

IBM BladeCenter 4-Port Gb Ethernet Switch  
Module



# Installation Guide



IBM BladeCenter 4-Port Gb Ethernet Switch  
Module



# Installation Guide

**Note:**

Before using this information and the product it supports, read the general information in Appendix B, "IBM Statement of Limited Warranty Z125-4753-07 11/2002," on page 49 and Appendix C, "Notices," on page 71.

**Second Edition (April 2004)**

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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 ασφαλείας (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.



**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.

**Statement 2:**



**CAUTION:**

When replacing the lithium battery, use only IBM Part Number 33F8354 or an equivalent type battery recommended by the manufacturer. If your system has a module containing a lithium battery, replace it only with the same module type made by the same manufacturer. The battery contains lithium and can explode if not properly used, handled, or disposed of.

*Do not:*

- **Throw or immerse into water**
- **Heat to more than 100°C (212°F)**
- **Repair or disassemble**

**Dispose of the battery as required by local ordinances or regulations.**

Statement 3:



**CAUTION:**

When laser products (such as CD-ROMs, DVD drives, fiber optic devices, or transmitters) are installed, note the following:

- Do not remove the covers. Removing the covers of the laser product could result in exposure to hazardous laser radiation. There are no serviceable parts inside the device.
- Use of controls or adjustments or performance of procedures other than those specified herein might result in hazardous radiation exposure.



**DANGER**

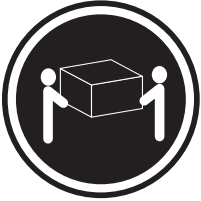
Some laser products contain an embedded Class 3A or Class 3B laser diode. Note the following.

Laser radiation when open. Do not stare into the beam, do not view directly with optical instruments, and avoid direct exposure to the beam.



Class 1 Laser Product  
Laser Klasse 1  
Laser Klass 1  
Luokan 1 Laserlaite  
Appareil À Laser de Classe 1

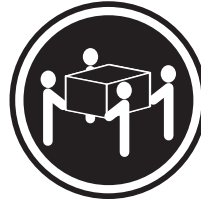
**Statement 4:**



≥ 18 kg (39.7 lb)



≥ 32 kg (70.5 lb)



≥ 55 kg (121.2 lb)

**CAUTION:**  
Use safe practices when lifting.

**Statement 5:**



**CAUTION:**  
The power control button on the device and the power switch on the power supply do not turn off the electrical current supplied to the device. The device also might have more than one power cord. To remove all electrical current from the device, ensure that all power cords are disconnected from the power source.



Statement 6:



**CAUTION:**

If you install a strain-relief bracket option over the end of the power cord that is connected to the device, you must connect the other end of the power cord to an easily accessible power source.

Statement 8:



**CAUTION:**

Never remove the cover on a power supply or any part that has the following label attached.



Hazardous voltage, current, and energy levels are present inside any component that has this label attached. There are no serviceable parts inside these components. If you suspect a problem with one of these parts, contact a service technician.

Statement 13:



**DANGER**

Overloading a branch circuit is potentially a fire hazard and a shock hazard under certain conditions. To avoid these hazards, ensure that your system electrical requirements do not exceed branch circuit protection requirements. Refer to the information that is provided with your device for electrical specifications.

Statement 14:



**CAUTION:**

Hazardous voltage, current, and energy levels might be present. Only a qualified service technician is authorized to remove the covers where the following label is attached.



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# Chapter 1. Introducing the IBM BladeCenter 4-Port Gb Ethernet Switch Module

Thank you for purchasing an IBM® BladeCenter® 4-Port Gb Ethernet Switch Module. This *Installation Guide* contains information about:

- Setting up and installing your switch module
- Configuring your switch module

For installation details, see Chapter 2, “Installing and removing a switch module,” on page 9. For additional information, see the instructions in your BladeCenter publications.

Your IBM BladeCenter 4-Port Gb Ethernet Switch Module is one of up to four Ethernet switch modules that can be installed in the IBM @server BladeCenter Type 8677, also known as the BladeCenter unit.

If you have access to the World Wide Web, you can obtain up-to-date information about your BladeCenter 4-Port Gb Ethernet Switch Module and other IBM server products at <http://www.ibm.com/eserver/xseries/>.

The product name, machine type and serial number are located on the identification label on the side of the BladeCenter 4-Port Gb Ethernet Switch Module. You will need this information when you register your BladeCenter 4-Port Gb Ethernet Switch Module with IBM. The media access control (MAC) address also is located on the identification label. See “Major components of the Ethernet switch module” on page 7 for an illustration that shows the location of the identification label.

**Note:** The MAC address is also located on a separate label on the information panel under the external Ethernet port connectors.

**Record your product information in this table.**

<b>Product name</b>	IBM BladeCenter 4-Port Gb Ethernet Switch Module
<b>Type</b>	_____
<b>Model number</b>	_____
<b>Serial number</b>	_____
<b>Media access control (MAC) address</b>	_____

Verify that the shipping carton contains an IBM BladeCenter 4-Port Gb Ethernet Switch Module. If the Ethernet switch module is missing or damaged, contact your local reseller for replacement. Otherwise, return the Ethernet switch module to its static-protective package.

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

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## Specifications and features

This section provides a summary of the specifications and features for your IBM BladeCenter 4-Port Gb Ethernet Switch Module.

The IBM BladeCenter 4-Port Gb Ethernet Switch Module features include:

- Ports
  - Four external 1000BASE-T ports for making 10/100/1000 Mbps connections to a backbone, end stations, and servers
  - Fourteen internal full-duplex gigabit ports, one connected to each of the BladeCenter blade servers
  - Two internal full-duplex 10/100 Mbps ports connected to the management module
- Performance features
  - Transmission method: Store-and-forward
  - Random-access memory (RAM) buffer: 8 MB
  - Packet filtering/forwarding rate:
    - Full-wire speed for all connections. 148800 packets per second (pps) per port (for 100 Mbps)
    - 1488100 pps per port (for 1000 Mbps)
  - Media access control (MAC) address learning: Automatic update. Supports 28 K MAC address



- Priority queues: Four priority queues per port
- Forwarding table age time: Maximum age: 17 to 2100 seconds. Default is 300 seconds.
- 802.1D Spanning Tree support. Can be disabled on the entire switch or on a per-port basis
- 802.1Q Tagged virtual local area network (VLAN) support, including Generic Attribute Registration Protocol (GARP) VLAN Registration Protocol (GVRP)
- Support for 256 VLANs in total, including 128 static VLANs
- Internet group management protocol (IGMP) snooping support per VLAN
- Link aggregation with 802.3ad support on four external ports for up to two static trunk groups or two link aggregation control protocol (LACP) 802.3ad link aggregation groups
- Management
  - Spanning Tree Algorithm (STA) protocol for creation of alternative backup paths and prevention of network loops
  - Simple network management protocol (SNMP) version 1
  - Fully configurable either in-band or out-of-band control through SNMP based software
  - Flash memory for software upgrades. This can be done through trivial file (TFTP) or hypertext transfer protocol (HTTP) Web interface.
  - Built-in SNMP management:
    - Bridge management information base (MIB) (RFC 1493)
    - MIB-II (RFC 1213)
    - 802.1P/Q MIB (RFC 2674)
    - Interface MIB (RFC 2233)
    - Mini-RMON MIB (RFC 1757) - four groups. The remote monitoring (RMON) specification defines the counters for the receive functions only. However, the switch provides counters for both receive and transmit functions.
  - Supports Web-based management
  - TFTP support
  - Bootstrap protocol (BOOTP) support
  - Dynamic host configuration protocol (DHCP) client support
  - Password enabled
  - Telnet remote control console
- Network cables:
  - 10BASE-T:
    - UTP Category 3, 4, 5 (100 meters maximum)
    - 100-ohm STP (100 meters maximum)

- 100BASE-TX:
  - UTP Category 5 (100 meters maximum)
  - EIA/TIA-568 100-ohm STP (100 meters maximum)
- 1000BASE-T:
  - UTP Category 5e (100 meters maximum)
  - UTP Category 5 (100 meters maximum)
  - EIA/TIA-568B 100-ohm STP (100 meters maximum)

## **Standards and topology**

The following standards apply to the Ethernet switch module:

- IEEE 802.3 10BASE-T Ethernet
- IEEE 802.3u 100BASE-TX Fast Ethernet
- IEEE 802.3z Gigabit Ethernet
- IEEE 802.1Q Tagged VLAN
- IEEE 802.1P Tagged Packets
- IEEE 802.3ab 1000BASE-T
- IEEE 802.3x Full-duplex Flow Control
- ANSI/IEEE 802.3 NWay auto-negotiation

The following topology applies to the Ethernet switch module: Star

---

## Related publications

This *Installation Guide* contains setup and installation instructions for the IBM BladeCenter 4-Port Gb Ethernet Switch Module. This publication also provides general information about your Ethernet switch module, including information about getting started, first-time connection to the Ethernet switch module, how to configure your Ethernet switch module, and how to get help.

In addition to this *Installation Guide*, the following related documentation is provided with your BladeCenter 4-Port Gb Ethernet Switch Module:

- *BladeCenter 4-Port Gb Ethernet Switch Module Installation and User's Guide*  
This publication is provided in Portable Document Format (PDF) on the *IBM BladeCenter Documentation* CD. This publication contains detailed setup and installation instructions for the IBM BladeCenter 4-Port Gb Ethernet Switch Module. This publication also provides general information about your Ethernet switch module, including information about features, how to configure your BladeCenter 4-Port Gb Ethernet Switch Module, and how to get help.
- *Rack Installation Instructions*  
This publication contains the instructions to install your BladeCenter unit in a rack.
- *Safety Information Book*  
This multilingual publication is provided in Portable Document Format (PDF) on the *IBM BladeCenter Documentation* CD. It contains translated versions of the caution and danger statements that appear in the documentation for your server. Each caution and danger statement has an assigned number, which you can use to locate the corresponding statement in your native language.
- *@server BladeCenter Type 8677 Installation and User's Guide*  
This publication is provided in PDF on the *IBM BladeCenter Documentation* CD. It provides general information about your BladeCenter unit, including:
  - Information about features
  - How to set up, cable, and start your BladeCenter unit
  - How to install options in your BladeCenter unit
  - How to configure your BladeCenter unit
  - How to perform basic troubleshooting of your BladeCenter unit
  - How to get help
- *BladeCenter HS20 Type 8678 Installation and User's Guide*  
This publication is provided in PDF on the *IBM BladeCenter Documentation* CD. It provides general information about your blade server, including:
  - Information about features
  - How to set up and start your blade server

- How to install options in your blade server
  - How to configure your blade server
  - How to install an operating system on your blade server
  - How to perform basic troubleshooting of your blade server
  - How to get help
- *Hardware Maintenance Manual and Troubleshooting Guides*

The BladeCenter unit and the BladeCenter HS20 Type 8678 product each come with a customized *Hardware Maintenance Manual and Troubleshooting Guide*. These publications are provided in PDF on the *IBM BladeCenter Documentation CD*. They contain information to help you solve the problem yourself or to provide helpful information to a service technician.

Depending on your blade server model, additional publications might be included on the *IBM BladeCenter Documentation CD*.

In addition to reviewing the publications in this library, be sure to review the *IBM BladeCenter Planning and Installation Guide* located at <http://www.pc.ibm.com/eserver/bladecenter> on the World Wide Web for information to help you prepare for system installation and configuration.

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## Notices and statements used in this book

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

The following types of notices and statements are used in this book:

- **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.

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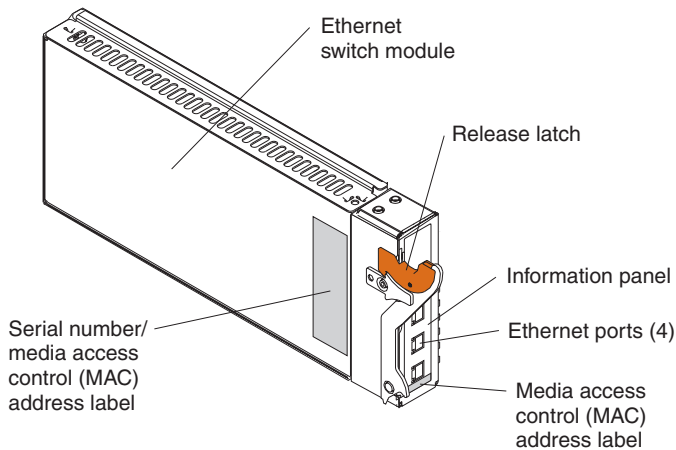
## Major components of the Ethernet switch module

The orange color on components and labels on your Ethernet switch module and BladeCenter unit identifies hot-swap or hot-plug components. You can install or remove these components while the system is running, provided that your system is configured to support this function.

The blue color on components and labels indicates touch points where a component can be gripped, a latch moved, and so on.

The following illustration shows the major components of your Ethernet switch module.

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



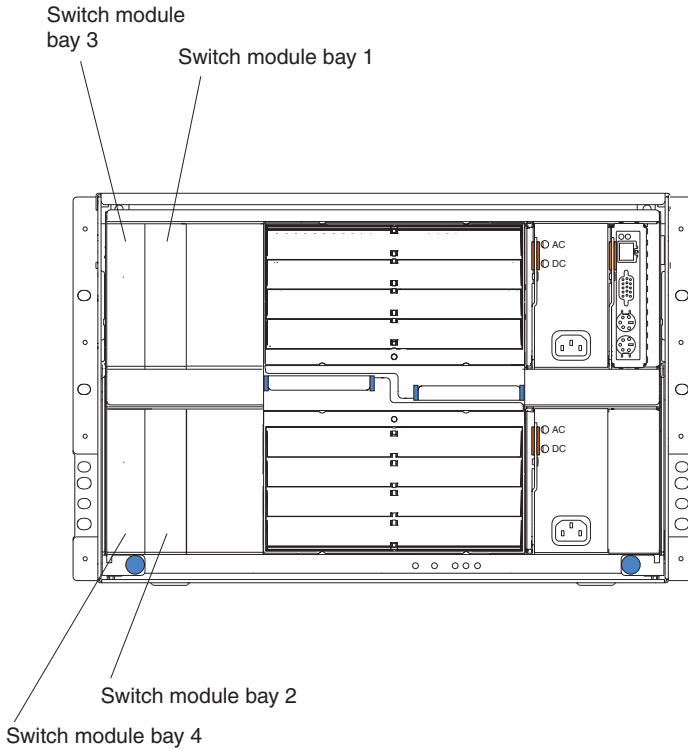
For more information about the components of the information panel, see Chapter 3, “Information panel LEDs and external ports,” on page 17. For more information about the MAC address, see the *BladeCenter 4-Port Gb Ethernet Switch Module Installation and User’s Guide* provided on the IBM BladeCenter Documentation CD.



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## Chapter 2. Installing and removing a switch module

The following illustration shows the switch-module bay locations.



**Attention:** To maintain proper system cooling, all module bays must contain either a module or a filler module; all blade bays must contain either a blade or a filler blade.

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### Ethernet interface requirements

Your BladeCenter unit supports a minimum of one hot-plug Ethernet switch module in switch-module bay 1. This switch module is a fully-functional four-connector Ethernet switch that provides a network connection to Ethernet Link 1 in all the blade servers in the BladeCenter unit. To provide a network connection for Ethernet Link 2 in each blade server, install an Ethernet switch module in switch-module bay 2.

If you install an interface option on any blade server, you must install a hot-plug switch module of the same interface type in switch-module bay 3 to obtain connection 1 for the interface option. To provide connection 2 for the interface option, install a switch module of that interface type in switch-module bay 4. The switch modules in bays 3 and 4 provide connections to all the interface options in the BladeCenter unit.

**Important:** The switch modules in switch-module bays 3 and 4 and all blade server interface options in the BladeCenter unit must use the same interface type. For example: if you install an Ethernet interface option on a blade server, the switch modules that you install in switch-module bays 3 and 4 must be Ethernet, and all other interface options in the BladeCenter unit must also be Ethernet interface options.

The following table summarizes the application for each switch module.

Bay	Switch-module function
1	Connection 1 (Ethernet Link 1) for all blade servers in the BladeCenter unit
2	Connection 2 (Ethernet Link 2) for all blade servers in the BladeCenter unit
3	Connection 3 (from all blade server interface options in the BladeCenter unit)
4	Connection 4 (from all blade server interface options in the BladeCenter unit)

For additional information, see the *BladeCenter Type 8677 Installation and User's Guide* on the *IBM BladeCenter Documentation CD*.

---

## Installation guidelines

Before you begin to install the Ethernet switch module in your BladeCenter unit, read the following information:

- Become familiar with the safety and handling guidelines specified under "Safety" on page v and "Handling static-sensitive devices" on page 11, and read the safety statements in BladeCenter unit option publications.
- The orange color on components and labels in your BladeCenter unit identifies hot-swap or hot-plug components. You can install or remove hot-swap modules while the BladeCenter unit is running. For complete details about installing or removing a hot-swap or hot-plug component, see the detailed information in this chapter.
- The blue color on components and labels identifies touch points where you can grip a component, move a latch, and so on.
- You do not need to turn off the BladeCenter unit to install or replace any of the hot-swap modules on the rear of the BladeCenter unit.



- For a list of supported options for your BladeCenter unit, refer to <http://www.ibm.com/pc/us/compat/> on the World Wide Web.

## System reliability considerations

**Attention:** To help ensure proper cooling and system reliability, make sure that:

- Each of the module bays on the rear of the BladeCenter unit has either a module or filler module installed.
- A removed hot-swap module is replaced with an identical module or filler module within 1 minute of removal.
- A removed hot-swap blade is replaced with an identical blade or a filler blade within 1 minute of removal.
- Cables for the optional modules are routed according to the illustrations and instructions in this document.

## Handling static-sensitive devices

**Attention:** Static electricity can damage electronic devices and your system. 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 printed circuitry.
- Do not leave the device where others can handle and possibly damage the device.
- While the device is still in its static-protective package, touch it to an unpainted metal part of the BladeCenter chassis for at least two seconds. (This drains static electricity from the package and from your body.)
- Remove the device from its package and install it directly into your BladeCenter unit without setting it down. If it is necessary to set the device down, place it in its static-protective package. Do not place the device on your BladeCenter chassis or on a metal table.
- Take additional care when handling devices during cold weather because heating reduces indoor humidity and increases static electricity.

---

## Installing a switch module

Statement 8:



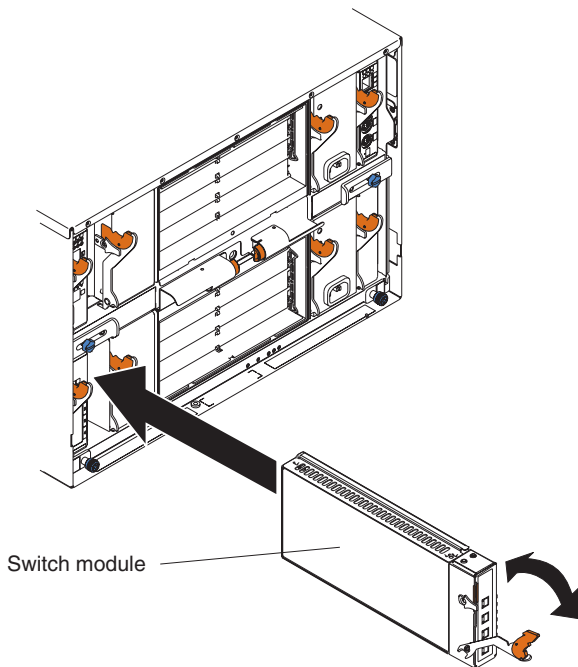
### CAUTION:

Never remove the cover on a power supply or any part that has the following label attached.



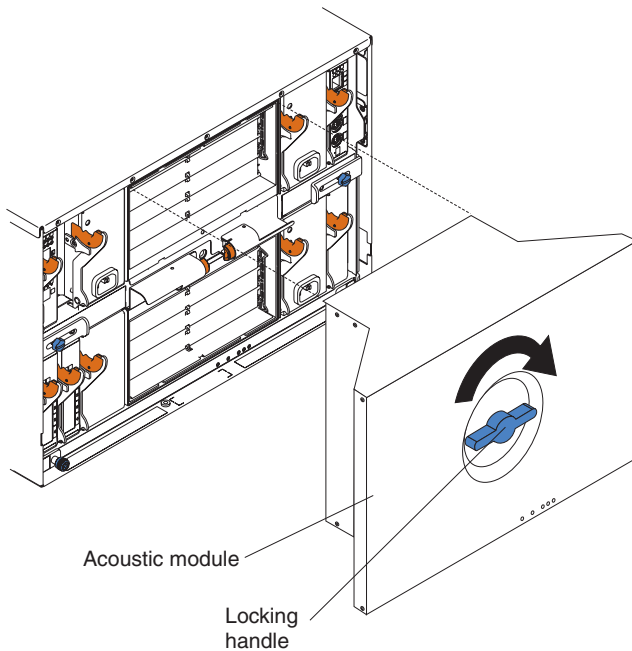
Hazardous voltage, current, and energy levels are present inside any component that has this label attached. There are no serviceable parts inside these components. If you suspect a problem with one of these parts, contact a service technician.

The following illustration shows how to install a switch module in the rear of the BladeCenter unit.



Complete the following steps to install a switch module.

1. Review the information in “Safety” on page v and “Installation guidelines” on page 10 through “Handling static-sensitive devices” on page 11.
2. Remove the acoustic attenuation module, if installed, from the rear of the BladeCenter unit.



3. Select a switch-module bay in which to install the switch module, in accordance with the instructions in “Ethernet interface requirements” on page 9.
4. Remove the filler module from the selected bay. Store the filler module for future use.
5. If you have not already done so, touch the static-protective package that contains the switch module to an unpainted metal part of the BladeCenter unit for at least two seconds.
6. Remove the switch module from its static-protective package.
7. Ensure that the release latch on the switch module is in the open position (perpendicular to the module).
8. Slide the switch module into the appropriate switch-module bay until it stops.
9. Push the release latch on the front of the switch module to the closed position.
10. Make sure that the LEDs on the switch module indicate that it is operating properly. Verify that:
  - The dc power LED and the ac power LED on each power module are lit.
  - The OK LED on each management module is lit.
  - The OK LED on each switch module is lit.

11. If you have other switch modules to install, do so now; otherwise, go to step 12.
12. Attach any cables or cords required by the switch module. For the location of the connectors on the BladeCenter unit, see the *BladeCenter Type 8677 Installation and User's Guide* on the *IBM BladeCenter Documentation CD*.
13. Replace the acoustic attenuation module, if you removed it in step 2 on page 13.

---

## Removing a switch module

**Statement 8:**



**CAUTION:**

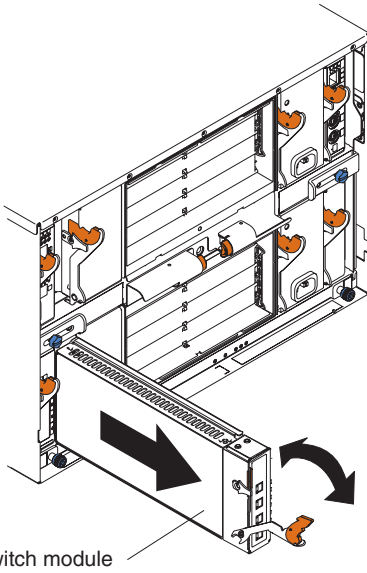
Never remove the cover on a power supply or any part that has the following label attached.



**Hazardous voltage, current, and energy levels are present inside any component that has this label attached. There are no serviceable parts inside these components. If you suspect a problem with one of these parts, contact a service technician.**

Complete the following steps to remove a switch module.

1. Remove the acoustic attenuation module, if installed, from the rear of the BladeCenter unit (see step 2 on page 13 for location).
2. Select an appropriate switch-module bay from which to remove a switch module, in accordance with the instructions in "Ethernet interface requirements" on page 9.
3. Unplug any cables from the selected switch module.
4. Pull the release latch toward the bottom of the switch module as shown in the illustration. The module moves out of the bay about 0.64 cm (0.25 inch).



5. Slide the switch module out of the bay and set it aside.
6. Place either another switch module or a filler module in the bay within 1 minute.
7. If you placed another switch module in the bay, reconnect any cables that you unplugged in step 3 on page 15.
8. Replace the acoustic attenuation module option, if you removed it in step 1 on page 15.

---

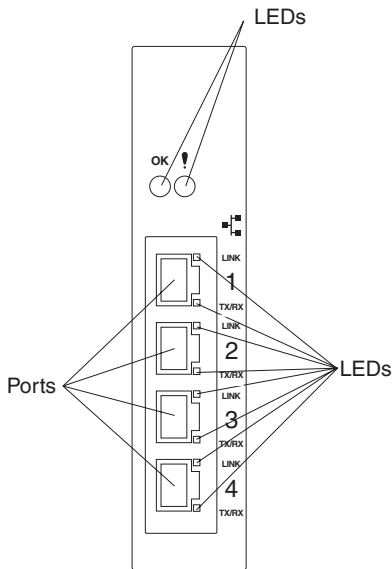
## Chapter 3. Information panel LEDs and external ports

This chapter describes the information panel and LEDs on the IBM BladeCenter 4-Port Gb Ethernet Switch Module. This chapter also identifies the external ports on the information panel.

---

### Information panel

The information panel of the switch module consists of LEDs and four external 1000BASE-T ports, as shown in the following illustration.



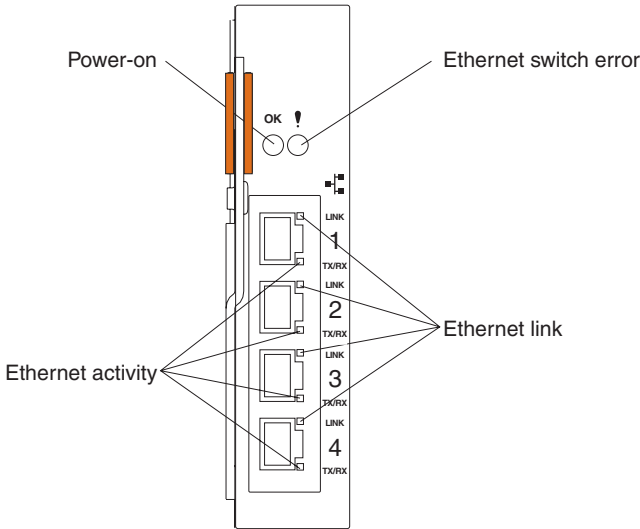
The switch module contains:

- Comprehensive LEDs display the status of the switch module and the network (see "LEDs" on page 18).
- Fourteen internal ports, one connected to each of the processor blades.
- Two internal full-duplex 10/100 Mbps ports connected to the management module.
- Four external 1000BASE-T Ethernet ports for 10/100/1000 Mbps connections to external Ethernet devices, such as backbones, end stations, and servers. These ports are identified as Ext1, Ext2, Ext3, and Ext4 in the switch configuration menus and are labeled 1 through 4 (from top to bottom) on the switch module, as shown in the preceding illustration.

---

## LEDs

The LEDs on the information panel of the switch module include OK, !, Ethernet link, and Ethernet activity. The following illustration shows the LEDs on the switch module. A description of each LED follows the illustration.



### Notes:

1. The illustrations in this document might differ slightly from your hardware.
2. An amber LED illuminates when a system error or event has occurred. To identify the error or event, check the LEDs on the information panel of the switch module.

**OK (power-on):** This green LED is located above the four external 10/100/1000 Mbps ports on the information panel. When this LED is on, it indicates that the switch module has passed the power-on self-test (POST) and is operational.

**! (Ethernet switch error):** This amber LED is located next to the OK (power-on) LED on the information panel. This LED indicates that the switch module has a fault. If the switch module fails the POST, this fault LED will be lit.

**Ethernet link:** This green link status LED is located at the top of each external 10/100/1000 Mbps port. When this LED is lit on a port, it indicates that there is a connection (or link) to a device on that port.



**Ethernet activity:** This green activity LED is located at the bottom of each external 10/100/1000 Mbps port. When this LED blinks on a port, it indicates that data is being received or transmitted (that is, activity is occurring) on that port. The blink frequency is proportional to the amount of traffic on that port.



---

## Chapter 4. Configuration through the Web-Based network management module

This chapter describes how to use the Web-based network management module to access and configure the internal switching software.

**Important:** Before you configure your Ethernet switch module, be sure that the management modules in your BladeCenter unit are properly configured. In addition, to access and manage your Ethernet switch module from an external environment, you might need to enable certain features, such as the external ports and external management over all ports. See the applicable *BladeCenter Installation and User's Guide* publications on the *IBM BladeCenter Documentation CD* for more information. For more detailed information about configuring your Ethernet switch module, see the *BladeCenter 4-Port Gb Ethernet Switch Module Installation and User's Guide* on the *IBM BladeCenter Documentation CD*.

In addition to reviewing the publications in this library, be sure to review the *IBM BladeCenter Planning and Installation Guide* located at <http://www.pc.ibm.com/eserver/bladecenter> on the World Wide Web for information to help you prepare for system installation and configuration.

---

### Introduction

The switch module offers an embedded hypertext markup language (HTML), Web-based interface that allows you to manage the switch through a standard browser, such as Opera, Netscape Navigator/Communicator, or Microsoft® Internet Explorer. The Web browser acts as an access tool and can communicate directly with the switch using the HTTP protocol. Your browser window might vary with the window illustrations in this guide.

**Note:** This Web-based management module does not accept Chinese language input (or other double-byte character-set languages).

The Web-based management module and the Telnet program are different ways to access the same internal switching software and configure it. Thus, all the settings that you encounter in Web-based management are the same as those found in the Telnet program. If your system application requires that you use the Telnet program, see Chapter 5, "Configuration through the Telnet interface," on page 31 for additional information.

---

## Remotely managing the Ethernet switch module

The Ethernet switch module supports two remote-access modes for management through Ethernet connections. You can select the mode that is best suited for your BladeCenter environment. The Ethernet switch module has an internal Ethernet path to the management module and the four external Ethernet ports on the switch module.

- The default mode uses the internal path to the management module only. In this mode, the remote-access link to the management console must be attached to the 10/100 Mbps Ethernet port on the management module. With this mode, the IP addresses and SNMP parameters of the Ethernet switch modules can be automatically assigned by the IBM Director BladeCenter Deployment Wizard or, you must manually assign them through the BladeCenter Management and Configuration Program. This mode enables the system administrator to provide a secure LAN for management of the BladeCenter subsystems separately from the data network.

**Important:** With this mode, the Ethernet switch module does not respond to remote-management commands through the four external Ethernet ports on the switch module.

See the applicable *BladeCenter Installation and User's Guide* on the IBM BladeCenter Documentation CD for additional instructions for configuring the Ethernet switch module for this mode of operation.

- The system administrator can choose to enable remote management of the Ethernet switch module through the four external Ethernet ports on the switch module, instead of or in addition to access through the management module. This mode can only be enabled through the management module configuration interface. Once this mode is enabled, the external Ethernet ports will support both management traffic and BladeCenter application data traffic. Also, the Ethernet switch module can transmit DHCP and BOOTP request frames through the external Ethernet ports.

This mode allows the Ethernet switch module IP addresses to reside on a different subnet than the management modules. This is useful when the Ethernet switch modules are to be managed and controlled as part of the overall network infrastructure, while maintaining secure management of other BladeCenter subsystems through the management module. However, management access to the Ethernet switch-module link will be lost if the Ethernet switch module IP address is not on the same subnet as the management module. The *BladeCenter 4-Port Gb Ethernet Switch Module Installation and User's Guide* contains additional instructions for configuring the Ethernet switch module for this mode of operation.

The two previously described modes are only applicable to the Ethernet switch module. The management module can only be remotely accessed through the 10/100 Mbps Ethernet port on the management module.

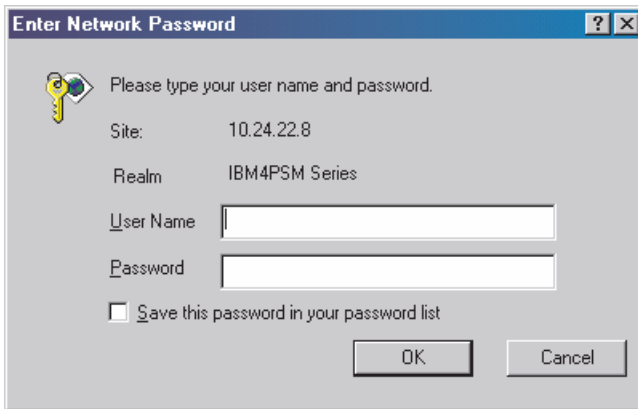
---

## Getting started

The first step in getting started with using Web-based management for your switch is to install a browser. A Web browser is a program that allows a person to read hypertext, for example, Opera, Netscape Navigator, or Microsoft Internet Explorer. Follow the installation instructions for the browser.

You are now ready to begin managing your switch by simply running the browser installed on your computer and pointing it to the IP address that you have defined for the device. The URL in the address bar should have the following format and contain information similar to: `http://123.123.123.123`, where the numbers `123` represent the IP address of the switch.

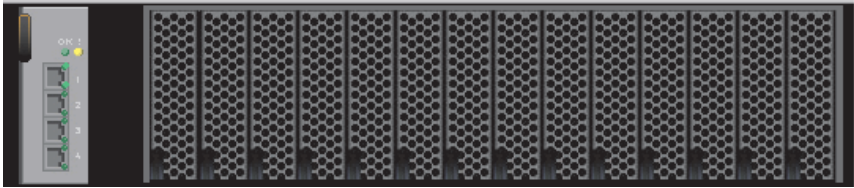
Depending on which browser you are using, a dialog box similar to the following will open:



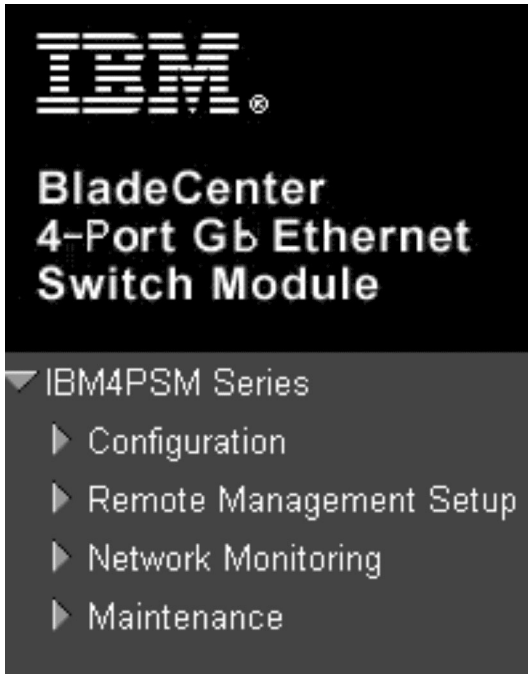
Enter `USERID` for the **User Name** and `PASSW0RD` for the **Password** (where the sixth alphanumeric character is the number zero, not the letter *O*) and click **OK**. This opens the main page in the management module.

**Note:** Capital letters are required, as these fields are both case-sensitive. To increase system security, change the password after you log onto the system for the first time and, be sure to store the new password in a safe location.

The top panel shows a real-time information-panel display of the switch module:



The panel on the left side contains the main menu. The featured items include: **Configuration**, **Remote Management Setup**, **Network Monitoring**, and **Maintenance**.

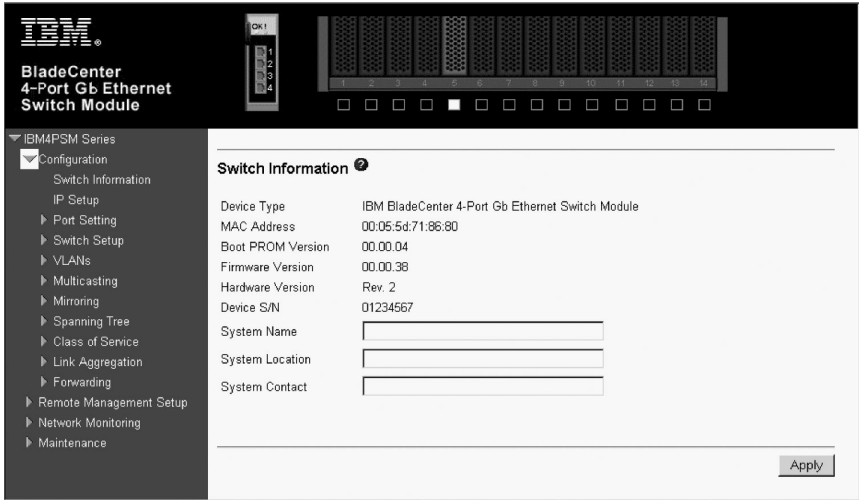


These are the major categories for switch module management. If the sub-menus for each main category do not appear, click the small square hyperlink to the left of the folder icon.

This chapter describes some of the Web-based switch module management features. For more detailed information about configuring your Ethernet switch module, see the *BladeCenter 4-Port Gb Ethernet Switch Module Installation and User's Guide* on the *IBM BladeCenter Documentation CD*.

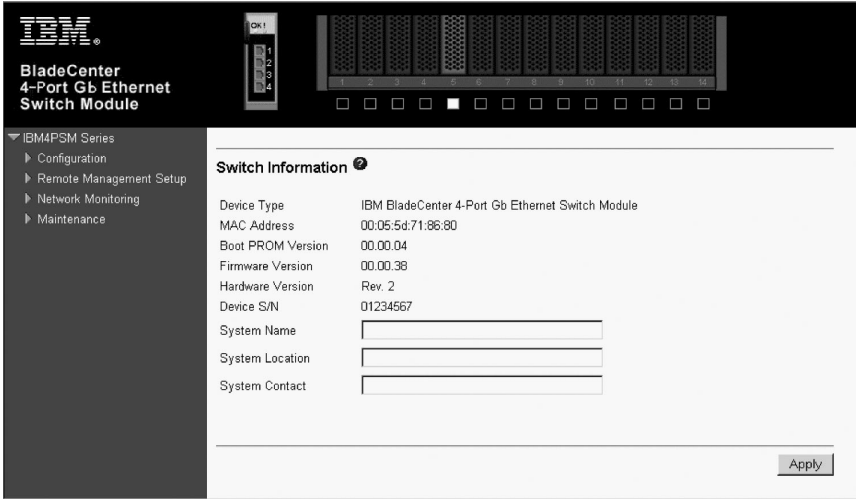
## Configuration menu

The Configuration menu includes: **Switch Information, IP Setup, Port Setting, Switch Setup, VLANs, Multicasting, Mirroring, Spanning Tree, Class of Service, Link Aggregation, and Forwarding**, as well as secondary windows.



# Switch Information

When you select **Switch Information** from the Configuration menu, a window similar to the following appears:



To set basic switch settings, enter a **System Name** in the first field, the physical location of the switch in the **System Location** field, and the name of the contact person responsible for the switch in the **System Contact** field. Then, click **Apply**.

Clicking **Apply** makes your changes effective; however, if the I/O module is restarted the changes will be lost. To enter the changes into NVRAM and make them permanent, click **Maintenance** → **Save Changes** in the navigation pane.

The data fields on the Switch Information window are described as follows:

### Device Type

A description of the switch type.

### MAC Address

The Ethernet address for the device.

### Boot PROM Version

Version number for the firmware startup code.

### Firmware Version

Version number of the firmware code installed on the switch. This can be updated by using the Update Firmware window in the **Reset and Update** section of the Switch Information window.



## Hardware Version

Version number of the hardware installed on the switch.

## System Name

A user-assigned name for the switch.

## System Location

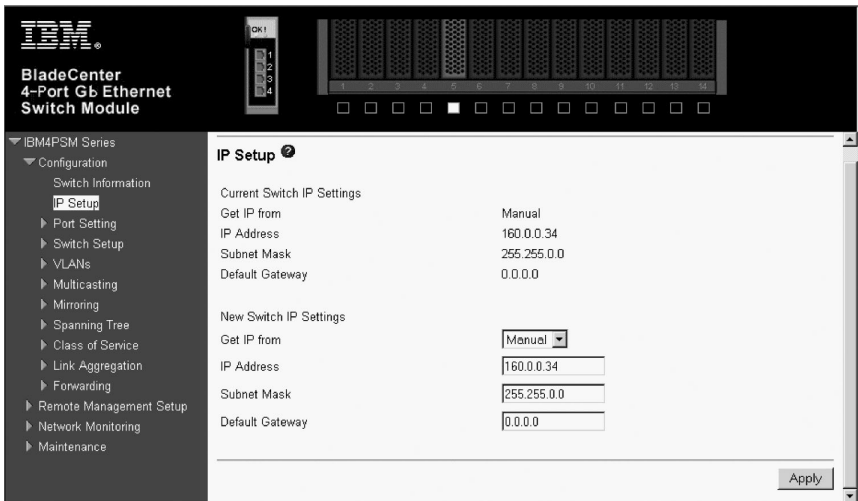
A user-assigned description for the physical location of the switch.

## System Contact

The name of the person to contact regarding any problems or questions with respect to the system. You might also want to include a phone number or extension.

## IP Setup

When you select **IP Setup** from the Configuration menu, a window similar to the following appears:



This window is used to determine whether the switch should get its IP Address settings from the user (Manual), a BOOTP server, or a DHCP server. If you are not using either BOOTP or DHCP, enter the **IP Address**, **Subnet Mask**, and **Default Gateway** of the switch. If you enable BOOTP, you do not need to configure any IP parameters because a BOOTP server automatically assigns IP configuration parameters to the switch. If you enable DHCP, a Dynamic Host Configuration Protocol request will be sent when the switch is turned on. Once you have selected a setting under **Get IP From**, click **Apply** to activate the new settings.

Clicking **Apply** makes your changes effective; however, if the I/O module is restarted the changes will be lost. To enter the changes into NVRAM and make them permanent, click **Maintenance** → **Save Changes** in the navigation pane.

The switch default IP address is 192.168.70.1xx, where xx depends on the number of the bay into which you have installed the switch module, as shown in Table 1.

*Table 1. Default IP addresses based on switch module bay numbers (IP Setup window of Web-based Configuration menu)*

Bay number	Default IP address
Bay 1	192.168.70.127
Bay 2	192.168.70.128
Bay 3	192.168.70.129
Bay 4	192.168.70.130

The data fields on the IP Setup window are described as follows:

### Get IP From

There are three choices for how the switch receives its IP Address settings: **Manual**, **BOOTP**, and **DHCP**.

#### Manual

Allows the entry of an IP address, Subnet Mask, and a Default Gateway for the switch. These fields should be of the form xxx.xxx.xxx.xxx, where each xxx is a number (represented in decimal form) between 0 and 255. This address should be a unique address on the network assigned for use by the network administrator. The fields that require entries under this option are as follows:

#### IP Address

The host address for the device on the TCP/IP network.

#### Subnet Mask

The address mask that controls subnetting on your TCP/IP network. This address mask is a bitmask that determines the extent of the subnet that the switch module is on. Should be of the form xxx.xxx.xxx.xxx, where each xxx is a number (represented in decimal) between 0 and 255. The value should be 255.0.0.0 for a Class A network, 255.255.0.0 for a Class B network, and 255.255.255.0 for a Class C network, but custom subnet masks are allowed.

**Note:** For switch communication with a remote management station, such as the IBM Director server, through the management module external Ethernet port, the switch module internal network interface and the management module internal and external interfaces must be on the same subnet.

### **Default Gateway**

The IP address that determines where packets with a destination address outside the current subnet should be sent. The IP address of the device is usually the address of a router or a host acting as an IP gateway to handle connections to other subnets or other TCP/IP networks. If your network is not part of an intranet, or you do not want the device to be accessible outside your local network, you can enter a value of **0.0.0.0** in this field.

### **BOOTP**

The switch module will send out a BOOTP broadcast request when it is turned on. The BOOTP protocol allows IP addresses, network masks, and default gateways to be assigned by a central BOOTP server. If this option is set, the switch module will first look for a BOOTP server to provide it with this information before using the default or previously entered settings.

### **DCHP**

The switch module will send out a DCHP broadcast request when it is turned on. The DCHP protocol allows IP addresses, network masks, and default gateways to be assigned by a DCHP server. If this option is set, the switch will first look for a DCHP server to provide it with this information before using the default or previously entered settings.



---

## Chapter 5. Configuration through the Telnet interface

Your switch module supports a management interface that allows you to set up and control your device over the network using the TCP/IP Telnet protocol. You can use this facility to perform many basic network management functions. In addition, the Telnet interface will allow you to configure the switch module for management using an SNMP-based network management system. This chapter describes how to use the Telnet interface to access the switch module, change its settings, and monitor its operation.

**Important:** Before you configure your Ethernet switch module, be sure that the management modules in your BladeCenter unit are properly configured. In addition, to access and manage your Ethernet switch module from an external environment, you might need to enable certain features, such as the external ports and external management over all ports. See the applicable *BladeCenter Installation and User's Guide* publications on the *IBM BladeCenter Documentation CD* for more information. For more detailed information about configuring your Ethernet switch module, see the *BladeCenter 4-Port Gb Ethernet Switch Module Installation and User's Guide* on the *IBM BladeCenter Documentation CD*.

In addition to reviewing the publications in this library, be sure to review the *IBM BladeCenter Planning and Installation Guide* located at <http://www.pc.ibm.com/eserver/bladecenter> on the World Wide Web for information to help you prepare for system installation and configuration.

---

### Remotely managing the Ethernet switch module

The Ethernet switch module supports two remote-access modes for management through Ethernet connections. You can select the mode that is best suited for your BladeCenter environment. The Ethernet switch module has an internal Ethernet path to the management module and the four external Ethernet ports on the switch module.

- The default mode uses the internal path to the management module only. In this mode, the remote-access link to the management console must be attached to the 10/100 Mbps Ethernet port on the management module. With this mode, the IP addresses and SNMP parameters of the Ethernet switch modules can be automatically assigned by the IBM Director BladeCenter Deployment Wizard or, you must manually assign them through the BladeCenter Management and Configuration Program. This mode enables the system administrator to provide a secure LAN for management of the BladeCenter subsystems separately from the data network.

**Important:** With this mode, the Ethernet switch module does not respond to remote-management commands through the four external Ethernet ports on the switch module.

See the applicable *BladeCenter Installation and User's Guide* on the IBM *BladeCenter Documentation* CD for additional instructions for configuring the Ethernet switch module for this mode of operation.

- The system administrator can choose to enable remote management of the Ethernet switch module through the four external Ethernet ports on the switch module, instead of or in addition to access through the management module. This mode can only be enabled through the management module configuration interface. Once this mode is enabled, the external Ethernet ports will support both management traffic and BladeCenter application data traffic. Also, the Ethernet switch module can transmit DHCP and BOOTP request frames through the external Ethernet ports.

This mode allows the Ethernet switch module IP addresses to reside on a different subnet than the management modules. This is useful when the Ethernet switch modules are to be managed and controlled as part of the overall network infrastructure, while maintaining secure management of other BladeCenter subsystems through the management module. However, management access to the Ethernet switch-module link will be lost if the Ethernet switch module IP address is not on the same subnet as the management module. The *BladeCenter 4-Port Gb Ethernet Switch Module Installation and User's Guide* contains additional instructions for configuring the Ethernet switch module for this mode of operation.

The two previously described modes are only applicable to the Ethernet switch module. The management module can only be remotely accessed through the 10/100 Mbps Ethernet port on the management module.

---

## Connecting to the switch module

Once you know the IP address for your switch module and provided that you have an existing network connection, you can use the Telnet program (in VT-100 compatible terminal mode) to access and control the switch module. If you need to obtain the IP address for your switch module or establish a network connection, consult your system or network administrator. Be sure to use the correct IP address in the required command, as specified in "First-time connection to the Ethernet switch module" on page 33.

## Telnet usage conventions

The Telnet interface makes use of the following conventions:

- Items in <angle brackets> can be toggled among several choices through the spacebar.
- Items in [square brackets] can be changed by typing in a new value. You can use the backspace and delete keys to erase characters behind and in front of the cursor.
- The up and down arrow keys, the left and right arrow keys, the tab key, and the backspace key, can be used to move between selected items.
- Items in UPPERCASE are commands. Moving the selection to a command and pressing Enter will process that command; for example, **APPLY**, and so on.

**Important:** The command **APPLY** makes changes to the switch configuration for the current session only. If you want your changes to be permanent, select **Save Changes** from the main menu. Selecting **Save Changes** enters the current switch configuration, including all changes, into NVRAM, and then restarts the switch module.

## First-time connection to the Ethernet switch module

The switch module supports user-based security that can allow you to prevent unauthorized users from accessing the switch module or changing its settings. This section tells how to log onto the switch module.

**Note:** The passwords used to access the switch module are case-sensitive; therefore, an uppercase S is not the same as a lowercase s.

Complete the following steps to connect to the switch module through the Telnet interface:

1. Display a window that contains a DOS prompt command line; for example, C:\>.
2. Type the following command on the DOS prompt command line and press Enter: **telnet x**  
where x is the IP address for your switch module

When you first connect to the switch module, the login window (shown in the following illustration) appears.

**Note:** Press Ctrl+R to refresh the window. This command can be used at any time to force the program in the switch module to refresh the current window.

```
IBM BladeCenter 4-Port Gb Ethernet Switch Module Console

Username: [          ]
Password: [          ]

Copyright(C) 2000, 2002 IBM Corporation                DISCONNECT
-----
Function: Enter case-sensitive username.
Message:
CTRL+R = Refresh
```

**Note:** The initial **Username** is **USERID** and the initial **Password** is **PASSWORD** (where the sixth alphanumeric character is the number zero). Remember that both the **Username** and the **Password** are case-sensitive.

Press Enter in both the **Username** and **Password** fields. You will be given access to the main menu shown in the following illustration:

```
IBM BladeCenter 4-Port Gb Ethernet Switch Module - Main Menu
-----
Basic Setup
Switch Information
IP Setup
Remote Management Setup
Switch Settings
Configure Ports
Setup User Accounts
Utilities
Network Monitoring
Save Changes
Reboot
Logout

Advanced Setup
Spanning Tree
Forwarding
Class Of Service
Mirroring
Multicasting
VLANs
Link Aggregation

Function: Setup and browse switch information.
Message:
For Help, press F1
```

**Note:** The first user automatically gets Root privileges (see “Assigning Root, User+, and User privileges to accounts” on page 36). Create at least one Root-level user for the switch module when you set up your user accounts (see “Setting up user accounts” on page 35 for complete details).



---

## Setting up user accounts

Only a user with Root privileges can add new user accounts or make changes to existing user accounts. Before you can update a user account, you also must enter the password for that user account. If you are updating or deleting an existing user account, see “Updating a user account” on page 40 or “Deleting a user account” on page 41 for complete details.

To create a new user account, highlight **Setup User Accounts** from the main menu and press Enter:

```
IBM BladeCenter 4-Port Gb Ethernet Switch Module - Main Menu
-----
Basic Setup                               Advanced Setup
Switch Information                         Spanning Tree
IP Setup                                   Forwarding
Remote Management Setup                   Class Of Service
Switch Settings                           Mirroring
Configure Ports                           Multicasting
Setup User Accounts                       VLANs
Utilities                                  Link Aggregation
Network Monitoring
Save Changes
Reboot
Logout

-----
Function: Setup user account and password.
Message:
For Help, press F1
```

The Setup User Accounts window appears, as shown in the following illustration:

```
Setup User Accounts
-----
Current Accounts:      User Name      Access Level
                       USERID        Root

Action                 <Add >
Username               [          ]
Old Password           [          ]
New Password           [          ]
Confirm New Password  [          ]
Access Level           <Root >

APPLY

-----
Function: Select action - Add, Delete, or Update.
Message:
CTRL+F1 = Main Menu      Esc = Prev. Screen      CTRL+R = Refresh
```

Complete the following steps to create a new user account:

1. Toggle the **Action** field to **<Add>** using the space bar. This will allow the addition of a new user. The other options are:

**<Delete>**

Deletes a user entry.

**<Update>**

Makes changes to an existing user entry.

2. Enter the new user's name in the **Username** field, assign an initial password in the **New Password** field, and then confirm the new password in the **Confirm New Password** field. Determine whether the new user should have **<Root>**, **<User+>**, or **<User>** privileges (see "Assigning Root, User+, and User privileges to accounts" for descriptions of these privileges). The space bar toggles among these three options in the **Access Level** field.
3. Highlight **APPLY** and press Enter to make the addition of the new user effective.
4. Press Esc to return to the previous window or Ctrl+T to go to the root window.

A listing of all current user accounts and access levels is displayed near the top of the Setup User Accounts window. This list is updated when **APPLY** is processed.

**Important:** The command **APPLY** makes changes to the switch configuration for the current session only. If you want your changes to be permanent, select **Save Changes** from the main menu. Selecting **Save Changes** enters the current switch configuration, including all changes, into NVRAM, and then restarts the switch module.

---

## Assigning Root, User+, and User privileges to accounts

There are three levels of user privileges: Root, User+, and User. Some menu selections that are available to users with Root privileges might not be available to those with User+ and User privileges.

**Note:** User privileges are also known as normal user privileges.

The following table summarizes the Root, User+, and User privileges that you can assign to accounts:

Table 2. Root, User+, and User privileges

Switch Configuration	Privilege		
	Root	User+	User
Management			
Configuration	Yes	Read Only	Read Only
Network Monitoring	Yes	Read Only	Read Only
Community Strings and Trap Stations	Yes	Read Only	Read Only
Update Firmware and Configuration Files	Yes	No	No
System Utilities	Yes	Ping Only	Ping Only
Factory Reset	Yes	No	No
Reboot Switch	Yes	Yes	No
<b>User Accounts Management</b>			
Add/Update/Delete User Accounts	Yes	No	No
View User Accounts	Yes	No	No

After establishing a user account with Root-level privileges, press Esc. Then, highlight **Save Changes** and press Enter (see “Saving changes”). The switch will save any changes to its NVRAM and restart. Log on with the new user name and password as described in “Logging onto the switch module” on page 40. You are now ready to continue configuring the switch.

---

## Saving changes

The switch module has two levels of memory; normal random-access memory (RAM) and NVRAM. To make configuration changes effective, highlight **APPLY** and press Enter. When this is done, the settings will be immediately applied to the switching software in RAM, and will immediately take effect.

However, some settings require you to restart the switch before they will take effect. Restarting the switch erases all settings in RAM and reloads the stored settings from the NVRAM. Thus, it is necessary to save all setting changes to NVRAM before restarting the switch.

To keep any configuration changes permanently, highlight **Save Changes** from the main menu.

```
IBM BladeCenter 4-Port Gb Ethernet Switch Module - Main Menu
-----
Basic Setup                               Advanced Setup
Switch Information                        Spanning Tree
IP Setup                                  Forwarding
Remote Management Setup                  Class Of Service
Switch Settings                          Mirroring
Configure Ports                          Multicasting
Setup User Accounts                       VLANs
Utilities                                 Link Aggregation
Network Monitoring
Save Changes
Reboot
Logout

-----
Function: Save changes.
Message:
For Help, press F1
```

The following window will appear to verify that your new settings have been saved to NVRAM:

```
Save all settings to NVRAM... done.
Press any key to continue..._
```

Once the switch configuration settings have been saved to NVRAM, they become the default settings for the switch. These settings will be used every time that the switch module restarts.

---

## Restoring default configuration values

The only way to change the configuration stored in NVRAM is to save a new configuration using **Save Changes**, or to process a **Load Factory Default Configuration** function from the Reboot menu. This will clear all settings and restore them to their initial values listed in the *BladeCenter 4-Port Gb Ethernet Switch Module Installation and User's Guide*. These are the configuration settings that were entered at the factory and are the same settings that were present when the switch was purchased.

```
IBM BladeCenter 4-Port Gb Ethernet Switch Module - Main Menu
-----
Basic Setup                               Advanced Setup
Switch Information                       Spanning Tree
IP Setup                                 Forwarding
Remote Management Setup                 Class Of Service
Switch Settings                         Mirroring
Configure Ports                         Multicasting
Setup User Accounts                     VLANs
Utilities                               Link Aggregation
Network Monitoring
Save Changes
Reboot
Logout

-----
Function: Reboot Configuration.
Message:
For Help, press F1
```

Highlight **Reboot** from the main menu and press Enter.

```
Reboot
-----
Reboot
Save Configuration & Reboot
Reboot & Load Factory Default Configuration
Reboot & Load Factory Default Configuration Except IP Address

-----
Function: Reboot the system.
Message:
CTRL+I = Main Menu           Esc = Prev. Screen           CTRL+R = Refresh
```

Highlight the appropriate choice and press Enter to reset the switch NVRAM to the factory default settings (or just restart the switch module). Loading the **Factory Default Configuration** will erase any user accounts (and all other configuration settings) that you might have entered and return the switch module to the state it was in when it was purchased. The **Load Factory Default Configuration Except IP Address** option is used when the IP address of the switch module needs to be preserved.

---

## Logging onto the switch module

To log in once you have created a registered user, complete the following steps from the login window (see “First-time connection to the Ethernet switch module” on page 33 for additional information):

1. Type in your **Username** and press Enter.
2. Type in your **Password** and press Enter.
3. The main menu window will be displayed based on your access level or privilege.

---

## Viewing current user accounts

Access to the switch is controlled through using an authorized user name and password. The switch supports a maximum of eight user accounts. The interface does not allow deletion of the currently logged-in user, to prevent accidentally deleting all the users with Root privileges.

Only a user with Root privileges can delete users.

To view the current user accounts, highlight **Setup User Accounts** from the main menu. You can read the current user accounts from the Setup User Accounts window.

---

## Updating a user account

Only a user with Root privileges can add new accounts or make changes to existing user accounts. Before you can update a user account, you also must enter the password for that user account. If you are adding a new user account, see “Setting up user accounts” on page 35 for complete details.

Complete the following steps to update a user account:

1. Choose **Setup User Accounts** from the main menu. The following Setup User Accounts window appears:

```

Setup User Accounts
-----
Current Accounts:      User Name      Access Level
                       USERID        Root

Action                 <Add >
Username               [          ]
Old Password           [          ]
New Password           [          ]
Confirm New Password  [          ]
Access Level           <Root >

                                           APPLY
-----
Function: Select action - Add, Delete, or Update.
Message:
CTRL+I = Main Menu           Esc = Prev. Screen           CTRL+R = Refresh

```

2. Toggle the **Action** field using the space bar to choose **Update**.
3. Type in the **Username** for the user account that you want to change; then, press Enter. Type in the **Old Password** for that user account; then, press Enter.
4. You can now modify the password or the privilege level for this user account.
  - To change the password, type in the **New Password** that you have chosen, and press Enter. Type in the same new password in the **Confirm New Password** field to verify that you have not mistyped it.
  - To change the privilege level, toggle the **Access Level** field until the appropriate level is displayed - **Root**, **User+**, or **User**.
5. Highlight **APPLY** and press Enter to make the change effective.
6. You must enter the configuration changes into the NVRAM through the **Save Changes** choice on the main menu if you want the new configuration values to be used after a switch restart.

---

## Deleting a user account

Only a user with Root privileges can delete user accounts. Before you can delete a user account, you also must enter the password for that user account.

Complete the following steps to delete a user account and password:

1. Choose **Setup User Accounts** from the main menu. The following Setup User Accounts window appears:

```

Setup User Accounts
-----
Current Accounts:      User Name      Access Level
                       USERID        Root

Action                 <Add >
Username               [                ]
Old Password           [                ]
New Password           [                ]
Confirm New Password  [                ]
Access Level           <Root >

APPLY

-----
Function: Select action - Add, Delete, or Update.
Message:
CTRL+I = Main Menu      Esc = Prev. Screen      CTRL+R = Refresh

```

2. Toggle the Action field to **Delete**.
3. Enter the **Username** and **Old Password** for the account that you want to delete.
4. Highlight **APPLY** and press Enter to make the deletion of the selected user effective.
5. You must enter the configuration changes into the NVRAM through the **Save Changes** choice on the main menu if you want the new configuration values to be used after a switch restart.

---

## Basic Setup

The main menu is divided into two sections, **Basic Setup** and **Advanced Setup**. The **Basic Setup** menus are organized into 12 main categories: **Switch Information**, **IP Setup**, **Remote Management Setup**, **Switch Settings**, **Configure Ports**, **Setup User Accounts** (see “Setting up user accounts” on page 35), **Utilities**, **Network Monitoring**, **Save Changes** (see “Saving changes” on page 37), **Reboot** (see “Restoring default configuration values” on page 38), and **Logout**.

### Switch Information

Highlight **Switch Information** on the main menu and press Enter. The following window appears:



```

Switch Information
-----
Device Type       : Ethernet Switch Module
MAC Address      : 00-05-5D-71-86-80
Boot PROM Version: 00.00.04
Firmware Version : 00.00.38
Hardware Version : Rev. 2
Device S/N       : 01234567

System Name      [ _____ ]
System Location  [ _____ ]
System Contact   [ _____ ]

APPLY
-----
Function: Sets a name for identification purposes.
Message:
CTRL+I = Main Menu      Esc = Prev. Screen      CTRL+R = Refresh

```

The **Switch Information** shows the type of switch module and its **MAC Address** (assigned by the factory and unchangeable). In addition, the **Boot PROM** and **Firmware Version** numbers are shown. This information is helpful to keep track of PROM and firmware code updates and to obtain the switch module MAC address for entry into another network device address table, if necessary.

You can also enter the name of the **System**, its location, and the name and telephone number of the system administrator. It is recommended that the person responsible for the maintenance of the network system that this switch module is installed on be listed here.

## IP Setup

Some settings must be entered to allow the switch module to be managed from an SNMP-based Network Management System, such as SNMP version 1 or, to be able to access the switch module using the Telnet protocol.

The IP Setup window lets you specify how the switch module will be assigned an IP address to allow it to be identified on the network.

The switch default IP address is 192.168.70.1xx, where xx depends on the number of the bay into which you have installed the switch module, as shown in Table 3 on page 44.

Table 3. Default IP addresses based on switch module bay numbers (IP Setup window of Telnet Basic Setup menu)

Bay number	Default IP address
Bay 1	192.168.70.127
Bay 2	192.168.70.128
Bay 3	192.168.70.129
Bay 4	192.168.70.130

To set up the switch module for remote management, highlight **IP Setup** from the main menu. The following window appears:

```

IP Setup
-----
Current Switch IP Settings
Get IP From      :Manual
IP Address       :160.0.0.34
Subnet Mask      :255.255.0.0
Default Gateway  :0.0.0.0

New Switch IP Settings
Get IP From      <Manual>
IP Address       [160.0.0.34   ]
Subnet Mask      [255.255.0.0  ]
Default Gateway  [0.0.0.0     ]

                                APPLY   SAUE/APPLY
-----
Function: Get IP from Manual, BOOTP or DHCP.
Message:
CTRL+I = Main Menu           Esc = Prev. Screen           CTRL+R = Refresh
  
```

The switch module must have an IP address assigned to it so that a network management system (that is, Telnet) client can find it on the network.

The switch module must have an IP address assigned to it so that a network management system (that is, Telnet) client can find it on the network.

The fields listed under the **Current Switch IP Settings** heading are those currently being used by the switch module. The fields listed under the **New Switch IP Settings** heading are those that will be used after the switch module has been restarted. Toggle the **Get IP From** field using the space bar to choose from Manual, BOOTP, or DHCP. This selects how the switch module will be assigned an IP address on the next restart (or startup). The **Get IP From** options are:

#### BOOTP

The switch module will send out a BOOTP broadcast request when it is turned on. The BOOTP protocol allows IP addresses, network masks, and default gateways to be assigned by a central BOOTP

server. If this option is set, the switch module will first look for a BOOTP server to provide it with this information before using the default or previously entered settings.

**DCHP** The switch module will send out a DCHP broadcast request when it is turned on. The DCHP protocol allows IP addresses, network masks, and default gateways to be assigned by a DCHP server. If this option is set, the switch will first look for a DCHP server to provide it with this information before using the default or previously entered settings.

## Manual

Allows the entry of an IP address, Subnet Mask, and a Default Gateway for the switch. These fields should be of the form *xxx.xxx.xxx.xxx*, where each *xxx* is a number (represented in decimal form) between 0 and 255. This address should be a unique address on the network assigned for use by the network administrator. The fields that require entries under this option are as follows:

### Subnet Mask

A bitmask that determines the extent of the subnet that the switch module is on. Should be of the form *xxx.xxx.xxx.xxx*, where each *xxx* is a number (represented in decimal) between 0 and 255. The value should be 255.0.0.0 for a Class A network, 255.255.0.0 for a Class B network, and 255.255.255.0 for a Class C network, but custom subnet masks are allowed.

**Note:** For switch communication with a remote management station, such as the IBM Director server, through the management module external Ethernet port, the switch module internal network interface and the management module internal and external interfaces must be on the same subnet.

### Default Gateway

IP address that determines where packets with a destination address outside the current subnet should be sent. This is usually the address of a router or a host acting as an IP gateway. If your network is not part of an intranet, or you do not want the device to be accessible outside your local network, you can enter a value of 0.0.0.0 in this field.

## Logging out

When you are finished with the current switch-module session, go to the main menu and select **Logout**. You can choose one of two methods for processing the changes that you made during the current switch-module session:

- If you made changes and used the **APPLY** function during the current switch-module session, but did not save your changes on the main menu, the following window will appear:



If you do not want to save your changes, select **Yes** to log out without saving your changes. The current switch-module session will close and, the login window will appear so that you can start a new switch-module session (see "First-time connection to the Ethernet switch module" on page 33 for additional information).

- If you either saved your changes on the main menu or did not make any changes during the current switch-module session, the Logout window will not appear when you select **Logout**. Instead, the current switch-module session will immediately close and, the login window will appear so that you can start a new switch-module session (see "First-time connection to the Ethernet switch module" on page 33 for additional information).

---

## 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 xSeries or IntelliStation® system, and whom to call for service, if it is necessary.

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### 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 is 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* on the *IBM xSeries Documentation CD* or in the *IntelliStation Hardware Maintenance Manual* at the IBM Support Web site.
- Go to the IBM Support Web site at <http://www.ibm.com/pc/support/> to check for technical information, hints, tips, and new device drivers or to submit a request for information.

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

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### Using the documentation

Information about your IBM xSeries or IntelliStation system and preinstalled software, if any, is available in the documentation that comes with your system. That documentation includes printed books, online books, 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/pc/support/> and follow the instructions. Also, you can order publications through the IBM Publications Ordering System at <http://www.elink.ibm.com/public/applications/publications/cgibin/pbi.cgi>.

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## 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 xSeries and IntelliStation products, services, and support. The address for IBM xSeries information is <http://www.ibm.com/eserver/xseries/>. The address for IBM IntelliStation information is <http://www.ibm.com/pc/intellistation/>.

You can find service information for your IBM products, including supported options, at <http://www.ibm.com/pc/support/>.

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## Software service and support

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

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

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## 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. Go to <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.

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## Appendix B. IBM Statement of Limited Warranty Z125-4753-07 11/2002

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### Part 1 - General Terms

#### 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. 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.***

#### What this Warranty Covers

IBM warrants that each Machine 1) is free from defects in materials and workmanship and 2) conforms to IBM's Official Published Specifications ("Specifications") which are available on request. The warranty period for the Machine starts on the original Date of Installation and is specified in Part 3 - Warranty Information. The date on your invoice or sales receipt is the Date of Installation unless IBM or your reseller informs you otherwise. Many features, conversions, or upgrades involve the removal of parts and their return to IBM. A part that replaces a removed part will assume the warranty service status of the removed part. 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. 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:

- any software programs, whether pre-loaded or shipped with the Machine, or installed subsequently;
- failure 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, or improper maintenance by you;
- failure caused by a product for which IBM is not responsible; and
- any non-IBM products, including those that IBM may procure and provide with or integrate into an IBM Machine at your request.

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 via telephone 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, contact IBM or your reseller to obtain warranty service. 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**

When you call for service, you must follow the problem determination and resolution procedures that IBM specifies. A technician will attempt to make an initial diagnosis of your problem and help you resolve it over the telephone.

The type of warranty service applicable to your Machine is specified in Part 3 - Warranty Information.

You are responsible for downloading 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 from an IBM Internet Web site or from other electronic media, and following the instructions that IBM provides.

If your problem can be resolved with a Customer Replaceable Unit (“CRU”) (e.g., keyboard, mouse, speaker, memory, hard disk drive and other easily replaceable parts), IBM will ship these parts to you for replacement by you.



If the Machine does not function as warranted during the warranty period and your problem cannot be resolved over the telephone, through your application of Machine Code or software updates, or with a CRU, IBM or your reseller, if 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 is unable to do either, you may return the Machine to your place of purchase and your money will be refunded.

IBM or your 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 your reseller replaces becomes its 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**

Before IBM or your reseller exchanges a Machine or part, you agree to remove all features, parts, options, alterations, and attachments not under warranty service.

You also agree to:

1. ensure that the Machine is free of any legal obligations or restrictions that prevent its exchange;
2. obtain authorization from the owner to have IBM or your reseller service a Machine that you do not own; and
3. where applicable, before service is provided:
  - a. follow the service request procedures that IBM or your reseller provides;
  - b. backup or secure all programs, data, and funds contained in the Machine;
  - c. provide IBM or your reseller with sufficient, free, and safe access to your facilities to permit IBM to fulfill its obligations; and
  - d. inform IBM or your reseller of changes in the Machine's location.
4. (a) ensure all information about identified or identifiable individuals (Personal Data) is deleted from the Machine (to the extent technically possible), (b) allow IBM, your reseller or an IBM supplier to process on your behalf any remaining Personal Data as IBM or your reseller considers necessary to fulfill its obligations under this Statement of Limited Warranty (which may include shipping the Machine for such processing to other IBM

service locations around the world), and (c) ensure that such processing complies with any laws applicable to such Personal Data.

**Limitation of Liability**

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.

Neither IBM nor your reseller are responsible for any of your confidential, proprietary or personal information contained in a Machine which you return to IBM for any reason. You should remove all such information from the Machine prior to its return.

Circumstances may arise where, because of a default on IBM's part or other liability, you are entitled to recover damages from IBM. In each such instance, 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 is liable for no more than

1. damages for bodily injury (including death) and damage to real property and tangible personal property; and
2. 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 and your reseller. It is the maximum for which IBM, its suppliers, and your reseller are collectively responsible.

**UNDER NO CIRCUMSTANCES IS IBM, ITS SUPPLIERS 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. SOME STATES OR JURISDICTIONS DO NOT ALLOW LIMITATIONS ON HOW LONG AN IMPLIED WARRANTY LASTS, SO THE ABOVE LIMITATION 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.

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## **Part 2 - Country-unique Terms**

### AMERICAS

#### **ARGENTINA**

**Governing Law:** *The following is added after the first sentence:*

Any litigation arising from this Statement of Limited Warranty will be settled exclusively by the Ordinary Commercial Court of the city of Buenos Aires.

#### **BRAZIL**

**Governing Law:** *The following is added after the first sentence:*

Any litigation arising from this Statement of Limited Warranty will be settled exclusively by the court of Rio de Janeiro, RJ.

#### **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").

### NORTH AMERICA

**How to Obtain Warranty Service:** *The following is added to this Section:*

To obtain warranty service from IBM in Canada or the United States, call 1-800-IBM-SERV (426-7378).

## CANADA

**Limitation of Liability:** *The following replaces item 1 of this section:*

1. damages for bodily injury (including death) or physical harm to real property and tangible personal property caused by IBM's negligence; and

**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.

## 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, LAOS, AND VIETNAM

**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, LAOS, AND VIETNAM

**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. OF CHINA AND MACAU S.A.R. OF CHINA**

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

laws of Hong Kong Special Administrative Region of China.

## **INDIA**

**Limitation of Liability:** *The following replaces items 1 and 2 of this section:*

1. 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
2. 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.

## MALAYSIA

**Limitation of Liability:** *The word "SPECIAL" in item 3 of the fifth 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 fifth 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 fifth 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:** If you purchase a Machine in Austria, Belgium, Cyprus, Denmark, Estonia, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Latvia, Liechtenstein, Lithuania, Luxembourg, Monaco, Netherlands, Norway, Portugal, Spain, San Marino, Sweden, Switzerland, United Kingdom or Vatican State, 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 purchased a Personal Computer Machine in Albania, Armenia, Belarus, Bosnia and Herzegovina, Bulgaria, Croatia, Czech Republic, Georgia, Hungary, Kazakhstan, Kyrgyzstan, Federal Republic of Yugoslavia, Former Yugoslav Republic of Macedonia (FYROM), Moldova, Poland, Romania, Russia, Slovak Republic, Slovenia, or Ukraine, 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.

If you purchase a Machine in a Middle Eastern 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.

*Add the following paragraph in **Western Europe** (Austria, Belgium, Cyprus, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Liechtenstein, Luxembourg, Monaco, Netherlands, Norway, Portugal, Spain, San Marino, Sweden, Switzerland, United Kingdom, Vatican State):*

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.

### **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, Poland, Romania, Russia, Slovakia, Slovenia, Tajikistan, Turkmenistan, Ukraine, Uzbekistan, and FR Yugoslavia;** 2) “the laws of France” in **Algeria, Benin, Burkina Faso, Cameroon, Cape Verde, 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, 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;** and 5) “the laws of South Africa” in **South Africa, Namibia, Lesotho and Swaziland.**

*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, 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, Cape Verde, 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, 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 **Russia**, all disputes arising out of or in relation to the interpretation, the violation, the termination, the nullity of the execution of this Statement of

Limited Warranty shall be settled by Arbitration Court of Moscow; 6) **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; 7) **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; 8) 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**; and 9) **in the United Kingdom**, both of us agree to submit all disputes relating to this Statement of Limited Warranty to the jurisdiction of the English courts.

**Arbitration:** *The following is added under this heading:*

**In Albania, Armenia, Azerbaijan, Belarus, Bosnia-Herzegovina, Bulgaria, Croatia, Georgia, Hungary, Kazakhstan, Kyrgyzstan, FYR Macedonia, Moldova, Poland, Romania, Russia, Slovakia, Slovenia, Tajikistan, Turkmenistan, Ukraine, Uzbekistan, and FR Yugoslavia** 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)**

### ***THE FOLLOWING TERMS APPLY TO ALL EU COUNTRIES:***

Consumers have legal rights under applicable national legislation governing the sale of consumer goods. Such rights are not affected by the warranties provided in this Statement of Limited Warranty.

**How to Obtain Warranty Service:** *The following is added to this section:*

To obtain warranty service from IBM in EU countries, see the telephone listing in Part 3 - Warranty Information.

You may contact IBM at the following address:

IBM Warranty & Service Quality Dept.  
PO Box 30  
Spango Valley  
Greenock  
Scotland PA16 0AH

**AUSTRIA, DENMARK, FINLAND, GREECE, ITALY, NETHERLANDS,  
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:

1. 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.

2. **UNDER NO CIRCUMSTANCES IS IBM, ITS SUPPLIERS 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:

1. 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 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").

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.

2. **UNDER NO CIRCUMSTANCES IS IBM, ITS SUPPLIERS 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**

**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 paragraphs are added to this section:*

The warranty period for Machines is 12 months from the date of delivery. The limitation period for consumers in action for breach of warranty is the statutory period as a minimum. In case IBM or your reseller is unable to repair an IBM Machine, you can alternatively ask for a partial refund 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 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 2:*

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

## EGYPT

**Limitation of Liability:** *The following replaces item 2 in this section:*

as to any other actual direct damages, IBM's liability will be limited to the total amount you paid for the Machine that is the subject of the claim. For purposes of this item, the term "Machine" includes Machine Code and Licensed Internal Code ("LIC").

*Applicability of suppliers and resellers (unchanged).*

## FRANCE

**Limitation of Liability:** *The following replaces the second sentence of the first paragraph of this section:*

In such instances, regardless of the basis on which you are entitled to claim damages from IBM, IBM is liable for no more than: (items 1 and 2 unchanged).

## 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 paragraphs are added to this section:*

The minimum warranty period for Machines is twelve months. In case IBM or your reseller is unable to repair an IBM Machine, you can alternatively ask for a partial refund 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 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 2:*

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

## HUNGARY

**Limitation of Liability:** *The following is added at the end of this section:*

The limitation and exclusion specified herein shall not apply to liability for a breach of contract damaging life, physical well-being, or health that has been caused intentionally, by gross negligence, or by a criminal act.

The parties accept the limitations of liability as valid provisions and state that the Section 314.(2) of the Hungarian Civil Code applies as the acquisition price as well as other advantages arising out of the present Statement of Limited Warranty balance this limitation of liability.

## IRELAND

**What this Warranty Covers:** *The following is added to this section:*

Except as expressly provided in these terms and conditions, all statutory conditions, including all warranties implied, but without prejudice to the generality of the foregoing all warranties implied by the Sale of Goods Act 1893 or the Sale of Goods and Supply of Services Act 1980 are hereby excluded.

**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.

1. IBM will accept unlimited liability for death or personal injury caused by the negligence of IBM.
2. Subject always to the **Items for Which IBM is Not Liable** below, IBM will accept unlimited liability for physical damage to your tangible property resulting from the negligence of IBM.
3. Except as provided in items 1 and 2 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 1 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:

1. loss of, or damage to, data;
2. special, indirect, or consequential loss; or
3. loss of profits, business, revenue, goodwill, or anticipated savings.

#### **SLOVAKIA**

**Limitation of Liability:** *The following is added to the end of the last paragraph:*

The limitations apply to the extent they are not prohibited under §§ 373-386 of the Slovak Commercial Code.

#### **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.

#### **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.

1. IBM will accept unlimited liability for:
  - a. death or personal injury caused by the negligence of IBM; and
  - b. 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.
2. 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.
3. IBM’s entire liability for actual damages for any one Default will not in any event, except as provided in items 1 and 2 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 1 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:

1. loss of, or damage to, data;
2. special, indirect, or consequential loss; or
3. loss of profits, business, revenue, goodwill, or anticipated savings.



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## Part 3 - Warranty Information

This Part 3 provides information regarding the warranty applicable to your Machine, including the warranty period and type of warranty service IBM provides.

### Warranty Period

The warranty period may vary by country or region and is specified in the table below.

**Note:** “Region” means either Hong Kong or Macau Special Administrative Region of China.

### Machine - IBM BladeCenter 4-Port Gb Ethernet Switch Module

Country or Region of Purchase	Warranty Period	Type of Warranty Service*
Worldwide	Parts - 3 years, labor - 3 years	2
* See “Types of Warranty Service” for the legend and explanations of warranty-service types.		

A warranty period of 3 years on parts and 1 year on labor means that IBM provides warranty service without charge for:

1. parts and labor during the first year of the warranty period; and
2. parts only, on an exchange basis, in the second and third years of the warranty period. IBM will charge you for any labor provided in performance of the repair or replacement(s) in the second and third year of the warranty period.

### Types of Warranty Service

If required, IBM provides repair or exchange service depending on the type of warranty service specified for your Machine in the above table and as described below. Warranty service may be provided by your reseller if approved by IBM to perform warranty service. Scheduling of service will depend upon the time of your call and is subject to parts availability. Service levels are response time objectives and are not guaranteed. The specified level of warranty service may not be available in all worldwide locations, additional charges may apply outside IBM’s normal service area, contact your local IBM representative or your reseller for country and location specific information.

#### 1. Customer Replaceable Unit (“CRU”) Service

IBM will ship CRU parts to you for your replacement. If IBM instructs you to return the replaced CRU, you are responsible for returning it to IBM in accordance with IBM’s instructions. If you do not return the defective CRU,

if IBM so instructs, within 30 days of your receipt of the replacement CRU, IBM may charge you for the replacement.

**2. On-site Service**

IBM or your reseller will either repair or exchange 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. **For some Machines, certain repairs may require sending the Machine to an IBM service center.**

**3. Courier or Depot Service\***

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.

**4. Customer Carry-In or Mail-In Service**

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 the subsequent installation and verification of the Machine.

\* This type of service is called ThinkPad® EasyServ or EasyServ in some countries.

The IBM Machine Warranty World Wide Web site at [http://www.ibm.com/servers/support/machine\\_warranties/](http://www.ibm.com/servers/support/machine_warranties/) provides a worldwide overview of IBM Limited Warranty for Machines, a Glossary of IBM definitions, Frequently Asked Questions (FAQs) and Support by Product (Machine) with links to Product Support pages. **The IBM Statement of Limited Warranty is also available on this site in 29 languages.**

To obtain warranty service contact IBM or your IBM reseller. In Canada or the United States, call 1-800-IBM-SERV (426-7378). In the EU countries, see the telephone numbers below.

**EU Country Telephone List**

Phone numbers are subject to change without notice.

Austria -- 43-1-24592-5901	Italy -- 39-02-482-9202
Belgium -- 02-718-4339	Luxembourg -- 352-360385-1
Denmark -- 4520-8200	Netherlands -- 020-514-5770

Finland -- 358-9-4591	Portugal -- 351-21-7915-147
France -- 0238-557-450	Spain -- 34-91-662-4916
Germany -- 07032-15-4920	Sweden -- 46-8-477-4420
Greece -- 30-210-688-1220	United Kingdom -- 01475-555-055
Ireland -- 353-1-815-4000	



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## Appendix C. Notices

This information was developed for products and services offered in the U.S.A.

IBM may not offer the products, services, or features discussed in this document in other countries. Consult your local IBM representative for information on the products and services currently available in your area. Any reference to an IBM product, program, or service is not intended to state or imply that only that IBM product, program, or service may be used. Any functionally equivalent product, program, or service that does not infringe any IBM intellectual property right may be used instead. However, it is the user's responsibility to evaluate and verify the operation of any non-IBM product, program, or service.

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Chipkill	ThinkPad
EtherJet	Tivoli
e-business logo	Tivoli Enterprise
@server	Update Connector
FlashCopy	Wake on LAN
IBM	XA-32
IBM (logo)	XA-64
IntelliStation	X-Architecture
NetBAY	XceL4
Netfinity	XpandOnDemand
NetView	xSeries
OS/2 WARP	

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## **Important notes**

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

CD-ROM 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.

IBM makes no representation or warranties regarding non-IBM products and services that are ServerProven<sup>®</sup>, including but not limited to the implied warranties of merchantability and fitness for a particular purpose. These products are offered and warranted solely by third parties.

IBM makes no representations or warranties with respect to non-IBM products. Support (if any) for the non-IBM products is provided by the third party, not IBM.

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

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## Product recycling and disposal

This unit contains materials such as circuit boards, cables, electromagnetic compatibility gaskets, and connectors which may contain lead and copper/beryllium alloys that require special handling and disposal at end of life. Before this unit is disposed of, these materials must be removed and recycled or discarded according to applicable regulations. IBM offers product-return programs in several countries. Information on product recycling offerings can be found on IBM's Internet site at <http://www.ibm.com/ibm/environment/products/prp.shtml>.

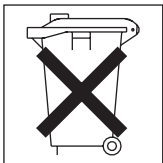
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## Battery return program

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/batteryrecycle.shtml> or contact your local waste disposal facility.

In the United States, IBM has established a collection 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.

In the Netherlands, the following applies.



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## 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 89/336/EEC 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.

### 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

**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、情報処理装置等電波障害自主規制協議会（VCCI）の基準に基づくクラス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。



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