

IBM 10 Gb Ethernet Passthru Module for IBM
BladeCenter



Installation Guide

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BladeCenter



Installation Guide

Note

Before using this information and the product it supports, be sure to read the general information in Appendix C, "Notices," on page 45 and Appendix B, "IBM Statement of Limited Warranty Z125-4753-10 08/2008," on page 27, and the *IBM Safety Information* and *IBM Systems Environmental Notices and User Guide* documents on the IBM *Documentation* CD.

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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.

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

安裝本產品之前，請先閱讀「安全資訊」。

Prije instalacije ovog produkta obavezno pročitajte Sigurnosne Upute.

Před instalací tohoto produktu si přečtěte příručku bezpečnostních instrukcí.

Læs sikkerhedsforskrifterne, før du installerer dette produkt.

Lees voordat u dit product installeert eerst de veiligheidsvoorschriften.

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

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

Vor der Installation dieses Produkts die Sicherheitshinweise lesen.

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

לפני שתתקינו מוצר זה, קראו את הוראות הבטיחות.

A termék telepítése előtt olvassa el a Biztonsági előírásokat!

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

製品の設置の前に、安全情報をお読みください。

본 제품을 설치하기 전에 안전 정보를 읽으십시오.

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

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

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

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

Перед установкой продукта прочтите инструкции по технике безопасности.

Pred inštaláciou tohto zariadenia si pečítajte Bezpečnostné predpisy.

Pred namestitvijo tega proizvoda preberite Varnostne informacije.

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

Läs säkerhetsinformationen innan du installerar den här produkten.

Important:

Each caution and danger statement in this document is labeled with a number. This number is used to cross reference an English-language caution or danger statement with translated versions of the caution or danger statement in the *Safety Information* document.

For example, if a caution statement is labeled “Statement 1,” translations for that caution statement are in the *Safety Information* document under “Statement 1.”

Be sure to read all caution and danger statements in this document before you perform the procedures. Read any additional safety information that comes with the 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 3:



CAUTION:

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



DANGER

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

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



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

Statement 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

The IBM 10 Gb Ethernet Passthru Module for IBM® BladeCenter® is a high-speed Ethernet passthru module that can be installed into a BladeCenter unit that supports high-speed I/O modules.

This *Installation Guide* contains instructions for and information about:

- Setting up and installing or replacing the passthru module
- Installing and removing small-form-factor pluggable (SFP+) modules in the passthru module
- Identifying the external ports and LEDs on the passthru module
- Cabling the passthru module and its optional devices
- Configuring the passthru module
- Updating the passthru-module software
- Solving problems with the passthru module

Notes:

1. Changes are made periodically to the IBM Web site. Procedures for locating firmware and documentation might vary slightly from what is described in this document.
2. The illustrations in this document might differ slightly from your hardware.

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

Product name	IBM 10 Gb Ethernet Passthru Module for IBM BladeCenter
Serial number	_____
Other identifiers	_____

Related documentation

In addition to this *Installation Guide*, the *Documentation* CD provided with the passthru module contains important safety and environmental guides related to this IBM product.

Notes:

- The most recent versions of this *Installation Guide* and all other BladeCenter documentation are at <http://www.ibm.com/systems/support/>
- Depending on your blade server model, additional documentation might be included on the IBM *BladeCenter Documentation* CD that came with the IBM BladeCenter unit.

Additional related documentation, including the documents listed below are available at <http://www.ibm.com/systems/support/>:

- *Installation and User's Guide* for the BladeCenter unit
- *Problem Determination and Service Guide* for the BladeCenter unit

- *IBM BladeCenter Advanced Management Module User's Guide*
- *IBM BladeCenter Advanced Management Module Command-Line Interface Reference Guide*

See the *IBM Configuration and Options Guide* for information about SFP+ modules and cables that can be used to connect the passthru module to other network devices. This document is available from <http://www.ibm.com/servers/eserver/xseries/cog/>.

For more information about available documentation, see “Using the documentation” on page 25.

Features and specifications

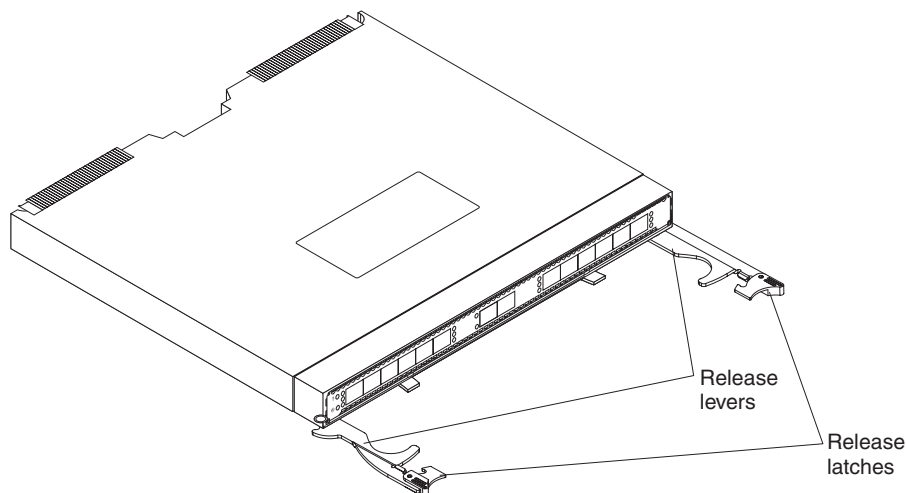
This section provides a summary of the features and specifications that apply to the IBM 10 Gb Ethernet Passthru Module for IBM BladeCenter.

- Management-module inter-integrated Circuit (I2C) interface that provides vital product data (VPD) and register access.
- 14-port Ethernet connections for 10 Gb fiber optic or copper SFP+ modules connectors (modules not included)
- Direct one-one mapping
- 10 Gb operation on uplinks
- Simple setup and monitoring through advanced management module
- HSSM form-factor compatible
- Provides self-test and diagnostics capability

You can install or remove this component while the BladeCenter unit is running; however, removing the module will disrupt all network communications through this device.

The following illustration shows the major features of the passthru module.

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



Notices and statements in this document

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

The following notices and statements are used in this document:

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

Chapter 2. Installing and replacing a passthru module

This chapter provides instructions for installing a passthru module in the BladeCenter unit and for removing a passthru module from the BladeCenter unit. See the documentation for your BladeCenter unit for information about I/O-module bay locations and the components that can be installed in them.

An expansion card or host channel adapter (HCA) must be installed in each blade server that you want to communicate with. To enable the passthru module to communicate with a blade server, at least one passthru module must be installed in the BladeCenter unit. For details about expansion-card installation, configuration, and use, see the documentation that comes with the expansion card and the blade server.

Installing a second passthru module enables a redundant path and a separate connection from the blade server to the external Ethernet network.

The BladeCenter unit supports a maximum of four Ethernet passthru modules. Depending on the type of BladeCenter unit that you are using, the BladeCenter unit supports a maximum of 12 or 14 expansion cards (one installed in each blade server).

Notes:

- The blade servers or BladeCenter units that are described or shown in this document might be different from your blade server or BladeCenter unit. For additional information, see the documentation that comes with your blade server or BladeCenter unit.
- Configuration requirements for your BladeCenter unit might vary. You can obtain up-to-date information about the passthru module and the BladeCenter unit at <http://www.ibm.com/systems/bladecenter/>.

Installation guidelines

Before you install the passthru module in the BladeCenter unit, read the following information:

- Read the safety information that begins on page v, "Handling static-sensitive devices" on page 6, and the safety statements in the BladeCenter unit documentation. This information will help you work safely.
- Observe good housekeeping in the area where you are working. Place removed covers and other parts in a safe place.
- Blue on a component indicates touch points, where you can grip the component to remove it from or install it in the blade server or BladeCenter unit, open or close a latch, and so on.
- Orange on a component or an orange label on or near a component on the passthru module, blade server, or BladeCenter unit indicates that the component can be hot-swapped, which means that if the BladeCenter unit and operating system support hot-swap capability, you can remove or install the component while the BladeCenter unit is running. (Orange can also indicate touch points on hot-swap components.) See the instructions for removing or installing a specific hot-swap component for any additional procedures that you might have to perform before you remove or install the component.
- You do not have to turn off the BladeCenter unit to install or replace any of the hot-swap modules on the front or rear of the BladeCenter unit.

- When you install a passthru module in the BladeCenter unit, you must also install a compatible I/O expansion card in the blade server to support the passthru module.
- When you are finished working on the blade server or BladeCenter unit, reinstall all safety shields, guards, labels, and ground wires.
- For a list of supported optional devices for the BladeCenter unit and other IBM products, see <http://www.ibm.com/servers/eserver/serverproven/compat/us/>.

System reliability guidelines

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

- All protective caps provided with the passthru module and with fiber optic SFP+ modules and cables are installed when the port or component is not in use.
- Each of the module bays on the rear of the BladeCenter unit contains either a module or a filler module.
- A removed hot-swap module is replaced with an identical module or filler module within 1 minute of removal.
- A removed hot-swap blade server is replaced with another blade server or filler blade within 1 minute of removal.
- The ventilation areas on the sides of the blade server are not blocked.
- You have followed the reliability guidelines in the documentation that comes with the BladeCenter unit.

Cable requirements for the passthru module are described in the *IBM Configuration and Options Guide* at <http://www.ibm.com/servers/eserver/xseries/cog/>. See the documentation that comes with the blade server for cable-routing information.

Handling static-sensitive devices

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

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

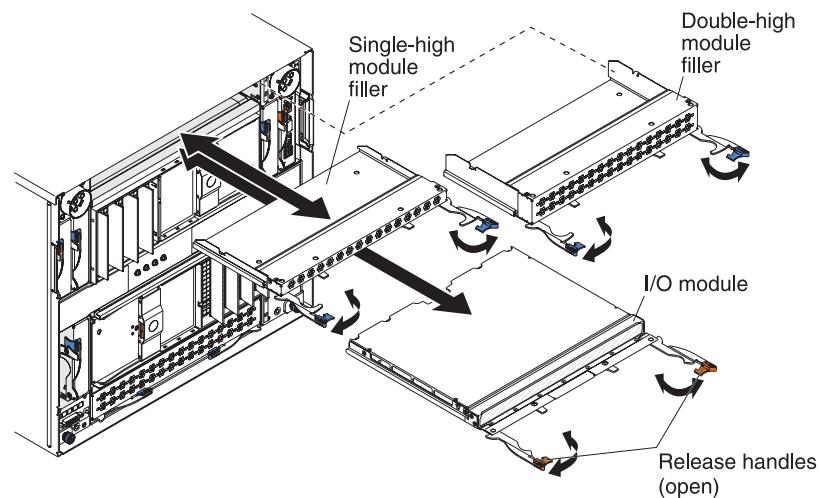
- Limit your movement. Movement can cause static electricity to build up around you.
- Handle the device carefully, holding it by its edges or its frame.
- Do not touch solder joints, pins, or exposed printed circuitry.
- Do not leave the device where others can handle and damage it.
- While the device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

- Some types of BladeCenter units come with electrostatic discharge (ESD) connectors. If the BladeCenter unit is equipped with an ESD connector, see the documentation that comes with the BladeCenter unit for using the ESD connector.

Installing a passthru module

Note: The following illustration shows how to install a passthru module in a BladeCenter H Type 8852 unit. The appearance of your BladeCenter unit might be different; see the documentation for your BladeCenter unit for additional information.

To install a passthru module, complete the following steps:



1. Read the safety information that begins on page v and “Installation guidelines” on page 5.
2. Select I/O-module bay in which to install the passthru module.

Note: For details about I/O-module bay requirements and bay locations, see the documentation for the BladeCenter unit and blade servers.

3. Remove the filler module from the selected bay. Store the filler module for future use.
4. If you have not already done so, touch the static-protective package that contains the passthru module to an *unpainted* metal surface of the BladeCenter unit or an *unpainted* metal surface on any other grounded rack-component for at least 2 seconds.
5. If the removed filler module (from step 3) occupied two bays, install a single-high filler module into the unused bay.
6. Remove the passthru module from its static-protective package.
7. Make sure that the release levers on the passthru module are in the open position (perpendicular to the module). For specific instructions for installing a passthru module in the BladeCenter unit, see the documentation that comes with the BladeCenter unit.
8. Slide the passthru module into the applicable I/O-module bay until it stops.

9. Push the release levers on the front of the passthru module to the closed position. After you insert and lock the passthru module, it is turned on, and a power-on self-test (POST) occurs to verify that the passthru module is operating correctly.

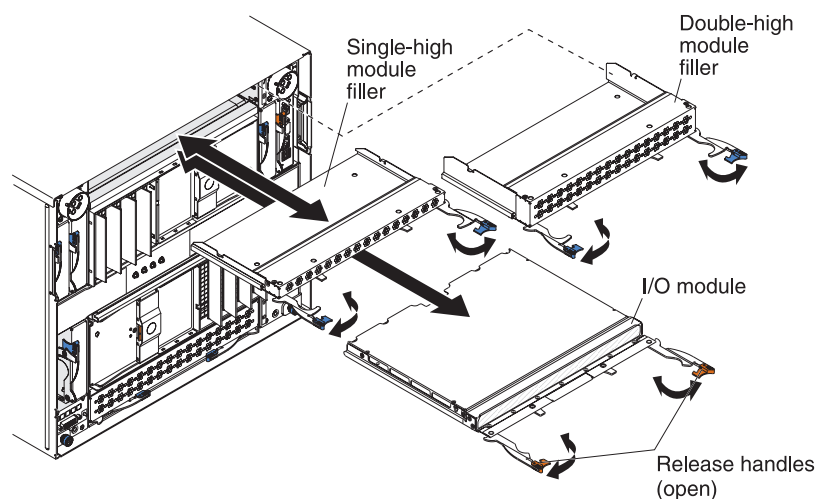
Notes:

- a. The passthru module takes approximately 60 seconds to complete the POST. When the passthru module is turned on, an LED test occurs. All LEDs are lit and remain lit during POST; then, all the LEDs except the OK LED turn off. This indicates normal POST results.
 - b. To maintain proper airflow, make sure that the ventilation holes on the front of the passthru module are not blocked.
10. Make sure that the LEDs on the passthru module indicate that it is operating correctly (see “Information LEDs” on page 18).
 11. If you have another passthru module to install, repeat step 3 on page 7 through step 10; otherwise, go to the next step.
 12. Install the SFP+ modules in the passthru module. For information and instructions, see Chapter 3, “Installing and removing a 10 Gb SFP+ module,” on page 11 and the documentation that comes with the SFP+ module.
 13. Attach any cables that are required by the passthru module. For additional information about cabling the passthru module, see Chapter 4, “Cabling fiber optic SFP+ modules,” on page 15, the documentation that comes with the cables, and the optional network devices to which the cables have been connected. For the locations of the connectors on the BladeCenter unit, see the documentation that comes with the BladeCenter unit. Then, continue with the next step.
 14. Make sure that the external ports on the passthru module are enabled through one of the advanced management-module interfaces, such as the Web-based interface or the CLI.

Removing or replacing a passthru module

Note: The following illustration shows how to remove and replace a passthru module from a BladeCenter H Type 8852 unit. The appearance of your BladeCenter unit might be different; see the documentation for your BladeCenter unit for additional information.

To replace a passthru module, complete the following steps:



1. Read the safety information that begins on page v, and “Installation guidelines” on page 5.
2. Disconnect any cables from the passthru module that you are removing. Removing these cables disrupts the network connection from the external Ethernet port to any connected external Ethernet devices. If you plan to replace the passthru module with another passthru module, you can use the existing cable, provided that it remains. For additional information about cabling the passthru module, see Chapter 4, “Cabling fiber optic SFP+ modules,” on page 15, the documentation that comes with the cables, and the optional network devices to which the cables have been connected. For the locations of the connectors on the BladeCenter unit, see the documentation that comes with the BladeCenter unit. Then, continue with step 3.
3. Pull the release latches out from the passthru module. The passthru module moves out of the bay approximately 0.6 cm (0.25 inch).
4. Slide the passthru module out of the bay and set it aside.
5. Place either another passthru module or a filler module in the bay.
Important: Complete this step within 1 minute. (For more information, see steps 9 and 10 on page 8.)
6. If you placed a filler module in the bay, continue with Chapter 3, “Installing and removing a 10 Gb SFP+ module,” on page 11.
7. If you placed a passthru module in the bay, reconnect the other cables that you disconnected. Attach any additional cables that are required by the passthru module. For additional information about cabling the passthru module, see Chapter 4, “Cabling fiber optic SFP+ modules,” on page 15, the documentation that comes with the cables, and the optional network devices to which the cables have been connected. For the locations of the connectors on the

BladeCenter unit, see the documentation that comes with the BladeCenter unit. Then, continue with Chapter 3, “Installing and removing a 10 Gb SFP+ module,” on page 11.

Chapter 3. Installing and removing a 10 Gb SFP+ module

The passthru module supports 10 Gb small-form-factor pluggable (SFP+) modules. SFP+ modules designed for use in fiber optic or copper networks are available separately. SFP+ modules designed for use in fiber optic networks are laser products that convert electrical signals to optical signals. Select SFP+ modules appropriate for your networking requirements.

- Fiber optic SFP+ modules require a separate fiber optic cable.
- Copper SFP+ modules should be MSA-compliant copper direct attach cables (DAC) of up to 7 m (23 ft) in length.

You can install both fiber optic and copper SFP+ modules in the same passthru module

Handling an SFP+ module

Before you install an SFP+ module, read the following information:

- The module housing of the SFP+ has an integral guide key that is designed to prevent you from inserting the module incorrectly.
- Use minimal pressure when you insert the module into the port. Forcing the module into the port can cause damage to the module or the module port.
- You can insert or remove the module while the BladeCenter unit is turned on.
- You must first insert the module into the port before you can connect the cables.
- You must remove the cable from the SFP+ module before you remove the SFP+ module from the passthru module.

Statement 3:



CAUTION:

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

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



DANGER

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

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



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

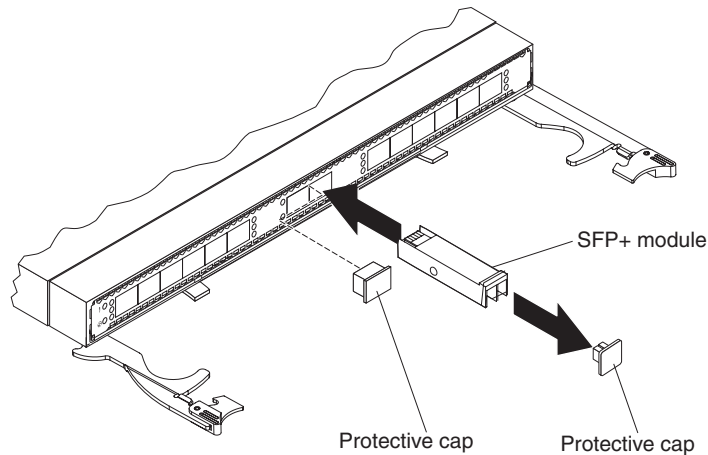
Installing an SFP+ module

The following instructions show how to install SFP+ modules designed for use with fiber optic networks. Installing SFP+ modules designed for use with copper networks is similar except that these modules have direct-attached cables.

1. Read the safety information that begins on page v.
2. If you have not already done so, touch the static-protective package that contains the SFP+ module to an *unpainted* metal surface of the BladeCenter unit or an *unpainted* metal surface on any other grounded rack component in the rack in which you are installing the passthru module for at least 2 seconds.
3. Read the information in “Handling an SFP+ module” on page 11.
4. Remove the SFP+ module from its static-protective package.
5. When installing a fiber optic SFP+ module, remove the protective cap from it and store the cap in a safe place.

Attention: Do *not* install fiber optic cables before the SFP+ module is installed in the passthru module.

6. Insert the SFP+ module into the SFP+ module port until it clicks into place.



7. When installing a fiber optic SFP+ module, connect the fiber optic cable (see “Connecting the fiber optic SFP+ module cable” on page 15).

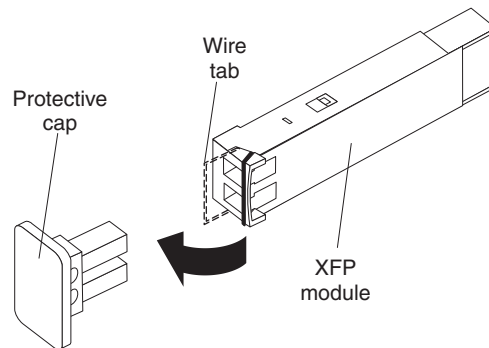
Removing an SFP+ module

To remove an SFP+ module, complete the following steps:

1. Read the safety information that begins on page v.
2. Read the information in “Handling an SFP+ module” on page 11.
3. When removing a fiber optic SFP+ module, remove the fiber optic cable from it. For more information about removing the cable, see “Disconnecting the fiber optic SFP+ module cable” on page 16.

Attention: To avoid damage to the cable or the SFP+ module, make sure that you disconnect the fiber optic cable *before* you remove the SFP+ module.

4. Unlock the SFP+ module by pulling the wire tab straight out, as shown in the following illustration.



5. Grasp the wire tab on the SFP+ module and pull it out of the port.
6. When removing a fiber optic SFP+ module, replace the protective cap on it.
7. Place the SFP+ module into a static-protective package.
8. Replace the protective cap in the passthru module port to ensure proper cooling of the BladeCenter components.

Chapter 4. Cabling fiber optic SFP+ modules

This chapter describes how to connect fiber optic SFP+ module cables.

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

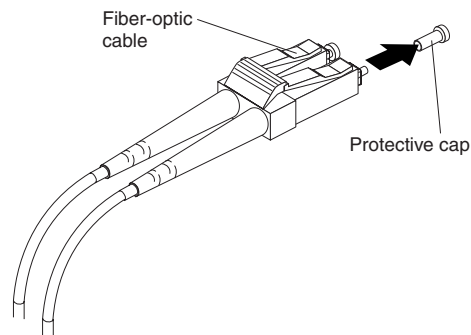
Connecting the fiber optic SFP+ module cable

Attention: To avoid damage to the fiber optic cables, follow these guidelines:

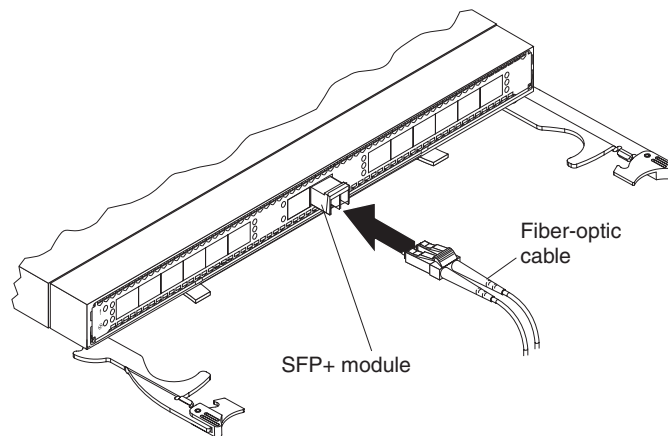
- Do not route the cable along a folding cable-management arm.
- When you attach the cable to a device on slide rails, leave enough slack in the cable so that it does not bend to a radius of less than 38 mm (1.5 in.) when the device is extended or become pinched when the device is retracted.
- Route the cable away from places where it can be snagged by other devices in the rack.
- Do not overtighten the cable straps or bend the cables to a radius of less than 38 mm (1.5 in.).
- Do not put excess weight on the cable at the connection point. Make sure that the cable is well supported.

To connect the fiber optic SFP+ module cable, complete the following steps:

1. Remove the protective caps from the end of the fiber optic cable and store the cap in a safe place.



2. Gently slide the fiber optic cable into the SFP+ module until it clicks into place.



3. Check the LEDs on the passthru module. When the passthru module is operating correctly, the green link LED is lit. For information about the status of the passthru module LEDs, see Chapter 5, “Front panel external ports and LEDs,” on page 17.

Disconnecting the fiber optic SFP+ module cable

To disconnect the fiber optic SFP+ module cable, complete the following steps:

1. Squeeze the release tabs and gently pull the fiber optic cable from the SFP+ module.
2. Replace the protective caps on the ends of the fiber optic cable.

Chapter 5. Front panel external ports and LEDs

The front panel of the passthru module contains information LEDs and 14 SFP+ module port connectors. Port and LED enumeration depends on the type of BladeCenter unit into which the module is installed.

The passthru module LEDs indicate the following:

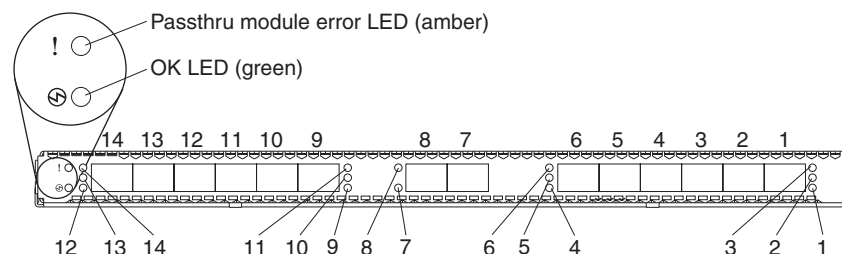
- The status of the passthru module and its network connection
- The status of the external connections to the passthru module

Note: Use the advanced management module web interface to make ensure that the passthru module is operating correctly. For more information, see the *IBM BladeCenter Advanced Management Module User's Guide*.

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

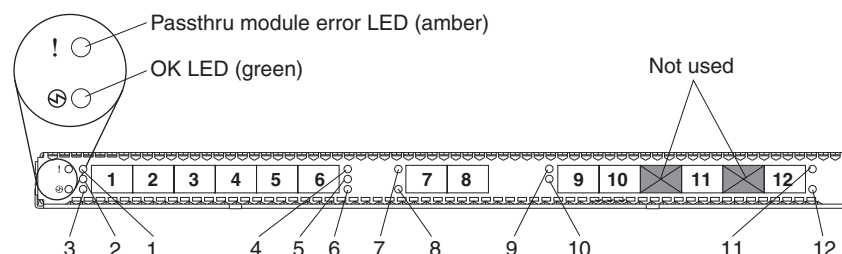
BladeCenter H Front panel

When the module is installed in a BladeCenter H unit, the ports and LEDs are numbered from right to left, as shown below.



BladeCenter HT Front panel

When the module is installed in a BladeCenter HT unit, the ports and LEDs are numbered from left to right, as shown below.



Note: The passthru module comes with a conversion kit for use when installing the passthru module in a BladeCenter HT unit. Follow the instructions in the conversion kit to make the necessary changes to the passthru module.

Information LEDs

The information LEDs are described in “Passthru-module status LEDs” and “Port link status LEDs.” See “BladeCenter H Front panel” on page 17 and “BladeCenter HT Front panel” on page 17 for locations of the LEDs and note that the LED enumeration depends on the type of BladeCenter unit into which the module is installed.

Note: An amber LED on the BladeCenter unit is lit when a system error or event has occurred. To identify the error or event, check the BladeCenter advanced management-module event log.

Passthru-module status LEDs

The two LEDs on the left of the front panel of the passthru module represent the passthru-module status.

OK (Ⓢ) LED

When lit, this green OK (Ⓢ) LED indicates that the passthru module is on.

Passthru-module error (!) LED

When lit, this amber passthru-module error (!) LED indicates a POST failure or critical alert.

Note: When this LED is lit, the system-error LED on the BladeCenter unit is also lit.

If neither LED is lit, it indicates that the passthru module is off.

Port link status LEDs

A link status LED is provided for each of the 14 external ports on the passthru module. These LEDs indicate the link status of each external port.

Link status LEDs

A green link status LED is associated with each port (1 through 14). These LEDs indicate whether the corresponding port link is up or down.

- When this LED is lit, an active connection (or link) exists between the corresponding port and the device that is using this connection.
- When this LED is not lit, there is no signal on the corresponding port or the link is down.
- When this LED is flashing, activity is occurring on that port.

Chapter 6. Updating the software

This chapter describes how to determine the level of the software that is installed on the passthru module, how to obtain the latest level of passthru software, how to upgrade the software, and how to reset the passthru module to activate the software upgrade.

Determining the level of passthru-module software

After you install the passthru module in the BladeCenter unit, make sure that the latest software is installed on the passthru module. To determine the level of the software that is installed, complete the following steps:

1. Log on to the advanced management module as described in the *IBM BladeCenter Advanced Management Module User's Guide*. If necessary, obtain the IP address of the advanced management module from your system administrator. The login window opens.
2. From the **Monitors** menu, click **Firmware VPD**. The Firmware VPD window opens.
3. In the **I/O Module Firmware VPD** area, locate the number of the I/O-module-bay that contains the passthru module that you installed; then, note the corresponding level of the software for the passthru module.

Obtaining the latest level of passthru software

The passthru module might have features that are not described in the documentation that comes with the passthru, and the documentation might be updated occasionally to include information about those features or technical updates.

If firmware and documentation updates are available, complete the following steps:

Note: Changes are made periodically to the IBM Web site. The procedure for locating firmware and documentation might change from what is described in this document.

1. Go to <http://www.ibm.com/systems/support/>.
2. Under **Product support**, click **BladeCenter**.
3. In the column on the left, click **BladeCenter support search**.
4. In the **Search for** field, type 10GB Passthru Module, and click **Search**.

For instructions for updating the passthru module software, see the *IBM BladeCenter Advanced Management Module User's Guide*.

Resetting and restarting the passthru module

To activate the new image or images, you must reset the passthru module. To reset the passthru module, complete the following steps:

1. From the **I/O Module Tasks** menu, click **Admin/Power/Restart**. The advanced management module window opens.
2. Select the I/O-module bay on which the software update was just installed.
3. Click **Power Off Module(s)**.
4. Select the passthru-module bay on which the software update was just installed.

5. Click **Power On Module(s)**. Wait 60 seconds for POST to be completed.
6. Click **Monitors**, and select **Firmware VPD**. The Firmware VPD window opens.
7. In the Firmware VPD window, locate the **I/O Module Firmware VPD** area. Page down to the number of the I/O-module bay that contains the passthru module that you just installed; then, note the corresponding level of the software for the passthru module. Confirm that the software build ID and revision reflect the correct software release.

Chapter 7. Parts listing

Replaceable components are of three types:

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

For information about the terms of the warranty, see “Part 1 - General Terms” on page 27.

The replaceable components in the following table are Tier 1 CRUs. If other BladeCenter components require replacement, see the following documentation that comes with these devices:

- BladeCenter *Problem Determination and Service Guide* or *Hardware Maintenance Manual and Troubleshooting Guide*
- *Installation and User's Guide* or *Installation Guide*

Part	CRU number (Tier 1)
IBM 10 Gb Ethernet Passthru Module for IBM BladeCenter assembly	46M6183
I/O module filler, single high	31R3303

Chapter 8. Solving problems

This section provides basic troubleshooting information to help you solve some problems that might occur while you are setting up the passthru module.

If you cannot locate and correct a problem by using the information in this section, see Getting help and technical assistance.

Running POST

To ensure that it is fully operational, the passthru module processes a series of tests during power-up or a restart (power-on self-test, or POST). These tests take approximately 30 seconds to complete. The advanced management module reads the test results and displays them for you. During normal operation, these tests are completed without error, and the green OK LED is lit. However, if the passthru module fails POST, the amber passthru-module error LED and the system-error LED on the BladeCenter unit are lit. An event is stored in the event log in the system status panel of the advanced management module. The specific failure is displayed on the system status passthru module panel of the advanced management module.

Note: For the locations and descriptions of the passthru module LEDs, see Chapter 5, “Front panel external ports and LEDs,” on page 17.

POST errors

There are two types of errors: noncritical and critical. A noncritical error applies to one port, and the passthru module is operational. You can continue to operate the passthru module; however, you must replace it as soon as possible. When critical errors occur, the passthru module does not operate. To view POST results, complete the following steps:

1. Log on to the advanced management module as described in the *IBM BladeCenter Advanced Management Module Command-Line Interface Reference Guide*. If necessary, obtain the IP address of the advanced management module from your system administrator. The login window opens.
2. Turn off the power to the passthru module; then, turn it on again.
3. After POST is completed, the advanced management module displays the results. Refresh the window to view the POST results. If a critical error occurs, replace the passthru module. If a noncritical error occurs, see the passthru-module error log for additional details.

The following table describes the basic critical and noncritical failures. This abbreviated list is representative; it is not an exhaustive list. An error code is associated with each failure. Error codes are displayed on the Management Module passthru Information window. Be sure to note the applicable error code and corresponding failure. You might have to provide this information when you call for service. For details, see Getting help and technical assistance.

Diagnostic indicator (in hex)	Failing functional area	Failure criticality
00 - 7F	Base internal functions	Critical
80 - 9E	Internal interface failures	Noncritical
9F	Firmware update failed. (Reverting to default-level firmware)	Noncritical
A0 - AF	External interface errors	Noncritical
B0 - FE	Reserved	Noncritical
FF	Passthru module “good” indicator	Operation

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 section contains information about where to go for additional information about IBM and IBM products, what to do if you experience a problem with your system, and whom to call for service, if it is necessary.

Before you call

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

- Check all cables to make sure that they are connected.
- Check the power switches to make sure that the system and any optional devices are turned on.
- Use the troubleshooting information in your system documentation, and use the diagnostic tools that come with your system. Information about diagnostic tools is in the *Problem Determination and Service Guide* on the IBM Documentation CD that comes with your system.
- Go to the IBM support Web site at <http://www.ibm.com/systems/support/> to check for technical information, hints, tips, and new device drivers or to submit a request for information.

You can solve many problems without outside assistance by following the troubleshooting procedures that IBM provides in the online help or in the documentation that is provided with your IBM product. The documentation that comes with IBM systems also describes the diagnostic tests that you can perform. Most 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 operating system or program.

Using the documentation

Information about your IBM 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/systems/support/> and follow the instructions. Also, some documents are available through the IBM Publications Center at <http://www.ibm.com/shop/publications/order/>.

Getting help and information from the World Wide Web

On the World Wide Web, the IBM Web site has up-to-date information about IBM systems, optional devices, services, and support. The address for IBM System x® and xSeries® information is <http://www.ibm.com/systems/x/>. The address for IBM BladeCenter information is <http://www.ibm.com/systems/bladecenter/>. The address for IBM IntelliStation® information is <http://www.ibm.com/intellistation/>.

You can find service information for IBM systems and optional devices at <http://www.ibm.com/systems/support/>.

Software service and support

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

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

Hardware service and support

You can receive hardware service through your IBM reseller or IBM Services. To locate a reseller authorized by IBM to provide warranty service, go to <http://www.ibm.com/partnerworld/> and click **Find a Business Partner** on the right side of the page. For IBM support telephone numbers, see <http://www.ibm.com/planetwide/>. In the U.S. and Canada, call 1-800-IBM-SERV (1-800-426-7378).

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

IBM Taiwan product service

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

IBM Taiwan product service contact information:

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

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

Part 1 - General Terms

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

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

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

What this Warranty Covers

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

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

Many features, conversions, or upgrades involve the removal of parts and their return to IBM. An IBM part that replaces a removed part will assume the warranty service status of the removed part. An IBM part that is added to a Machine without replacing a previously-installed part is subject to warranty effective on its Date of Installation. Unless IBM specifies otherwise, the warranty period, type of warranty, and service level of such part is the same as the Machine on which it is installed.

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

THESE WARRANTIES ARE YOUR EXCLUSIVE WARRANTIES AND REPLACE ALL OTHER WARRANTIES OR CONDITIONS, EXPRESS OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OR CONDITIONS OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE, AND ANY WARRANTY OF TITLE OR NON-INFRINGEMENT. SOME

STATES OR JURISDICTIONS DO NOT ALLOW THE EXCLUSION OF EXPRESS OR IMPLIED WARRANTIES, SO THE ABOVE EXCLUSION MAY NOT APPLY TO YOU. IN THAT EVENT, SUCH WARRANTIES ARE LIMITED IN DURATION TO THE WARRANTY PERIOD. NO WARRANTIES APPLY AFTER THAT PERIOD. SOME STATES OR JURISDICTIONS DO NOT ALLOW LIMITATIONS ON HOW LONG AN IMPLIED WARRANTY LASTS, SO THE ABOVE LIMITATION MAY NOT APPLY TO YOU.

What this Warranty Does not Cover

This warranty does not cover the following:

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

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

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

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

How to Obtain Warranty Service

If the Machine does not function as warranted during the warranty period, refer to the service documentation that shipped with your Machine for support assistance and problem determination procedures. A copy of the service documentation for your Machine can also be found at the following IBM website: <http://www.ibm.com> under "Support and downloads".

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

What IBM Will Do to Correct Problems

IBM will attempt to diagnose and resolve your problem over the telephone or electronically by access to an IBM Internet website. Certain Machines contain

remote support capabilities for direct problem reporting, remote problem determination, and resolution with IBM. When you contact IBM for service, you must follow the problem determination and resolution procedures that IBM specifies. Following problem determination, if IBM determines on-site service is required, a service technician will be scheduled for service at your location.

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

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

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

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

Exchange of a Machine or Part

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

Your Additional Responsibilities

You agree:

- a. before IBM or its subcontractor or the reseller exchanges a Machine or part, to remove all features, parts, options, alterations, and attachments not under warranty service and ensure that the Machine is free of any legal obligations or restrictions that prevent its exchange;
- b. to obtain authorization from the owner to have IBM or its subcontractor or the reseller service a Machine that you do not own;
- c. where applicable, before service is provided:
 1. follow the service request procedures that IBM or its subcontractor or its reseller provides;
 2. backup and secure all programs, data, and funds contained in the Machine; and
 3. inform IBM or its subcontractor or the reseller of changes in the Machine's location;

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

Limitation of Liability

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

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

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

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

Governing Law

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

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

Jurisdiction

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

Part 2 - Country-unique Terms

AMERICAS

Jurisdiction:

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

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

BRAZIL

Exchange of a Machine or Part:

Delete the last sentence:

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

CANADA

What this Warranty Covers:

The following replaces the 2nd paragraph to this section:

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

Limitation of Liability:

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

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

Governing Law:

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

laws in the Province of Ontario.

PERU**Limitation of Liability:**

The following is added at the end of this section:

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

UNITED STATES**Governing Law:**

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

laws of the State of New York

ASIA PACIFIC**AUSTRALIA****What this Warranty Covers:**

The following paragraph is added to this section:

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

Limitation of Liability:

The following is added to this section:

Where IBM is in breach of a condition or warranty implied by the Trade Practices Act 1974 or other similar legislation, IBM's liability is limited to the repair or

replacement of the goods or the supply of equivalent goods. Where that condition or warranty relates to right to sell, quiet possession or clear title, or the goods are of a kind ordinarily acquired for personal, domestic or household use or consumption, then none of the limitations in this paragraph apply.

Governing Law:

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

laws of the State or Territory

CAMBODIA AND LAOS

Governing Law:

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

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

CAMBODIA, INDONESIA AND LAOS

Arbitration:

The following is added under this heading:

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

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

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

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

HONG KONG S.A.R.

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

INDIA

Limitation of Liability:

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

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

Arbitration:

The following is added under this heading:

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

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

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

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

JAPAN**Governing Law:**

The following sentence is added to this section:

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

MACAU S.A.R.

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

MALAYSIA**Limitation of Liability:**

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

NEW ZEALAND

What this Warranty Covers:

The following paragraph is added to this section:

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

Limitation of Liability:

The following is added to this section:

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

PEOPLE’S REPUBLIC OF CHINA (PRC)

Governing Law:

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

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

PHILIPPINES

Limitation of Liability:

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

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

Arbitration:

The following is added under this heading:

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

The number of arbitrators shall be three, with each side to the dispute being entitled to appoint one arbitrator. The two arbitrators appointed by the parties shall appoint a third arbitrator who shall act as chairman of the proceedings. Vacancies in the post of chairman shall be filled by the president of the Philippine Dispute Resolution

Center, Inc. Other vacancies shall be filled by the respective nominating party. Proceedings shall continue from the stage they were at when the vacancy occurred.

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

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

SINGAPORE

Limitation of Liability:

*The words “**SPECIAL**” and “**ECONOMIC**” in item 3 in the last paragraph are deleted.*

EUROPE, MIDDLE EAST, AFRICA (EMEA)

THE FOLLOWING TERMS APPLY TO ALL EMEA COUNTRIES:

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

How to Obtain Warranty Service:

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

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

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

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

Governing Law:

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

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

Jurisdiction:

The following exceptions are added to this section:

1) In **Austria**; the choice of jurisdiction for all disputes arising out of this Statement of Limited Warranty and relating thereto, including its existence, will be the competent court of law in Vienna, Austria (Inner-City); 2) in **Angola, Bahrain, Botswana, Burundi, Egypt, Eritrea, Ethiopia, Ghana, Jordan, Kenya, Kuwait, Liberia, Malawi, Malta, Mozambique, Nigeria, Oman, Pakistan, Qatar, Rwanda, Sao Tome, Saudi Arabia, Sierra Leone, Somalia, Tanzania, Uganda, United Arab Emirates, United Kingdom, West Bank/Gaza, Yemen, Zambia, and Zimbabwe**; all disputes arising out of this Statement of Limited Warranty or related to its execution, including summary proceedings, will be submitted to the exclusive jurisdiction of the English courts; 3) in **Belgium and Luxembourg**; all disputes arising out of this Statement of Limited Warranty or related to its interpretation or its execution, the law, and the courts of the capital city, of the country of your registered office and/or commercial site location only are competent; 4) in **France, Algeria, Benin, Burkina Faso, Cameroon, Central African Republic, Chad, Comoros, Congo Republic, Djibouti, Democratic Republic of Congo, Equatorial Guinea, French Guiana, French Polynesia, Gabon, Gambia, Guinea, Guinea-Bissau, Ivory Coast, Lebanon, Libya, Madagascar, Mali, Mauritania, Mauritius, Mayotte, Morocco, New Caledonia, Niger, Reunion, Senegal, Seychelles, Togo, Tunisia, Vanuatu, and Wallis & Futuna**; all disputes arising out of this Statement of Limited Warranty or related to its violation or execution, including summary proceedings, will be settled exclusively by the Commercial Court of Paris; 5) in **South Africa, Namibia, Lesotho and Swaziland**; both of us agree to submit all disputes relating to this Statement of Limited Warranty to the jurisdiction of the High Court in Johannesburg; 6) in **Turkey**; all disputes arising out of or in connection with this Statement of Limited Warranty shall be resolved by the Istanbul Central (Sultanahmet) Courts and Execution Directorates of Istanbul, the Republic of Turkey; 7) in each of the following specified countries, any legal claim arising out of this Statement of Limited Warranty will be brought before, and settled exclusively by, the competent court of a) Athens for **Greece**, b) Tel Aviv-Jaffa for **Israel**, c) Milan for **Italy**, d) Lisbon for **Portugal**, and e) Madrid for **Spain**; 8) in **the United**

Kingdom; both of us agree to submit all disputes relating to this Statement of Limited Warranty to the exclusive jurisdiction of the English courts; 9) in **Liechtenstein**; all of our rights, duties, and obligations are settled exclusively by the competent court of Zurich; and 10) “to the competent courts of Czech republic”.

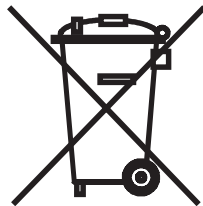
Arbitration:

The following is added under this heading:

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

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

EUROPEAN UNION (EU) BATTERY DIRECTIVE



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

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

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

participation is important to minimize any potential effects of batteries and accumulators on the environment and human health due to the potential presence of hazardous substances.

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

THE FOLLOWING TERMS APPLY TO ALL EU COUNTRIES:

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

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

Limitation of Liability:

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

Except as otherwise provided by mandatory law:

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

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

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

FRANCE AND BELGIUM

Limitation of Liability:

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

Except as otherwise provided by mandatory law:

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

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

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

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

THE FOLLOWING TERMS APPLY TO THE COUNTRY SPECIFIED:

AUSTRIA AND GERMANY

What this Warranty Covers:

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

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

The following paragraph is added to this section:

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

The second paragraph does not apply.

What IBM Will Do to Correct Problems:

The following is added to this section:

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

Limitation of Liability:

The following paragraph is added to this section:

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

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

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

IRELAND

What this Warranty Covers:

The following is added to this section:

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

Limitation of Liability:

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

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

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

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

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

Items for Which IBM is Not Liable

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

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

SOUTH AFRICA, NAMIBIA, BOTSWANA, LESOTHO AND SWAZILAND

Limitation of Liability:

The following is added to this section:

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

TURKEY

What this Warranty Covers:

The following is added to this section:

The minimum warranty period for Machines is 2 years.

UNITED KINGDOM

Limitation of Liability:

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

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

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

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

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

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

Items for Which IBM is Not Liable

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

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

Part 3 - Warranty Information

Machine Type(s)	Country of Purchase	Warranty Period	Type of Warranty Service*	Service Level*
IBM 10 Gb Ethernet Passthru Module for IBM BladeCenter	Worldwide	1 year	5	1
* See "Types of Warranty Service" and "Service Levels" for explanations of warranty-service types and service levels.				

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

Types of Warranty Service

Type 1 - Customer Replaceable Unit ("CRU") Service

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

Type 5 - CRU and On-site Service

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

Type 6 - CRU and Courier or Depot Service

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

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

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

Type 8 - CRU and Machine Exchange Service

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

Service Levels

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

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

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

IBM Contact Information

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

Appendix C. Notices

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

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

Important notes

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

CD or DVD drive speed is the variable read rate. Actual speeds vary and are often less than the possible maximum.

When referring to processor storage, real and virtual storage, or channel volume, KB stands for 1024 bytes, MB stands for 1 048 576 bytes, and GB stands for 1 073 741 824 bytes.

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

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

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

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

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

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

Electronic emission notices

Federal Communications Commission (FCC) statement

Note: This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference, in which case the user will be required to correct the interference at his own expense.

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

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

Industry Canada Class A emission compliance statement

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

Avis de conformité à la réglementation d'Industrie Canada

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

Australia and New Zealand Class A statement

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

United Kingdom telecommunications safety requirement

Notice to Customers

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

European Union EMC Directive conformance statement

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

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

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

European Community contact:
IBM Technical Regulations
Pascalstr. 100, Stuttgart, Germany 70569
Telephone: 0049 (0)711 785 1176
Fax: 0049 (0)711 785 1283
E-mail: tjahn@de.ibm.com

Taiwanese Class A warning statement

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

Germany Electromagnetic Compatibility Directive

Deutschsprachiger EU Hinweis:

Hinweis für Geräte der Klasse A EU-Richtlinie zur Elektromagnetischen Verträglichkeit

Dieses Produkt entspricht den Schutzanforderungen der EU-Richtlinie 2004/108/EG zur Angleichung der Rechtsvorschriften über die elektromagnetische Verträglichkeit in den EU-Mitgliedsstaaten und hält die Grenzwerte der EN 55022 Klasse A ein.

Um dieses sicherzustellen, sind die Geräte wie in den Handbüchern beschrieben zu installieren und zu betreiben. Des Weiteren dürfen auch nur von der IBM empfohlene Kabel angeschlossen werden. IBM übernimmt keine Verantwortung für die Einhaltung der Schutzanforderungen, wenn das Produkt ohne Zustimmung der IBM verändert bzw. wenn Erweiterungskomponenten von Fremdherstellern ohne Empfehlung der IBM gesteckt/eingebaut werden.

EN 55022 Klasse A Geräte müssen mit folgendem Warnhinweis versehen werden: "Warnung: Dieses ist eine Einrichtung der Klasse A. Diese Einrichtung kann im Wohnbereich Funk-Störungen verursachen; in diesem Fall kann vom Betreiber verlangt werden, angemessene Maßnahmen zu ergreifen und dafür aufzukommen."

Deutschland: Einhaltung des Gesetzes über die elektromagnetische Verträglichkeit von Geräten

Dieses Produkt entspricht dem "Gesetz über die elektromagnetische Verträglichkeit von Geräten (EMVG)". Dies ist die Umsetzung der EU-Richtlinie 2004/108/EG in der Bundesrepublik Deutschland.

Zulassungsbescheinigung laut dem Deutschen Gesetz über die elektromagnetische Verträglichkeit von Geräten (EMVG) (bzw. der EMC EG Richtlinie 2004/108/EG) für Geräte der Klasse A

Dieses Gerät ist berechtigt, in Übereinstimmung mit dem Deutschen EMVG das EG-Konformitätszeichen - CE - zu führen. Verantwortlich für die Konformitätserklärung des EMVG ist die IBM Deutschland GmbH, 70548 Stuttgart.

Generelle Informationen:

Das Gerät erfüllt die Schutzanforderungen nach EN 55024 und EN 55022 Klasse A.

People's Republic of China Class A warning statement

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

Japanese Voluntary Control Council for Interference (VCCI) statement

この装置は、情報処理装置等電波障害自主規制協議会（VCCI）の基準に基づくクラスA情報技術装置です。この装置を家庭環境で使用すると電波妨害を引き起こすことがあります。この場合には使用者が適切な対策を講ずるよう要求されることがあります。

Korean Class A warning statement

이기기는 업무용으로 전자파 적합등록을 받은 기기
이오니, 판매자 또는 사용자는 이점을 주의하시기
바라며, 만약 잘못 구입하셨을 때에는 구입한 곳에
서 비업무용으로 교환하시기 바랍니다.

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