

Check Point IP390 Security Platform Installation Guide

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About This Guide

This guide describes how to install and use Check Point IP390 security appliances. Installation and maintenance should be performed by experienced technicians or Check Point-approved service providers only.

This preface provides the following information:

- [In this Guide](#)
- [Conventions this Guide Uses](#)

In this Guide

This guide is organized into the following chapters and appendixes:

- [Chapter 1, “Overview”](#) presents a general overview of the IP390 appliance.
- [Chapter 2, “Installing the Check Point IP390 Appliance”](#) describes how to rack-mount the appliance and how to physically connect it to a network and power.
- [Chapter 3, “Performing the Initial Configuration”](#) describes how to make the appliance available on the network.
- [Chapter 4, “About IP390 Appliance Network Interface Cards”](#) describes how to connect to and use each of the supported NICs.
- [Chapter 5, “Installing and Replacing Network Interface Cards”](#) describes how to install, monitor, and replace network interface cards (NICs).
- [Chapter 6, “Installing and Replacing Components Other than Network Interface Cards”](#) describes how to install or replace compact flash memory cards, flash-memory PC cards, RAM memory, and a hard-disk drive.
- [Chapter 7, “Troubleshooting”](#) describes problems you might encounter and proposes solutions to these problems.
- [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 bodily injury might occur because of a physical hazard.



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.

Command-Line Conventions

You might encounter one or more of the following elements on a command-line path.

Table 1 Command-Line Conventions

Convention	Description
command	This required element is usually the product name or other short word that invokes the product or calls the compiler or preprocessor script for a compiled Check Point product. It might appear alone or precede one or more options. You must spell a command exactly as shown and use lowercase letters.
Italics	Indicates a variable in a command that you must supply. For example: <code>delete interface <i>if_name</i></code> Supply an interface name in place of the variable. For example: <code>delete interface nic1</code>
angle brackets < >	Indicates arguments for which you must supply a value: <code>retry-limit <1-100></code> Supply a value. For example: <code>retry-limit 60</code>

Table 1 Command-Line Conventions

Convention	Description
Square brackets []	Indicates optional arguments. <code>delete [slot slot_num]</code> For example: <code>delete slot 3</code>
-flag	A flag is usually an abbreviation for a function, menu, or option name, or for a compiler or preprocessor argument. You must enter a flag exactly as shown, including the preceding hyphen.
.ext	A filename extension, such as .ext, might follow a variable that represents a filename. Type this extension exactly as shown, immediately after the name of the file. The extension might be optional in certain products.
(.,;+*- /)	Punctuation and mathematical notations are literal symbols that you must enter exactly as shown.
''	Single quotation marks are literal symbols that you must enter as shown.

Text Conventions

[Table 2](#) describes the text conventions this guide uses.

Table 2 Text Conventions

Convention	Description
<code>monospace font</code>	Indicates command syntax, or represents computer or screen output, for example: <code>Log error 12453</code>
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.

Table 2 Text Conventions

Convention	Description
The words enter and type	Enter indicates 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>	• 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: <code>delete interface <i>if_name</i></code>

1

Overview

The Check Point IP390 appliance combines the power of Check Point IPSO software with your choice of firewall and VPN applications. These appliances are ideally suited for growing companies and satellite offices that want high-performance IP routing combined with the industry-leading Check Point VPN-1 enterprise applications. The small size of the IP390 appliance makes it ideal for installations that need to conserve space.

As network devices, these appliances support a comprehensive suite of IP-routing functions and protocols, including RIPv1/RIPv2, IGRP, OSPF and BGP4 for unicast traffic, and DVMRP for multicast traffic.

This chapter provides an overview of the IP390 appliance and the requirements for using it. The following topics are covered:

- [About the Check Point IP390 Appliance](#)
- [Managing the IP390 Appliance](#)
- [Site Requirements, Warnings, and Cautions](#)
- [Software Requirements](#)
- [Product Disposal](#)

About the Check Point IP390 Appliance

The IP390 is a one rack-unit disk-based or flash-based appliance that incorporates a serviceable slide-out tray into the chassis design and support for various network interface cards (NICs).

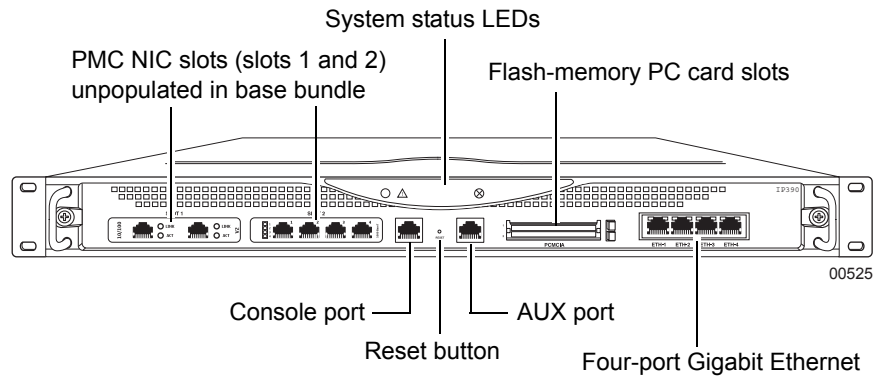
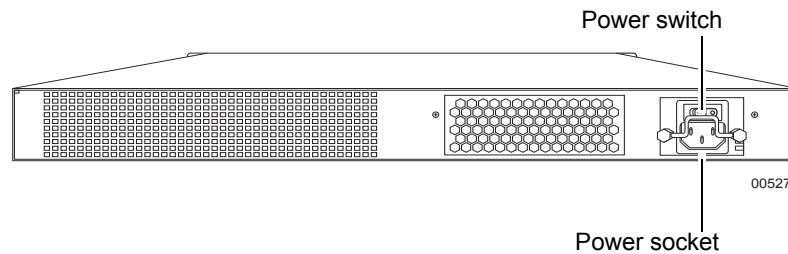
The Check Point IPSO system is stored in solid-state IDE compact flash memory.

[Table 3](#) shows the specifications for the IP390 appliance

Table 3 Specifications for the IP390 Platform

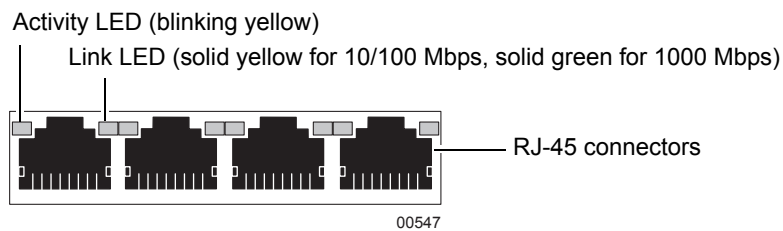
Feature	Check Point IP390
Maximum memory size	2 GB
Network interface cards (NICs) support	• Two or fewer four-port 10/100 Ethernet NICs • Two or fewer two-port copper Gigabit Ethernet NICs • Two or fewer two-port fiber-optic Gigabit Ethernet NICs

The following figures show component locations for the Check Point IP390 appliance.

Figure 1 Component Locations Front View**Figure 2 Component Locations Rear View**

Built-In Gigabit Ethernet Ports

The four built-in Gigabit Ethernet ports are located on the front of the appliance. [Figure 3](#) shows the layout of the built-in Gigabit Ethernet ports and status LEDs.

Figure 3 Built-In Gigabit Ethernet Ports Details

Caution

Cables that connect to the Gigabit Ethernet ports must be IEEE 802.3 compliant to prevent potential data loss.

Note

Check Point recommends the use of shielded twisted-pair cables and connectors for best Electromagnetic Interference and Immunity performance.

PMC Expansion Slots

The IP390 appliance provides two additional PMC network interface card (NIC) slots, as described in [Table 4](#).

Table 4 PMC Network Interface Card Slots

Interface	For details, see...
Four-port copper 10/100 Ethernet	“Four-Port 10/100 Mbps Ethernet Network Interface Card” on page 35
Two-port copper Gigabit Ethernet (10/100/1000 Mbps)	“Two-Port Copper Gigabit Ethernet Network Interface Card” on page 38
Two-port fiber-optic Gigabit Ethernet	“Two-Port Fiber-Optic Gigabit Ethernet Network Interface Card” on page 40
Four-port T1	“Four-Port T1 Network Interface Card” on page 43

Note

Check Point products only support NICs purchased from Check Point or Check Point-approved resellers. Check Point support services can provide support only for Check Point products that use Check Point-approved accessories. For sales or reseller information, see the Check Point Web site at www.checkpoint.com.

Note

System Status LEDs

You can monitor the basic operation of the IP390 appliance and NICs by checking their status LEDs. The system status LEDs are located on the front panel of the appliance, as [Figure 4](#) shows.

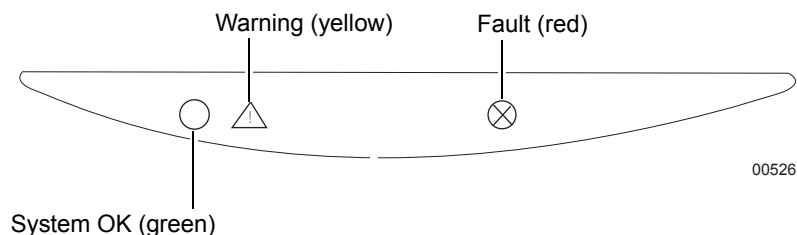
Figure 4 Appliance Status LEDs

Table 5 shows the system status LEDs and describes their meaning.

Table 5 System Status LEDs

Status Indicator	Meaning	Symbol
Solid yellow	Appliance is experiencing an internal voltage problem.	
Blinking yellow	Appliance is experiencing a temperature problem.	
Solid red	One or more fans are not operating properly. Power supply over temperature fault.	
Blinking green	System activity indicator	

The location and meaning of the status LEDs for NICs are described in [Chapter 4, “About IP390 Appliance Network Interface Cards.”](#)

- For information on the built-in Gigabit Ethernet interface LEDs, see [“Built-In Gigabit Ethernet Ports”](#) on page 16.
- For information on the four-port Ethernet NIC LEDs, see [“Four-Port 10/100 Mbps Ethernet Network Interface Card”](#) on page 35.

Managing the IP390 Appliance

You can manage the IP390 appliance by using one of the following interfaces:

- **Check Point Network Voyager for IP appliances**—an SSL-secured, Web-based element management interface to Check Point IP security platforms. Check Point Network Voyager is preinstalled on the IP2450 security platform and enabled through the Check Point IPSO operating system. With Check Point Network Voyager, you can manage, monitor, and configure the IP2450 security platform from any authorized location within the network by using a standard Web browser. Use one of the four Ethernet management ports to access the Check Point Network Voyager interface.

For information about how to access Check Point Network Voyager and the related reference materials, see “[Using Check Point Network Voyager](#)” on page 31.

- **The Check Point IPSO command-line interface (CLI)**—an SSHv2-secured interface that enables you to easily configure Check Point IP security platforms from the command line. Everything that you can accomplish with Check Point Network Voyager—manage, monitor, and configure the IP2450 security platform—you can also do with the CLI.

For information about how to access the CLI, see the *CLI Reference Guide* for the version of Check Point IPSO you are using.

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

For information about how to obtain Check Point Horizon Manager, see the Check Point Web site at www.checkpoint.com.

Site Requirements, Warnings, and Cautions

Before you install a Check Point IP390 appliance, ensure that your computer room or wiring closet conforms to the environmental specifications listed in [Chapter A, “Technical Specifications.”](#)



Warning

Excessive electromagnetic interference (EMI) 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.



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.

**Warning**

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

**Caution**

For IP390 appliances intended for shipment outside of the United States, the cord might be optional. If a cord is not provided, use a power cord rated at 6A, 250V, maximum 15 feet long, made of HAR cordage and IEC fittings approved by the country of end use.

Software Requirements

The Check Point IP390 appliance supports the following operating system and applications:

- Check Point operating system software requirements—Check Point IPSO v4.1 or later
- Check Point VPN-1 versions compatible with the version of Check Point IPSO you are using

For information about updates to the software requirements or additional applications that have become available since this guide was published, see the Check Point Support Center at <http://support.checkpoint.com/>.

Product Disposal



This symbol on the product or on its packaging indicates that this product must not be disposed of with your other household waste. Instead, it is your responsibility to dispose of your waste equipment by handing it over to a designated collection point for the recycling of waste electrical and electronic equipment. The separate collection and recycling of your waste equipment at the time of disposal will help to conserve natural resources and ensure that it is recycled in a manner that protects human health and the environment. For more information about where you can drop off your waste equipment for recycling, please contact your local city office or your household waste disposal service.

2

Installing the Check Point IP390 Appliance

This chapter describes how to install the Check Point IP390 appliance. The following topics are covered:

- [Before You Begin](#)
- [Rack Mounting the Appliance](#)
- [Connecting Power](#)
- [Connecting to the Console or Auxiliary Port](#)
- [Connecting to Network Interfaces](#)

Before You Begin

To rack-mount the appliance, you need:

- Phillips-head screwdriver
- Grounding wrist strap
- Suitable, grounded work surface on which to place the chassis tray assembly



Caution

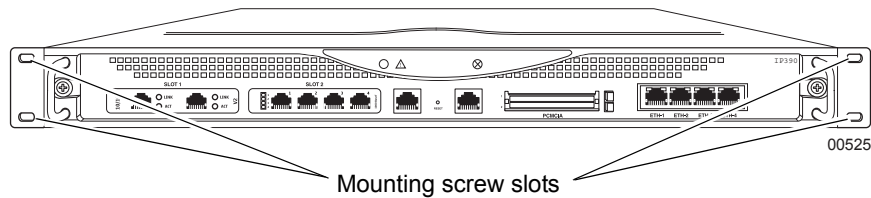
To help guard against electrostatic discharge damage, make sure you are properly grounded by using a grounding wrist strap and following the instructions provided with the wrist strap before you handle the components or open the appliance.

Rack Mounting the Appliance

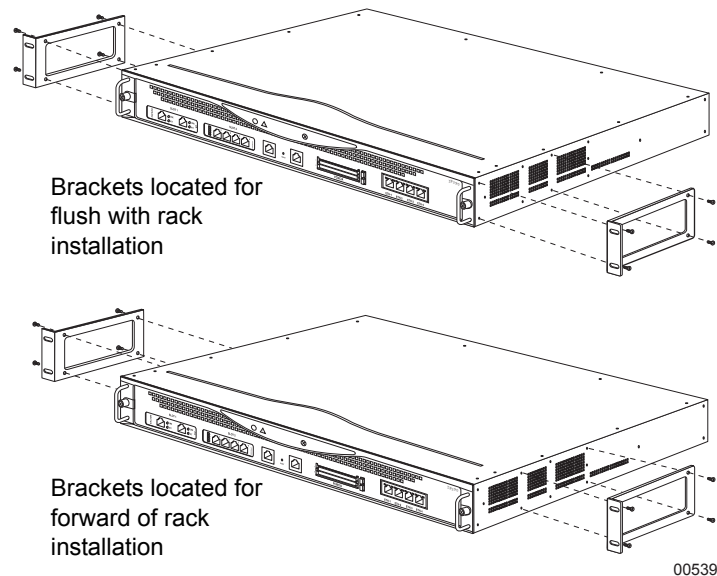
The IP390 appliance mounts in a standard 19-inch rack with four mounting screws as [Figure 5](#) shows.

Note

To avoid damaging your equipment, Check Point recommends that you use all four rack-mounting screws when you install your appliance on the rack.

Figure 5 Mounting Screws Location

Two mounting positions are available allowing you to mount the unit either flush with the rack, or two inches forward of the rack.

Figure 6 Adjustable Mounting Brackets**Caution**

Blocking ventilation openings during installation may result in damage to the appliance.

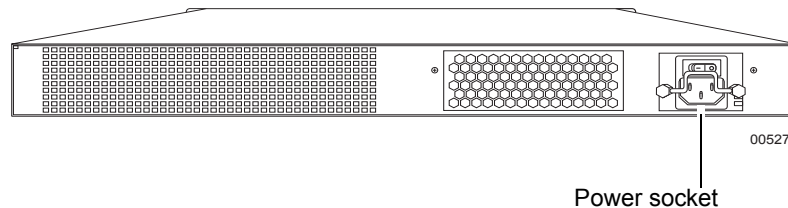
Connecting Power

The power plug and power switch for the IP390 appliance is located on the back of the appliance, as [Figure 7](#) shows.

Note

The IP390 appliance power supply automatically detects the input voltage (115VAC/60Hz [90 to 132] or 220VAC/50Hz [180 to 264]) and configures itself appropriately.

Figure 7 Back Panel Power Switch and Socket

**To connect to the power supply**

1. Connect the power cord securely into the power socket on the back of the appliance.
2. Plug the other end of the cord into a three-wire grounded power strip or wall outlet.

Connecting to the Console or Auxiliary Port

If you do not use DHCP to perform the initial configuration of your Check Point IP390 appliance, you must use a serial console connection (RJ-45 null-modem cable included). For information about using DHCP for initial configurations, see [Chapter 3, “Performing the Initial Configuration.”](#)

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

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

Use the following configuration settings for the console:

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

To connect to the console with a null-modem cable

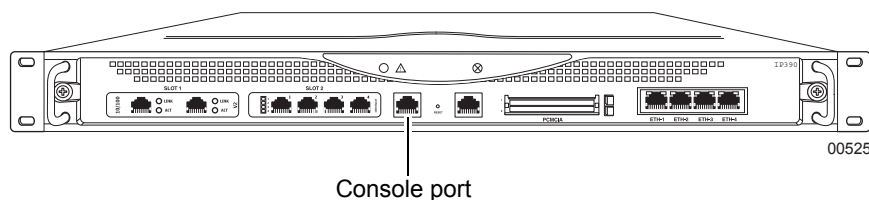
1. Connect the supplied null-modem console cable to the console port on the front panel of the IP390.

Note

The supplied console cable is Cisco compatible.

Use only the RJ-45 port labeled Console on the front panel; the serial (AUX) port is an auxiliary modem port.

One RJ-45 termination has a retractable shroud that releases or secures the RJ-45 tab. Use this end of the cable when connecting to the console port of the IP390.



For cable pin assignments for the console connection, see “[Console Port](#)” on page 25.

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

The cable that Check Point provides with IP390 appliances includes a latching mechanism used to secure the cable to the console port or auxiliary port of your appliance.

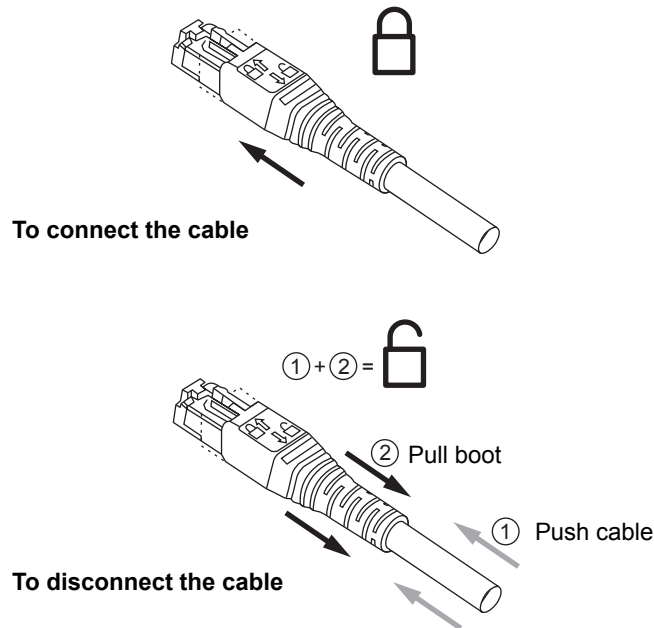
Note

To use the cable for modem connections from the auxiliary port, you need to order a modem cable kit. For information about contacting Check Point to order the kit, see the Check Point Web site at <http://www.checkpoint.com/>.

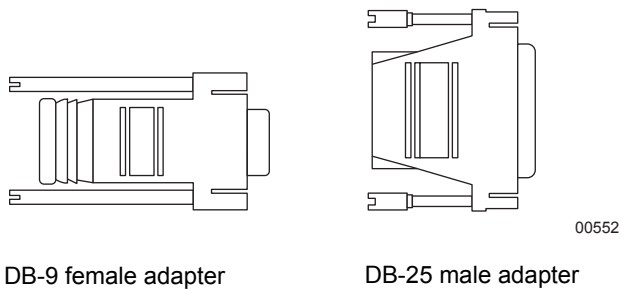
Note

The cable described in this section is a rollover cable, which is required for IP390 console and auxiliary port connections. You cannot use standard Ethernet cables for IP390 console and auxiliary connections.

To connect the cable, push the connector into the receptacle, as you would with other similar cables. To disconnect the cable, push the cable toward the appliance, pull back on the boot to release the latch, and pull the connector out of the receptacle.



You can connect the other end of the cable to a DB-9 console connection (using the appliance console port and the DB-9 female adaptor) or to a DB-25 modem connection (using the appliance auxiliary port and the DB-25 male adaptor). The DB-9 adaptor is provided with the cable. The DB-25 adaptor is provided with Check Point modem cable kits for the IP390.



Console Port

Use the built-in console port, shown in [Figure 6](#), to supply information that makes the appliance available on the network at speeds up to 9600 bps. The default configuration of the serial ports are: 9600 baud, 8 bits, no parity, and 1 stop. [Table 6](#) provides pin assignment information for console connections. If you need to access the devices locally, you must use the console port.

Table 6 Pin Assignments Console Connector and Cable

Console Port (DTE)	RJ-45 to RJ-45 Rollover Cable		RJ-45 to DB-9 Terminal Adapter	Remote Device
Signal	RJ-45 Pin	RJ-45 Pin	DB-9 Pin	Signal
RTS	1	8	8	CTS
DTR	2	7	6	DSR
TxD	3	6	2	RxD
GND	4	5	5	GND
GND	5	4	5	GND
RxD	6	3	3	TxD
DSR	7	2	4	DTR
CTS	8	1	7	RTS

The console cable provided with the IP390 is comprised of two parts:

- 6-foot rollover cable with RJ-45 terminations
- RJ-45 to DB-9 adapter

On the opposite end of the console cable, connect the RJ-45 to the DB-9 adapter, which you can then connect to the host terminal.

Auxiliary 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. The default configuration of the serial ports are: 9600 baud, 8 bits, no parity, and 1 stop. bit. [Table 7](#) provides pin assignment information for modem connections.

Table 7 Pin Assignments for AUX Connector and Modem Cable

Auxiliary Port (DTE)	RJ-45 to RJ-45 Rollover Cable		RJ-45 to DB-25 Modem Adapter	Modem
Signal	RJ-45 Pin	RJ-45 Pin	DB-25 Pin	Signal
RTS	1	8	4	RTS
DTR	2	7	20	DTR
TxD	3	6	3	TxD
GND	4	5	7	GND

Auxiliary Port (DTE)	RJ-45 to RJ-45 Rollover Cable		RJ-45 to DB-25 Modem Adapter	Modem
GND	5	4	7	GND
RxD	6	3	2	RxD
DSR	7	2	8	DCD
CTS	8	1	5	CTS

Connecting to Network Interfaces

Connect at least one network interface to use as the Check Point Network Voyager system management interface. This interface is configured during the system startup procedure, as described in [Chapter 3, “Performing the Initial Configuration.”](#)

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

To connect Ethernet devices

- Use a straight-through RJ-45 cable to connect to a 10-Mbps or 100-Mbps hub.
- Use a crossover RJ-45 cable to connect directly to a host.

For details, see [“Ethernet NIC Connectors and Cables”](#) on page 36.

To connect copper Gigabit Ethernet devices

- Use a straight-through or crossover RJ-45 cable to connect to a 10-Mbps, 100-Mbps, or 1000-Mbps hub or directly to a host.

Note

All Check Point copper Gigabit Ethernet NICs support cable auto-sensing. You can use a straight-through or crossover cable to connect the NIC to a Gigabit Ethernet hub or switch, or to connect directly to a host.

For details, see [“Copper Gigabit Ethernet Connectors and Cables”](#) on page 39.

To connect fiber-optic Gigabit Ethernet devices

- Use a multi-mode, fiber-optic cable with an LC connector to connect to a 10-Mbps, 100-Mbps, or 1000-Mbps hub or directly to a host. 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 receiver port.

For details, see [“Fiber-Optic Gigabit Ethernet NIC Connectors and Cables”](#) on page 42.

After you connect the network interfaces, continue with [Chapter 3, “Performing the Initial Configuration.”](#)

3 Performing the Initial Configuration

The first time you turn power on to a Check Point IP390 appliance, 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.

- You can configure a DHCP server to provide the initial configuration information the first time the appliance is started.
- You can 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](#)
- [Using Check Point Network Voyager](#)
- [Using the Command-Line Interface](#)
- [Using Check Point Horizon Manager](#)

For information about how to use the DHCP client for initial configuration, see the *Read Me First* document.

Using a Console Connection

If you have not already done so, you need to connect to the console port to complete the initial configuration. For information about console connections, see [“Connecting to the Console or Auxiliary Port”](#) on page 23.

Before you perform the initial configuration, you might gather the following information, which can be useful during the configuration process:

- What is the hostname?
- What is the admin password?
- Will you use Check Point Network Voyager for subsequent configuration?
- Which interface will you use?
- What is the assigned IP address and mask length?
- What is the default router?
- What is the interface speed?

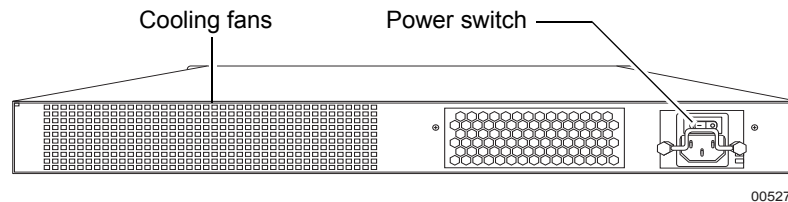
Note

The default interface speed for the IP390 is 1000 Mbps.

You can make VLAN, SNMP community string, and remote logging configuration choices at this time, although you can change them later.

To perform the initial configuration

1. Press the power switch to the “on” position to turn on power to the appliance.



The fans on the back of the appliance turn on when you press the power switch. Verify that the fans are running after you press the switch.

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

- Check the power supply cord to make sure it is properly connected.
- Make sure the power switch is on.
- Make sure the chassis tray assembly is pushed all the way in from the front of the appliance and that the front panel retaining screws are tightened.
- Make sure that power is turned on to the power strip or wall receptacle you plugged the appliance in to.

If the fans are still not running, contact your Check Point service provider or Check Point Support Center at <http://support.checkpoint.com/>.

2. At the console a series of startup messages appears, then the console prompt appears.

The prompt remains on the screen for about five seconds. If you type any character during this time, the appliance activates the Check Point IPSO boot manager.

```
BOOTMGR[0]>
```

Note

For information about using the boot manager, see the *IPSO Boot Manager Reference Guide*.

After some miscellaneous output, 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 Check Point service provider or Check Point Support Center at <http://support.checkpoint.com/>.

3. 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 appliance.
- b. Log into the system using the user name `admin` and the password `password`.
- c. Enter the following:

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

4. At each subsequent prompt, type the requested configuration information and then press Enter.

For more information about how to respond to the prompts during the initial configuration process, see the *Getting Started Guide and Release Notes* for the version of Check Point IPSO you are using.

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

Using Check Point Network Voyager

Use Check Point Network Voyager to configure and monitor your appliance.

To open Check Point Network Voyager

1. Open 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.

Note

If the username login screen does not open, you might not have a physical network connection between the host and your appliance, or you might have a network routing

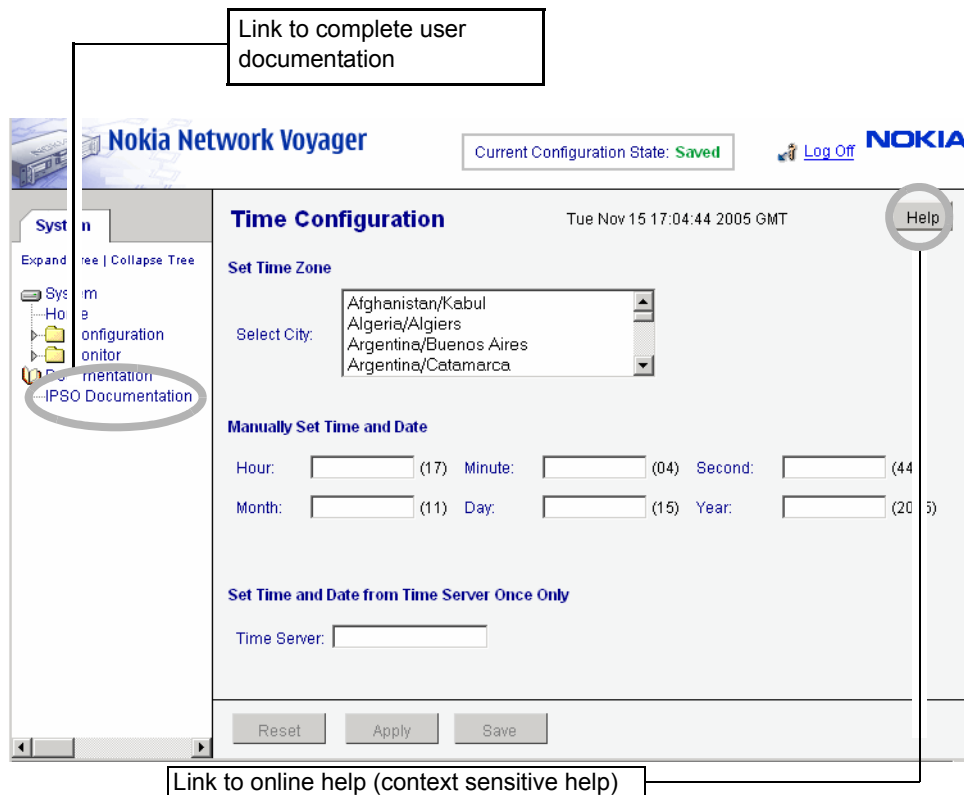
problem. Confirm the information you entered during the initial configuration and check that all cables are firmly connected. For more information, see the troubleshooting section in the installation guide for your appliance.

Viewing Check Point IPSO Documentation by Using Check Point Network Voyager

The following documentation is available from the Check Point Network Voyager interface, as shown in [Figure 8](#):

- **Network Voyager Reference Guide**—This guide is the comprehensive reference source for Check Point Network Voyager. To access this source, look at the list in the navigation tree on the left side of the window (as shown in [Figure 8](#)). You can also access this guide and other Check Point IPSO documentation at the Check Point Support Center at <http://support.checkpoint.com/>.
- **Network Voyager online help**—You can access online help when you use Check Point Network Voyager. Online help is the context-sensitive information source for Check Point Network Voyager. To access online help for the window you are viewing, click Help. A Close button is available at the bottom of each online help window you view.

Figure 8 Check Point Network Voyager Reference Access Points



Using the Command-Line Interface

You can also use the Check Point IPSO command-line interface (CLI) to manage and configure Check Point IP security appliances from the command line. Nearly everything that you can accomplish with Check Point Network Voyager you can also do with the CLI.

To access the command-line interface

1. Log on to the appliance by using a command-line connection (SSH, console, or Telnet) over a TCP/IP network as an admin, cadmin, or monitor user:
 - If you log in as a cadmin (cluster administrator) user, you can change and view configuration settings on all the cluster nodes. For information about how to administer a cluster, see the traffic management commands section in the *CLI Reference Guide* for the version of Check Point IPSO you are using.
2. If you log in as a monitor user, you can execute only the show form of commands. That is, you can view configuration settings, but you cannot change them.

You can now execute CLI commands from the CLI shell and the Check Point IPSO shell. The Check Point IPSO shell is what you see when you initially log on to the appliance.

Execute from	To Implement	Purpose
Check Point IPSO command line	Enter the following command to invoke the CLI shell: clish The prompt changes, and you can then enter CLI commands.	Enter any CLI commands in an interactive mode with help text and other helpful CLI features.
Check Point IPSO command line	Enter clish -c "cli-command"	Execute a single CLI command. You must place double-quotation marks around the CLI command.
Command files	From inside the CLI shell, enter load commands filename	Load commands from a text file that contains commands. The argument must be the name of a regular file.

For more information about how to access and use the CLI, see the *CLI Reference Guide* for the version of Check Point IPSO you are using.

Using Check Point Horizon Manager

Check Point Horizon Manager is an extension of the Check Point Network Voyager management functionality.

While Check Point Network Voyager provides the device administrator access to network configuration tasks (such as interface configuration and routing configuration) and security configuration tasks (such as user configuration and access configuration), Check Point Horizon

Manager concentrates on secure software image, inventory, and platform management of Check Point IP security platforms.

Using Check Point Horizon Manager, an administrator can obtain configuration information, upgrade (or downgrade) the operating system, perform application installations, and distribute necessary licensing to multiple platforms simultaneously, thereby reducing potential human error and improving productivity.

Using Check Point Horizon Manager, a network security professional can manage multiple devices simultaneously, perform parallel software upgrades, device verifications, device configuration, file backups, and more.

Check Point Horizon Manager is designed to manage and configure a large number of Check Point IP security appliances that reside on a corporate enterprise, managed service provider (MSP), or hosted applications service provider network (ASP).

For information about how to obtain Check Point Horizon Manager or to learn more about the Check Point Horizon Manager, see the Check Point Web site at www.checkpoint.com.

4

About IP390 Appliance Network Interface Cards

This chapter describes the PMC network interface cards (NICs) available for the IP390 appliance and describes how to connect those NICs to your network. The following NICs are covered:

- [Four-Port 10/100 Mbps Ethernet Network Interface Card](#)
- [Two-Port Copper Gigabit Ethernet Network Interface Card](#)
- [Two-Port Fiber-Optic Gigabit Ethernet Network Interface Card](#)
- [Four-Port T1 Network Interface Card](#)

For instructions on adding or replacing NICs, see [Chapter 5, “Installing and Replacing Network Interface Cards.”](#)



Caution

Protect your IP390 appliance and other electronic equipment from electrostatic discharge (ESD) damage by making sure you are properly grounded before you touch any electronic component.

Four-Port 10/100 Mbps Ethernet Network Interface Card

The IP390 appliance supports Check Point-approved, four-port UTP5 dual-mode 10-Mbps and 100-Mbps Ethernet NICs.

When you purchase an Ethernet NIC with your IP390 appliance, the NIC is installed before the appliance is delivered to you. For information on how to add or replace a NIC later, see [Chapter 5, “Installing and Replacing Network Interface Cards.”](#)

Ethernet NIC Features

The Ethernet PMC NIC supports the following features:

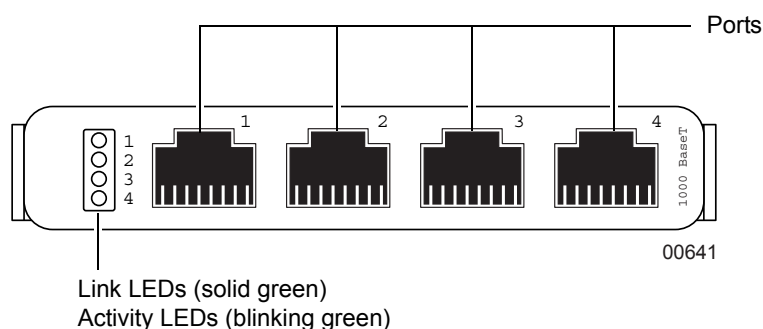
- Supports traffic at 10 and 100 Mbps
- Packet tracing for analysis through tcpdump

- Compliance with IEEE 802.3 Ethernet specification

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

The following figure shows Ethernet NIC front panel and LED details.

Figure 9 Four-Port Ethernet NIC Front Panel Details



After the power is turned on, the Ethernet link LEDs on the appliance and on the remote equipment illuminate to indicate the connection. As data is transmitted, the activity LEDs on the appliance light up.

Ethernet NIC Connectors and Cables

The connectors on the Ethernet NIC are RJ-45 connectors:

- To connect to a hub, use a straight-through RJ-45 cable.
- To connect directly to a host, use an RJ-45 crossover cable.

For further details about cables that you should use, see [“NIC Interfaces”](#) on page 84.



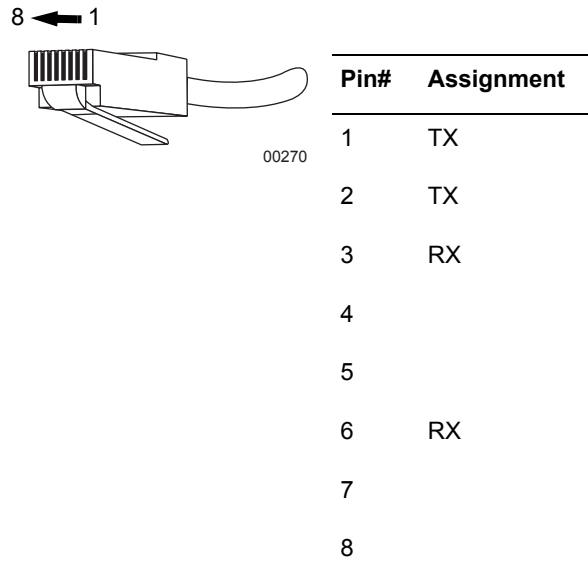
Caution

Cables that connect to the Ethernet NIC must be IEEE 802.3 compliant to prevent potential data loss.

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

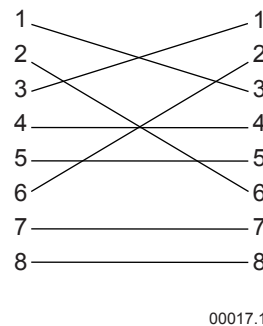
The following figure shows the pin assignments for the cable. The RJ-45 cable output connector is numbered from right to left, with the copper tabs facing up and toward you.

Figure 10 Ethernet Cable Connector Pin Assignments

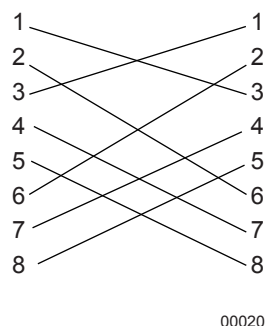


The following figure shows the pin assignments for the RJ-45 cross-over cable.

Figure 11 Ethernet Crossover-Cable Pin Connections



You can also use cables intended for Gigabit Ethernet NIC connections for your Ethernet NIC connections, as shown in [Figure 12](#).

Figure 12 Gigabit Ethernet Crossover Cable Pin Connections

Two-Port Copper Gigabit Ethernet Network Interface Card

All NICs installed in an IP390 are installed into slots on the appliance. Gigabit Ethernet NICs can occupy any of the slots or subslots in an appliance that other NICs do not occupy.

Note

Copper Gigabit Ethernet NICs you use in IP390 appliances need to be the Version 2 type, as indicated on the right end of the NIC faceplate. These NICs are sold by Check Point under the order code NIF4425.

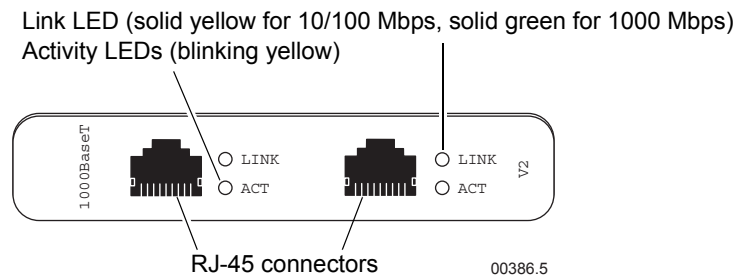
Copper Gigabit Ethernet NIC Features

The copper Gigabit Ethernet NIC supports the following features:

- Supports traffic at 10, 100, and 1000 Mbps
- High bandwidth
- Half-duplex mode operation up to 100 Mbps
- Packet tracing for analysis through tcpdump
- Compliance with IEEE 802.3ab Gigabit Ethernet specification

The following figure shows the front panel details for the two-port copper Gigabit Ethernet NIC you use in the Check Point IP390 appliance.

Figure 13 Two-Port Copper Gigabit Ethernet NIC



Copper Gigabit Ethernet Connectors and Cables

The copper Gigabit Ethernet NIC receptacles use RJ-45 connectors.

- To connect to a hub, use a straight-through RJ-45 cable.
- To connect directly to a host, use an RJ-45 crossover cable.

For further details about cables that you should use, see [“NIC Interfaces”](#) on page 84.



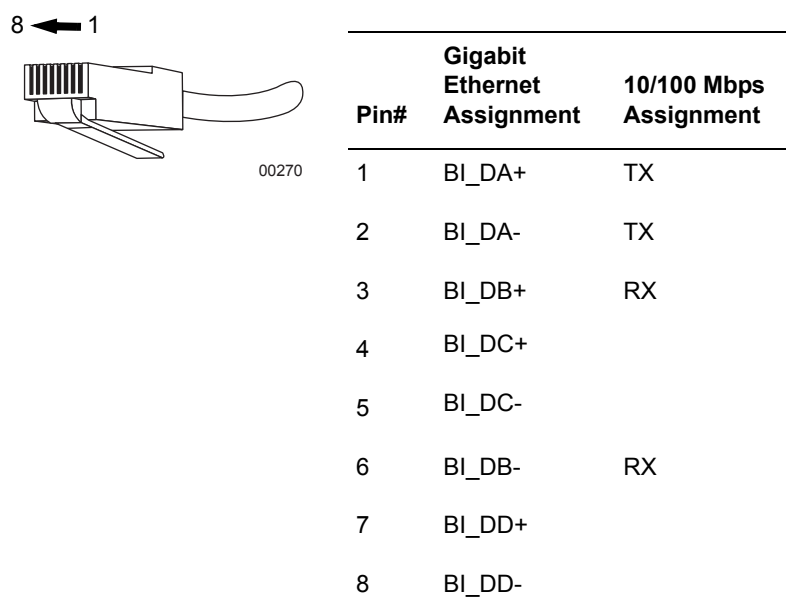
Caution

Cables that connect to the Gigabit Ethernet NIC must be IEEE 802.3 compliant to prevent potential data loss.

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

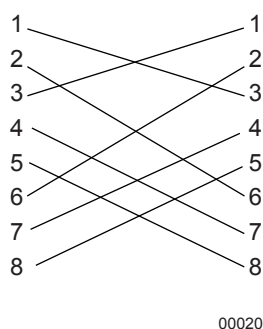
In the following figure, the RJ-45 cable output connector is numbered from right to left, with the copper pins facing up and toward you.

Figure 14 Copper Gigabit Ethernet Cable Connector Pin Assignments



To connect directly to a host, use an RJ-45 crossover cable wired as the following figure shows.

Figure 15 Gigabit Ethernet Crossover Cable Pin Connections



To connect the IP390 appliance to other network components, you can order appropriate adapter cables separately from a cable vendor of your choice.

Two-Port Fiber-Optic Gigabit Ethernet Network Interface Card

All NICs installed in an IP390 are installed into slots on the appliance. Gigabit Ethernet NICs can occupy any of the slots or subslots in an appliance that other NICs do not occupy.

Fiber-Optic Gigabit Ethernet NIC Features

The short-range and long-range fiber-optic Gigabit Ethernet NICs support:

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

The short-range multi-mode fiber (MMF) fiber-optic Gigabit Ethernet NICs in the IP390 run on Check Point IPSO v4.0.1 or higher.

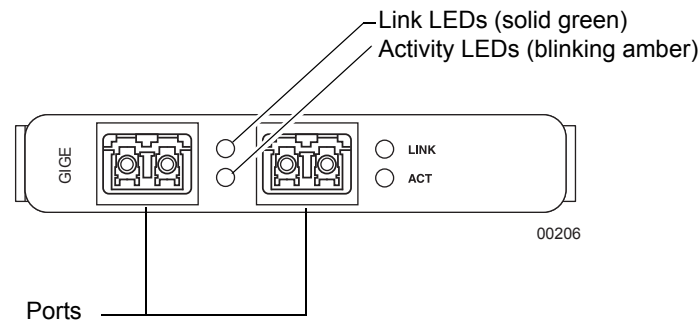
The long-range single-mode fiber (SMF) fiber-optic Gigabit Ethernet NICs in the IP390 run on Check Point IPSO v4.2 or higher.

You can configure and monitor Gigabit Ethernet NIC interfaces with Check Point 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 [Chapter 3, “Performing the Initial Configuration.”](#)

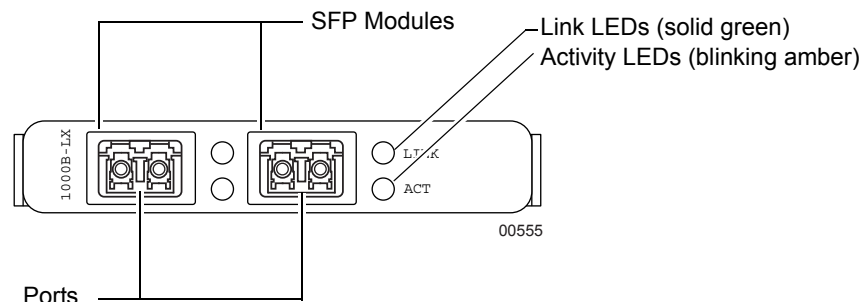
The following figure shows the front panel details for the two-port short-range (1000 Base-SX) fiber-optic Gigabit Ethernet NIC you can use in IP390 appliance.

Figure 16 PMC Two-Port Short-Range Gigabit Ethernet NIC



The following figure shows the front panel details for the two-port long-range (1000 Base-LX) fiber-optic Gigabit Ethernet NIC you can use in your IP390.

Figure 17 PMC Two-Port Long-Range Gigabit Ethernet NIC



After the power is turned on and the cables are connected, the Ethernet link LEDs on both the IP390 and on the remote equipment illuminate to indicate the connection. As data is transmitted, the activity LEDs on the appliance illuminate.

Fiber-Optic Gigabit Ethernet NIC Connectors and Cables

For short-range NICs, to connect the fiber-optic Gigabit Ethernet NIC to other network components, use a multi-mode, fiber-optic cable with an LC connector for each NIC interface. You can use either 50 or 62.5 micron cable; 50 micron-type cable provides longer transmission reach.

For long-range NICs, to connect the fiber-optic Gigabit Ethernet NIC to other network components, use a single-mode, 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 receiver port. LC and SC define the fiber-optic connector types; LC connectors are smaller than SC connectors.



Caution

Depending on the product you order, one or more LC-to-SC cables are included with fiber-optic Gigabit Ethernet NICs. You can order additional cables from a cable vendor of your choice. Cables that connect to the Gigabit Ethernet NIC must be IEEE 802.3z compliant to prevent potential data loss.

Fiber-Optic Gigabit Ethernet NIC SFP Modules

If for any reason you need to remove or install a long-range or short-range SFP module, be sure that it is fully inserted before you put the NIC into service to ensure proper operation.

Four-Port T1 Network Interface Card

All NICs installed in an IP390 are installed into slots on the appliance. T1 NICs can occupy any of the slots or subslots in an appliance that other NICs do not occupy.

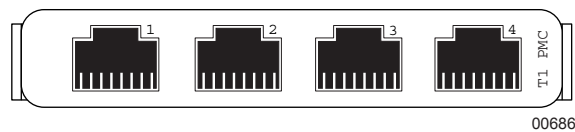
T1 NIC Features

This four-port T1 network interface card (NIC) with integrated CSU/DSU occupies a single PMC slot in Check Point IP390 appliances. CSU/DSU, or Channel Service Unit/Data Service Unit, is a digital-interface you use to connect your IP390 to a T1 circuit.

T1 circuits are commonly used for Enterprise branch office WAN connectivity deployments. The Check Point T1 NIC provides up to 1.5 Mbps of throughput and is deployed in the United States.

The following figure shows T1 NIC front panel details.

Figure 18 Four-port T1 NIC front-panel details



T1 Connectors and Cables

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

Note

Cable types C, S, and X will all work properly with your Check Point T1 NICs.

Note

If you use an RJ-45 cable with your T1 NIC by mistake, it will not work, but no damage to your appliance or NIC will occur.

To connect the NIC to another CSU/DSU, use an RJ-48 crossover cable wired as shown in [Figure 20](#) on page 44.

Check Point recommends the use of shielded twisted pair cables and connectors for best Electromagnetic Interference and Immunity performance.



Warning

To reduce the risk of fire, use only No. 26 AWG or larger telecommunication line cord with the T1/E1 cards.

Note

Your T1 cable might not include straight-through wiring for pins 3, 6, 7, and 8. It will, however, work properly with your Check Point T1 NICs.

5

Installing and Replacing Network Interface Cards

Your IP390 appliance comes with any network interface cards (NICs) you ordered already installed. This chapter describes how to remove, add, or replace NICs later if it becomes necessary.

The following topics are covered:

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

For detailed information on specific NICs, see [Chapter 4, “About IP390 Appliance Network Interface Cards.”](#)



Caution

You should have a working knowledge of networking equipment before attempting to service an IP390 appliance. Limit service of the unit to the procedures described in this chapter.



Caution

Protect your IP390 appliance and other electronic equipment from electrostatic discharge (ESD) by making sure you are properly grounded before touching any electronic components.

Deactivating Configured Interfaces

If you are removing or replacing an installed NIC, use Check Point Network Voyager to deactivate any configured ports on the NIC before removing it.

- Deactivate all of the logical interfaces on the NIC.
- Deactivate all of the physical interfaces on the NIC.

If you do not deactivate the interfaces before removing the NIC, you may have to reinstall the NIC to deactivate its logical and physical interfaces in Network Voyager.

For information about how to access Network Voyager, see [“Using Check Point Network Voyager”](#) on page 31.

Removing, Installing, and Replacing NICs

Note

Before removing a configured NIC with these instructions, you must deactivate the NIC in Network Voyager. For additional information, see [“Deactivating Configured Interfaces”](#) on page 47.

Use these instructions to remove, install, or replace a NIC in the IP390 appliance. Some steps are not applicable to all procedures. The instructions point out steps appropriate to each procedure.

Before You Start

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

- A Phillips-head screwdriver
- Physical access to the appliance
- Access to the appliance by using Check Point Network Voyager or the CLI
- Suitable, grounded work surface
- Network interface card kit

To remove, install, or replace a NIC

Note

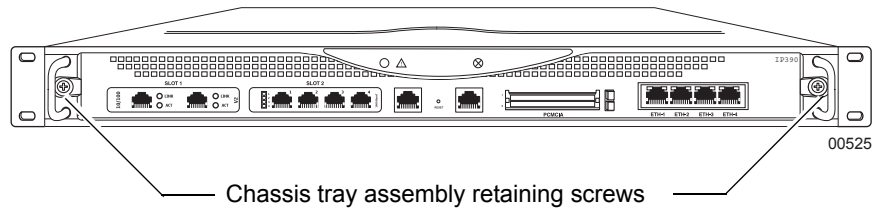
Because power to the IP390 appliance is automatically disconnected when the chassis tray assembly is opened, you do not need to manually disconnect the power for this procedure. Any servicing of the unit, however, should be completed with the chassis tray assembly fully removed from the appliance. Power is still active in the chassis body and care should be taken when working on the power supply or power supply wiring without disconnecting the power cord.

1. Use Network Voyager or the CLI to halt the appliance.

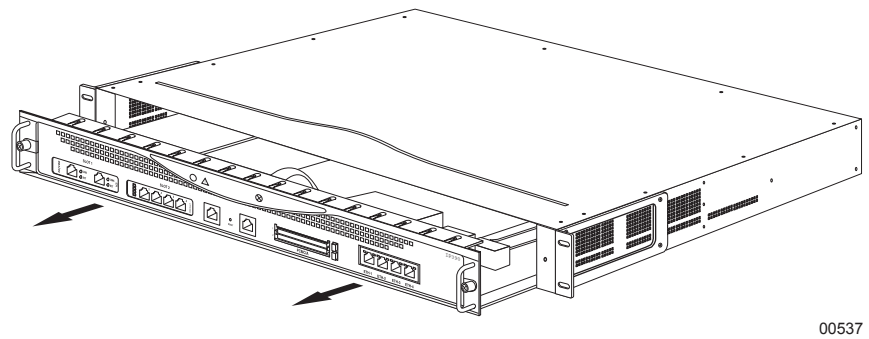
To use Network Voyager to shut the appliance down, select
System > Configuration > Reboot or Shutdown > Halt.

To use the CLI to shut the appliance down, enter halt at the prompt.

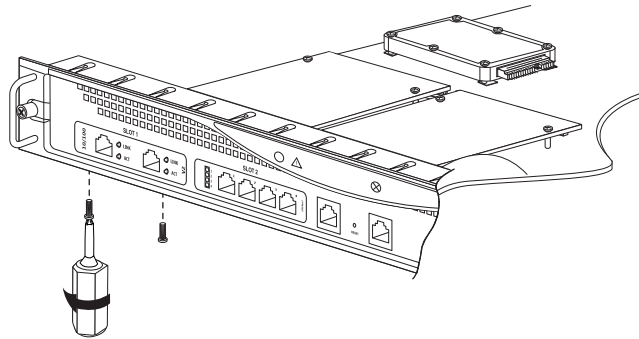
2. Use your fingers or a screwdriver to loosen the retaining screws that hold the chassis tray assembly.



3. Gently pull the chassis tray assembly forward to expose the NIC connectors. Remove the tray completely to avoid damaging components.

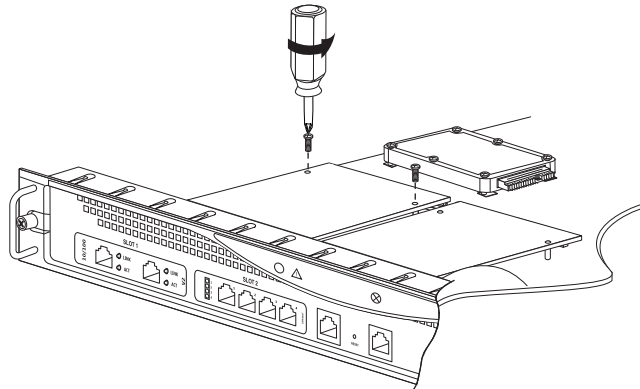


4. From underneath the chassis tray assembly, remove the bezel retaining screws.



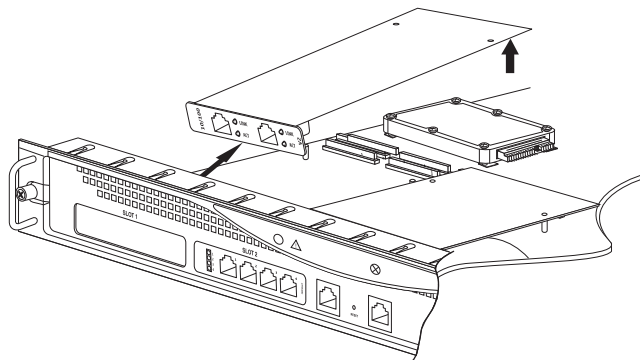
If you are installing a NIC in an unoccupied slot, remove the blank bezel that occupies the space in the appliance front panel, retain it for future use, and proceed to [step 7](#).

5. From above the chassis tray assembly, remove the NIC retaining screws from the back of the NIC.



00530

6. Remove the NIC by lifting the back of the NIC (as close as possible to the connector locations) away from the chassis tray assembly and pulling the NIC gently away from the front panel.



00533a

7. Insert the new NIC or blank bezel.
 - If you are removing a NIC without installing another NIC:
 - a. Insert a blank bezel into the front panel slot formerly occupied by the NIC and push it gently into place.

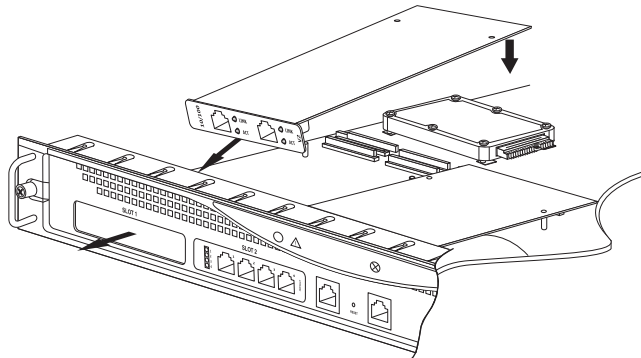
Make sure that the bezel is completely seated into the front panel and that the screw holes on the bottom of the bezel align with those in the front panel.

Note

To reduce electromagnetic interference (EMI), a blank bezel needs to be installed in the place of any NIC you have removed.

- b. Proceed to [step 9](#).

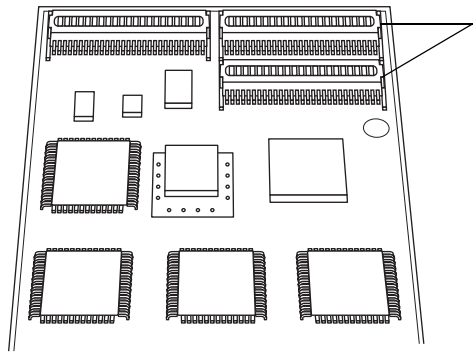
- If you are installing or replacing a NIC, insert the NIC.
- a. Insert the NIC bezel into the front panel.



00532a

- b. Gently push the back of the NIC (as close as possible to the connector locations) down toward the chassis tray assembly.

For T1 NICs, note that only two connectors on the NIC are used for the interface, as the following figure shows.

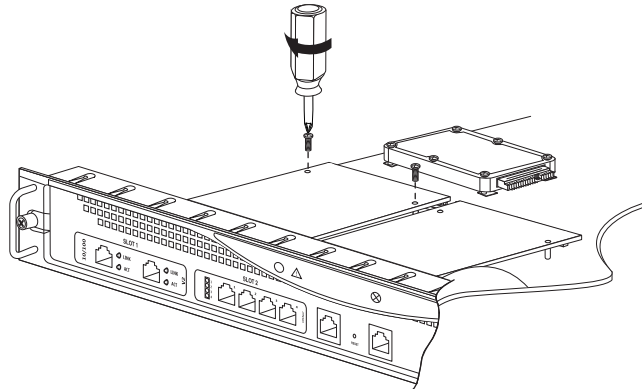


As shown on the bottom of the T1 NIC, only these two NIC connectors are used for the interface

00689

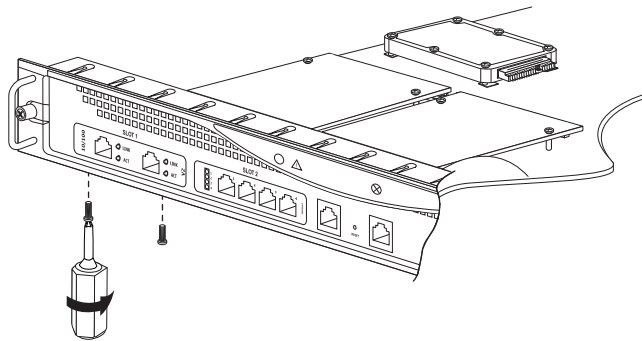
Make sure that the NIC edge is completely seated into the connectors on the chassis tray assembly.

8. From the top of the chassis tray assembly, screw the NIC retaining screws into the standoffs on the back of the NIC.



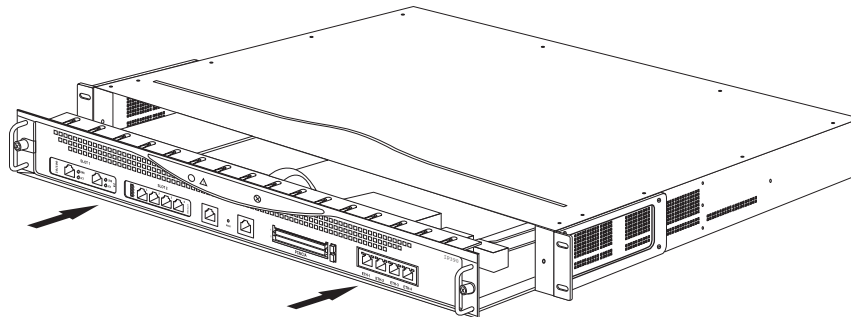
00531

9. From beneath the chassis tray assembly, screw in the bezel retaining screws.



00528

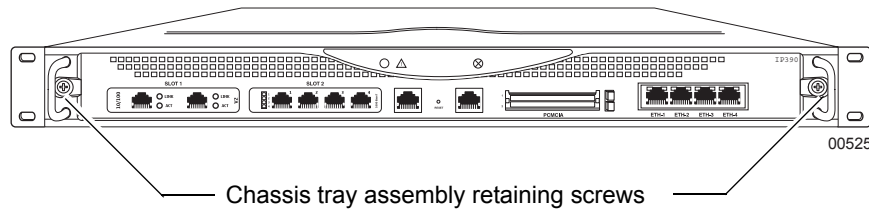
10. Gently slide the chassis tray assembly back into the appliance until it clicks into place.



00538

The appliance automatically restarts when the chassis tray assembly clicks into place.

11. Tighten the retaining screws that hold the chassis tray assembly.



Configuring and Activating Interfaces

The IP390 appliance automatically detects any new NIC when the appliance is restarted. Use Network Voyager to configure and activate the logical and physical interfaces on the NIC.

For information about how to access Network Voyager and the related reference materials, see [“Using Check Point Network Voyager”](#) on page 31.

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 the NICs. The status indicators for each NIC are explained in the NIC reference chapter.

For status indicator information for the built-in Gigabit Ethernet ports, see [“Built-In Gigabit Ethernet Ports”](#) on page 16.

For status indicator information for the four-port Ethernet NIC, see [“Four-Port 10/100 Mbps Ethernet Network Interface Card”](#) on page 35.

For status indicator information for the two-port copper Gigabit Ethernet NIC, see [“Two-Port Copper Gigabit Ethernet Network Interface Card”](#) on page 38.

For status indicator information for the two-port fiber-optic Gigabit Ethernet NIC, see [“Two-Port Fiber-Optic Gigabit Ethernet Network Interface Card”](#) on page 40.

For status indicator information for the four-port T1 NIC, see [“Four-Port T1 Network Interface Card”](#) on page 43.

Use Network Voyager to access detailed port information. For information about accessing Network Voyager, see [“Using Check Point Network Voyager”](#) on page 31. You can also use the Check Point IPSO `tcpdump` command to examine the traffic on a specific port.

6

Installing and Replacing Components Other than Network Interface Cards

This chapter provides information on how to install or replace user serviceable items other than network interface cards (NICs) in your IP390 appliance. The following topics are covered:

- [Replacing the Compact Flash Memory Card](#)
- [Installing a Flash-Memory PC Card](#)
- [Installing or Replacing a Hard-Disk Drive](#)
- [Replacing or Upgrading Memory](#)
- [Replacing the Battery](#)

For instructions on adding or replacing interface cards, see [Chapter 5, “Installing and Replacing Network Interface Cards”](#).



Caution

You should have a working knowledge of networking equipment before attempting to service an IP390 appliance. Limit service of the appliance to the procedures described in this chapter.



Caution

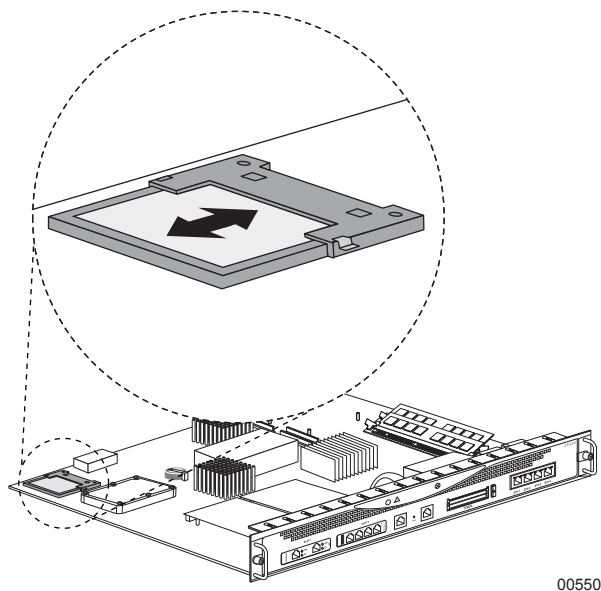
Protect your IP390 appliance and other electronic equipment from electrostatic discharge (ESD) damage by making sure you are properly grounded before you touch any component.

Replacing the Compact Flash Memory Card

In flash-based IP390 appliances, the compact flash memory card stores the Check Point IPSO operating system, Check Point application, and boot manager. In disk-based IP390 appliances, the compact flash memory card stores only the boot manager, and the Check Point IPSO operating system and Check Point application are stored on the hard-disk drive. Use the internal compact flash to boot the system and install the Check Point IPSO operating system on the disk. The compact flash memory card is located on the motherboard in a slot behind the hard-disk drive location.

Figure 21 shows the location of the compact flash memory card.

Figure 21 Compact Flash Memory Card Slot



Caution

To protect the appliance and the compact flash memory card 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.

You must perform an orderly shutdown of the appliance and turn the power off whenever you remove the chassis tray assembly to service internal components.

Note

Because power to an IP390 appliance is automatically disconnected when the chassis tray assembly is opened, you do not need to manually disconnect the power for this procedure. Any servicing of the unit, however, should be completed with the chassis tray assembly fully removed from the appliance. Power is still active in the chassis body and care should be taken when working on the power supply or power supply wiring without disconnecting the power cord.



Caution

You risk damage to the appliance or loss of data if you do not use the following procedure when you replace the compact flash memory card.

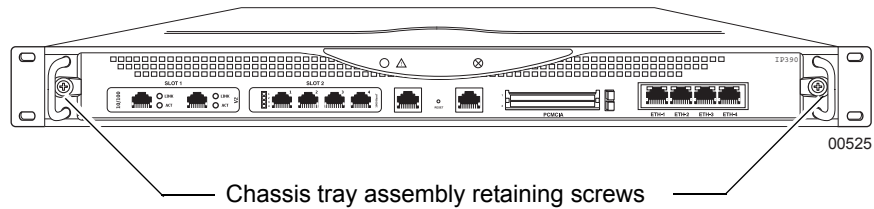
To replace compact flash memory card in your appliance

1. Use Check Point Network Voyager or the CLI to halt the appliance.

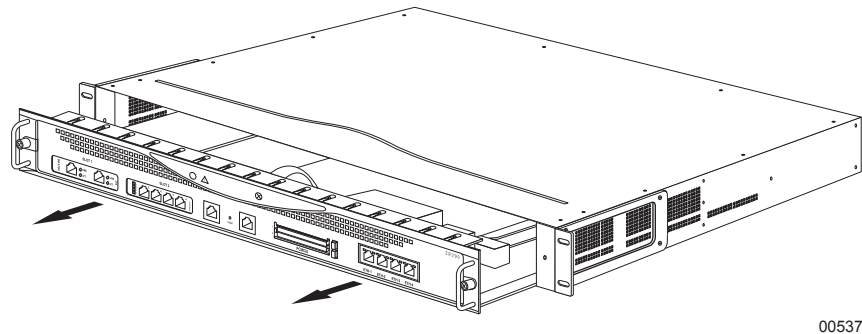
To use Network Voyager to shut the appliance down, select
System > Configuration > Reboot or Shutdown > Halt.

To use the CLI to shut the appliance down, enter halt at the prompt.

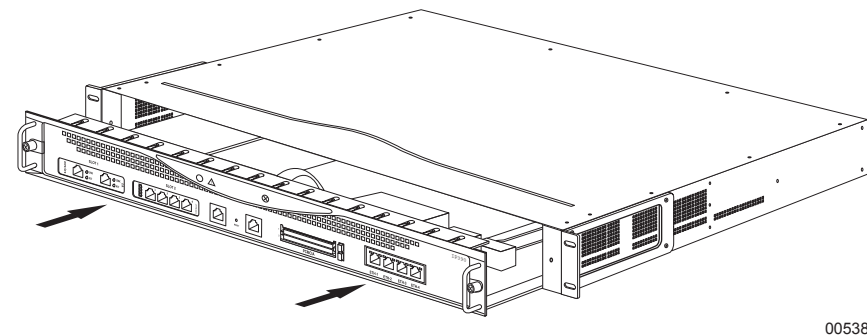
2. Loosen the two front panel retaining screws.



3. Gently slide the chassis tray assembly forward and completely remove the assembly to expose the motherboard components.



4. Place the chassis tray assembly on a table top.
5. Locate and remove the existing compact flash memory card from the slot by holding the edges of the card and gently sliding it out of the slot.
6. Gently insert the new compact flash memory card into the slot.
7. Gently slide the chassis tray assembly back into the appliance until it clicks into place.



The appliance automatically restarts when the chassis tray assembly clicks into place.

8. Resecure the two chassis tray assembly retaining screws.
9. Turn on the power supply at the back of the appliance.

Installing a Flash-Memory PC Card

You can use the flash-memory PC card to store local system logs, Check Point IPSO images, and configuration files. The IP390 appliance has two PCMCIA slots that can support a flash-memory PC card having a capacity of 1 GB or higher.

Before You Begin

To install a flash-memory PC card, you need:

- Physical access to the appliance
- Access to the appliance by using Check Point Network Voyager or the command-line interface (CLI)
- Compact flash-memory PC card and accompanying documentation



Caution

To avoid potential equipment malfunction, Check Point recommends that you obtain flash-memory PC cards only from Check Point or authorized resellers. For further information, see the Check Point Web site at <http://www.checkpoint.com>.



Caution

You risk damage to the appliance or loss of data if you do not use the following procedure when you replace the flash-memory PC card.

Note

The flash-memory PC card comes formatted from the factory.

To install the flash-memory PC card

1. Insert the flash-memory PC card into PC-card slot 1 or slot 2.
2. Press gently on the card until it is firmly seated in the slot.

The eject button to the left of the slot should be flush with the card.

The card is automatically detected by your appliance, and you are notified through your console connection.

Transferring Files with the Flash-Memory PC Card

You can copy configuration files between the internal compact flash memory and the flash-memory PC card. If you do not use Check Point Network Voyager to configure the flash-memory PC card as an optional disk, you must mount the flash-memory PC card when you insert it in the PC-card slot, and you must unmount the flash-memory PC card before you remove it. You do not need to reboot or shut down the system if you manually mount and unmount the flash-memory PC card.

To transfer Check Point IPSO images or configuration files to the flash-memory PC card:

1. Insert the flash-memory PC card into the IP390 appliance.
2. Connect to the IP390 appliance by using a console or terminal connection.
3. Mount the flash-memory PC card by using the following command if you do not have a hard-disk drive installed in your appliance:

```
mount /dev/wd1 /cdrom
```

Or, if you do have a hard-disk drive installed in your appliance:

```
mount /dev/wd2 /cdrom
```

The /cdrom directory is a default directory in Check Point IPSO for mounting media.

4. Use the cp command to transfer Check Point IPSO images or configuration files to and from the flash-memory PC card.

For example, to copy the current Check Point IPSO image from the compact flash memory to the flash-memory PC card, use the following command:

```
cp /image/current/ipso.tgz /cdrom/
```

5. Use the following command to unmount the flash-memory PC card before you eject it:

```
umount /cdrom
```

6. To remove the card, slowly push the eject button located to the left of the card.

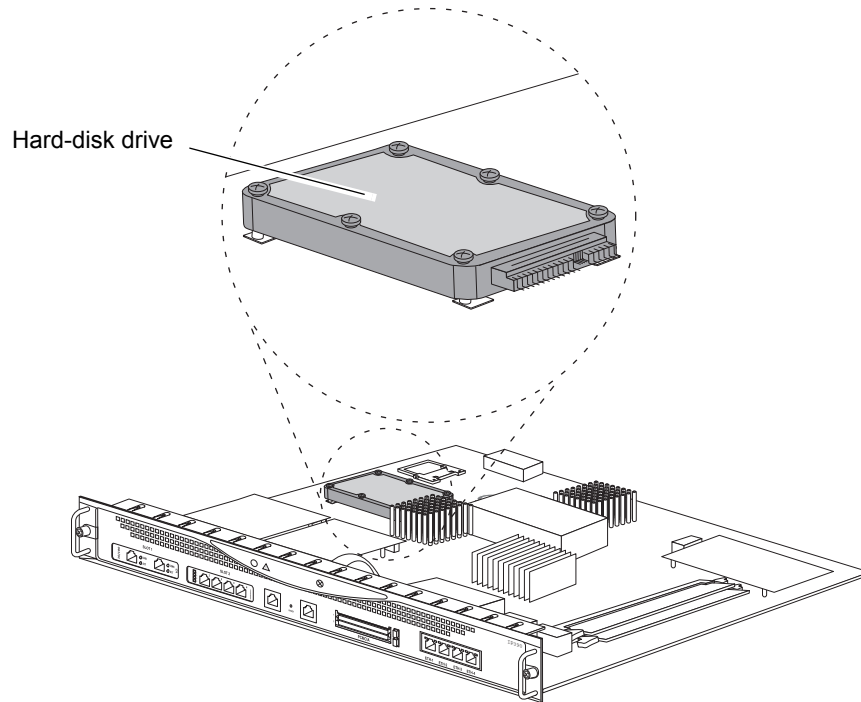
Hold the flash-memory PC card while you push the eject button to prevent the card from ejecting too quickly.

Installing or Replacing a Hard-Disk Drive

You can add a single hard-disk drive to your flash-based IP390 appliance. The following figure shows the location of the hard-disk drive on the motherboard.

Note

Back up your files to a remote system on a regular basis. For back up and restore procedures, see the *Network Voyager Reference Guide* for the version of Check Point IPSO you are using.

Figure 22 Hard-Disk Drive Location

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Before You Start

To install or replace the hard-disk drive in your appliance, you need the following:

- Physical access to the appliance
- A Check Point-approved hard-disk drive
- Access to the appliance through Network Voyager
- A Phillips-head screwdriver
- A torque screwdriver capable of a 69.4ozf*in (5kgf*cm) setting

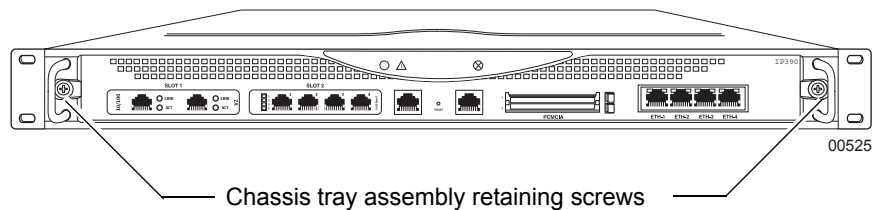
To install or replace a hard-disk drive

1. Use Network Voyager or the CLI to halt the appliance.

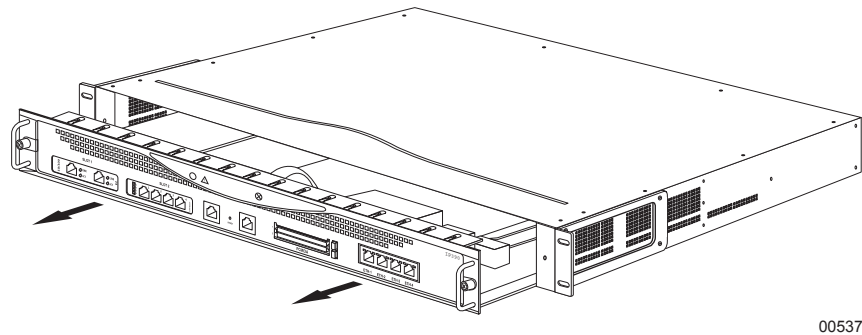
To use Network Voyager to shut the appliance down, select
System > Configuration > Reboot or Shutdown > Halt.

To use the CLI to do this, enter halt at the prompt.

2. Loosen the retaining screws that hold the chassis tray assembly.

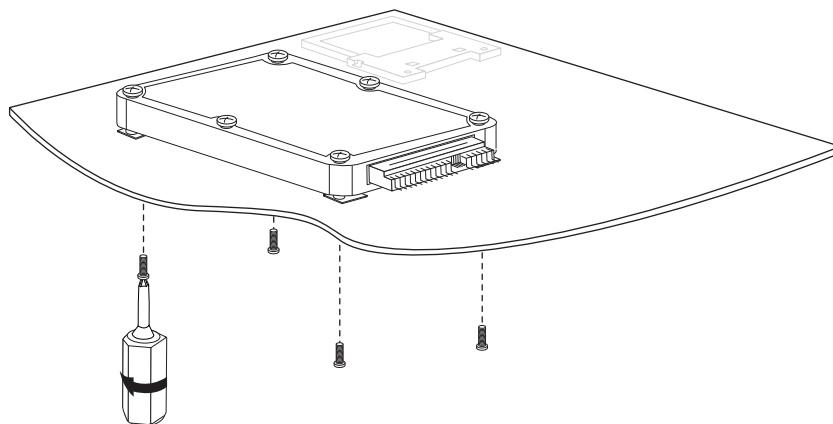


3. Gently slide the chassis tray assembly forward to remove the tray from the appliance so you can access the hard-disk drive retaining screws from the bottom of the tray.

**Note**

Because power to an IP390 appliance is automatically disconnected when the chassis tray assembly is opened, you do not need to manually disconnect the power for this procedure. Any servicing of the unit, however, should be completed with the chassis tray assembly fully removed from the appliance. Power is still active in the chassis body and care should be taken when working on the power supply or power supply wiring without disconnecting the power cord.

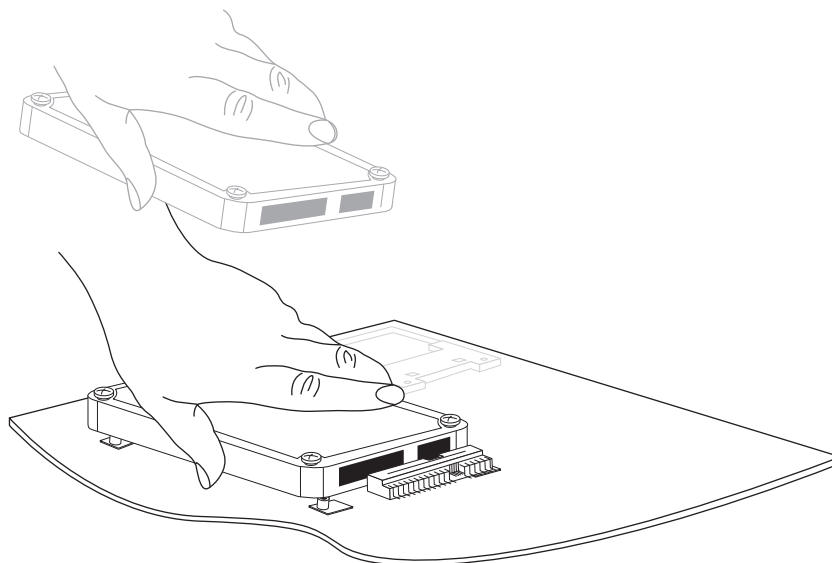
4. If you are replacing a hard-disk drive, remove the retaining screws that hold the hard-disk drive unit from the bottom of the chassis tray assembly.



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Gently remove the hard-disk drive from the motherboard, taking care not to damage the connector.

5. Insert the hard-disk drive unit.

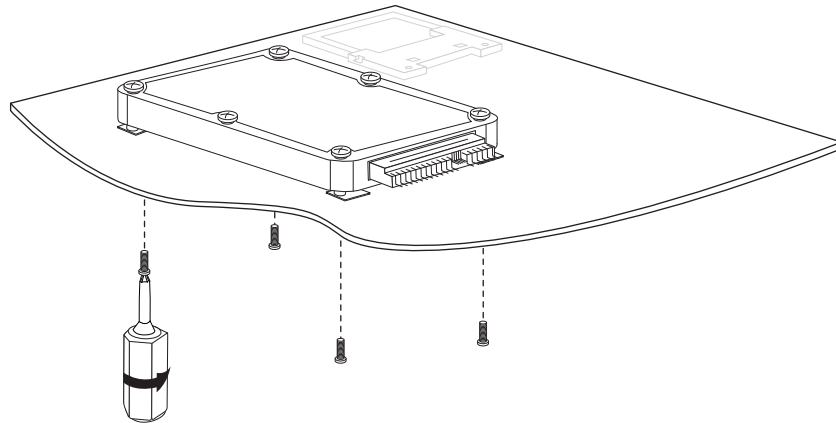


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Note

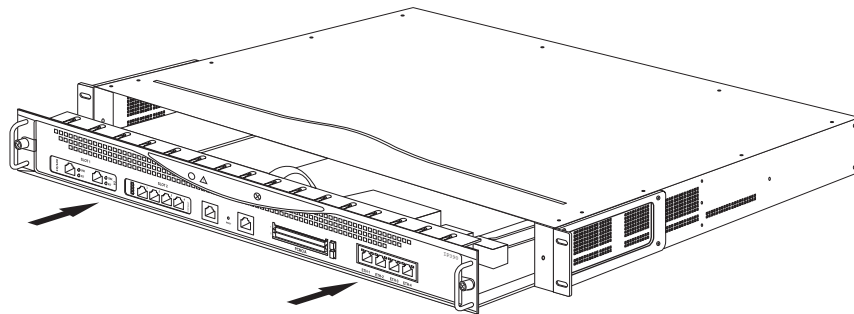
Push the hard-disk drive gently into place. Take care to align the connectors correctly as the connectors are not keyed.

6. Tighten the retaining screws that holds the hard-disk drive into place.



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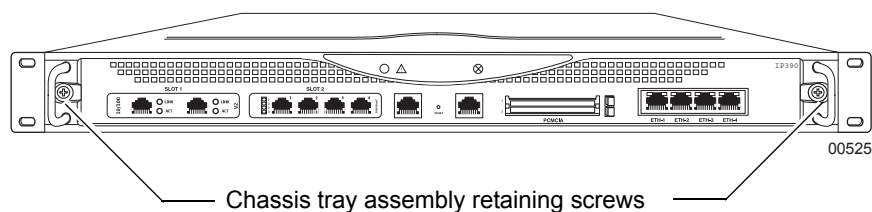
7. Gently slide the chassis tray assembly back into the appliance until it clicks into place.



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The appliance automatically restarts when the chassis tray assembly clicks into place.

8. Tighten the retaining screws that hold the chassis tray assembly.



00525

Chassis tray assembly retaining screws

Configuring a Hard-Disk Drive for Logging

On the flash-based IP390, you can save log files locally by installing and configuring an optional hard-disk drive. The *Network Voyager Reference Guide* and the *CLI Reference Guide* contain instructions for configuring a Check Point appliance to store Check Point IPSO log messages on the disk. This section explains how to configure an optional disk and configure it to store Check Point log messages on an IP390.

To install and configure an optional disk in an IP390

1. If necessary, install the optional disk in the appliance as described in [“Installing or Replacing a Hard-Disk Drive”](#) on page 59.
2. Restart the appliance if appropriate.
3. Start Check Point Network Voyager.
4. Navigate to the Optional Disk configuration page.
Network Voyager displays information about the device you installed.
5. Select the device in the Choose column.
6. Click Apply.
7. Wait until you see a message indicating that you should reboot the appliance.
There is a short delay (possibly a few minutes) before the message appears. The delay is longer with devices of larger capacity.
8. When the message appears, click Reboot, Shutdown System.
9. Reboot the appliance.
10. When the appliance has rebooted, log into it and start Check Point Network Voyager.
11. Navigate to the System Logging configuration page.
12. Select the option Logging to Optional Disk.
The other options on this page do not apply to Check Point logging.
13. Click Apply.
14. Click Save.

Note

The appliance can use only one local logging device at a time.

For more information about storing Check Point IPSO system logs, see the *Network Voyager Reference Guide* or the *CLI Reference Guide* for the version of Check Point IPSO you are using.

For more information about storing Check Point application log messages, see *Important Information: Storing Check Point Log Messages on Flash-Based Platforms*.

Replacing or Upgrading Memory

The IP390 appliances have two dual inline memory-module (DIMM) sockets. This section explains how to upgrade or replace the memory in your appliance by using a Check Point-approved memory upgrade kit.

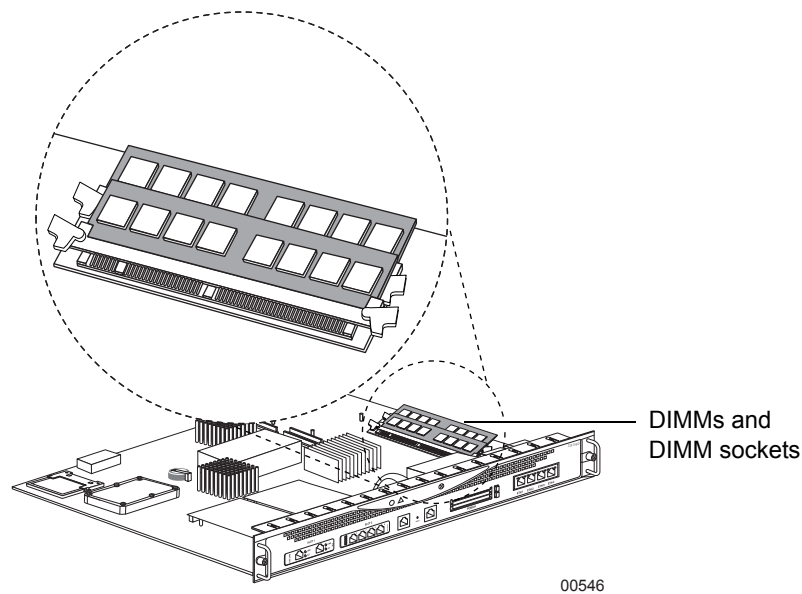
The IP390 comes with different memory configurations. Contact Check Point customer support for more information on the supported memory configurations.

Note

Check Point recommends that you obtain memory kits only from Check Point or authorized resellers. For further information, see the Check Point Web site at <http://www.checkpoint.com>.

The DIMM sockets are located at the right of the motherboard, as you look at the appliance from the front, as [Figure 23](#) shows.

Figure 23 DIMM Socket Locations



Before You Start

To upgrade or replace the memory in your appliance, you need the following:

- Physical access to the appliance
- Check Point memory upgrade kit and accompanying documentation
- Network or console access to the appliance



Caution

To protect the IP390 appliance and the memory modules from electrostatic discharge (ESD), make sure you are properly grounded before you touch these components.

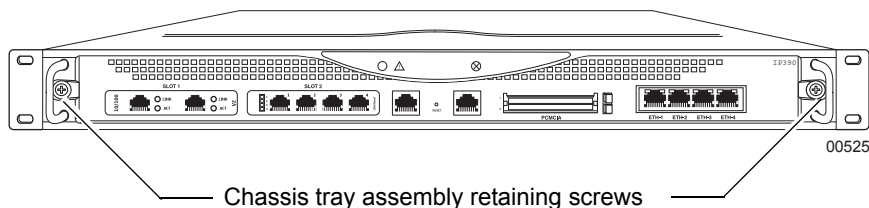
To add or replace DIMMs

1. Use Network Voyager or the CLI to halt the appliance.

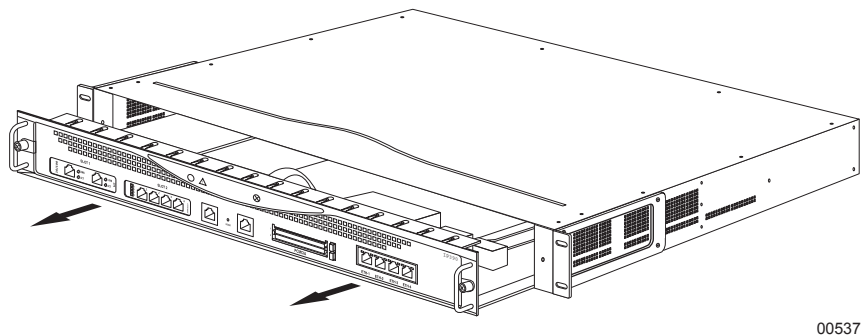
To use Network Voyager to shut the appliance down, select
System > Configuration > Reboot or Shutdown > Halt.

To use the CLI to do this, enter halt at the prompt.

2. Loosen the two front panel retaining screws.

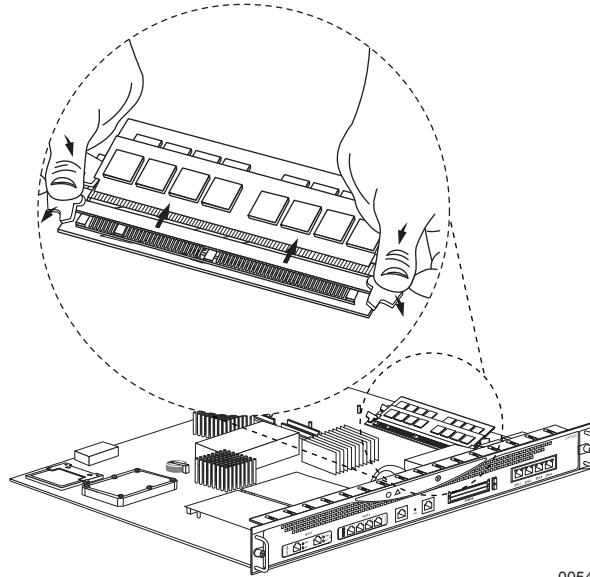


3. Gently slide the chassis tray assembly forward to expose the DIMM sockets. Remove the tray completely to avoid damaging components.

**Note**

Because power to an IP390 appliance is automatically disconnected when the chassis tray assembly is opened, you do not need to manually disconnect the power for this procedure. Any servicing of the unit, however, should be completed with the chassis tray assembly fully removed from the appliance. Power is still active in the chassis body and care should be taken when working on the power supply or power supply wiring without disconnecting the power cord.

4. Remove any memory module necessary by pressing the two retaining clips outward and carefully pulling each DIMM upward as the following figure shows.

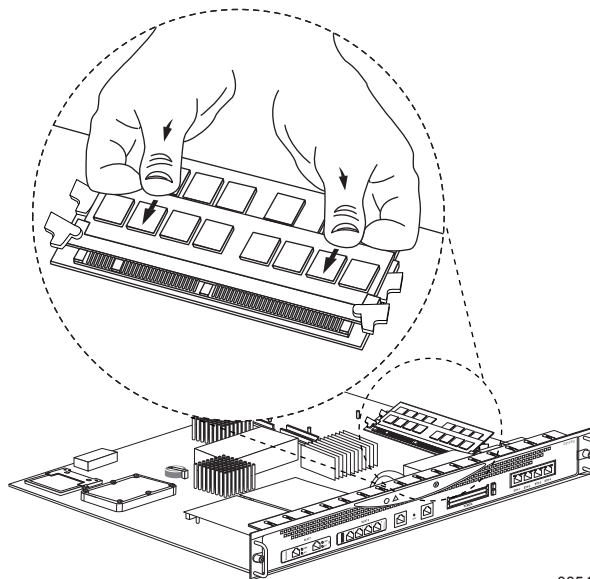


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You might need to pull opposite ends of the DIMM alternately to gradually free it from the contact pins.

5. The memory DIMMs are keyed to prevent improper insertion. Press the new DIMM into the socket until it clicks into place.

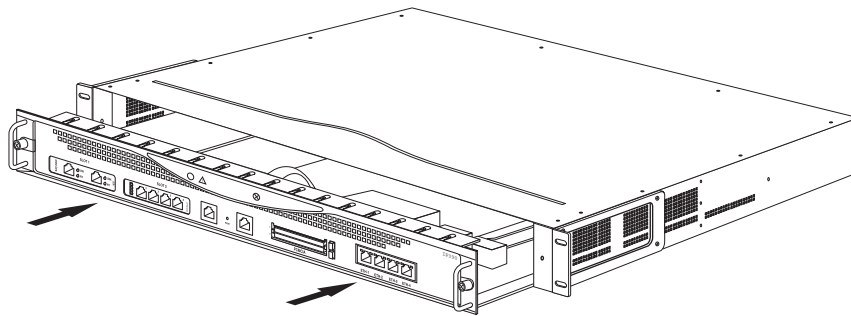
The top of the DIMM is smooth. The bottom edge has three different length sets of contacts, which mate with the slots on the socket. Be sure the contacts and slots are properly aligned before you insert the DIMM.



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

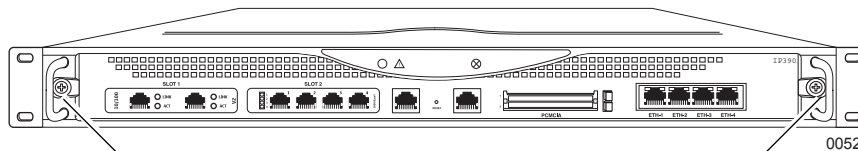
6. Gently slide the chassis tray assembly back into the appliance until it clicks into place.



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The appliance automatically restarts when the chassis tray assembly clicks into place.

7. Resecure the two retaining screws.



00525

Chassis tray assembly retaining screws

The appliance automatically recognizes the new memory configuration. You can verify this from the Network Voyager, the CLI, or from the Check Point IPSO shell.

To verify the memory from the CLI, enter:

```
show asset hardware
```

To verify the memory from the Check Point IPSO shell, enter:

```
dmesg | grep 'real memory'
```

Replacing the Battery

To replace the battery, you need the following:

- The appropriate Check Point battery replacement kit for your appliance
- Physical access to the appliance
- A Phillips-head screwdriver
- A grounding wrist strap
- (Optional) Safety glasses

**Warning**

Risk of explosion if battery is replaced by an incorrect type. Replace the battery only with the same or equivalent type that the manufacturer recommends. Dispose of used batteries according to the manufacturer's instructions.

**Warning**

Make certain to remove the power cord from the appliance before you proceed with any of the following steps. Failure to do so could cause electric shock with burns or death resulting for the user.

**Caution**

Make certain that you are properly grounded when you handle components internal to the appliance to protect against electrostatic discharge damage to the appliance. Use the grounding wrist strap included in the battery replacement kit.

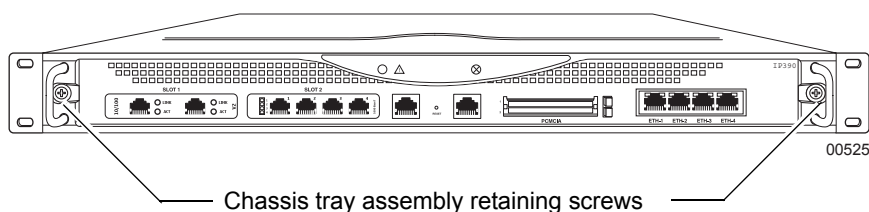
To install the battery

1. Use Network Voyager or the CLI to halt the appliance.

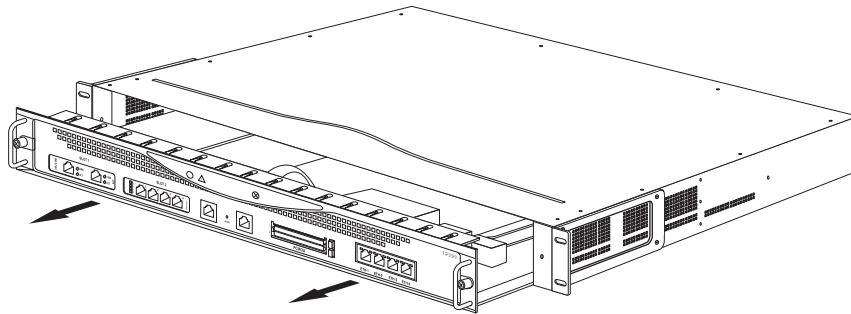
To use Network Voyager to shut the appliance down, select System > Configuration > Reboot or Shutdown > Halt.

To use the CLI to do this, enter halt at the prompt.

2. Loosen the two front panel retaining screws.
3. Loosen the two front panel retaining screws.



4. Gently slide the chassis tray assembly forward to expose the DIMM sockets. Remove the tray completely to avoid damaging components.



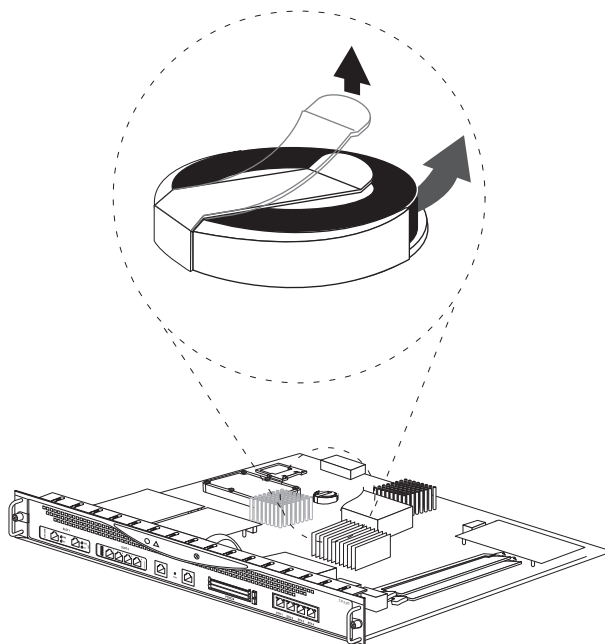
00537

Note

Because power to an IP390 appliance is automatically disconnected when the chassis tray assembly is opened, you do not need to manually disconnect the power for this procedure. Any servicing of the unit, however, should be completed with the chassis tray assembly fully removed from the appliance. Power is still active in the chassis body and care should be taken when working on the power supply or power supply wiring without disconnecting the power cord.

5. Locate the battery on the motherboard.

The battery is in a black battery holder secured with a battery retaining pin.



00014

6. Remove the old battery. Use a small nonconductive device, such as a plastic probe, to slide the battery out of the battery holder through the cutout in the holder.

**Caution**

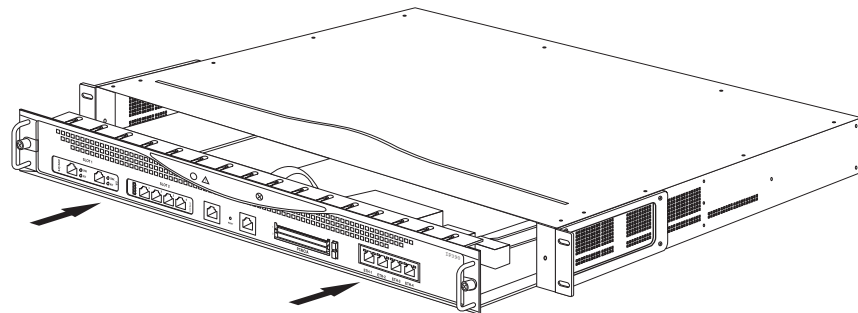
Replace the battery only with the same or equivalent type battery recommended by the manufacturer. Dispose of used batteries according to the manufacturer's instructions.

7. With the positive side facing up, slide the new battery through the cutout in the battery holder.

**Caution**

You must place the new battery into the battery holder observing the correct polarity. The positive terminal of the battery must be facing up.

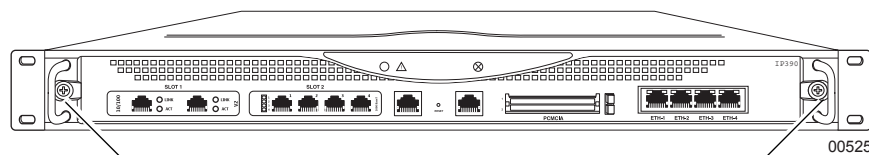
8. Gently slide the chassis tray assembly back into the appliance until it clicks into place.



00538

The appliance automatically restarts when the chassis tray assembly clicks into place.

9. Resecure the two retaining screws.



Chassis tray assembly retaining screws

After you replace the battery, you need to reset the date and time using Network Voyager or the CLI.

7 Troubleshooting

This chapter provides troubleshooting tips, problems, and solutions related to IP390 appliance installations.

General Troubleshooting Information

The information in this section relates to non-routing problems. For information about how to troubleshoot routing problems, see [“Troubleshooting Routing Problems”](#) on page 79.

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 IP390 appliance. If this is not possible using your laptop computer or terminal, the problem is with the terminal or cable and not the appliance.

Problem You do not have a console connection to the IP390 appliance.

Solution For information about how to create a console connection, see [“Using a Console Connection”](#) on page 29.

Problem Not connected with a null-modem cable.

Solution Verify that you are using a null-modem cable. For pinout information, see [“Using a Console Connection”](#) on page 29.

Problem Wrong terminal settings.

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

Problem Terminal set for flow control.

Solution The IP390 appliance does not use flow control. The terminal should be set for no flow control.

Problem Defective IP390 appliance or file system.

Solution Contact the Check Point Support Center at <http://support.checkpoint.com/>.

Problem Database is corrupt.

Solution Return to default settings according to the instructions included in the instructions for resetting the default password, or contact the Check Point Support Center at <http://support.checkpoint.com/>.

Login Prompt Appears, But Password Not Accepted

Problem Entered wrong password.

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

To reset the admin 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.

1. Boot up the appliance in single-user mode by restarting or power cycling the appliance.
When the `boot:` prompt appears, type `boot -s` and press enter 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 prompt.
When the response asks if you want to continue, type `y`.
When you are returned to the prompt, type `Ctrl + d` to reboot with admin user and a new password.
4. The admin password defaults to no password for admin.
Continue to boot to multiuser mode.
5. Reconfigure the password as you normally would.

Note

Blank passwords are not accepted in Check Point Network Voyager. In such cases, enter the following command to reset the password from the command line using a blank password:

```
dbpasswd admin newpassword ""
```

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

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 and bring up the new system-startup procedure. The new system-startup procedure is described in [Chapter 3, “Performing the Initial Configuration”](#).

To reset the default database settings

1. Log in to the IP390 appliance as admin by using Network Voyager.

For information about how to access Network Voyager and the related reference materials, see [“Using Check Point Network Voyager”](#) on page 31.

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 IP390 appliance is defective, or the file system on the IP390 appliance is defective.

Solution Contact the Check Point Support Center at <http://support.checkpoint.com/>.

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 IP390 appliance. 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 Check Point Support Center at <http://support.checkpoint.com/>.

Unable to Connect to 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 [“Four-Port 10/100 Mbps Ethernet Network Interface Card”](#) on page 35.

Problem Port is not configured as active.

Solution Use the CLI over the console connection to verify the interface configuration and fix it if necessary.

Problem Host port configuration is incorrect.

Solution Use the CLI over the console connection to verify the interface configuration and fix it if necessary.

Problem Wrong link speed.

Solution Use the CLI over the console connection to verify the interface configuration and fix it if necessary.

Do Not See Interfaces that Should be Present

Problem Local IP390 appliance ports do not appear.

Solution Your NIC might be defective. Contact the Check Point Support Center at <http://support.checkpoint.com/>.

Note

The problem could be with the slot on the PMC card carrier. 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 an IP390 appliance and a host, and a straight-through cable between an appliance and a hub.

Problem Solid data and activity LED.

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

Problem Port not enabled.

Solution Verify from the Interface page in 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.

Unable to Ping Through Appliance—No Connectivity Between Ports

This section covers connectivity issues that are isolated within an IP390 appliance or network.

Localize the problem by issuing pings to various network interfaces. Use tcpdump to help isolate the problem. Use tcpdump to verify that a packet is leaving or entering a port.

Problem Interfaces not up.

Solution Ensure that all interfaces are up and active, as described in [Chapter 3, “Performing the Initial Configuration.”](#)

Problem No route to network.

Solution Check the routing table to see if a route exists to the network where the interface is located. If no route exists, see [“Troubleshooting Routing Problems”](#) on page 79.

Problem Attached device does not have proper default route or routing information.

Solution If a local computer is unable to ping through an attached appliance, the computer might contain either an invalid default route or invalid routing information.

If you are using default routes from a computer, ensure that the local interface is the default route for that computer.

Problem The ARP table has old information.

Solution If the ARP table has an old or invalid entry for the device associated with the IP address you are attempting to ping, use Network Voyager to delete the invalid entry.

For information about how to access Network Voyager and the related reference materials, see [“Using Check Point Network Voyager”](#) on page 31.

To delete the invalid entry

1. Click Config.
2. Click ARP in the Interfaces section.
3. Click Display or Remove Dynamic ARP Entries.
4. Click Delete for the entry you want to delete.
5. Click Apply.

Problems with Multicast

Use tcpdump to view packets. To display packets for a specific interface, use the following command: `tcpdump -i interface proto igmp`. For more information about how to use the tcpdump command, see the *Network Voyager Reference Guide*.

Under Routing Options in the Routing Configuration section in Network Voyager, you can also enable several types of trace options for DVMRP. These traces are logged into `/var/tmp/ipsrd.log`.

For information about how to access Network Voyager and the related reference materials, see [“Using Check Point Network Voyager”](#) on page 31.

Problem No IP connectivity.

Solution Verify that you have IP connectivity; ping various hosts on each network.

Problem DVMRP is not enabled on the interfaces.

Solution Verify that DVMRP is enabled on the interfaces in use.

Problem Exceeding TTL on clients.

Solution Verify that the client is set up for the proper TTL number. Many clients are set to receive local traffic only one hop away.

Problems Interfacing to 1483 Devices

Problem Remote and local devices are not configured for the same VC and VP value.

Solution Set remote and local devices to the same VC and VP values. Consult your 1483 device documentation.

Problem Remote and local devices are not in the supported VC range of the NIC.

Solution Use `ipsctl` to determine the VC range. Enter the following command:

```
ipsctl ifphys:logical interface:max_rxlabel
```

Problem Encapsulation is not set to LLC/SNAP.

Solution Set encapsulation to LLC/SNAP. Consult your 1483 device documentation.

Problem The MTU size is not 1500 (for Ethernet interfaces) or 16018 (for Gigabit Ethernet interfaces).

Solution The MTU size must be 1500 (for Ethernet interfaces) or 16018 (for Gigabit Ethernet interfaces). Check Point does not support larger MTU sizes.

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 there is no power at the source, take appropriate action such as inserting a new fuse or resetting circuit breaker.

Appliance Does Not Recognize New Memory Configuration

Problem 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.

Appliance locks up after you upgrade Check Point IPSO with a console connection. No error messages appear, but the appliance stops responding to console and network.

Problem During the upgrade process, some of the environment variables might not have updated correctly.

Solution You can verify what the current boot manager settings are by issuing a `printenv` command at the boot manager prompt, as shown in this example:

```
Loading boot manager ..
BOOTMGR[0]> printenv
Bootmgr Revision: 3.3,base kernel=3.5.1-fcs1
02.12-2001-102644
autoboot: NO
bootwait: 5
boot-file:
boot-flags:
boot-device:
```

No referenced boot-file or boot-device appears.

Setting the boot manager to defaults causes the boot manager to determine that no environment variables are set, and it responds by importing the defaults from the binary file. To set the boot manager to defaults, issue the `set-defaults` command at the boot manager prompt as shown in this example:

```
BOOTMGR> set-defaults
```

If you issue the `printenv` command again, the boot-file and boot-device entries are present, as shown in this example:

```
BOOTMGR[2]> printenv
Bootmgr Revision: 3.3,base kernel=3.5.1-fcs1
02.12.2001-102644
autoboot: YES
bootwait: 5
boot-file: /image/current/kernel
boot-flags:
boot-device: wd0
```

Issue the `halt` command to restart your appliance.

```
BOOTMGR> halt
```

Troubleshooting Routing Problems

Several useful tools are available to troubleshoot routing problems. The first tool is available from the Monitor page in Network Voyager, from which you display routing statistics and errors.

You can access this information from the command-line interface using the ICLID (IPSRD command-line interface daemon) command. An example use of the ICLID command is shown below.

For information about the ICLID command, see the *Network Voyager Reference Guide*. For information about how to access Network Voyager and the related reference materials, see [“Using Check Point Network Voyager”](#) on page 31.

Note

Adding a question mark (?) after any command provides additional command options. Typing a question mark (?) at a prompt provides a list of available commands.

```
hostname[admin]# iclid
hostname | IP address>
hostname | IP address> ?
exit    get    help    quit    show
hostname | IP address>
hostname | IP address> show ?
addressbgpigmphelpmfcripvrrp bootpgwigrpkrtpspf route
inbound-filterdvmpinterface memory resource version
hostname | IP address> show route ?
aggregate    bgp            igrp            ospf            static
all           direct        inactive       rip             summary
hostname | IP address> show route ospf
Codes: C - connected, S - static, I - IGRP, R - RIP,
B - BGP, O - OSPF, E - OSPF external, A - Aggregate,
K - Kernel Remnant, H - Hidden, S - Suppressed
```

The response to the preceding ICLID command is as follows:

```
0 172.16/16 via 10.1.1.225, eith-sp4p1c0, cost 3, age 3111
```

In addition, several trace options are available. You can enable these options under the routing options in Network Voyager. When a trace is enabled the output appears in `/var/tmp/ipsrd.log`.

Common Problems with OSPF

Use `tcpdump` to view routing information. Use the following command display routing updates for that interface:

```
tcpdump -i interface proto ospf
```

For more information about how to use the `tcpdump` command, see the *CLI Reference Guide*.

Under routing options in Network Voyager, you can also enable several types of trace options for OSPF. These traces are logged in `/var/tmp/ipsrd.log`.

For information about how to access Network Voyager and the related reference materials, see [“Using Check Point Network Voyager”](#) on page 31.

Problem OSPF is not configured.

Solution Verify that OSPF is properly configured for all interfaces that are involved in OSPF routing. For more information, see *Configuring OSPF* from the *Configuring Routing* document page in *Network Voyager*. You can access the document page by pressing *Doc*.

Problem OSPF hello and dead timers are not the same on each interface for a given link.

Solution Verify that the settings at the end of each link are identical.

Problem Attached devices do not support OSPF.

Solution Ensure that the attached IP390 appliance supports OSPF. If the attached appliance does not support OSPF, configure it with a protocol that the appliance supports and exchange routes with OSPF, or set a default or static route.

Note

You can also use ICLID to display OSPF details.

Common Problems with RIP

Use *tcpdump* to view routing information. Use the following command to display routing updates for a specific interface:

```
tcpdump -i interface proto rip
```

For more information about how to use the *tcpdump* command, see the *CLI Reference Guide*.

Under routing options in *Network Voyager*, you can also enable several types of trace options for routing information protocol (RIP). These traces are logged in

/var/tmp/ipsrd.log.

For information about how to access *Network Voyager* and the related reference materials, see [“Using Check Point Network Voyager”](#) on page 31.

Problem Inconsistent subnet mask (netmask does not match the class of IP address for RIP v1).

Solution RIP version 1 must use consistent subnet masks; change to RIP version 2 or OSPF to use inconsistent subnet masks.

Problem Number of networks exceeds the RIP limit.

Solution RIP can span up to 16 networks. Verify that your network topology does not exceed this limit.

Common Problems Exchanging Routes

Always enter a metric value if you are exporting routes from OSPF to RIP.

Problem Exchanging routes are not configured correctly.

Solution Exchanging routes involves several configuration steps. Follow the tasks in the *Network Voyager Reference Guide* (online documentation) to ensure that you follow all steps.

For information about how to access Network Voyager and the related reference materials, see [“Using Check Point Network Voyager”](#) on page 31.

Problem Routing protocol is not functioning properly.

Solution to ensure that each routing protocol is functioning properly, see [“Common Problems with OSPF”](#) on page 80 and [“Common Problems with RIP”](#) on page 81.

A Technical Specifications

Physical Dimensions

Dimensions	Height:	1.75 in. (4.45 cm)
	Width:	17 in. (44 cm) 19 in. (48 cm) rack mountable
	Depth:	16.12 in. (40.94 cm)
Weight	17 lbs. (7.7 kg) base system	

Space Requirements

The IP390 appliance is designed for front-screw mounting in a 19-inch rack. Each IP390 appliance requires the following space in a rack:

- 1.75 inches (4.45 centimeters) of vertical space
- 18 inches (46 centimeters) behind the front-panel of the rack
- 6 inches (15 centimeters) behind the IP390 appliance to allow the back exit fan to move air through the appliances



Caution

Do not place objects over the ventilation holes on the appliance. The appliance might overheat and become damaged.

Operating Temperature

The operating temperature range for the Check Point IP390 appliance is 0° C to 45° C (32° F to 113° F).

NIC Interfaces

NIC Type	Cable Type	Cable Connector
10/100 Ethernet	IEEE 802.3 100 Base-TX or 1000 Base-T unshielded twisted pair, full-duplex or half-duplex. Straight-through cable (Cat 5 type) or crossover cable; in some cases, shielded Cat 5 Ethernet cable can be used to improve interference radiated emissions.	RJ-45
Fiber-optic Gigabit Ethernet	IEEE 802.32 Gigabit Ethernet multi-mode Fiber	LC
Copper Gigabit Ethernet	IEEE 802.3 1000 Base-T unshielded twisted pair, full-duplex or half-duplex. Straight-through cable (Cat 5 type) or crossover cable; in some cases, shielded Cat 5 Ethernet cable can be used to improve interference radiated emissions.	RJ-45
T1	Straight-through RJ-48 cable.	RJ-48

B Compliance Information

This appendix contains declaration of conformity, compliance, and related regulatory information.

Declaration of Conformity

According to ISO/IEC 17050:

Manufacturer's Name: Nokia Inc.
Manufacturer's Address: 313 Fairchild Drive
Mountain View, CA 94043-2215
USA

declares that the product:

Product Name: IP390
Model Number: EM7500
Product Options: All
Serial Number: 1 to 100,000
Date First Applied: 2006

conforms to the following standards:

Safety: EN60950-1:2001+A11; IEC60950-1:2001; UL60950,
Third Edition:2000; CAN/CSA-C22.2
No.60950:2000.
EMC: EN55024 1998, EN55022A 2006, EN61000-3-2,
EN61000-3-3

Supplementary information:

Pursuant to ISO/IEC 17050 this product complies with the requirements of the Low Voltage Directive 73/23/EEC and the EMC Directive 2004/108/EC.



A handwritten signature in black ink, appearing to read "Saleem".

Christopher Saleem
Compliance & Reliability Engineering Manager
Security & Mobile Connectivity, Enterprise Solutions
Mountain View, California
May 2008

Compliance Statements

This hardware complies with the standards listed in this section.

Emissions Standards

FCC Part 15 Subpart B Class A	US/Canada
EMI-ICES-003 Class A	Canada
EN55022 (CISPR 22 Class A)	European Community (CE)

Immunity Standards

EN55024	European Community (CE)
EN61000-4-2	
EN61000-4-3	
EN61000-4-4	
EN61000-4-5	
EN61000-4-6	
EN61000-4-11	

Harmonics and Voltage Fluctuation

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

Safety Standards

UL60950/EN60950	US/European Community(CE)
CAN/CSA-C22.2 No.60950	Canada

Telecom

T1	FCC Part 68, CS-03
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FCC Requirements (US)

This equipment complies with FCC rules, Part 68. On the bottom of this equipment is a label that contains, among other things, the FCC Registration Number. When you are ready to install this unit, contact your local telephone company and supply them with the following information:

- Standard Jack(s) for connection to the network: RJ48
- Universal Service Order Code (USOC): 6.0
- Facility Interface Code (FIC): All are applicable; 04DU9-BN,
- 04DU9-DN, 04DU9-1KN, 04DU9-1SN
- FCC registration number: 6NV-USA-46001-DE-N

Should this equipment cause harm to the telephone network, the telephone company shall, where practicable, notify the customer that temporary discontinuance of service may be required; however, where prior written notice is not practicable, the telephone company may discontinue service forthwith, if such action is reasonable in the circumstances. You will be informed of your right to file a complaint with the FCC.

The telephone company may make changes in its communications facilities, equipment, and operation procedures, where such action is reasonably required in the operation of its business and is not inconsistent with the rules and regulations of the Federal Communications Commission. If they do, you will be notified in advance to give you an opportunity to maintain uninterrupted telephone service.

Do not attempt to repair or modify this equipment. If defective, return it to the person from whom it was purchased who will in turn arrange to return it or to have it repaired by the manufacturer. The telephone company may ask that you disconnect this equipment from the network until the problem has been corrected or until you are sure that the equipment is not malfunctioning. If trouble is experienced, disconnect this equipment from the telephone line to determine if it is causing the malfunction. If equipment is determined to be malfunctioning, its use shall be discontinued until the problem has been corrected.

FCC Notice (US)

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection

against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.



Caution

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

060425

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