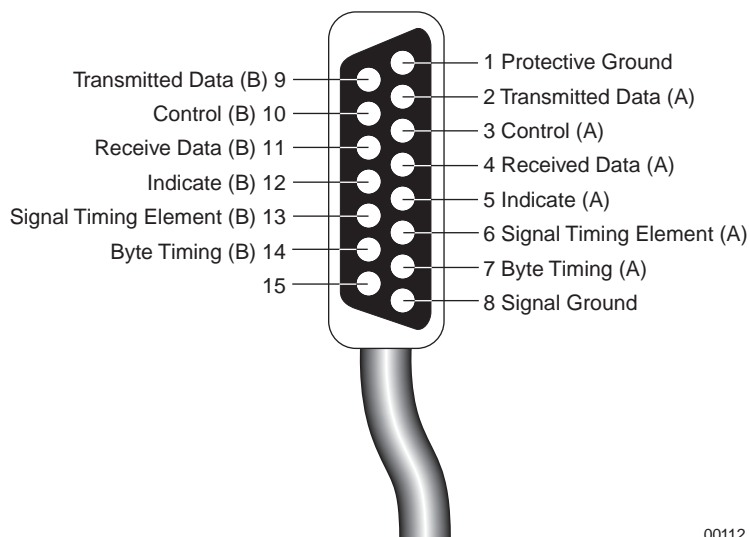


Figure 24 Output Connector for the X.21 Cable

00112

Single-Port T1 NIC

The IP1200 Series IP security platforms support Nokia-approved, single-port T1 cards.

The Nokia IP1200 Series appliances can accommodate a maximum number of four cards. The Nokia T1 network interface card provide the following features:

- Built-in CSU/DSU for long and short-haul operations
- Line speed to full T1
- High-speed access for network connections over leased lines
- On-board HDLC and Frame controllers, which allow operation at 1.544 Mbps

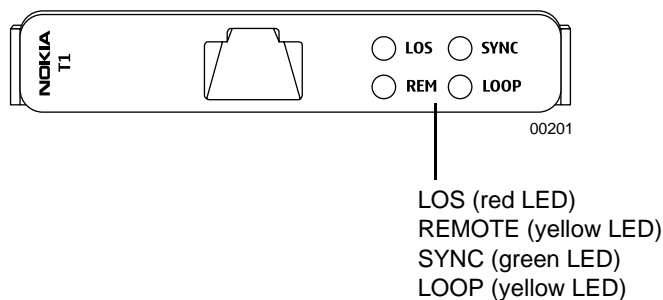
- Up to 24 channels per card (Nokia IPSO supports only fractional channels)
- Fractional T1
- Support for hot-swapping of NICs when used in IP1200 Series appliances
- Tracing through tcpdump
- Conformance with RFC 1661 (PPP), 1662 (PPP in HDLC-like framing), 1332 (PPP-IPCP), 1490 (frame relay), and Cisco HDLC
- Compliance with ANSI T1.403

The Nokia T1 card supports conformance with RFC 1406 (DS1 MIB support).

You can configure and monitor T1 interfaces by using Nokia Network Voyager, the Web-based element manager configuration and monitoring program for the Nokia IPSO operating system.

For information about how to access Network Voyager and the related reference materials, see [“Using Nokia Network Voyager to Manage Your Security Platform”](#) on page 47.

Figure 25 Single-Port T1 NIC Front Panel Details



Connectors and Cables

To connect the card to a T1 device, use a straight-through RJ-48 cable.

To connect the card to another channel service unit/data service unit (CSU/DSU), use an RJ-48 crossover cable wired as shown in [Figure 26](#) on page 94.

You can order appropriate adapter cables separately from Nokia (see [“Nokia Contact Information”](#) on page 3).



Warning

Cables connecting to the T1 card must be a minimum of 26 AWG wire.



Caution

Remove the T1 cable before you work on any Nokia appliance.



Caution

Nokia requires that this equipment be installed by authorized, experienced service personnel who have the equipment installation instructions. Nokia requires that all equipment be connected to a

power source using a socket-outlet with protective grounding connection.

In [Figure 26](#) the RJ-48 connector is numbered from right to left, with the copper pins facing up and toward you.

Figure 26 T1 Network Interface Card Receptacle and Pin Assignments

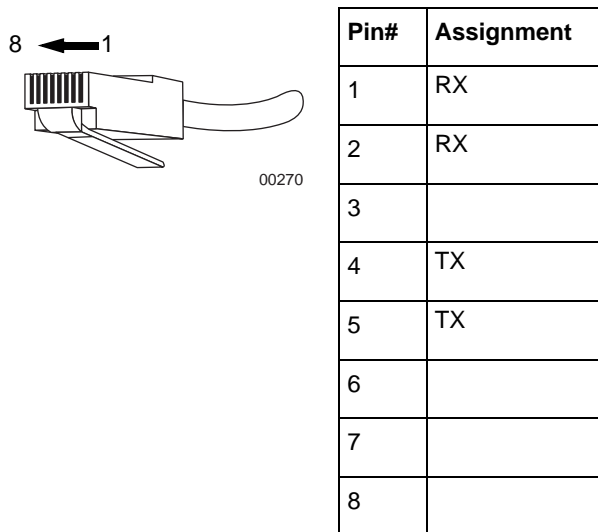
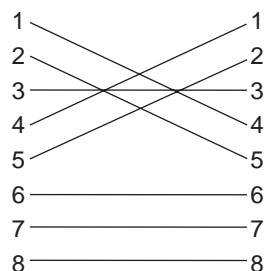


Figure 27 T1 Crossover Cable Pin Connections

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Single-Port E1 NIC

Nokia IP1200 Series Security Platform support Nokia-approved, single-port E1 cards. The IP1200 Series appliances can accommodate a maximum number of four cards.

The Nokia E1 network interface card provides the following features:

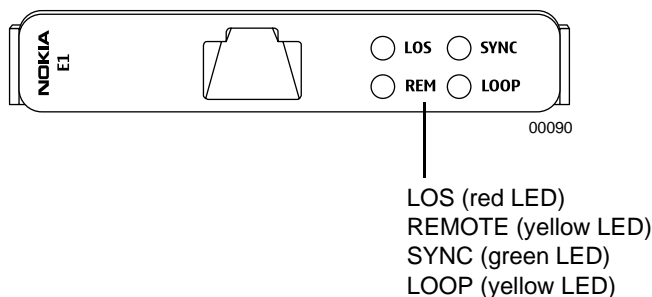
- CTESPA includes a built-in channel service unit/data service unit (CSU/DSU) for long and short-haul operations
- Line speed to full E1
- Direct, high-speed access for network connections over leased lines
- On-board HDLC and Frame controllers, which allow operation at 2.048 Mbps
- Up to 32 channels per card
 - Channels 0 and 16 can be used for inband signaling
 - IPSO supports only fractional channels
- Fractional E1
- Support for hot-swapping of NICs when used in IP1200 Series appliances
- Tracing through tcpdump

- Conformance with RFC 1661 (PPP), 1662 (PPP in HDLC-like framing), 1332 (PPP-IPCP), and Cisco HDLC
- Compliance with ITUT G703

You can configure and monitor E1 interfaces by using Nokia Network Voyager, the Web-based element manager configuration and monitoring program for the Nokia IPSO operating system.

For information about how to access Network Voyager and the related reference materials, see [“Using Nokia Network Voyager to Manage Your Security Platform”](#) on page 47.

Figure 28 Single-Port E1 NIC Front Panel Details



Connectors and Cables

To connect the card to an E1 service, use a straight-through RJ-48 cable.

To connect the card to another CSU/DSU, use an RJ-48 crossover cable wired as shown in [Figure 29](#) on page 98.

You can order appropriate adapter cables separately from Nokia (see [“Nokia Contact Information”](#) on page 3).



Caution

Cables connecting to the E1 card must be a minimum of 26 AWG wire.



Caution

Remove the E1 cable before you work on any Nokia appliance.



Caution

Nokia requires that this equipment be installed by authorized, experienced service personnel who have the equipment installation instructions. Nokia requires that all equipment be connected to a power source by using a socket outlet with a protective grounding connection.

In [Figure 29](#), the RJ-48 connector is numbered from right to left, with the copper tabs facing up and toward you.

Figure 29 E1 Network Interface Card Receptacle and Pin Assignments

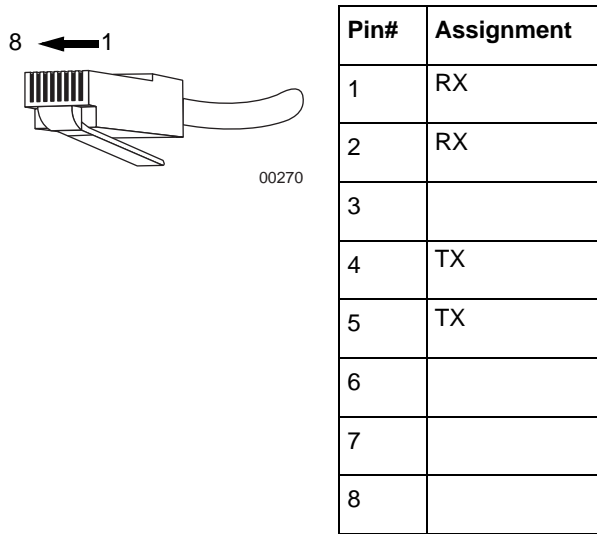
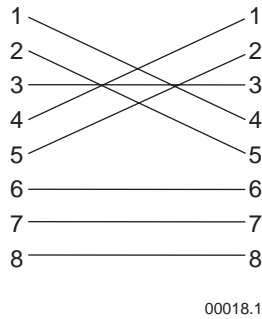


Figure 30 E1 Crossover Cable Connection Diagram



6

Using the Boot Manager

The Nokia IP1200 Series Security Platform incorporates a boot manager to control the boot-up process. The boot manager allows you to perform a number of tasks, including:

- Booting from alternate kernels, which might reside on nondefault devices or directories
- Installing new versions of Nokia IPSO (the operating system)
- Obtaining system information
- Performing various housekeeping tasks

These tasks and the boot manager commands are discussed in the following sections:

- [Variables](#)
- [Booting the System](#)
- [Using the Boot Manager to Install Nokia IPSO](#)
- [Protecting the Boot Manager with a Password](#)
- [Installing the Boot Manager](#)
- [Upgrading the Boot Manager](#)

When you first receive your Nokia IP1200 Series Security Platform, the boot manager uses factory-default parameters (such as kernel, and boot device) for the boot process. The factory defaults cause the appliance to bypass the boot manager prompt after a three-second wait. You can change these defaults to reflect your own needs, or you can use different parameters in the command line at boot time. The boot manager maintains the default values of these

parameters on the hard disk drive. You can set these values by using boot manager commands.

This chapter describes the boot manager commands.

Variables

A number of variables are stored by the boot manager in nonvolatile memory. You can set and view most variables from the boot manager prompt. [Table 8](#) lists the boot manager variables.

Table 8 Boot Manager Variables

Variable	Description
boot manager revision	Version number of the boot manager. This variable cannot be set from the command line.
autoboot	If autoboot is set to <i>no</i> , the IP1200 Series stops at the boot manager command line during the boot process. If autoboot is set to <i>yes</i> , the IP1200 Series does not stop at the boot manager command line during a boot up. It does wait for the amount of time specified in <i>bootwait</i> for input from the keyboard. If input is received, the boot manager goes to the command line; otherwise, it proceeds with the boot up. Default is <i>yes</i> .
bootwait	Amount of time, in seconds, that the boot manager waits for input during a boot up when <i>autoboot</i> is set to <i>yes</i> . Default is three seconds.
boot-file	Name of the operating system kernel file. Default is <i>/image/current/kernel</i> .
boot-flags	String of flags passed to the kernel. Default is <i>-x</i> .
boot-device	Device from which the boot-file loads. Default is <i>wd0</i> .

The following table shows possible boot flags.

Flag	Meaning
-d	Debug mode—enters the kernel debugger as soon as possible in the kernel initialization.
-s	Single-user mode—if the console is marked as insecure, you must enter the root password to access the manager.
-v	Verbose mode—verbose during device probing and thereafter.

Viewing the Variables and Other System Parameters

printenv

Use the `printenv` command to view the values of variables currently stored in the boot manager nonvolatile memory. The command has the following syntax:

```
printenv
```

For example:

```
BOOTMGR[93]> printenv
NOKIA IPSO BOOTMGR VERSION=3.7 07.05.2003-130000
autoboot: YES
testboot: NO
bootwait: 3
boot-file: /image/current/kernel
boot-flags:
boot-device: wd0
vendor: Nokia
model: IP
bmslice: 4
```

sysinfo

Use the `sysinfo` command to view system information such as CPU speed and memory size. This command has the following syntax:

```
sysinfo
```

For example:

```
BOOTMGR[6]> sysinfo
CPU 0: 1996 MHz Pentium 4/XEON
Memory: 536870912 (512M bytes)
Disk Devices:
IO port 0x1f0 wdc0: unit 0 (wd0): <SanDisk SDCFB-16>
  16MB (31360 sectors), 31 cyls, 16 heads, 63 S/T, 512 B/S
IO port 0x1f0 wdc0: unit 1 (wd1): <IBM-DJSA-205>
  20003MB (9767520 sectors), 608 cyls, 255 heads, 63 S/T,
  512 B/S
Network Interfaces:
eth-s3p1:  flags=131<LINK,BROADCAST,MULTICAST,PRESENT>
  ether 0:30:30:0:20:10 speed 10M full duplex
eth-s3p2:  flags=130<BROADCAST,MULTICAST,PRESENT>
  ether 0:30:30:0:20:11 speed 10M full duplex
eth-s3p3:  flags=130<BROADCAST,MULTICAST,PRESENT>
  ether 0:30:30:0:20:12 speed 10M full duplex
eth-s3p4:  flags=130<BROADCAST,MULTICAST,PRESENT>
  ether 0:30:30:0:20:13 speed 10M full duplex
loop0:    flags=10b<UP,LINK,LOOPBACK,PRESENT>
soverf0:  flags=2923<UP,LINK,MULTICAST,PRESENT,IPV6ONLY>
stof0:    flags=2903<UP,LINK,PRESENT,IPV6ONLY>
tun0:     flags=107<UP,LINK,POINTOPOINT,PRESENT>
```

ls

Use the `ls` command to view the contents of directories on the devices in your IP1200 Series. The command has the following syntax:

```
ls device directory
```

where *device* is the device that contains the directory you want to look at, and *directory* is the directory on that device. Both *device* and *directory* are optional. The default directory is `/image` on the `wd0` device.

For example:

```
BOOTMGR[2]> ls wd0 /image/current
.description  bootmgr  etc          kernel.debug  usr
VERSION       cdrom    ipso.tgz    mnt            web
bin           dev      kernel      sbin
```

Setting the Variables

setenv

Use the `setenv` command to set a particular variable. The command has the following syntax:

```
setenv name value
```

where *name* is the name of the variable, and *value* is the new value you want the variable to assume.

For example:

```
BOOTMGR[2]> setenv autoboot YES
```

sets the value of `autoboot` to `YES`.

unsetenv

Use the `unsetenv` command to clear a particular variable. The command has the following syntax:

```
unsetenv name
```

where *name* is the name of the variable to be cleared.

For example:

```
BOOTMGR[ 2 ]> unsetenv autoboot
```

clears `autoboot` to *YES*,

```
BOOTMGR[ 3 ]> unsetenv testboot
```

clears `testboot` to *NO*,

```
BOOTMGR[ 4 ]> unsetenv bootwait
```

clears `bootwait` to 3,

```
BOOTMGR[ 5 ]> unsetenv boot-file
```

clears `boot-file` to `/image/current/kernel`,

```
BOOTMGR[ 6 ]> unsetenv boot-flags
```

clears `boot-flags` to `-x`,

```
BOOTMGR[ 7 ]> unsetenv boot-device
```

clears `boot-device` to `wd0`.

set-defaults

Use the `set-defaults` command to set variables to their factory-default values. The command has the following syntax:

```
set-defaults name
```

where *name* is the name of the variable to be set to its factory default. If *name* is not specified, all variables are set to their factory defaults.

For example:

```
BOOTMGR[2]> set-defaults autoboot
```

sets the value of autoboot to *YES*, the factory default.

setalias

Use the setalias command to set an alias. The command has the following syntax:

```
setalias name device
```

where *name* is the alias name, and *device* the device for which *name* is the alias.

For example:

```
BOOTMGR[2]> setalias disk wd0
```

sets the alias disk to the value of wd0.

You can have a maximum of eight aliases set at one time.

unsetalias

Use the unsetalias command to clear an alias. The command has the following syntax:

```
unsetalias name
```

where *name* is the name of the alias to be cleared.

For example, the following command deletes the disk alias from the list of aliases:

```
BOOTMGR[2]> unsetalias disk
```

Other commands

halt

Use the halt command to halt the system. The command has the following syntax:

```
halt
```

help

Use the help command to display a list of the available commands. The command has the following syntax:

```
help
```

Booting the System

The boot command lets you boot up the Nokia IPSO operating system. It allows you to set the boot device, boot file, and boot flags from the command line.

The command has the following syntax:

```
boot boot-device boot-file boot-flags
```

where *boot-device* is the storage device from which the operating system loads at boot up, and *boot-file* is the operating system kernel. The *boot-flags* control the operation of the command.

For example, at the boot manager command prompt enter the following:

```
BOOTMGR[0]> boot wd0 /image/current/mykernel -vd
```

This command boots mykernel from disk wd0 in verbose and debug mode.

You can supply all, any, or none of the arguments. If you do not supply an argument, the boot manager uses its default. It first searches its nonvolatile memory to see if the corresponding default argument is specified there. If so, it uses that value; if not, it defaults to the values in the following table:

Argument	Default
boot-device	wd0 (the hard disk drive)
boot-file	/image/current/kernel
boot-flags	-x

Using the Boot Manager to Install Nokia IPSO

Use the install command to install Nokia IPSO. The syntax of the command is:

```
install
```

For complete installation procedures, see the appropriate version of release notes.

Note

Using the install command to perform a full installation deletes the existing IPSO image on the IP1200 Series.

To install a new copy of the Nokia IPSO kernel

1. At the boot manager command prompt, enter:

```
BOOTMGR[0]>install
```

If you used the passwd command to protect this command with a password, see [“Protecting the Boot Manager with a Password”](#) on page 108, the boot manager prompts you for your password before allowing you to execute the install command.

2. Enter the information the install command requests (your system IP address, the server IP address, and other information).
3. Reboot the IP1200 Series.

Protecting the Boot Manager with a Password

To prevent accidental or unauthorized access to the hard disk on your Nokia IP1200 Series Security Platform, you can require that the user enter a password to access the boot manager install command. Use the `passwd` command to set the password.

Note

The password you enter gives you access to the install command in boot manager, not access to Nokia IPSO.

To set a password

1. At the boot manager command prompt enter:

```
BOOTMGR[ 0 ]> passwd
```

The `passwd` program prompts you for your current password.

2. If the appliance is protected by a password, enter your current password.

The program prompts you for the new password.

3. Enter the new password.

The program prompts you to re-enter the new password for verification.

4. Enter the new password again.

Note

If you forget your install password, contact the appropriate Nokia Customer Support site as listed in [“Nokia Contact Information”](#) on page 3 for information on how to set a new one.

Installing the Boot Manager

The boot manager is installed at the factory; you should not need to reinstall it. If you should need to reinstall the boot manager, contact the appropriate Nokia Customer Support site as listed in “[Nokia Contact Information](#)” on page 3 for instructions and a new boot manager.

The command to install the boot manager has the following syntax:

```
install_bootmgr boot-device boot-file
```

where *boot-device* is the storage device to which you write the new boot manager image and from which the boot manager image loads at boot up and *boot-file* is the new boot manager and is named nkipflash. Execute the `install_bootmgr` command from Nokia IPSO (the operating system), not from the boot manager.

To install the new boot manager, at the Nokia IPSO command prompt enter:

```
/etc/install_bootmgr wd1 /image/current/bootmgr/nkipflash
```

The command installs the new boot manager image (nkipflash) into the flash device (wd1). The installation takes some time to complete. Do not interrupt the installation process.

Upgrading the Boot Manager

The command to upgrade the boot manager has the following syntax:

```
upgrade_bootmgr boot-device boot-file
```

where *boot-device* is the storage device from which the boot manager loads at boot up and *boot-file* is the new boot manager image. The new boot manager image is named nkipflash. Execute the `upgrade_bootmgr` command from the Nokia IPSO operating system, not from the boot manager.

For complete upgrade procedures, see the appropriate version of the *Nokia IPSO Release Notes*.

To upgrade the boot manager

1. Obtain the upgraded boot-manager image from the appropriate Nokia Customer Support site as listed in [“Nokia Contact Information”](#) on page 3.
2. At the Nokia IPSO command prompt, enter:

```
/etc/upgrade_bootmgr wd1 /etc/nkipflash
```

The command upgrades the boot manager with the new image (nkipflash), writing it into the hard disk drive (wd0). The upgrade takes some time to complete. Do not interrupt the upgrade process.

7 Troubleshooting

This chapter provides troubleshooting tips, problems, and solutions related to Nokia IP1200 Series Security Platform installations.

For information about how to reinstall the Nokia IPSO operating system onto your appliance, see [Chapter 6, “Using the Boot Manager.”](#)

General Troubleshooting Information

The information in this section relates to problems you might encounter during the IP1200 Series installation.

Appliance Not Receiving Power

Problem Power cord is not properly plugged in.

Solution Check cord. Make sure it is properly seated at both ends.

Problem Power supply not providing power.

Solution Check power source. If the source has no power, take appropriate action such as inserting a new fuse or resetting circuit breaker.

Unable to Log In to the Console Port—No Error Message

Two laptop computers (using terminal emulation programs) or terminals should be able to communicate back to back in the same way that the terminal

communicates with the IP1200 Series. If this is not possible by using your laptop computer or terminal, the problem is with the terminal or cable and not with the appliance.

Problem No console connection to the IP1200 Series.

Solution For information about how to create a console connection, see [“To connect to the console”](#) on page 40.

Problem Not connected with a null-modem cable.

Solution Verify that you are using a null-modem cable. For pinout information, see [“To connect to the console”](#) on page 40.

Problem Wrong terminal settings.

Solution Verify terminal settings: 8 data bits, 1 stop bit, no parity, 9600 bps.

Problem Terminal set for flow control.

Solution The IP1200 Series does not use flow control. The terminal should be set for no flow control.

Problem Defective IP1200 Series or file system.

Solution Contact the Nokia customer support site listed in [“Nokia Contact Information”](#) on page 3.

Login Prompt Appears, But Password Not Accepted

Problem Database is corrupt.

Solution Return to default settings as described in [“To reset the default database settings”](#) on page 114, or contact the Nokia customer support site listed in [“Nokia Contact Information”](#) on page 3.

Problem Entered wrong password.

Solution Obtain a valid password or set the password to a default value.

Note

You must have local serial access to your appliance console to perform this procedure. With a keyboard and monitor directly connected to the appliance, the boot: prompt does not appear, and you cannot perform this procedure.

To reset the admin password to a default value

1. Boot up the appliance in single-user mode by restarting or power cycling the appliance.

When the boot: prompt appears, enter **-s** before the appliance goes into multiuser mode; you have about 10 seconds to do this.

2. After the appliance boots up, the following text appears:

```
Enter pathname of shell or RETURN for sh:
```

Press Enter.

3. Type **/etc/overpw** at the pound-sign (#) prompt.

When the response asks if you want to continue, type **y**.

4. The admin password defaults to no password for admin.

Continue to boot to multiuser mode.

5. Enter the following command to reset the password from the command line by using a blank password:

```
dbpasswd admin newpassword ""
```

The two double quotation marks at the end of the command properly indicate a blank password.

Note

Blank passwords are not accepted in Nokia Network Voyager or Lynx.

After you execute this command, the system reports that the password was not successfully changed. However, the password is changed and is now newpassword.

Finally, return the entire database to its default settings to initiate the initial configuration process. The initial configuration process is described in [Chapter 2, “Performing the Initial Configuration.”](#)

To reset the default database settings

1. Log in to the IP1200 Series as admin by using Nokia Network Voyager.
For information about how to access Network Voyager and the related reference materials, see [“To open Nokia Network Voyager”](#) on page 47.
2. Under Configuration Database Management (Config > System Configuration > Manage Configuration Sets), choose the option to create a new factory default configuration.
3. Create the new default configuration.

Do Not Get a Login Prompt—Error Messages Appear

Problem The IP1200 Series is defective, or the file system on the IP1200 Series is defective.

Solution Contact the Nokia customer support site listed in [“Nokia Contact Information”](#) on page 3.

Note

Use the full installation procedure to install a new system. The new system completely replaces the contents of the drive and might be needed to restore or reload an IP1200 Series. This procedure erases any configuration database on the appliance. For information about how to

complete the full installation procedure, see the current release notes. The release notes are located on the Nokia customer support Web site as listed in the [“Nokia Contact Information”](#) on page 3.

Not Able to Connect to Nokia Network Voyager Using the Ethernet Port, But Console Access Works

Problem Using the wrong Ethernet cable.

Solution Use a crossover Ethernet cable if you are connecting directly to the computer. Use a straight-through cable if you are connecting to a hub. For cabling information, see [“Ethernet NIC Connectors and Cables”](#) on page 77.

Problem Port is not configured as active.

Solution View the port in Network Voyager, or from Lynx, and verify that the interface is configured as active.

Problem Host port configuration is incorrect.

Solution Check host Ethernet port settings. Verify that the IP address and netmask settings are correct for the IP1200 Series configuration.

Problem Wrong link speed.

Solution Verify that the port on the host and the port on the IP1200 Series are set for the same speed (10 Mbps or 100 Mbps). An unblinking data and activity LED on a port is a good indication of a speed mismatch.

Problem Duplex setting is wrong.

Solution Correct duplex setting.

Problem NIC is not installed correctly.

Solution Remove the card and reinstall it. Ensure that you can tighten the retaining screws on both sides of the NIC.

Do Not See Interfaces that Should be Present

Problem Local IP1200 Series ports do not appear.

Solution Your NIC might be defective. Contact the appropriate Nokia customer support site as listed in [“Nokia Contact Information”](#) on page 3.

Note

The problem could be with the I/O slot. Try installing the NIC in another slot.

Common Ethernet Problems—Connectivity with Attached Device

Problem No link light.

Solution You might have used the wrong cable. Use a crossover cable between the IP1200 Series and a host, and a straight-through cable between an appliance and a hub.

Problem Solid activity LED.

Solution You might have set the wrong speed. Verify that the speeds match on each end of the Ethernet connection (10 Mbps, 100 Mbps, or 1000 Mbps).

Problem Port not enabled.

Solution Verify from the Interface page in Nokia Network Voyager that the interface port is configured as active.

Problem High collision rate on the hub.

Solution Disconnect connections one at a time until the problem is localized to one computer and troubleshoot further.

Appliance Does Not Recognize New Memory Configuration

Problem The DIMMs are not properly seated in DIMM sockets.

Solution Repeat memory installation procedures. Make sure DIMMs are fully seated in sockets. Be sure DIMMs click into place. Make sure DIMMs are seated in adjacent slots J5/J6 and/or J7/J8.

8

Installing and Replacing Other Components

This chapter provides information about how to add or replace field-replaceable units (FRUs) other than network interface cards (NICs) in your Nokia IP1200 Series Security Platform. The following topics are covered:

- [Replacing a Hard Disk Drive](#)
- [Replacing or Upgrading Memory](#)
- [Installing a Nokia Encryption Accelerator Card](#)
- [Installing a Fan Unit](#)
- [Installing or Replacing a Power Supply](#)
- [Monitoring the Nokia IP1200 Series Security Platform Power Supply](#)

For information about how to add or replace NICs, see [Chapter 4, “Installing and Replacing Network Interface Cards.”](#)

You should have a working knowledge of networking equipment before you attempt to service an IP1200 Series. Limit service of the appliance to the procedures described in this chapter.



Caution

To protect the IP1200 Series and the memory modules from electrostatic discharge damage, make sure you are properly grounded before you touch these components. Use a grounding wrist strap and follow the instructions provided with the wrist strap

before you handle the components or open the appliance. If you do not have a grounding wrist strap, make sure you are properly grounded before you touch any electronic component.

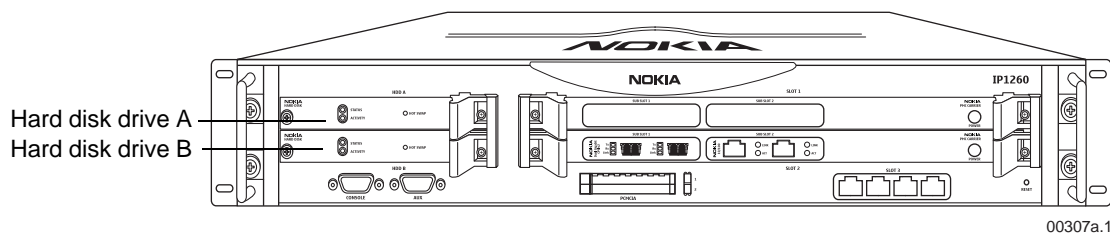
Replacing a Hard Disk Drive

The Nokia IP1200 Series Security Platform supports up to two hard disk drives with the disk mirroring feature in the Nokia IPSO operating system. If the appliance has only one hard disk drive installed, it is in the top slot (slot A). You can add a second hard disk drive into the bottom slot (slot B) or replace the hard disk drive in slot A.

This section describes how to remove and replace a failed hard disk drive, and how to add an optional second hard disk drive to implement the disk-mirroring feature.

[Figure 31](#) shows the location of the hard disk drives on the front of the IP1200 Series.

Figure 31 Location of Hard Disk Drives



Disk Mirroring

The Nokia disk-mirroring feature provides fault tolerance by letting the Nokia IP1200 Series Security Platform continue working in the event of a disk failure. You can create mirror sets that consist of a source hard disk drive

(which holds the active copy of the operating system) and mirror hard disk drive. The mirror hard disk drive contains a copy of all of the files on the source hard disk drive, and if the source hard disk drive fails, the mirror hard disk drive immediately takes over. The IP1200 Series continues to operate normally.

You can use Nokia Network Voyager, the command-line interface (CLI), or Lynx to create and delete mirror sets.

Note

If your IP1200 Series contains two hard disk drives when you receive it, the disk-mirroring feature is already enabled.

For more information about disk mirroring, including configuration details, see the *Nokia Network Voyager Reference Guide* and the *IPSO Release Notes and Getting Started Guide*.

Hard Disk Drive Hot Swap Feature

A hot swap button is located on the front panel of each hard disk drive. Pressing the hot swap button allows you to hot swap hard disk drives if you have configured and enabled disk mirroring.

**Caution**

Hard disk drives are susceptible to damage from shock. Handle them with care.

**Caution**

To protect the IP1200 Series and the memory modules from electrostatic discharge damage, make sure you are properly grounded before you touch these components. Use a grounding wrist strap and follow the instructions provided with the wrist strap before you handle the components or open the appliance. If you do

not have a grounding wrist strap, make sure you are properly grounded before you touch any electronic component.



Caution

If you fail to use the following procedure when you remove the hard disk drive, the drive might become damaged or you might lose data.



Caution

The operating system is disabled if *all* of the following occurs:

- Both hard disk drive slots are occupied.
 - The appliance is turned on.
 - Disk mirroring is *not* enabled.
 - You press the hot swap button on the source hard disk drive.
-

Before You Begin

To upgrade or replace a Nokia IP1200 Series Security Platform hard disk drive, you need:

- Physical access to the appliance
- Nokia hard disk drive kit and accompanying documentation
- Phillips-head screwdriver

Removing and Replacing a Hard Disk Drive

If you have disk mirroring configured on your Nokia IP1200 Series Security Platform, you can remove a failed hard disk drive without shutting down the system.

You must replace the hard disk drive with a drive that has a capacity equal to or larger than the drive you are replacing.

Back up your hard disk drive files to a remote system on a regular basis. For backup and restore procedures, see the *IPSO 3.7 Release Notes and Getting Started Guide* or the *Nokia Horizon Manager User Guide* and online help.

To replace a hard disk drive by using the hot-swap feature

Note

You must have disk mirroring implemented to use the hot swap feature.

1. Locate the hard disk drive to remove.
2. Loosen the retaining screws on both sides of the hard disk drive.



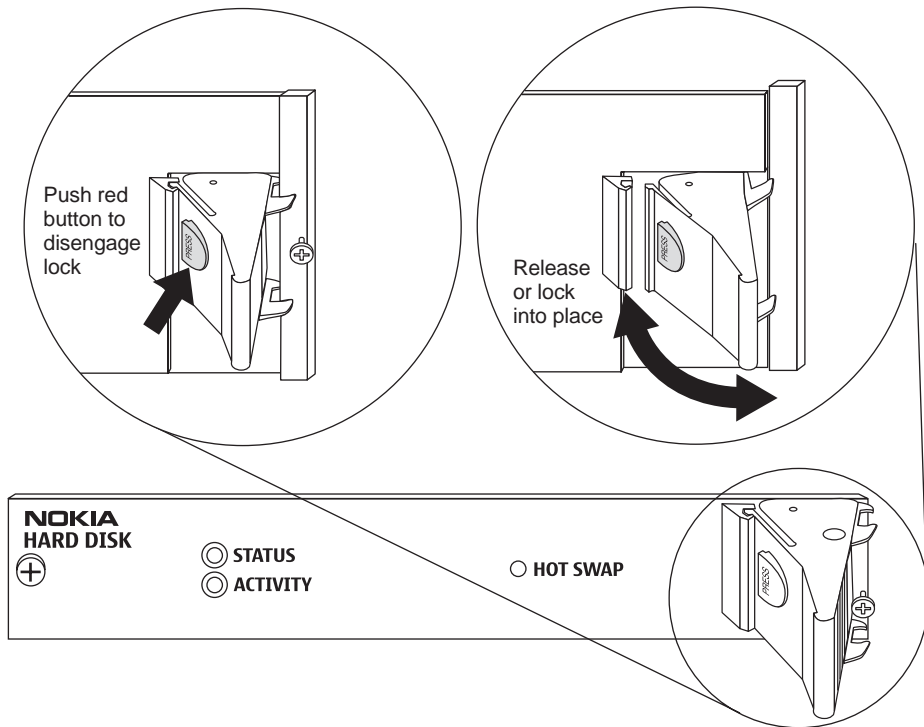
Caution

To avoid damage to the ejection lever, loosen the retaining screw behind each ejection lever before you remove the hard disk drive.

3. Press the recessed hot swap button located on the front of the hard disk drive to disable the hard disk drive.

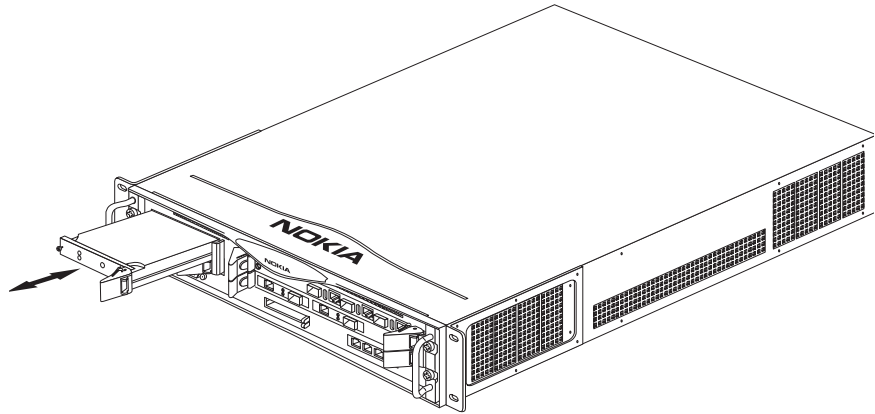
The status LED blinks.

4. When the status LED stops blinking, use your thumb or forefinger to press the ejector and locking lever to eject the hard disk drive from the chassis.



00320

5. Gently pull the hard disk drive forward to remove it from the appliance.



00316.1

6. Install a replacement hard disk drive into the empty hard disk drive bay.
7. Lock the hard disk drive in place by pressing the ejector and locking lever.
8. Tighten the screws on both sides of the hard disk drive.
9. Press the recessed hot swap button again to restore power to the hard disk drive.

The IP1200 Series recognizes the new hard disk drive.

10. Use Nokia Network Voyager, Lynx, or the CLI to implement disk mirroring.

To remove a hard disk drive without using the hot swap feature

1. If *both* of the following are true:

- You are removing a hard disk drive used as part of a disk-mirroring implementation, and
- The hard disk drive is not active

you do not need to use the following substeps to shut down the operating system. Instead, press the hot swap button on the hard disk drive and proceed to [step 3](#).

a. Access Network Voyager.

For information about how to access Network Voyager and the related reference materials, see “[To open Nokia Network Voyager](#)” on page 47.

b. On the Network Voyager home page, click Config.

c. Scroll to the bottom and click Reboot, Shut Down System.

d. Click Halt.

e. Wait until the activity LED for the hard disk drive is extinguished.

f. Use power switch on the back panel to turn the appliance off.

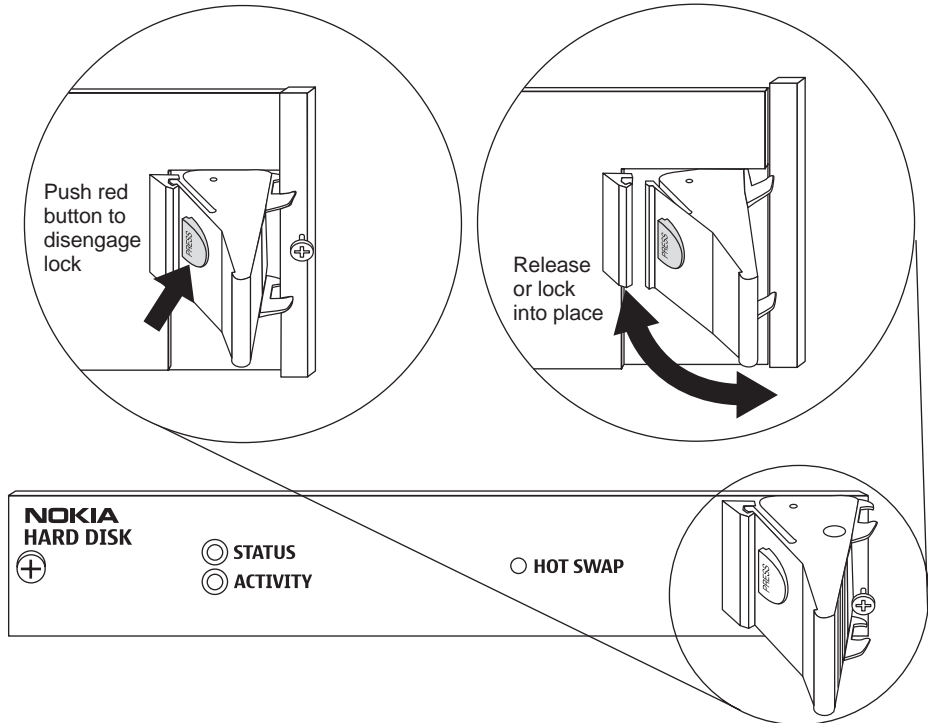
2. Loosen the retaining screws on both sides of the hard disk drive.



Caution

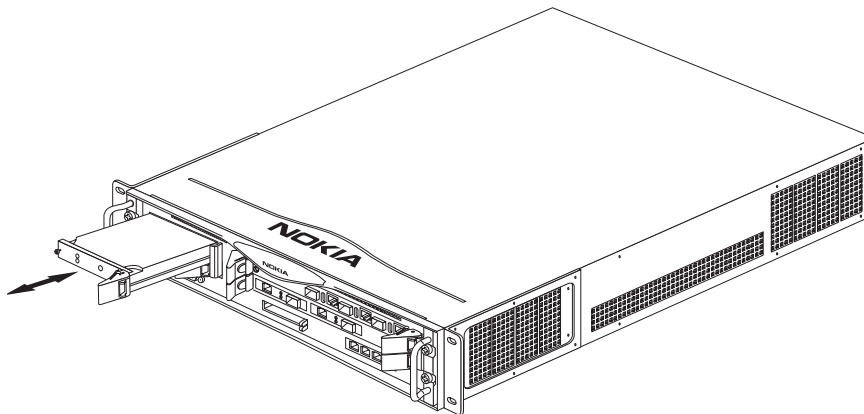
To avoid damage to the ejection lever, loosen the retaining screw behind each ejection lever before you remove the hard disk drive.

3. Use your thumb or forefinger to press the ejector and locking lever on the hard disk drive that you are removing to eject the hard disk drive from the chassis.



00320

4. Gently pull the hard disk drive forward to remove it from the appliance.



00316.1

5. Insert the new hard disk drive until it locks into place.
The ejector and locking lever clicks into the locked position.
6. Tighten the retaining screws on both sides of the hard disk drive.
7. Press the hot swap button to restore power to the hard disk drive.

The IP1200 Series recognizes the new hard disk drive.

8. Use Nokia Network Voyager, Lynx, or the CLI to implement disk mirroring.

Replacing or Upgrading Memory

The Nokia IP1200 Series Security Platform has four dual inline memory-module (DIMM) sockets. This section describes how to upgrade or replace the memory by using a Nokia-approved memory upgrade kit.

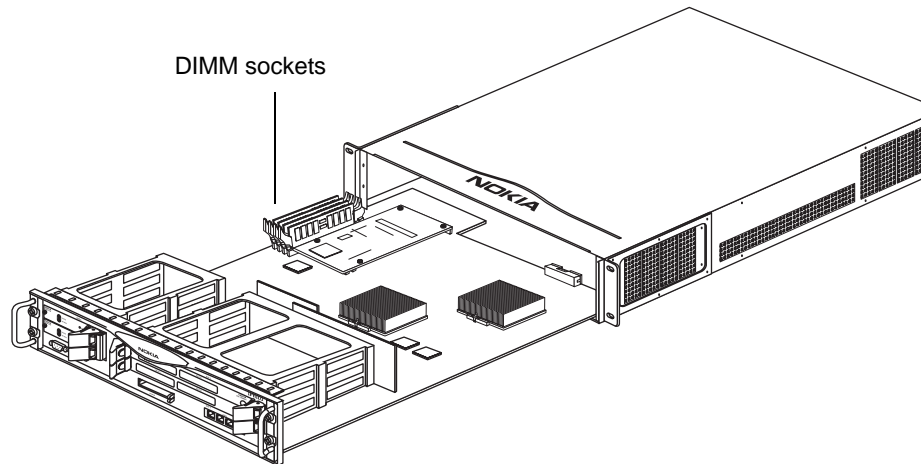
The IP1260 security platform comes with 1 GB of memory in two 512 MB DIMMs and can be upgraded to a maximum of 2 GB of RAM.

The IP1220 security platform comes with 512 MB of memory in two 256 MB DIMMs and can be upgraded to a maximum of 2 GB of RAM.

Nokia products only support memory kits purchased from Nokia or Nokia-approved resellers. For further information, contact the appropriate Nokia customer support site listed in “[Nokia Contact Information](#)” on page 3.

The DIMM sockets are located on the left rear of the IP1200 Series motherboard, as you look at the appliance from the front, as [Figure 32](#) shows.

Figure 32 DIMM Socket Locations



0032

Note

You must install DIMMs in pairs starting from the left. Insert a pair of DIMMS into adjacent slots J5/J6 and/or J7/J8, otherwise the DIMMS do not work. You can also use all four slots at one time.

Before You Begin

To upgrade or replace your Nokia IP1200 Series Security Platform memory, you need:

- Physical access to the appliance
- Nokia memory upgrade kit and accompanying documentation
- Access to the appliance by using Nokia Network Voyager or Lynx



Caution

To protect the IP1200 Series and the memory modules from electrostatic discharge damage, make sure you are properly grounded before you touch these components. Use a grounding wrist strap and follow the instructions provided with the wrist strap before you handle the components or open the appliance. If you do not have a grounding wrist strap, make sure you are properly grounded before you touch any electronic component.

Note

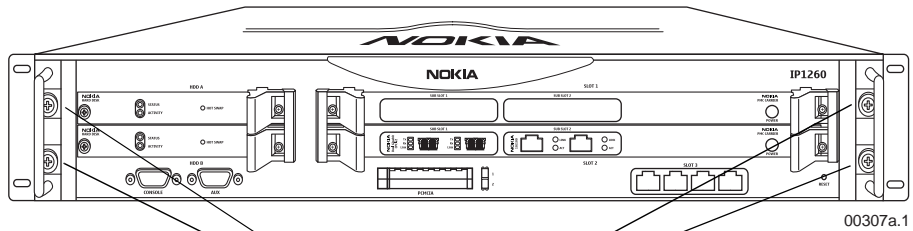
Because power to an IP1200 Series is automatically disconnected when the chassis assembly is opened, you do not need to manually disconnect the power for this procedure. Any servicing of the appliance, however, should be completed with the chassis assembly fully removed from the appliance.

To add or replace DIMMs

1. Use Nokia Network Voyager or Lynx to perform an orderly shutdown of the IP1200 Series.

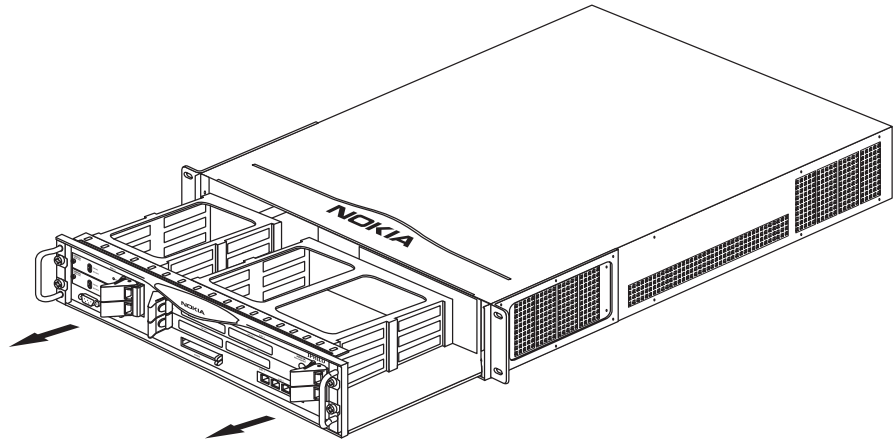
For information about how to access Network Voyager and the related reference materials, see [“To open Nokia Network Voyager”](#) on page 47.

- Loosen the four front panel retaining screws.

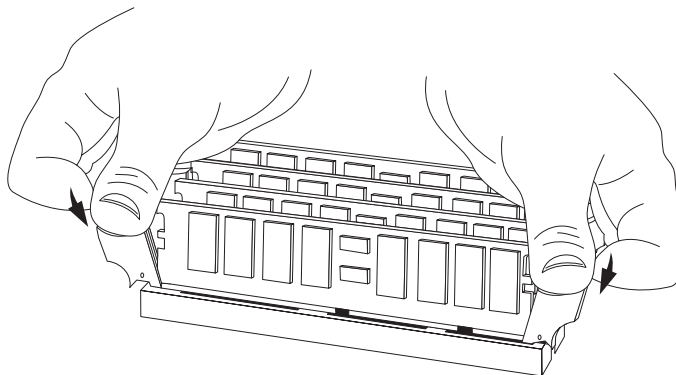


Chassis assembly retaining screws

- Slide the chassis assembly forward to expose the DIMM sockets on the IP1200 Series motherboard.
- Pull the chassis assembly entirely out of the appliance.



5. Remove the DIMM by pressing the two retaining clips outward and carefully pulling each DIMM upward.



00322

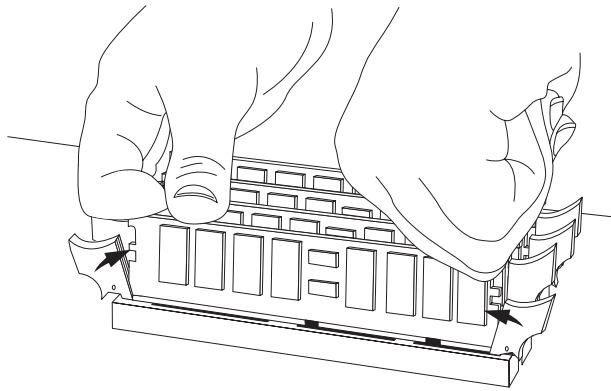
You might need to pull opposite ends of the DIMM alternately to gradually free it from the contact pins.

6. Press the new DIMM into the socket until it clicks into place.

Note

You must install DIMMs in pairs starting from the left. Insert a pair of DIMMS into adjacent slots J5/J6 and/or J7/J8, otherwise the DIMMS will not work. You can also use all four slots at one time.

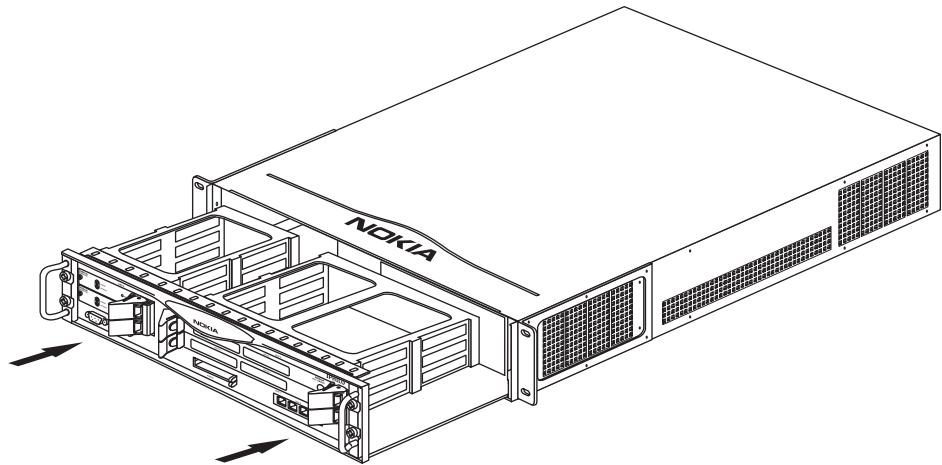
The top of the DIMM is smooth. The bottom edge has two different-length sets of contacts, which mate with the slots on the socket. Be sure the contacts and slots are properly aligned before you insert the DIMM.



00323

The retaining clips move into the lock position as you press the DIMM into place.

7. Slide the chassis assembly back into the appliance until it clicks into place.



00326b.1

8. Resecure the four chassis assembly retaining screws.

The IP1200 Series automatically recognizes the new memory configuration. You can verify the configuration by using Nokia Network Voyager or Lynx.

Installing a Nokia Encryption Accelerator Card

The Nokia IP1200 Series Security Platform supports a Nokia encryption accelerator card to further enhance VPN performance. The accelerator card provides high-speed cryptographic processing that enhances VPN performance.

The IP1260 security platform comes with the Nokia encryption accelerator card preinstalled as part of its base bundle.

If you ordered the Nokia encryption accelerator card as an option before purchasing the IP1220, then the Nokia encryption accelerator card is installed before the appliance is delivered.

The IP1200 Series uses a PMC format accelerator card. The accelerator card has no external connections and requires no cables. The accelerator card software package is part of IPSO, so the appliance automatically detects and configures the card.

Use Nokia Network Voyager to configure your software applications (IPSec or Check Point VPN) to make use of the available hardware accelerator. For information about how to configure software applications, see [“Configuring Software to Use Hardware Acceleration”](#) on page 139.

This section describes how to replace a previously installed accelerator card.

Before You Begin

To replace the accelerator card, you need:

- Physical access to the appliance
- The Nokia encryption accelerator card and installation kit
- Phillips-head screwdriver
- Four screws (included in kit)
- Disposable wrist strap (included in kit)



Caution

To help guard against electrostatic discharge damage, make sure you are properly grounded by using a grounding wrist strap and following the instructions provided with the wrist strap before you handle the components or open the appliance. If you do not have a grounding wrist strap, make sure you are properly grounded before you touch any electronic component.

Note

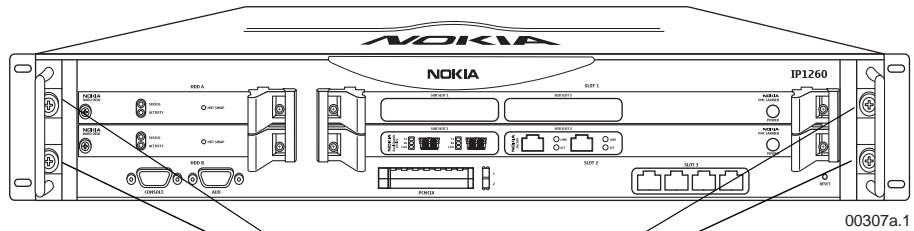
Because power to an IP1200 Series is automatically disconnected when the chassis assembly is opened, you do not need to manually disconnect the power for this procedure. Any servicing of the appliance, however, should be completed with the chassis assembly fully removed from the appliance.

To install the accelerator card

1. Use Nokia Network Voyager or Lynx to shut down the IP1200 Series.

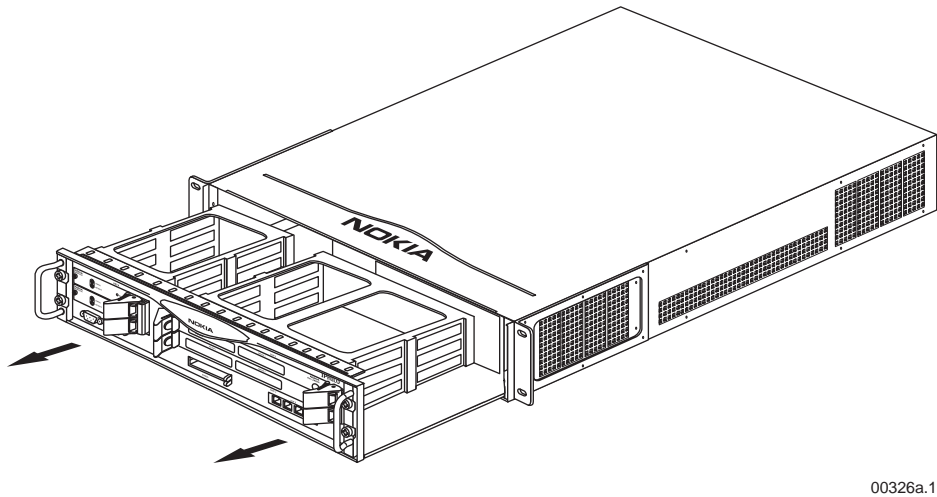
For information about how to access Network Voyager and the related reference materials, see [“To open Nokia Network Voyager”](#) on page 47.

2. Loosen the four front-panel retaining screws.



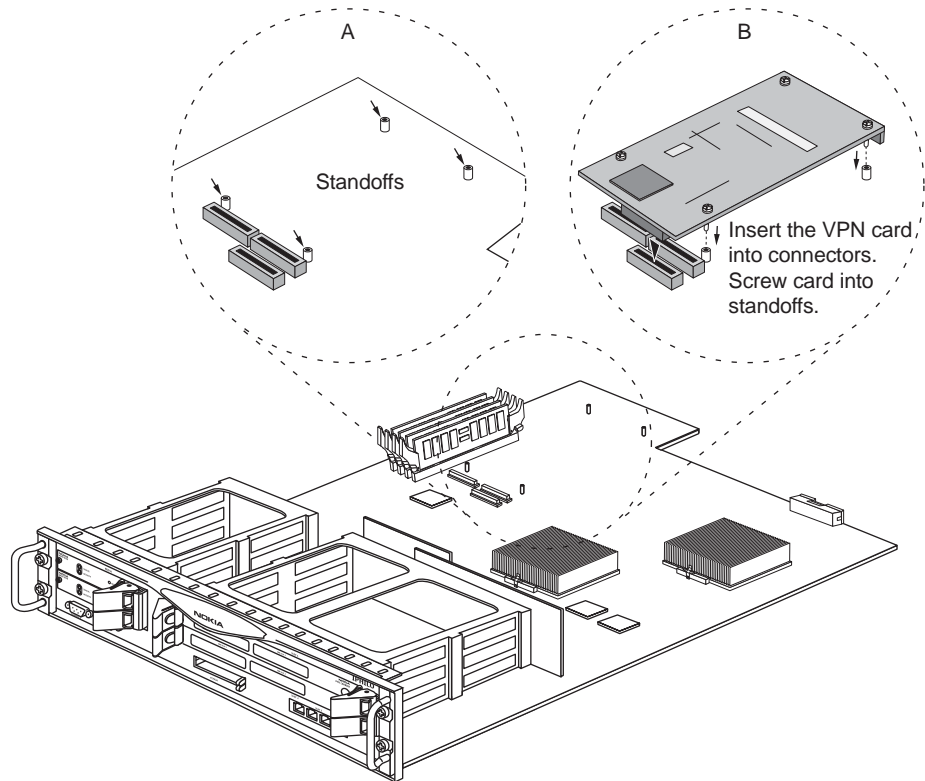
Chassis assembly retaining screws

3. Slide the chassis assembly forward to expose the motherboard components.



4. Locate the PMC connectors on the motherboard.

The connectors are located near the back of the motherboard near the DIMM sockets.



00324



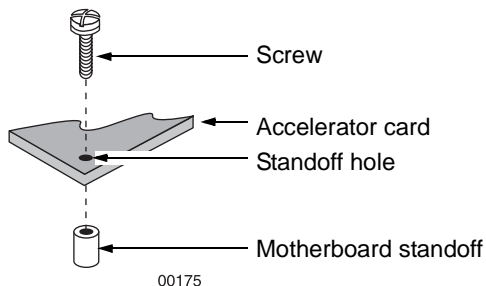
Caution

Do not use the PMC connectors located at the front of the motherboard for the acceleration card. Those connectors are for the management card.

5. Position the three male PMC connectors on the card over the three female PMC connectors on the motherboard.

The two sets of connectors should be aligned with each other. The four screw holes and four standoffs should also be aligned with each other.

6. Push down on the card until it is properly seated on the motherboard.
7. Place the screws through the standoff holes on the card and into the standoffs on the motherboard.



8. Turn each screw clockwise to attach the card to the standoffs.
Make sure that all four standoff connections are properly aligned before tightening the screws completely.
9. To secure the connections, tighten the screws firmly, but do not overtighten.
10. Slide the chassis assembly back into the appliance and resecure the four retaining screws.
Reseating the chassis assembly automatically restores power to the appliance.
11. Configure your software to use hardware acceleration by following the instructions in [“Configuring Software to Use Hardware Acceleration”](#) on page 139.

Configuring Software to Use Hardware Acceleration

Use Nokia Network Voyager to configure virtual private network (VPN) tunnels to use hardware acceleration. This step is necessary for the optional encryption accelerator card on the IP1200 Series.

The way you enable the software depends on whether you create VPN tunnels with Network Voyager or with Check Point software. If you use Voyager to create a VPN tunnel, see [“To configure IPSec.”](#) If you use Check Point software to create a VPN tunnel, see [“To configure a Check Point VPN.”](#)

To configure IPSec

1. Access Network Voyager.
2. On the Network Voyager home page, click Config.
3. Under Interfaces, click IPSec.
4. Scroll down and click IPSec Advanced Configuration.
5. At Hardware Device Configuration, click On.
6. Click Apply to enable the card.

To configure a Check Point VPN

1. Access Network Voyager.
2. On the Network Voyager home page, click Config.
3. Scroll down to Security and Access Configuration and click Cryptographic Hardware Acceleration.
4. At Hardware Device Configuration, click On.
5. Click Apply to enable the card.

You can also monitor Nokia encryption accelerator card interfaces with Network Voyager. For more information about how to access Network Voyager and locating relevant reference materials, see the *Nokia Network Voyager Reference Guide*.

Installing a Fan Unit

The fan unit is hot swappable. You can remove and install the fan unit on the back of the IP1200 Series without shutting the appliance down.

Before You Begin

To replace a fan unit, you need:

- Physical access to the IP1200 Series.
- Replacement fan unit kit and appropriate documentation.

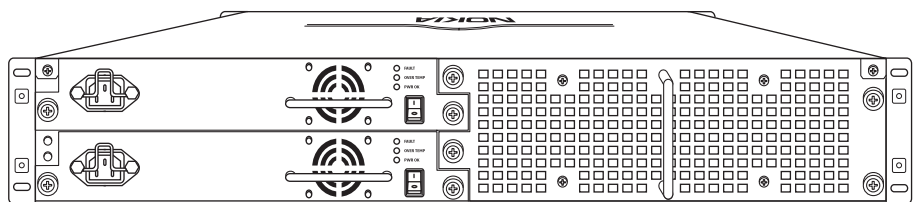


Caution

Components inside the appliance can overheat if they are not cooled even for a short period of time. If you are replacing a failed fan unit, and do not completely remove power to the appliance, do not allow the appliance to run without a fan unit for any longer than necessary.

To replace a fan unit

1. Locate the fan unit on the back of the IP1200 Series and the four retaining screws that secure it.

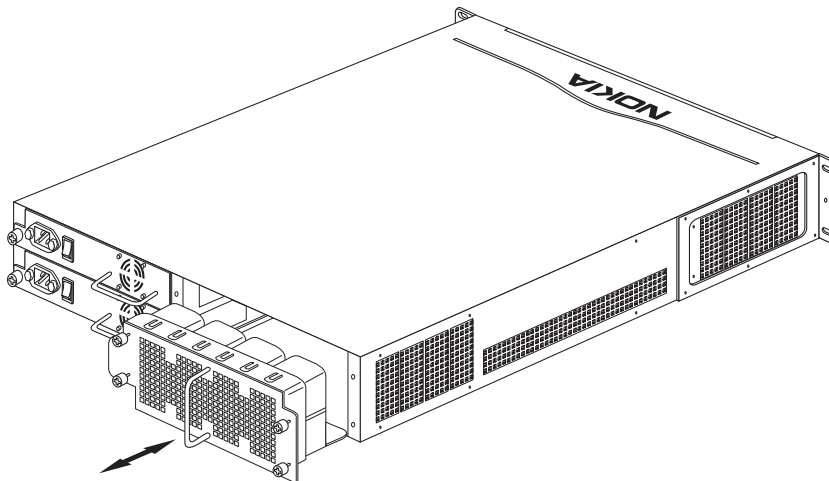


00308a

Fan unit

2. Loosen the retaining screws by turning them counterclockwise.

3. Slowly pull the fan unit out of the chassis toward the rear.



4. If the IP1200 Series is running, immediately install a replacement fan unit by sliding it into the back of the appliance.
5. Tighten the four retaining screws on the new fan unit.

00318.1

Installing or Replacing a Power Supply

The power supplies in the Nokia IP1200 Series Security Platform are hot swappable, and perform load sharing while two active power supplies are connected in parallel. Load sharing increases the life of the power supplies.

Note

On an appliance with two active power supplies installed, both power supplies should be turned on for load sharing and redundancy. If both power supplies are not turned on, the Fault LED illuminates. For more information about the Fault LED, see [“Power Supply Status LEDs”](#) on page 34.

The power supplies are autosensing and can accept input voltages between 85 VAC and 264 VAC. The power supply output is regulated to a tolerance of ± 5 percent of the specified output voltage.

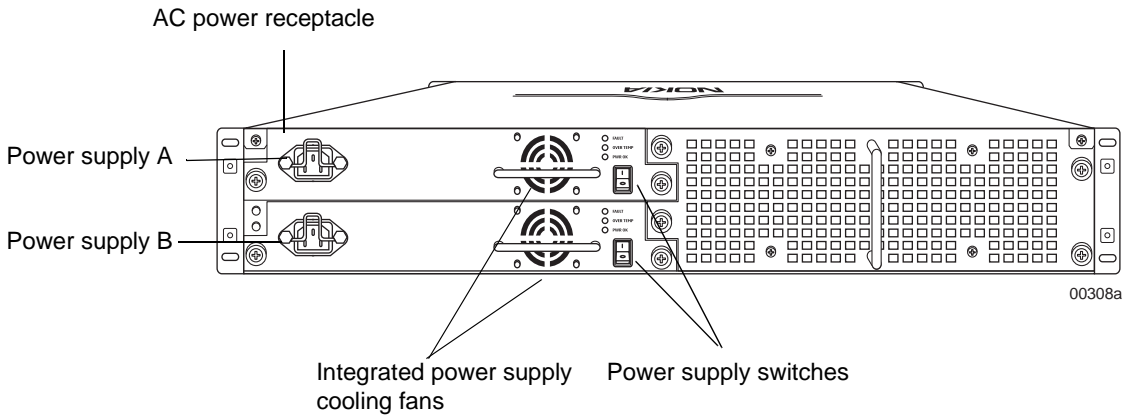
Under certain circumstances, the power supplies feel hot to the touch. This happens when the power supply is connected to AC power, but is not turned on. In this state the 3.3 V standby circuitry is powered on, causing the power supply to heat up. Because the power supply is not turned on, the integrated cooling fan is not operating.

In this situation, the power supply still meets all safety standards. This condition is normal and does not affect the performance of the Nokia IP1200 Series. To cool the power supply down, use the power supply switch to turn on power and activate the integrated cooling fan.



Caution

The Nokia IP1200 Series power supply might be hot to the touch when the power supply unit is plugged in to an AC power source and the power supply is not turned on



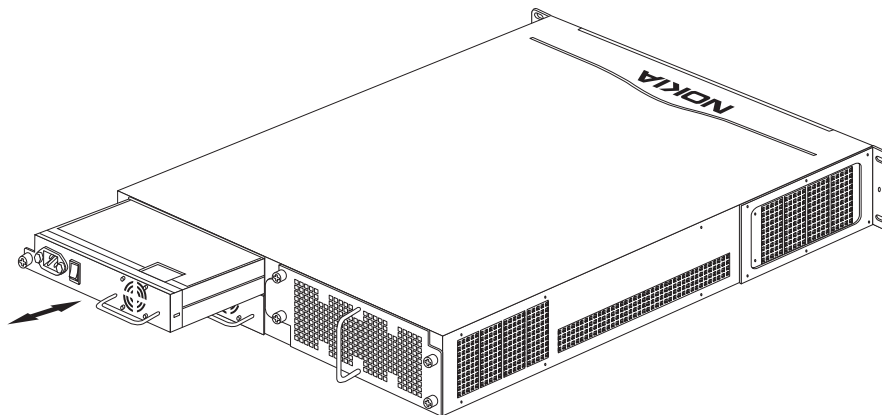
Before You Begin

To replace a power supply, you need:

- Physical access to the IP1200 Series.
- Phillips-head screwdriver.
- Replacement power supply and appropriate documentation.

To replace a power supply

1. Locate the power supply and the two screws that secure it on the back of the IP1200 Series.
2. Turn off the power to the power supply to be removed.
3. Loosen the two retaining screws.
4. Remove the grounding lugs.
5. Use the handles to gently pull the power supply out of the chassis.



00317.1

6. Insert the new power supply into the empty bay.
7. Replace the grounding lugs.
8. Reinstall the two retaining screws.

9. Turn on power to the power supply.

Monitoring the Nokia IP1200 Series Security Platform Power Supply

You can monitor the status of the Nokia IP1200 Series Security Platform power supply with Nokia Network Voyager. Similarly, you can also use the command-line interface (CLI). For information about the CLI, see the CLI Reference Guide.

To monitor the security platform power supply by using Nokia Voyager

1. Log on to the security platform with Voyager.
2. Click Monitor.
3. Click Hardware Monitoring > System Status.

To the right of the Power Supply link, the status indicator is green for normal and red for fault.

4. For more detailed information about the power supply status, click Power Supply.

For more information about Voyager, see the Nokia Voyager Reference Guide or use the Voyager inline help.

A

Technical Specifications

Dimensions

Height:	3.5 in. (8.89 cm)
Width:	17 in. (44 cm) 19 in. (48 cm) rack mountable
Depth:	21 in. (53.34 cm)

Operational Temperature

-5° C to +40° C (23° F to 104° F)
Humidity 5% to 85%

Short Term Operational Temperature (not to exceed 96 consecutive hours)

-5° C to 50° C (23° F to 122° F)
Humidity 5% to 90%

Space Requirements

The Nokia IP1200 Series Security Platform is designed for front-screw mounting in a 19-inch rack. Each IP1200 Series requires the following space in a rack:

- 3.5 inches (8.89 centimeters) of vertical space
- 18 inches (46 centimeters) behind the front-panel of the rack
- 6 inches (15 centimeters) behind the IP1200 Series to allow the back exit fan to move air through the appliances



Caution

Do not block the ventilation holes on the IP1200 Series. The appliance might overheat and become damaged.

B

Compliance Information

This appendix contains the following compliance information:

- [Declaration of Conformity](#)
- [Compliance Statements](#)
- [FCC Notice \(US\)](#)
- [Equipment Attachment Regulations \(Canada\)](#)

Declaration of Conformity

According to ISO/IEC Guide 22 and EN 45014:

Manufacturer's Name:	Nokia Inc.
-----------------------------	------------

Manufacturer's Address:	313 Fairchild Drive Mountain View, CA 94043-2215 USA
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declares that the product:

Product Name:	Nokia IP1200 Series Security Platform
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Model Number:	IP1260, IP1220
----------------------	----------------

Product Options:	All
-------------------------	-----

Serial Number:	1 to 100,000
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Date First Applied:	2003
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conforms to the following standards:

Safety:	EN60950:1992, A1, A2:1993, A3:1995, A4:1997, A11:1998 with Japanese National Deviations
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EMC:	EN55024 1998, EN55022A 1998, EN61000-3-2, EN61000-3-3
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Supplementary Information:

Pursuant to directive 1999/5/EC this product complies with the requirements of the Low Voltage Directive 73/23/EEC and the EMC Directive 89/336/EEC with Amendment 93/68/EEC.

NOKIA

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Compliance Statements

Note

The Nokia IP security platforms are LAN devices that can also use Nokia NICs for wide area or out-of-band network connections. In the latter case this must be done with local country approval for Nokia T1, E1, ISDN, or other NICs. Refer to your reseller or distributor to determine if these NICs are approved for the desired country. Specific NICs might not be available for use in a particular country.

This hardware complies with the standards listed in this section.

Emissions Standards

FCC Part 15 Subpart B Class A	US/Canada
EN55022 (CISPR 22 Class A)	European Community (CE)

Immunity Standards

EN50024:	European Community (CE)
EN61000-4-2	
EN61000-4-3	
EN61000-4-4	
EN61000-4-5	
EN61000-4-6	
EN61000-4-8	
EN61000-4-11	
ENV50204	

Harmonics and Voltage Fluctuation

EN61000-3-2	European Community (CE)
EN61000-3-3	European Community (CE)

Safety Standards

UL60950	US
Can/CSA-C22.2 No. 950	Canada

Telecom

CTR2	V.35/X.21	European Community
CTR3	ISDN	European Community
C92-I020-0	ISDN	Taiwan

FCC Notice (US)

This device has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This device generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this device does cause harmful interference to radio or television reception, 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 computer and receiver.
- Connect the computer into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.



Caution

Any changes or modifications not expressly approved by the grantee of this device could void the user's authority to operate the equipment.

Equipment Attachment Regulations (Canada)

NOTICE: The Industry Canada label identifies certified equipment. This certification means that the equipment meets telecommunications network protective, operational and safety requirements as prescribed in the appropriate Terminal Equipment Technical Requirements document(s). The Department does not guarantee the equipment will operate to the user's satisfaction. Before installing this equipment, users should ensure that it is permissible to be connected to the facilities of the local telecommunications company. The equipment must also be installed using an acceptable method of connection. The customer should be aware that compliance with the above conditions might not prevent degradation of service in some situations. Repairs to certified equipment should be coordinated by a representative designated by the supplier. Any repairs or alterations made by the user to this equipment, or equipment malfunctions, may give the telecommunications company cause to request the user to disconnect the equipment. Users should ensure for their own protection that the electrical ground connections of the power utility, telephone lines and internal metallic water pipe system, if present, are connected together. This precaution may be particularly important in rural areas.



Caution

Users should not attempt to make such connections themselves, but should contact the appropriate electric inspection authority, or an electrician.

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