

BladeCenter Advanced Management Module



# Installation Guide



BladeCenter Advanced Management 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 Z125-4753-08 04/2004," on page 29 and Appendix C, "Notices," on page 53.

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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.

在安裝本產品之前，請仔細閱讀 **Safety Information**  
(安全信息)。

安裝本產品之前，請先閱讀「安全資訊」。

Prije instalacije ovog produkta obavezno pročitajte Sigurnosne Upute.

Před instalací tohoto produktu si přečtěte příručku bezpečnostních instrukcí.

Læs sikkerhedsforskrifterne, før du installerer dette produkt.

Lees voordat u dit product installeert eerst de veiligheidsvoorschriften.

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

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

Vor der Installation dieses Produkts die Sicherheitshinweise lesen.

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

לפני שתתקינו מוצר זה, קראו את הוראות הבטיחות.

A termék telepítése előtt olvassa el a Biztonsági előírásokat!

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

製品の設置の前に、安全情報をお読みください。

본 제품을 설치하기 전에 안전 정보를 읽으십시오.

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

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

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

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

Перед установкой продукта прочтите инструкции по технике безопасности.

Pred inštaláciou tohto zariadenia si pečítajte Bezpečnostné predpisy.

Pred namestitvijo tega proizvoda preberite Varnostne informacije.

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

Läs säkerhetsinformationen innan du installerar den här produkten.

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

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

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



**Statement 1:**



**DANGER**

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

To avoid a shock hazard:

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

**To Connect:**

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

**To Disconnect:**

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

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.

---

## Chapter 1. Introduction

This *Installation Guide* contains information about installing your IBM® BladeCenter® Advanced Management Module. This *Installation Guide* provides the following information:

- Chapter 2, “Indicators, controls, and external connectors,” on page 7
- Chapter 3, “Installing a management module,” on page 11
- Chapter 4, “Configuring the management module,” on page 23

The advanced management module is a hot-swap BladeCenter module that you use to configure and manage all installed BladeCenter components. The advanced management module provides system-management functions and keyboard/video/mouse (KVM) multiplexing for all the blade servers in the BladeCenter unit that support KVM. It controls a serial port for remote connection; the external keyboard, mouse, and video connections for use by a local console; and a 10/100 Mbps Ethernet remote-management connection.

The advanced management module is referred to throughout this document as the management module.

All BladeCenter units come with at least one management module. Some BladeCenter units support management-module redundancy. Only one of the management modules in a BladeCenter unit can be active and it functions as the primary management module. If you install a redundant management module, it remains inactive until you switch it to act as primary, if the primary management module fails.

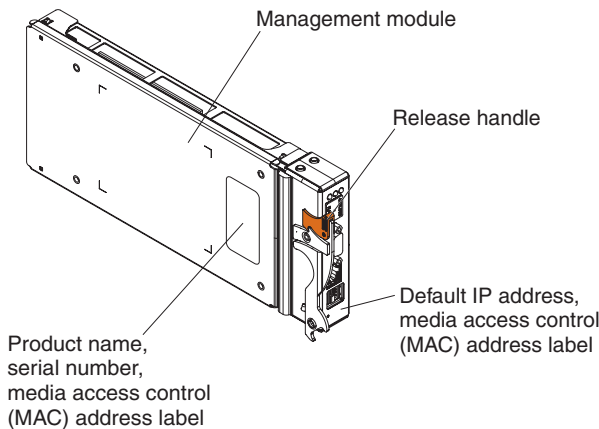
If two management modules are installed in a BladeCenter unit, both must always have the same level of firmware and the same IP address. The firmware must support redundant management-module function, to ensure changeover of control from the primary (active) management module to the redundant management module. The latest level of management-module firmware is available at <http://www.ibm.com/support/>.

The service processor in the management module communicates with the service processor in each blade server to support features such as blade-server power-on requests, error and event reporting, KVM requests, and requests to use the BladeCenter shared media tray (removable-media drives and USB connector).

Record information about the management module in the following table.

<b>Product name</b>	IBM BladeCenter Advanced Management Module
<b>Serial number</b>	
<b>Media access control (MAC) address</b>	

The product name, serial number, and media access control (MAC) address are located on the identification label on the side of the management module. The MAC address and along the default IP address are on a separate label on the bottom of the front of the management module.



You can obtain up-to-date information about your management module and other IBM server products at <http://www.ibm.com/bladecenter/>.

---

## Related documentation

In addition to this *Installation Guide*, the following documentation might be on the *Documentation* CD that comes with your management module, in Portable Document Format (PDF). Additional documents might also be included on the *Documentation* CD. The most recent versions of all BladeCenter documentation are at <http://www.ibm.com/support/>.

- *Safety Information*

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

- *IBM BladeCenter Management Module User's Guide*

This document provides general configuration information for the management-module Web-based user interface, including information about features, how to configure your management module, and how to get help.

- *IBM BladeCenter Management Module Command-Line Interface Reference Guide*

This document explains how to use the management-module command-line interface (CLI) to directly access management functions as an alternative to using the Web-based user interface. The CLI also provides access to the text-console command prompt on each blade server through a Serial over LAN (SOL) connection.

- *IBM BladeCenter Serial over LAN Setup Guide*

This document describes how to update and configure BladeCenter components for Serial over LAN (SOL) operation. The SOL connection provides access to the text-console command prompt on each blade server and enables the blade servers to be managed from a remote location.

In addition to the documentation in this library, be sure to review the *IBM BladeCenter Planning and Installation Guide* for your BladeCenter unit for information to help you prepare for system installation and configuration. This document is available at <http://www.ibm.com/bladecenter/>.

---

## The IBM Documentation CD

Your management module comes with an IBM *BladeCenter Documentation CD*, which contains documentation for your system in PDF and includes the IBM Documentation Browser to help you find information quickly.

### System requirements

To run the CD, use a system that has the following minimum hardware and software:

- Microsoft® Windows NT® 4.0 (with Service Pack 3 or later), Windows® 2000, SUSE LINUX, or Red Hat® Linux®.
- 700 MHz Intel® microprocessor.
- 32 MB RAM.
- Adobe Acrobat Reader 3.0 (or later) or xpdf, which comes with Linux operating systems. Acrobat Reader software is included on the CD, and you can install it when you run the Documentation Browser.

### Using the Documentation Browser

Use the Documentation Browser to browse the contents of the CD, read brief descriptions of the documents, and view documents, using Adobe Acrobat Reader or xpdf. The Documentation Browser automatically detects the regional settings in use in your system and presents the information in the language for

that region (if available). If a topic is not available in the language for that region, the English-language version is displayed.

Use one of the following procedures to start the Documentation Browser:

- If Autostart is enabled, insert the CD into the drive. The Documentation Browser starts automatically.
- If Autostart is disabled or is not enabled for all users:
  - If you are using a Windows operating system, insert the CD into the drive, and click **Start → Run**. In the **Open** field, type  
`e:\win32.bat`  
where *e* is the drive letter of the drive, and click **OK**.
  - If you are using a Linux operating system, insert the CD into the drive, and run the following command from the `/mnt/cdrom` directory:  
`sh runlinux.sh`

Select your computer from the **Product** menu. The **Available Topics** list displays all the documents for your BladeCenter product. Some documents might be in folders. A plus sign (+) indicates each folder or document that has additional topics under it. Click the plus sign to display the additional documents.

When you select a document, a description of the document appears under **Topic Description**. To select more than one document, press and hold the **Ctrl** key while you select the documents. Click **View Book** to view the selected document or documents in Acrobat Reader or xpdf. If you selected more than one document, all the selected documents are opened in Acrobat Reader or xpdf.

To search all the documents, type a word or word string in the **Search** field and click **Search**. The documents in which the word or word string appears are listed in order of the most occurrences. Click a document to view it, and press **Ctrl+F** to use the Acrobat search function or press **Alt+F** to use the xpdf search function within the document.

Click **Help** for detailed information about using the Documentation Browser.

---

## Notices and statements in this document

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

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

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





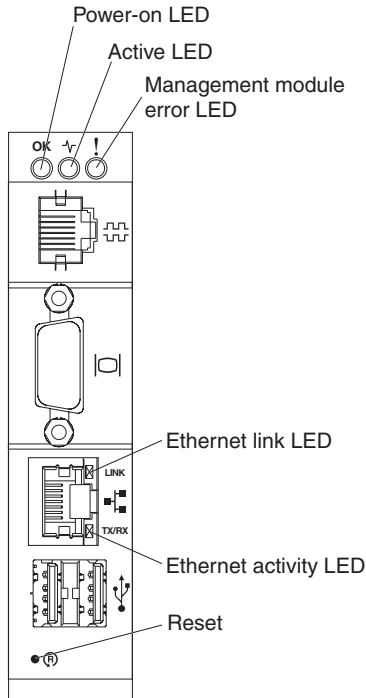
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## Chapter 2. Indicators, controls, and external connectors

This chapter describes the indicators, controls, and external connectors on the management module. See the documentation that comes with each management module for a description of the LEDs on the module.

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### Management-module indicators and controls



The following management-module LEDs provide status information about the management module and remote-management connection.

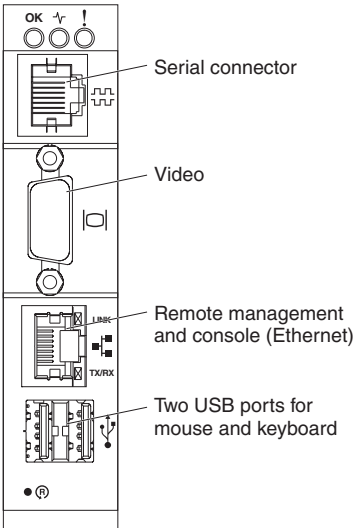
- **Power-on LED:** When this green LED is lit, it indicates that the management module has power.
- **Active LED:** When this green LED is lit, it indicates that the management module is actively controlling the BladeCenter unit. Only one management module actively controls the BladeCenter unit. If two management modules are installed in the BladeCenter unit, this LED is lit on only one module.

- **Management module error LED:** When this amber LED is lit, it indicates that an error has been detected in the management module. When this LED is lit, the BladeCenter unit system error LED is also lit.
- **Ethernet Link LED:** When this green LED is lit, there is an active connection through the port to the network.
- **Ethernet activity LED:** When this green LED is flashing, it indicates that there is activity through the port over the network link.
- **Reset button:** When you press this button the blowers operate at full speed while the management module is initializing.
  - Press and release the reset button to restart the management module.
  - Press and hold the reset button for 8 seconds to restore the management module to factory default settings.

---

## Management-module input and output connectors

The management module has a serial connector, a video connector, a remote management and console connector, and two USB connectors for keyboard and mouse.



- **Serial connector:** Use this connection to configure and manage the BladeCenter components over a serial line through the management-module command-line interface (CLI). This connector provides local access to the CLI and redirection to the Serial over LAN (SOL) interface of any processor blade server. For example, you can connect a notebook computer to the serial connector and a terminal emulator program to configure the IP

addresses, user accounts, and other management settings through the CLI user interface. See the management-module *Command-Line Interface Reference Guide* for more information.

- **Video connector:** Use this connector to connect a compatible SVGA or VGA video monitor to the BladeCenter unit. See Table 1 on page 17 for more information about compliant video settings.
- **Remote management and console (Ethernet) connector:** Use this connector for an Ethernet remote connection to a network-management station on the network. See “Configuring remote access” on page 24 for more information about remote configuration.
- **Two USB ports for mouse and keyboard:** Use these two connectors for local mouse and keyboard connectivity. Unlike a BladeCenter unit, which has USB connectors on the media tray, the blade servers share the management-module USB ports through the BladeCenter KVM interface. The KVM interface has ownership of these ports.



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## Chapter 3. Installing a management module

See the *Installation and User's Guide* that comes with your BladeCenter unit type for specific management-module bay locations and installation information.

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### Installation guidelines

Before you install the management module, read the following information:

- Read the safety information that begins on page v and “Handling static-sensitive devices” on page 12, and read the safety statements in the BladeCenter unit documentation.
- The orange color on components and labels in your BladeCenter unit identifies hot-swap components. You can install or remove hot-swap modules and, with some restrictions, hot-swap blade servers while the BladeCenter unit is running. For details about installing or removing a management module, see the detailed information in this chapter.
- For a list of supported options for your BladeCenter unit, see <http://www.ibm.com/servers/eserver/serverproven/compat/us/>.

### System reliability guidelines

To help ensure proper BladeCenter cooling and system reliability, make sure that the following requirements are met:

- Each of the module bays on the front and rear of the BladeCenter unit has either a module or a module filler installed.
- Each of the blade server bays on the front of the BladeCenter unit has either a blade server or a blade filler installed.
- Each of the drive bays in a blade-server storage expansion option has either a hot-swap drive or a panel filler installed.
- A removed hot-swap module, blade server, or drive is replaced within 1 minute of removal.
- Cables for optional modules are routed according to the documents that come with the modules.
- A failed blower is replaced as soon as possible, to restore cooling redundancy. See the BladeCenter *Hardware Maintenance Manual and Troubleshooting Guide* for instructions.

Failure to replace a blade server or module with another blade server, module, blade filler, or module filler within 1 minute can affect performance in the blade servers.

## Handling static-sensitive devices

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

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

- See the *Installation and User's Guide* that comes with your BladeCenter unit to locate the ESD connector. Not all BladeCenter units have a ESD connector.
- 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 damage it.
- While the device is still in its static-protective package, touch it to an unpainted metal part of the BladeCenter unit or any unpainted surface on any other grounded rack component for at least 2 seconds. This drains static electricity from the package and from your body.
- Remove the device from its package and install it immediately without setting down the device. If it is necessary to set down the device, put it back into its static-protective package.
- Take additional care when handling devices during cold weather. Heating reduces indoor humidity and increases static electricity.

## Hardware and software requirements

The management module supports the following Web browsers for remote (client) access. The client Web browser must be Java™-enabled, must support JavaScript™ 1.2 or later, and must have the Java Virtual Machine (JVM) version 1.4.2-08 or later (but earlier than 1.5) Plug-in installed. The JVM Plug-in is available from <http://www.java.com/>.

- Microsoft Internet Explorer 5.5 or later (with latest Service Pack installed)
- Netscape Navigator 7.0 or later
- Mozilla version 1.3 or later

**Note:** The Remote Disk feature works only with the Microsoft Windows 2000 operating system or later.

The following server operating systems have USB support, which is required for the Remote Control feature:

- Microsoft Windows Server 2003
- Microsoft Windows 2000 with Service Pack 4 or later
- Red Hat Linux version 7.3
- SUSE LINUX version 8.0
- Novell NetWare 6.5

The management-module Web interface does not support double-byte character set (DBCS) languages.

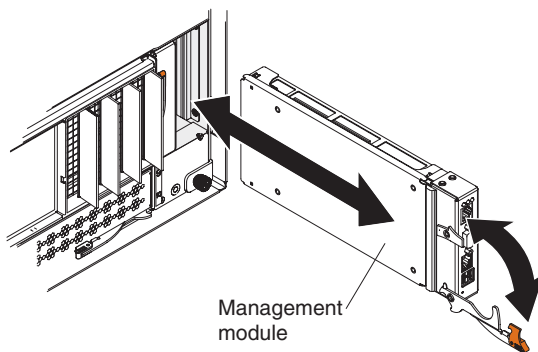
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## Installing a management module

The following illustration shows how to install a management module in a BladeCenter unit. Your BladeCenter unit might differ from the illustrations in this document.

When you install a management module, if the BladeCenter unit is not connected to a DHCP server on the network, it takes up to 3 minutes for the management module to use the default (static) IP address.

**Attention:** To maintain proper system cooling, each module bay must contain either a module or a module filler.



### Notes:

1. If you replace a redundant management module, you must install the same type of management module as the primary management module.
2. These instructions assume that the BladeCenter unit is connected to power.
3. After failover, you might not be able to establish a network connection to the management module for 5 minutes. The reason for this condition is the network might include switches, routers, and hubs which might not allow

(or relay) an address resolution protocol (ARP) from the new management module to update the network cached ARP table. Without this information relay, the new MAC address/IP association will not recognize the management module. This condition will correct itself after the ARP table times out. To prevent this condition, reconfigure the network-routing setup tables to enable ARPs to be relayed from the management module.

To install a management module, complete the following steps:

1. Read the safety information that begins on page v and “Installation guidelines” on page 11 through “Handling static-sensitive devices” on page 12.
2. If you are installing a secondary management module, read “Preparing for management-module redundancy” on page 16.
3. Remove any external devices that are blocking access to the rear of the BladeCenter unit. See the *Installation and User’s Guide* for your BladeCenter unit for instructions.
4. If you are replacing the only management module in the BladeCenter unit, and the management module is functional, save the configuration file before you proceed. To save the configuration file and restore it to the replacement management module, see the management-module *User’s Guide* or the *Command-Line Interface Reference Guide* for instructions.
5. If you are replacing a management module, remove the current module from the bay (see “Removing a management module” on page 15). If you are adding a new management module, remove the module filler from the selected management-module bay and store the module filler for future use.
6. If you have not already done so, touch the static-protective package that contains the replacement management module to an unpainted metal part of the BladeCenter unit or any unpainted surface on any other grounded rack component for at least 2 seconds.
7. Remove the management module from its static-protective package.
8. Make sure that the release handle on the management module is in the open position (perpendicular to the module).
9. Slide the management module into the selected management-module bay until it stops.
10. Push the release handle on the front of the management module to the closed position.
11. Make sure that the power-on LED on the management module is lit. This indicates that the management modules are operating correctly. See “Management-module indicators and controls” on page 7 to locate the LED.
12. Connect the cables to the management module. See “Management-module video settings” on page 17 for more information.



13. Replace any external components that you removed in step 3 on page 14.
14. If this is the only management module in the BladeCenter unit, configure the new management module. See Chapter 4, “Configuring the management module,” on page 23 for more information.  
If this is a redundant management module, and you followed the instructions in “Preparing for management-module redundancy” on page 16, no configuration is necessary.

The second management module receives the configuration and status information automatically from the primary management module when necessary. The transfer of information to the redundant management module can take up to 45 minutes after it is installed.

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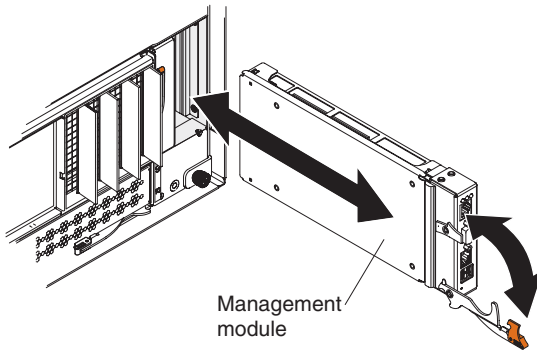
## Removing a management module

### Notes:

1. These instructions assume that the BladeCenter unit is connected to power.
2. If you are replacing the only management module in the BladeCenter unit and the management module is functioning, save the configuration file before you proceed. See the management-module *User's Guide* or the *Command-Line Interface Reference Guide* for instructions for saving and restoring a configuration file.
3. If you have just installed a second management module in the BladeCenter unit, do not remove the first (primary) management module for up to 45 minutes; the second (redundant) management module needs the time to receive initial status information and firmware from the primary management module.

To remove a management module, complete the following steps:

1. Read the safety information that begins on page v and “Installation guidelines” on page 11 through “Handling static-sensitive devices” on page 12.
2. If you are removing the active management module in the BladeCenter unit, stop all management-module local and remote sessions before you proceed, to avoid an unexpected termination of sessions.
3. Save the management-module configuration file. See the management-module *User's Guide* for instructions.
4. Remove any external devices that block access to the rear of the BladeCenter unit. See the *Installation and User's Guide* for your BladeCenter unit for instructions.
5. Disconnect any cables from the management module.
6. Pull the release handle all the way toward the bottom of the management module until it stops, as shown in the illustration. The module moves out of the bay approximately 0.6 cm (0.25 inch).



7. Slide the module out of the bay and set it aside. Within 1 minute, place either another module of the same type or a module filler in the bay.

---

## Preparing for management-module redundancy

To prepare your management modules for redundancy, complete the following steps:

1. Install the second management module in the available management-module bay.
2. Wait up to 45 minutes while the primary management module transfers firmware and configuration information to the second management module.

The management modules are now prepared for redundancy.

### Notes:

1. Whenever power is restored to a BladeCenter unit that has two functional management modules, the management module in bay 1 is, by default, the active management module, even if the module in bay 2 was the active module before power was removed.
2. For the most recent version of IBM Director software that you can use to manage redundant management modules, see <http://www.ibm.com/support/>.

See the management-module *User's Guide* or *Command-Line Interface Reference Guide* for more information about configuring the management module.

---

## Management-module video settings

The following table lists the video resolution and refresh-rate combinations for KVM-equipped blade servers that are supported for all system configurations. Unless noted otherwise, these settings apply to all management-module types.

*Table 1. Compliant video settings*

Resolution	Refresh rate
640 x 480	60 Hz
640 x 480	72 Hz
640 x 480	75 Hz
640 x 480	85 Hz
800 x 600	60 Hz
800 x 600	72 Hz
800 x 600	75 Hz
800 x 600	85 Hz
1024 x 768	60 Hz
1024 x 768	70 Hz

---

## Cabling the KVM

See “Management-module input and output connectors” on page 8 for the location of each connector.

If you always use a remote session to communicate with the blade servers in the BladeCenter unit, you do not have to connect a local KVM to the management module.

To cable the KVM for the management module, use one of the following cabling methods:

- **Keyboard and mouse with USB ports** - Connect a USB keyboard and USB mouse to the USB connector on the management module.
- **Video port** - Connect the video cable to the video connector on the management module.
- **Cable only to the active management module** - When the management-module data transfer occurs, you can move the keyboard, video, and mouse cables to the active management module.
- **Use a duplicate keyboard, monitor, and mouse for the second management module** - With a second keyboard, monitor, and mouse always connected to the second management module, no switching or recabling is required when data transfer occurs.

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## Connecting the management module to the network

The management module supports network connection through the remote management and console (Ethernet) connector or a CLI-only connection through the serial connector. You can manage the BladeCenter unit through the graphical-user interface that is provided by the management-module Web interface or through the CLI that you access through a terminal emulator program, a Secure Shell (SSH) server, or the serial connector.

All management-module network connections to blade servers that do not support KVM are made through the CLI. You can perform initial configuration of the management module after you connect it to your network; however, because some requirements are imposed by the default management-module settings, it might be easier to perform these setup operations through a temporary connection.

You can access the management-module Web interface through a network or through a computer that is connected directly to the management module. To connect to the management-module Web interface, you need the following equipment and information:

- A computer with Internet browser capability. To facilitate connections at multiple locations, you can use a notebook computer.
- The management-module MAC address (listed on the label on the management module).
- For a networked connection to the management module, the following equipment:
  - A standard Ethernet cable
  - A local Ethernet network port (facility connection)
- For direct connection of a computer to the management-module remote management and console (Ethernet) connector, you need an Ethernet cable.

Network connections through the serial connector can access only the management-module CLI. See the management-module *Command-Line Interface Reference Guide* for information about accessing the management-module CLI.

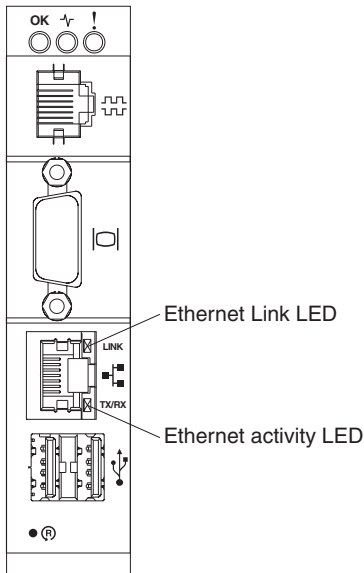
The following sections describe how to make typical network connections for a management module.

## Networked connection

To connect the Ethernet cable to the management module, complete the following steps:

1. Connect one end of a Category 5 or higher Ethernet cable to the remote management and console (Ethernet) connector on the management module. Connect the other end of the Ethernet cable to the network.
2. Check the Ethernet LEDs to make sure that the network connection is working.
  - When the green Ethernet LINK LED is lit, there is an active connection through the port to the network.
  - When the green Ethernet activity (TX/RX) LED is flashing, it indicates that there is activity through the port over the network link.

The following illustration shows the locations of the Ethernet LEDs.



## Direct connection

To connect the Ethernet cable directly to the management module, complete the following steps:

1. Connect one end of a Category 5 or higher Ethernet cable to the remote management and console (Ethernet) connector on the management module.
2. Connect the other end of the Ethernet cable to the Ethernet connector on the client computer.

3. Check the Ethernet LEDs to make sure that the network connection is working.
  - When the green Ethernet LINK LED is lit, there is an active connection through the port to the network.
  - When the green Ethernet activity (TX/RX) LED is flashing, it indicates that there is activity through the port over the network link.

## Serial connection

To connect the serial cable to the management module, complete the following steps:

1. Connect one end of an RJ-45 serial cable to the serial connector on the management module.
2. Connect the other end of the serial cable to the serial connector of the client computer, such as a notebook computer.
3. Configure the serial port of the client computer to the following values:
  - Baud rate = 57600
  - Parity = none
  - Stop bits = 1

The serial cable must have the following characteristics.

RJ-45 signal	RJ-45 pins	RJ-45 cable	DB9 signal	DB9 pins
TxD out	6	yellow	RxD in	2
RxD in	5	green	TxD out	3
RTS out	8	white	CTS in	8
CTS in	7	brown	RTS out	7
DTR out	3	black	DSR in	6
DSR in	1	blue	DTR out	4
DCD in	2	orange	DCD in	n/a
RI in	n/a	n/a	RI in	n/a
GND	4	red	GND	5

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## Connecting a remote console to the management module for the first time

The following sections describe how to connect a remote console to the management module to perform initial configuration of the BladeCenter unit. The management module has the following default settings:

- IP address: 192.168.70.125
- Subnet: 255.255.255.0
- User ID: USERID (all capital letters)
- Password: PASSWORD (note the number zero, not the letter O, in PASSWORD)

By default, the management module is configured to respond to DHCP first before using its static IP address.

The client computer that you connect to the management module must be configured to operate on the same subnet as the management module. The IP address of the management module must also be in the same local domain as the client computer. To connect to the management module for the first time, you must change the Internet protocol properties on the client computer.

There are two interfaces that you can use to connect to the management module for the first time. If you are connecting to the management module through an Ethernet connection, you can open a Web browser and use the Web-based interface, or you can use Telnet to connect to the management module and use the CLI to configure the module. If you are connecting through a serial connection, you can use a terminal emulator to access the CLI.

### Ethernet connection (Web-based)

After you connect the Ethernet cable from the management module to the client computer, complete the following steps:

1. Make sure that the subnet of the client computer is set to the same value as the default management-module subnet (255.255.255.0).
2. Open a Web browser on the client computer, and direct it to the default management-module IP address (192.168.70.125).
3. Enter the default user name, USERID, and the default password, PASSWORD (note the number zero, not the letter O, in PASSWORD), to start the remote session.
4. Follow the instructions on the screen. Make sure that you set the timeout value that you want for your Web session.

After you connect the client computer to the management module for the first time, perform initial configuration of the BladeCenter unit. See the management-module *User's Guide* for configuration instructions.

## Ethernet connection (CLI)

After you connect the Ethernet cable from the management module to the client computer, complete the following steps:

1. Make sure that the subnet of the client computer is set to the same value as the default management-module subnet (255.255.255.0).
2. Open a console window and log in to the default management-module IP address (192.168.70.125).
3. Enter the default user name, USERID, and the default password, PASSWORD (note the number zero, not the letter O, in PASSWORD), to start the remote session.

After you connect the client computer to the management module for the first time, perform initial configuration of the BladeCenter unit. See the management-module *User's Guide* for configuration instructions.

## Serial connection (CLI)

After you connect the serial cable from the management module to the client computer, complete the following steps:

1. Make sure that the serial port of the client computer is set to the following settings:
  - Baud rate = 57600
  - Parity = none
  - Stop bits = 1
2. Open a terminal emulator window and establish a connection to the management-module serial port.
3. Enter the default user name, USERID, and the default password, PASSWORD (note the number zero, not the letter O, in PASSWORD), to start the remote session.

After you connect to the management module for the first time, perform initial configuration of the BladeCenter unit. See the management-module *User's Guide* for GUI-configuration instructions or the management-module *Command-Line Interface Guide* for CLI-configuration instructions.



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## Chapter 4. Configuring the management module

The BladeCenter unit automatically detects the modules and blade servers that are installed and stores the vital product data (VPD). When the BladeCenter unit is started, the management module automatically configures the remote management port of the management module so that you can configure and manage BladeCenter unit components. You can configure and manage BladeCenter unit components from a remote location through the management-module Web-based interface or the management-module CLI. You can also configure and manage BladeCenter unit components through the local management-module serial port, using the CLI.

You configure only the primary (active) management module. The redundant management module, if present, receives the configuration and status information automatically from the primary management module when necessary.

If the management module that you installed is a replacement for the only management module in the BladeCenter unit and you saved the configuration file before you replaced the management module, you can apply the saved configuration file to the replacement management module by using the management-module Web interface or the management-module CLI. See the management-module *User's Guide* or the *Command-Line Interface Reference Guide* for instructions.

**Note:** There are two ways to configure the I/O modules: through the management-module Web interface or through an external I/O-module port that is enabled through the management module, using a Telnet interface or a Web browser. See the documentation that comes with each I/O module for information.

After the management module is installed, you must configure a remote connection and remote access or a local connection.

You also can use the management-module Web interface or management-module CLI to view some of the blade-server configuration settings. All management modules are preconfigured with the same static IP address. You can assign a new static IP address for each BladeCenter unit. If DHCP is not used and you do not assign a new static IP address for each BladeCenter unit before you attempt to communicate with a management-module interface, only one BladeCenter unit at a time can be added onto the network for discovery. Adding multiple units to the network without a unique IP address assignment for each BladeCenter unit results in IP address conflicts.

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## Configuring remote access

After you connect the active management module to the network, the Ethernet-port connection is configured in one of the following ways:

- If you have an accessible, active, and configured DHCP server on the network, the host name, IP address, gateway address, subnet mask, and Dynamic Name Server (DNS) server IP address are set automatically.
- If the DHCP server does not respond within 3 minutes after the port is connected to the network, the management module uses the factory-defined static IP address and default subnet address. The management module is inaccessible during this time.

To configure remote access, complete the following steps:

1. Make sure that the client computer is on the same subnet as the management module; then, use a Web browser to connect it to the management module.
2. In the browser **Address** field, specify the IP address that the management module is using:
  - If the IP address was assigned through a DHCP server, get the IP address from your network administrator.
  - The factory-defined static IP address is 192.168.70.125, the default subnet address is 255.255.255.0, and the default host name is MMxxxxxxxxxxx, where xxxxxxxx is the burned-in media access control (MAC) address. The MAC address is on a label on the management module, below the reset button.

**Note:** If the IP configuration is assigned by the DHCP server, the network administrator can use the MAC address of the management-module network interface to determine which IP address and host name are assigned.

See your management-module *User's Guide* for instructions for configuring the management module.

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## Communicating with the IBM Director software

The IBM Director program communicates with the BladeCenter unit through the Ethernet port on the active management module.

To communicate with the BladeCenter unit, the IBM Director software needs a managed object (in the Group Contents pane of the IBM Director Management Console main window) that represents the BladeCenter unit. If the management-module IP address is known, the network administrator can create an IBM Director managed object for the unit. If the IP address is not

known, the IBM Director software can automatically discover the BladeCenter unit (out-of-band, using the Ethernet port on the management module) and create a managed object for the unit.

For the IBM Director software to discover the BladeCenter unit, your network must initially provide connectivity from the IBM Director management server to the management-module Ethernet port. To establish connectivity, the management module attempts to use DHCP to acquire its initial IP address for the Ethernet port. If the DHCP request fails, the management module uses the static IP address that is assigned to it. Therefore, the DHCP server (if used) must be on the management LAN for your BladeCenter unit.

**Note:** For I/O module communication with the IBM Director management server through the management-module external Ethernet port, the I/O-module internal network interface and the management-module external interfaces must be on the same subnet.

If you do not want to keep the factory-defined static values, you can configure the static IP address, host name, and subnet mask for the management module through the Web-based interface.



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## Appendix A. Getting help and technical assistance

If you need help, service, or technical assistance or just want more information about IBM products, you will find a wide variety of sources available from IBM to assist you. This appendix contains information about where to go for additional information about IBM and IBM products, what to do if you experience a problem with your BladeCenter product or optional device, 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* or *Problem Determination Guide* on the IBM Documentation CD that comes with your system.
- Go to <http://www.ibm.com/servers/eserver/bladecenter/> and click **Support** to check for information to help you solve the problem.

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

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### Using the documentation

Information about your IBM BladeCenter system and preinstalled software, if any, or optional device is available in the documentation that comes with the product. That documentation can include printed documents, online documents, readme files, and help files. See the troubleshooting information in your system documentation for instructions for using the diagnostic programs. The troubleshooting information or the diagnostic programs might tell you that you need additional or updated device drivers or other software. IBM maintains pages on the World Wide Web where you can get the latest technical information and download device drivers and updates. To access these pages,

go to <http://www.ibm.com/bladecenter/>, click **Support**, and follow the instructions. Also, some documents are available through the IBM Publications Center at <http://www.ibm.com/shop/publications/order/>.

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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 BladeCenter systems, optional devices, services, and support at <http://www.ibm.com/bladecenter/>. For service information, click **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 BladeCenter products. For information about which products are supported by Support Line in your country or region, see <http://www.ibm.com/services/sl/products/>.

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

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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. See <http://www.ibm.com/planetwide/> for support telephone numbers, or in the U.S. and Canada, call 1-800-IBM-SERV (1-800-426-7378).

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

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## Appendix B. IBM Statement of Limited Warranty Z125-4753-08 04/2004

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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 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 contact IBM for service, you must follow the problem determination and resolution procedures that IBM specifies. An initial diagnosis of your problem can be made either by a technician over the telephone or electronically by access to an IBM website.

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), IBM will ship the CRU to you for you to install.



If the Machine does not function as warranted during the warranty period and your problem cannot be resolved over the telephone or electronically, through your application of Machine Code or software updates, or with a CRU, IBM or 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**

**Jurisdiction:** *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.

#### **BOLIVIA**

**Jurisdiction:** *The following is added after the first sentence:*

Any litigation arising from this Statement of Limited Warranty will be settled exclusively by the courts of the city of La Paz.

#### **BRAZIL**

**Jurisdiction:** *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.

#### **CHILE**

**Jurisdiction:** *The following is added after the first sentence:*

Any litigation arising from this Statement of Limited Warranty will be settled exclusively by the Civil Courts of Justice of Santiago.

## COLOMBIA

**Jurisdiction:** *The following is added after the first sentence:*

Any litigation arising from this Statement of Limited Warranty will be settled exclusively by the Judges of the Republic of Colombia.

## EQUADOR

**Jurisdiction:** *The following is added after the first sentence:*

Any litigation arising from this Statement of Limited Warranty will be settled exclusively by the Judges of Quito.

## MEXICO

**Jurisdiction:** *The following is added after the first sentence:*

Any litigation arising from this Statement of Limited Warranty will be settled exclusively by the Federal Courts of Mexico City, Federal District.

## PARAGUAY

**Jurisdiction:** *The following is added after the first sentence:*

Any litigation arising from this Statement of Limited Warranty will be settled exclusively by the courts of the city of Asuncion.

## 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").

## URUGUAY

**Jurisdiction:** *The following is added after the first sentence:*

Any litigation arising from this Statement of Limited Warranty will be settled exclusively by the City of Montevideo Court's Jurisdiction.

## VENEZUELA

**Jurisdiction:** *The following is added after the first sentence:*

Any litigation arising from this Statement of Limited Warranty will be settled exclusively by the Courts of the Metropolitan Area Of the City of Caracas.

## 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 AND LAOS

**Governing Law:** *The following replaces “laws of the country in which you acquired the Machine” in the first sentence:*  
laws of the State of New York, United States of America.

## CAMBODIA, INDONESIA, AND LAOS

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

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

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

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

## HONG KONG S.A.R. 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:**

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

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

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

If you 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.

### **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:*

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

**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

## CONSUMERS

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.

### **AUSTRIA, DENMARK, FINLAND, GREECE, ITALY, NETHERLANDS, NORWAY, PORTUGAL, SPAIN, SWEDEN AND SWITZERLAND**

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

Except as otherwise provided by mandatory law:

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**

**The provisions of this Statement of Limited Warranty replace any applicable statutory warranties.**

**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 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, IBM will reimburse you for the transportation charges for the delivery of the failing Machine to IBM.

**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.

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.

### IBM BladeCenter Advanced Management Module

Country or Region of Purchase	Warranty Period	Type of Warranty Service*
Worldwide	3 years	3
* See " <u>Types of Warranty Service</u> " for the legend and explanations of warranty-service types.		

### 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 provides replacement CRUs to you for you to install. CRU information and replacement instructions are shipped with your Machine and are available from IBM at any time on your request. Installation of Tier 1 CRUs is your responsibility. If IBM installs a Tier 1 CRU at your request, you will be charged for the installation. You may install a Tier 2 CRU yourself or request IBM to install it, at no additional charge, under the type of warranty service designated for your Machine. IBM specifies in the materials shipped with a replacement CRU whether a defective CRU must be returned to IBM. When return is required, 1) return instructions and a container are shipped with the replacement CRU, and 2) you may be charged for the replacement CRU if IBM does not receive the defective CRU within 30 days of your receipt of 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.

**5. CRU and On-site Service**

This type of Warranty Service is a combination of Type 1 and Type 2 (see above).

**6. CRU and Courier or Depot Service**

This type of Warranty Service is a combination of Type 1 and Type 3 (see above).

**7. CRU and Customer Carry-In or Mail-In Service**

This type of Warranty Service is a combination of Type 1 and Type 4 (see above).

**When a 5, 6 or 7 type of warranty service is listed, IBM will determine which type of warranty service is appropriate for the repair.**

\* This type of service is called ThinkPad<sup>®</sup> 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's 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. For the warranty service contact telephone number in a country subsequently added to the EU and not yet reflected in the list below, contact IBM in that country or visit the website above for a current telephone listing.

Austria -- +43-1-24592-5901	Latvia -- +386-61-1796-699
Belgium -- +32-70-23-3392	Lithuania -- +386-61-1796-699
Cyprus -- +357-22-841100	Luxembourg -- +352-298-977-5063
Czech Republic -- +420-2-7213-1316	Malta -- +356-23-4175
Denmark -- +45-4520-8200	Netherlands -- +31-20-514-5770
Estonia -- +386-61-1796-699	Poland -- +48-22-878-6999
Finland -- +358-8001-4260	Portugal -- +351-21-892-7147
France -- +33-238-557-450	Slovakia -- +421-2-4954-1217
Germany -- +49-1805-253553	Slovenia -- +386-1-4796-699
Greece -- +30-210-680-1700	Spain -- +34-91-714-7983
Hungary -- +36-1-382-5720	Sweden -- +46-8-477-4420
Ireland -- +353-1-815-4000	United Kingdom -- +44-1475-555-055
Italy -- +39-800-820-094	



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## Appendix C. Notices

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

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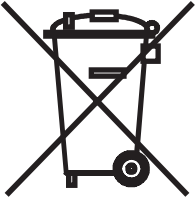
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For Taiwan: Please recycle batteries.



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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

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## **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.

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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.

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聲 明  
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