

IBM Flex System EN4091 10Gb Ethernet Pass-thru



User's Guide

IBM Flex System EN4091 10Gb Ethernet Pass-thru



User's Guide

Note: Before using this information and the product it supports, read the general information in Appendix B, "Notices," on page 23, the *Safety Information* and *Environmental Notices and User Guide* documents on the *IBM Notices for Network Devices* CD, and the *Warranty Information* document that comes with the product.

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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.

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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.

ཐོན་རྒྱུ་འདི་བདེ་སྤྱད་མ་བྱས་གོང་། རྒྱུ་འདྲ་མིན་ཡིན་གཟུགས་
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Bu ürünü kurmadan önce güvenlik bilgilerini okuyun.

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Safety statements

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 system 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:

- 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.

UL Regulatory Information

This device is for use only with Listed IBM Flex System Enterprise Chassis.

Chapter 1. The IBM Flex System EN4091 10Gb Ethernet Pass-thru module

The EN4091 Pass-thru module provides 14 internal and 14 external 10 Gb Ethernet ports, and it supports 1 Gb and 10 Gb Ethernet signaling for Converged Enhanced Ethernet (CEE), Fibre Channel over Ethernet (FCoE), and other Ethernet-based transport protocols. This Pass-thru module does not have an internal Ethernet management interface, but it can provide its vital product data (VPD) to the secure management network in the Chassis Management Module.

This *User's Guide* contains information and instructions for installing the Pass-thru module, updating the firmware, and solving problems.

For information about the types of compatible devices available for IBM products, contact your IBM marketing representative or authorized reseller. For a list of supported optional devices, see <http://www.ibm.com/servers/eserver/serverproven/compat/us/>.

You can obtain up-to-date information about the Pass-thru module at <http://www.ibm.com/supportportal/>.

Notes:

1. The illustrations in this document might differ slightly from your hardware.
2. The screens that are described or referenced in this document might differ slightly from the screens that are displayed by your system. Screen content varies according to the type of IBM chassis and the firmware versions and options that are installed.

Notices and statements in this document

The caution and danger statements in this document are also in the multilingual *Safety Information* document, which is provided on the *IBM Notices for Network Device* CD. Each statement is numbered for reference to the corresponding statement in your language 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 potential 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.

Features and specifications

See the documentation that came with your IBM chassis for information about the environmental conditions and specifications that are supported by the system.

Major components of the Pass-thru module

The EN4091 Pass-thru module provides 14 internal and 14 external 10 Gb Ethernet ports, and it supports 1 Gb and 10 Gb Ethernet signaling for Converged Enhanced Ethernet (CEE), Fibre Channel over Ethernet (FCoE), and other Ethernet-based transport protocols. This Pass-thru module does not have an internal Ethernet management interface, but it can provide its vital product data (VPD) to the secure management network in the Chassis Management Module.

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

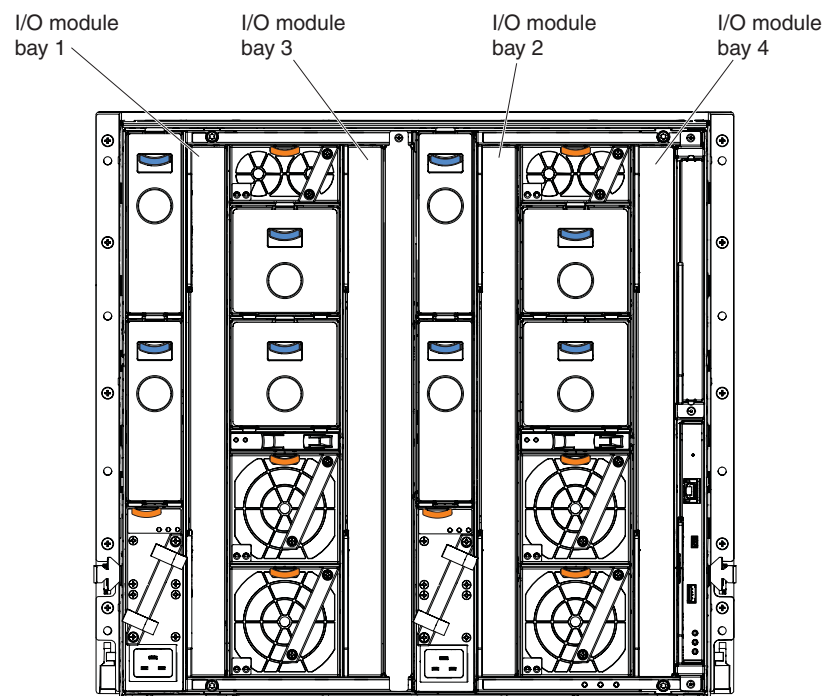
Product name	IBM Flex System EN4091 10Gb Ethernet Pass-thru module
Model number	_____
Serial number	_____
Part number	_____

Chapter 2. Installing the Pass-thru module

This chapter provides instructions for installing the Pass-thru module in the IBM Flex System chassis and for removing the module from the IBM Flex System chassis. See the documentation for your IBM Flex System chassis for information about I/O-module bay locations and the components that can be installed in them that is specific to your IBM Flex System chassis type.

You can install up to four I/O bays in the IBM Flex System chassis, including Ethernet switch modules, Fibre Channel switch modules, Infiniband, and Pass-thru modules (optical and copper).

The following illustration shows an example of a IBM Flex System chassis with the I/O bays identified.



Installing a second switch or Pass-thru module enables a redundant path and a separate connection from the compute node to the external Ethernet network.

You can install up to four switches or Pass-thru modules in the I/O bays on the rear of the IBM Flex System chassis. Depending on the type of IBM Flex System chassis that you are using, the IBM Flex System chassis supports a maximum of 14 compute nodes.

Notes:

- I/O bays 1 and 2 support any standard Ethernet switch or Pass-thru modules that connects to the two integrated Ethernet controllers in each of the compute nodes. When you install an IBM Flex System network adapter in the first bay on the compute node, the I/O bays support any switch with the same type of network interface that is used in the corresponding compute node adapter bay.

- The I/O bays 3 and 4 support Ethernet switch modules, Fibre Channel switch modules, Infiniband, and Pass-thru modules (optical and copper) if the serial Pass-thru modules are not being used. If you install an additional I/O in bay 3 or 4, a corresponding IBM Flex System network adapter is required to be installed in each compute node to access the I/O bay.
- The compute nodes or IBM Flex System chassis that are described or shown in this document might be different from your compute nodes or IBM Flex System chassis. For additional information, see the documentation that comes with your compute nodes or IBM Flex System chassis.
- When the Pass-thru module is installed in a IBM Flex System chassis, the internal ports operate at 1 or 10 Gbps. The external ports can operate at 1 Gbps or 10 Gbps, depending on the SFP module type.

Installation guidelines

Before you install the Pass-thru module in the IBM Flex System chassis, read the following information:

- Read the safety information that begins on page v, “Handling static-sensitive devices” on page 5, and the safety statements in the IBM Flex System chassis documentation. This information provides a safe working environment.
- 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 IBM Flex System chassis, open or close a latch, and so on.
- Orange on a component or an orange label on or near a component on the switch, Pass-thru module, or IBM Flex System chassis indicates that the component can be hot-swapped, which means that if the IBM Flex System chassis and operating system support hot-swap capability, you can remove or install the component while the IBM Flex System chassis 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 IBM Flex System chassis to install or replace any of the hot-swap modules on the front or rear of the IBM Flex System chassis.
- When you install a Pass-thru module in the IBM Flex System chassis, you must also install a compatible I/O network adapter in the compute node to support the switch.
- When you are finished working on the compute node or IBM Flex System chassis, reinstall all safety shields, guards, labels, and ground wires.
- For a list of supported optional devices for the IBM Flex System chassis 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 bays on the rear of the IBM Flex System chassis 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 compute node is replaced with another compute node or filler module within 1 minute of removal.
- The ventilation areas on the sides of the compute node are not blocked.
- You have followed the reliability guidelines in the documentation that comes with the IBM Flex System chassis.

Cable requirements for the Pass-thru 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 IBM Flex System chassis for cable-routing information.

Handling static-sensitive devices

Attention: Static electricity can damage the IBM Flex System chassis 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:

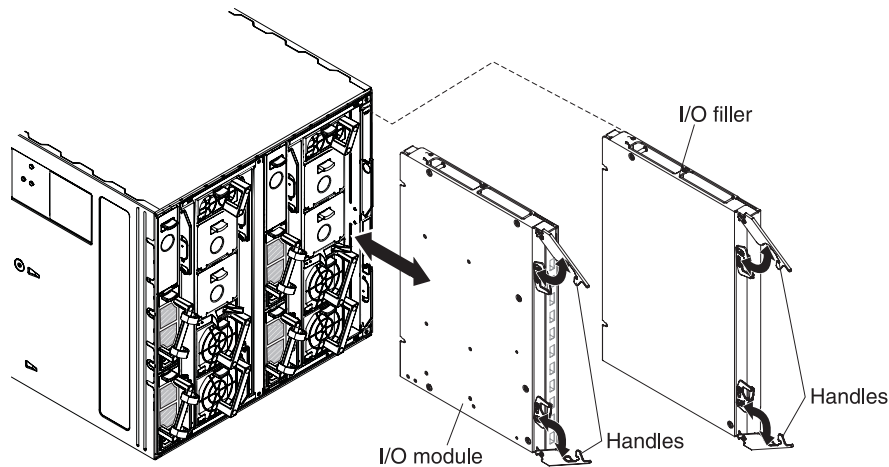
- Limit your movement. Movement can cause static electricity to build up around you.
- Handle the device carefully, holding it by its edges or its frame.
- Do not touch solder joints, pins, or exposed printed circuitry.
- Do not leave the device where others can handle and damage it.
- While the device is still in its static-protective package, touch it to an *unpainted* metal surface of the IBM Flex System 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 IBM Flex System chassis 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 IBM Flex System chassis 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 IBM Flex System chassis come with electrostatic discharge (ESD) connectors. If your unit is equipped with an ESD connector, see the documentation that comes with the IBM Flex System chassis for using the ESD connector.

Installing the Pass-thru module

Note: The following illustration shows how to install a Pass-thru module in a IBM Flex System chassis. The appearance of your IBM Flex System chassis might be different; see the documentation for your IBM Flex System chassis for additional information.

You can install a Pass-thru module while the IBM Flex System chassis is powered on. For redundancy support, you must install I/O modules of the same type in I/O bays 1 and 2, and I/O modules of the same type in bays 3 and 4 of the chassis.

To install a Pass-thru module, complete the following steps:



1. Read the safety information that begins on page v and “Installation guidelines” on page 4.
2. Verify that the Pass-thru module is compatible with the chassis. For a list of supported optional devices for the IBM Flex System chassis and other IBM products, see <http://www.ibm.com/servers/eserver/serverproven/compat/us/>.
3. Select I/O bay in which to install the Pass-thru module.

Note: For details about I/O bay requirements and bay locations, see the documentation for the IBM Flex System chassis.

4. Remove the filler module from the selected bay. Store the filler module for future use.
5. If you have not already done so, touch the static-protective package that contains the switch to an *unpainted* metal surface of the IBM Flex System chassis or an *unpainted* metal surface on any other grounded rack-component for at least 2 seconds.
6. If the removed filler module (from step 4) occupied two bays:
 - Remove the single-high filler module from its static-protective package.
 - Install the single-high filler module into the unused bay.
7. Remove the Pass-thru module from its static-protective package.
8. Make sure that the release levers on the Pass-thru module are in the open position (perpendicular to the module).
9. Slide the Pass-thru module into the applicable I/O bay until it stops.
10. Push the release levers on the front of the module to the closed position. After you insert and lock the Pass-thru module, it is turned on, and a power-on self-test (POST) occurs to verify that the module is operating correctly.

Notes:

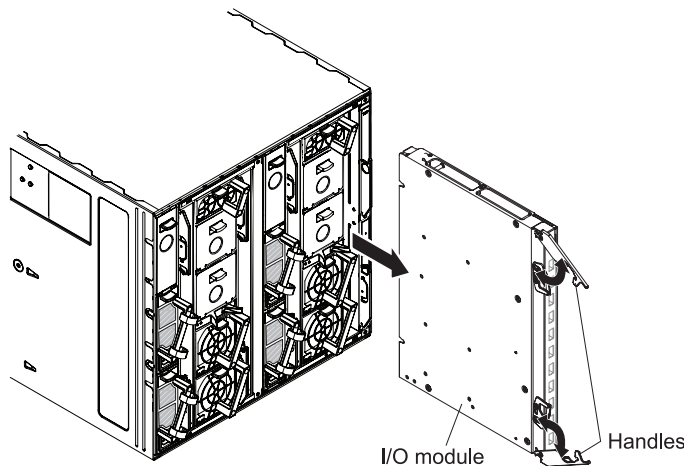
- a. The Pass-thru module takes approximately 60 seconds to complete the POST. When the switch is turned on, an LED test occurs. All LEDs are lit and remain lit during POST; then, all the LEDs except the OK LED turn off. This indicates normal POST results.
 - b. To maintain proper airflow, make sure that the ventilation holes on the front of the module are not blocked.
11. Make sure that the LEDs on the Pass-thru module indicate that it is operating correctly (see “Information LEDs” on page 13).
 12. If you have another switch or module to install, repeat step 4 through step 11; otherwise, go to the next step.

13. Install the supported SFP+ modules for the Pass-thru module. For information and instructions, see “Installing and removing a 10 Gb SFP+ module” on page 9 and the documentation that comes with the SFP+ module.
14. Attach any cables that are required by the Pass-thru module. For additional information about cabling the Pass-thru module, see “Cabling the Pass-thru module and the SFP+ module” on page 8, 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 IBM Flex System chassis, see the documentation that comes with the IBM Flex System chassis. Then, continue with the next step.
15. Make sure that the external ports on the Pass-thru module are enabled through one of the management module interfaces, such as the Web-based interface or the CLI.

Removing or replacing a Pass-thru module

Note: The following illustration shows how to remove and replace a Pass-thru module from a IBM Flex System chassis. The appearance of your IBM Flex System chassis might be different; see the documentation for your IBM Flex System chassis for additional information.

To replace a Pass-thru module, complete the following steps:



1. Read the safety information that begins on page v, and “Installation guidelines” on page 4.
2. Disconnect any cables from the Pass-thru 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 Pass-thru module with another module or switch, you can use the existing Ethernet cable, provided that it remains securely attached to the Ethernet network. For additional information about cabling the switch, see “Cabling the Pass-thru module and the SFP+ module” on page 8, 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 IBM Flex System chassis, see the documentation that comes with the IBM Flex System chassis. Then, continue with step 3.
3. Pull the release latches out from the Pass-thru module. The Pass-thru module moves out of the bay approximately 0.6 cm (0.25 inch).

4. Slide the Pass-thru module out of the bay and set it aside.
5. Place either another Pass-thru module or a filler module in the bay.
Important: Complete this step within 1 minute. (For more information, see steps 10 and 11 on page 6.)
6. If you placed a filler module in the bay, continue with “Installing and removing a 10 Gb SFP+ module” on page 9.
7. If you placed a Pass-thru module in the bay, reconnect the other cables that you disconnected. Attach any additional cables that are required by the Pass-thru module. For additional information about cabling the Pass-thru module, see “Cabling the Pass-thru module and the SFP+ module,” 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 IBM Flex System chassis, see the documentation that comes with the IBM Flex System chassis. Then, continue with “Installing and removing a 10 Gb SFP+ module” on page 9.

Cabling the Pass-thru module and the SFP+ module

This section describes how to cable the Pass-thru module and its optional devices.

The SFP+ modules and DAC cables supported for the Pass-thru module are as follows:

- 10GBase-SR SFP+ (MMFiber) transceiver (part no. 44W4408)
- 10GBase-SR SFP+ (MMFiber) transceiver (part no. 46C3447)
- IBM BNT SFP+ LR transceiver (part no. 90Y9412)
- 1000Base-SX SFP (MMFiber) transceiver (part no. 81Y1622)
- 1000Base-T SFP transceiver (part no. 81Y1618)
- 1000Base-LX SFP LX transceiver (part no. 90Y9424)
- 1m 10GE Twinax Act Copper SFP+ DAC (active) (part no. 81Y8295)
- 3m 10GE Twinax Act Copper SFP+ DAC (active) (part no. 81Y8296)
- 5m 10GE Twinax Act Copper SFP+ DAC (active) (part no. 81Y8297)

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

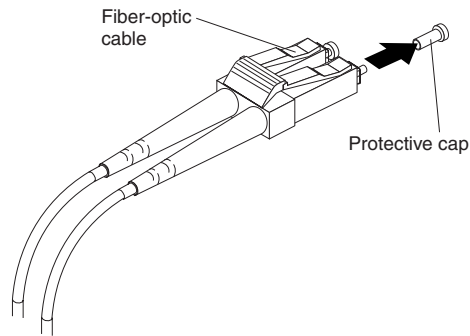
Connecting the SFP+ module cable

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

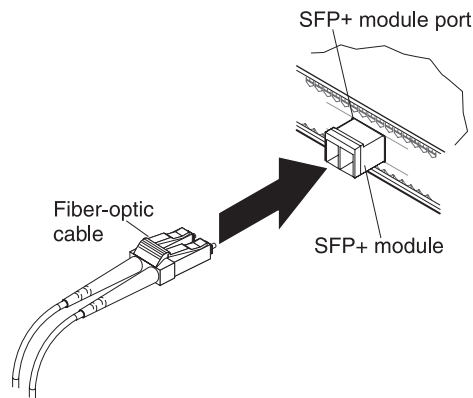
- Do not route the cable along a folding cable-management arm.
- When you attach the cable to a device on slide rails, leave enough slack in the cable so that it does not bend to a radius of less than 38 mm (1.5 in.) when the device is extended or become pinched when the device is retracted.
- Route 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 Pass-thru module. When the Pass-thru module is operating correctly, the green link LED is lit. For information about the status of the Pass-thru LEDs, see “Locating the information panels, LEDs, and external ports” on page 11.

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.

Installing and removing a 10 Gb SFP+ module

The Pass-thru module supports the 10 Gb small-form-factor pluggable (SFP+) module and the 1 Gb small-form-factor pluggable (SFP) module. The SFP+ , and SFP modules are laser products that convert electrical signals to optical signals.

For additional information about the location of the Pass-thru module, the network interface requirements, and network adapter options, see the documentation for your IBM Flex System chassis.

Notes:

1. The illustrations in this document might differ slightly from your hardware.
2. While the information in this section describes the 10 Gb small-form-factor pluggable (SFP+) module, it also applies to the 1 Gb small-form-factor pluggable (SFP) module.
3. The Pass-thru module also supports MSA-compliant copper direct-attach ACTIVE cables (DAC), up to 5 m in length.

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 IBM Flex System chassis 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 Pass-thru 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 4.

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 IBM Flex System chassis or an *unpainted* metal surface on any other grounded rack component in the rack in which you are installing the switch for at least 2 seconds.
3. Read the information in “Handling an SFP+ module” on page 10.
4. Remove the SFP+ module from its static-protective package.
5. Remove the protective cap, if one is installed, from the SFP+ module port where you are installing the SFP+ module and store it in a safe place.
6. Remove the protective cap from the SFP+ module and store it in a safe 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. Insert the SFP+ module into the SFP+ module port until it clicks into place.
8. Connect the fiber optic cable (see “Connecting the SFP+ module cable” on page 8) and any cables that you disconnected earlier.

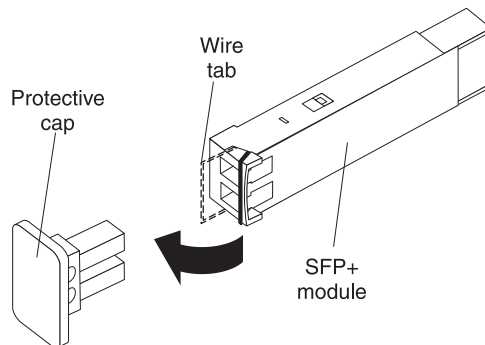
Removing an SFP+ module

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

1. Read the safety information that begins on page v and “Installation guidelines” on page 4.
2. Read the information in “Handling an SFP+ module” on page 10.
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 9.

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 and the SFP+ module port.
7. Place the SFP+ module into a static-protective package.

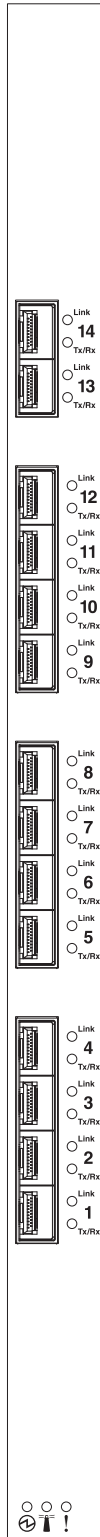
Locating the information panels, LEDs, and external ports

This section describes the information panels and LEDs on the Pass-thru 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 Pass-thru module contains information LEDs, and fourteen SFP+ module port connectors.



The Pass-thru module information panel contains the following components:

- LEDs that display the following information:
 - The status of the Pass-thru module and its network connection
 - The status of the external connections to the Pass-thru module
 For further details about LEDs, see “Information LEDs.”
- Fourteen SFP+ port connectors to attach SFP+ modules.

Information LEDs

The front panel of the Pass-thru module has two sets of LEDs. The OK and switch error LEDs at the bottom of the Pass-thru module indicate the module status. The link (LINK) and activity (TX/RX) LEDs indicate the status of the external ports.

Notes:

- A yellow LED on the IBM Flex System chassis is lit when a system error or event has occurred. To identify the error or event, check the IBM Flex System management-module event log or the switch system log.
- An LED test occurs whenever the Pass-thru module is powered on. All LEDs are lit and remain lit during POST, and then all the LEDs except the OK LED turn off.

When POST errors are written to the system log, these errors are also written to the IBM Flex System management-module event log. If a hardware error, such as a current fault occurs, the management module displays it. If a firmware 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 Pass-thru module is operating correctly. For more information, see the documentation for the IBM Flex System chassis.

Pass-thru module status LEDs

The following table provides descriptions of the Pass-thru module status LEDs on the front panel of the module.

Table 1. Pass-thru module status LEDs

Status LED	Description
OK (Ⓞ) LED	<p>This green LED is at the bottom of the Pass-thru module on the front panel.</p> <ul style="list-style-type: none"> • When this LED is lit, it indicates that the Pass-thru module is on. • When this LED is not lit and the yellow Pass-thru module error LED is lit, it indicates a critical alert. If the yellow LED is also not lit, it indicates that the switch is off.
Switch error (!) LED	<p>This yellow LED is at the bottom of the Pass-thru 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 IBM Flex System chassis is also lit. • When this LED is not lit and the green LED is lit, it indicates that the Pass-thru module is working correctly. If the green LED is also not lit, it indicates that the Pass-thru module is off.

Port status LEDs

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

Table 2. Port status LEDs

Status LED	Description
Link (L) LED	<p>This green LED indicates whether the 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 not lit, it indicates that there is no signal on the corresponding port, or the link is down.
Activity (TX/RX) LED	<p>This yellow LED indicates the status of the link activity for the 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 not lit, it indicates that there is no signal or no link activity on the corresponding port.

Chapter 3. Updating the firmware

This chapter describes how to determine the level of the firmware that is installed on the Pass-thru module, how to obtain the latest level of Pass-thru module firmware, how to upgrade the firmware, and how to reset the Pass-thru module to activate the firmware upgrade.

Determining the level of Pass-thru module firmware

After you install the Pass-thru module in the IBM Flex System chassis, make sure that the latest firmware is installed on the Pass-thru module. To determine the level of the firmware that is installed, complete the following steps:

1. Log on to the management module CLI. If necessary, obtain the IP address of the management module from your system administrator.
2. Set the environment to the bay where you installed the Pass-thru module. For example:

```
system> env -T system:switch[1]
```

3. Issue the **info** command to display Pass-thru module firmware information:

```
system:switch[1]> info
...
Boot ROM
  Rel date:    01/17/2012
  Version:    6.9.1.0
  Status: Active
Main application
  Rel date:    01/17/2012
  Version:    6.9.1.0
  Status: Active
Main application
  Rel date:    11/18/2011
  Version:    6.9.0.11
  Status: Inactive
```

Obtaining the latest level of switch firmware

The latest firmware update for the IBM Flex System EN4091 10Gb Ethernet Pass-thru module is available at the following site, <http://www.ibm.com/supportportal/>.

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.

Upgrading the Pass-thru module firmware

You can upgrade the Pass-thru module firmware by using a TFTP or SFTP server application. Typically, this application runs under your operating system. Make sure that this application is installed on your server; then, download the Pass-thru module firmware from <http://www.ibm.com/supportportal/> into a directory on your TFTP/SFTP server. Enable the TFTP/SFTP server and set its default directory to where the Pass-thru firmware is located.

To transfer the firmware file from the TFTP/SFTP server to the Pass-thru module, you can establish an SSH or Telnet (if enabled) session with the management module. From the management module, ping the TFTP/SFTP server to make sure that you have a connection.

Note: The SSH/Telnet session performs optimally if both network entities (TFTP/SFTP server and management module IP addresses) are on the same IP subnet.

Examples of IP addresses and masks are described in the following table.

Network entity	IP address	Mask
TFTP/SFTP server	192.168.2.178	255.255.255.0
Management module (eth0)	192.168.2.237	255.255.255.0

Using the TFTP/SFTP server IP address example, perform the following steps to update the firmware through the IBM Flex System Chassis Management Module (CMM).

Note: After you complete the following steps, the Pass-thru module reboots.

1. Establish an SSH/Telnet (if enabled) session to the CMM and log in.
2. Change environment on the CMM to the Pass-thru module bay number:
`env -T switch[1]`
3. Update the Pass-thru module using the CMM command:
`update -u tftp://192.168.2.178/ibm_fw_scsw_en4091-2.0.2.0_anyos_noarch.img`

Note: For more information on establishing a CLI session to the CMM and using the update command, see the CMM User's Guide.

Chapter 4. Solving problems

This section provides basic troubleshooting information to help you solve some problems that might occur while you are setting up the Pass-thru 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 19.

Running POST

To ensure that it is fully operational, the Pass-thru 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 Pass-thru module fails POST, the yellow Pass-thru module error LED and the system-error LED on the IBM Flex System chassis 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 Pass-thru module LEDs, see “Locating the information panels, LEDs, and external ports” on page 11.

POST errors

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

1. Log on to the management module as described in the *IBM Advanced 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 Pass-thru module; then, turn it on again.
3. After POST is completed, the management module displays the results. Refresh the window to view the POST results. If a critical error occurs, replace the Pass-thru module. If a noncritical error occurs, see the Pass-thru 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 19.

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

Diagnostic indicator (in hex)	Failing functional area	Failure criticality
B0 - FE	Reserved	Noncritical
FF	Switch "good" indicator	Operation

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 Information* document.

Part	CRU number (Tier 1)
IBM Flex System EN4091 10Gb Ethernet Pass-thru	88Y6046

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.
- 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/> and follow the instructions.

Getting help and information from the World Wide Web

On the World Wide Web, the IBM website has up-to-date information about IBM systems, optional devices, services, and support. You can find service information for IBM systems and optional devices at <http://www.ibm.com/supportportal/>.

Software service and support

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

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

Each solid-state memory cell has an intrinsic, finite number of write cycles that the cell can incur. Therefore, a solid-state device has a maximum number of write

cycles that it can be subjected to, expressed as “total bytes written” (TBW). A device that has exceeded this limit might fail to respond to system-generated commands or might be incapable of being written to. IBM is not responsible for replacement of a device that has exceeded its maximum guaranteed number of program/erase cycles, as documented in the Official Published Specifications for the device.

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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 switch module 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 switch module 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 switch module, IBM may condition provision of repair or replacement of switch module or parts on implementation of appropriate remedial measures to mitigate such environmental contamination. Implementation of such remedial measures is a customer responsibility.

Table 3. 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

Table 3. Limits for particulates and gases (continued)

Contaminant	Limits
	¹ ASHRAE 52.2-2008 - <i>Method of Testing General Ventilation Air-Cleaning Devices for Removal Efficiency by Particle Size</i> . 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. <i>Environmental conditions for process measurement and control systems: Airborne contaminants</i> . 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
U.S.A.*

In the request, be sure to include the publication part number and title.

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Further certification may be required by law prior to making any such connection. Contact an IBM representative or reseller for any questions.

Electronic emission notices

When you attach a monitor to the equipment, you must use the designated monitor cable and any interference suppression devices that are supplied with the monitor.

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

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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.

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Responsible manufacturer:

International Business Machines Corp.
New Orchard Road
Armonk, New York 10504
914-499-1900

European Community contact:

IBM Deutschland GmbH
Technical Regulations, Department M372
IBM-Allee 1, 71139 Ehningen, Germany
Telephone: +49 7032 15 2941
Email: lugi@de.ibm.com

Germany Class A statement

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

VCCI Class A statement

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

This is a Class A product based on the standard of the Voluntary Control Council for Interference (VCCI). If this equipment is used in a domestic environment, radio interference may occur, in which case the user may be required to take corrective actions.

Japan Electronics and Information Technology Industries Association (JEITA) statement

高調波ガイドライン準用品

Japanese Electronics and Information Technology Industries Association (JEITA)
Confirmed Harmonics Guideline with Modifications (products greater than 20 A per phase)

Korea Communications Commission (KCC) statement

이 기기는 업무용(A급)으로 전자파적합기기로서 판매자 또는 사용자는 이 점을 주의하시기 바라며, 가정외의 지역에서 사용하는 것을 목적으로 합니다.

This is electromagnetic wave compatibility equipment for business (Type A). Sellers and users need to pay attention to it. This is for any areas other than home.

Russia Electromagnetic Interference (EMI) Class A statement

ВНИМАНИЕ! Настоящее изделие относится к классу А. В жилых помещениях оно может создавать радиопомехи, для снижения которых необходимы дополнительные меры

People's Republic of China Class A electronic emission statement

中华人民共和国“A类”警告声明

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

Taiwan Class A compliance 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。

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