

IBM BladeCenter Server Connectivity Module



Installation Guide

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Installation Guide

Note:

Before using this information and the product it supports, read the *Warranty Information* document, the general information in Appendix B, "Notices," on page 29, and the *Important Notices* document that comes with the product. Read the *IBM System Safety Notices* and the *License Agreement for Machine Code (LAMC)* document on the IBM Documentation CD. Read the *Environmental Notices and User Guide* on the IBM *Environmental Notices* CD.

Third Edition (June 2012)

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Safety

Before installing this product, read the Safety Information.

قبل تركيب هذا المنتج، يجب قراءة الملاحظات الأمنية

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

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

安裝本產品之前，請先閱讀「安全資訊」。

Prije instalacije ovog produkta obavezno pročitajte Sigurnosne Upute.

Před instalací tohoto produktu si přečtěte příručku bezpečnostních instrukcí.

Læs sikkerhedsforskrifterne, før du installerer dette produkt.

Lees voordat u dit product installeert eerst de veiligheidsvoorschriften.

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

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

Vor der Installation dieses Produkts die Sicherheitshinweise lesen.

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

לפני שתתקינו מוצר זה, קראו את הוראות הבטיחות.

A termék telepítése előtt olvassa el a Biztonsági előírásokat!

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

製品の設置の前に、安全情報をお読みください。

본 제품을 설치하기 전에 안전 정보를 읽으십시오.

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

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

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

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

Перед установкой продукта прочтите инструкции по технике безопасности.

Pred inštaláciou tohto zariadenia si pečítajte Bezpečnostné predpisy.

Pred namestitvijo tega proizvoda preberite Varnostne informacije.

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

Läs säkerhetsinformationen innan du installerar den här produkten.

Important:

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

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

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

Statement 1:



DANGER

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

To avoid a shock hazard:

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

To Connect:

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

To Disconnect:

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

Chapter 1. Introduction

This *Installation Guide* contains information about setting up, installing, and configuring the IBM® BladeCenter® Server Connectivity Module.

For installation details, see Chapter 2, “Installing and removing components,” on page 9. For additional information, see the instructions in your BladeCenter unit documentation. The IBM BladeCenter Server Connectivity Module is also referred to throughout this document as the switch module or I/O module.

You can obtain up-to-date information about the I/O module and other IBM products at <http://www.ibm.com/servers/eserver/support/xseries/index.html>.

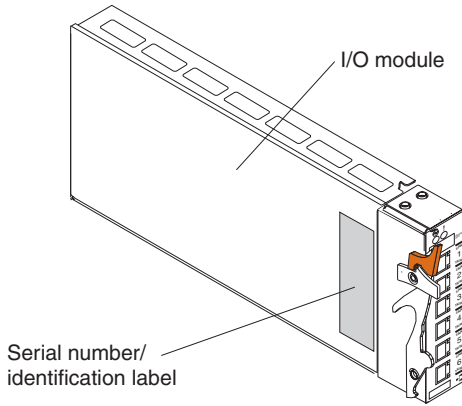
Notes:

- Unless otherwise stated, references to the BladeCenter unit apply to all BladeCenter unit types.
- 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.
- The illustrations in this document might differ slightly from your hardware.
- The sample screens that appear 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.
- Unless otherwise stated, references to the management module apply to all types of BladeCenter management modules.

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

Product name	IBM BladeCenter Server Connectivity Module
Serial number	_____
Other identifiers	_____

The following illustration shows the locations of the identification label and the serial number on the I/O module.



Related documentation

This *Installation Guide* contains setup, installation, configuration, and troubleshooting instructions for the I/O module. This document also provides general information about the I/O module, including warranty information, and how to get help.

The following related documentation is in Portable Document Format (PDF) on the *BladeCenter Documentation* CD that comes with your BladeCenter or BladeCenter T unit:

- *Safety Information*

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

- *BladeCenter Management Module User's Guide*

This document provides general information about the management module for your BladeCenter or BladeCenter T unit type, including information about features, how to configure the management module, and how to get help.

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

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

- *IBM BladeCenter Serial over LAN Setup Guide*

This document explains how to update and configure BladeCenter components for SOL operation. The SOL connection provides access to the text-console command prompt on each blade server, enabling the blade servers to be managed from a remote location.

The most recent versions of this *Installation Guide* and all other BladeCenter documentation are at <http://www.ibm.com/servers/eserver/support/bladecenter/index.html>.

Features and specifications

This section provides a summary of the features and specifications that apply to the Server Connectivity Module for IBM BladeCenter. For detailed information about the features, see the *IBM BladeCenter Server Connectivity Module User's Guide*.

Table 1. Features and specifications

- Simple Configuration and Control: This device should be configurable by a non-networking system administrator through a graphical user interface (GUI) or a command-line interface (CLI). Typical networking concepts, such as spanning tree redundancy, virtual local area networks (VLANs), port filters, link aggregation, port trunks, and remote monitoring (RMON) statistics are not typically used or understood by this class of administrator. The default operation will be to hide the underlying networking function and configuration from the user. Some functions, such as Spanning Tree Protocol, are eliminated since they are not required. Only a few simple networking parameters are available to the user to configure and control the Server Connectivity Module.
- Ports
 - Internal ports
 - Fourteen internal full-duplex Gigabit ports, one connected to each of the blade servers in the BladeCenter unit. Eight internal links in a BladeCenter-T chassis.
 - Two internal full-duplex 100 Mbps ports connected to the management module in slots 1 and 2.
 - External copper ports
 - Six external ports are provided using standard Category 5 enhanced (5e) copper cable connectors.
 - 10/100/1000 Mbps interfaces: The external ports connect at 10 Mbps Full Duplex, 100 Mbps Full Duplex, or 1 Gbps Full Duplex.
 - Auto-negotiation capability.
 - Copper connection for making connections to a backbone, end stations, and servers.
- Internal Switching: This device provides packet switching between the blade servers and management modules within the chassis to support Serial over LAN (SOL) and other future traffic flows. Blade-server-to-blade-server switching is supported for those blade server ports that are assigned to a common group. This support does not require explicit configuration to be operational.
- Configuration of the Server Connectivity Module is only through a connection to a management-module port and not through the external switch ports.
- Support for tagged VLANs: The administrator can define VLAN identifiers (IDs) to match specific server application requirements.
- Cisco EtherChannel compatible static link aggregation.
- Management-module control that allows for external ports to be enabled or disabled.
- Support for Ethernet jumbo frame formats (up to 9K bytes per frame).

Table 1. Features and specifications (continued)

<ul style="list-style-type: none">• Two independent internal 100 Mbps FDX links connected to each of two management modules (jumbo frame support not required on these links).• Management-module I²C interface that provides VPD and register access.• Level-2 (L2) switching per current industry standards and practice.• “Non-networking” device appearance allows administration and installation of this device by the system manager rather than a network administrator.• Port aggregation (external ports).• Port group failover (triggered by external ports).• IEEE 802.3x Flow Control.• Internet group multicast protocol (IGMP) snooping.• IEEE 802.1Q support for SOL and optional user VLAN tagging of external ports.• An embedded central processing subsystem for initialization, configuration, and management.• RADIUS or TACACS+ user authentication.
<ul style="list-style-type: none">• Network cables<ul style="list-style-type: none">– 10BASE-T:<ul style="list-style-type: none">- UTP Category 3, 4, 5 (100 meters or 328.1 ft maximum)- 100-ohm STP (100 meters or 328.1 ft maximum)– 100BASE-TX:<ul style="list-style-type: none">- UTP Category 5 (100 meters or 328.1 ft maximum)- EIA/TIA-568 100-ohm STP (100 meters or 328.1 ft maximum)– 1000BASE-T:<ul style="list-style-type: none">- UTP Category 6 (standard for 1 GB devices)- UTP Category 5e (100 meters or 328.1 ft maximum)- UTP Category 5 (100 meters or 328.1 ft maximum)- EIA/TIA-568B 100-ohm STP (100 meters or 328.1 ft maximum)

Standards

The Server Connectivity Module supports the following Institute of Electrical and Electronics Engineers (IEEE) standards:

- IEEE 802.3x
- IEEE 802.1Q (tagged) VLANs

Notices and statements in this document

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

The following notices and statements are used in this document:

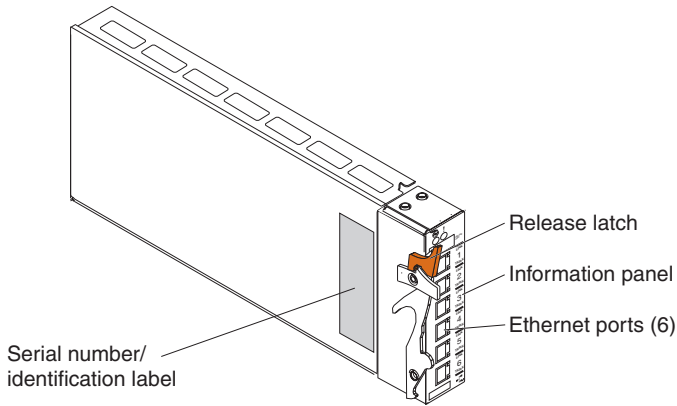
- **Note:** These notices provide important tips, guidance, or advice.
- **Important:** These notices provide information or advice that might help you avoid inconvenient or problem situations.
- **Attention:** These notices indicate possible damage to programs, devices, or data. An attention notice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

Major components of the I/O module

Orange on the release latch on the I/O module identifies this device as a hot-swap component. You can install or remove this component while the BladeCenter unit is running.

The following illustration shows the major components of the I/O module.

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



For more information about the components of the information panel, see Chapter 3, “Information panel LEDs and external ports,” on page 15.

Chapter 2. Installing and removing components

See the *Installation and User's Guide* for your BladeCenter unit type for information about the I/O-module bay locations in the BladeCenter unit and specific requirements for installing I/O modules in your BladeCenter unit.

Attention: To maintain proper system cooling, each I/O-module bay must contain either an I/O module or a filler module.

For details about network interface requirements and expansion options, see the following documents:

- *Installation and User's Guide* for your BladeCenter unit type
- *Installation and User's Guide* for each blade server type

Installation guidelines

Before you begin to install the I/O module in your BladeCenter unit, read the following information:

- Read the safety information that begins on page v and the guidelines in “Handling static-sensitive devices” on page 10, and read the safety statements in the BladeCenter unit publications. 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.
- Do not attempt to lift an object that you think is too heavy for you. If you have to lift a heavy object, observe the following precautions:
 - Make sure that you can stand safely without slipping.
 - Distribute the weight of the object equally between your feet.
 - Use a slow lifting force. Never move suddenly or twist when you lift a heavy object.
 - To avoid straining the muscles in your back, lift by standing or by pushing up with your leg muscles.
- Make sure that you have an adequate number of properly grounded electrical outlets for the BladeCenter unit, monitor, and other devices.
- Back up all important data before you make changes to disk drives.
- Have a small flat-blade screwdriver available.
- You do not have to turn off the BladeCenter unit to install or replace any of the hot-swap modules in the BladeCenter unit.
- Orange on the release latch on the I/O module identifies this device as a hot-swap component. You can install or remove this component while the

BladeCenter unit is running. See the instructions in this chapter for more information about installing or removing hot-swap or hot-plug components.

- If you plan to install additional I/O modules in the I/O-module bays of your BladeCenter unit, you might also have to install an I/O expansion card in the applicable blade server to support the I/O modules in these bays. For information about the types of compatible I/O expansion cards for the blade servers, contact your IBM authorized reseller. See the I/O expansion card documentation for details about I/O expansion card installation, configuration, and use.
- When you are finished working on the I/O module and all other BladeCenter unit components, reinstall all safety shields, guards, labels, and ground wires.
- For a list of supported options for the I/O module, see <http://www.ibm.com/servers/eserver/serverproven/compat/us/>.

Handling static-sensitive devices

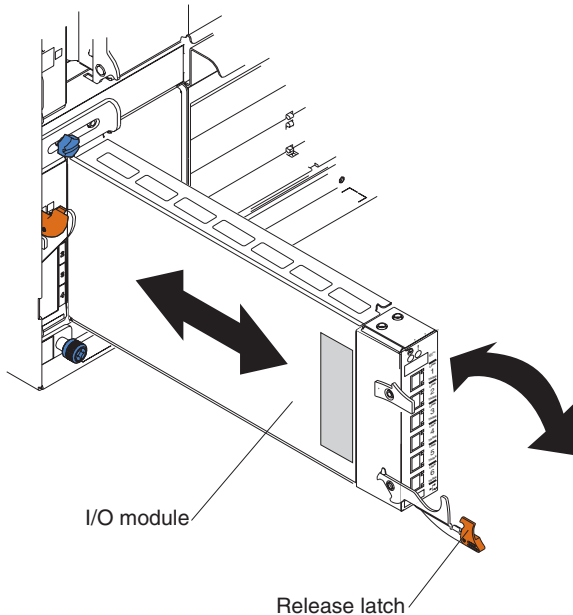
Attention: Static electricity can damage the system and other electronic devices. To avoid damage, keep static-sensitive devices in their static-protective packages until you are ready to install them.

To reduce the possibility of electrostatic discharge, 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 circuitry.
- Do not leave the device where others can handle and damage it.
- While the device is still in its static-protective package, touch it to an *unpainted* metal part of the BladeCenter unit or any *unpainted* metal surface on any other grounded rack component in the rack in which you are installing the device 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 chassis or on a metal surface.
- Take additional care when handling devices during cold weather. Heating reduces indoor humidity and increases static electricity.

Installing an I/O module

The following illustration shows how to install an I/O module into a Type 8677 BladeCenter unit. The appearance of your BladeCenter unit might be different. For additional information, see the documentation for your BladeCenter unit.



To install an I/O module, complete the following steps.

Attention: If the I/O module has a cover, make sure that the cover is installed and closed before you install the I/O module in the BladeCenter unit.

1. Read the safety information that begins on page v and “Installation guidelines” on page 9.
2. If an acoustic attenuation module is installed on your BladeCenter unit, remove it. See the documentation for your BladeCenter unit for instructions.
3. Select an I/O-module bay in which to install the I/O module.

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

4. Remove the filler module from the selected I/O-module bay. Store the filler module for future use.

5. If you have not already done so, touch the static-protective package that contains the I/O module to any *unpainted* metal surface of the BladeCenter unit or any *unpainted* metal surface on any other grounded rack component for at least 2 seconds.
6. Remove the I/O module from its static-protective package.
7. Make sure that the release latch on the I/O module is in the open position (perpendicular to the module).
8. Slide the I/O module into the I/O-module bay until it stops.

Important: The BladeCenter unit must be turned on before you can perform steps 9 and 10.

9. Push the release latch on the front of the I/O module to the closed position. After you insert and lock the I/O module, it is turned on, and a power-on self-test (POST) occurs to verify that the I/O module is operating correctly.
10. The POST results are displayed by the status LEDs. Make sure that the LEDs on the I/O module indicate that it is operating correctly. Make sure that the power LED on each I/O module is lit. See Chapter 3, “Information panel LEDs and external ports,” on page 15 for a more detailed description of the operation of these LEDs.
For additional information, see Chapter 5, “Solving problems,” on page 21.
11. If you have other I/O modules to install, do so now; otherwise, go to step 12.

Note: To make sure that the BladeCenter unit installation complies with EMC product regulations for intra-building lightning surges, you must use shielded LAN cables that are grounded at both ends.

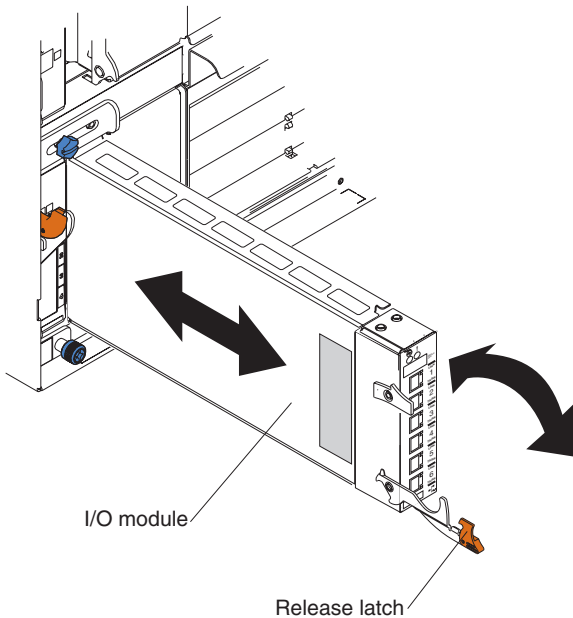
12. Attach any cables or cords that are required by the I/O module. For cable requirements, see page 5.
13. Replace the acoustic attenuation module, if you removed it in step 2 on page 11.

Removing an I/O module

Attention: To maintain proper cooling and system reliability, each I/O-module bay in the BladeCenter unit must have either an I/O module or filler module installed. If you remove a hot-swap module, you must replace it with another module or filler module within 1 minute of removal.

To remove an I/O module, complete the following steps.

1. Read the safety information that begins on page v and “Installation guidelines” on page 9.
2. If an acoustic attenuation module is installed on your BladeCenter unit, remove it. See the documentation for your BladeCenter unit for instructions.
3. Observe or record the locations of the cable connectors on the I/O module. You will need this information when you reconnect the cables. Then, disconnect any cables from the I/O module that you are removing.
4. Pull the release latch toward the bottom of the I/O module as shown in the following illustration. The module moves out of the I/O-module bay approximately 0.64 cm (0.25 inch).



5. Slide the I/O module out of the I/O-module bay and set it aside.
6. Place either another I/O module or a filler module in the I/O-module bay within 1 minute.

7. If you placed another I/O module in the I/O-module bay, reconnect any compatible cables that you disconnected in step 3 on page 13. If a cable that you disconnected is not compatible with the new I/O module, you will have to connect a new cable that is compatible with the new I/O module.
8. Replace the acoustic attenuation module, if you removed it in step 2 on page 13.

Chapter 3. Information panel LEDs and external ports

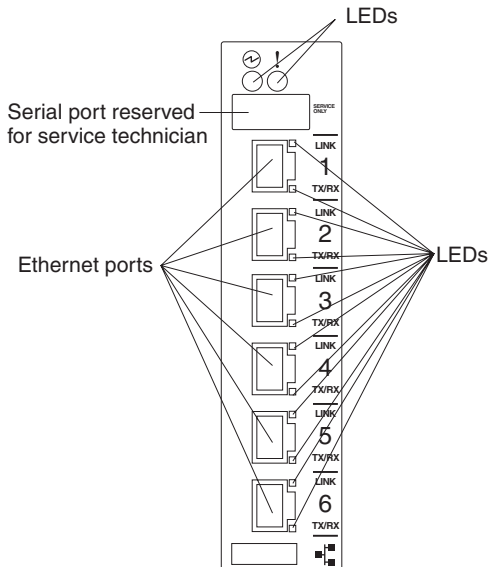
This chapter describes the information panel and LEDs on the Server Connectivity Module. This chapter also identifies the external ports on the information panel.

Information panel

As shown in the following illustrations, the information panel of the I/O module contains the following LEDs and ports:

- The LEDs that display the status of the I/O module and the network (see “LEDs” on page 16).
- The I/O module has six external 1000BASE-T Ethernet ports for 10/100/1000 Mbps connections to external Ethernet devices, such as backbones, end stations, and servers. These ports are identified as EXT1, EXT2, EXT3, EXT4, EXT5, and EXT6 in the switch configuration menus and are labeled 1 through 6 (from top to bottom) on the I/O module.
- The I/O module has a serial port that is reserved for service technicians only. This port does not support additional devices; therefore, do not connect any devices to this port.

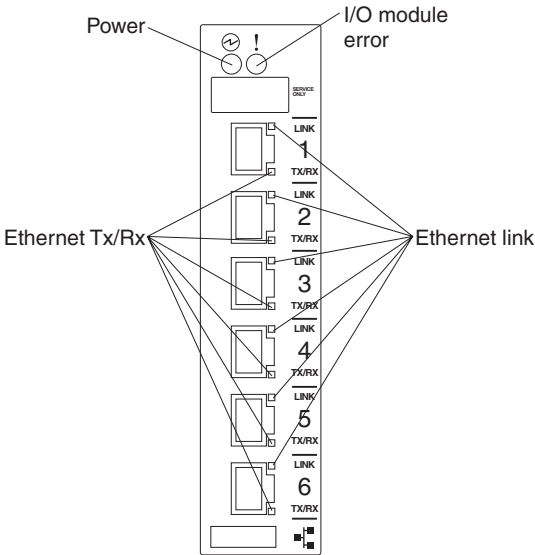
The following illustration shows the information panel for the I/O module.



LEDs

The LEDs on the information panel of the I/O module are power and I/O module error (fault). In addition, each external port on the I/O module contains an Ethernet link LED and an Ethernet Tx/Rx LED. The following illustrations show the LEDs on the I/O modules. A description of each LED follows the illustrations.

The following illustration shows the LEDs on the I/O module.



Power: This green active LED is on the left side of the information panel, above the service port. When this LED is lit, it indicates that the I/O module has passed the power-on self-test (POST) with no critical faults and is operational.

! I/O module error (fault): This amber LED is on the right side of the information panel, above the service port. When this LED is lit, it indicates that the I/O module has failed the POST or detected an operational fault.

Note: When the I/O module error LED is lit, the system-error LED on the BladeCenter unit will also be lit.

Ethernet link: This green link status LED is at the top of each external 10/100/1000 Mbps port. When this LED is lit on a port, it indicates that there is an active connection (or link) to a device using that connector.

Ethernet Tx/Rx: This green activity LED is at the bottom of each external 10/100/1000 Mbps port. When this LED flashes on a port, it indicates that data is being transmitted or received (that is, activity is occurring) between that port and another device on the network link. The flash frequency is proportional to the amount of traffic on the network link.

Chapter 4. Updating the software and configuring the switch module

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

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

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

Chapter 5. Solving problems

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

If you cannot locate and correct the problem using the information in this section, see Appendix A, “Getting help and technical assistance,” on page 25.

Running POST

To ensure that it is fully operational, the I/O 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 POST fails, the amber I/O module error (fault) LED and the system-error LED on the BladeCenter unit will be 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 pane of the management-module interface.

Notes:

- For the location and description of the I/O module LEDs, see Chapter 3, “Information panel LEDs and external ports,” on page 15.
- See the *BladeCenter Management Module User’s Guide* for additional information about system status, event logs, and system errors.

POST errors

There are two types of errors: noncritical and critical. A noncritical error applies to one port, and the I/O module is operational. You can continue to operate the I/O module; however, you must replace it as soon as possible. When critical errors occur, the I/O module does not operate. If a critical error occurs, complete the following steps:

1. Open the Management Module Switch Information window.
2. Turn off the I/O module; then, turn it back on.
3. After POST is completed, the management-module interface displays the results. Refresh the window to view the POST results. If the error remains, the I/O module is defective. Replace the I/O module.

The following table describes the basic critical and noncritical failures. This abbreviated list is representative; it is not intended as an exhaustive list. An error code is associated with each failure. Error codes appear 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 IBM. For more details, see Appendix A, “Getting help and technical assistance,” on page 25.

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	I/O module “good” indicator	Operation

Chapter 6. Parts listing

The following table shows the list of the parts that come with the I/O module option. This parts listing supports the copper models of the Server Connectivity Module.

Note: Field replaceable units (FRUs) should be serviced only by qualified field service technicians. Customer replaceable units (CRUs) can be replaced by the customer.

Part	CRU number	CRU/FRU
IBM BladeCenter Server Connectivity Module	39Y9327	CRU

Appendix A. Getting help and technical assistance

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

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

Using the documentation

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

information and download device drivers and updates. To access these pages, go to <http://www.ibm.com/servers/eserver/support/bladecenter/index.html> 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 BladeCenter systems, optional devices, services, and support at <http://www.ibm.com/servers/eserver/support/bladecenter/index.html>.

Software service and support

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

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

Hardware service and support

You can receive hardware service through IBM Services or through your IBM reseller, if your reseller is authorized by IBM to provide warranty service. See <http://www.ibm.com/planetwide/> for support telephone numbers, or in the U.S. and Canada, call 1-800-IBM-SERV (1-800-426-7378).

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

IBM Taiwan product service

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

IBM Taiwan product service contact information:

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

Appendix B. Notices

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Important notes

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

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When referring to processor storage, real and virtual storage, or channel volume, KB stands for approximately 1000 bytes, MB stands for approximately 1 000 000 bytes, and GB stands for approximately 1 000 000 000 bytes.

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

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

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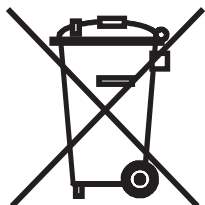
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This appliance is labeled in accordance with European Directive 2002/96/EC concerning waste electrical and electronic equipment (WEEE). The Directive determines the framework for the return and recycling of used appliances as applicable throughout 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.

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Battery return program

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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:



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.

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

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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

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Australia and New Zealand Class A statement

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New Orchard Road
Armonk, New York 10504
914-499-1900

European Community contact:

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

Germany Class A statement

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Generelle Informationen:

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VCCI-A

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

Russia Electromagnetic Interference (EMI) Class A statement

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People's Republic of China Class A electronic emission statement

中华人民共和国“A类”警告声明

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Federal Communications Commission (FCC) statement

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Industry Canada Class A emission compliance statement

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

Avis de conformité à la réglementation d'Industrie Canada

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

Australia and New Zealand Class A statement

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

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Deutschland: Einhaltung des Gesetzes über die elektromagnetische Verträglichkeit von Geräten

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

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Generelle Informationen:

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

VCCI Class A statement

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

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В жилых помещениях оно может создавать радиопомехи, для
снижения которых необходимы дополнительные меры

People's Republic of China Class A electronic emission statement

中华人民共和国“A类”警告声明

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

Taiwan Class A compliance statement

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

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Part Number: 42C4871-03

Printed in USA