

Intelligent Copper Pass-thru Module for IBM
BladeCenter



Installation Guide

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BladeCenter



Installation Guide

Note: Before using this information and the product it supports, read the general information in Appendix B, "Warranty," on page 29 and Appendix C, "Notices," on page 49.

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Safety

Before installing this product, read the Safety Information.

قبل تركيب هذا المنتج، يجب قراءة الملاحظات الأمنية

Antes de instalar este produto, leia as Informações de Segurança.

在安装本产品之前，请仔细阅读 **Safety Information**
(安全信息)。

安裝本產品之前，請先閱讀「安全資訊」。

Prije instalacije ovog produkta obavezno pročitajte Sigurnosne Upute.

Před instalací tohoto produktu si přečtěte příručku bezpečnostních instrukcí.

Læs sikkerhedsforskrifterne, før du installerer dette produkt.

Lees voordat u dit product installeert eerst de veiligheidsvoorschriften.

Ennen kuin asennat tämän tuotteen, lue turvaohjeet kohdasta Safety Information.

Avant d'installer ce produit, lisez les consignes de sécurité.

Vor der Installation dieses Produkts die Sicherheitshinweise lesen.

Πριν εγκαταστήσετε το προϊόν αυτό, διαβάστε τις πληροφορίες ασφάλειας
(safety information).

לפני שתתקינו מוצר זה, קראו את הוראות הבטיחות.

A termék telepítése előtt olvassa el a Biztonsági előírásokat!

Prima di installare questo prodotto, leggere le Informazioni sulla Sicurezza.

製品の設置の前に、安全情報をお読みください。

본 제품을 설치하기 전에 안전 정보를 읽으십시오.

Пред да се инсталира овој продукт, прочитајте информацијата за безбедност.

Les sikkerhetsinformasjonen (Safety Information) før du installerer dette produktet.

Przed zainstalowaniem tego produktu, należy zapoznać się z książką "Informacje dotyczące bezpieczeństwa" (Safety Information).

Antes de instalar este produto, leia as Informações sobre Segurança.

Перед установкой продукта прочтите инструкции по технике безопасности.

Pred inštaláciou tohto zariadenia si pečítajte Bezpečnostné predpisy.

Pred namestitvijo tega proizvoda preberite Varnostne informacije.

Antes de instalar este producto, lea la información de seguridad.

Läs säkerhetsinformationen innan du installerar den här produkten.

Important:

All caution and danger statements in this documentation begin with a number. This number is used to cross reference an English caution or danger statement with translated versions of the caution or danger statement in the *IBM Safety Information* book.

For example, if a caution statement begins with a number 1, translations for that caution statement appear in the *IBM Safety Information* book under statement 1.

Be sure to read all caution and danger statements in this documentation before performing the instructions. Read any additional safety information that comes with your server or optional device before you install the device.

Statement 1:



DANGER

Electrical current from power, telephone, and communication cables is hazardous.

To avoid a shock hazard:

- Do not connect or disconnect any cables or perform installation, maintenance, or reconfiguration of this product during an electrical storm.
- Connect all power cords to a properly wired and grounded electrical outlet.
- Connect to properly wired outlets any equipment that will be attached to this product.
- When possible, use one hand only to connect or disconnect signal cables.
- Never turn on any equipment when there is evidence of fire, water, or structural damage.
- Disconnect the attached power cords, telecommunications systems, networks, and modems before you open the device covers, unless instructed otherwise in the installation and configuration procedures.
- Connect and disconnect cables as described in the following table when installing, moving, or opening covers on this product or attached devices.

To Connect:

1. Turn everything OFF.
2. First, attach all cables to devices.
3. Attach signal cables to connectors.
4. Attach power cords to outlet.
5. Turn device ON.

To Disconnect:

1. Turn everything OFF.
2. First, remove power cords from outlet.
3. Remove signal cables from connectors.
4. Remove all cables from devices.

Chapter 1. Introduction

This *Installation Guide* contains information about setting up, installing, and configuring the Intelligent Copper Pass-thru Module for IBM® BladeCenter®.

For installation details, see Chapter 2, “Installing and removing components,” on page 7. For additional information, see the instructions in your BladeCenter unit documentation. The Intelligent Copper Pass-thru Module (ICPM) for IBM BladeCenter is also referred to throughout this document as the switch module or I/O module.

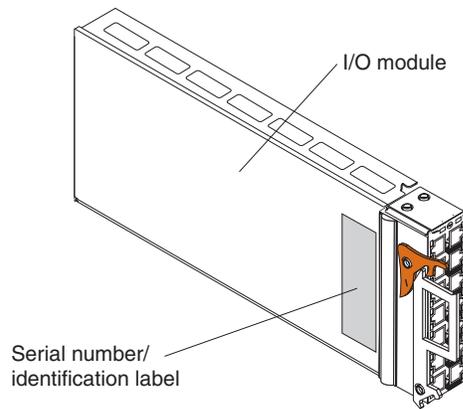
You can obtain up-to-date information about the I/O module at <http://www.ibm.com/servers/eserver/support/bladecenter/index.html>. You can obtain up-to-date information about other IBM products at <http://www.ibm.com/systems/support/>.

- Unless otherwise stated, references to the BladeCenter unit apply to all BladeCenter unit types.
- Changes are made periodically to the IBM Web site. Procedures for locating firmware and documentation might vary slightly from what is described in this document.
- The illustrations in this document might differ slightly from your hardware.
- The sample screens that appear in this document might differ slightly from the screens that are displayed by your system. Screen content varies according to the type of BladeCenter unit and the firmware versions and options that are installed.
- Unless otherwise stated, references to the management module apply to all types of BladeCenter management modules.

Record information about the I/O module in the following table. The product name and serial number are on the identification label on the side of the I/O module. You will need this information when you register the I/O module with IBM. You can register the I/O module at <http://www.ibm.com/support/mysupport/>.

Product name	Intelligent Copper Pass-thru Module for IBM BladeCenter
Serial number	_____
Other identifiers	_____

The following illustration shows the locations of the identification label and the serial number on the I/O module.



Related documentation

This *Installation Guide* contains setup, installation, configuration, and troubleshooting instructions for the I/O module. This document also provides general information about the I/O module, including warranty information, and how to get help.

The following related documentation is in Portable Document Format (PDF) on the *BladeCenter Documentation* CD that comes with your BladeCenter unit:

- *Safety Information*

This document contains translated caution and danger statements. Each caution and danger statement that appears in the documentation has a number that you can use to locate the corresponding statement in your language in the *Safety Information* document.

- *BladeCenter Management Module User's Guide*

This document provides general information about the management module for your BladeCenter unit type, including information about features, how to configure the management module, and how to get help.

- *BladeCenter Management Command-Line Reference Guide*

This document provides detailed information about the management module command line interface (CLI) feature.

The most recent versions of this *Installation Guide* and all other BladeCenter documentation are at <http://www.ibm.com/servers/eserver/support/bladecenter/index.html>.

Features and specifications

This section provides a summary of the features and specifications that apply to the intelligent copper pass-thru module (ICPM) for IBM BladeCenter.

- Two independent internal 100 Mbps full-duplex links connected to each of two management modules (jumbo frame support not required on these links).
- Management-module Inter-Integrated Circuit (I2C) interface that provides vital product data (VPD) and register access.
- 14-Port Ethernet connections using standard RJ45 connectors
- Direct one-one mapping
- 100Mbit/1Gbit operation on uplinks
- Serial over LAN (SOL) support when in bay 1
- Concurrent keyboard/video/mouse (cKVM) support when in bay 1
- Simple setup and monitoring through advanced management module
- Form factor compatible with older switches
- Provides self-test and diagnostics capability

Notices and statements in this document

The caution and danger statements that appear in this document are also in the multilingual *Safety Information* document, which is on the IBM *BladeCenter Documentation* CD. Each statement is numbered for reference to the corresponding statement in the *Safety Information* document.

The following notices and statements are used in this document:

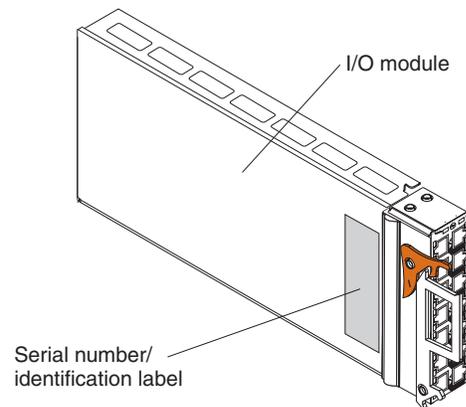
- **Note:** These notices provide important tips, guidance, or advice.
- **Important:** These notices provide information or advice that might help you avoid inconvenient or problem situations.
- **Attention:** These notices indicate possible damage to programs, devices, or data. An attention notice is placed just before the instruction or situation in which damage could occur.
- **Caution:** These statements indicate situations that can be potentially hazardous to you. A caution statement is placed just before the description of a potentially hazardous procedure step or situation.
- **Danger:** These statements indicate situations that can be potentially lethal or extremely hazardous to you. A danger statement is placed just before the description of a potentially lethal or extremely hazardous procedure step or situation.

Major components of the I/O module

Orange on the release latch on the I/O module identifies this device as a hot-swap component. You can install or remove this component while the BladeCenter unit is running. Removing the module will disrupt all network communications through this device.

The following illustration shows the major components of the I/O module.

Note: The illustrations in this document might differ slightly from your hardware.



For more information about the components of the information panel, see Chapter 3, “LEDs, external ports, and cables,” on page 13.

Chapter 2. Installing and removing components

See the *Installation and User's Guide* for your BladeCenter unit type for information about the I/O-module bay locations in the BladeCenter unit and specific requirements for installing I/O modules in your BladeCenter unit.

Attention: To maintain proper system cooling, each I/O-module bay must contain either an I/O module or a filler module.

For details about network interface requirements and expansion options, see the following documents:

- *Installation and User's Guide* for your BladeCenter unit type
- *Installation and User's Guide* for each blade server type

Installation guidelines

Before you begin to install the I/O module in your BladeCenter unit, read the following information:

- Read the safety information that begins on page v and the guidelines in "Handling static-sensitive devices" on page 8, and read the safety statements in the BladeCenter unit publications. This information will help you work safely.
- Observe good housekeeping in the area where you are working. Place removed covers and other parts in a safe place.
- Do not attempt to lift an object that you think is too heavy for you. If you have to lift a heavy object, observe the following precautions:
 - Make sure that you can stand safely without slipping.
 - Distribute the weight of the object equally between your feet.
 - Use a slow lifting force. Never move suddenly or twist when you lift a heavy object.
 - To avoid straining the muscles in your back, lift by standing or by pushing up with your leg muscles.
- Make sure that you have an adequate number of properly grounded electrical outlets for the BladeCenter unit, monitor, and other devices.
- Back up all important data before you make changes to disk drives.
- Have a small flat-blade screwdriver available.
- You do not have to turn off the BladeCenter unit to install or replace any of the hot-swap modules in the BladeCenter unit.
- Orange on the release latch on the I/O module identifies this device as a hot-swap component. You can install or remove this component while the BladeCenter unit is running. See the instructions in this chapter for more information about installing or removing hot-swap or hot-plug components.
- If you plan to install additional I/O modules in the I/O-module bays of your BladeCenter unit, you might also have to install an I/O expansion card in the applicable blade server to support the I/O modules in these bays. For information about the types of compatible I/O expansion cards for the blade servers, contact your IBM authorized reseller. See the I/O expansion card documentation for details about I/O expansion card installation, configuration, and use.

- When you are finished working on the I/O module and all other BladeCenter unit components, reinstall all safety shields, guards, labels, and ground wires.
- For a list of supported options for the I/O module, see <http://www.ibm.com/servers/eserver/serverproven/compat/us/>.

Handling static-sensitive devices

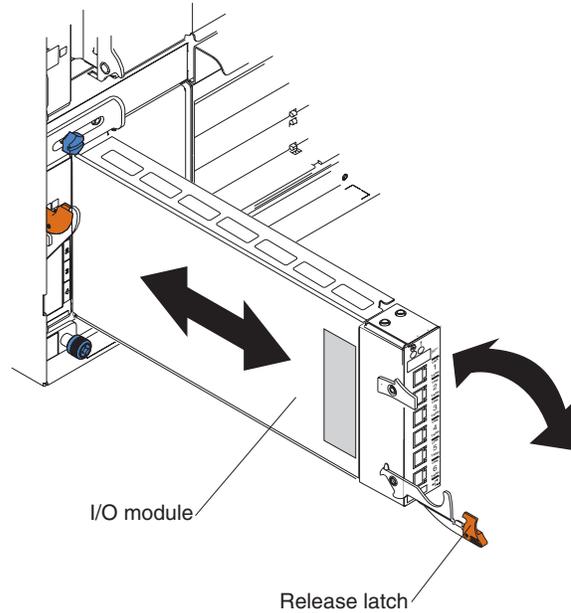
Attention: Static electricity can damage the system and other electronic devices. To avoid damage, keep static-sensitive devices in their static-protective packages until you are ready to install them.

To reduce the possibility of electrostatic discharge, observe the following precautions:

- Limit your movement. Movement can cause static electricity to build up around you.
- Handle the device carefully, holding it by its edges or its frame.
- Do not touch solder joints, pins, or exposed circuitry.
- Do not leave the device where others can handle and damage it.
- While the device is still in its static-protective package, touch it to an *unpainted* metal part of the BladeCenter unit or any *unpainted* metal surface on any other grounded rack component in the rack in which you are installing the device for at least 2 seconds. This drains static electricity from the package and from your body.
- Remove the device from its package and install it directly into the BladeCenter unit without setting down the device. If it is necessary to set down the device, put it back into its static-protective package. Do not place the device on the BladeCenter chassis or on a metal surface.
- Take additional care when handling devices during cold weather. Heating reduces indoor humidity and increases static electricity.

Installing an I/O module

The following illustration shows how to install an I/O module into a typical BladeCenter unit. The appearance of your BladeCenter unit might be different. For additional information, see the documentation for your BladeCenter unit.



To install an I/O module, complete the following steps.

1. Read the safety information that begins on page v and “Installation guidelines” on page 7.
2. If an acoustic attenuation module is installed on your BladeCenter unit, remove it. See the documentation for your BladeCenter unit for instructions.
3. Select an I/O-module bay in which to install the I/O module.

Notes:

- a. For details about I/O-module bay requirements, see the documentation for your BladeCenter unit and blade servers.
- b. To make full use of the ICPM capabilities in some BladeCenter units, install it in I/O-module bay 1 or 2. If you install this module in I/O-module bay 3, only Ethernet ports 1 through 7 will be active. If you install it in I/O-module bay 4, only ports 8 through 14 will be active.
- c. The BladeCenter S I/O module bays have unique functions, as summarized in the table below.

Table 1. BladeCenter S I/O Module Bay Support

	Bay 1	Bay 2	Bay 3	Bay 4
Port 1	Blade 1 NIC A	n/a	Blade 1	n/a
Port 2	Blade 2 NIC A	n/a	Blade 2	n/a
Port 3	Blade 3 NIC A	n/a	Blade 3	n/a
Port 4	Blade 4 NIC A	n/a	Blade 4	n/a
Port 5	Blade 5 NIC A	n/a	Blade 5	n/a
Port 6	Blade 6 NIC A	n/a	Blade 6	n/a

Table 1. BladeCenter S I/O Module Bay Support (continued)

	Bay 1	Bay 2	Bay 3	Bay 4
Port 7	Switch Bay 3	n/a	n/a	n/a
Port 8	Blade 1 NIC B	n/a	n/a	Blade 1
Port 9	Blade 2 NIC B	n/a	n/a	Blade 2
Port 10	Blade 3 NIC B	n/a	n/a	Blade 3
Port 11	Blade 4 NIC B	n/a	n/a	Blade 4
Port 12	Blade 5 NIC B	n/a	n/a	Blade 5
Port 13	Blade 6 NIC B	n/a	n/a	Blade 6
Port 14	Switch bay 4	n/a	n/a	n/a

n/a = not supported at this time.

4. Remove the filler from the selected I/O-module bay. Store the filler for future use.
5. If you have not already done so, touch the static-protective package that contains the I/O module to any *unpainted* metal surface of the BladeCenter unit or any *unpainted* metal surface on any other grounded rack component for at least 2 seconds.
6. Remove the I/O module from its static-protective package.
7. Make sure that the release latch on the I/O module is in the open position (perpendicular to the module).
8. Slide the I/O module into the I/O-module bay until it stops.
9. Push the release latch on the front of the I/O module to the closed position. After you insert and lock the I/O module in a powered BladeCenter unit, a power-on self-test (POST) occurs to verify that the I/O module is operating correctly.
10. The POST results are displayed by the status LEDs. Make sure that the LEDs on the I/O module indicate that it is operating correctly. Make sure that the power LED on each I/O module is lit. If indications are not as specified, see Chapter 6, "Solving problems," on page 23 for additional information.
11. If you have other I/O modules to install, do so now; otherwise, go to step 12.

Note: To make sure that the BladeCenter unit installation complies with EMC product regulations for intra-building lightning surges, you must use shielded LAN cables that are grounded at both ends.

12. Attach any cables or cords that are required by the I/O module.

Notes:

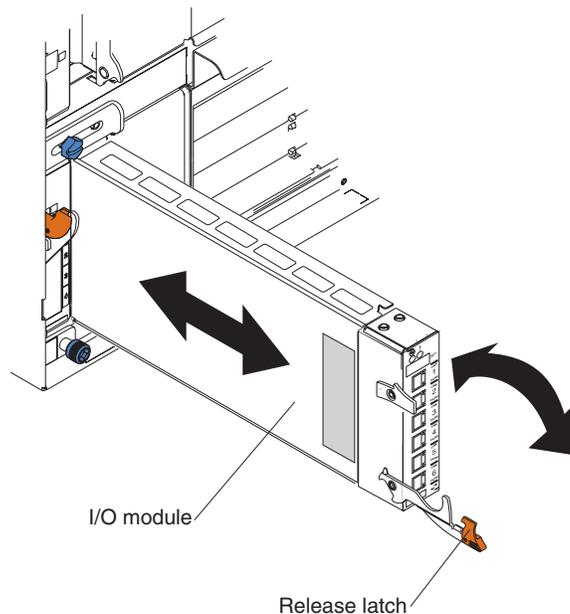
- a. The ICPM has 14 Ethernet ports located close together. Standard RJ45 connectors can be easily inserted. Shrouded RJ45 connectors may not fit as easily.
 - b. When installing an ICPM in a BladeCenter unit that has JS43 blade servers in it, the Ethernet cables should be attached to the ICPM before the JS43 blade servers are powered on. If a JS43 blade server was powered on before attaching the Ethernet cables to its corresponding ICPM ports, you must restart the blade server.
13. Replace the acoustic attenuation module, if you removed it in step 2 on page 9.

Removing an I/O module

Attention: To maintain proper cooling and system reliability, each I/O-module bay in the BladeCenter unit must have either an I/O module or filler module installed. If you remove a hot-swap module, you must replace it with another module or filler module within 1 minute of removal.

To remove an I/O module, complete the following steps.

1. Read the safety information that begins on page v and “Installation guidelines” on page 7.
2. If an acoustic attenuation module is installed on your BladeCenter unit, remove it. See the documentation for your BladeCenter unit for instructions.
3. If you are replacing the I/O module:
 - a. Record the locations of the cable connectors on the I/O module. You will need this information when you reconnect the cables.
 - b. Disconnect any cables from the I/O module that you are removing.
4. Pull the release latch toward the bottom of the I/O module. The module moves out of the I/O-module bay approximately 0.64 cm (0.25 inch).



5. Slide the I/O module out of the I/O-module bay and set it aside.
6. Place either another I/O module or a filler module in the I/O-module bay within 1 minute.
7. If you placed another I/O module in the I/O-module bay, reconnect any compatible cables that you disconnected in step 3. If a cable that you disconnected is not compatible with the new I/O module, you will have to connect a new cable that is compatible with the new I/O module.

Note: When installing an ICPM in a BladeCenter unit that has JS43 blade servers in it, the Ethernet cables should be attached to the ICPM before the JS43 blade servers are powered on. If a JS43 blade server was powered on before attaching the Ethernet cables to its corresponding ICPM ports, you must restart the blade server.

8. Replace the acoustic attenuation module, if you removed it in step 2.

Chapter 3. LEDs, external ports, and cables

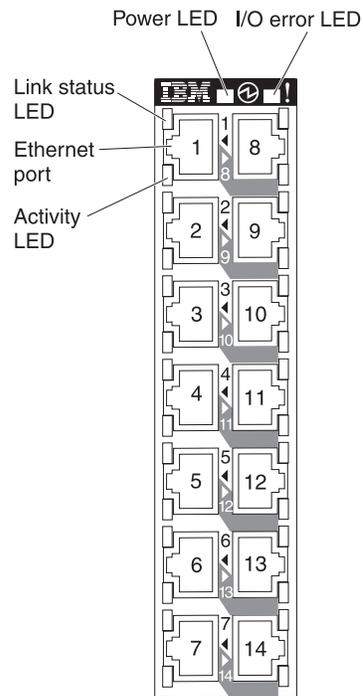
This chapter describes the locations and functions of the LEDs on the ICPM, and offers suggestions on managing the RJ-45 connectors that plug into the external ports.

LEDs and ports

As shown in the following illustration, the face of the I/O module contains the following LEDs and ports:

- 2 LEDs that display the status of the I/O module
- 28 LEDs that display the status of the network connections
- 14 external 1000BASE-T Ethernet ports for 100/1000 Mbps connections to external Ethernet devices, such as backbones, end stations, and servers

The two LEDs at the top of the I/O module face are power and I/O module error (fault). In addition, each external port on the I/O module contains an Ethernet link LED and an Ethernet Tx/Rx LED. The following illustrations show the LEDs on the I/O modules.



Power: This green LED on the left side is lit to indicate that the I/O module has passed the power-on self-test (POST) with no critical faults and is operational. If POST fails this LED will stay lit, unless the I/O module has been instructed to power off by the advanced management module.

I/O module error (fault): This amber LED on the right side is lit to indicate that the I/O module has failed the POST or detected an operational fault.

Note: When the I/O module error LED is lit, the system-error LED on the BladeCenter unit will also be lit.

Ethernet link: The green link status LED is at the top of each external 100/1000 Mbps port. When this LED is solidly lit, it indicates that there is an active connection (or link) to a device using that port.

Ethernet Tx/Rx: The green activity LED is at the bottom of each external 100/1000 Mbps port. When this LED flashes, it indicates that data is being transmitted or received between that port and another device on the network link. The flash frequency is proportional to the amount of traffic on the network link.

Ethernet cables and connectors

The ICPM has 14 Ethernet ports located close together.

- Standard RJ-45 connectors can be easily inserted.
- Shrouded RJ-45 connectors may not fit as easily.
- You might need to use a tool, such as a small flat-bladed screwdriver, to release the latch on an RJ-45 connector when detaching a single cable.

There is no need to disconnect the cables from the ICPM if you are replacing a midplane. Cables left attached when you remove the ICPM will be in the correct positions when you reinsert the ICPM.

Chapter 4. Managing and configuring the ICPM

The ICPM functions as a nearly transparent link to Ethernet switches located outside of the BladeCenter unit. Therefore, it requires very little management. The I/O module supports one remote-access mode for management through Ethernet connections. The I/O module has an internal Ethernet path to the management module.

Note: If you are using a management module other than the advanced management module, attach the remote-access link to the management console to the Ethernet connector on the management module.

In addition to the documents in this library, be sure to review the following documents for information to help you prepare for system installation and configuration:

- The *BladeCenter Management Module User's Guide* for your BladeCenter unit type
- The *BladeCenter Management Module Installation Guide* for your BladeCenter unit type

Managing the ICPM

Complete the following steps to establish a TCP/IP session to the switch through the management module.

1. Access and log in to the management module as described in the *BladeCenter Management Module User's Guide*. If necessary, obtain the IP address of the management module from your system administrator. The login window opens.

If you do not have an assigned user ID and initial password, type the default user ID (USERID) in the **User ID** field and the default password (PASSWORD) in the **Password** field (note the number zero, not the letter O, in PASSWORD) and click **OK**. The main page in the management-module interface opens.

Notes:

- a. The **User ID** and **Password** fields are case-sensitive.
 - b. To maintain system security, change the password after you log in for the first time.
2. Select **Admin/Power/Restart** under **I/O Module Tasks** in the navigation pane of the BladeCenter Management Module page. The next page displays the I/O modules in the I/O-module bays. An ICPM will display the following information on this page:
 - Manufacturer
 - Power status
 - POST results

I/O Module Power/Restart [?]

Select one or more module(s) using the checkboxes in the first column and then click on one of the links below the table to perform the desired action.

<input type="checkbox"/>	Bay	Type	Manufacturer	MAC Address	IP Address	Pwr	Unique ID Type	ID	Stacking Mode	Protected Mode	POST
<input type="checkbox"/>	1	ICPM	XYZ	n/a	n/a	On	n/a	n/a	n/a	n/a	POST results available: Module
<input type="checkbox"/>	2	ICPM	XYZ	n/a	n/a	On	n/a	n/a	n/a	n/a	POST results available: Module
	3			No module							
	4			No module							

[†] If this notation is shown next to an IP address, it means the address is the stack management address.

- [Power On Module\(s\)](#)
- [Power Off Module\(s\)](#)
- [Restart Module\(s\) and Run Standard Diagnostics](#)
- [Restart Module\(s\) and Run Extended Diagnostics](#)
- [Restart Module\(s\) and Run Full Diagnostics](#)
- [Enable Protected Mode](#)
- [Disable Protected Mode](#)

I/O Module Advanced Setup [?]

Select a module: ▼
Fast POST: ▼
External ports: ▼

- Select the choices in the I/O Module Tasks section to view the settings or configuration on network-interface I/O modules in the BladeCenter unit. At this point, you can click on the first four text links to perform the following functions:
 - Power on the selected module
 - Power off the selected module
 - Restart the selected module and run standard diagnostics
 - Restart the selected module and run extended diagnostics

Note: The items marked as n/a do not apply to the ICPM.

- In the **I/O Module Advanced Setup** section, select an ICPM, and enable or disable its external ports

Configuring the ICPM

Use this section to view the POST results and to select throughput characteristics for each Ethernet port.

1. Access and log in to the management module as described in the *BladeCenter Management Module User's Guide*. If necessary, obtain the IP address of the management module from your system administrator. The login window opens.

Enter your user ID and password.

If you do not have an assigned user ID and initial password, type the default user ID (USERID) in the **User ID** field and the default password (PASSWORD) in the **Password** field (note the number zero, not the letter O, in PASSWORD) and click **OK**. The main page in the management-module interface opens.

Notes:

- a. The **User ID** and **Password** fields are case-sensitive.
 - b. To maintain system security, change the password after you log in for the first time.
2. Select **Configuration** under **I/O Module Tasks** in the navigation pane of the BladeCenter Management Module page. The I/O Module Configuration window opens.

The screenshot shows the BladeCenter Advanced Management Module interface. The top header displays the IBM logo and the title "BladeCenter Advanced Management Module". Below the header, the user information for "Bay 1: SN#YK118167C19G" and "User: USERID" is shown. A navigation pane on the left lists various system tasks, with "Configuration" under "I/O Module Tasks" highlighted. The main content area is titled "I/O Module Configuration" and includes links for "Bay 1", "Bay 2", "Bay 3", and "Bay 4". Below these links, the configuration for "Bay 1 (ICPM)" is shown, indicating the "Enhanced Module Interface" status is "Active". There are also links for "Advanced Configuration" and "Port Configuration and Status". The configuration for "Bay 2 (I/O Module)" is partially visible at the bottom, showing "Current IP Configuration".

3. Select an I/O-module bay.

- Click on the **Advanced Configuration** link to view the POST results.

Advanced Configuration for I/O Module 1 ?

Use the following links to jump down to different sections on this page.

[POST Results](#)

POST Results ?

POST results available: Module completed POST successfully.

- Click the **Port Configuration and Status** link to view and configure the state of the 14 Ethernet ports supported by the selected ICPM.

I/O Module 1 - ICPM: I/O Port Status ?

Power: On, Enhanced Module Interface: Active

Bay 1 I/O Module Port Status

Port	Label	Port Type	Link State		Speed, Duplex	
			Desired	Physical	Desired	Physical
1	External port	External	Up <input checked="" type="checkbox"/>	Up	100 Mbps, Full	100 Mbps, Full
2	External port	External	Up <input type="checkbox"/>	Down	Auto	n/a
3	External port	External	Up <input checked="" type="checkbox"/>	Up	100 Mbps, Full	100 Mbps, Full
4	External port	External	Up <input type="checkbox"/>	Down	100 Mbps, Full	n/a
5	External port	External	Up <input type="checkbox"/>	Down	Auto	n/a
6	External port	External	Up <input type="checkbox"/>	Down	Auto	n/a
7	External port	External	Up <input type="checkbox"/>	Down	Auto	n/a
8	External port	External	Up <input type="checkbox"/>	Down	Auto	n/a
9	External port	External	Up <input type="checkbox"/>	Down	Auto	n/a
10	External port	External	Up <input type="checkbox"/>	Down	Auto	n/a
11	External port	External	Up <input type="checkbox"/>	Down	Auto	n/a
12	External port	External	Up <input type="checkbox"/>	Down	Auto	n/a
13	External port	External	Up <input type="checkbox"/>	Down	Auto	n/a
14	External port	External	Up <input type="checkbox"/>	Down	Auto	n/a

If an Ethernet port is plugged into an external switch, and if the **Desired** check box is selected, you can assign speeds of 100 Mbps or 1000 Mbps. Select **Auto** to have the I/O Module negotiate the link speed and mode with the far-end equipment .

Note: Port speeds of 1 Gbps or higher can only be full duplex.

- Click **Save**.

Chapter 5. Updating the firmware

This chapter provides information for the following tasks:

- Determining the level of the firmware installed
- Obtaining the latest level of firmware for the I/O module
- Updating the firmware on the I/O module
- Resetting the I/O module to activate the firmware update

Determining the level of the ICPM firmware

After you install the I/O module in your BladeCenter unit, make sure that the latest I/O module (switch) firmware is installed on the I/O module. To determine the level of the firmware that is installed on the I/O module, complete the following steps.

1. Access and log in to the management module as described in the *Management Module User's Guide* for your BladeCenter unit type. If necessary, obtain the IP address of the management module from your system administrator. The login window opens.

If you do not have an assigned user identifier (ID) and initial password, type the default user ID (USERID) in the **User ID** field and the default password (PASSWORD) in the **Password** field (where the sixth character is the number zero, not the letter O) and click **OK**. The main page in the management module opens.
2. Select **Firmware VPD** from the **Monitors** menu on the left side of the BladeCenter Management Module window. The Firmware VPD window opens.
3. On the Firmware VPD window, locate the **I/O Module Firmware VPD** heading. Scroll to the number of the I/O-module bay that contains the I/O module that you just installed; then, note the level of the firmware for the I/O module.

Updating the I/O module firmware

To update the I/O module firmware, complete the following steps.

1. Go to <http://www.ibm.com/servers/eserver/support/bladecenter/index.html> ; then, click **Support & downloads** → **Downloads** → **Fixes, updates and drivers**.
2. Type the I/O module model number in the **Search within Download** field. A window opens, displaying the latest level of available firmware.
3. Compare the level of firmware that you noted in the **I/O Module Firmware VPD** section of the Firmware VPD window to the latest level of available firmware. If the two firmware levels do not match, download the latest level from the IBM web site.
4. Install the new firmware following the instructions that are provided with the download.

- Use the *Firmware Management* page selected from the *I/O Module Tasks* navigation pane to select an image to update, activate, or both.

Firmware Management, I/O Modules with Enhanced Module Interface

Use this section to either flash a firmware component, or to make a firmware image active.

To update a firmware component

- ◆ Select a target module
- ◆ Select or enter a firmware file to upload
- ◆ Select the target firmware image
- ◆ Click the "Update" button

Target

Firmware file

	Click to Activate*	Image Information from I/O Module	Select to Update
Image	<input type="checkbox"/>	Image-Name: IBM ICPM BOOT ,Version: 1.0.0.20 ,BuildID: 0 ,Rel-Date: 0 ,Revision: 0 ,Type: Boot Rom ,Status: Active ,Other-Info: None	<input type="radio"/>
	<input type="checkbox"/>	Image-Name: IBM ICPM OS ,Version: 1.0.0.20 ,BuildID: 0 ,Rel-Date: 0 ,Revision: 0 ,Type: Application ,Status: Active ,Other-Info: None	<input type="radio"/>
	<input type="checkbox"/>	Image-Name: IBM ICPM OS ,Version: 170.187.204.221 ,BuildID: 0 ,Rel-Date: 0 ,Revision: 0 ,Type: Application ,Status: Backup ,Other-Info: None	<input type="radio"/>

*To activate a back-up firmware image

- ◆ Click the activate button next to the firmware image.
- ◆ The active image is the firmware currently running on the I/O module.
- ◆ Other images are stored on the I/O module, but not currently running
- ◆ Note that some firmware images do not have a redundant standby. An activation request on these may fail.

Notes:

- The older Copper Pass-thru Module (CPM) does not support the **Click to Activate** feature.
 - The BOOT image is the firmware the ICPM will use to load its operating system and run POST.
 - The ICPM can contain two different firmware operating-system images. Therefore, you can always return to a previous image if the current download process fails.
- Select the image or images to update, and the image to set as the active image, and click **Update**.

Restarting the I/O module

To activate the new image or images, you must restart the I/O module through the management-module interface. To restart the I/O module, complete the following steps.

- Select **Admin/Power/Restart** from the *I/O Module Tasks* section of the navigation pane. The I/O Module Tasks window opens.
- Select the I/O module bay on which the firmware update was just installed.
- From the I/O Module Power/Restart window, select **Restart Module(s)**.

4. Make sure that the latest I/O module firmware was correctly installed on the I/O module. Select **Firmware VPD** from the **Monitors** choices in the navigation pane. The Firmware VPD window opens.
5. On the Firmware VPD window, locate **I/O Module Firmware VPD** . Scroll to the I/O-module bay field that contains the I/O module that you just installed; then, note the level of the firmware for the I/O module.
6. Make sure that the latest I/O module firmware was correctly installed on the I/O module.

Note: In order to run the SOL or cKVM options through the ICPM, you will need to establish the physical connection first. After you plug the RJ-45 connector of the terminal into the ICPM, you will be able to activate these Advanced Management Module features.

Chapter 6. Solving problems

This section provides basic troubleshooting information to help you solve some problems that might occur. If you cannot locate and correct the problem using the information in this section, see Appendix A, “Getting help and technical assistance,” on page 27.

Running POST

To make sure that it is fully operational, the I/O module performs a power-on self-test (POST). This test takes approximately 1 minute to complete. The management module reads the test results and displays them for you. During normal operation, these tests are completed without error, and the green OK LED is lit. However, if POST fails, the amber I/O module error (fault) LED and the system-error LED on the BladeCenter unit will be lit. A management module event is stored in the management module event log. The specific failure is displayed on the System Status → I/O Module pane.

Notes:

- For the location and description of the I/O module LEDs, see Chapter 3, “LEDs, external ports, and cables,” on page 13.
- See the *BladeCenter Management Module User’s Guide* for additional information about system status, event logs, and system errors.

POST errors

There are two types of errors: noncritical and critical.

- A noncritical error is a partial failure that applies to one port or more ports, and leaves one or more ports on the I/O module operational. You can continue to operate the I/O module; however, you must replace it as soon as possible.
- When critical errors occur, the entire I/O module no longer operates.

If a critical error occurs, complete the following steps:

1. Open the Management Module Switch Information window (see “Configuring the ICPM” on page 17).
2. Turn off the I/O module; then, turn it back on.
3. After POST is completed, the management-module interface displays the results. If the error remains, the I/O module is defective. Replace the I/O module.

The Management Module Switch Information window displays the error code associated with each failure. Note the applicable error code and corresponding failure. You might have to provide this information when you call IBM. For more details, see Appendix A, “Getting help and technical assistance,” on page 27.

The following table describes some critical and noncritical failures. This is not an exhaustive list.

Diagnostic indicator (in hex)	Failing functional area	Failure criticality
00 - 7F	Base internal functions	Critical
80 - 9F	Internal interface failures	Noncritical
A0 - AF	External interface errors	Noncritical
B0 - FE	Reserved	Noncritical
FF	I/O module "good" indicator	Operation

Chapter 7. Parts listing

Replaceable components are of three types:

- **Tier 1 customer replaceable unit (CRU):** Replacement of Tier 1 CRUs is your responsibility. If IBM installs a Tier 1 CRU at your request, you will be charged for the installation.
- **Tier 2 customer replaceable unit (CRU):** You may install a Tier 2 CRU yourself or request IBM to install it, at no additional charge, under the type of warranty service that is designated for your server.
- **Field replaceable unit (FRU):** FRUs must be installed only by trained service technicians.

For information about the terms of the warranty, see Appendix B, "Warranty," on page 29.

The following table lists the part information associated with the ICPM.

Name of component	CRU/FRU identifier
Intelligent Copper Pass-thru Module	44R5248 (Tier 1 CRU)

Appendix A. Getting help and technical assistance

If you need help, service, or technical assistance or just want more information about IBM products, you will find a wide variety of sources available from IBM to assist you. This appendix contains information about where to go for additional information about IBM and IBM products, what to do if you experience a problem with your BladeCenter or optional device, and whom to call for service, if it is necessary.

Before you call

Before you call, make sure that you have taken these steps to try to solve the problem yourself:

- Check all cables to make sure that they are connected.
- Check the power switches to make sure that the system and any optional devices are turned on.
- Use the troubleshooting information in your system documentation, and use the diagnostic tools that come with your system. Information about diagnostic tools is in the *Hardware Maintenance Manual and Troubleshooting Guide* or *Problem Determination and Service Guide* on the IBM Documentation CD that comes with your system.
- Go to <http://www.ibm.com/servers/eserver/support/bladecenter/index.html> to check for information to help you solve the problem.

You can solve many problems without outside assistance by following the troubleshooting procedures that IBM provides in the online help or in the documentation that is provided with your IBM product. The documentation that comes with BladeCenter systems also describes the diagnostic tests that you can perform. Most BladeCenter systems, operating systems, and programs come with documentation that contains troubleshooting procedures and explanations of error messages and error codes. If you suspect a software problem, see the documentation for the software.

Using the documentation

Information about your IBM BladeCenter system and preinstalled software, if any, or optional device is available in the documentation that comes with the product. That documentation can include printed documents, online documents, readme files, and help files. See the troubleshooting information in your system documentation for instructions for using the diagnostic programs. The troubleshooting information or the diagnostic programs might tell you that you need additional or updated device drivers or other software. IBM maintains pages on the World Wide Web where you can get the latest technical information and download device drivers and updates. To access these pages, go to <http://www.ibm.com/servers/eserver/support/bladecenter/index.html> and follow the instructions. Also, some documents are available through the IBM Publications Center at <http://www.ibm.com/shop/publications/order/>.

Getting help and information from the World Wide Web

On the World Wide Web, the IBM Web site has up-to-date information about IBM BladeCenter systems, optional devices, services, and support at <http://www.ibm.com/servers/eserver/support/bladecenter/index.html>.

Software service and support

Through IBM Support Line, you can get telephone assistance, for a fee, with usage, configuration, and software problems with BladeCenter products. For information about which products are supported by Support Line in your country or region, see <http://www.ibm.com/services/sl/products/>.

For more information about Support Line and other IBM services, see <http://www.ibm.com/services/>, or see <http://www.ibm.com/planetwide/> for support telephone numbers. In the U.S. and Canada, call 1-800-IBM-SERV (1-800-426-7378).

Hardware service and support

You can receive hardware service through IBM Services or through your IBM reseller, if your reseller is authorized by IBM to provide warranty service. See <http://www.ibm.com/planetwide/> for support telephone numbers, or in the U.S. and Canada, call 1-800-IBM-SERV (1-800-426-7378).

In the U.S. and Canada, hardware service and support is available 24 hours a day, 7 days a week. In the U.K., these services are available Monday through Friday, from 9 a.m. to 6 p.m.

IBM Taiwan product service

台灣 IBM 產品服務聯絡方式：
台灣國際商業機器股份有限公司
台北市松仁路 7 號 3 樓
電話：0800-016-888

IBM Taiwan product service contact information:
IBM Taiwan Corporation
3F, No 7, Song Ren Rd.
Taipei, Taiwan
Telephone: 0800-016-888

Appendix B. Warranty

IBM provides hardware warranty service for this product equivalent to that described in the IBM Statement of Limited Warranty ("SOLW"), a copy of which is included, notwithstanding the section entitled, "What this Warranty Does not Cover" of the SOLW. All references to "Machine" in the SOLW apply to this product (except for its firmware or accompanying software) for purposes of the warranty. References to "IBM's Official Published Specifications" mean the specifications for the product designated by IBM. Any firmware or software included in or which accompanies this product is subject to the terms and conditions of the manufacturer's end user license agreement.

IBM Statement of Limited Warranty Z125-4753-10 08/2008

Part 1 - General Terms

This Statement of Limited Warranty includes Part 1 - General Terms, Part 2 - Country-unique Terms, and Part 3 - Warranty Information. The terms of Part 2 replace or modify those of Part 1. For purposes of this Statement of Limited Warranty, "IBM" means the IBM entity that provided your Machine to you or to your reseller—for example, International Business Machines Corporation in the U.S. or IBM World Trade Corporation or the local IBM entity in your country.

The warranties provided by IBM in this Statement of Limited Warranty apply only to Machines you purchase for your use, and not for resale. The term "Machine" means an IBM machine, its features, conversions, upgrades, elements, or accessories, or any combination of them. The term "Machine" does not include any software programs, whether pre-loaded with the Machine, installed subsequently, or otherwise. **NOTHING IN THIS STATEMENT OF LIMITED WARRANTY AFFECTS ANY STATUTORY RIGHTS OF CONSUMERS THAT CANNOT BE WAIVED OR LIMITED BY CONTRACT.**

This Statement of Limited Warranty is available, in multiple languages, at the following IBM Internet website: http://www.ibm.com/systems/support/machine_warranties/.

What this Warranty Covers

IBM warrants that each Machine is free from defects in materials and workmanship and conforms to its Specifications. "Specifications" is information specific to a Machine in a document entitled "Official Published Specifications", which is available upon request.

During the warranty period, IBM provides repair and exchange service for the Machine under the type of warranty service IBM designates for the Machine. The warranty period for the Machine is a fixed period starting on its original Date of Installation. The date on your purchase invoice or sales receipt is the Date of Installation unless IBM or your reseller informs you otherwise. The warranty period, type of warranty, and service level that apply to your Machine are designated in Part 3.

Many features, conversions, or upgrades involve the removal of parts and their return to IBM. An IBM part that replaces a removed part will assume the warranty

service status of the removed part. An IBM part that is added to a Machine without replacing a previously-installed part is subject to warranty effective on its Date of Installation. Unless IBM specifies otherwise, the warranty period, type of warranty, and service level of such part is the same as the Machine on which it is installed.

Unless IBM specifies otherwise, these warranties apply only in the country or region in which you purchased the Machine.

THESE WARRANTIES ARE YOUR EXCLUSIVE WARRANTIES AND REPLACE ALL OTHER WARRANTIES OR CONDITIONS, EXPRESS OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OR CONDITIONS OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE, AND ANY WARRANTY OF TITLE OR NON-INFRINGEMENT. SOME STATES OR JURISDICTIONS DO NOT ALLOW THE EXCLUSION OF EXPRESS OR IMPLIED WARRANTIES, SO THE ABOVE EXCLUSION MAY NOT APPLY TO YOU. IN THAT EVENT, SUCH WARRANTIES ARE LIMITED IN DURATION TO THE WARRANTY PERIOD. NO WARRANTIES APPLY AFTER THAT PERIOD. SOME STATES OR JURISDICTIONS DO NOT ALLOW LIMITATIONS ON HOW LONG AN IMPLIED WARRANTY LASTS, SO THE ABOVE LIMITATION MAY NOT APPLY TO YOU.

What this Warranty Does not Cover

This warranty does not cover the following:

- a. failure or damage resulting from misuse (including, but not limited to, use of any Machine capacity or capability, other than that authorized by IBM in writing), accident, modification, unsuitable physical or operating environment, operation in other than the specified operating environment or improper maintenance by you or a third party;
- b. failure due to events beyond IBM's control;
- c. failure caused by a product for which IBM is not responsible;
- d. any non-IBM products, including those provided with, or installed on, an IBM Machine at your request;
- e. accessories, supply items and consumables (e.g. batteries and printer cartridges), and structural parts (e.g. frames and covers);
- f. service of Machine alterations; and
- g. service of a Machine on which you are using capacity or capability, other than that authorized by IBM in writing.

The warranty is voided by removal or alteration of identification labels on the Machine or its parts.

IBM does not warrant uninterrupted or error-free operation of a Machine.

Any technical or other support provided for a Machine under warranty, such as assistance with "how-to" questions and those regarding Machine set-up and installation, is provided **WITHOUT WARRANTIES OF ANY KIND**.

How to Obtain Warranty Service

If the Machine does not function as warranted during the warranty period, refer to the service documentation that shipped with your Machine for support assistance

and problem determination procedures. A copy of the service documentation for your Machine can also be found at the following IBM website: <http://www.ibm.com> under "Support and downloads".

If you are unable to resolve your problem with the service documentation, contact IBM or your reseller to obtain warranty service. Contact information for IBM is provided in Part 3. If you do not register the Machine with IBM, you may be required to present proof of purchase as evidence of your entitlement to warranty service.

What IBM Will Do to Correct Problems

IBM will attempt to diagnose and resolve your problem over the telephone or electronically by access to an IBM Internet website. Certain Machines contain remote support capabilities for direct problem reporting, remote problem determination, and resolution with IBM. When you contact IBM for service, you must follow the problem determination and resolution procedures that IBM specifies. Following problem determination, if IBM determines on-site service is required, a service technician will be scheduled for service at your location.

You are responsible for downloading or obtaining from IBM, and installing designated Machine Code (microcode, basic input/output system code (called "BIOS"), utility programs, device drivers, and diagnostics delivered with an IBM Machine) and other software updates in a timely manner from an IBM Internet website or from other electronic media, and following the instructions that IBM provides. You may request IBM to install Machine Code changes, however, you may be charged for that service.

Some parts of IBM Machines are designated as Customer Replaceable Units ("CRUs"). If your problem can be resolved with a CRU (e.g. keyboard, memory, hard disk drive), IBM will ship the CRU to you for you to install.

If the Machine does not function as warranted during the warranty period and your problem cannot be resolved over the telephone or electronically, through your application of Machine Code or software updates, or with a CRU, IBM or its subcontractor or a reseller that has been approved by IBM to provide warranty service, will either, at its discretion, 1) repair it to make it function as warranted, or 2) replace it with one that is at least functionally equivalent. If IBM or its subcontractor or the reseller is unable to do either, you may return the Machine to your place of purchase and your money will be refunded.

IBM or its subcontractor or the reseller will also manage and install selected engineering changes that apply to the Machine.

Exchange of a Machine or Part

When the warranty service involves the exchange of a Machine or part, the item IBM or its subcontractor or the reseller replaces becomes IBM's property, and the replacement becomes yours. You represent that all removed items are genuine and unaltered. The replacement may not be new, but will be in good working order and at least functionally equivalent to the item replaced. The replacement assumes the warranty service status of the replaced item.

Your Additional Responsibilities

You agree:

- a. before IBM or its subcontractor or the reseller exchanges a Machine or part, to remove all features, parts, options, alterations, and attachments not under warranty service and ensure that the Machine is free of any legal obligations or restrictions that prevent its exchange;
- b. to obtain authorization from the owner to have IBM or its subcontractor or the reseller service a Machine that you do not own;
- c. where applicable, before service is provided:
 - 1. follow the service request procedures that IBM or its subcontractor or its reseller provides;
 - 2. backup and secure all programs, data, and funds contained in the Machine; and
 - 3. inform IBM or its subcontractor or the reseller of changes in the Machine's location;
- d. to provide IBM or its subcontractor or the reseller with sufficient and safe access to your facilities to permit IBM to fulfill its obligations;
- e. to allow IBM or its subcontractor or the reseller to install mandatory engineering changes, such as those required for safety;
- f. when the type of warranty service requires that you deliver a failing Machine to IBM, you agree to ship it suitably packaged, as IBM specifies, to a location IBM designates. After the Machine has been repaired or exchanged, IBM will return the repaired Machine or provide a replacement Machine to you at its expense, unless IBM specifies otherwise. IBM is responsible for loss of, or damage to, your Machine only while it is 1) in IBM's possession; or 2) in transit in those cases where IBM is responsible for the transportation charges; and
- g. to securely erase from any Machine you return to IBM for any reason all programs not provided by IBM with the Machine, and data, including without limitation the following: 1) information about identified or identifiable individuals or legal entities ("Personal Data"); and 2) your confidential or proprietary information and other data. If removing or deleting Personal Data is not possible, you agree to transform such information (e.g., by making it anonymous or encrypting it) so that it no longer qualifies as Personal Data under applicable law. You also agree to remove all funds from Machines returned to IBM. IBM is not responsible for any funds, programs not provided by IBM with the Machine, or data contained in a Machine that you return to IBM. You acknowledge that, to perform its responsibilities under this Statement of Limited Warranty, IBM may ship all or part of the Machine or its software to other IBM or third party locations around the world, and you authorize IBM to do so.

Limitation of Liability

Circumstances may arise where, because of a default on IBM's part or other liability, you are entitled to recover damages from IBM. Regardless of the basis on which you are entitled to claim damages from IBM (including fundamental breach, negligence, misrepresentation, or other contract or tort claim), except for any liability that cannot be waived or limited by applicable laws, IBM's entire liability for all claims in the aggregate arising from or related to each Product will not exceed:

- a. damages for bodily injury (including death) and damage to real property and tangible personal property; and
- b. the amount of any other actual direct damages, up to the charges (if recurring, 12 months' charges apply) for the Machine that is subject of the claim. For purposes of this item, the term "Machine" includes Machine Code and Licensed Internal Code ("LIC").

This limit also applies to IBM's suppliers, subcontractors, and resellers. It is the maximum for which IBM and its suppliers, subcontractors, and resellers are collectively responsible.

UNDER NO CIRCUMSTANCES IS IBM OR ITS SUPPLIERS, SUBCONTRACTORS, OR RESELLERS LIABLE FOR ANY OF THE FOLLOWING EVEN IF INFORMED OF THEIR POSSIBILITY: 1) THIRD PARTY CLAIMS AGAINST YOU FOR DAMAGES (OTHER THAN THOSE UNDER THE FIRST ITEM LISTED ABOVE); 2) LOSS OF, OR DAMAGE TO, DATA; 3) SPECIAL, INCIDENTAL, OR INDIRECT DAMAGES OR FOR ANY ECONOMIC CONSEQUENTIAL DAMAGES; OR 4) LOST PROFITS, BUSINESS, REVENUE, GOODWILL OR ANTICIPATED SAVINGS. SOME STATES OR JURISDICTIONS DO NOT ALLOW THE EXCLUSION OR LIMITATION OF INCIDENTAL OR CONSEQUENTIAL DAMAGES, SO THE ABOVE LIMITATION OR EXCLUSION MAY NOT APPLY TO YOU.

Governing Law

Both you and IBM consent to the application of the laws of the country in which you acquired the Machine to govern, interpret, and enforce all of your and IBM's rights, duties, and obligations arising from, or relating in any manner to, the subject matter of this Statement of Limited Warranty, without regard to conflict of law principles.

THESE WARRANTIES GIVE YOU SPECIFIC LEGAL RIGHTS, AND YOU MAY ALSO HAVE OTHER RIGHTS WHICH VARY FROM STATE TO STATE OR JURISDICTION TO JURISDICTION.

Jurisdiction

All of our rights, duties, and obligations are subject to the courts of the country in which you acquired the Machine.

Part 2 - Country-unique Terms

AMERICAS

Jurisdiction:

The following sentence is added to this section as it applies to countries in bold print below:

Any litigation arising from this Statement of Limited Warranty will be settled exclusively by 1) in **Argentina**; the Ordinary Commercial Court of the city of Buenos Aires; 2) in **Bolivia**; the courts of the city of La Paz; 3) in **Brazil**; court of Rio de Janeiro, RJ; 4) in **Chile**; the Civil Courts of Justice of Santiago; 5) in **Colombia**; the Judges of the Republic of Colombia; 6) in **Equador**; the civil judges of Quito for executory or summary proceedings (as applicable); 7) in **Mexico**; the courts located in Mexico City, Federal District; 8) in **Paraguay**; the courts of the city of Asuncion; 9) in **Peru**; the judges and tribunals of the judicial district of Lima, Cercado; 10) in **Uruguay**; the courts of the city of Montevideo; 11) in **Venezuela**; the courts of the metropolitan area of the city of Caracas.

BRAZIL

Exchange of a Machine or Part:

Delete the last sentence:

The replacement assumes the warranty service status of the replaced item.

CANADA

What this Warranty Covers:

The following replaces the 2nd paragraph to this section:

During the warranty period, IBM provides repair and exchange service for the Machine under the type of warranty service IBM designates for the Machine. The warranty period for the Machine is a fixed period starting on its original Date of Installation. The date on your purchase invoice or sales receipt is the Date of Installation unless IBM informs you otherwise. The warranty period, type of warranty, and service level that apply to your Machine are designated in Part 3.

Limitation of Liability:

The following replaces item a and item b of this section:

- a. damages for bodily injury (including death) or physical harm to real property and tangible personal property caused by IBM's negligence; and
- b. the amount of any other actual direct damages, up to the greater of \$100,000.00 or the charges (if recurring, 12 months' charges apply) for the Machine that is subject of the claim. For purposes of this item, the term "Machine" includes Machine Code and Licensed Internal Code ("LIC").

Governing Law:

The following replaces "laws of the country in which you acquired the Machine" in the first sentence:

laws in the Province of Ontario.

PERU

Limitation of Liability:

The following is added at the end of this section:

In accordance with Article 1328 of the Peruvian Civil Code the limitations and exclusions specified in this section will not apply to damages caused by IBM's willful misconduct ("dolo") or gross negligence ("culpa inexcusable").

UNITED STATES

Governing Law:

The following replaces "laws of the country in which you acquired the Machine" in the first sentence:

laws of the State of New York

ASIA PACIFIC

AUSTRALIA

What this Warranty Covers:

The following paragraph is added to this section:

The warranties specified in this Section are in addition to any rights you may have under the Trade Practices Act 1974 or other similar legislation and are only limited to the extent permitted by the applicable legislation.

Limitation of Liability:

The following is added to this section:

Where IBM is in breach of a condition or warranty implied by the Trade Practices Act 1974 or other similar legislation, IBM's liability is limited to the repair or replacement of the goods or the supply of equivalent goods. Where that condition or warranty relates to right to sell, quiet possession or clear title, or the goods are of a kind ordinarily acquired for personal, domestic or household use or consumption, then none of the limitations in this paragraph apply.

Governing Law:

The following replaces "laws of the country in which you acquired the Machine" in the first sentence:

laws of the State or Territory

CAMBODIA AND LAOS

Governing Law:

The following replaces "laws of the country in which you acquired the Machine" in the first sentence:

laws of the State of New York, United States of America

CAMBODIA, INDONESIA AND LAOS

Arbitration:

The following is added under this heading:

Disputes arising out of or in connection with this Statement of Limited Warranty shall be finally settled by arbitration which shall be held in Singapore in accordance with the Arbitration Rules of Singapore International Arbitration Center ("SIAC Rules") then in effect. The arbitration award shall be final and binding for the parties without appeal and shall be in writing and set forth the findings of fact and the conclusions of law.

The number of arbitrators shall be three, with each side to the dispute being entitled to appoint one arbitrator. The two arbitrators appointed by the parties shall appoint a third arbitrator who shall act as chairman of the proceedings. Vacancies in the post of chairman shall be filled by the president of the SIAC. Other vacancies shall be filled by the respective nominating party. Proceedings shall continue from the stage they were at when the vacancy occurred.

If one of the parties refuses or otherwise fails to appoint an arbitrator within 30 days of the date the other party appoints its, the first appointed arbitrator shall be the sole arbitrator, provided that the arbitrator was validly and properly appointed.

All proceedings shall be conducted, including all documents presented in such proceedings, in the English language. The English language version of this Statement of Limited Warranty prevails over any other language version.

HONG KONG S.A.R.

As applies to transactions initiated and performed in Hong Kong S.A.R., phrases throughout this Agreement containing the word “country” (for example, “country of purchase” and “country of Installation”) are replaced with “Hong Kong S.A.R.”

INDIA

Limitation of Liability:

The following replaces item a and item b of this section:

- a. liability for bodily injury (including death) or damage to real property and tangible personal property will be limited to that caused by IBM's negligence; and
- b. as to any other actual damage arising in any situation involving nonperformance by IBM pursuant to, or in any way related to the subject of this Statement of Limited Warranty, the charge paid by you for the individual Machine that is the subject of the claim. For purposes of this item, the term “Machine” includes Machine Code and Licensed Internal Code (“LIC”).

Arbitration:

The following is added under this heading:

Disputes arising out of or in connection with this Statement of Limited Warranty shall be finally settled by arbitration which shall be held in Bangalore, India in accordance with the laws of India then in effect. The arbitration award shall be final and binding for the parties without appeal and shall be in writing and set forth the findings of fact and the conclusions of law.

The number of arbitrators shall be three, with each side to the dispute being entitled to appoint one arbitrator. The two arbitrators appointed by the parties shall appoint a third arbitrator who shall act as chairman of the proceedings. Vacancies in the post of chairman shall be filled by the president of the Bar Council of India. Other vacancies shall be filled by the respective nominating party. Proceedings shall continue from the stage they were at when the vacancy occurred.

If one of the parties refuses or otherwise fails to appoint an arbitrator within 30 days of the date the other party appoints its, the first appointed arbitrator shall be the sole arbitrator, provided that the arbitrator was validly and properly appointed.

All proceedings shall be conducted, including all documents presented in such proceedings, in the English language. The English language version of this Statement of Limited Warranty prevails over any other language version.

JAPAN

Governing Law:

The following sentence is added to this section:

Any doubts concerning this Statement of Limited Warranty will be initially resolved between us in good faith and in accordance with the principle of mutual trust.

MACAU S.A.R.

As applies to transactions initiated and performed in Macau S.A.R., phrases throughout this Agreement containing the word “country” (for example, “country of purchase” and “country of Installation”) are replaced with “Macau S.A.R.”

MALAYSIA

Limitation of Liability:

The word “SPECIAL” in item 3 of the last paragraph is deleted.

NEW ZEALAND

What this Warranty Covers:

The following paragraph is added to this section:

The warranties specified in this section are in addition to any rights you may have under the Consumer Guarantees Act 1993 or other legislation which cannot be excluded or limited. The Consumer Guarantees Act 1993 will not apply in respect of any goods which IBM provides, if you require the goods for the purposes of a business as defined in that Act.

Limitation of Liability:

The following is added to this section:

Where Machines are not acquired for the purposes of a business as defined in the Consumer Guarantees Act 1993, the limitations in this Section are subject to the limitations in that Act.

PEOPLE'S REPUBLIC OF CHINA (PRC)

Governing Law:

The following replaces “laws of the country in which you acquired the Machine” in the first sentence:

laws of the State of New York, United States of America (except when local law requires otherwise).

PHILIPPINES

Limitation of Liability:

Item 3 in the last paragraph is replaced by the following:

SPECIAL (INCLUDING NOMINAL AND EXEMPLARY DAMAGES), MORAL, INCIDENTAL, OR INDIRECT DAMAGES FOR ANY ECONOMIC CONSEQUENTIAL DAMAGES; OR

Arbitration:

The following is added under this heading:

Disputes arising out of or in connection with this Statement of Limited Warranty shall be finally settled by arbitration which shall be held in Metro Manila, Philippines in accordance with the laws of the Philippines then in effect. The arbitration award shall be final and binding for the parties without appeal and shall be in writing and set forth the findings of fact and the conclusions of law.

The number of arbitrators shall be three, with each side to the dispute being entitled to appoint one arbitrator. The two arbitrators appointed by the parties shall appoint a third arbitrator who shall act as chairman of the proceedings. Vacancies in the post of chairman shall be filled by the president of the Philippine Dispute Resolution Center, Inc. Other vacancies shall be filled by the respective nominating party. Proceedings shall continue from the stage they were at when the vacancy occurred.

If one of the parties refuses or otherwise fails to appoint an arbitrator within 30 days of the date the other party appoints its, the first appointed arbitrator shall be the sole arbitrator, provided that the arbitrator was validly and properly appointed.

All proceedings shall be conducted, including all documents presented in such proceedings, in the English language. The English language version of this Statement of Limited Warranty prevails over any other language version.

SINGAPORE

Limitation of Liability:

The words "SPECIAL" and "ECONOMIC" in item 3 in the last paragraph are deleted.

EUROPE, MIDDLE EAST, AFRICA (EMEA)

THE FOLLOWING TERMS APPLY TO ALL EMEA COUNTRIES:

The terms of this Statement of Limited Warranty apply to Machines purchased from IBM or an IBM reseller.

How to Obtain Warranty Service:

*Add the following paragraphs in **Western Europe** (Andorra, Austria, Belgium, Bulgaria, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Liechtenstein, Lithuania, Luxembourg, Malta, Monaco, Netherlands, Norway, Poland, Portugal, Romania, San Marino, Slovakia, Slovenia, Spain, Sweden, Switzerland, United Kingdom, Vatican State, and any country subsequently added to the European Union, as from the date of accession):*

The warranty for Machines acquired in Western Europe shall be valid and applicable in all Western Europe countries provided the Machines have been announced and made available in such countries.

If you purchase a Machine in one of the Western European countries, as defined above, you may obtain warranty service for that Machine in any of those countries from either (1) an IBM reseller approved to perform warranty service or (2) from IBM, provided the Machine has been announced and made available by IBM in the country in which you wish to obtain service.

If you purchase a Machine in a Middle East or African country, you may obtain warranty service for that Machine from the IBM entity within the country of purchase, if that IBM entity provides warranty service in that country, or from an IBM reseller, approved by IBM to perform warranty service on that Machine in that country. Warranty service in Africa is available within 50 kilometers of an IBM approved service provider. You are responsible for transportation costs for Machines located outside 50 kilometers of an IBM approved service provider.

Governing Law:

The phrase “the laws of the country in which you acquired the Machine” is replaced by:

1) “the laws of Austria” in **Albania, Armenia, Azerbaijan, Belarus, Bosnia-Herzegovina, Bulgaria, Croatia, Georgia, Hungary, Kazakhstan, Kyrgyzstan, FYR Macedonia, Moldova, Montenegro, Poland, Romania, Russia, Serbia, Slovakia, Slovenia, Tajikistan, Turkmenistan, Ukraine, and Uzbekistan;** 2) “the laws of France” in **Algeria, Benin, Burkina Faso, Cameroon, Central African Republic, Chad, Comoros, Congo Republic, Djibouti, Democratic Republic of Congo, Equatorial Guinea, French Guiana, French Polynesia, Gabon, Gambia, Guinea, Guinea-Bissau, Ivory Coast, Lebanon, Libya, Madagascar, Mali, Mauritania, Mauritius, Mayotte, Morocco, New Caledonia, Niger, Reunion, Senegal, Seychelles, Togo, Tunisia, Vanuatu, and Wallis & Futuna;** 3) “the laws of Finland” in **Estonia, Latvia, and Lithuania;** 4) “the laws of England” in **Angola, Bahrain, Botswana, Burundi, Egypt, Eritrea, Ethiopia, Ghana, Jordan, Kenya, Kuwait, Liberia, Malawi, Malta, Mozambique, Nigeria, Oman, Pakistan, Qatar, Rwanda, Sao Tome, Saudi Arabia, Sierra Leone, Somalia, Tanzania, Uganda, United Arab Emirates, the United Kingdom, West Bank/Gaza, Yemen, Zambia, and Zimbabwe;** 5) “the laws of South Africa” in **South Africa, Namibia, Lesotho and Swaziland;** 6) “the laws of Switzerland” in **Liechtenstein;** and 7) “the laws of Czech republic” in **Czech republic.**

Jurisdiction:

The following exceptions are added to this section:

1) In **Austria;** the choice of jurisdiction for all disputes arising out of this Statement of Limited Warranty and relating thereto, including its existence, will be the competent court of law in Vienna, Austria (Inner-City); 2) in **Angola, Bahrain, Botswana, Burundi, Egypt, Eritrea, Ethiopia, Ghana, Jordan, Kenya, Kuwait, Liberia, Malawi, Malta, Mozambique, Nigeria, Oman, Pakistan, Qatar, Rwanda, Sao Tome, Saudi Arabia, Sierra Leone, Somalia, Tanzania, Uganda, United Arab Emirates, United Kingdom, West Bank/Gaza, Yemen, Zambia, and Zimbabwe;** all disputes arising out of this Statement of Limited Warranty or related to its execution, including summary proceedings, will be submitted to the exclusive jurisdiction of the English courts; 3) in **Belgium and Luxembourg;** all disputes arising out of this Statement of Limited Warranty or related to its interpretation or

its execution, the law, and the courts of the capital city, of the country of your registered office and/or commercial site location only are competent; 4) in **France, Algeria, Benin, Burkina Faso, Cameroon, Central African Republic, Chad, Comoros, Congo Republic, Djibouti, Democratic Republic of Congo, Equatorial Guinea, French Guiana, French Polynesia, Gabon, Gambia, Guinea, Guinea-Bissau, Ivory Coast, Lebanon, Libya, Madagascar, Mali, Mauritania, Mauritius, Mayotte, Morocco, New Caledonia, Niger, Reunion, Senegal, Seychelles, Togo, Tunisia, Vanuatu, and Wallis & Futuna**; all disputes arising out of this Statement of Limited Warranty or related to its violation or execution, including summary proceedings, will be settled exclusively by the Commercial Court of Paris; 5) in **South Africa, Namibia, Lesotho and Swaziland**; both of us agree to submit all disputes relating to this Statement of Limited Warranty to the jurisdiction of the High Court in Johannesburg; 6) in **Turkey**; all disputes arising out of or in connection with this Statement of Limited Warranty shall be resolved by the Istanbul Central (Sultanahmet) Courts and Execution Directorates of Istanbul, the Republic of Turkey; 7) in each of the following specified countries, any legal claim arising out of this Statement of Limited Warranty will be brought before, and settled exclusively by, the competent court of a) Athens for **Greece**, b) Tel Aviv-Jaffa for **Israel**, c) Milan for **Italy**, d) Lisbon for **Portugal**, and e) Madrid for **Spain**; 8) in **the United Kingdom**; both of us agree to submit all disputes relating to this Statement of Limited Warranty to the exclusive jurisdiction of the English courts; 9) in **Liechtenstein**; all of our rights, duties, and obligations are settled exclusively by the competent court of Zurich; and 10) “to the competent courts of Czech republic”.

Arbitration:

The following is added under this heading:

In **Albania, Armenia, Azerbaijan, Belarus, Bosnia-Herzegovina, Bulgaria, Croatia, Georgia, Hungary, Kazakhstan, Kyrgyzstan, Libya, FYR Macedonia, Moldova, Montenegro, Poland, Romania, Russia, Serbia, Slovakia, Slovenia, Tajikistan, Turkmenistan, Ukraine, and Uzbekistan** all disputes arising out of this Statement of Limited Warranty or related to its violation, termination or nullity will be finally settled under the Rules of Arbitration and Conciliation of the International Arbitral Center of the Federal Economic Chamber in Vienna (Vienna Rules) by three arbitrators appointed in accordance with these rules. The arbitration will be held in Vienna, Austria, and the official language of the proceedings will be English. The decision of the arbitrators will be final and binding upon both parties. Therefore, pursuant to paragraph 598 (2) of the Austrian Code of Civil Procedure, the parties expressly waive the application of paragraph 595 (1) figure 7 of the Code. IBM may, however, institute proceedings in a competent court in the country of installation.

In **Estonia, Latvia and Lithuania** all disputes arising in connection with this Statement of Limited Warranty will be finally settled in arbitration that will be held in Helsinki, Finland in accordance with the arbitration laws of Finland then in effect. Each party will appoint one arbitrator. The arbitrators will then jointly appoint the chairman. If arbitrators cannot agree on the chairman, then the Central Chamber of Commerce in Helsinki will appoint the chairman.

EUROPEAN UNION (EU) BATTERY DIRECTIVE



Notice: This mark applies only to countries within the European Union (EU).

Batteries or packaging for batteries are labeled in accordance with European Directive 2006/66/EC concerning batteries and accumulators and waste batteries and accumulators. The Directive determines the framework for the return and recycling of used batteries and accumulators as applicable throughout the European Union. This label is applied to various batteries to indicate that the battery is not to be thrown away, but rather reclaimed upon end of life per this Directive.

In accordance with the European Directive 2006/66/EC, batteries and accumulators are labeled to indicate that they are to be collected separately and recycled at end of life. The label on the battery may also include a chemical symbol for the metal concerned in the battery (Pb for lead, Hg for mercury, and Cd for cadmium). Users of batteries and accumulators must not dispose of batteries and accumulators as unsorted municipal waste, but use the collection framework available to customers for the return, recycling, and treatment of batteries and accumulators. Customer participation is important to minimize any potential effects of batteries and accumulators on the environment and human health due to the potential presence of hazardous substances.

The retail price of batteries, accumulators and power cells includes the cost of the environmental management of their waste. For proper collection and treatment, contact your local IBM representative.

THE FOLLOWING TERMS APPLY TO ALL EU COUNTRIES:

The warranty for Machines acquired in EU countries is valid and applicable in all EU countries provided the Machines have been announced and made available in such countries.

DENMARK, FINLAND, GREECE, ITALY, LIECHTENSTEIN, NETHERLANDS, NORWAY, PORTUGAL, SPAIN, SWEDEN AND SWITZERLAND

Limitation of Liability:

The following replaces the terms of this section in its entirety:

Except as otherwise provided by mandatory law:

- a. IBM's liability for any damages and losses that may arise as a consequence of the fulfillment of its obligations under or in connection with this Statement of Limited Warranty or due to any other cause related to this Statement of Limited Warranty is limited to the compensation of only those damages and losses proved and actually arising as an immediate and direct consequence of the non-fulfillment of such obligations (if IBM is at fault) or of such cause, for a maximum amount equal to the charges you paid for the Machine. For purposes of this item, the term "Machine" includes Machine Code and Licensed Internal Code ("LIC").

The above limitation shall not apply to damages for bodily injuries (including death) and damages to real property and tangible personal property for which IBM is legally liable.

- b. **UNDER NO CIRCUMSTANCES IS IBM, OR ITS SUPPLIERS, SUBCONTRACTORS, OR RESELLERS LIABLE FOR ANY OF THE FOLLOWING, EVEN IF INFORMED OF THEIR POSSIBILITY: 1) LOSS OF, OR DAMAGE TO, DATA; 2) INCIDENTAL OR INDIRECT DAMAGES, OR FOR ANY ECONOMIC CONSEQUENTIAL DAMAGES; 3) LOST PROFITS, EVEN IF THEY ARISE AS AN IMMEDIATE CONSEQUENCE OF THE EVENT THAT GENERATED THE DAMAGES; OR 4) LOSS OF BUSINESS, REVENUE, GOODWILL, OR ANTICIPATED SAVINGS.**

FRANCE AND BELGIUM

Limitation of Liability:

The following replaces the terms of this section in its entirety:

Except as otherwise provided by mandatory law:

- a. IBM's liability for any damages and losses that may arise as a consequence of the fulfillment of its obligations under or in connection with this Statement of Limited Warranty is limited in the aggregate to the compensation of only those damages and losses proved and actually arising as an immediate and direct consequence of the non-fulfillment of such obligations (if IBM is at fault), for a maximum amount equal to the charges you paid for the Machine that has caused the damages. For purposes of this item, the term "Machine" includes Machine Code and Licensed Internal Code ("LIC").

This limit also applies to IBM's suppliers, subcontractors, and resellers. It is the maximum for which IBM and its suppliers, subcontractors and resellers are collectively responsible.

The above limitation shall not apply to damages for bodily injuries (including death) and damages to real property and tangible personal property for which IBM is legally liable.

- b. **UNDER NO CIRCUMSTANCES IS IBM, OR ITS SUPPLIERS, SUBCONTRACTORS, OR RESELLERS LIABLE FOR ANY OF THE FOLLOWING, EVEN IF INFORMED OF THEIR POSSIBILITY: 1) LOSS OF, OR DAMAGE TO, DATA; 2) INCIDENTAL OR INDIRECT DAMAGES, OR FOR ANY ECONOMIC CONSEQUENTIAL DAMAGES; 3) LOST PROFITS, EVEN IF THEY ARISE AS AN IMMEDIATE CONSEQUENCE OF THE EVENT THAT GENERATED THE DAMAGES; OR 4) LOSS OF BUSINESS, REVENUE, GOODWILL, OR ANTICIPATED SAVINGS.**

THE FOLLOWING TERMS APPLY TO THE COUNTRY SPECIFIED:

AUSTRIA AND GERMANY

What this Warranty Covers:

The following replaces the first sentence of the first paragraph of this section:

The warranty for an IBM Machine covers the functionality of the Machine for its normal use and the Machine's conformity to its Specifications.

The following paragraph is added to this section:

The minimum warranty period for Machines is 12 months. In case IBM or your reseller is unable to repair an IBM Machine, you can alternatively ask for a price reduction as far as justified by the reduced value of the unrepaired Machine or ask for a cancellation of the respective agreement for such Machine and get your money refunded.

The second paragraph does not apply.

What IBM Will Do to Correct Problems:

The following is added to this section:

During the warranty period, transportation for the delivery of the failing Machine to IBM will be at IBM's expense.

Limitation of Liability:

The following paragraph is added to this section:

The limitations and exclusions specified in the Statement of Limited Warranty will not apply to damages caused by IBM with fraud or gross negligence and for express warranty.

The following sentence is added to the end of item "b":

IBM's liability under this item is limited to the violation of essential contractual terms in cases of ordinary negligence.

IRELAND**What this Warranty Covers:**

The following is added to this section:

Except as expressly provided in these terms and conditions or Section 12 of the Sale of Goods Act 1893 as amended by the Sale of Goods and Supply of Services Act, 1980 ("the 1980 Act"), all conditions or warranties (express or implied, statutory or otherwise) are hereby excluded including, without limitation, any warranties implied by the Sale of Goods Act 1893 as amended by the 1980 Act (including, for the avoidance of doubt, section 39 of the 1980 Act).

Limitation of Liability:

The following replaces the terms of this section in its entirety:

For the purposes of this section, a "Default" means any act, statement, omission, or negligence on the part of IBM in connection with, or in relation to, the subject

matter of this Statement of Limited Warranty in respect of which IBM is legally liable to you, whether in contract or tort. A number of Defaults which together result in, or contribute to, substantially the same loss or damage will be treated as one Default occurring on the date of occurrence of the last such Default.

Circumstances may arise where, because of a Default, you are entitled to recover damages from IBM.

This section sets out the extent of IBM's liability and your sole remedy.

- a. IBM will accept unlimited liability for death or personal injury caused by the negligence of IBM.
- b. Subject always to the **Items for Which IBM is Not Liable** below, IBM will accept unlimited liability for physical damages to your tangible property resulting from the negligence of IBM.
- c. Except as provided in items "a" and "b" above, IBM's entire liability for actual damages for any one Default will not in any event exceed the greater of 1) EUR 125,000, or 2) 125% of the amount you paid for the Machine directly relating to the Default.

Items for Which IBM is Not Liable

Save with respect to any liability referred to in item "a" above, under no circumstances is IBM, its suppliers or resellers liable for any of the following, even if IBM or they were informed of the possibility of such losses:

- a. loss of, or damage to, data;
- b. special, indirect, or consequential loss; or
- c. loss of profits, business, revenue, goodwill, or anticipated savings.

SOUTH AFRICA, NAMIBIA, BOTSWANA, LESOTHO AND SWAZILAND

Limitation of Liability:

The following is added to this section:

IBM's entire liability to you for actual damages arising in all situations involving nonperformance by IBM in respect of the subject matter of this Statement of Warranty will be limited to the charge paid by you for the individual Machine that is the subject of your claim from IBM.

TURKEY

What this Warranty Covers:

The following is added to this section:

The minimum warranty period for Machines is 2 years.

UNITED KINGDOM

Limitation of Liability:

The following replaces the terms of this section in its entirety:

For the purposes of this section, a "Default" means any act, statement, omission, or negligence on the part of IBM in connection with, or in relation to, the subject matter of this Statement of Limited Warranty in respect of which IBM is legally liable to you, whether in contract or tort. A number of Defaults which together result in, or contribute to, substantially the same loss or damage will be treated as one Default.

Circumstances may arise where, because of a Default, you are entitled to recover damages from IBM.

This section sets out the extent of IBM's liability and your sole remedy.

- a. IBM will accept unlimited liability for:
 - 1. death or personal injury caused by the negligence of IBM; and
 - 2. any breach of its obligations implied by Section 12 of the Sale of Goods Act 1979 or Section 2 of the Supply of Goods and Services Act 1982, or any statutory modification or re-enactment of either such Section.
- b. IBM will accept unlimited liability, subject always to the Items for Which IBM is Not Liable below, for physical damage to your tangible property resulting from the negligence of IBM.
- c. IBM's entire liability for actual damages for any one Default will not in any event, except as provided in items a and b above, exceed the greater of 1) Pounds Sterling 75,000, or 2) 125% of the total purchase price payable or the charges for the Machine directly relating to the Default.

These limits also apply to IBM's suppliers and resellers. They state the maximum for which IBM and such suppliers and resellers are collectively responsible.

Items for Which IBM is Not Liable

Save with respect to any liability referred to in item a above, under no circumstances is IBM or any of its suppliers or resellers liable for any of the following, even if IBM or they were informed of the possibility of such losses:

- a. loss of, or damage to, data;
- b. special, indirect, or consequential loss;
- c. loss of profits, business, revenue, goodwill, or anticipated savings; or
- d. third party claims against you for damages.

Part 3 - Warranty Information

Machine Type(s)	Country of Purchase	Warranty Period	Type of Warranty Service*	Service Level*
Intelligent Copper Pass-thru Module for IBM BladeCenter	Worldwide	1 year	1	1
* See "Types of Warranty Service" and "Service Levels" for explanations of warranty-service types and service levels.				

Scheduling of a warranty service will depend upon the following: 1) the time your request for service is received, 2) Machine technology and redundancy, and 3) availability of parts. Contact your local IBM representative or the subcontractor or reseller performing services on behalf of IBM for country and location specific information.

Types of Warranty Service

Type 1 - Customer Replaceable Unit (“CRU”) Service

IBM provides replacement CRUs to you for you to install. CRU information and replacement instructions are shipped with your Machine and are available from IBM at any time on your request. CRUs are designated as being either a Tier 1 (mandatory) or a Tier 2 (optional) CRU. Installation of a Tier 1 CRU is your responsibility. If IBM installs a Tier 1 CRU at your request, you will be charged for the installation. You may install a Tier 2 CRU yourself or request IBM to install it, at no additional charge, under the type of warranty service designated for your Machine. IBM specifies in the materials shipped with a replacement CRU whether a defective CRU must be returned to IBM. When return is required, 1) return instructions and a container are shipped with the replacement CRU, and 2) you may be charged for the replacement CRU if IBM does not receive the defective CRU within 15 days of your receipt of the replacement.

Type 5 - CRU and On-site Service

At IBM's discretion you will receive CRU service or IBM or your reseller will repair the failing Machine at your location and verify its operation. You must provide suitable working area to allow disassembly and reassembly of the IBM Machine. The area must be clean, well lit and suitable for the purpose.

Type 6 - CRU and Courier or Depot Service

At IBM's discretion you will receive CRU service or you will disconnect the failing Machine for collection arranged by IBM. IBM will provide you with a shipping container for you to return your Machine to a designated service center. A courier will pick up your Machine and deliver it to the designated service center. Following its repair or exchange, IBM will arrange the return delivery of the Machine to your location. You are responsible for its installation and verification of operation.

Type 7 - CRU and Customer Carry-In or Mail-In Service

At IBM's discretion you will receive CRU service or you will deliver or mail as IBM specifies (prepaid unless IBM specifies otherwise) the failing Machine suitably packaged to a location IBM designates. After IBM has repaired or exchanged the Machine, IBM will make it available for your collection or, for Mail-in Service, IBM will return it to you at IBM's expense, unless IBM specifies otherwise. You are responsible for its installation and verification of operation.

Type 8 - CRU and Machine Exchange Service

At IBM's discretion you will receive specified CRU service or IBM will initiate shipment of a replacement Machine to your location. You must pack the failing Machine into the shipping container that contained the replacement Machine and return the failing Machine to IBM. Transportation charges, both ways, are paid by IBM. You may be charged for the replacement Machine if IBM does not receive the failing Machine within 15 days of your receipt of the replacement Machine. You are responsible for its installation and verification of operation.

Service Levels

Service levels specified below are response-time objectives only and are not guarantees. The specified service level may not be available in all worldwide locations. Charges may apply outside IBM's normal service area. Response times are based on local standard business days and working hours. Unless otherwise specified, all responses are measured from the time the customer contacts IBM for problem determination until IBM has resolved the problem remotely or scheduled service to be performed. Same Business Day Warranty Service (SBD) is based on local standard business days and working hours. Next Business Day Warranty Service (NBD) is based on commercially reasonable effort.

IBM encourages you to use available remote support technologies. Failure to install and use available remote connectivity tools and equipment for direct problem reporting, remote problem determination and resolution may result in an increased service level response-time due to resource requirements.

1. Next Business Day (NBD), 9X5
2. Same Business Day (SBD), 9X5
3. Same Day (SD), 24X7

IBM Contact Information

For IBM in Canada or the United States, call 1-800-IBM-SERV (or 1-800-426-7378). For IBM in the European Union (EU), Asia Pacific, and Latin America countries, contact IBM in that country or visit the IBM Directory of Worldwide Contacts at the following IBM Internet website: <http://www.ibm.com/planetwide/>.

Appendix C. Notices

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Other company, product, or service names may be trademarks or service marks of others.

Important notes

Processor speeds indicate the internal clock speed of the microprocessor; other factors also affect application performance.

CD drive speeds list the variable read rate. Actual speeds vary and are often less than the maximum possible.

When referring to processor storage, real and virtual storage, or channel volume, KB stands for approximately 1000 bytes, MB stands for approximately 1 000 000 bytes, and GB stands for approximately 1 000 000 000 bytes.

When referring to hard disk drive capacity or communications volume, MB stands for 1 000 000 bytes, and GB stands for 1 000 000 000 bytes. Total user-accessible capacity may vary depending on operating environments.

Maximum internal hard disk drive capacities assume the replacement of any standard hard disk drives and population of all hard disk drive bays with the largest currently supported drives available from IBM.

Maximum memory may require replacement of the standard memory with an optional memory module.

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Some software may differ from its retail version (if available), and may not include user manuals or all program functionality.

Product recycling and disposal

This unit must be recycled or discarded according to applicable local and national regulations. IBM encourages owners of information technology (IT) equipment to responsibly recycle their equipment when it is no longer needed. IBM offers a variety of product return programs and services in several countries to assist equipment owners in recycling their IT products. Information on IBM product recycling offerings can be found on IBM's Internet site at <http://www.ibm.com/ibm/environment/products/index.shtml>.

Esta unidad debe reciclarse o desecharse de acuerdo con lo establecido en la normativa nacional o local aplicable. IBM recomienda a los propietarios de equipos de tecnología de la información (TI) que reciclen responsablemente sus equipos cuando éstos ya no les sean útiles. IBM dispone de una serie de programas y servicios de devolución de productos en varios países, a fin de ayudar a los propietarios de equipos a reciclar sus productos de TI. Se puede encontrar información sobre las ofertas de reciclado de productos de IBM en el sitio web de IBM <http://www.ibm.com/ibm/environment/products/index.shtml>.



Notice: This mark applies only to countries within the European Union (EU) and Norway.

This appliance is labeled in accordance with European Directive 2002/96/EC concerning waste electrical and electronic equipment (WEEE). The Directive determines the framework for the return and recycling of used appliances as applicable throughout the European Union. This label is applied to various products to indicate that the product is not to be thrown away, but rather reclaimed upon end of life per this Directive.

注意: このマークは EU 諸国およびノルウェーにおいてのみ適用されます。

この機器には、EU 諸国に対する廃電気電子機器指令 2002/96/EC(WEEE) のラベルが貼られています。この指令は、EU 諸国に適用する使用済み機器の回収とリサイクルの骨子を定めています。このラベルは、使用済みになった時に指令に従って適正な処理をする必要があることを知らせるために種々の製品に貼られています。

Remarque : Cette marque s'applique uniquement aux pays de l'Union Européenne et à la Norvège.

L'étiquette du système respecte la Directive européenne 2002/96/EC en matière de Déchets des Equipements Electriques et Electroniques (DEEE), qui détermine les dispositions de retour et de recyclage applicables aux systèmes utilisés à travers

l'Union européenne. Conformément à la directive, ladite étiquette précise que le produit sur lequel elle est apposée ne doit pas être jeté mais être récupéré en fin de vie.

In accordance with the European WEEE Directive, electrical and electronic equipment (EEE) is to be collected separately and to be reused, recycled, or recovered at end of life. Users of EEE with the WEEE marking per Annex IV of the WEEE Directive, as shown above, must not dispose of end of life EEE as unsorted municipal waste, but use the collection framework available to customers for the return, recycling, and recovery of WEEE. Customer participation is important to minimize any potential effects of EEE on the environment and human health due to the potential presence of hazardous substances in EEE. For proper collection and treatment, contact your local IBM representative.

Battery return program

This product may contain a sealed lead acid, nickel cadmium, nickel metal hydride, lithium, or lithium ion battery. Consult your user manual or service manual for specific battery information. The battery must be recycled or disposed of properly. Recycling facilities may not be available in your area. For information on disposal of batteries outside the United States, go to <http://www.ibm.com/ibm/environment/products/index.shtml> or contact your local waste disposal facility.

In the United States, IBM has established a return process for reuse, recycling, or proper disposal of used IBM sealed lead acid, nickel cadmium, nickel metal hydride, and battery packs from IBM equipment. For information on proper disposal of these batteries, contact IBM at 1-800-426-4333. Have the IBM part number listed on the battery available prior to your call.

For Taiwan: Please recycle batteries.



For the European Union:



Notice: This mark applies only to countries within the European Union (EU).

Batteries or packaging for batteries are labeled in accordance with European Directive 2006/66/EC concerning batteries and accumulators and waste batteries and accumulators. The Directive determines the framework for the return and

recycling of used batteries and accumulators as applicable throughout the European Union. This label is applied to various batteries to indicate that the battery is not to be thrown away, but rather reclaimed upon end of life per this Directive.

Les batteries ou emballages pour batteries sont étiquetés conformément aux directives européennes 2006/66/EC, norme relative aux batteries et accumulateurs en usage et aux batteries et accumulateurs usés. Les directives déterminent la marche à suivre en vigueur dans l'Union Européenne pour le retour et le recyclage des batteries et accumulateurs usés. Cette étiquette est appliquée sur diverses batteries pour indiquer que la batterie ne doit pas être mise au rebut mais plutôt récupérée en fin de cycle de vie selon cette norme.

バッテリーあるいはバッテリー用のパッケージには、EU 諸国に対する廃電気電子機器指令 2006/66/EC のラベルが貼られています。この指令は、バッテリーと蓄電池、および廃棄バッテリーと蓄電池に関するものです。この指令は、使用済みバッテリーと蓄電池の回収とリサイクルの骨子を定めているもので、EU 諸国にわたって適用されます。このラベルは、使用済みになったときに指令に従って適正な処理をする必要があることを知らせるために種々のバッテリーに貼られています。

In accordance with the European Directive 2006/66/EC, batteries and accumulators are labeled to indicate that they are to be collected separately and recycled at end of life. The label on the battery may also include a chemical symbol for the metal concerned in the battery (Pb for lead, Hg for mercury, and Cd for cadmium). Users of batteries and accumulators must not dispose of batteries and accumulators as unsorted municipal waste, but use the collection framework available to customers for the return, recycling, and treatment of batteries and accumulators. Customer participation is important to minimize any potential effects of batteries and accumulators on the environment and human health due to the potential presence of hazardous substances. For proper collection and treatment, contact your local IBM representative.

This notice is provided in accordance with Royal Decree 106/2008 of Spain: The retail price of batteries, accumulators, and power cells includes the cost of the environmental management of their waste.

For California:

Perchlorate material – special handling may apply. See <http://www.dtsc.ca.gov/hazardouswaste/perchlorate/>.

The foregoing notice is provided in accordance with California Code of Regulations Title 22, Division 4.5 Chapter 33. Best Management Practices for Perchlorate Materials. This product/part may include a lithium manganese dioxide battery which contains a perchlorate substance.

Electronic emission notices

Federal Communications Commission (FCC) statement

Note: 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.

Properly shielded and grounded cables and connectors must be used in order to meet FCC emission limits. IBM is not responsible for any radio or television interference caused by using other than recommended cables and connectors or by unauthorized changes or modifications to this equipment. Unauthorized changes or modifications could void the user's authority to operate the equipment.

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

Industry Canada Class A emission compliance statement

This Class A digital apparatus complies with Canadian ICES-003.

Avis de conformité à la réglementation d'Industrie Canada

Cet appareil numérique de la classe A est conforme à la norme NMB-003 du Canada.

Australia and New Zealand Class A statement

Attention: This is a Class A product. In a domestic environment this product may cause radio interference in which case the user may be required to take adequate measures.

United Kingdom telecommunications safety requirement

Notice to Customers

This apparatus is approved under approval number NS/G/1234/J/100003 for indirect connection to public telecommunication systems in the United Kingdom.

European Union EMC Directive conformance statement

This product is in conformity with the protection requirements of EU Council Directive 2004/108/EC on the approximation of the laws of the Member States relating to electromagnetic compatibility. IBM cannot accept responsibility for any failure to satisfy the protection requirements resulting from a nonrecommended modification of the product, including the fitting of non-IBM option cards.

This product has been tested and found to comply with the limits for Class A Information Technology Equipment according to CISPR 22/European Standard EN 55022. The limits for Class A equipment were derived for commercial and industrial environments to provide reasonable protection against interference with licensed communication equipment.

Attention: This is a Class A product. In a domestic environment this product may cause radio interference in which case the user may be required to take adequate measures.

European Community contact:
IBM Technical Regulations
Pascalstr. 100, Stuttgart, Germany 70569

Telephone: 0049 (0)711 785 1176
Fax: 0049 (0)711 785 1283
E-mail: tjahn@de.ibm.com

Taiwanese Class A warning statement

警告使用者：
這是甲類的資訊產品，在
居住的環境中使用時，可
能會造成射頻干擾，在這
種情況下，使用者會被要
求採取某些適當的對策。

Chinese Class A warning statement

中华人民共和国“A类”警告声明

声明
此为A级产品，在生活环境中，该产品可能会造成无线电干扰。在这种情况下，
可能需要用户对其干扰采取切实可行的措施。

Japanese Voluntary Control Council for Interference (VCCI) statement

この装置は、クラス A 情報技術装置です。この装置を家庭環境で使用すると電波妨害を引き起こすことがあります。この場合には使用者が適切な対策を講ずるよう要求されることがあります。

VCCI-A

Korean Class A warning statement

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