

Nortel 1/10 Gb Uplink Ethernet Switch Module for IBM
BladeCenter



Installation Guide

Nortel 1/10 Gb Uplink Ethernet Switch Module for IBM
BladeCenter



Installation Guide

Note: Before using this information and the product it supports, read the general information in Appendix B, "Warranty," on page 43 and Appendix C, "Notices," on page 61.

First Edition (May 2008)

© Copyright International Business Machines Corporation 2008. All rights reserved.

US Government Users Restricted Rights – Use, duplication or disclosure restricted by GSA ADP Schedule Contract with IBM Corp.

Contents

Safety	v
Chapter 1. The Nortel 1/10 Gb Uplink Ethernet Switch Module	1
Specifications	2
Related documentation	2
Inventory checklist	4
Notices and statements in this document	4
Major components of the switch module	5
Chapter 2. Installing and replacing a switch module	7
Installation guidelines	7
System reliability guidelines	8
Handling static-sensitive devices	8
Installing a switch module	9
Removing or replacing a switch module	10
Chapter 3. Installing and removing a 10 Gb SFP+ module	13
Handling an SFP+ module	13
Installing an SFP+ module	15
Removing an SFP+ module	16
Chapter 4. Cabling the switch module and the SFP+ module	17
Connecting the serial console cable	17
Disconnecting the serial console cable	17
Connecting the SFP+ module cable	17
Disconnecting the SFP+ module cable	18
Connecting the RJ-45 cable	18
Disconnecting the RJ-45 cable	19
Chapter 5. Information panels, LEDs, and external ports	21
Information panel	21
Information LEDs	22
Switch-module and port status LEDs	22
Chapter 6. Configuring the switch module	25
Establishing a TCP/IP session through the management module	26
Enabling management through external ports	27
Configuring the switch module through the Telnet interface	28
Connecting to the switch module	28
Accessing the main menu	28
Configuring the switch module through the serial-port interface	29
Configuring the switch module through the switch-module browser-based interface	30
Initial configuration	31
Logging in to the switch module	31
Chapter 7. Updating the software	33
Determining the level of switch-module software	33
Obtaining the latest level of switch software	33
Upgrading the switch-module software	33
Resetting and restarting the switch module	35
Chapter 8. Parts listing	37

Chapter 9. Solving problems	39
Running POST	39
POST errors	39
Appendix A. Getting help and technical assistance	41
Before you call	41
Using the documentation	41
Getting help and information from the World Wide Web	41
Software service and support	42
Hardware service and support	42
IBM Taiwan product service	42
Appendix B. Warranty	43
IBM Statement of Limited Warranty Z125-4753-09 08/2006	43
Part 1 - General Terms	43
Part 2 - Country-unique Terms	47
Part 3 - Warranty Information	57
Appendix C. Notices	61
Trademarks	61
Important notes	62
Product recycling and disposal	62
Battery return program	63
Electronic emission notices	65
Federal Communications Commission (FCC) statement	65
Industry Canada Class A emission compliance statement	65
Avis de conformité à la réglementation d'Industrie Canada	65
Australia and New Zealand Class A statement	66
United Kingdom telecommunications safety requirement	66
European Union EMC Directive conformance statement	66
Taiwanese Class A warning statement	66
Chinese Class A warning statement	67
Japanese Voluntary Control Council for Interference (VCCI) statement	67
Korean Class A warning statement	67
Index	69

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 Nortel 1/10 Gb Uplink Ethernet Switch Module

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

This *Installation Guide* contains the following instructions and information:

- Setting up and installing or replacing the Nortel 1/10 Gb Uplink Ethernet Switch Module for IBM BladeCenter
- Installing and removing optional devices in the switch module
- Cabling the switch module and its optional devices
- Using the information panel, LEDs, and external ports on the switch module
- Configuring the switch module
- Updating the switch-module software
- Solving problems with the switch module

For installation instructions, see Chapter 2, “Installing and replacing a switch module,” on page 7 and Chapter 3, “Installing and removing a 10 Gb SFP+ module,” on page 13. 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 Nortel 1/10 Gb Uplink Ethernet Switch Module for IBM BladeCenter at <http://www.ibm.com/systems/bladecenter/>.

Notes:

1. Throughout this document, the Nortel 1/10 Gb Uplink Ethernet Switch Module for IBM BladeCenter 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 Nortel 1/10 Gb Uplink Ethernet Switch Module for IBM BladeCenter 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 Nortel 1/10 Gb Uplink Ethernet 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

For more information, see Chapter 6, “Configuring the switch module,” on page 25.

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 5. 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/mysupport/>.

Product name	Nortel 1/10 Gb Uplink Ethernet Switch Module for IBM BladeCenter
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 *Nortel 1/10 Gb Uplink Ethernet Switch Module for IBM BladeCenter Application Guide*.

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.ibm.com/systems/support/>.
- Depending on your blade server model, additional documentation might be included on the IBM *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
- *Nortel 1/10 Gb Uplink Ethernet Switch Module for IBM BladeCenter Application Guide*
- *Nortel 1/10 Gb Uplink Ethernet Switch Module for IBM BladeCenter Browser Based Interface Quick Guide*
- *Nortel 1/10 Gb Uplink Ethernet Switch Module for IBM BladeCenter Command Reference*
- *Nortel 1/10 Gb Uplink Ethernet Switch Module for IBM BladeCenter ISCLI Reference*

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.ibm.com/servers/eserver/xseries/cog/>.

For more information about documentation requirements, see “Using the documentation” on page 41.

Inventory checklist

Make sure that the shipping carton contains the following items:

- One Nortel 1/10 Gb Uplink Ethernet Switch Module for IBM BladeCenter
- The *Documentation* CD
- One serial console cable
- *Important Notices* document
- End User License Agreement

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 *Safety Information* document, which is on the IBM *BladeCenter Documentation* CD for the BladeCenter unit. Each statement is numbered for reference to the corresponding statement in your language in the *Safety Information* document.

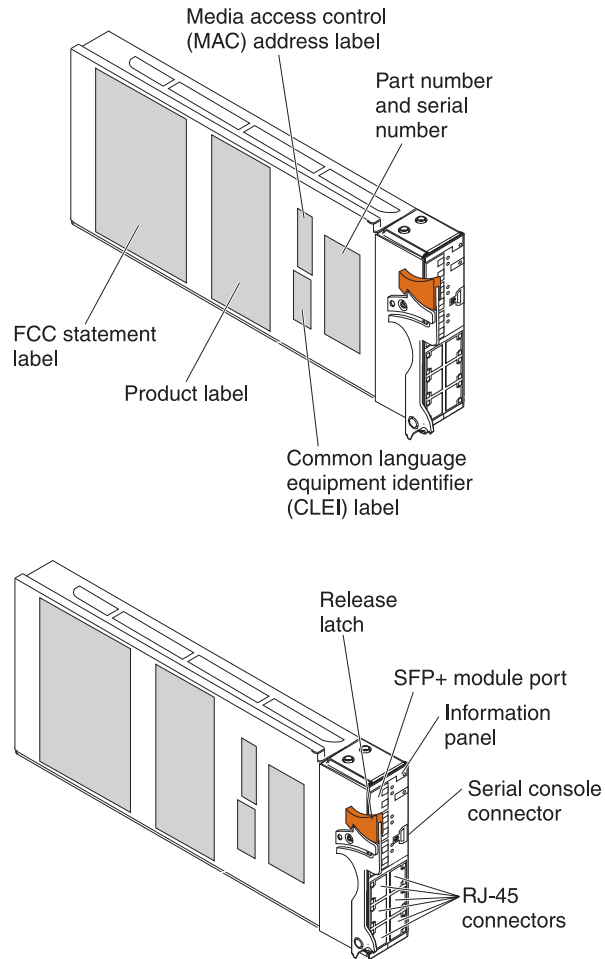
The following notices and statements are used in this document:

- **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 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 Nortel 1/10 Gb Uplink Ethernet 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 8, 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.ibm.com/servers/eserver/xseries/cog/>. See the documentation that comes with the blade server for cable-routing information.

Handling static-sensitive devices

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

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

- Limit your movement. Movement can cause static electricity to build up around you.
- Handle the device carefully, holding it by its edges or its frame.
- Do not touch solder joints, pins, or exposed printed circuitry.
- Do not leave the device where others can handle and damage it.
- While the device is still in its static-protective package, touch it to an *unpainted* metal surface of the BladeCenter unit 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 7.
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.

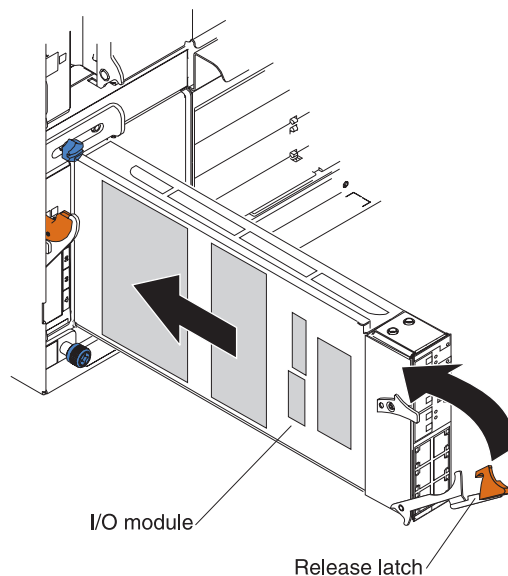
3. Remove the filler module from the selected bay. Store the filler module for future use.

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:

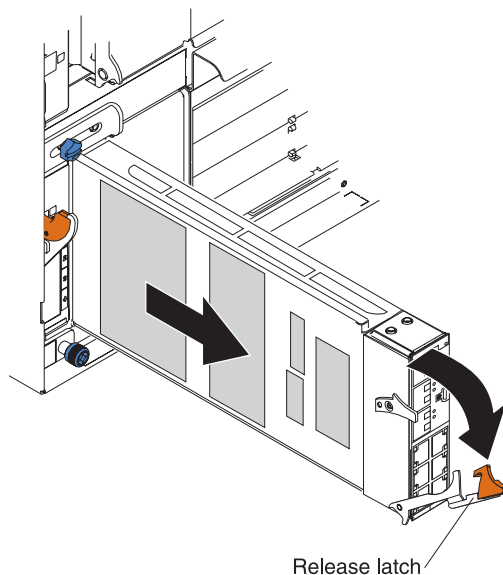
- a. The switch module takes approximately 60 seconds to complete the POST. When the switch module is turned on, an LED test occurs. All LEDs are lit and remain lit during POST; then, all the LEDs except the OK LED turn off. This indicates normal POST results.
- b. To maintain proper airflow, make sure 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 9 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 17, 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 7.
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 17 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 10.)

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 17, 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 13.

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.

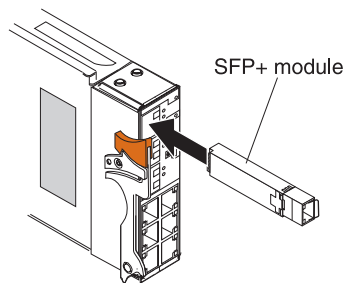


Class 1 Laser Product
Laser Klasse 1
Laser Klass 1
Luokan 1 Laserlaite
Appareil À Laser de Classe 1

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 7.
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 13.
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 17) and any cables that you disconnected earlier.

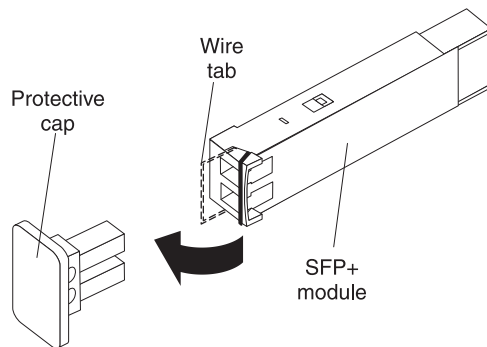
Removing an SFP+ module

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

1. Read the safety information that begins on page v and “Installation guidelines” on page 7.
2. Read the information in “Handling an SFP+ module” on page 13.
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 18.

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.

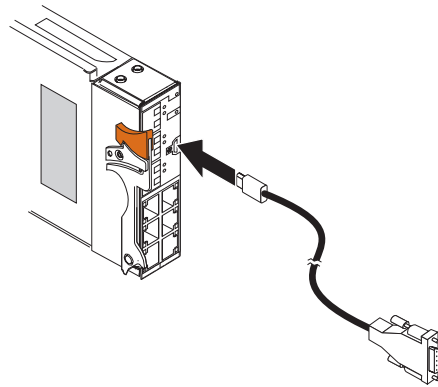
Chapter 4. Cabling the switch module and the SFP+ module

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.

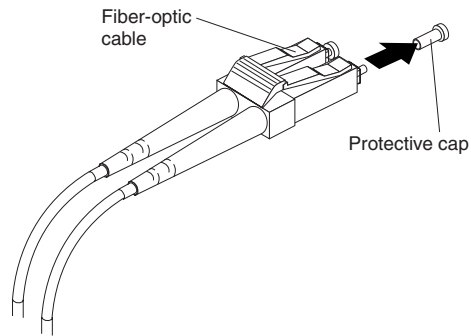
Connecting the SFP+ module cable

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

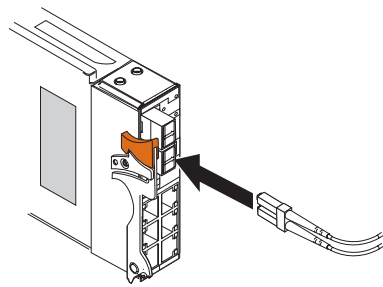
- Do not route the cable along a folding cable-management arm.
- When you attach the cable to a device on slide rails, leave enough slack in the cable so that it does not bend to a radius of less than 38 mm (1.5 in.) when the device is extended or become pinched when the device is retracted.
- Route 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 5, “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.

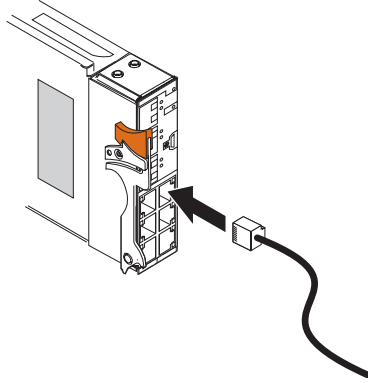
Connecting the RJ-45 cable

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.

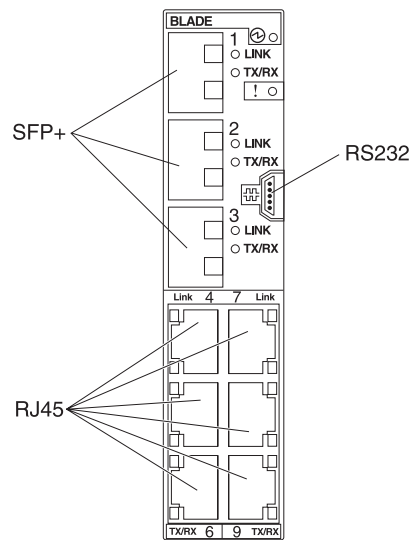
Chapter 5. Information panels, LEDs, and external ports

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.



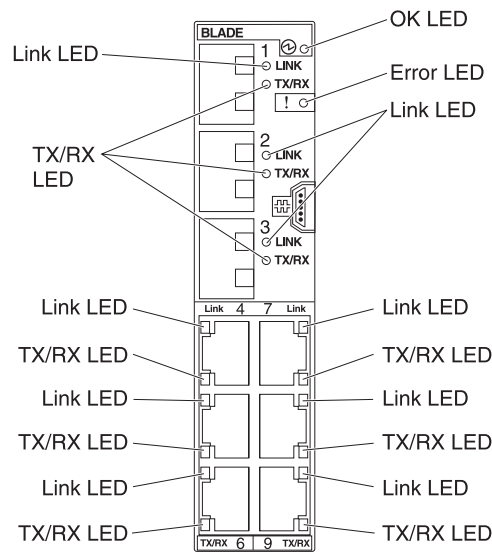
The switch-module information panel contains the following components:

- 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 17.
- 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 *Nortel 1/10 Gb Uplink Ethernet Switch Module for IBM BladeCenter Command Reference*.

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 6. Configuring the switch module

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

- **Default mode:** The default mode uses the internal path to the management module only. In this mode, the remote-access link to the management console must be attached to the Ethernet connector on the management module. The Internet protocol (IP) addresses and SNMP parameters of the switch modules can be automatically assigned by the IBM Director BladeCenter Deployment wizard (when available), or you must assign them through the BladeCenter Management and Configuration Program. This mode enables you to provide a secure LAN for management of the BladeCenter subsystems that is separate from the data network. See “Establishing a TCP/IP session through the management module” on page 26 for more information.
- **Remote management mode:** You can enable remote management of the switch module through the seven external ports, instead of or in addition to access through the management module. This mode can be enabled only through the management-module configuration interface. When this mode is enabled, the nine external ports support both management traffic and BladeCenter application data traffic.

This mode enables the use of additional switch-module IP addresses on different IP subnets than the management modules. This is useful when the switch modules are to be managed and controlled as part of the overall network infrastructure while secure management of other BladeCenter subsystems is maintained through the management module. See “Enabling management through external ports” on page 27 for additional instructions for configuring the switch module for this mode of operation.

The RS-232 console port provides an alternative path to manage and configure the switch for local access.

Important:

- Before you configure the switch module, make sure that the management modules in the BladeCenter unit are correctly configured. For more information about configuring the switch module, see the following documents:
 - *Installation and User’s Guide* for the BladeCenter unit
 - *BladeCenter Advanced Management Module Installation Guide* or *BladeCenter T Advanced Management Module Installation Guide*
 - *IBM BladeCenter Management Module User’s Guide*
- The default IP address of the switch module is 192.168.70.127, 192.168.70.128, 192.168.70.129, or 192.168.70.130, depending on the switch-module bay where it is installed.
- If you change the IP address of the switch module and restart the BladeCenter unit, the switch module maintains this new IP address as its default value.
- The management module and the switch module can communicate with each other only if they are on the same IP subnet.
- When you use the management-module Web interface to update the switch-module configuration, the management-module firmware saves the new

configuration in its internal nonvolatile random-access memory (NVRAM). If the switch module restarts, the management module applies the saved configuration to the switch module.

If the switch module restarts and the management module cannot apply the saved configuration, the switch module defaults to using the configuration that it had previously saved. If the IP subnet address of the switch module does not match the IP subnet address of the management module, you can no longer manage the switch module from the management module.

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

For specific details about configuring the switch module and preparing for system installation, see the documentation listed in “Related documentation” on page 2.

Notes:

- Throughout this document, the management-module Web-based user interface is also known as the BladeCenter management-module Web interface.
- Throughout this document, the user name is also known as the login name or user ID for logging on to interfaces or programs.
- 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 options that are installed.

Establishing a TCP/IP session through the management module

To establish a TCP/IP session for the switch module through the management module, complete the following steps:

1. Log on to the management module as described in the *User's Guide* or *Command Line Interface Reference Guide* for your management module. If necessary, obtain the IP address of the management module from your system administrator. The management-module window opens.

Note: The **User ID** and **Password** fields are case-sensitive. Type your information in uppercase letters only. To maintain system security, change your password after you log on for the first time. The default User ID is USERID, and the default password is PASSWØRD (where the sixth character is the number zero, not the letter O).

2. From the **I/O Module Tasks** menu, click **Configuration**.
3. In the **I/O Module Configuration** area, click the bay number that corresponds to the location of the switch module that you installed.
4. In the **IP address** field in the **New Static IP Configuration** area, type the new TCP/IP address of the switch module; then, click **Save**.

Note: The management module does not check for invalid IP addresses.

5. Click **Advanced Configuration**. You can now start a Web session or a Telnet session.

The Web interface and the Telnet program provide different ways to access the same internal-switching software and configure it.

- If your system application requires that you use the Web interface program, see “Configuring the switch module through the switch-module browser-based interface” on page 30 for additional information.
- If your system application requires that you use the Telnet program, see “Configuring the switch module through the Telnet interface” on page 28 for additional information.

Enabling management through external ports

To access and manage the switch module through external interfaces, you must enable the external ports and the ability to manage the switch through them. Use the information in the following table to configure your ports.

External management	External ports	Description
Disabled	Disabled	The switch must be managed through the management module. No traffic is allowed on external ports.
Disabled	Enabled	The switch must be managed through the management module. Data traffic is allowed on external ports.
Enabled	Disabled	The switch can be managed through the management module or a blade server. No traffic is allowed on external ports.
Enabled	Enabled	The switch can be managed through the management module, a blade server, or a management station that is connected through an external port. Data traffic is allowed on external ports.

To enable management through external ports, complete the following steps:

1. Log on to the management module as described in the *User's Guide* or *Command Line Interface Reference Guide* for your management module. If necessary, obtain the IP address of the management module from your system administrator. The management-module window opens.
2. Click **I/O Module Tasks** → **Configuration** and click the bay number that corresponds to the location of the switch module that you installed.
3. Click **Advanced Configuration** and make sure that external management is enabled.
4. Click **I/O Module Tasks** → **Admin/Power/Restart** and make sure that the external ports are enabled for the switch module that you installed.

Configuring the switch module through the Telnet interface

The switch module supports a command-line interface (CLI) that you can use to configure and control the switch module over the network through the Telnet program. You can use the CLI to perform many basic network-management functions. In addition, you can configure the switch module for management through an SNMP-based network-management system. The following sections describe how to use the Telnet interface to access the switch module, change its settings, and monitor its operation.

Connecting to the switch module

If you know the IP address of the switch module and you have an existing network connection, you can use the Telnet program from an external management station or the management module to access and control the switch module. The management station and the switch module must be on the same IP subnet. If you have to obtain the IP address of the switch module or establish a network connection, contact your system or network administrator. Be sure to use the correct IP address in the required command, as specified in “Accessing the main menu.”

Accessing the main menu

To connect to the switch module through the Telnet interface, complete the following steps:

1. From a DOS command-line prompt, type `telnet x` and press Enter.
(*x* is the IP address for the switch module.)
2. If you do not have an assigned initial password, in the **Password** field, type the default password (`admin`) and press Enter.

Important: The **apply** command changes the currently active configuration. If you want your change to persist beyond the next reboot of the switch, you must enter the **save** command. This command stores the current switch configuration and all changes in nonvolatile memory.

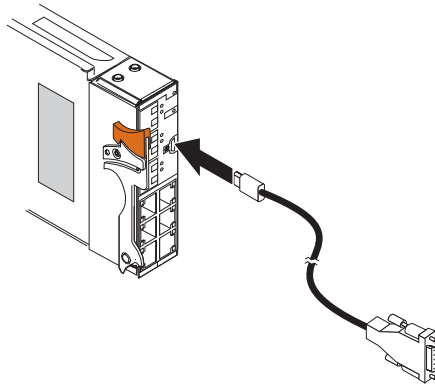
For more information about configuring through the CLI, see the *Nortel 1/10 Gb Uplink Ethernet Switch Module for IBM BladeCenter Command Reference*.

Configuring the switch module through the serial-port interface

The serial port provides basic communication RS-232 serial data transfer through a terminal emulation program (such as Hyperterminal). Because messages from the power-on self-test (POST) and all initialization information are transmitted through the serial port, you can use the serial port to log in to the switch module and access and configure the internal switching software.

To log in to the switch module, complete the following steps:

1. Connect one end of the specifically designed serial cable that comes with your device to the RS-232 connector and connect the other end to the management station.



For additional information, see “Connecting the serial console cable” on page 17.

2. On the management station, open a console window and make sure that the serial port is configured with the following settings:
 - 9600 baud
 - 8 data bits
 - No parity
 - 1 stop bit
 - No flow control
3. Type the user name and password. The default user name is admin. The default password is admin.

The serial port is compatible with the standard 16550 Universal Asynchronous Receiver/Transmitter (UART) protocol. The RS-232 serial port is enabled by default.

Configuring the switch module through the switch-module browser-based interface

This section describes how to use the switch-module browser-based interface (BBI) to access and configure the internal switching software. For more information about the BBI, see the *Nortel 1/10 Gb Uplink Ethernet Switch Module for IBM BladeCenter Browser Based Interface Quick Guide*.

This section also describes some of the Web interface switch-module management features.

The switch module offers an embedded HTML, browser-based interface that you can use to manage the switch through Netscape Navigator and Communicator, Mozilla Firefox, or Microsoft® Internet Explorer. This interface is enabled by default. The browser-based interface acts as an access tool and can communicate directly with the switch through HTTP. Your computer might have to access and install a Java plug-in (JRE 1.4.0) to run without errors. Later versions of the JRE might work but are not officially supported.

Note: This interface does not accept Chinese-language input (or other double-byte character-set languages).

Before you can access and start the browser-based interface, make sure that you have completed the following procedures:

- Install the switch module in the BladeCenter unit.
- Make sure that the switch-module software is installed on the switch module.
- Configure at least one IP interface on the switch module.
- Enable the frames and the JavaScript™ program in your Web browser.

The following hardware and software are required for the Web interface:

- A frame-capable Web-browser program, such as Internet Explorer (version 6.0 or later), Mozilla Firefox (version 1.0.4 or later), or Netscape Navigator (version 4.7 or later)
- A computer or workstation with network access to the switch module

To start the browser-based interface, complete the following steps:

1. Start a Web browser. The Web-browser window opens.
2. In the **URL** field, enter the IP address of the switch module, in the following format:
http://xxx.xxx.xxx.xxx. The login window opens.
3. Enter your user ID and password and click **OK**. The default user ID is admin. The default password is admin.

Note: The passwords that are used to access the switch module are case-sensitive. To increase system security, change the password after you log on for the first time.

Initial configuration

The operating software on the switch module contains default configuration files that are installed during the software installation. These initial configuration settings are not in a separate configuration file but are components of the software. When you restore the management module to factory defaults, the original configuration is restored. For more information about configuring and managing the switch module through the management module, see the *Nortel 1/10 Gb Uplink Ethernet Switch Module for IBM BladeCenter Command Reference*.

Logging in to the switch module

The switch module supports user-based security that enables you to prevent unauthorized users from accessing the switch or changing its settings.

To log in to the switch module, complete the following steps:

1. At the prompt, type your user ID and press Enter. The default user ID is admin.
2. Type your password (default is admin) and press Enter. The default password is admin. The main-menu window opens.

After you log on to the switch module, you must set the date and time. See the *Nortel 1/10 Gb Uplink Ethernet Switch Module for IBM BladeCenter Command Reference* to perform this task and others as needed.

Chapter 7. Updating the software

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

Determining the level of switch-module software

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

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

Obtaining the latest level of switch software

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

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

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

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

The switch module can contain two operating-system images. You can revert to the previous image if the current download process fails.

Upgrading the switch-module software

You can upgrade the switch-module software by using a TFTP server application. Typically, this software runs as an application under your operating system. Make sure that this software is installed on your server; then, download the software images from <http://www.ibm.com/systems/support/> into a directory on your TFTP server. Enable the TFTP server and set its default directory to the one where the image is.

To transfer the software image files from the TFTP server to the switch, you can establish a Telnet session through the management module. Ping the TFTP server to make sure that you have a connection. The Telnet session performs optimally if all three network entities (TFTP server, management module, and switch IP addresses) are on the same subnet. Otherwise, you must use a router and configure a gateway address on the switch. Use the management-module interface to configure the IP addresses of the management module external interface (eth0) and the switch module so that they are both on the same subnet as the TFTP server.

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

Network entity	IP address	Mask
TFTP server	192.168.2.178	255.255.255.0
Management module (eth0)	192.168.2.237	255.255.255.0
Switch-module current IP configuration	192.168.2.51	255.255.255.0

Note: With this configuration, you can ping the switch module from the TFTP server.

Use the management-module interface to start a Telnet session, as described in the following steps. The requirements for running a Telnet session are described in Chapter 6, “Configuring the switch module,” on page 25.

1. Log on to the management module as described in the *IBM BladeCenter Advanced Management Module User's Guide*. The login window opens.
2. From the **I/O Module Tasks** menu, click **Configuration** → **Bay X** → **Advanced Configuration**. The Advanced Configuration window opens.
3. To start a Telnet session, click **Start Telnet/Web Session**.

To upgrade the switch-module software, complete the following steps:

1. Log in to the switch module.
2. At the CLI prompt, type the following command and press Enter.

```
/boot/gting imagex TADDR zzzzz
```

(*imagex* is the image to install and *zzzzz* is the operating-system image file name.)
3. Reset and restart the switch module as described in “Resetting and restarting the switch module.”
4. At the CLI prompt, type the following command and press Enter.

```
/boot/gting boot TADDR yyyy
```

(*yyyy* is the boot image file name.)
5. Reset and restart the switch module as described in “Resetting and restarting the switch module.”

Resetting and restarting the switch module

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

1. From the **I/O Module Tasks** menu, click **Admin/Power/Restart**. The management module window opens.
2. Select the I/O-module bay on which the software update was just installed.
3. Click **Power Off Module(s)**.
4. Select the I/O-module bay on which the software update was just installed.
5. Click **Power On Module(s)**. Wait 60 seconds for POST to be completed.
6. Click **Monitors**, and select **Firmware VPD**. The Firmware VPD window opens.
7. In the Firmware VPD window, locate the **I/O Module Firmware VPD** area. Page down to the number of the I/O-module bay that contains the switch module that you just installed; then, note the corresponding level of the software for the switch module. Confirm that the software build ID and revision reflect the correct software release.

Chapter 8. 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 Appendix B, “Warranty,” on page 43.

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

Chapter 9. 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 *Nortel 1/10 Gb Uplink Ethernet Switch Module for IBM BladeCenter Application Guide* 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 41.

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 5, “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 41.

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

Before you call

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

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

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

Using the documentation

Information about your IBM system and preinstalled software, if any, or optional device is available in the documentation that comes with the product. That documentation can include printed documents, online documents, readme files, and help files. See the troubleshooting information in your system documentation for instructions for using the diagnostic programs. The troubleshooting information or the diagnostic programs might tell you that you need additional or updated device drivers or other software. IBM maintains pages on the World Wide Web where you can get the latest technical information and download device drivers and updates. To access these pages, go to <http://www.ibm.com/systems/support/> and follow the instructions. Also, some documents are available through the IBM Publications Center at <http://www.ibm.com/shop/publications/order/>.

Getting help and information from the World Wide Web

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

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

Software service and support

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

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

Hardware service and support

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

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

IBM Taiwan product service

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

IBM Taiwan product service contact information:

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

Appendix B. Warranty

IBM provides hardware warranty service for this product equivalent to that described in the IBM Statement of Limited Warranty (“SOLW”), a copy of which is included, notwithstanding the section entitled, “What this Warranty Does not Cover” of the SOLW. All references to “Machine” in the SOLW apply to this product (except for its firmware or accompanying software) for purposes of the warranty. References to “IBM’s Official Published Specifications” mean the specifications for the product designated by IBM. Any firmware or software included in or which accompanies this product is subject to the terms and conditions of the manufacturer’s end user license agreement.

IBM Statement of Limited Warranty Z125-4753-09 08/2006

Part 1 - General Terms

This Statement of Limited Warranty includes Part 1 - General Terms, Part 2 - Country-unique Terms, and Part 3 - Warranty Information. The terms of Part 2 replace or modify those of Part 1.

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

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

What this Warranty Covers

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

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

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

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

THESE WARRANTIES ARE YOUR EXCLUSIVE WARRANTIES AND REPLACE ALL OTHER WARRANTIES OR CONDITIONS, EXPRESS OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OR CONDITIONS OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. SOME STATES OR JURISDICTIONS DO NOT ALLOW THE EXCLUSION OF EXPRESS OR IMPLIED WARRANTIES, SO THE ABOVE EXCLUSION MAY NOT APPLY TO YOU. IN THAT EVENT, SUCH WARRANTIES ARE LIMITED IN DURATION TO THE WARRANTY PERIOD. NO WARRANTIES APPLY AFTER THAT PERIOD. SOME STATES OR JURISDICTIONS DO NOT ALLOW LIMITATIONS ON HOW LONG AN IMPLIED WARRANTY LASTS, SO THE ABOVE LIMITATION MAY NOT APPLY TO YOU.

What this Warranty Does not Cover

This warranty does not cover the following:

1. failure or damage resulting from misuse (including but not limited to use of any Machine capacity or capability, other than that authorized by IBM in writing), accident, modification, unsuitable physical or operating environment, or improper maintenance by you;
2. failure caused by a product for which IBM is not responsible;
3. any non-IBM Products, including those provided with, or installed on, an IBM Machine at your request;
4. accessories, supply items and consumables (e.g. batteries and printer cartridges), and structural parts (e.g. frames and covers);
5. service of Machine alterations; and
6. service of a Machine on which you are using capacity or capability, other than that authorized by IBM in writing.

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

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

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

How to Obtain Warranty Service

If the Machine does not function as warranted during the warranty period, contact IBM or your reseller to obtain warranty service. Contact information for IBM is provided in Part 3. If you do not register the Machine with IBM, you may be required to present proof of purchase as evidence of your entitlement to warranty service.

What IBM Will Do to Correct Problems

IBM will attempt to diagnose and resolve your problem over the telephone or electronically by access to an IBM Internet website. Certain Machines contain remote support capabilities for direct problem reporting, remote problem determination and resolution with IBM. When you contact IBM for service, you must

follow the problem determination and resolution procedures that IBM specifies. Following problem determination, if IBM determines on-site service is required, a service technician will be scheduled for service at your location.

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

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

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

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

Exchange of a Machine or Part

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

Your Additional Responsibilities

You agree:

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

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

Limitation of Liability

Circumstances may arise where, because of a default on IBM's part or other liability, you are entitled to recover damages from IBM. In each such instance, regardless of the basis on which you are entitled to claim damages from IBM (including fundamental breach, negligence, misrepresentation, or other contract or tort claim), except for any liability that cannot be waived or limited by applicable laws, IBM is liable for no more than:

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

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

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

Governing Law

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

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

Jurisdiction

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

Part 2 - Country-unique Terms

AMERICAS

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

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

BRAZIL

Exchange of a Machine or Part: *Delete the last sentence:*

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

CANADA

What this Warranty Covers: *The following replaces the 2nd paragraph to this section:*

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

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

1. damages for bodily injury (including death) or physical harm to real property and tangible personal property caused by IBM's negligence; and
2. the amount of any other actual direct damages, up to the greater of \$100,000.00 or the charges (if recurring, 12 months' charges apply) for the

Machine that is subject of the claim. For purposes of this item, the term “Machine” includes Machine Code and Licensed Internal Code (“LIC”).

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

laws in the Province of Ontario.

PERU

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

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

UNITED STATES

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

laws of the State of New York

ASIA PACIFIC

AUSTRALIA

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

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

Limitation of Liability: *The following is added to this section:*

Where IBM is in breach of a condition or warranty implied by the Trade Practices Act 1974 or other similar legislation, IBM’s liability is limited to the repair or replacement of the goods or the supply of equivalent goods. Where that condition or warranty relates to right to sell, quiet possession or clear title, or the goods are of a kind ordinarily acquired for personal, domestic or household use or consumption, then none of the limitations in this paragraph apply.

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

laws of the State or Territory

CAMBODIA AND LAOS

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

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

CAMBODIA, INDONESIA, AND LAOS

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

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

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

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

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

HONG KONG S.A.R.

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

INDIA

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

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

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

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

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

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

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

JAPAN

Governing Law: *The following sentence is added to this section:*

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

MACAU S.A.R.

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

MALAYSIA

Limitation of Liability: *The word “**SPECIAL**” in item 3 of the fifth paragraph is deleted.*

NEW ZEALAND

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

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

Limitation of Liability: *The following is added to this section:*

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

PEOPLE’S REPUBLIC OF CHINA (PRC)

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

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

PHILIPPINES

Limitation of Liability: *Item 3 in the fifth paragraph is replaced by the following:*

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

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

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

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

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

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

SINGAPORE

Limitation of Liability: *The words “SPECIAL” and “ECONOMIC” in item 3 in the fifth paragraph are deleted.*

EUROPE, MIDDLE EAST, AFRICA (EMEA)

THE FOLLOWING TERMS APPLY TO ALL EMEA COUNTRIES:

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

How to Obtain Warranty Service:

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

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

If you purchase a Machine in one of the Western European countries, as defined above, you may obtain warranty service for that Machine in any of those countries from either (1) an IBM reseller approved to perform warranty service or (2) from

IBM, provided the Machine has been announced and made available by IBM in the country in which you wish to obtain service.

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

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

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

Jurisdiction: *The following exceptions are added to this section:*

1) **In Austria** the choice of jurisdiction for all disputes arising out of this Statement of Limited Warranty and relating thereto, including its existence, will be the competent court of law in Vienna, Austria (Inner-City); 2) **in Angola, Bahrain, Botswana, Burundi, Egypt, Eritrea, Ethiopia, Ghana, Jordan, Kenya, Kuwait, Liberia, Malawi, Malta, Mozambique, Nigeria, Oman, Pakistan, Qatar, Rwanda, Sao Tome, Saudi Arabia, Sierra Leone, Somalia, Tanzania, Uganda, United Arab Emirates, United Kingdom, West Bank/Gaza, Yemen, Zambia, and Zimbabwe** all disputes arising out of this Statement of Limited Warranty or related to its execution, including summary proceedings, will be submitted to the exclusive jurisdiction of the English courts; 3) **in Belgium and Luxembourg**, all disputes arising out of this Statement of Limited Warranty or related to its interpretation or its execution, the law, and the courts of the capital city, of the country of your registered office and/or commercial site location only are competent; 4) **in France, Algeria, Benin, Burkina Faso, Cameroon, Central African Republic, Chad, Comoros, Congo Republic, Djibouti, Democratic Republic of Congo, Equatorial Guinea, French Guiana, French Polynesia, Gabon, Gambia, Guinea, Guinea-Bissau, Ivory Coast, Lebanon, Libya, Madagascar, Mali, Mauritania, Mauritius, Mayotte, Morocco, New Caledonia, Niger, Reunion, Senegal, Seychelles, Togo, Tunisia, Vanuatu, and Wallis & Futuna** all disputes arising out of this Statement of Limited Warranty or related to its violation or execution, including summary proceedings, will be settled exclusively by the Commercial Court of Paris; 5) **in South Africa, Namibia, Lesotho and Swaziland**, both of us agree

to submit all disputes relating to this Statement of Limited Warranty to the jurisdiction of the High Court in Johannesburg; 6) **in Turkey** all disputes arising out of or in connection with this Statement of Limited Warranty shall be resolved by the Istanbul Central (Sultanahmet) Courts and Execution Directorates of Istanbul, the Republic of Turkey; 7) in each of the following specified countries, any legal claim arising out of this Statement of Limited Warranty will be brought before, and settled exclusively by, the competent court of a) Athens for **Greece**, b) Tel Aviv-Jaffa for **Israel**, c) Milan for **Italy**, d) Lisbon for **Portugal**, and e) Madrid for **Spain**; and 8) **in the United Kingdom**, both of us agree to submit all disputes relating to this Statement of Limited Warranty to the jurisdiction of the English courts.

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

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

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

EUROPEAN UNION (EU)

THE FOLLOWING TERMS APPLY TO ALL EU COUNTRIES:

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

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

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

Except as otherwise provided by mandatory law:

1. IBM's liability for any damages and losses that may arise as a consequence of the fulfillment of its obligations under or in connection with this Statement of Limited Warranty or due to any other cause related to this Statement of Limited Warranty is limited to the compensation of only those damages and losses proved and actually arising as an immediate and direct consequence of the non-fulfillment of such obligations (if IBM is at fault) or of such cause, for a

maximum amount equal to the charges you paid for the Machine. For purposes of this item, the term “Machine” includes Machine Code and Licensed Internal Code (“LIC”).

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

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

FRANCE AND BELGIUM

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

Except as otherwise provided by mandatory law:

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

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

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

THE FOLLOWING TERMS APPLY TO THE COUNTRY SPECIFIED:

AUSTRIA AND GERMANY

What this Warranty Covers: *The following replaces the first sentence of the first paragraph of this section:*

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

The following paragraphs are added to this section:

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

reduction as far as justified by the reduced value of the unrepaired Machine or ask for a cancellation of the respective agreement for such Machine and get your money refunded.

The second paragraph does not apply.

What IBM Will Do to Correct Problems: *The following is added to this section:*

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

Limitation of Liability: *The following paragraph is added to this section:*

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

The following sentence is added to the end of item 2:

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

IRELAND

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

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

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

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

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

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

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

Items for Which IBM is Not Liable

Save with respect to any liability referred to in item 1 above, under no circumstances is IBM, its suppliers or resellers liable for any of the following, even if IBM or they were informed of the possibility of such losses:

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

SOUTH AFRICA, NAMIBIA, BOTSWANA, LESOTHO AND SWAZILAND

Limitation of Liability: *The following is added to this section:*

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

SWITZERLAND

Your Additional Responsibilities: *The following sentence is added to this section:*

Personal Data also includes information about you as a legal entity.

TURKEY

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

The minimum warranty period for Machines is 2 years.

UNITED KINGDOM

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

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

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

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

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

Sterling 75,000, or 2) 125% of the total purchase price payable or the charges for the Machine directly relating to the Default.

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

Items for Which IBM is Not Liable

Save with respect to any liability referred to in item 1 above, under no circumstances is IBM or any of its suppliers or resellers liable for any of the following, even if IBM or they were informed of the possibility of such losses:

1. loss of, or damage to, data;
2. special, indirect, or consequential loss;
3. loss of profits, business, revenue, goodwill, or anticipated savings; or
4. third party claims against you for damages.

Part 3 - Warranty Information

Nortel 1/10 Gb Uplink Ethernet Switch Module for IBM BladeCenter

Country or Region of Purchase	Warranty Period	Type of Warranty Service*	Service Level*
Worldwide	1 year	1	Not applicable
* See "Types of Warranty Service" and "Service Levels" for explanations of warranty-service types and service levels.			

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

Types of Warranty Service

1. Customer Replaceable Unit ("CRU") Service

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

2. On-site Service

IBM or your reseller will either repair or exchange the failing Machine at your location and verify its operation. You must provide suitable working area to allow disassembly and reassembly of the IBM Machine. The area must be clean, well lit and suitable for the purpose. For some Machines, certain repairs may require sending the Machine to an IBM service center.

3. Courier or Depot Service

You will disconnect the failing Machine for collection arranged by IBM. IBM will provide you with a shipping container for you to return your Machine to a

designated service center. A courier will pick up your Machine and deliver it to the designated service center. Following its repair or exchange, IBM will arrange the return delivery of the Machine to your location. You are responsible for its installation and verification.

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

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

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

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

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

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

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

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

8. **Machine Exchange Service**

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

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

Service Levels

Service levels specified below are response-time objectives only and are not guarantees. The specified service level may not be available in all worldwide locations. Charges may apply outside IBM's normal service area. Certain Machines with a Same Day On-site response-time objective may require the installation and use of remote connectivity tools and equipment for direct problem reporting, remote problem determination and resolution.

1. **Next Business Day (NBD), 9X5**

After we receive your call, following problem determination, if IBM determines on-site service is required, a service technician will be scheduled to arrive at your location on the next business day. Service will be provided from 8:00 a.m. to 5:00 p.m. in your local time zone, Monday through Friday, excluding holidays.

2. **Same Business Day (SBD), 9X5**

After we receive your call, following problem determination, if IBM determines on-site service is required, a service technician will be scheduled to arrive at your location within four hours. Service will be provided from 8:00 a.m. to 5:00 p.m. in your local time zone, Monday through Friday, excluding local IBM

holidays. If after 1:00 p.m. it is determined that on-site service is required, a service technician will be scheduled to arrive the morning of the following business day.

3. **Same Day (SD), 24X7**

After we receive your call, following problem determination, if IBM determines on-site service is required, a service technician will be scheduled to arrive at your location within four hours. This type of service will be provided 24 hours a day, every day, including holidays.

IBM Contact Information

For IBM in Canada or the United States, call 1-800-IBM-SERV (or 1-800-426-7378). For IBM in the European Union (EU), Asia Pacific, and Latin America countries, contact IBM in that country or visit the following IBM Internet website:
http://www.ibm.com/servers/support/machine_warranties/.

Appendix C. Notices

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

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

IBM may have patents or pending patent applications covering subject matter described in this document. The furnishing of this document does not give you any license to these patents. You can send license inquiries, in writing, to:

*IBM Director of Licensing
IBM Corporation
North Castle Drive
Armonk, NY 10504-1785
U.S.A.*

INTERNATIONAL BUSINESS MACHINES CORPORATION PROVIDES THIS PUBLICATION "AS IS" WITHOUT WARRANTY OF ANY KIND, EITHER EXPRESS OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF NON-INFRINGEMENT, MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE. Some states do not allow disclaimer of express or implied warranties in certain transactions, therefore, this statement may not apply to you.

This information could include technical inaccuracies or typographical errors. Changes are periodically made to the information herein; these changes will be incorporated in new editions of the publication. IBM may make improvements and/or changes in the product(s) and/or the program(s) described in this publication at any time without notice.

Any references in this information to non-IBM Web sites are provided for convenience only and do not in any manner serve as an endorsement of those Web sites. The materials at those Web sites are not part of the materials for this IBM product, and use of those Web sites is at your own risk.

IBM may use or distribute any of the information you supply in any way it believes appropriate without incurring any obligation to you.

Trademarks

IBM, the IBM logo, and [ibm.com](http://www.ibm.com) are trademarks or registered trademarks of International Business Machines Corporation in the United States, other countries, or both. If these and other IBM trademarked terms are marked on their first occurrence in this information with a trademark symbol (® or ™), these symbols indicate U.S. registered or common law trademarks owned by IBM at the time this information was published. Such trademarks may also be registered or common law trademarks in other countries. A current list of IBM trademarks is available on the Web at "Copyright and trademark information" at <http://www.ibm.com/legal/copytrade.shtml>.

Adobe and PostScript are either registered trademarks or trademarks of Adobe Systems Incorporated in the United States and/or other countries.

Cell Broadband Engine is a trademark of Sony Computer Entertainment, Inc., in the United States, other countries, or both and is used under license therefrom.

Intel, Intel Xeon, Itanium, and Pentium are trademarks or registered trademarks of Intel Corporation or its subsidiaries in the United States and other countries.

Java and all Java-based trademarks are trademarks of Sun Microsystems, Inc., in the United States, other countries, or both.

Linux is a registered trademark of Linus Torvalds in the United States, other countries, or both.

Microsoft, Windows, and Windows NT are trademarks of Microsoft Corporation in the United States, other countries, or both.

UNIX is a registered trademark of The Open Group in the United States and other countries.

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

Important notes

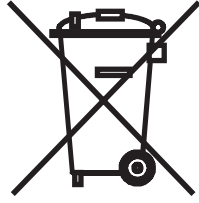
IBM makes no representation or warranties regarding non-IBM products and services that are ServerProven[®], including but not limited to the implied warranties of merchantability and fitness for a particular purpose. These products are offered and warranted solely by third parties.

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

Product recycling and disposal

This unit must be recycled or discarded according to applicable local and national regulations. IBM encourages owners of information technology (IT) equipment to responsibly recycle their equipment when it is no longer needed. IBM offers a variety of product return programs and services in several countries to assist equipment owners in recycling their IT products. Information on IBM product recycling offerings can be found on IBM's Internet site at <http://www.ibm.com/ibm/environment/products/index.shtml>.

Esta unidad debe reciclarse o desecharse de acuerdo con lo establecido en la normativa nacional o local aplicable. IBM recomienda a los propietarios de equipos de tecnología de la información (TI) que reciclen responsablemente sus equipos cuando éstos ya no les sean útiles. IBM dispone de una serie de programas y servicios de devolución de productos en varios países, a fin de ayudar a los propietarios de equipos a reciclar sus productos de TI. Se puede encontrar información sobre las ofertas de reciclado de productos de IBM en el sitio web de IBM <http://www.ibm.com/ibm/environment/products/index.shtml>.



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

This appliance is labeled in accordance with European Directive 2002/96/EC concerning waste electrical and electronic equipment (WEEE). The Directive determines the framework for the return and recycling of used appliances as applicable throughout the European Union. This label is applied to various products to indicate that the product is not to be thrown away, but rather reclaimed upon end of life per this Directive.

注意: このマークは EU 諸国およびノルウェーにおいてのみ適用されます。

この機器には、EU 諸国に対する廃電気電子機器指令 2002/96/EC(WEEE) のラベルが貼られています。この指令は、EU 諸国に適用する使用済み機器の回収とリサイクルの骨子を定めています。このラベルは、使用済みになった時に指令に従って適正な処理をする必要があることを知らせるために種々の製品に貼られています。

Remarque : Cette marque s'applique uniquement aux pays de l'Union Européenne et à la Norvège.

L'étiquette du système respecte la Directive européenne 2002/96/EC en matière de Déchets des Equipements Electriques et Electroniques (DEEE), qui détermine les dispositions de retour et de recyclage applicables aux systèmes utilisés à travers l'Union européenne. Conformément à la directive, ladite étiquette précise que le produit sur lequel elle est apposée ne doit pas être jeté mais être récupéré en fin de vie.

In accordance with the European WEEE Directive, electrical and electronic equipment (EEE) is to be collected separately and to be reused, recycled, or recovered at end of life. Users of EEE with the WEEE marking per Annex IV of the WEEE Directive, as shown above, must not dispose of end of life EEE as unsorted municipal waste, but use the collection framework available to customers for the return, recycling, and recovery of WEEE. Customer participation is important to minimize any potential effects of EEE on the environment and human health due to the potential presence of hazardous substances in EEE. For proper collection and treatment, contact your local IBM representative.

Battery return program

This product may contain a sealed lead acid, nickel cadmium, nickel metal hydride, lithium, or lithium ion battery. Consult your user manual or service manual for specific battery information. The battery must be recycled or disposed of properly. Recycling facilities may not be available in your area. For information on disposal of batteries outside the United States, go to <http://www.ibm.com/ibm/environment/products/index.shtml> or contact your local waste disposal facility.

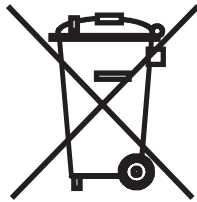
In the United States, IBM has established a return process for reuse, recycling, or proper disposal of used IBM sealed lead acid, nickel cadmium, nickel metal hydride,

and battery packs from IBM equipment. For information on proper disposal of these batteries, contact IBM at 1-800-426-4333. Have the IBM part number listed on the battery available prior to your call.

For Taiwan: Please recycle batteries.



For the European Union:



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

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

Les batteries ou emballages pour batteries sont étiquetés conformément aux directives européennes 2006/66/EC, norme relative aux batteries et accumulateurs en usage et aux batteries et accumulateurs usés. Les directives déterminent la marche à suivre en vigueur dans l'Union Européenne pour le retour et le recyclage des batteries et accumulateurs usés. Cette étiquette est appliquée sur diverses batteries pour indiquer que la batterie ne doit pas être mise au rebut mais plutôt récupérée en fin de cycle de vie selon cette norme.

バッテリーあるいはバッテリー用のパッケージには、EU 諸国に対する廃電気電子機器指令 2006/66/EC のラベルが貼られています。この指令は、バッテリーと蓄電池、および廃棄バッテリーと蓄電池に関するものです。この指令は、使用済みバッテリーと蓄電池の回収とリサイクルの骨子を定めているもので、EU 諸国にわたって適用されます。このラベルは、使用済みになったときに指令に従って適正な処理をする必要があることを知らせるために種々のバッテリーに貼られています。

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

participation is important to minimize any potential effects of batteries and accumulators on the environment and human health due to the potential presence of hazardous substances. For proper collection and treatment, contact your local IBM representative.

This notice is provided in accordance with Royal Decree 106/2008 of Spain: The retail price of batteries, accumulators, and power cells includes the cost of the environmental management of their waste.

For California:

Perchlorate material – special handling may apply. See <http://www.dtsc.ca.gov/hazardouswaste/perchlorate/>.

The foregoing notice is provided in accordance with California Code of Regulations Title 22, Division 4.5 Chapter 33. Best Management Practices for Perchlorate Materials. This product/part may include a lithium manganese dioxide battery which contains a perchlorate substance.

Electronic emission notices

Federal Communications Commission (FCC) statement

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

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

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

Industry Canada Class A emission compliance statement

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

Avis de conformité à la réglementation d'Industrie Canada

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

Australia and New Zealand Class A statement

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

United Kingdom telecommunications safety requirement

Notice to Customers

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

European Union EMC Directive conformance statement

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

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

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

European Community contact:

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

Taiwanese Class A warning statement

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

Chinese Class A warning statement

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

Japanese Voluntary Control Council for Interference (VCCI) statement

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

Korean Class A warning statement

이 기기는 업무용으로 전자파 적합등록을 받은 기기 이오니, 판매자 또는 사용자는 이점을 주의하시기 바라며, 만약 잘못 구입하셨을 때에는 구입한 곳에서 비업무용으로 교환하시기 바랍니다.

Index

A

- accessing
 - main menu 28
 - switch module
 - through the Telnet interface 28
 - through the Web interface 30
 - Web interface 30
- activity (TX/RX) LED, Ethernet switch module 22
- activity (TX/RX) LED, switch module or SFP+ module port 23
- activity status, port
 - Ethernet switch module 22
 - switch module or SFP+ module port 23
- adapter, host channel 1
- assistance, getting 41
- attention notices 4

B

- battery return program 63
- blade server
 - interconnections with expansion card and high-speed switch-modules 1, 7
 - network requirements 1
- BladeCenter documentation Web site 3
- browser-based interface (BBI)
 - configuring the switch module 30
 - connecting to the switch module 30
 - starting a session 30

C

- cables
 - requirements for Ethernet network 10, 11
 - requirements for switch modules 8
 - serial console
 - installing 17
 - removing 17
 - SFP+ module
 - installing 17
 - removing 18
- cabling
 - parts listing 37
 - serial console 17
 - SFP+ module 18
 - switch module 17
- case-sensitive data fields
 - accessing the switch module 30
 - logging on to the management module 26
- caution statements 4
- Class A electronic emission notice 65
- Common Language Equipment Identification (CLEI) label 5
- communication requirements 1, 7, 10
- compatible
 - BladeCenter options Web site 8
 - host channel adapter (HCA) 1

- components
 - information panel 21
 - switch module 5
- configuration
 - cable requirements 8
 - menu 21
 - options 3
 - settings 26
 - Telnet interface requirements 28
- configuring
 - switch module
 - for remote access 25
 - initial configuration 31
 - through the browser-based interface 30
 - through the serial-port interface 29
 - through the Telnet interface 28
- connecting
 - RJ-45 cables 18
 - serial console cable 17
 - SFP+ module cable 18
- connecting to the switch module
 - through the browser-based interface 30
 - through the serial-port interface 29
 - through the Telnet interface 28, 31
- country unique terms 47
- courier or depot service 58
- critical errors 39
- customer carry-in service 58
- customer replaceable unit (CRU) service 57

D

- danger statements 4
- default IP address 25
- default remote-management mode 25
- depot or courier service 58
- determining the current level of switch software 33
- disconnecting
 - RJ-45 cables 19
 - serial console cable 17
 - SFP+ module cable 18
- documentation
 - cable requirements 8
 - related 3

E

- electronic emission Class A notice 65
- enabling management over external ports 10
- enabling management through external ports 27
- enabling the external ports 10, 27
- error
 - critical 39
 - noncritical 39
- error log
 - management module 22
 - power-on self-test (POST) 22

- establishing a session
 - through the management module 26
 - through the Telnet interface 28
 - through the Web interface 30
- Ethernet
 - expansion card 1
 - external management-module ports 28
 - LEDs 22
 - network requirements 10, 11
 - ports 21, 23
- Ethernet switch module
 - activity (TX/RX) LED 21, 22, 23
 - components 5
 - features, specifications, and standards 2
 - information panel 21
 - installation guidelines 7
 - installing 7, 9
 - link LED 21, 22, 23
 - OK LED 21, 22, 23
 - ports 21, 23
 - removing or replacing 10
 - switch-module error (!) LED 21, 22, 23
- event log, management module 22
- exchange of a machine or part 45
- expansion card
 - interconnections with blade server and high-speed switch-modules 1, 7
 - network requirements 1, 7
- external ports
 - enabling 10, 27
 - enabling management 10, 27
 - Ethernet
 - accessing the switch module 28
 - cable requirements 10, 11
 - remote management 25
 - status LEDs
 - on Ethernet switch module 21, 22
 - on switch module or SFP+ module port 23

F

- FCC Class A notice 65
- features 2
- fiber optic cables
 - installing 18
 - removing 18
- filler module
 - installation requirements 9
 - parts listing 37
- front view 21, 22

G

- general terms, warranty 43
- getting help 41
- governing law 47
- guidelines
 - handling an SFP+ module 13
 - handling fiber optic cables 17
 - handling static-sensitive devices 8
 - installation 7

- guidelines (*continued*)
 - system reliability 8

H

- handling
 - an SFP+ module 13
 - fiber optic cables 17
 - static-sensitive devices 8
- hardware features 2
- hardware requirements 1, 7
- hardware service and support 42
- help, getting 41
- high-speed device interconnections 1, 7
- high-speed switch-module (HSSM)
 - documentation 3
 - network requirements 7
- host channel adapter (HCA)
 - interconnections with blade server and high-speed switch-modules 1, 7
 - network requirements 1, 7
- host channel requirements 1, 7
- hot-swap component 7
- HSSM (high-speed switch module) 1, 7

I

- IBM ServerProven list 8
- IBM Support Line 42
- identification labels 5
- important notices 4
- information panel 30
 - Ethernet switch module 21
- initial configuration 31
- installation
 - guidelines 7
 - procedure
 - cables 17
 - cables for switch module 10, 11
 - serial console cable 17
 - SFP+ module 15
 - SFP+ module cable 18
 - switch module 9
 - requirements 7
- installing
 - fiber optic cables 18
 - high-speed switch module 7
 - host channel adapter 1
 - options 7, 13
 - SFP+ module 15
 - switch module 7, 9
- Internet protocol (IP) address
 - configuration requirements 28
 - default 25
 - Telnet program requirements 31
- inventory checklist 4

J

- jurisdiction 47

L

- labels 5
- law, governing 47
- LED
 - activity (TX/RX), Ethernet switch module 22
 - activity (TX/RX), switch module or SFP+ module port 23
 - colors 22
 - critical alert 23
 - front view 21, 22
 - illustration 21, 22
 - link, Ethernet switch module 22
 - link, switch module or SFP+ module port 23
 - locations 21, 22
 - OK 21, 22, 23
 - port status
 - Ethernet switch module 21, 22
 - switch module status 21, 22
 - switch-module error (!) 21, 22, 23
 - system status 21, 22
 - system-error 21, 22
 - liability, limitation of 46
 - limitation of liability 46
 - link activity status, port
 - Ethernet switch module 21, 22
 - switch module or SFP+ module port 23
 - link LED 22, 23
 - link up/down status, port
 - Ethernet switch module 21, 22
 - switch module or SFP+ module port 23
 - logging in to the switch module
 - through the serial-port interface 29
 - through the Telnet interface 31
 - through the Web interface 30
 - logging on to the management module 26
 - login window
 - Telnet interface 31
 - Web interface 30

M

- machine exchange service 58
- machine or part, exchange of 45
- mail-in service 58
- main menu
 - accessing 28
 - Telnet interface 31
 - Web interface 30
- major components 5
- management module
 - configuration settings 28
 - establishing a TCP/IP session 26
 - establishing a Telnet session 28
 - establishing a Web session 30
 - event log 22
 - external Ethernet ports 28
 - logging on 26
 - Web interface 26
- management workstation 28
- media access control (MAC) address label 2, 5

N

- network requirements 1, 7, 10
- next business day service level 58
- noncritical errors 39
- notes 4
- notes, important 62
- notices 61
 - electronic emission 65
 - FCC, Class A 65
- notices and statements 4

O

- obtaining the latest level of switch software 33
- obtaining warranty service 44
- OK LED 21, 22, 23
- on-site service 57
- online product registration 2
- options
 - BladeCenter Web site 1, 8
 - configuring 3
 - IBM ServerProven list 8
 - installing 7, 13

P

- part number label 5
- parts listing 37
- password rules
 - Telnet interface 28, 31
 - Web interface 30
- port fault 23
- port link activity status
 - Ethernet switch module 21, 22
 - switch module or SFP+ module port 23
- port link up/down status
 - Ethernet switch module 21, 22
 - switch module or SFP+ module port 23
- port status LEDs
 - Ethernet switch module 21, 22
- ports
 - external
 - Ethernet 28
 - status LEDs on Ethernet switch module 21, 22
 - status LEDs on switch module or SFP+ module port 23
- power-on self-test (POST)
 - completed 9
 - description 9
 - error log 22
 - failure 23
 - normal 9, 22
- product
 - information 1
 - name label 5
 - registration Web site 2
- product recycling and disposal 62
- protocols 2
- publications
 - related 3

R

- real-time information-panel display 30
- recycling and disposal, product 62
- registration, product 2
- related documentation 3
- remote access 25
- remote-management mode 25
- removing
 - fiber optic cables 18
 - serial console cable 17
 - SFP+ module 16
 - switch module 10
- requirements
 - hardware 1
 - logging on to the management module 26
 - logging on to the switch module
 - through the serial-port interface 29
 - through the Web interface 30
 - through the Web interface 30
- requirements, hardware 7
- resetting the switch module 35
- restarting the switch module 35
- RJ-45 cables
 - connecting 18
 - disconnecting 19

S

- safety certification label 5
- same business day service level 59
- same day service level 59
- serial console cable
 - connecting 17
 - disconnecting 17
 - parts listing 37
- serial number
 - label 5
 - location of 2
- serial-port interface
 - configuring the switch module 29
 - connecting to the switch module 29
- ServerProven list, IBM 8
- service
 - courier or depot 58
 - CRU and on-site 58
 - customer carry-in or mail-in 58
 - customer replaceable unit (CRU) 57
 - machine exchange 58
 - on-site 57
- service level
 - next business day 58
 - same business day 59
 - same day 59
- SFP+ module
 - cable, connecting 18
 - cable, disconnecting 18
 - description 13
 - handling 13
 - installation procedure 15
 - installing 15

- SFP+ module (*continued*)
 - port activity status 23
 - port link status 23
 - removing 16
- small form-factor pluggable module
 - removing 16
- software features 2
- software service and support 42
- software updates 33
- solving problems 39
- specifications 2
- standards 2
- starting a session
 - through the Telnet interface 28
 - through the Web interface 30
- statements and notices 4
- static-sensitive devices, handling 8
- status
 - port activity
 - Ethernet switch module 21, 22
 - switch module or SFP+ module port 23
 - port link
 - Ethernet switch module 21, 22
 - switch module or SFP+ module port 23
 - system 21, 22
- subnet masks 28
- support, web site 41
- switch module
 - accessing from a network-management workstation 28
 - cable requirements 8
 - cabling 17, 37
 - components 5
 - configuring 25
 - connection
 - through the browser-based interface 30
 - through the serial-port interface 29
 - through the Telnet interface 28, 31
 - documentation 3
 - Ethernet
 - port status LEDs 21, 22
 - ports 21
 - system-status LEDs 21, 22
 - external ports
 - enabling 10, 27
 - features, specifications, and standards 2
 - high-speed 7
 - installation guidelines 7
 - installing 7, 9
 - interconnections with blade server and expansion card 1
 - logging in
 - through the serial-port interface 29
 - through the Telnet interface 31
 - network requirements 1, 10
 - parts listing 37
 - product registration 2
 - removing or replacing 10
 - resetting and restarting 35
 - status
 - Ethernet switch module 21

- switch module *(continued)*
 - status *(continued)*
 - switch module 22
- switch software
 - determining the current level 33
 - obtaining the latest level 33
 - updating 33
 - upgrading 33
- switch-module error (!) LED 21, 22, 23
- system log 22
- system reliability 8
- system security, switch module 30
- system-error LED 21, 22
- system-status LED 21, 22

T

- TCP/IP session, management module 26
- telephone numbers 42
- Telnet program
 - accessing the switch module 28
 - configuration requirements 28
 - connecting to the switch module 28, 31
 - starting a session 28
- terms, country unique 47
- trademarks 61
- troubleshooting 39
- type of warranty 57

U

- unique terms, country 47
- United States electronic emission Class A notice 65
- United States FCC Class A notice 65
- updating the software 33
- upgrading the switch software 33

W

- warranty
 - general terms 43
 - service, obtaining 44
 - type 57
- Web interface
 - configuring through 30
 - main menu 30
 - requirements 30
 - starting a session 30
- web site
 - machine warranty 59
 - publication ordering 41
 - support 41
 - support line, telephone numbers 42
- Web site
 - BladeCenter documentation 3, 8
 - compatible BladeCenter options 8
 - IBM product information 1
 - IBM ServerProven list 1, 8
 - product registration 2
- Web-based network management 30



Part Number: 44R5056

Printed in USA

(1P) P/N: 44R5056

