

IBM BladeCenter 1/10 Gb Uplink Ethernet Switch
Module



Installation Guide

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Module



Installation Guide

Note: Before using this information and the product it supports, read the *Warranty Information* document, Appendix B, "Notices," on page 33 and the *Important Notices* document. Read the *Safety* document and the *License Agreement for Machine Code (LAMC)* document on the IBM *Documentation CD*. Read the *IBM Systems Environmental Notices* document on the *Environmental Notices 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.

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

安裝本產品之前，請先閱讀「安全資訊」。

Prije instalacije ovog produkta obavezno pročitajte Sigurnosne Upute.

Před instalací tohoto produktu si přečtěte příručku bezpečnostních instrukcí.

Læs sikkerhedsforskrifterne, før du installerer dette produkt.

Lees voordat u dit product installeert eerst de veiligheidsvoorschriften.

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

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

Vor der Installation dieses Produkts die Sicherheitshinweise lesen.

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

לפני שתתקינו מוצר זה, קראו את הוראות הבטיחות.

A termék telepítése előtt olvassa el a Biztonsági előírásokat!

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

製品の設置の前に、安全情報をお読みください。

본 제품을 설치하기 전에 안전 정보를 읽으십시오.

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

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

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

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

Перед установкой продукта прочтите инструкции по технике безопасности.

Pred inštaláciou tohto zariadenia si pečítajte Bezpečnostné predpisy.

Pred namestitvijo tega proizvoda preberite Varnostne informacije.

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

Läs säkerhetsinformationen innan du installerar den här produkten.

Important:

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. The IBM BladeCenter 1/10 Gb Uplink Ethernet Switch Module

The IBM® BladeCenter® 1/10 Gb Uplink Ethernet Switch Module is an Ethernet component that is installed into a BladeCenter unit.

For installation instructions, see Chapter 2, “Installing and replacing a switch module,” on page 5 and Chapter 3, “Installing and removing a 10 Gb SFP+ module,” on page 11. For additional information about switch modules and other BladeCenter components, see the BladeCenter documentation that comes with these devices.

For BladeCenter units with four I/O-module bays, you must also install an Ethernet I/O card (also known as an Ethernet expansion card) in the blade server to support the GbE switch module in I/O-module bay 3 or 4.

For information about the types of compatible expansion cards for the blade server, contact your IBM marketing representative or authorized reseller. For a list of supported optional devices for the blade server, see <http://www.ibm.com/servers/eserver/serverproven/compat/us/>. For details about compatible expansion card installation, configuration, and use, see the documentation that comes with this adapter.

You can obtain up-to-date information about the IBM BladeCenter 1/10 Gb Uplink Ethernet Switch Module at <http://www.ibm.com/systems/bladecenter/>.

Notes:

1. Throughout this document, the IBM BladeCenter 1/10 Gb Uplink Ethernet Switch Module is referred to as the switch module or the I/O module.
2. Unless otherwise stated, references to the BladeCenter unit apply to all BladeCenter units.
3. 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.
4. The illustrations in this document might differ slightly from your hardware.
5. The screens that are described or referred to in this document might differ slightly from the screens that are displayed by your system. Screen content varies according to the type of BladeCenter unit and the firmware versions and optional devices that are installed.
6. Unless otherwise stated, references to the management module apply to the BladeCenter Management Module and the BladeCenter Advanced Management Module.

The IBM BladeCenter 1/10 Gb Uplink Ethernet Switch Module has the following components:

- Fourteen internal 1 Gb ports, one connected to each of the blade servers in the BladeCenter unit
- Two internal 100 Mb ports to connect to the management module
- Three external 10 Gb Ethernet ports for connecting small-form-factor pluggable (SFP+) modules
- Six external 1 Gb Ethernet ports for RJ45 (copper) links
- One external RS-232 serial port for management use

You can manage and configure the switch module through multiple interfaces:

- A Telnet connection to the embedded command-line interface (CLI)
- A terminal emulation program connection to the serial-port interface
- A Web-browser-based interface (BBI) connection to the switch module

Record information about the switch module in the following table. The product name and serial number are on the identification label on the bottom cover of the switch module. The media access control (MAC) address is on a separate label on the bottom cover of the switch module. For an illustration that shows the locations of these labels, see “Major components of the switch module” on page 4. You will need this information when you register the switch module with IBM. You can register the switch module at <http://www.ibm.com/support/mynotifications/>.

| | |
|---|---|
| Product name | IBM BladeCenter 1/10 Gb Uplink Ethernet Switch Module |
| Model number | _____ |
| Serial number | _____ |
| Part number | _____ |
| Media access control (MAC) address for switch module | _____ |
| MAC addresses for other components | _____ |
| | _____ |
| | _____ |

Specifications

For detailed information about the switch-module hardware and software features, specifications, and standards, see the *Application Guide* for the switch module.

Related documentation

This *Installation Guide* contains setup and installation instructions for the switch module and general information about the switch module, including getting started, how to configure the switch module, and how to get help.

Notes:

- The most recent versions of this *Installation Guide* and all other BladeCenter documentation are at <http://www-947.ibm.com/support/entry/portal/documentation/> enter the name of your product in the **Quick Find** field and press **Enter**. Also, some hardcopy documents are available through the IBM Publications Center at <http://www.elink.ibm.com/public/applications/publications/cgibin/pbi.cgi>.
- Depending on your blade server model, additional documentation might be included on the BladeCenter *Documentation* CD for the IBM BladeCenter unit.

The following related documentation is available at <http://www.ibm.com/systems/support/>:

- *BladeCenter Problem Determination and Service Guide or Hardware Maintenance Manual and Troubleshooting Guide*
- *BladeCenter Advanced Management Module Installation Guide or BladeCenter T Advanced Management Module Installation Guide*
- *IBM BladeCenter Management Module Command-Line Interface Reference Guide*

- *IBM BladeCenter Advanced Management Module User's Guide*
- *Installation and User's Guide* for the BladeCenter unit
- *Application Guide* for your switch module
- *Browser Based Interface Quick Guide* for your switch module
- *Menu-Based CLI Command Reference* guide for your switch module
- *ISCLI—Industry Standard CLI Command Reference* guide for your switch module

See the IBM *Configuration and Options Guide* for information about which SFP+ module and cable are required to connect the switch module to other network devices. This document is available in both HTML and Portable Document Format (PDF) from <http://www-03.ibm.com/systems/xbc/cog/search.html>.

For more information about documentation requirements, see “Using the documentation” on page 30.

Inventory checklist

Make sure that the shipping carton contains the following items:

- One IBM BladeCenter 1/10 Gb Uplink Ethernet Switch Module
- One serial console cable
- One *Documentation* CD
- One *Environmental Notices* CD
- One *Important Notices* document
- One *Warranty* document

If any of these items are missing or damaged, contact your authorized reseller for replacement.

Notices and statements in this document

The caution and danger statements in this document are also in the multilingual *Systems Safety Notices* document, which is on the BladeCenter *Documentation* CD for the BladeCenter unit. Each statement is numbered for reference to the corresponding statement in your language in the *Systems Safety Notices* document.

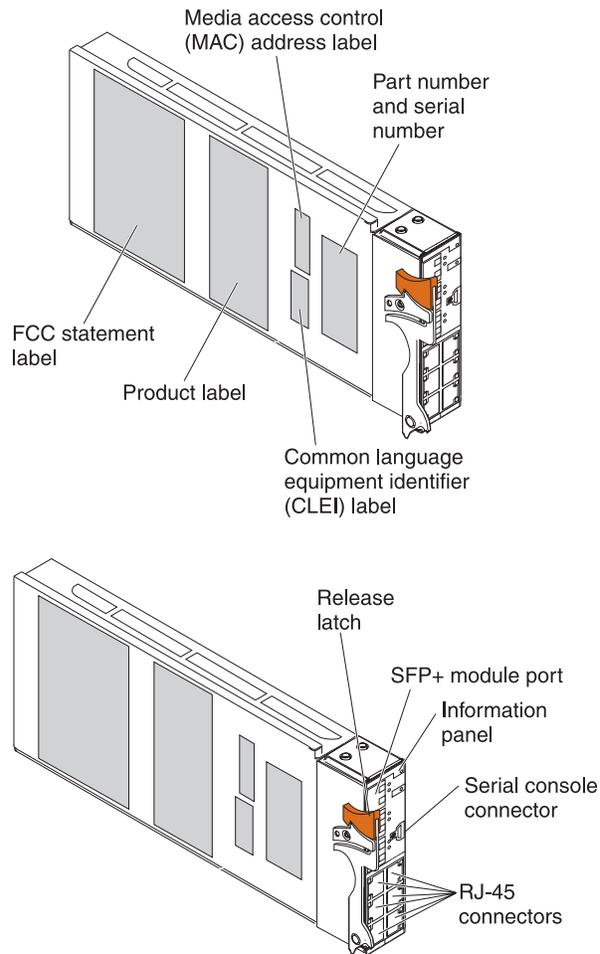
The following notices and statements are used in this document:

- **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 potential damage to programs, devices, or data. An attention notice is placed just before the instruction or situation in which damage might occur.
- **Caution:** These statements indicate situations that can be potentially hazardous to you. A caution statement is placed just before the description of a potentially hazardous procedure step or situation.
- **Danger:** These statements indicate situations that can be potentially lethal or extremely hazardous to you. A danger statement is placed just before the description of a potentially lethal or extremely hazardous procedure step or situation.

Major components of the switch module

The following illustrations show the location of the major components of the switch module.

Note: The illustrations in this document might differ slightly from your hardware, and your switch module might have labels that are not shown in the illustrations in this document.



Chapter 2. Installing and replacing a switch module

This chapter provides instructions for installing a switch module in the BladeCenter unit and for removing a switch module from the BladeCenter unit.

As of the date of this document, the BladeCenter unit supports a maximum of four switch modules. Installing a second switch module enables a redundant path and a separate connection from the blade server to the external Ethernet network.

Attention: If you install the switch module into a BladeCenter unit I/O bay other than I/O-module bay 1 or I/O-module bay 2 (or I/O-module bay 1 when you are installing the switch module in a BladeCenter S unit), a compatible expansion card must be installed into each blade server, blade workstation, or other blade device that you want to connect to the switch module. The expansion card provides the connection between the blade device and the I/O bay into which you install the switch module.

For more information about the I/O bays that are available on your BladeCenter unit, or for more information about the expansion card types that can be installed in your blade server, see the documents that come with the device. For information about the compatibility of your BladeCenter unit, blade servers, and expansion cards, see <http://www.ibm.com/servers/eserver/serverproven/compat/us/>.

Notes:

- If you are installing only one switch module, use I/O-module bay 1.
- Configuration requirements for the switch module and the BladeCenter unit might vary. You can obtain up-to-date information about the switch module and the BladeCenter unit at <http://www.ibm.com/systems/bladecenter/>.

Installation guidelines

Before you install the switch 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 switch 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 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:

- 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 switch module are described in the IBM *Configuration and Options Guide* at <http://www-03.ibm.com/systems/xbc/cog/search.html>. 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 chassis 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 switch module

To install a switch module, complete the following steps:

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

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

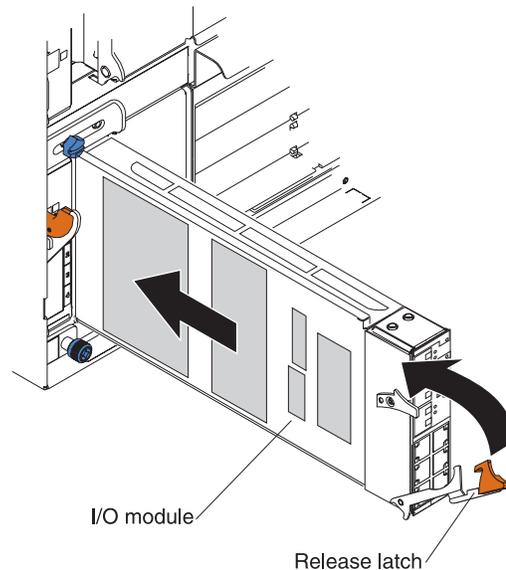
3. Remove the filler module from the selected bay. Store the filler module for future use.

Each I/O-module bay must contain either an I/O module or a filler module.

4. If you have not already done so, touch the static-protective package that contains the switch 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. Remove the switch module from its static-protective package.
6. Make sure that the release lever on the switch module is in the open position (perpendicular to the module).

For specific instructions for installing a switch module in the BladeCenter unit, see the documentation that comes with the BladeCenter unit.

7. Slide the switch module into the applicable I/O-module bay until it stops.
8. Push the release lever on the front of the switch module to the closed position.



After you insert and lock the switch module, it is turned on, and a power-on self-test (POST) occurs to verify that the switch module is operating correctly.

Notes:

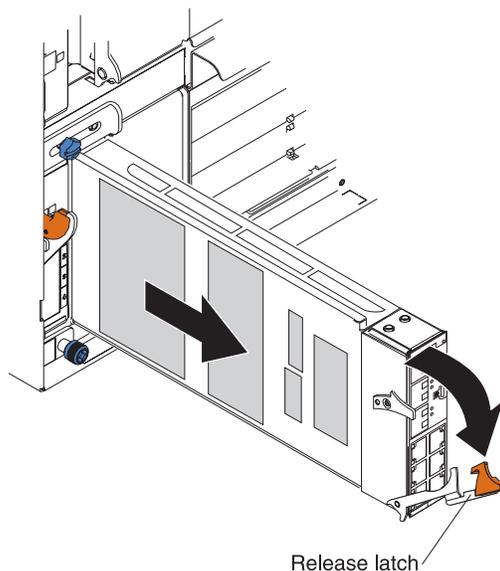
- a. The switch module takes approximately 60 seconds to complete the POST. When the switch module is turned on, an LED test occurs. All LEDs are lit and remain lit during POST; then, all the LEDs except the OK LED turn off. This indicates normal POST results.
- b. To maintain proper airflow, make sure that the ventilation areas on the sides of the blade server are not blocked.

9. Make sure that the LEDs on the switch module indicate that it is operating correctly (see “Information LEDs” on page 22).
10. If you have a second switch module to install, repeat step 3 on page 7 through step 9; otherwise, go to the next step.
11. Attach any cables that are required by the switch module. For additional information about cabling the switch module, see Chapter 4, “Cabling the switch module and the SFP+ module,” on page 15, and 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.
12. Make sure that the external ports on the switch module are enabled through one of the management-module interfaces, such as the Web-based interface or the CLI.

Removing or replacing a switch module

To remove or replace a switch 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 switch module that you are removing. Removing these cables (especially an Ethernet cable) disrupts the network connection from the external Ethernet port to any connected external Ethernet devices. If you plan to replace the switch module with another switch module, you can use the existing Ethernet cable, provided that it remains securely attached to the Ethernet network. For additional information about cabling the switch module, see Chapter 4, “Cabling the switch module and the SFP+ module,” on page 15 and 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 latch out from the switch module. The switch module moves out of the bay approximately 0.6 cm (0.25 inch).



4. Slide the switch module out of the bay and set it aside.
5. Place either another switch module or a filler module in the bay.

Important: Complete this step within 1 minute. (For more information, see steps 8 and 9 on page 8.)

6. If you placed a filler module in the bay, continue with the next chapter.

If you placed a switch module in the bay, reconnect the other cables that you disconnected. Attach any additional cables that are required by the switch module. For additional information about cabling the switch module, see Chapter 4, “Cabling the switch module and the SFP+ module,” on page 15, and 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 switch module supports the 10 Gb small-form-factor pluggable (SFP+) module. The SFP+ module is a laser product that converts electrical signals to optical signals.

For additional information about the location of the switch module, the network interface requirements, and expansion options, see the documentation for your BladeCenter unit.

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

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 switch 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.

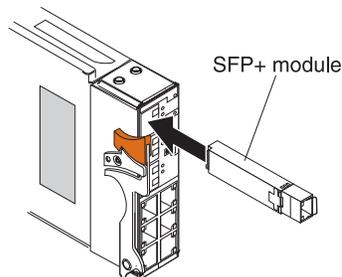


Class 1 Laser Product
Laser Klasse 1
Laser Klass 1
Luokan 1 Laserlaite
Appareil À Laser de Classe 1

Installing an SFP+ module

The SFP+ module provides two fiber-optic cable connectors for connecting to external ports. To install an SFP+ module, complete the following steps:

1. Read the safety information that begins on page v and “Installation guidelines” on page 5.
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 chassis or an *unpainted* metal surface on any other grounded rack component in the rack in which you are installing the switch 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. Remove the protective cap from the SFP+ module and store it in a safe place.
6. Insert the SFP+ module into the SFP+ module port until it clicks into place.



Attention: To avoid damage to the cable or the SFP+ module, make sure that you do not connect the fiber-optic cable *before* you install the SFP+ module.

7. Connect the fiber-optic cable (see “Connecting the SFP+ module cable” on page 15) and any cables that you disconnected earlier.

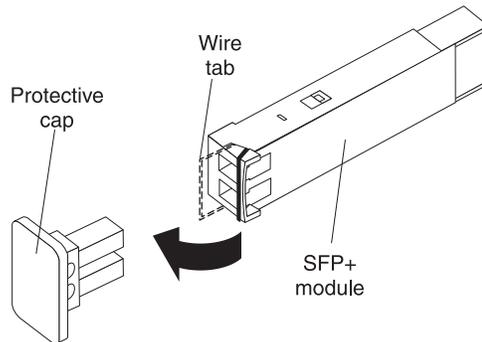
Removing an SFP+ module

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

1. Read the safety information that begins on page v and “Installation guidelines” on page 5.
2. Read the information in “Handling an SFP+ module” on page 11.
3. Remove the fiber-optic cable from the SFP+ module that you want to replace. For more information about removing the cable, see “Disconnecting the 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. Replace the protective cap on the SFP+ module.
7. Place the SFP+ module into a static-protective package.

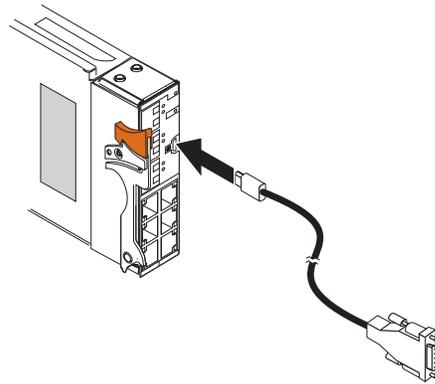
Chapter 4. Cabling the switch module and the SFP+ module

This chapter describes how to cable the switch module and its optional devices.

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

Connecting the serial console cable

To connect the serial console cable to the switch module, connect the serial cable that came with the switch module to the RS-232 serial console connector of the switch module and the other end of the cable to the console device.



Disconnecting the serial console cable

To disconnect the serial console cable, gently pull the cable from the switch module.

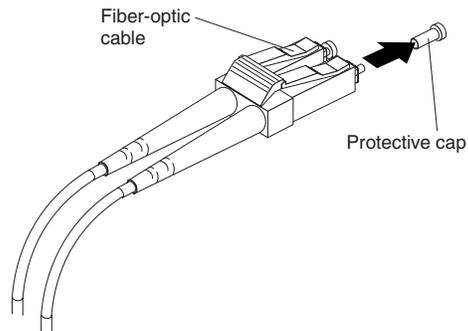
Connecting the SFP+ module cable

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

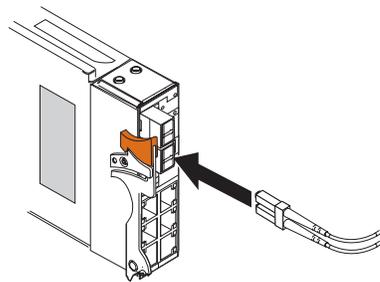
- Do not route the cable along a folding cable-management arm.
- When you attach the cable to a device on slide rails, leave enough slack in the cable so that it does not bend to a radius of less than 38 mm (1.5 in.) when the device is extended or become pinched when the device is retracted.
- Route 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 SFP+ module cable, complete the following steps:

1. Remove the protective caps from the end of the fiber-optic cable.



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



3. Check the LEDs on the switch module. When the switch module is operating correctly, the green link LED is lit. For information about the status of the switch module LEDs, see Chapter 6, “Information panels, LEDs, and external ports,” on page 21.

Disconnecting the SFP+ module cable

To disconnect the 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.

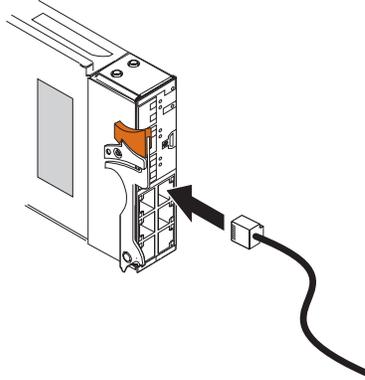
Connecting the RJ-45 cable

RJ-45 cables can be connected to ports 4 through 9.

To connect the RJ-45 connector to the switch module, push the RJ-45 cable connector into the port connector until it clicks into place, as shown in the following illustration.

Note: The GbE switch module has six 1 Gb external connectors located close together.

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



Disconnecting the RJ-45 cable

To disconnect the RJ-45 connector, squeeze the release tab and gently pull the cable connector out of the switch-module connector. You might have to use a tool, such as a small flat-blade screwdriver.

Chapter 5. Updating the software and configuring the switch module

Make sure that you are using the latest version of management module firmware for your BladeCenter unit type. See the *IBM BladeCenter Management Module User's Guide* for your BladeCenter unit type, located at <http://publib.boulder.ibm.com/infocenter/bladectr/documentation/index.jsp> for your BladeCenter unit type for additional information.

Make sure that you are using the latest version of the switch module software. For instructions on upgrading the switch module software, see the *Menu-Based CLI Command Reference* or the *ISCLI—Industry Standard CLI Command Reference Guide* at <http://www-947.ibm.com/support/entry/portal/docdisplay?Indocid=MIGR-54667>.

For instructions on configuring the switch module, see the *IBM BladeCenter Command Reference Guide* for your switch module located at <http://www.bladenetwork.net/IBM-BladeCenter-support.html>.

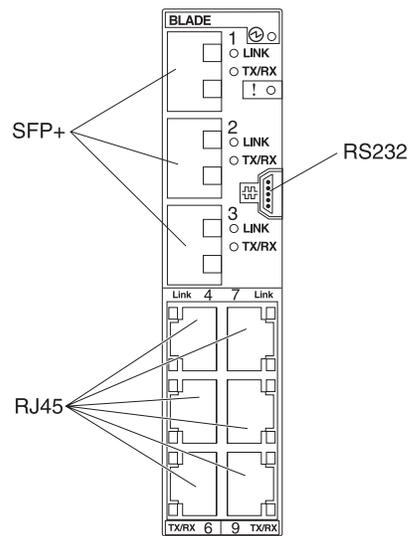
Chapter 6. Information panels, LEDs, and external ports

This chapter describes the information panels and LEDs on the switch module and identifies the external ports on the information panels.

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

Information panel

The front panel of the switch module contains information LEDs, three SFP+ module port connectors, one RS-232 serial port connector, and six Ethernet port connectors, as shown in the following illustration.



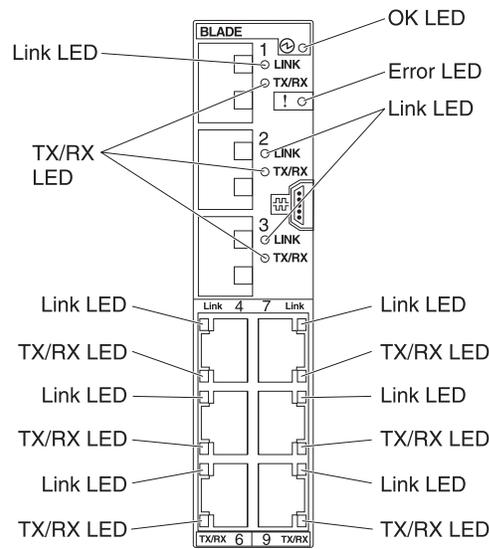
The switch-module information panel contains the following components:

- LEDs that display the following information:
 - The status of the switch module and its network connection
 - The status of the external connections to the switch moduleFor further details about LEDs, see “Information LEDs” on page 22.
- Three SFP+ port connectors to attach SFP+ modules. These connectors are identified as ports EXT1 through EXT3 in the I/O-module configuration menus and are labeled 1 through 3 (from top to bottom) on the switch module.
- One RS-232 serial port connector for console port use (management purposes) only. Do *not* attach any devices to this connector other than the serial cable that comes with the switch module, as described in Chapter 4, “Cabling the switch module and the SFP+ module,” on page 15.
- Six RJ-45 Ethernet port connectors. Do *not* attach any devices to these connectors other than a compatible cable. These connectors are identified as ports EXT4 through EXT9 in the I/O-module configuration menus and are labeled 4 through 9 on the switch module.

Information LEDs

The front panel of the switch module has multiple sets of LEDs. The OK and switch-module error LEDs in the upper right corner of the switch module indicate the switch-module status. The link (LINK) and activity (TX/RX) LEDs indicate the status of the external ports.

The following illustration shows the locations of the LEDs on the switch module. See Table 1 on page 23 for a description of the LEDs.



Notes:

- 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 management-module event log or the switch system log.
- An LED test occurs whenever the switch module is turned on. All LEDs are lit and remain lit during POST, and then all the LEDs except the OK LED turn off.

Any errors that are detected during POST are written to the system log. For information about the command to read the system log, see the *Menu-Based CLI Command Reference* guide.

When POST errors are written to the system log, these errors are also written to the BladeCenter management-module event log. If a hardware error, such as a current fault occurs, the management module displays it. If a software error occurs, the management module displays the Module did not complete POST message and a post error code that indicates the test that was running when the error was detected.

Note: You can also use the management module to make sure that the switch module is operating correctly. For more information, see the documentation for the BladeCenter unit.

Switch-module and port status LEDs

The following table provides descriptions of the switch-module and port status LEDs on the front panel of the switch module.

Table 1. Switch-module and port status LEDs

| Status LED | Description |
|-----------------------------|---|
| OK (Ⓞ) LED | <p>This green LED is at the top right of the switch module on the front panel.</p> <ul style="list-style-type: none">• When this LED is lit, it indicates that the switch module is on.• When this LED is off and the amber switch-module error LED is lit, it indicates a critical alert. If the amber LED is also off, it indicates that the switch module is off. |
| Switch-module error (!) LED | <p>This amber LED is at the top right of the switch module on the front panel.</p> <ul style="list-style-type: none">• When this LED is lit, it indicates a POST failure or critical alert. Note: When this LED is lit, the system-error LED on the BladeCenter unit is also lit.• When this LED is off and the green LED is lit, it indicates that the switch module is working correctly. If the green LED is also off, it indicates that the switch module is off. |
| Link LED | <p>This green LED is on ports 1 through 9. It indicates whether the corresponding port link is up or down.</p> <ul style="list-style-type: none">• When this LED is lit, there is an active connection (or link) between the corresponding port and the device that is using this connection.• When this LED is off, it indicates that there is no signal on the corresponding port, or the link is down. |
| Activity (TX/RX) LED | <p>This green LED is on ports 1 through 9. It indicates the status of the link activity for the corresponding port.</p> <ul style="list-style-type: none">• When this LED is flashing or lit, the corresponding port is connected and online, and link activity is occurring on that port.• When this LED is off, it indicates that there is no signal or no link activity on the corresponding port. |

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 the warranty that ships with your switch module.

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 BladeCenter 1/10 Gb Uplink Ethernet Switch Module assembly | 44W4407 |
| Serial console cable | 43X0510 |
| IBM 10 Gb SFP+ small-form-factor pluggable module, SR (850 nm) | 44W4411 |

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 switch module. The *Application Guide* for your switch module provides more details about troubleshooting the switch module.

If you cannot locate and correct a problem by using the information in this section, see Appendix A, “Getting help and technical assistance,” on page 29.

Running POST

To ensure that it is fully operational, the switch module processes a series of tests during power-up or a restart (power-on self-test, or POST). These tests take approximately 1 minute to complete. The management module reads the test results and displays them for you. During normal operation, these tests are completed without error, and the green OK LED is lit. However, if the switch module fails POST, the amber switch-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 management module. The specific failure is displayed on the system status I/O-module panel of the management module.

Note: For the locations and descriptions of the switch module LEDs, see Chapter 6, “Information panels, LEDs, and external ports,” on page 21.

POST errors

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

1. Log on to the management module as described in the *IBM BladeCenter Management Module Command-Line Interface Reference Guide*. If necessary, obtain the IP address of the management module from your system administrator. The login window opens.
2. Turn off the power to the switch module; then, turn it on again. After POST is completed, the management module displays the results.
3. Refresh the window to view the POST results. If a critical error occurs, replace the switch module. If a noncritical error occurs, see the switch-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 Switch 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 Appendix A, "Getting help and technical assistance," on page 29.

| Diagnostic indicator (in hex) | Failing functional area | Failure criticality |
|--------------------------------------|--------------------------------|----------------------------|
| 00 - 7F | Base internal functions | Critical |
| 80 - 9F | Internal interface failures | Noncritical |
| A0 - AF | External interface errors | Noncritical |
| B0 - FE | Reserved | Noncritical |
| FF | Switch 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. Use this information to obtain additional information about IBM and IBM products, determine what to do if you experience a problem with your IBM system or optional device, and determine 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.
- Check for updated firmware and operating-system device drivers for your IBM product. The IBM Warranty terms and conditions state that you, the owner of the IBM product, are responsible for maintaining and updating all software and firmware for the product (unless it is covered by an additional maintenance contract). Your IBM service technician will request that you upgrade your software and firmware if the problem has a documented solution within a software upgrade.
- If you have installed new hardware or software in your environment, check <http://www.ibm.com/systems/info/x86servers/serverproven/compat/us/> to make sure that the hardware and software is supported by your IBM product.
- Go to <http://www.ibm.com/supportportal/> to check for information to help you solve the problem.
- Gather the following information to provide to IBM Support. This data will help IBM Support quickly provide a solution to your problem and ensure that you receive the level of service for which you might have contracted.
 - Hardware and Software Maintenance agreement contract numbers, if applicable
 - Machine type number (IBM 4-digit machine identifier)
 - Model number
 - Serial number
 - Current system UEFI and firmware levels
 - Other pertinent information such as error messages and logs
- Go to http://www.ibm.com/support/entry/portal/Open_service_request/ to submit an Electronic Service Request. Submitting an Electronic Service Request will start the process of determining a solution to your problem by making the pertinent information available to IBM Support quickly and efficiently. IBM service technicians can start working on your solution as soon as you have completed and submitted an Electronic Service Request.

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/supportportal/>. 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

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How to send Dynamic System Analysis data to IBM

Use the IBM Enhanced Customer Data Repository to send diagnostic data to IBM. Before you send diagnostic data to IBM, read the terms of use at <http://www.ibm.com/de/support/ecurep/terms.html>.

You can use any of the following methods to send diagnostic data to IBM:

- **Standard upload:** http://www.ibm.com/de/support/ecurep/send_http.html
- **Standard upload with the system serial number:** http://www.ecurep.ibm.com/app/upload_hw
- **Secure upload:** http://www.ibm.com/de/support/ecurep/send_http.html#secure
- **Secure upload with the system serial number:** https://www.ecurep.ibm.com/app/upload_hw

Creating a personalized support web page

At <http://www.ibm.com/support/mynotifications/>, you can create a personalized support web page by identifying IBM products that are of interest to you. From this personalized page, you can subscribe to weekly email notifications about new technical documents, search for information and downloads, and access various administrative services.

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

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

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電話：0800-016-888

IBM Taiwan product service contact information:
IBM Taiwan Corporation
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Taipei, Taiwan
Telephone: 0800-016-888

Appendix B. Notices

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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.

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

Particulate contamination

Attention: Airborne particulates (including metal flakes or particles) and reactive gases acting alone or in combination with other environmental factors such as humidity or temperature might pose a risk to the device that is described in this document. Risks that are posed by the presence of excessive particulate levels or concentrations of harmful gases include damage that might cause the device to malfunction or cease functioning altogether. This specification sets forth limits for particulates and gases that are intended to avoid such damage. The limits must not be viewed or used as definitive limits, because numerous other factors, such as temperature or moisture content of the air, can influence the impact of particulates or environmental corrosives and gaseous contaminant transfer. In the absence of specific limits that are set forth in this document, you must implement practices that maintain particulate and gas levels that are consistent with the protection of human health and safety. If IBM determines that the levels of particulates or gases in your environment have caused damage to the device, IBM may condition provision of repair or replacement of devices or parts on implementation of appropriate remedial measures to mitigate such environmental contamination. Implementation of such remedial measures is a customer responsibility.

Table 2. Limits for particulates and gases

| Contaminant | Limits |
|-------------|---|
| Particulate | <ul style="list-style-type: none"> The room air must be continuously filtered with 40% atmospheric dust spot efficiency (MERV 9) according to ASHRAE Standard 52.2¹. Air that enters a data center must be filtered to 99.97% efficiency or greater, using high-efficiency particulate air (HEPA) filters that meet MIL-STD-282. The deliquescent relative humidity of the particulate contamination must be more than 60%². The room must be free of conductive contamination such as zinc whiskers. |
| Gaseous | <ul style="list-style-type: none"> Copper: Class G1 as per ANSI/ISA 71.04-1985³ Silver: Corrosion rate of less than 300 Å in 30 days |

¹ ASHRAE 52.2-2008 - *Method of Testing General Ventilation Air-Cleaning Devices for Removal Efficiency by Particle Size*. Atlanta: American Society of Heating, Refrigerating and Air-Conditioning Engineers, Inc.

² The deliquescent relative humidity of particulate contamination is the relative humidity at which the dust absorbs enough water to become wet and promote ionic conduction.

³ ANSI/ISA-71.04-1985. *Environmental conditions for process measurement and control systems: Airborne contaminants*. Instrument Society of America, Research Triangle Park, North Carolina, U.S.A.

Documentation format

The publications for this product are in Adobe Portable Document Format (PDF) and should be compliant with accessibility standards. If you experience difficulties when you use the PDF files and want to request a Web-based format or accessible PDF document for a publication, direct your mail to the following address:

*Information Development
IBM Corporation
205/A015
3039 E. Cornwallis Road
P.O. Box 12195
Research Triangle Park, North Carolina 27709-2195
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Electronic emission notices

Federal Communications Commission (FCC) statement

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

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

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

Industry Canada Class A emission compliance statement

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

Avis de conformité à la réglementation d'Industrie Canada

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

Australia and New Zealand Class A statement

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

United Kingdom telecommunications safety requirement

Notice to Customers

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

European Union EMC Directive conformance statement

This product is in conformity with the protection requirements of EU Council Directive 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.

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European Community contact:

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

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種情況下，使用者會被要
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Germany Electromagnetic Compatibility Directive

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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

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