IBM System x3755 Type 8877

IBM

Problem Determination and Service Guide

IBM System x3755 Type 8877

Problem Determination and Service Guide

Note: Before using this information and the product it supports, read the general information in Appendix B, "Notices," on page 141.

Contents

Safety

Before installing this product, read the Safety Information.

قبل تركيب هذا المنتج، يجب قراءة الملاحظات الآمنية

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 pečítaje 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.

Guidelines for trained service technicians

This section contains information for trained service technicians.

Inspecting for unsafe conditions

Use the information in this section to help you identify potential unsafe conditions in an IBM product that you are working on. Each IBM product, as it was designed and manufactured, has required safety items to protect users and service technicians from injury. The information in this section addresses only those items. Use good judgment to identify potential unsafe conditions that might be caused by non-IBM alterations or attachment of non-IBM features or optional devices that are not addressed in this section. If you identify an unsafe condition, you must determine how serious the hazard is and whether you must correct the problem before you work on the product.

Consider the following conditions and the safety hazards that they present:

- Electrical hazards, especially primary power. Primary voltage on the frame can cause serious or fatal electrical shock.
- Explosive hazards, such as a damaged CRT face or a bulging capacitor.
- Mechanical hazards, such as loose or missing hardware.

To inspect the product for potential unsafe conditions, complete the following steps:

1. Make sure that the power is off and the power cord is disconnected.
2. Make sure that the exterior cover is not damaged, loose, or broken, and observe any sharp edges.
3. Check the power cord:
   - Make sure that the third-wire ground connector is in good condition. Use a meter to measure third-wire ground continuity for 0.1 ohm or less between the external ground pin and the frame ground.
   - Make sure that the power cord is the correct type, as specified in "Power cords" on page 90.
   - Make sure that the insulation is not frayed or worn.
4. Remove the cover.
5. Check for any obvious non-IBM alterations. Use good judgment as to the safety of any non-IBM alterations.
6. Check inside the server for any obvious unsafe conditions, such as metal filings, contamination, water or other liquid, or signs of fire or smoke damage.
7. Check for worn, frayed, or pinched cables.
8. Make sure that the power-supply cover fasteners (screws or rivets) have not been removed or tampered with.

Guidelines for servicing electrical equipment

Observe the following guidelines when you service electrical equipment:

- Check the area for electrical hazards such as moist floors, nongrounded power extension cords, and missing safety grounds.
- Use only approved tools and test equipment. Some hand tools have handles that are covered with a soft material that does not provide insulation from live electrical current.
- Regularly inspect and maintain your electrical hand tools for safe operational condition. Do not use worn or broken tools or testers.

- Do not touch the reflective surface of a dental mirror to a live electrical circuit. The surface is conductive and can cause personal injury or equipment damage if it touches a live electrical circuit.
- Some rubber floor mats contain small conductive fibers to decrease electrostatic discharge. Do not use this type of mat to protect yourself from electrical shock.
- Do not work alone under hazardous conditions or near equipment that has hazardous voltages.
- Locate the emergency power-off (EPO) switch, disconnecting switch, or electrical outlet so that you can turn off the power quickly in the event of an electrical accident.
- Disconnect all power before you perform a mechanical inspection, work near power supplies, or remove or install main units.
- Before you work on the equipment, disconnect the power cord. If you cannot disconnect the power cord, have the customer power-off the wall box that supplies power to the equipment and lock the wall box in the off position.
- Never assume that power has been disconnected from a circuit. Check it to make sure that it has been disconnected.
- If you have to work on equipment that has exposed electrical circuits, observe the following precautions:
  – Make sure that another person who is familiar with the power-off controls is near you and is available to turn off the power if necessary.
  – When you work with powered-on electrical equipment, use only one hand. Keep the other hand in your pocket or behind your back to avoid creating a complete circuit that could cause an electrical shock.
  – When you use a tester, set the controls correctly and use the approved probe leads and accessories for that tester.
  – Stand on a suitable rubber mat to insulate you from grounds such as metal floor strips and equipment frames.
- Use extreme care when you measure high voltages.
- To ensure proper grounding of components such as power supplies, pumps, blowers, fans, and motor generators, do not service these components outside of their normal operating locations.
- If an electrical accident occurs, use caution, turn off the power, and send another person to get medical aid.

Safety statements

Important:

Each caution and danger statement in this documentation begins 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 begins with a number 1, translations for that caution statement appear in the *Safety Information* document 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:	To Disconnect:
1. Turn everything OFF.	1. Turn everything OFF.
2. First, attach all cables to devices.	2. First, remove power cords from outlet.
3. Attach signal cables to connectors.	3. Remove signal cables from connectors.
4. Attach power cords to outlet.	4. Remove all cables from devices.
5. Turn device ON.	

Statement 2:

CAUTION:
When replacing the lithium battery, use only IBM Part Number 33F8354 or an equivalent type battery recommended by the manufacturer. If your system has a module containing a lithium battery, replace it only with the same module type made by the same manufacturer. The battery contains lithium and can explode if not properly used, handled, or disposed of.

Do not:
- **Throw or immerse into water**
- **Heat to more than 100°C (212°F)**
- **Repair or disassemble**

Dispose of the battery as required by local ordinances or regulations.

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.

Statement 4:
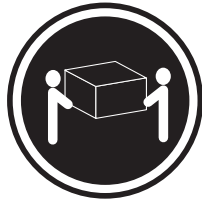
≥ 18 kg (39.7 lb)　　　　　　≥ 32 kg (70.5 lb)　　　　　　≥ 55 kg (121.2 lb)
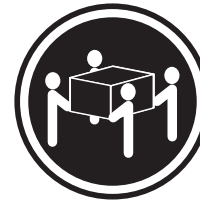
CAUTION:
Use safe practices when lifting.

Statement 5:

CAUTION:
The power control button on the device and the power switch on the power
supply do not turn off the electrical current supplied to the device. The device
also might have more than one power cord. To remove all electrical current
from the device, ensure that all power cords are disconnected from the power
source.
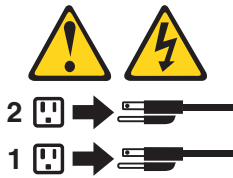
Statement 8:

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.

Statement 26:

CAUTION:
Do not place any object on top of rack-mounted devices.

Statement 27:

CAUTION:
Hazardous moving parts are nearby.

Chapter 1. Introduction

This *Problem Determination and Service Guide* contains information to help you solve problems that might occur in your IBM® System x3755 Type 8877 server. It describes the diagnostic tools that come with the server, error codes and suggested actions, and instructions for replacing failing components.

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:** 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 and getting service and assistance, see the *Warranty and Support Information* document.

Related documentation

In addition to this document, the following documentation also comes with the server:

- *Installation Guide*

  This printed document contains instructions for setting up the server and basic instructions for installing some optional devices.

- *User's Guide*

  This document is in Portable Document Format (PDF) on the IBM *System x*™ *Documentation* CD. It provides general information about the server, including information about features, and how to configure the server. It also contains detailed instructions for installing, removing, and connecting optional devices that the server supports.

- *Rack Installation Instructions*

  This printed document contains instructions for installing the server in a rack.

- *Safety Information*

  This document is in PDF on the IBM *System x Documentation* CD. It 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.

- *Warranty and Support Information*

  This document is in PDF on the IBM *System x Documentation* CD. It contains information about the terms of the warranty and getting service and assistance.

Depending on the server model, additional documentation might be included on the IBM *System x Documentation* CD.

The System x and xSeries® Tools Center is an online information center that contains information about tools for updating, managing, and deploying firmware, device drivers, and operating systems. The System x and xSeries Tools Center is at http://publib.boulder.ibm.com/infocenter/toolsctr/v1r0/index.jsp.

1

The server might have features that are not described in the documentation that comes with the server. The documentation might be updated occasionally to include information about those features, or technical updates might be available to provide additional information that is not included in the server documentation. These updates are available from the IBM Web site. To check for updated documentation and technical updates, complete the following steps.

Note: Changes are made periodically to the IBM Web site. The actual procedure might vary slightly from what is described in this document.

1. Go to http://www.ibm.com/servers/eserver/support/xseries/index.html.
2. From the **Hardware** list, select **System x3755** and click **Go**.
3. Click the **Install and use** tab.
4. Click **Product documentation**.

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

Features and specifications

The following information is a summary of the features and specifications of the server. Depending on the server model, some features might not be available, or some specifications might not apply.

Table 1. Features and specifications

Microprocessor:
- AMD Opteron™
- 1 MB Level-2 cache
- Support for up to four dual-core microprocessors

Note: Use the Configuration/Setup Utility program to determine the type and speed of the microprocessors.

Memory:
- Minimum: 1 GB depending on server model, expandable to 128 GB
- Type: 667 MHz, registered, ECC, PC2-5300 double data rate (DDR) II, SDRAM
- Sizes: 512 MB, 1 GB, 2 GB, or 4 GB in pairs
- Connectors: Two-way interleaved, eight dual inline memory module (DIMM) connectors per microprocessor/memory card
- Maximum: Four microprocessor/memory cards, each card containing four pairs of PC2-5300 DDRII DIMMs

Drives:
- Slim CD-RW/DVD: IDE
- Serial Attached SCSI (SAS) hard disk drives

Expansion bays:
- Four SAS, 3.5-inch bays
- One 5.25-inch bay (CD-RW/DVD drive installed)

Expansion slots:
- One PCI Express x16 (full-length)
- Two PCI Express x8 (full-length)
- One PCI Express x4 (full-length)
- Two 100 MHz/64-bit PCI-X (full-length)
- One HTX (half-length)

Upgradeable microcode:

System BIOS, diagnostics, service processor, BMC, CPLD, and SAS microcode

Power supply:
- Standard: One dual-rated power supply
  - 1500 watts at 220 V ac input
  - 750 watts at 110 V ac input
- Upgradeable to two power supplies (redundant at 220 V ac only)

Size:
- 4 U
- Height: 178 mm (7 in.)
- Depth: 711 mm (28 in.)
- Width: 483 mm (19 in.)
- Weight: approximately 43.2 kg (95.25 lb) when fully configured or 29.5 kg (65 lb) minimum

Racks are marked in vertical increments of 4.45 cm (1.75 inches). Each increment is referred to as a unit, or "U." A 1-U-high device is 4.45 cm (1.75 inches) tall.

Integrated functions:
- Support for ServeRAID-8k-I or ServeRAID-8k SAS controller
- Baseboard management controller (BMC)
- Service processor support for Remote Supervisor Adapter II SlimLine
- Light path diagnostics
- Three Universal Serial Bus (USB) ports (2.0)
  - Two on front of server
  - One on rear of server
- Two Broadcom 5708 10/100/1000 Ethernet controllers (with Wake on LAN support)
- ATI ES1000 video controller
- Mouse connector
- Keyboard connector
- Serial connector
- Trusted platform module

Acoustical noise emissions:
- Sound power, idle: 6.6 bel declared
- Sound power, operating: 6.6 bel declared

Environment:
- Air temperature:
  - Server on: 10° to 35°C (50.0° to 95.0°F); altitude: 0 to 2133 m (6998.0 ft)
  - Server off: 10° to 43°C (50.0° to 109.4°F); maximum altitude: 2133 m (6998.0 ft)
- Humidity:
  - Server on: 8% to 80%
  - Server off: 8% to 80%

Heat output:

Approximate heat output in British thermal units (Btu) per hour:
- Minimum configuration: 683 Btu per hour (200 watts)
- Maximum configuration: 6598 Btu per hour (1932 watts)

Electrical input:
- Sine-wave input (50-60 Hz) required
- Input voltage low range:
  - Minimum: 100 V ac
  - Maximum: 127 V ac
- Input voltage high range:
  - Minimum: 200 V ac
  - Maximum: 240 V ac
- Approximate input kilovolt-amperes (kVA):
  - Minimum: 0.20 kVA
  - Maximum: 1.93 kVA

Notes:

1. Power consumption and heat output vary depending on the number and type of optional features that are installed and the power-management optional features that are in use.

2. These levels were measured in controlled acoustical environments according to the procedures that are specified by the American National Standards Institute (ANSI) S12.10 and ISO 7779 and are reported in accordance with ISO 9296. Actual sound-pressure levels in a given location might exceed the average stated values because of room reflections and other nearby noise sources. The declared sound-power levels indicate an upper limit, below which a large number of computers will operate.

Server controls, connectors, LEDs, and power

This section describes the controls, connectors, and light-emitting diodes (LEDs) and how to turn the server on and off.

Front view

The following illustration shows the controls, LEDs, and connectors on the front of the server.
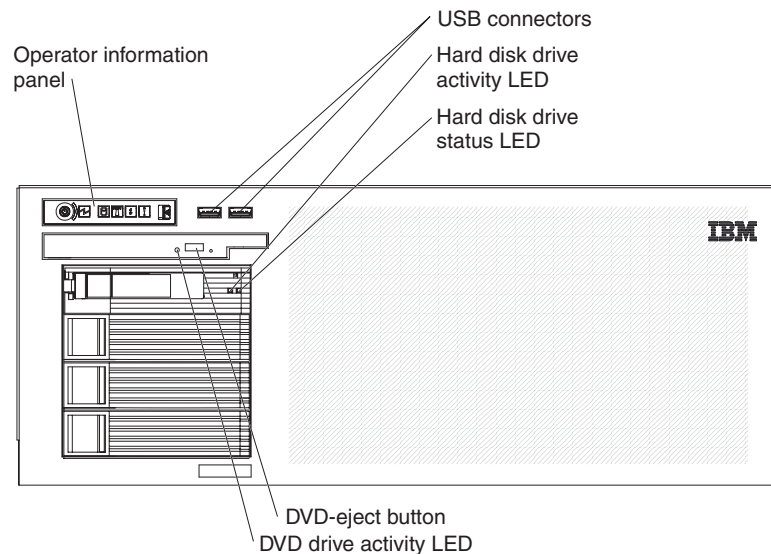
Operator information panel: The following illustration shows the controls and LEDs on the operator information panel.
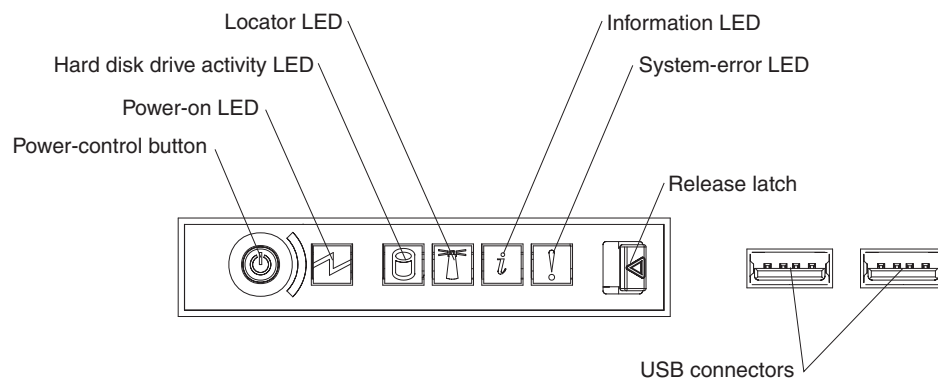
The following controls and LEDs are on the operator information panel:

Power-control button: Press this button to turn the server on and off manually. A power-control-button shield comes with the server.

Power-on LED: When this LED is lit and not flashing, it indicates that the server is turned on. When this LED is flashing, it indicates that the server is turned off and still connected to an ac power source. When this LED is off, it indicates that ac power is not present, or the power supply or the LED itself has failed.

Note: If this LED is off, it does not mean that there is no electrical power in the server. The LED might be burned out. To remove all electrical power from the server, you must disconnect the power cords from the electrical outlets.

Hard disk drive activity LED: When this LED is flashing, it indicates that a SAS hard disk drive is in use.

Locator LED: When this LED is lit, it has been lit remotely by the system administrator to aid in visually locating the server.

Information LED: When this LED is lit, it indicates that a noncritical event has occurred. An LED on the light path diagnostics panel is also lit to help isolate the error.

System-error LED: When this LED is lit, it indicates that there is a fault or condition in the server and that light path diagnostics might light an additional LED to help isolate the condition.

Release latch: Slide this latch to the left to access the light path diagnostics panel.

USB connectors: Connect USB devices to these connectors.

Hard disk drive activity LED: On some server models, each hot-swap hard disk drive has an activity LED. When this LED is flashing, it indicates that the drive is in use.

Hard disk drive status LED: If the server is configured for RAID operation, when this LED is lit, it indicates that the associated hard disk drive has failed. If the LED flashes slowly (one flash per second), the drive is being rebuilt. If the LED flashes rapidly (three flashes per second), the controller is identifying the drive.

DVD-eject button: Press this button to release a CD or DVD from the DVD drive.

DVD drive activity LED: When this LED is lit, it indicates that the DVD drive is in use.

Rear view

The following illustration shows the connectors and LEDs on the rear of the server.
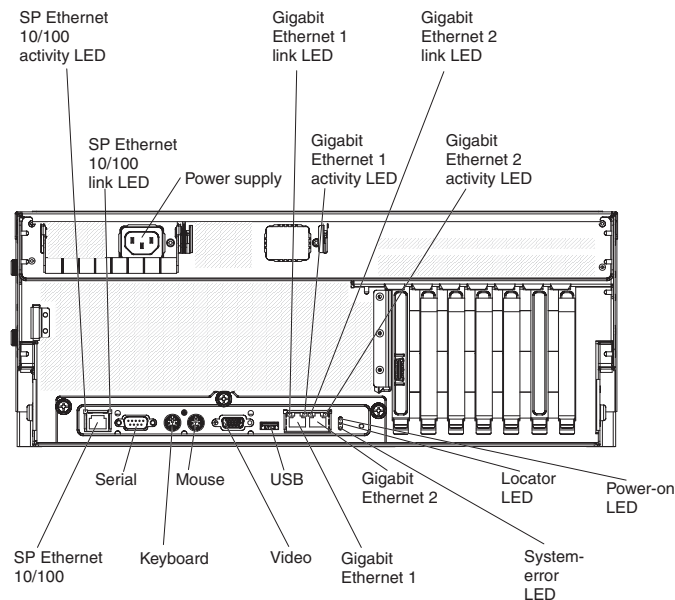
SP Ethernet 10/100 activity LED: This LED is on the SP Ethernet 10/100 connector. When this LED is lit, it indicates that there is activity between the server and the network.

SP Ethernet 10/100 link LED: This LED is on the SP Ethernet 10/100 connector. When this LED is lit, it indicates that there is an active connection on the Ethernet port.

Power-supply connector: Connect the power cord to this connector.

Gigabit Ethernet 1 link LED: This LED is on the Gigabit Ethernet 1 connector. When this LED is lit, it indicates that there is an active connection on the Ethernet port.

Gigabit Ethernet 1 activity LED: This LED is on the Gigabit Ethernet 1 connector. When this LED flashes, it indicates that there is activity between the server and the network.

Gigabit Ethernet 2 link LED: This LED is on the Gigabit Ethernet 2 connector. When this LED is lit, it indicates that there is an active connection on the Ethernet port.

Gigabit Ethernet 2 activity LED: This LED is on the Gigabit Ethernet 2 connector. When this LED flashes, it indicates that there is activity between the server and the network.

Power-on LED: When this LED is lit and not flashing, it indicates that the server is turned on. When this LED is flashing, it indicates that the server is turned off and still connected to an ac power source. When this LED is off, it indicates that ac power is not present, or the power supply or the LED itself has failed.

Note: If this LED is off, it does not mean that there is no electrical power in the server. The LED might be burned out. To remove all electrical power from the server, you must disconnect the power cords from the electrical outlets.

Locator LED: When this LED is lit, it has been lit remotely by the system administrator to aid in visually locating the server.

System-error LED: When this LED is lit, it indicates that there is a fault or condition in the server and that light path diagnostics might light an additional LED to help isolate the condition.

Gigabit Ethernet 2 connector: Use this connector to connect the server to a network.

Gigabit Ethernet 1 connector: Use this connector to connect the server to a network.

USB connector: Connect a USB device to this connector.

Video connector: Connect a monitor to this connector.

Mouse connector: Connect a mouse or other device to this connector.

Keyboard connector: Connect a keyboard to this connector.

Serial connector: Connect a 9-pin serial device to this connector. The serial port is shared with the baseboard management controller (BMC). The BMC can take control of the shared serial port to perform text console redirection and to redirect serial traffic, using Serial over LAN (SOL).

SP Ethernet 10/100 connector: Use this connector to connect the service processor to a network.

Internal LEDs, connectors, and jumpers

The illustrations in this section show the LEDs, connectors, and jumpers on the internal boards. The illustrations might differ slightly from your hardware.

I/O board internal connectors

The following illustration shows the internal connectors on the I/O board.
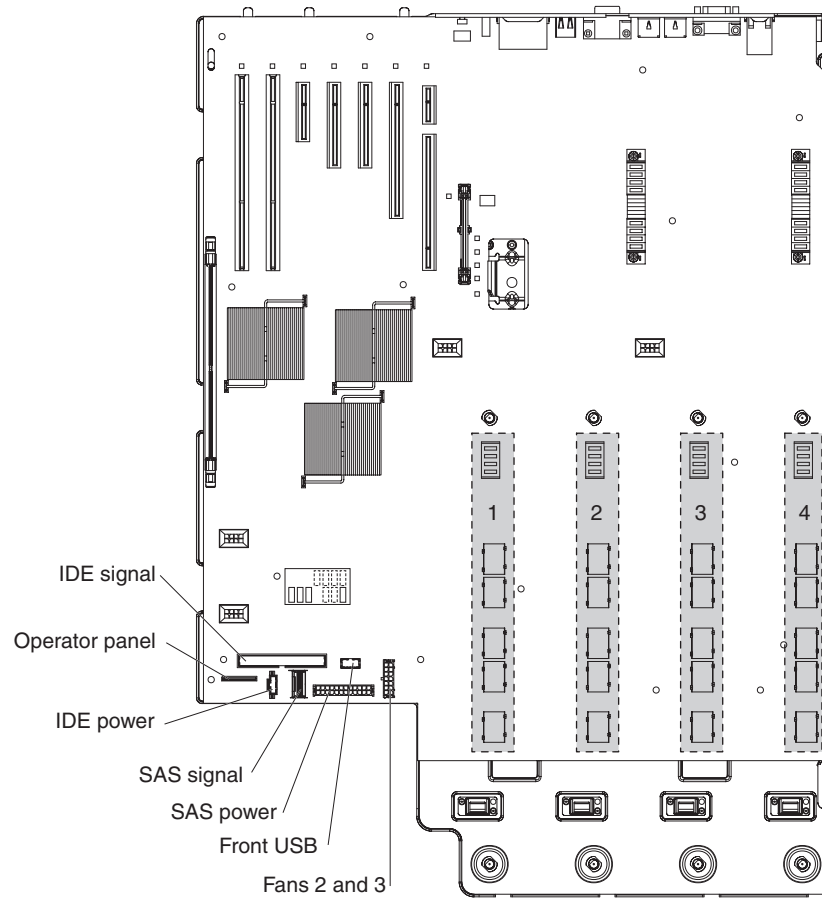
I/O board internal optional-device connectors

The following illustration shows the internal connectors on the I/O board for user-installable optional devices.
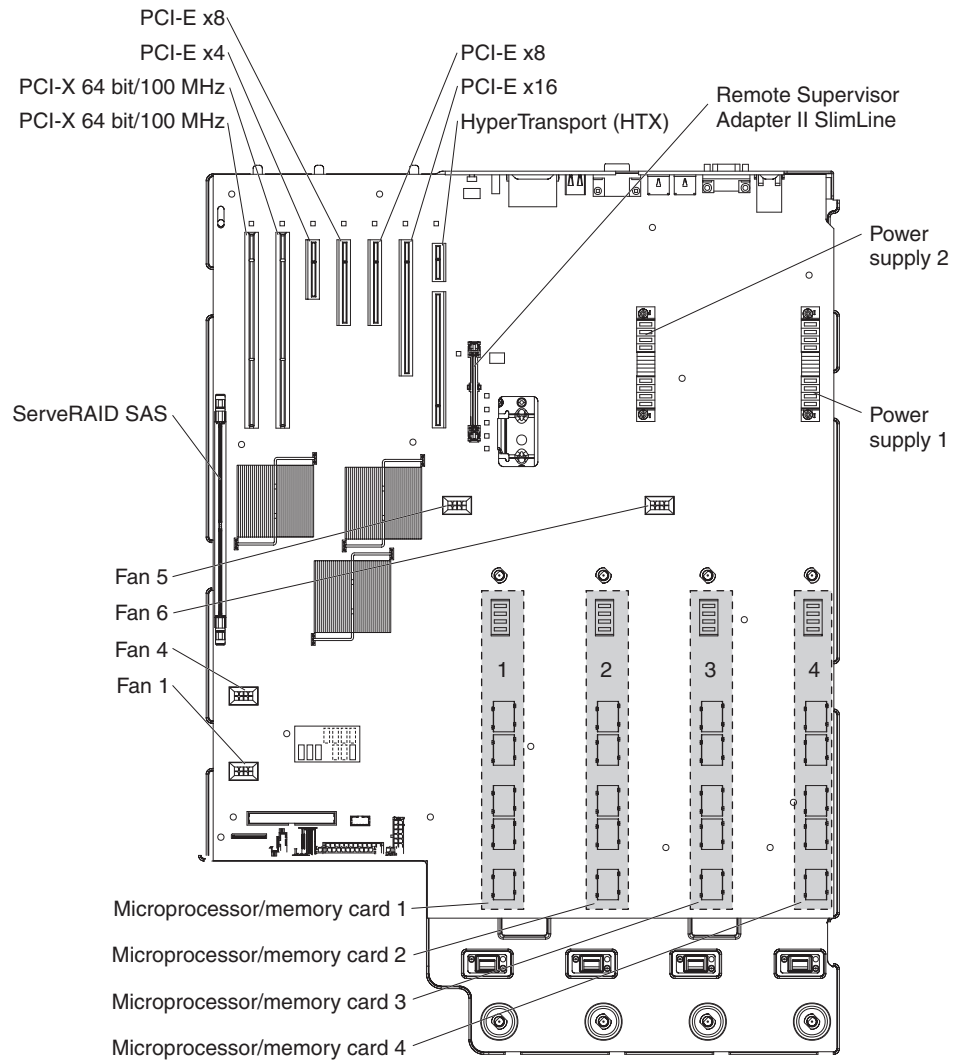
I/O board jumpers

The following illustration shows the jumpers on the I/O board.

Force power on (J68)

Power-on password (J65)

Boot recovery (BIOS) (J64)

Wake on LAN (J63)
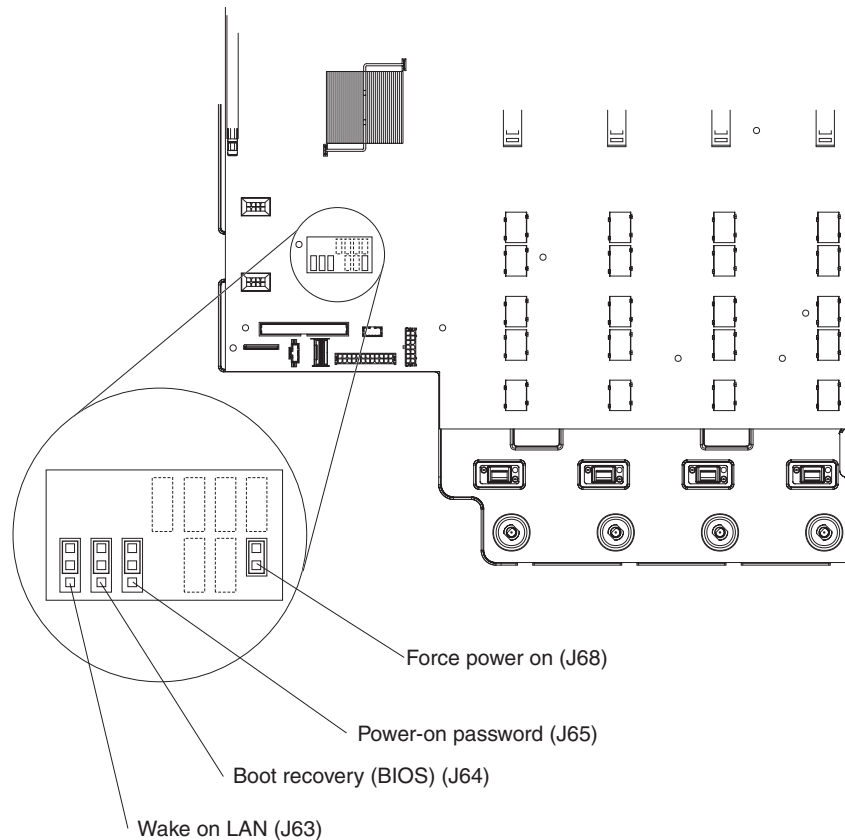
Table 2 describes the function of each jumper block.

Table 2. I/O board jumper blocks

Jumper name	Description
Force power on (J68)	Position a jumper over pins 1 and 2 on this two-pin jumper block to force the server to start up when you connect the server to ac power.
Power-on password (J65)	The default position is pins 1 and 2. Change the position of this jumper to pins 2 and 3 to bypass the power-on password check. Changing the position of this jumper does not affect the administrator password check if an administrator password is set. If you forget the administrator password, you must replace the I/O board. For more information about passwords, see "Passwords" on page 132.
Boot recovery (BIOS) (J64)	The default position is pins 1 and 2 (use the primary page during startup). Move the jumper to pins 2 and 3 to use the secondary page during startup.
Wake on LAN (J63)	The default position is pins 1 and 2. Move the jumper to pins 2 and 3 to prevent a Wake on LAN packet from waking the system when the system is in the powered-off state.

I/O board LEDs

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

Slot 3 error LED
Slot 4 error LED
Slot 5 error LED
Slot 6 error LED

Slot 2 error LED
Slot 1 error LED
HTX error LED
I/O board error LED

RAID controller error LED
RAID DIMM error LED
RAID battery error LED
BMC heartbeat LED
SP error LED
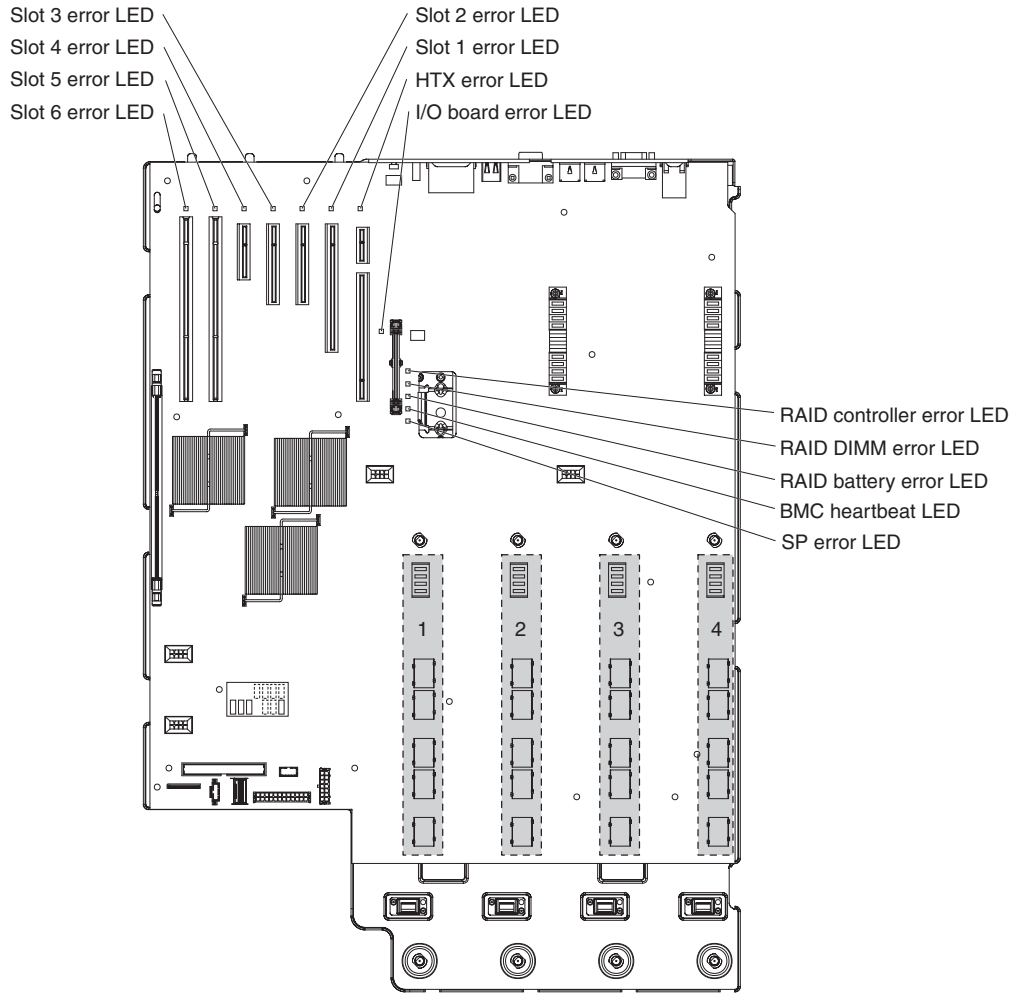
Microprocessor/memory-card connectors

The following illustration shows the connectors on the microprocessor/memory card.

DIMM 1
DIMM 2
DIMM 3
DIMM 4
DIMM 5
DIMM 6
DIMM 7
DIMM 8
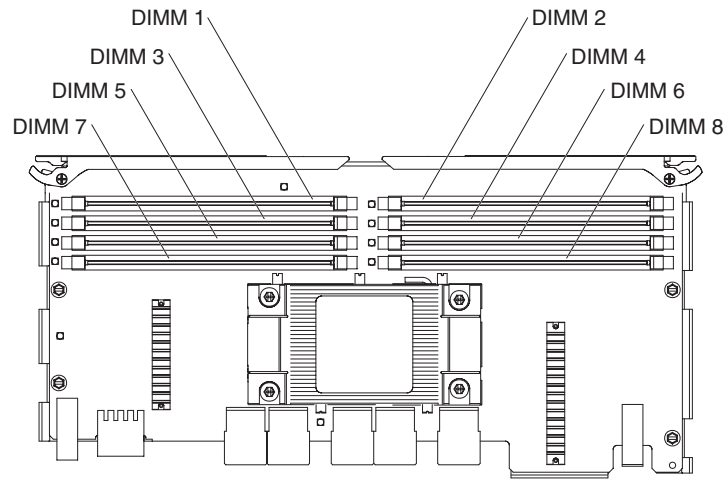
Microprocessor/memory-card LEDs

The following illustration shows the LEDs on the microprocessor/memory card.

DIMM 1 error LED
DIMM 2 error LED
DIMM 3 error LED
DIMM 4 error LED
DIMM 5 error LED
DIMM 6 error LED
DIMM 7 error LED
DIMM 8 error LED

Light path diagnostics button power LED

Light path diagnostics button

Microprocessor/memory card error LED

Microprocessor error LED
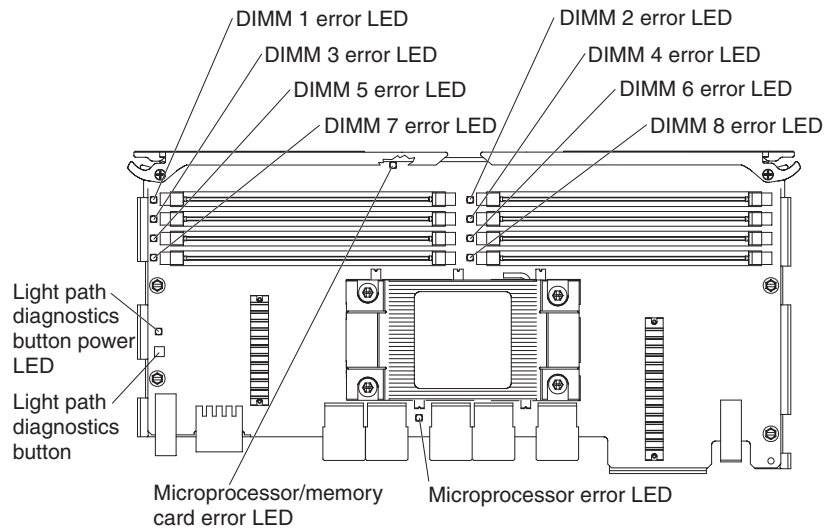
SAS-backplane connectors

The following illustration shows the connectors on the SAS backplane.

SAS hard disk drive connectors

SAS power

SAS signal
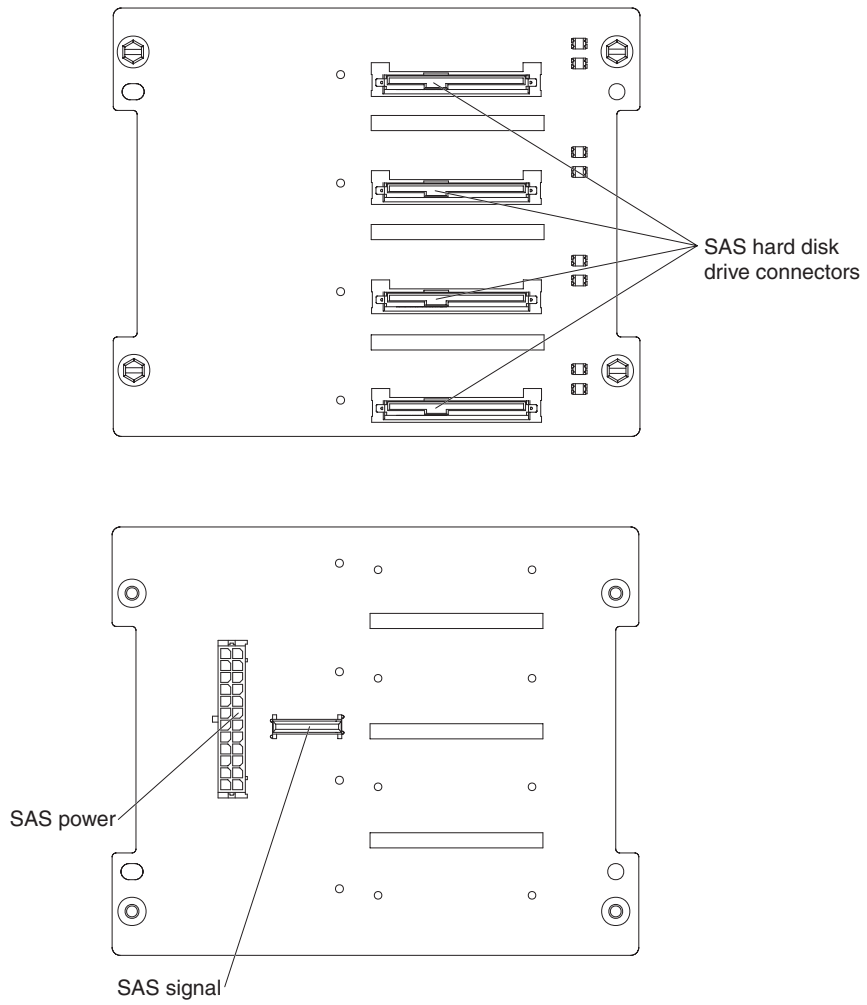
Chapter 2. Diagnostics

This chapter describes the diagnostic tools that are available to help you solve problems that might occur in the server.

If you cannot diagnose and correct a problem by using the information in this chapter, see Appendix A, "Getting help and technical assistance," on page 139 for more information.

Diagnostic tools

The following tools are available to help you diagnose and solve hardware-related problems:

- **POST beep codes, error messages, and error logs**

  The power-on self-test (POST) generates beep codes and messages to indicate successful test completion or the detection of a problem. See "POST" for more information.

- **Troubleshooting tables**

  These tables list problem symptoms and actions to correct the problems. See "Troubleshooting tables" on page 29.

- **Light path diagnostics**

  Use the light path diagnostics to diagnose system errors quickly. See "Light path diagnostics" on page 41 for more information.

- **Diagnostic programs, messages, and error messages**

  The diagnostic programs are the primary method of testing the major components of the server. The diagnostic programs are in read-only memory on the server. See "Diagnostic programs, messages, and error codes" on page 50 for more information.

POST

When you turn on the server, it performs a series of tests to check the operation of the server components and some optional devices in the server. This series of tests is called the power-on self-test, or POST.

If a power-on password is set, you must type the password and press Enter, when you are prompted, for POST to run.

If POST is completed without detecting any problems, a single beep sounds, and the server startup is completed.

If POST detects a problem, more than one beep might sound, or an error message is displayed. See "Beep code descriptions" on page 14 and "POST error codes" on page 20 for more information.

POST beep codes

A beep code is a combination of short or long beeps or series of short beeps that are separated by pauses. For example, a "1-2-3" beep code is one short beep, a pause, two short beeps, a pause, and three short beeps. A beep code other than one beep indicates that POST has detected a problem. To determine the meaning of a beep code, see "Beep code descriptions" on page 14. If no beep code sounds, see "No-beep symptoms" on page 19.

Beep code descriptions

The following table describes the beep codes and suggested actions to correct the detected problems.

A single problem might cause more than one error message. When this occurs, correct the cause of the first error message. The other error messages usually will not occur the next time POST runs.

Exception: If there are multiple error codes or light path diagnostics LEDs that indicate a microprocessor error, the error might be in a microprocessor or in a microprocessor/memory card connector. See "Microprocessor problems" on page 34 for information about diagnosing microprocessor problems.

- **Follow the suggested actions in the order in which they are listed in the Action column until the problem is solved.**
- **See Chapter 3, "Parts listing, System x3755 Type 8877," on page 87 to determine which components are customer replaceable units (CRU) and which components are field replaceable units (FRU).**
- **If an action step is preceded by "(Trained service technician only)," that step must be performed only by a trained service technician.**

Beep code	Description	Action
1-1-3	CMOS write/read test failed.	(Trained service technician only) Replace the I/O board.
1-1-4	BIOS ROM checksum failed.	1. Restart the server using the backup BIOS page (see "Recovering from a BIOS update failure" on page 60). 2. Flash the BIOS code. 3. (Trained service technician only) Replace the I/O board.
1-2-1	Programmable interval timer failed.	(Trained service technician only) Replace the I/O board.
1-2-2	DMA initialization failed.	(Trained service technician only) Replace the I/O board.
1-2-3	DMA page register write/read failed.	(Trained service technician only) Replace the I/O board.
1-2-4	RAM refresh verification failed.	1. Reseat the microprocessor/memory cards. 2. Reseat the DIMMs. 3. Replace the following components one at a time, in the order shown, restarting the server each time: a. DIMMs b. Microprocessor/memory card 4, 3, 2; then, 1
1-3-1	First 64K RAM test failed.	1. Reseat the first microprocessor/memory card that contains DIMMs. 2. Reseat the DIMMs. 3. Replace the following components one at a time, in the order shown, restarting the server each time: a. DIMMs b. Microprocessor/memory card 4, 3, 2; then, 1

- **Follow the suggested actions in the order in which they are listed in the Action column until the problem is solved.**
- **See Chapter 3, "Parts listing, System x3755 Type 8877," on page 87 to determine which components are customer replaceable units (CRU) and which components are field replaceable units (FRU).**
- **If an action step is preceded by "(Trained service technician only)," that step must be performed only by a trained service technician.**

Beep code	Description	Action

1-3-2	First 64K RAM parity test failed.	1. Reseat the microprocessor/memory cards.
		2. Reseat the DIMMs.
		3. Replace the following components one at a time, in the order shown, restarting the server each time:
		   a. DIMMs
		   b. Microprocessor/memory card 4, 3, 2; then, 1

2-1-1	Secondary DMA register failed.	(Trained service technician only) Replace the I/O board.
2-1-2	Primary DMA register failed.	(Trained service technician only) Replace the I/O board.
2-1-3	Primary interrupt mask register failed.	(Trained service technician only) Replace the I/O board.
2-1-4	Secondary interrupt mask register failed.	(Trained service technician only) Replace the I/O board.
2-2-1	Interrupt vector loading failed.	(Trained service technician only) Replace the I/O board.

2-2-2	Keyboard controller failed.	1. Reseat the keyboard.
		2. Replace the following components one at a time, in the order shown, restarting the server each time:
		   a. Keyboard
		   b. (Trained service technician only) I/O board

2-2-3	CMOS power failure and checksum checks failed.	1. Reseat the battery.
		2. Replace the following components one at a time, in the order shown, restarting the server each time:
		   a. Battery
		   b. (Trained service technician only) I/O board

2-2-4	CMOS configuration information validation failed.	1. Reseat the battery.
		2. Replace the following components one at a time, in the order shown, restarting the server each time:
		   a. Battery
		   b. (Trained service technician only) I/O board

2-3-1	Screen initialization failed.	(Trained service technician only) Replace the I/O board.

- **Follow the suggested actions in the order in which they are listed in the Action column until the problem is solved.**
- **See Chapter 3, "Parts listing, System x3755 Type 8877," on page 87 to determine which components are customer replaceable units (CRU) and which components are field replaceable units (FRU).**
- **If an action step is preceded by "(Trained service technician only)," that step must be performed only by a trained service technician.**

Beep code	Description	Action
2-3-2	Screen memory failed.	(Trained service technician only) Replace the I/O board.
2-3-3	Screen retrace failed.	(Trained service technician only) Replace the I/O board.
2-3-4	Search for video ROM failed.	(Trained service technician only) Replace the I/O board.
2-4-1	Video failed; screen believed operable.	(Trained service technician only) Replace the I/O board.
2-4-4	Unsupported memory configuration.	1. If POST error code 289 is displayed, follow the suggested actions for that error (see "POST error codes" on page 20 for more information about the 289 error). 2. Check the DIMM error LEDs.
3-1-1	Timer tick interrupt failed.	(Trained service technician only) Replace the I/O board.
3-1-2	Interval timer channel 2 failed.	(Trained service technician only) Replace the I/O board.

3-1-3	RAM test failed above address 0FFFFh.	1. Reseat the microprocessor/memory cards.
		2. Reseat the DIMMs.
		3. Replace the following components one at a time, in the order shown, restarting the server each time:
		  a. DIMMs
		  b. Microprocessor/memory card 4, 3, 2; then, 1
		  c. (Trained service technician only) I/O board

3-1-4	Time-of-day clock failed.	1. Reseat the battery.
		2. Replace the following components one at a time, in the order shown, restarting the server each time:
		  a. Battery
		  b. (Trained service technician only) I/O board

3-2-1	Serial port failed.	(Trained service technician only) Replace the I/O board.

- **Follow the suggested actions in the order in which they are listed in the Action column until the problem is solved.**
- **See Chapter 3, "Parts listing, System x3755 Type 8877," on page 87 to determine which components are customer replaceable units (CRU) and which components are field replaceable units (FRU).**
- **If an action step is preceded by "(Trained service technician only)," that step must be performed only by a trained service technician.**

Beep code	Description	Action

3-2-4	Failure comparing CMOS memory size against actual	1. Reseat the following components:
		  a. Microprocessor/memory cards
		  b. DIMMs
		  c. Battery
		2. Replace the following components one at a time, in the order shown, restarting the server each time:
		  a. Microprocessor/memory card 4, 3, 2; then, 1
		  b. DIMMs
		  c. Battery
		  d. (Trained service technician only) I/O board

3-3-1	Memory size mismatch occurred.	1. Verify that both DIMMs in the bank are of the same size, speed, type and technology.
		2. Reseat the following components:
		  a. Microprocessor/memory cards
		  b. DIMMs
		  c. Battery
		3. Replace the following components one at a time, in the order shown, restarting the server each time:
		  a. DIMMs
		  b. Microprocessor/memory card 4, 3, 2; then, 1
		  c. Battery
		  d. (Trained service technician only) I/O board

3-3-2	Critical SMBUS error occurred.	1. Reseat the microprocessor/memory cards.
		2. Reseat the DIMMs.
		3. Replace the following components one at a time, in the order shown, restarting the server each time.
		  a. DIMMs
		  b. Microprocessor/memory card 4, 3, 2; then, 1
		  c. (Trained service technician only) I/O board

- **Follow the suggested actions in the order in which they are listed in the Action column until the problem is solved.**
- **See Chapter 3, "Parts listing, System x3755 Type 8877," on page 87 to determine which components are customer replaceable units (CRU) and which components are field replaceable units (FRU).**
- **If an action step is preceded by "(Trained service technician only)," that step must be performed only by a trained service technician.**

Beep code	Description	Action
3-3-3	No operational memory in system.	**Important:** In some memory configurations, the 3-3-3 beep code might sound during POST, followed by a blank monitor screen. If this occurs and the **Boot Fail Count** feature in the **Start Options** of the Configuration/Setup Utility program is enabled (its default setting), you must restart the server three times to reset the configuration settings to the default configuration (the memory connector or bank of connectors enabled). 1. Install or reseat DIMMS and restart the server. 2. Reseat the microprocessor/memory cards and restart the server. 3. Replace the following components one at a time, in the order shown, restarting the server each time: a. DIMMs b. Microprocessor/memory card 4, 3, 2; then, 1 c. (Trained service technician only) I/O board
Two short beeps	Information only, configuration has changed.	Run the Configuration/Setup Utility program.
Three short beeps	Memory error.	1. Reseat the microprocessor/memory cards. 2. Reseat the DIMMs. 3. Replace the following components one at a time, in the order shown, restarting the server each time: a. DIMMs b. Microprocessor/memory card 4, 3, 2; then, 1 c. (Trained service technician only) I/O board
One continuous beep	Microprocessor error.	1. Reseat microprocessor/memory cards. 2. Replace the following components one at a time, in the order shown, restarting the server each time: a. Microprocessor/memory card 1, 2, 3; then, 4 b. (Trained service technician only) I/O board

• Follow the suggested actions in the order in which they are listed in the Action column until the problem is solved.		
• See Chapter 3, "Parts listing, System x3755 Type 8877," on page 87 to determine which components are customer replaceable units (CRU) and which components are field replaceable units (FRU).		
• If an action step is preceded by "(Trained service technician only)," that step must be performed only by a trained service technician.		
Beep code	**Description**	**Action**

Repeating short beeps	Keyboard error.	1. Make sure that nothing is resting on the keyboard.
		2. Reseat the keyboard cable.
		3. Replace the following components one at a time, in the order shown, restarting the server each time:
		   a. Keyboard
		   b. (Trained service technician only) I/O board

No-beep symptoms

• Follow the suggested actions in the order in which they are listed in the Action column until the problem is solved.		
• See Chapter 3, "Parts listing, System x3755 Type 8877," on page 87 to determine which components are customer replaceable units (CRU) and which components are field replaceable units (FRU).		
• If an action step is preceded by "(Trained service technician only)," that step must be performed only by a trained service technician.		
No-beep symptom	**Description**	**Action**
No beeps occur, and the server operates correctly.		1. Reseat the operator information panel cable. 2. Replace the operator information panel assembly.
No beep sound, and no video is displayed (the system error LED is off).		See "Solving undetermined problems" on page 85.
No beep sounds, and no video is displayed (the system attention LED is lit).		See "Light path diagnostics LEDs" on page 44.

Error logs

The POST error log contains the three most recent error codes and messages that were generated during POST. The BMC log and the system-error log contain messages that were generated during POST and all system status messages from the service processor.

You can view the contents of the POST error log, the BMC log, and the system-error log from the Configuration/Setup Utility program. You can view the contents of the BMC log also from the diagnostic programs.

When you are troubleshooting PCI slots, note that the error logs report the PCI-X buses numerically. The numerical assignments vary depending on the configuration.

You can check the assignments by running the Configuration/Setup Utility program (see the *User's Guide* for more information).

Viewing error logs from the Configuration/Setup Utility program

For complete information about using the Configuration/Setup Utility program, see the *User's Guide*.

To view the error logs, complete the following steps:

1. Turn on the server.
2. When the prompt `Press F1 for Configuration/Setup` is displayed, press F1. If you have set both a power-on password and an administrator password, you must type the administrator password to view the error logs.
3. Use one of the following procedures:
   - To view the POST error log, select **Error Logs**, and then select **POST Error Log**.
   - To view the BMC log, select **Advanced Settings**, select **Baseboard Management Controller (BMC) settings**, and then select **BMC System Event Log**.
   - To view the system-error log (available only if an optional Remote Supervisor Adapter II SlimLine is installed), select **Event/Error Logs**, and then select **System Event/Error Log**.

Viewing the BMC log from the diagnostic programs

The BMC log contains the same information, whether it is viewed from the Configuration/Setup Utility program or from the diagnostic programs.

For information about using the diagnostic programs, see "Running the diagnostic programs" on page 50.

To view the BMC log, complete the following steps:

1. If the server is running, turn off the server and all attached devices.
2. Turn on all attached devices; then, turn on the server.
3. When the prompt `F2 for Diagnostics` is displayed, press F2. If you have set both a power-on password and an administrator password, you must type the administrator password to run the diagnostic programs.
4. From the top of the screen, select **Hardware Info**.
5. From the list, select **BMC Log**.

POST error codes

The following table describes the POST error codes and suggested actions to correct the detected problems. See http://www.ibm.com/servers/eserver/support/xseries/index.html to check for updated technical information.

- **Follow the suggested actions in the order in which they are listed in the Action column until the problem is solved.**
- **See Chapter 3, "Parts listing, System x3755 Type 8877," on page 87 to determine which components are customer replaceable units (CRU) and which components are field replaceable units (FRU).**
- **If an action step is preceded by "(Trained service technician only)," that step must be performed only by a trained service technician.**

Error code	Description	Action

161	Real-time clock battery error.	1. Run the Configuration/Setup Utility program.
		2. Reseat the battery.
		3. Replace the following components one at a time, in the order shown, restarting the server each time:
		  a. Battery
		  b. (Trained service technician only) I/O board

162	Device configuration error.	1. Run the Configuration/Setup Utility program, select **Load Default Settings**, and save the settings.
		2. Reseat the following components:
		  a. Battery
		  b. Failing device
		3. Replace the following components one at a time, in the order shown, restarting the server each time:
		  a. Battery
		  b. Failing device
		  c. (Trained service technician only) I/O board

163	Real-time clock error.	1. Run the Configuration/Setup Utility program, select **Load Default Settings**, make sure that the date and time are correct, and save the settings.
		2. Reseat the battery.
		3. Replace the following components one at a time, in the order shown, restarting the server each time:
		  a. Battery
		  b. (Trained service technician only) I/O board

184	Power-on password damaged.	1. Run the Configuration/Setup Utility program, select **Load Default Settings**, and save the settings. 2. (Trained service technician only) Replace the I/O board.
189	An attempt was made to access the server with invalid passwords.	Restart the server, run the Configuration/Setup Utility program and change the power-on password.
199	Processor power rating unsupported.	1. Make sure that the microprocessor that was just installed has a supported power rating. If the power rating is not supported, replace the microprocessor/memory card with one that has a supported power rating. 2. Update BIOS code. 3. Replace the microprocessor/memory card.

- **Follow the suggested actions in the order in which they are listed in the Action column until the problem is solved.**
- **See Chapter 3, "Parts listing, System x3755 Type 8877," on page 87 to determine which components are customer replaceable units (CRU) and which components are field replaceable units (FRU).**
- **If an action step is preceded by "(Trained service technician only)," that step must be performed only by a trained service technician.**

Error code	Description	Action

201	Memory test error.	1. Update BIOS code and run the diagnostic programs again.
		2. Reseat the microprocessor/memory cards.
		3. Reseat the DIMMs.
		4. Replace the following components one at a time, in the order shown, restarting the server each time.
		  a. DIMMs
		  b. Microprocessor/memory card 4, 3, 2; then, 1
		  c. (Trained service technician only) I/O board

289	DIMM disabled by user or system.	1. If the DIMM was disabled by the user, run the Configuration/Setup Utility program and enable the DIMM.
		2. Reseat the disabled DIMM.
		3. Reseat the microprocessor/memory cards.
		4. Replace the following components one at a time, in the order shown, restarting the server each time:
		  a. Disabled DIMM
		  b. Microprocessor/memory card that contains the disabled DIMM
		  c. (Trained service technician only) I/O board

301	Keyboard or keyboard controller error.	1. If you have installed a USB keyboard, run the Configuration/Setup Utility program and enable keyboardless operation to prevent the POST error message 301 from being displayed during startup.
		2. Reseat the keyboard.
		3. Replace the following components one at a time, in the order shown, restarting the server each time:
		  a. Keyboard
		  b. (Trained service technician only) I/O board

303	Keyboard controller error.	(Trained service technician only) Replace the I/O board.
11xx	System board serial port error.	1. Reseat the external cable on the serial port. 2. Run the Configuration/Setup Utility program. 3. (Trained service technician only) Replace the I/O board.

- **Follow the suggested actions in the order in which they are listed in the Action column until the problem is solved.**
- **See Chapter 3, "Parts listing, System x3755 Type 8877," on page 87 to determine which components are customer replaceable units (CRU) and which components are field replaceable units (FRU).**
- **If an action step is preceded by "(Trained service technician only)," that step must be performed only by a trained service technician.**

Error code	Description	Action
1162	Serial port configuration conflicts.	1. Run the Configuration/Setup Utility program to ensure that the IRQ and I/O port assignments that are needed by the serial port are available. 2. If all interrupts are being used by adapters, remove an adapter or force other adapters to share an interrupt.

1200	Processor machine check.	1. Check the system-error log or BMC log (see "Error logs" on page 19).
		2. Reseat microprocessor/memory card 4, 3, 2; then, 1.
		3. Replace the following components one at a time, in the order shown, restarting the server each time:
		   a. Microprocessor/memory card 4, 3, 2; then, 1
		   b. (Trained service technician only) I/O board

1762	Hard disk configuration error.	1. Reseat the hard disk drive.
		2. Run the Configuration/Setup Utility program and load the defaults.
		3. Replace the following components one at a time, in the order shown, restarting the server each time:
		   a. Hard disk drive
		   b. (Trained service technician only) I/O board

1800	Unavailable PCI hardware interrupt.	1. Run the Configuration/Setup Utility program and adjust the adapter settings. 2. Remove each adapter one at a time, restarting the server each time, until the problem is isolated.

- **Follow the suggested actions in the order in which they are listed in the Action column until the problem is solved.**
- **See Chapter 3, "Parts listing, System x3755 Type 8877," on page 87 to determine which components are customer replaceable units (CRU) and which components are field replaceable units (FRU).**
- **If an action step is preceded by "(Trained service technician only)," that step must be performed only by a trained service technician.**

Error code	Description	Action

1801	An adapter has requested memory resources that are not available	1. Rearrange the order of the adapters in the PCI slots, if possible.
		2. Run the Configuration/Setup Utility program, select **Startup Options**, and change the startup sequence.
		3. Run the Configuration/Setup Utility program and disable other resources, if possible.
		   a. Select **Startup Options** to disable the onboard Ethernet controller option ROM.
		   b. Select **Advanced Setup** to disable the option ROM of adapters in the PCI slots.
		   c. Select **Devices and I/O Ports** to disable any of the integrated devices.
		4. If the problem remains, replace the following components one at a time, in the order shown, restarting the server each time:
		   a. Each adapter
		   b. (Trained service technician only) I/O board

1962	A drive does not contain a valid boot sector.	1. Make sure that a bootable operating system is installed.
		2. Reseat the hard disk drive.
		3. Run the hard disk drive diagnostic test.
		4. Check for a valid RAID configuration, if a RAID configuration is in use.
		5. Replace the following components one at a time, in the order shown, restarting the server each time:
		   a. Hard disk drive
		   b. SAS backplane
		   c. (Trained service technician only) I/O board
		   d. SAS cables

2400	Video controller test failure.	1. Reseat the video adapter (if installed).
		2. Replace the following components one at a time, in the order shown, restarting the server each time:
		   a. Video adapter (if installed)
		   b. (Trained service technician only) I/O board

2462	Video memory configuration error.	(Trained service technician only) Replace the I/O board.

- **Follow the suggested actions in the order in which they are listed in the Action column until the problem is solved.**
- **See Chapter 3, "Parts listing, System x3755 Type 8877," on page 87 to determine which components are customer replaceable units (CRU) and which components are field replaceable units (FRU).**
- **If an action step is preceded by "(Trained service technician only)," that step must be performed only by a trained service technician.**

Error code	Description	Action

5962	IDE CD or DVD drive configuration error.	1. Run the Configuration/Setup Utility program, select **Load Default Settings**, and save the settings.
		2. Reseat the following components:
		  a. CD or DVD drive power cable
		  b. CD or DVD drive IDE cable
		  c. CD or DVD drive
		3. Replace the following components one at a time, in the order shown, restarting the server each time:
		  a. CD or DVD drive power cable
		  b. CD or DVD drive IDE cable
		  c. CD or DVD drive
		  d. (Trained service technician only) I/O board
		  e. Battery

8603	Pointing-device error.	1. Reseat the pointing device.
		2. Replace the following components one at a time, in the order shown, restarting the server each time:
		  a. Pointing device
		  b. (Trained service technician only) I/O board

00019xxx	Processor x is not functioning or failed built in self test.	1. Reseat the microprocessor/memory card containing microprocessor *x*.
		2. Replace the following components one at a time, in the order shown, restarting the server each time:
		  a. Microprocessor/memory card that contains microprocessor x
		  b. (Trained service technician only) I/O board

00180xxx	A PCI adapter requested a resource that is not available.	1. See http://www.ibm.com/servers/eserver/support/ xseries/index.html and search for MIGR-61663 for additional information about the error code.
		2. Make sure that the BIOS code is at the latest level.
		3. Run the Configuration/Setup Utility program to verify that the interrupt resource settings are correct.
		4. Reseat the failing adapter (if installed).
		5. Replace the following components one at a time, in the order shown, restarting the server each time:
		  a. Failing adapter
		  b. (Trained service technician only) I/O board

- **Follow the suggested actions in the order in which they are listed in the Action column until the problem is solved.**
- **See Chapter 3, "Parts listing, System x3755 Type 8877," on page 87 to determine which components are customer replaceable units (CRU) and which components are field replaceable units (FRU).**
- **If an action step is preceded by "(Trained service technician only)," that step must be performed only by a trained service technician.**

Error code	Description	Action
012980xx	Processor patch (microcode) missing.	1. Update the BIOS code. 2. Reseat the microprocessor/memory card that contains microprocessor xx. 3. Replace the microprocessor/memory card that contains microprocessor xx.
012981xx	Processor patch (microcode) update failed.	1. Update the BIOS code. 2. Reseat the microprocessor/memory card that contains microprocessor xx. 3. Replace the microprocessor/memory card that contains microprocessor xx.
01298200	Processor speed mismatch.	Make sure that all microprocessors have the same number of cores, cache size and type, clock speed, internal and external clock frequencies (see "Configuration/Setup Utility menu choices" on page 129).

19990301	Hard disk sector error.	1. Reseat the hard disk drive.
		2. Replace the following components one at a time, in the order shown, restarting the server each time:
		  a. Hard disk drive
		  b. (Trained service technician only) I/O board

19990305	An operating system was not found.	1. Make sure that a bootable operating system is installed.
		2. Run the hard disk drive diagnostic test.
		3. Reseat the hard disk drive.
		4. Replace the following components one at a time, in the order shown, restarting the server each time:
		  a. Hard disk drive
		  b. (Trained service technician only) I/O board

Checkout procedure

The checkout procedure is the sequence of tasks that you should follow to diagnose a problem in the server.

About the checkout procedure

Before you perform the checkout procedure for diagnosing hardware problems, review the following information:

- Read the safety information that begins on page vii.
- The diagnostic programs provide the primary methods of testing the major components of the server, such as the I/O board, Ethernet controllers, keyboard,

mouse (pointing device), serial ports, and hard disk drives. You can also use them to test some external devices. If you are not sure whether a problem is caused by the hardware or by the software, you can use the diagnostic programs to confirm that the hardware is working correctly.

- When you run the diagnostic programs, a single problem might cause more than one error message. When this happens, correct the cause of the first error message. The other error messages usually will not occur the next time you run the diagnostic programs.

  Exception: If there are multiple error codes or light path diagnostics LEDs that indicate a microprocessor error, the error might be in a microprocessor or in a microprocessor/memory card connector. See "Microprocessor problems" on page 34 for information about diagnosing microprocessor problems.

- Before you run the diagnostic programs, you must determine whether the failing server is part of a shared hard disk drive cluster (two or more servers that share external storage devices). If it is part of a cluster, you can run all diagnostic programs except the ones that test the storage unit (that is, a hard disk drive in the storage unit) or the storage adapter that is attached to the storage unit. The failing server might be part of a cluster if any of the following conditions is true:
  - You have identified the failing server as part of a cluster (two or more servers that share external storage devices).
  - One or more external storage units are attached to the failing server and at least one of the attached storage units is also attached to another server or unidentifiable device.
  - One or more servers are located near the failing server.

  Important: If the server is part of a shared hard disk drive cluster, run one test at a time. Do not run any suite of tests, such as "quick" or "normal" tests, because this might enable the hard disk drive diagnostic tests.

- If the server is halted and a POST error code is displayed, see "Error logs" on page 19. If the server is halted and no error message is displayed, see "Troubleshooting tables" on page 29 and "Solving undetermined problems" on page 85.

- For information about power-supply problems, see "Solving power problems" on page 83 and "Power-supply LEDs" on page 48.

- For intermittent problems, check the error log; see "Error logs" on page 19 and "Diagnostic programs, messages, and error codes" on page 50.

Performing the checkout procedure

To perform the checkout procedure, complete the following steps:

1. Is the server part of a cluster?
   - **No:** Go to step 2.
   - **Yes:** Shut down all failing servers that are related to the cluster. Go to step 2.
2. Complete the following steps:
   a. Turn off the server and all external devices.
   b. Check all cables and power cords.
   c. Set all monitor controls to the middle positions.
   d. Turn on all external devices.
   e. Turn on the server. If the server does not start, see "Troubleshooting tables" on page 29.
   f. Check the system-error LED on the operator information panel. If it is flashing, check the light path diagnostics LEDs (see "Light path diagnostics" on page 41).
   g. Check for the following results:
      - Successful completion of POST, which is indicated by a single beep
      - Successful completion of startup, which is indicated by a readable display of the operating-system desktop
3. Did a single beep sound and are there readable instructions on the main menu?
   - **No:** Find the failure symptom in "Troubleshooting tables" on page 29; if necessary, see "Solving undetermined problems" on page 85.
   - **Yes:** Run the diagnostic programs (see "Running the diagnostic programs" on page 50).
     - If you receive an error, see "Diagnostic error codes" on page 51.
     - If the diagnostic programs were completed successfully and you still suspect a problem, see "Solving undetermined problems" on page 85.

Checkpoint codes (trained service technicians only)

A checkpoint code identifies the check that was occurring when the server stopped; it does not provide error codes or suggest replacement components. Checkpoint codes are shown on the checkpoint display, which is on the I/O board. By using the checkpoint display, you do not have to wait for the video to initialize each time you restart the server.

There are two types of checkpoint codes: CPLD hardware checkpoint codes and BIOS checkpoint codes. The BIOS checkpoint codes might change when the BIOS code is updated.

For a list of checkpoint codes for the IBM System x3755 server, see http://w3.pc.ibm.com/helpcenter/infotips/techinfo/MIGR-58350.html.

Troubleshooting tables

Use the troubleshooting tables to find solutions to problems that have identifiable symptoms.

If you cannot find a problem in these tables, see "Running the diagnostic programs" on page 50 for information about testing the server.

If you have just added new software or a new optional device and the server is not working, complete the following steps before you use the troubleshooting tables:

1. Check the light path diagnostics LEDs on the operator information panel (see "Light path diagnostics" on page 41).
2. Remove the software or device that you just added.
3. Run the diagnostic tests to determine whether the server is running correctly.
4. Reinstall the new software or new device.

CD or DVD drive problems

- **Follow the suggested actions in the order in which they are listed in the Action column until the problem is solved.**
- **See Chapter 3, "Parts listing, System x3755 Type 8877," on page 87 to determine which components are customer replaceable units (CRU) and which components are field replaceable units (FRU).**
- **If an action step is preceded by "(Trained service technician only)," that step must be performed only by a trained service technician.**

Symptom	Action

The CD or DVD drive is not recognized.	1. Make sure that:
	  • The IDE channel to which the CD or DVD drive is attached (primary or secondary) is enabled in the Configuration/Setup Utility program.
	  • All cables and jumpers are installed correctly.
	  • The correct device driver is installed for the CD or DVD drive.
	2. Run the CD or DVD drive diagnostic programs.
	3. Reseat the following components:
	  a. CD or DVD drive
	  b. CD or DVD drive cable
	4. Replace the components listed in step 3 one at a time, in the order shown, restarting the server each time.

A CD or DVD is not working correctly.	1. Clean the CD or DVD. 2. Run the CD or DVD drive diagnostic programs. 3. Reseat the CD or DVD drive. 4. Replace the CD or DVD drive.
The CD or DVD drive tray is not working.	1. Make sure that the server is turned on. 2. Reseat the CD or DVD drive. 3. Replace the CD or DVD drive.

General problems

- **Follow the suggested actions in the order in which they are listed in the Action column until the problem is solved.**
- **See Chapter 3, "Parts listing, System x3755 Type 8877," on page 87 to determine which components are customer replaceable units (CRU) and which components are field replaceable units (FRU).**
- **If an action step is preceded by "(Trained service technician only)," that step must be performed only by a trained service technician.**

Symptom	Action
A cover lock is broken, an LED is not working, or a similar problem has occurred.	If the part is a CRU, replace it. If the part is a FRU, the part must be replaced by a trained service technician.

Hard disk drive problems

- **Follow the suggested actions in the order in which they are listed in the Action column until the problem is solved.**
- **See Chapter 3, "Parts listing, System x3755 Type 8877," on page 87 to determine which components are customer replaceable units (CRU) and which components are field replaceable units (FRU).**
- **If an action step is preceded by "(Trained service technician only)," that step must be performed only by a trained service technician.**

Symptom	Action
Not all drives are recognized by the hard disk drive diagnostic test.	Remove the drive indicated on the diagnostic tests; then, run the hard disk drive diagnostic test again. If the remaining drives are recognized, replace the drive that you removed with a new one. Verify that the hard disk drives have the minimum firmware levels.
The server stops responding during the hard disk drive diagnostic test.	Remove the hard disk drive that was being tested when the server stopped responding, and run the diagnostic test again. If the hard disk drive diagnostic test runs successfully, replace the drive that you removed with a new one.
A hard disk drive was not detected while the operating system was being started.	Reseat all hard disk drives and cables; then, run the hard disk drive diagnostic tests again.
A hard disk drive passes the diagnostic SCSI Attached Disk test, but the problem remains.	Run the diagnostic SCSI Attached Disk Test (see "Running the diagnostic programs" on page 50). **Note:** This test is not available to servers that have controllers other than the integrated SAS controller or servers with IDE or SATA hard disk drives.

Intermittent problems

•	**Follow the suggested actions in the order in which they are listed in the Action column until the problem is solved.**
•	**See Chapter 3, "Parts listing, System x3755 Type 8877," on page 87 to determine which components are customer replaceable units (CRU) and which components are field replaceable units (FRU).**
•	**If an action step is preceded by "(Trained service technician only)," that step must be performed only by a trained service technician.**

Symptom	Action
A problem occurs only occasionally and is difficult to diagnose.	1. Make sure that: • All cables and cords are connected securely to the rear of the server and attached devices. • When the server is turned on, air is flowing from the fan grille. If there is no airflow, the fan is not working. This can cause the server to overheat and shut down. 2. Check the system-error log or BMC log (see "Error logs" on page 19).

Keyboard, mouse, or pointing-device problems

•	**Follow the suggested actions in the order in which they are listed in the Action column until the problem is solved.**
•	**See Chapter 3, "Parts listing, System x3755 Type 8877," on page 87 to determine which components are customer replaceable units (CRU) and which components are field replaceable units (FRU).**
•	**If an action step is preceded by "(Trained service technician only)," that step must be performed only by a trained service technician.**

Symptom	Action
All or some keys on the keyboard do not work.	1. If the server is attached to a KVM switch, bypass the KVM switch to eliminate it as a possible cause of the problem: connect the keyboard cable directly to the correct connector on the rear of the server. 2. Make sure that: • The keyboard cable is securely connected. • If you are using a PS/2 keyboard, the keyboard and mouse cables are not reversed. • The server and the monitor are turned on. 3. If you are using a USB keyboard, run the Configuration/Setup Utility program and enable keyboardless operation to prevent the 301 POST error message from being displayed during startup. 4. If you are using a USB keyboard and it is connected to a USB hub, disconnect the keyboard from the hub and connect it directly to the server. 5. Replace the following components one at a time, in the order shown, restarting the server each time: a. Keyboard b. (Trained service technician only) I/O board

• **Follow the suggested actions in the order in which they are listed in the Action column until the problem is solved.**	
• **See Chapter 3, "Parts listing, System x3755 Type 8877," on page 87 to determine which components are customer replaceable units (CRU) and which components are field replaceable units (FRU).**	
• **If an action step is preceded by "(Trained service technician only)," that step must be performed only by a trained service technician.**	

Symptom	Action
The mouse or pointing device does not work.	1. If the server is attached to a KVM switch, bypass the KVM switch to eliminate it as a possible cause of the problem: connect the mouse cable directly to the correct connector on the rear of the server. 2. Make sure that: • The mouse or pointing-device cable is securely connected to the server. • If you are using a PS/2 mouse or pointing device, the keyboard and mouse or pointing-device cables are not reversed. • The mouse or pointing-device device drivers are installed correctly. • The server and the monitor are turned on. • The mouse option is enabled in the Configuration/Setup Utility program. 3. If you are using a USB mouse or pointing device and it is connected to a USB hub, disconnect the mouse or pointing device from the hub and connect it directly to the server. 4. Replace the following components one at a time, in the order shown, restarting the server each time: a. Mouse or pointing device b. (Trained service technician only) I/O board

Memory problems

•	**Follow the suggested actions in the order in which they are listed in the Action column until the problem is solved.**
•	**See Chapter 3, "Parts listing, System x3755 Type 8877," on page 87 to determine which components are customer replaceable units (CRU) and which components are field replaceable units (FRU).**
•	**If an action step is preceded by "(Trained service technician only)," that step must be performed only by a trained service technician.**

Symptom	Action

The amount of system memory that is displayed is less than the amount of installed physical memory.	1. Make sure that:
	   • No error LEDs are lit on the operator information panel or on the microprocessor/memory cards.
	   • The memory modules are seated correctly.
	   • You have installed the correct type of memory.
	   • If you changed the memory, you updated the memory configuration in the Configuration/Setup Utility program.
	   • All banks of memory are enabled. The server might have automatically disabled a memory bank when it detected a problem, or a memory bank might have been manually disabled.
	
	2. Check the POST error log for error message 289:
	   • If a DIMM was disabled by a systems-management interrupt (SMI), replace the DIMM.
	   • If a DIMM was disabled by the user or by POST, run the Configuration/Setup Utility program and enable the DIMM.
	
	3. Run memory diagnostics (see "Running the diagnostic programs" on page 50).
	
	4. Make sure that there is no memory mismatch when the server is at the minimum memory configuration (two 512 MB DIMMs).
	
	5. Add one pair of DIMMs at a time, making sure that the DIMMs in each pair match.
	
	6. Add one microprocessor/memory card at a time, making sure that the DIMMs on each card match.
	
	7. Reseat the following components:
	   a. DIMMs
	   b. Microprocessor/memory cards
	
	8. Replace the components listed in step 7 one at a time, in the order shown, restarting the server each time.

Microprocessor problems

- **Follow the suggested actions in the order in which they are listed in the Action column until the problem is solved.**
- **See Chapter 3, "Parts listing, System x3755 Type 8877," on page 87 to determine which components are customer replaceable units (CRU) and which components are field replaceable units (FRU).**
- **If an action step is preceded by "(Trained service technician only)," that step must be performed only by a trained service technician.**

Symptom	Action

The server emits a continuous beep during POST, indicating that the startup (boot) microprocessor is not working correctly.	1. Correct any errors that are indicated by the light path diagnostics LEDs (see "Light path diagnostics" on page 41).
	
	2. Make sure that the server supports all the microprocessors and that the microprocessors match in cache size and speed.
	
	3. Reseat the microprocessor/memory cards.
	
	4. If there is no indication of which microprocessor has failed, isolate the error by testing with one microprocessor/memory card at a time.
	
	5. Replace the microprocessor/memory cards one at a time, restarting the server each time.
	
	6. If there are multiple error codes or light path diagnostics LEDs that indicate a microprocessor error, reverse the location of two microprocessor/memory cards to determine whether the error is associated with a microprocessor or with a microprocessor/memory card connector.
	
	   • If the error is associated with a microprocessor, replace the microprocessor/memory card.
	
	   • (Trained service technician only) If the error is associated with a microprocessor/memory card connector, replace the I/O board.

Monitor problems

Some IBM monitors have their own self-tests. If you suspect a problem with your monitor, see the documentation that comes with the monitor for instructions for testing and adjusting the monitor. If you cannot diagnose the problem, call for service.

- **Follow the suggested actions in the order in which they are listed in the Action column until the problem is solved.**
- **See Chapter 3, "Parts listing, System x3755 Type 8877," on page 87 to determine which components are customer replaceable units (CRU) and which components are field replaceable units (FRU).**
- **If an action step is preceded by "(Trained service technician only)," that step must be performed only by a trained service technician.**

Symptom	Action

Testing the monitor.	1. Make sure that the monitor cables are firmly connected.
	2. Try using a different monitor on the server, or try using the monitor that is being tested on a different server.
	3. Run the diagnostic programs. If the monitor passes the diagnostic programs, the problem might be a video device driver.
	4. Reseat the Remote Supervisor Adapter II SlimLine (if one is installed).
	5. Replace the following components one at a time, in the order shown, restarting the server each time:
	  a. Remote Supervisor Adapter II SlimLine (if one is installed)
	  b. (Trained service technician only) I/O board

The screen is blank.	1. If the server is attached to a KVM switch, bypass the KVM switch to eliminate it as a possible cause of the problem: connect the monitor cable directly to the correct connector on the rear of the server.
	2. Make sure that:
	  • The server is turned on. If there is no power to the server, see "Solving power problems" on page 83.
	  • The monitor cables are connected correctly.
	  • The monitor is turned on and the brightness and contrast controls are adjusted correctly.
	  • One beep sounds when the server is turned on.
	
	Important: In some memory configurations, the 3-3-3 beep code might sound during POST, followed by a blank monitor screen. If this occurs and the **Boot Fail Count** option in the **Start Options** of the Configuration/Setup Utility program is enabled, you must restart the server three times to reset the configuration settings to the default configuration (the memory connector or bank of connectors enabled).
	3. Make sure that the correct server is controlling the monitor, if applicable.
	4. Make sure that damaged BIOS code is not affecting the video.
	5. Observe the checkpoint LEDs on the I/O board.
	6. See "Solving undetermined problems" on page 85.

- **Follow the suggested actions in the order in which they are listed in the Action column until the problem is solved.**
- **See Chapter 3, "Parts listing, System x3755 Type 8877," on page 87 to determine which components are customer replaceable units (CRU) and which components are field replaceable units (FRU).**
- **If an action step is preceded by "(Trained service technician only)," that step must be performed only by a trained service technician.**

Symptom	Action
The monitor works when you turn on the server, but the screen goes blank when you start some application programs.	1. Make sure that: • The application program is not setting a display mode that is higher than the capability of the monitor. • You installed the necessary device drivers for the application. 2. Run video diagnostics (see "Running the diagnostic programs" on page 50). • If the server passes the video diagnostics, the video is good; see "Solving undetermined problems" on page 85. • (Trained service technician only) If the problem remains, replace the I/O board.
The monitor has screen jitter, or the screen image is wavy, unreadable, rolling, or distorted.	1. If the monitor self-tests show that the monitor is working correctly, consider the location of the monitor. Magnetic fields around other devices (such as transformers, appliances, fluorescent lights, and other monitors) can cause screen jitter or wavy, unreadable, rolling, or distorted screen images. If this happens, turn off the monitor. **Attention:** Moving a color monitor while it is turned on might cause screen discoloration. Move the device and the monitor at least 305 mm (12 in.) apart, and turn on the monitor. **Notes:** a. To prevent diskette drive read/write errors, make sure that the distance between the monitor and any external diskette drive is at least 76 mm (3 in.). b. Non-IBM monitor cables might cause unpredictable problems. 2. Reseat the following components: a. Monitor b. Remote Supervisor Adapter II SlimLine (if one is installed) 3. Replace the following components one at a time, in the order shown, restarting the server each time: a. Monitor b. Remote Supervisor Adapter II SlimLine (if one is installed) c. (Trained service technician only) I/O board
Wrong characters appear on the screen.	1. If the wrong language is displayed, update the BIOS code with the correct language (see "Updating the firmware" on page 127). 2. Reseat the monitor. 3. Replace the following components one at a time, in the order shown, restarting the server each time: a. Monitor b. (Trained service technician only) I/O board

Optional-device problems

- **Follow the suggested actions in the order in which they are listed in the Action column until the problem is solved.**
- **See Chapter 3, "Parts listing, System x3755 Type 8877," on page 87 to determine which components are customer replaceable units (CRU) and which components are field replaceable units (FRU).**
- **If an action step is preceded by "(Trained service technician only)," that step must be performed only by a trained service technician.**

Symptom	Action
An IBM optional device that was just installed does not work.	1. Make sure that: • The device is designed for the server (see http://www.ibm.com/servers/ eserver/serverproven/compat/us/). • You followed the installation instructions that came with the device and the device is installed correctly. • You have not loosened any other installed devices or cables. • You updated the configuration information in the Configuration/Setup Utility program. Whenever memory or any other device is changed, you must update the configuration. 2. Reseat the device that you just installed. 3. Replace the device that you just installed.
An IBM optional device that used to work does not work now.	1. Make sure that all of the hardware and cable connections for the device are secure. 2. If the device comes with test instructions, use those instructions to test the device. 3. If the failing device is a SCSI device, make sure that: • The cables for all external SCSI devices are connected correctly. • The last device in each SCSI chain, or the end of the SCSI cable, is terminated correctly. • Any external SCSI device is turned on. You must turn on an external SCSI device before turning on the server. 4. Reseat the failing device. 5. Replace the failing device.

Power problems

•	**Follow the suggested actions in the order in which they are listed in the Action column until the problem is solved.**
•	**See Chapter 3, "Parts listing, System x3755 Type 8877," on page 87 to determine which components are customer replaceable units (CRU) and which components are field replaceable units (FRU).**
•	**If an action step is preceded by "(Trained service technician only)," that step must be performed only by a trained service technician.**

Symptom	Action

The server does not start.
Note: The power-control button will not function until 10 seconds after the server has been connected to ac power.
	1. Make sure that:
	  • The power cords are correctly connected to the server and to a working electrical outlet.
	  • The type of memory that is installed is correct.
	  • The microprocessor/memory cards are fully seated.
	  • The LEDs on the power supply do not indicate a problem.
	  • The microprocessor/memory cards are installed in the correct sequence.
	2. If the power-on LED does not flash:
	  a. Disconnect the server power cords.
	  b. Reconnect the power cords.
	  c. Reseat the operator information panel cables, and then repeat steps 2a and 2b.
	    • If the server starts, reseat the operator information panel. If the problem remains, replace the operator information panel.
	    • If the server does not start, bypass the operator information panel power-control button by using the force-power-on jumper; if the server starts, reseat the operator information panel. If the problem remains, replace the operator information panel.
	3. Reseat the following components:
	  a. Microprocessor/memory cards
	  b. Power switch connector
	4. Replace the following components one at a time, in the order shown, restarting the server each time:
	  a. Microprocessor/memory cards
	  b. Power switch connector
	  c. (Trained service technician only) I/O board
	5. If you just installed an optional device, remove it, and restart the server. If the server now starts, you might have installed more devices than the power supplies support.
	6. See "Power-supply LEDs" on page 48.
	7. See "Solving undetermined problems" on page 85.

The server does not turn off.	1. Determine whether you are using an Advanced Configuration and Power Interface (ACPI) or a non-ACPI operating system. If you are using a non-ACPI operating system, complete the following steps:
	  a. Press Ctrl+Alt+Delete.
	  b. Turn off the server by pressing the power-control button for 5 seconds.
	  c. Restart the server.
	  d. If the server fails POST and the power-control button does not work, disconnect the power cord for 20 seconds; then, reconnect the power cord and restart the server.
	2. If the problem remains or if you are using an ACPI-aware operating system, suspect the I/O board.

- **Follow the suggested actions in the order in which they are listed in the Action column until the problem is solved.**
- **See Chapter 3, "Parts listing, System x3755 Type 8877," on page 87 to determine which components are customer replaceable units (CRU) and which components are field replaceable units (FRU).**
- **If an action step is preceded by "(Trained service technician only)," that step must be performed only by a trained service technician.**

Symptom	Action
The server unexpectedly shuts down, and the LEDs on the operator information panel are not lit.	See "Solving undetermined problems" on page 85.

Serial port problems

- **Follow the suggested actions in the order in which they are listed in the Action column until the problem is solved.**
- **See Chapter 3, "Parts listing, System x3755 Type 8877," on page 87 to determine which components are customer replaceable units (CRU) and which components are field replaceable units (FRU).**
- **If an action step is preceded by "(Trained service technician only)," that step must be performed only by a trained service technician.**

Symptom	Action
The number of serial ports that are identified by the operating system is less than the number of installed serial ports.	Make sure that each port is assigned a unique address in the Configuration/Setup Utility program and that none of the serial ports is disabled.

A serial device does not work.	1. Make sure that:
	   • The device is compatible with the server.
	   • The serial port is enabled and is assigned a unique address.
	   • The device is connected to the correct connector (see "I/O board internal optional-device connectors" on page 8).
	2. Reseat the following components:
	   a. Failing serial device
	   b. Serial cable
	   c. Remote Supervisor Adapter II SlimLine (if one is installed)
	3. Replace the following components one at a time, in the order shown, restarting the server each time:
	   a. Failing serial device
	   b. Serial cable
	   c. Remote Supervisor Adapter II SlimLine (if one is installed)
	   d. (Trained service technician only) I/O board

ServerGuide problems

•	**Follow the suggested actions in the order in which they are listed in the Action column until the problem is solved.**
•	**See Chapter 3, "Parts listing, System x3755 Type 8877," on page 87 to determine which components are customer replaceable units (CRU) and which components are field replaceable units (FRU).**
•	**If an action step is preceded by "(Trained service technician only)," that step must be performed only by a trained service technician.**

Symptom	Action
The *ServerGuide™ Setup and Installation* CD will not start.	• Make sure that the server supports the ServerGuide program and has a startable (bootable) CD or DVD drive. • If the startup (boot) sequence settings have been changed, make sure that the CD or DVD drive is first in the startup sequence. • If more than one CD or DVD drive is installed, make sure that only one drive is set as the primary drive. Start the CD from the primary drive.
The ServeRAID™ Manager program cannot view all installed drives, or the operating system cannot be installed.	• Make sure that the hard disk drive is connected correctly. • Make sure that the SAS hard disk drive backplane cables are securely connected.
The operating-system installation program continuously loops.	Make more space available on the hard disk.
The ServerGuide program will not start the operating-system CD.	Make sure that the operating-system CD is supported by the ServerGuide program. See the *ServerGuide Setup and Installation* CD label for a list of supported operating-system versions.
The operating system cannot be installed; the option is not available.	Make sure that the server supports the operating system. If it does, either no logical drive is defined (SCSI RAID systems), or the ServerGuide System Partition is not present. Run the ServerGuide program and make sure that setup is complete.

Software problems

•	**Follow the suggested actions in the order in which they are listed in the Action column until the problem is solved.**
•	**See Chapter 3, "Parts listing, System x3755 Type 8877," on page 87 to determine which components are customer replaceable units (CRU) and which components are field replaceable units (FRU).**
•	**If an action step is preceded by "(Trained service technician only)," that step must be performed only by a trained service technician.**

Symptom	Action

You suspect a software problem.	1. To determine whether the problem is caused by the software, make sure that:
	  • The server has the minimum memory that is needed to use the software. For memory requirements, see the information that comes with the software. If you have just installed an adapter or memory, the server might have a memory-address conflict.
	  • The software is designed to operate on the server.
	  • Other software works on the server.
	  • The software works on another server.
	2. If you receive any error messages while you use the software, see the information that comes with the software for a description of the messages and suggested solutions to the problem.
	3. Contact your place of purchase of the software.

Universal Serial Bus (USB) port problems

> - **Follow the suggested actions in the order in which they are listed in the Action column until the problem is solved.**
> - **See Chapter 3, "Parts listing, System x3755 Type 8877," on page 87 to determine which components are customer replaceable units (CRU) and which components are field replaceable units (FRU).**
> - **If an action step is preceded by "(Trained service technician only)," that step must be performed only by a trained service technician.**

Symptom	Action
A USB device does not work.	1. Make sure that: • The correct USB device driver is installed. • The operating system supports USB devices. • A standard PS/2 keyboard or mouse is not connected to the server. If it is, a USB keyboard or mouse will not work during POST. 2. Make sure that the USB configuration options are set correctly in the Configuration/Setup Utility program menu (see the *User's Guide* for more information). 3. If you are using a USB hub, disconnect the USB device from the hub and connect it directly to the server.

Video problems

See "Monitor problems" on page 35.

Light path diagnostics

Light path diagnostics is a system of LEDs on various external and internal components of the server. When an error occurs, LEDs are lit throughout the server. By viewing the LEDs in a particular order, you can often identify the source of the error.

When LEDs are lit to indicate an error, they remain lit when the server is turned off, provided that the server is still connected to power and the power supply is operating correctly.

Any memory or microprocessor LED can be lit while the microprocessor/memory card is removed from the server so that you can isolate a problem. After ac power has been removed from the server, power remains available to these LEDs for up to 24 hours.

To view the memory or microprocessor LEDs, press and hold the light path diagnostics button on the microprocessor/memory card briefly to light the error LEDs. The LEDs that were lit while the server was running will be lit again while the button is pressed.

Before you work inside the server to view light path diagnostics LEDs, read the safety information that begins on page vii and "Installation guidelines" on page 93.

If an error occurs, view the light path diagnostics LEDs in the following order:

1. Check the operator information panel on the front of the server.
   - If the information LED is lit, it indicates that a noncritical event has occurred. An LED on the light path diagnostics panel might also be lit to help isolate the error.

Note: If the information LED is lit and no other LEDs are lit, the server might be running with nonredundant power. Two power supplies at 110 V ac can support a fully configured server but do not supply redundancy.

- If the system-error LED is lit, it indicates that there is a fault or condition in the server and that light path diagnostics might light an additional LED to help diagnose the problem.

The following illustration shows the operator information panel.
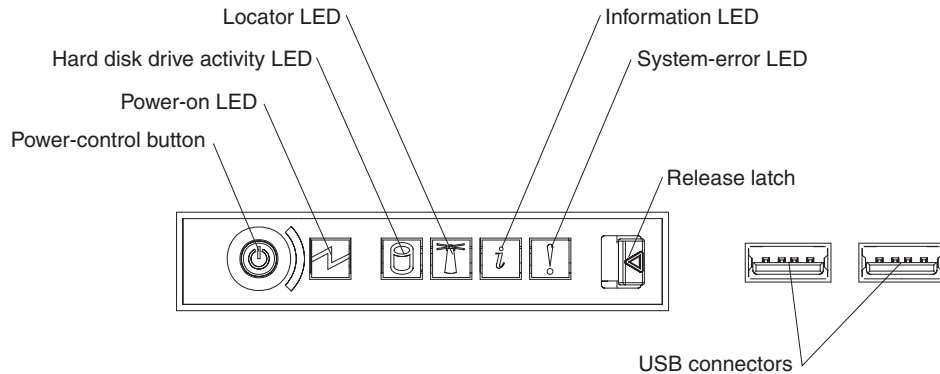
2. To view the light path diagnostics panel, press the release latch on the front of the operator information drawer to the left; then, slide it forward. Note any LEDs that are lit, and then close the drawer.
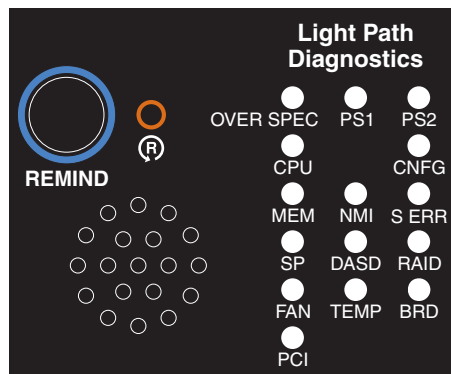
3. Remove the top cover to look inside the server for lit LEDs. To identify the component that is causing the error, note the lit LED on or next to the component. For example, a microprocessor/memory card error will light the LED on top of the microprocessor/memory card.

The following illustration shows the LEDs and connectors on the I/O board.

Slot 3 error LED

Slot 4 error LED

Slot 5 error LED

Slot 6 error LED

Slot 2 error LED

Slot 1 error LED

HTX error LED

I/O board error LED

RAID controller error LED

RAID DIMM error LED

RAID battery error LED

BMC heartbeat LED

SP error LED

The following illustration shows the LEDs on the microprocessor/memory card.

DIMM 1 error LED

DIMM 3 error LED

DIMM 5 error LED

DIMM 7 error LED

DIMM 2 error LED

DIMM 4 error LED

DIMM 6 error LED

DIMM 8 error LED

Light path
diagnostics
button power
LED

Light path
diagnostics
button

Microprocessor/memory
card error LED

Microprocessor error LED

Remind button

You can use the remind button on the light path diagnostics panel to put the
system-error LED or information LED on the operator information panel into Remind
mode. When you press the remind button, you acknowledge the error or non-critical

event but indicate that you will not take immediate action. The system-error LED or information LED flashes while it is in Remind mode and stays in Remind mode until one of the following conditions occurs:

- All known errors or non-critical events are corrected.
- The server is restarted.
- A new error or non-critical event occurs, causing the system-error LED or information LED to be lit again.

Light path diagnostics LEDs

The following table describes the LEDs on the light path diagnostics panel and suggested actions to correct the detected problems.

- **Follow the suggested actions in the order in which they are listed in the Action column until the problem is solved.**
- **See Chapter 3, "Parts listing, System x3755 Type 8877," on page 87 to determine which components are customer replaceable units (CRU) and which components are field replaceable units (FRU).**
- **If an action step is preceded by "(Trained service technician only)," that step must be performed only by a trained service technician.**

Lit light path diagnostics LED with the system-error or system-information LED also lit	Description	Action
All LEDs off (the power LED is lit).		No action necessary.
OVERSPEC	There is insufficient power to power the server.	1. Check that ac power is available to all power supplies. 2. Reseat any failed power supplies. 3. Replace any failed power supplies. 4. Add an optional power supply if only one power supply is installed. 5. Remove optional devices. 6. Use 220 V ac instead of 110 V ac.
PS 1	Power supply 1 has failed or has been removed. **Note:** In a redundant power configuration, the dc power LED on one power supply might be off.	1. Reinstall the removed power supply. 2. Reseat the failed power supply. 3. Replace the failed power supply. 4. Remove ac power before you restore dc power.
PS 2	Power supply 2 has failed or has been removed. **Note:** In a redundant power configuration, the dc power LED on one power supply might be off.	1. Reinstall the removed power supply. 2. Reseat the failed power supply. 3. Replace the failed power supply. 4. Remove ac power before you restore dc power.

- **Follow the suggested actions in the order in which they are listed in the Action column until the problem is solved.**
- **See Chapter 3, "Parts listing, System x3755 Type 8877," on page 87 to determine which components are customer replaceable units (CRU) and which components are field replaceable units (FRU).**
- **If an action step is preceded by "(Trained service technician only)," that step must be performed only by a trained service technician.**

Lit light path diagnostics LED with the system-error or system-information LED also lit	Description	Action
CPU	A microprocessor/memory card has failed, or a component on the card has failed.	1. See the BMC log or the system-error log for the source of the fault. 2. Find the failing, missing, or mismatched microprocessor/memory card by checking the LEDs on top of the card. 3. Remove the microprocessor/memory card with the lit error LED on the top of the card; then, press the light path diagnostics button on the microprocessor/memory card to identify the failed component. 4. Reseat the microprocessor/memory card. 5. Replace the microprocessor/memory card.
CNFG	A microprocessor/memory card configuration error has occurred.	1. See the BMC log or the system-error log for the source of the fault. 2. Make sure that all microprocessors are the same cache size and type. 3. Make sure that the microprocessor/memory cards are installed in the correct sequence and that a passthru card is correctly installed, if required.

MEM	Memory failure.	1. Remove the microprocessor/memory card with the lit error LED on the top of the card; then, press the light path diagnostics button on the microprocessor/memory card to identify the failed DIMM.
		2. Reseat the DIMM.
		3. Replace the following components one at a time, in the order shown, restarting the server each time:
		  a. DIMM
		  b. Microprocessor/memory card

NMI	A hardware error has been reported to the operating system. **Note:** The PCI or MEM LED might also be lit.	1. See the BMC log or the system-error log for the source of the fault. 2. If the PCI LED is lit, follow the instructions for that LED. 3. If the MEM LED is lit, follow the instructions for that LED. 4. Restart the server.
S ERR	A PCI serr error has occurred.	1. See the BMC log or the system-error log. 2. Replace the failing adapter. 3. (Trained service technician only) Replace the I/O board.

- **Follow the suggested actions in the order in which they are listed in the Action column until the problem is solved.**
- **See Chapter 3, "Parts listing, System x3755 Type 8877," on page 87 to determine which components are customer replaceable units (CRU) and which components are field replaceable units (FRU).**
- **If an action step is preceded by "(Trained service technician only)," that step must be performed only by a trained service technician.**

Lit light path diagnostics LED with the system-error or system-information LED also lit	Description	Action
SP	There is a fault in the Remote Supervisor Adapter II SlimLine.	1. Reseat the Remote Supervisor Adapter II SlimLine. 2. Update the firmware for the Remote Supervisor Adapter II SlimLine. 3. Replace the Remote Supervisor Adapter II SlimLine.

DASD	A hard disk drive has failed or has been removed.
	Note: The error LED on the failing hard disk drive might also be lit.
		1. Reinstall the removed drive.
		2. Reseat the following components:
		  a. Failing hard disk drive
		  b. SAS hard disk drive backplane cables
		3. Replace the following components one at a time, in the order shown, restarting the server each time:
		  a. Failing hard disk drive
		  b. SAS hard disk drive backplane cables
		  c. SAS backplane
		  d. (Trained service technician only) I/O board

RAID	A RAID controller error has occurred.	1. See the BMC log or the system-error log for the source of the fault.
		2. If an optional RAID controller is installed, see the documentation that comes with the RAID controller.
		3. Reseat the following components:
		  a. Optional RAID controller
		  b. Hard disk drives
		4. Replace the components in step 3 one at a time, in the order shown, restarting the server each time.
		5. (Trained service technician only) Replace the I/O board.

FAN	A fan has failed or has been removed. **Note:** A failing fan can also cause the TEMP LED to be lit.	1. Reinstall the removed fan. 2. If an individual fan LED is lit, replace the fan. 3. (Trained service technician only) Replace the I/O board or front fan board.

- **Follow the suggested actions in the order in which they are listed in the Action column until the problem is solved.**
- **See Chapter 3, "Parts listing, System x3755 Type 8877," on page 87 to determine which components are customer replaceable units (CRU) and which components are field replaceable units (FRU).**
- **If an action step is preceded by "(Trained service technician only)," that step must be performed only by a trained service technician.**
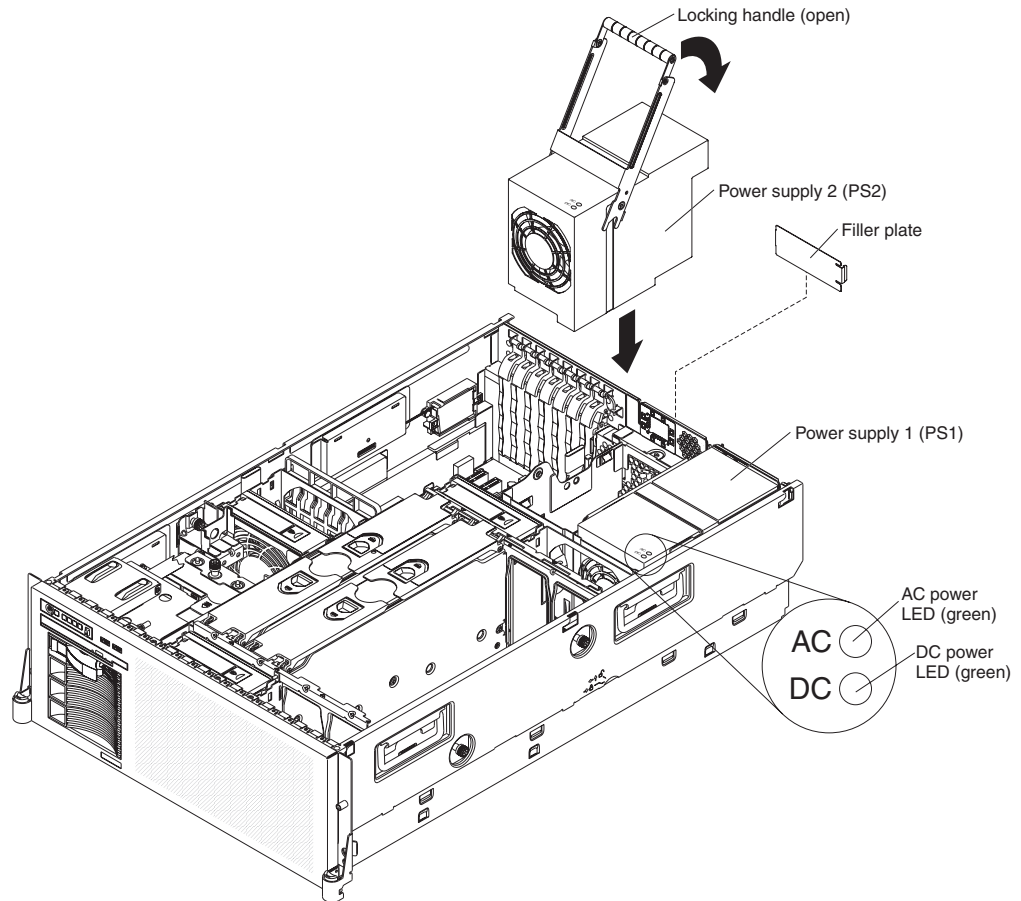
Lit light path diagnostics LED with the system-error or system-information LED also lit	Description	Action
TEMP	A system temperature or component has exceeded specifications. **Note:** A fan LED or microprocessor error LED might also be lit.	1. See the BMC log or the system-error log for the source of the fault. 2. Make sure that the airflow in the server is not blocked. 3. If a fan LED is lit, reseat the fan. 4. Replace the fan for which the LED is lit. 5. Make sure that the room is neither too hot nor too cold (see "Environment" in "Features and specifications" on page 3). 6. If one of the microprocessors indicates "hot," remove ac power before you restore dc power.
BRD	An error has occurred on the I/O board.	1. See the BMC log or the system-error log for the source of the fault. 2. Check the LEDs on the I/O board to identify the component that is causing the error. 3. (Trained service technician only) Replace the I/O board.
PCI	A PCI adapter has failed. **Note:** The error LED next to one or more adapters might also be lit.	1. See the BMC log or the system-error log for the source of the fault. **Note:** The BMC log or system-error log might point to more than one adapter as the source of the fault. 2. Reseat the failing adapter. 3. Replace the failing adapter. 4. Repeat step 2 and step 3 for each failing adapter.

Power-supply LEDs

The following illustration shows the locations of the power-supply LEDs.

Locking handle (open)

Power supply 2 (PS2)

Filler plate

Power supply 1 (PS1)

AC power LED (green)

AC

DC power LED (green)

DC

The following table describes the problems that are indicated by various combinations of the power-supply LEDs and the power-on LED on the operator information panel. The table also provides suggested actions to correct the detected problems.

- **Follow the suggested actions in the order in which they are listed in the Action column until the problem is solved.**
- **See Chapter 3, "Parts listing, System x3755 Type 8877," on page 87 to determine which components are customer replaceable units (CRU) and which components are field replaceable units (FRU).**
- **If an action step is preceded by "(Trained service technician only)," that step must be performed only by a trained service technician.**

Power-supply LEDs		Operator information panel power-on	Description	Action
AC	**DC**	**LED**	**Description**	**Action**
Off	Off	Off	No power to the server, or a problem with the ac power source.	1. Check the ac power to the server. 2. Make sure that the power cord is connected to a functioning power source. 3. Remove one power supply at a time.
Lit	Off	Off	DC source power problem	1. Replace the failing power supply. 2. View the system-error log (see "Error logs" on page 19). 3. (Trained service technician only) Replace the I/O board.
Lit	Lit	Off	Standby power problem	1. View the system-error log (see "Error logs" on page 19). 2. Use the force-power-on jumper as a debugging aid (see "I/O board jumpers" on page 9) to determine whether the information panel switch and cable are faulty. 3. (Trained service technician only) Replace the I/O board.
Lit	Lit	Flashing	System power-on problem	1. View the system-error log (see "Error logs" on page 19). 2. Press the power-control button on the operator information panel. 3. Use the force-power-on jumper as a debugging aid (see "I/O board jumpers" on page 9) to determine whether the information panel switch and cable are faulty. 4. Remove the optional Remote Supervisor Adapter II SlimLine, and try to turn on the server. 5. (Trained service technician only) Replace the I/O board.
Lit	Lit	Lit	The power is good.	No action.

Diagnostic programs, messages, and error codes

The diagnostic programs are the primary method of testing the major components of the server. As you run the diagnostic programs, text messages and error codes are displayed on the screen and are saved in the test log. A diagnostic text message or error code indicates that a problem has been detected; to determine what action you should take as a result of a message or error code, see the table in "Diagnostic error codes" on page 51.

Running the diagnostic programs

To run the diagnostic programs, complete the following steps:

1. If the server is running, turn off the server and all attached devices.
2. Turn on all attached devices; then, turn on the server.
3. When the prompt `F2 for Diagnostics` is displayed, press F2. If you have set both a power-on password and an administrator password, you must type the administrator password to run the diagnostic programs.
4. From the top of the screen, select either **Extended** or **Basic**.
5. From the diagnostic programs screen, select the test that you want to run, and follow the instructions on the screen.

   When you are diagnosing hard disk drives, select **SCSI Attached Disk Test** for the most thorough test. Select **Fixed Disk Test** for any of the following situations:

   - You want to run a faster test.
   - The server contains RAID arrays using controllers other than the integrated SAS controller.
   - The server contains SATA (not attached to the SAS controller) or IDE hard disk drives.

To determine what action you should take as a result of a diagnostic text message or error code, see the table in "Diagnostic error codes" on page 51.

If the diagnostic programs do not detect any hardware errors but the problem remains during normal server operations, a software error might be the cause. If you suspect a software problem, see the information that comes with your software.

A single problem might cause more than one error message. When this happens, correct the cause of the first error message. The other error messages usually will not occur the next time you run the diagnostic programs.

Exception: If there are multiple error codes or light path diagnostics LEDs that indicate a microprocessor error, the error might be in a microprocessor or in a microprocessor/memory card connector. See "Microprocessor problems" on page 34 for information about diagnosing microprocessor problems.

If the server stops during testing and you cannot continue, restart the server and try to run the diagnostic programs again. If the problem remains, replace the component that was being tested when the server stopped.

The keyboard and mouse (pointing device) tests assume that a keyboard and mouse are attached to the server. If no mouse or a USB mouse is attached to the server, you cannot use the **Next Cat** and **Prev Cat** buttons to select categories. All other mouse-selectable functions are available through function keys. You can use the regular keyboard test to test a USB keyboard, and you can use the regular

mouse test to test a USB mouse. You can run the USB interface test only if no USB devices are attached. The USB test will not run if a Remote Supervisor Adapter II SlimLine is installed.

To view server configuration information (such as system configuration, memory contents, interrupt request (IRQ) use, direct memory access (DMA) use, device drivers, and so on), select **Hardware Info** from the top of the screen.

Diagnostic text messages

Diagnostic text messages are displayed while the tests are running. A diagnostic text message contains one of the following results:

Passed: The test was completed without any errors.

Failed: The test detected an error.

User Aborted: You stopped the test before it was completed.

Not Applicable: You attempted to test a device that is not installed in the server.

Aborted: The test could not proceed because of the server configuration.

Warning: The test could not be run. There was no failure of the hardware that was being tested, but there might be a hardware failure elsewhere, or another problem prevented the test from running; for example, there might be a configuration problem, or the hardware might be missing or is not being recognized.

The result is followed by an error code or other additional information about the error.

Viewing the test log

To view the summary test log when the tests are completed, select **Utility** from the top of the screen and then select **View Test Log**. To view the detailed test log, press Tab while the summary test log is displayed. The test-log data is maintained only while you are running the diagnostic programs. When you exit from the diagnostic programs, the test log is cleared.

To save the test log to a file on a diskette or to the hard disk, click **Save Log** on the diagnostic programs screen and specify a location and name for the saved log file.

Notes:
1. To create and use a diskette, you must add an optional external diskette drive to the server.
2. To save the test log to a diskette, you must use a diskette that you have formatted yourself; this function does not work with preformatted diskettes. If the diskette has sufficient space for the test log, the diskette can contain other data.

Diagnostic error codes

The following table describes the error codes that the diagnostic programs might generate and suggested actions to correct the detected problems.

If the diagnostic programs generate error codes that are not listed in the table, make sure that the latest levels of BIOS, Remote Supervisor Adapter II SlimLine, and ServeRAID code are installed.

In the error codes, x can be any numeral or letter. However, if the three-digit number in the central position of the code is 000, 195, or 197, *do not* replace a CRU or FRU. When these numbers are in the central position of the code, they have the following meanings:

000   The server passed the test. Do not replace a CRU or FRU.

195   The Esc key was pressed to end the test. Do not replace a CRU or FRU.

197   This is a warning error, but it does not indicate a hardware failure; do not replace a CRU or FRU. Take the action that is indicated in the Action column but *do not replace a CRU or a FRU*. See the description of **Warning** in "Diagnostic text messages" on page 51 for more information.

- **Follow the suggested actions in the order in which they are listed in the Action column until the problem is solved.**
- **See Chapter 3, "Parts listing, System x3755 Type 8877," on page 87 to determine which components are customer replaceable units (CRU) and which components are field replaceable units (FRU).**
- **If an action step is preceded by "(Trained service technician only)," that step must be performed only by a trained service technician.**

Error code	Description	Action
001-197-000	Test aborted.	1. Check the system-error log and the BMC log for messages that indicate the cause of the error, and take the indicated action. 2. From the diagnostic programs, run Quick Memory Test All Banks; then, if an error is detected, take the indicated action. 3. Reinstall and if necessary, update the BIOS code on the server; then, rerun the test (see "Updating the firmware" on page 127).
001-198-000	Test aborted.	1. Check the system-error log and the BMC log for messages that indicate the cause of the error, and take the indicated action. 2. From the diagnostic programs, run Quick Memory Test All Banks; then, if an error is detected, take the indicated action. 3. Reinstall and if necessary, update the BIOS code on the server; then, rerun the test (see "Updating the firmware" on page 127).
001-250-00n	ECC Test logic failed, where n = failing microprocessor [1 - 4].	1. Restart the server. 2. From the diagnostic programs, run the ECC test again; then, if an error is detected, take the indicated action. 3. Reseat the microprocessor/memory card. 4. Replace the microprocessor/memory card.
001-xxx-000	Failed core tests.	(Trained service technician only) Replace the I/O board.
001-xxx-001	Failed core tests.	(Trained service technician only) Replace the I/O board.
005-xxx-000	Failed video test.	(Trained service technician only) Replace the I/O board.
011-xxx-000	Failed COM1 serial port test.	(Trained service technician only) Replace the I/O board.

- **Follow the suggested actions in the order in which they are listed in the Action column until the problem is solved.**
- **See Chapter 3, "Parts listing, System x3755 Type 8877," on page 87 to determine which components are customer replaceable units (CRU) and which components are field replaceable units (FRU).**
- **If an action step is preceded by "(Trained service technician only)," that step must be performed only by a trained service technician.**

Error code	Description	Action
030-xxx-099	Failed internal SCSI interface test	(Trained service technician only) Replace the I/O board.
035-285-001	Adapter Communication Error	1. Update the RAID controller firmware. 2. Reseat the RAID controller. 3. Replace the RAID controller.
035-286-001	Adapter CPU Test Error	1. Update the RAID controller firmware. 2. Reseat the RAID controller. 3. Replace the RAID controller.
035-287-001	Adapter Local RAM Test Error	1. Update the RAID controller firmware. 2. Reseat the RAID controller. 3. Replace the RAID controller.
035-288-001	Adapter NVSRAM Test Error	1. Update the RAID controller firmware. 2. Reseat the RAID controller. 3. Replace the RAID controller.
035-289-001	Adapter Cache Test Error	1. Update the RAID controller firmware. 2. Reseat the RAID controller. 3. Replace the RAID controller.
035-292-001	Adapter Parameter Set Error	1. Update the RAID controller firmware. 2. Reseat the RAID controller. 3. Replace the RAID controller.
035-230-001	Battery Low	Replace the battery module on the RAID controller.
035-231-001	Abnormal Battery Temperature	Replace the battery module on the RAID controller.
035-231-001	Battery Status Unknown	Replace the battery module on the RAID controller.
089-xxx-0nn	Failed microprocessor, where nn = APIC ID. **APIC ID** **Microprocessor** 0, 1 1 2, 3 2 4, 5 3 6, 7 4	1. Reseat the microprocessor/memory card. 2. Replace the microprocessor/memory card.

- **Follow the suggested actions in the order in which they are listed in the Action column until the problem is solved.**
- **See Chapter 3, "Parts listing, System x3755 Type 8877," on page 87 to determine which components are customer replaceable units (CRU) and which components are field replaceable units (FRU).**
- **If an action step is preceded by "(Trained service technician only)," that step must be performed only by a trained service technician.**

Error code	Description	Action
166-051-000	System Management: Failed. Unable to communicate with the Remote Supervisor Adapter II SlimLine. It may be busy. Run the test again.	1. Update the firmware (BIOS, service processor, and diagnostics; see "Updating the firmware" on page 127). 2. Run the diagnostic test again. 3. Correct other error conditions (including failed systems-management tests and items that are logged in the Remote Supervisor Adapter II SlimLine system-error log) and run the diagnostic test again. 4. Disconnect all server and device power cords from the server, wait 30 seconds, reconnect the power cords, and run the diagnostic test again. 5. Reseat the Remote Supervisor Adapter II SlimLine. 6. Replace the Remote Supervisor Adapter II SlimLine.
166-060-000	System Management: Failed. Unable to communicate with the Remote Supervisor Adapter II SlimLine. It may be busy. Run the test again.	1. Update the firmware (BIOS, service processor, and diagnostics; see "Updating the firmware" on page 127). 2. Run the diagnostic test again. 3. Correct other error conditions (including failed systems-management tests and items that are logged in the Remote Supervisor Adapter II SlimLine system-error log) and run the diagnostic test again. 4. Disconnect all server and device power cords from the server, wait 30 seconds, reconnect the power cords, and run the diagnostic test again. 5. Reseat the Remote Supervisor Adapter II SlimLine. 6. Replace the Remote Supervisor Adapter II SlimLine.

- **Follow the suggested actions in the order in which they are listed in the Action column until the problem is solved.**
- **See Chapter 3, "Parts listing, System x3755 Type 8877," on page 87 to determine which components are customer replaceable units (CRU) and which components are field replaceable units (FRU).**
- **If an action step is preceded by "(Trained service technician only)," that step must be performed only by a trained service technician.**

Error code	Description	Action
166-070-000	System Management: Failed. Unable to communicate with the Remote Supervisor Adapter II SlimLine. It may be busy. Run the test again.	1. Update the firmware (BIOS, service processor, and diagnostics; see "Updating the firmware" on page 127). 2. Run the diagnostic test again. 3. Correct other error conditions (including failed systems-management tests and items that are logged in the Remote Supervisor Adapter II SlimLine system-error log) and run the diagnostic test again. 4. Disconnect all server and device power cords from the server, wait 30 seconds, reconnect the power cords, and run the diagnostic test again. 5. Reseat the Remote Supervisor Adapter II SlimLine. 6. Replace the Remote Supervisor Adapter II SlimLine.

166-198-000	BIOS cannot detect the Remote Supervisor Adapter II SlimLine. Reseat the Remote Supervisor Adapter II SlimLine in the correct slot; Remote Supervisor Adapter II SlimLine restart failure. Unplug and cold boot server to reset the Remote Supervisor Adapter II SlimLine.	1. Run the diagnostic test again.
		2. Correct other error conditions (including other failed systems-management tests and items that are logged in the Remote Supervisor Adapter II SlimLine system-error log) and run the diagnostic test again.
		3. Disconnect all server and device power cords from the server, wait 30 seconds, reconnect the power cords, and run the diagnostic test again.
		4. Reseat the Remote Supervisor Adapter II SlimLine.
		5. Replace the following components one at a time, in the order shown, restarting the server each time:
		  a. Remote Supervisor Adapter II SlimLine
		  b. (Trained service technician only) I/O board

166-201-000	BMC indicates I2C errors on bus 0.	(Trained service technician only) Replace the I/O board.

166-201-001	BMC indicates I2C errors on bus 1.	1. Reseat the microprocessor/memory card.
		2. Replace the following components one at a time, in the order shown, restarting the server each time:
		  a. Microprocessor/memory card
		  b. (Trained service technician only) I/O board

166-201-002	BMC indicates I2C errors on bus 2.	(Trained service technician only) Replace the I/O board.
166-201-003	BMC indicates I2C errors on bus 3.	(Trained service technician only) Replace the I/O board.

- **Follow the suggested actions in the order in which they are listed in the Action column until the problem is solved.**
- **See Chapter 3, "Parts listing, System x3755 Type 8877," on page 87 to determine which components are customer replaceable units (CRU) and which components are field replaceable units (FRU).**
- **If an action step is preceded by "(Trained service technician only)," that step must be performed only by a trained service technician.**

Error code	Description	Action
166-201-004	BMC indicates I2C errors on bus 4.	(Trained service technician only) Replace the I/O board.
166-201-005	BMC indicates I2C errors on bus 5.	(Trained service technician only) Replace the I/O board.
166-201-006	BMC indicates I2C errors on bus 6.	(Trained service technician only) Replace the I/O board.

166-201-007	BMC indicates I2C errors on bus 7.	1. Reseat the microprocessor/memory card.
		2. Replace the following components one at a time, in the order shown, restarting the server each time:
		  a. Microprocessor/memory card
		  b. (Trained service technician only) I/O board

166-201-008	BMC indicates I2C errors on bus 8.	1. Reseat the microprocessor/memory card.
		2. Replace the following components one at a time, in the order shown, restarting the server each time:
		  a. Microprocessor/memory card
		  b. (Trained service technician only) I/O board

166-260-000	Remote Supervisor Adapter II SlimLine restart failure.	1. Disconnect all server and device power cords from the server, wait 30 seconds, reconnect the power cords, and run the diagnostic test again. 2. Reseat the Remote Supervisor Adapter II SlimLine. 3. Replace the Remote Supervisor Adapter II SlimLine.
166-342-000	System management BIST indicates failed tests.	1. Disconnect all server and device power cords from the server, wait 30 seconds, reconnect the power cords, and run the diagnostic test again. 2. Reseat the Remote Supervisor Adapter II SlimLine. 3. Replace the Remote Supervisor Adapter II SlimLine.
166-400-000	BMC Self Test Result failed tests: xxx where xxx=flash, ROM, or RAM.	1. Disconnect all server and device power cords from the server, wait 30 seconds, reconnect the power cords, and run the diagnostic test again. 2. Update the BMC firmware (see "Updating the firmware" on page 127). 3. (Trained service technician only) Replace the I/O board.

- **Follow the suggested actions in the order in which they are listed in the Action column until the problem is solved.**
- **See Chapter 3, "Parts listing, System x3755 Type 8877," on page 87 to determine which components are customer replaceable units (CRU) and which components are field replaceable units (FRU).**
- **If an action step is preceded by "(Trained service technician only)," that step must be performed only by a trained service technician.**

Error code	Description	Action

180-197-000	SCSI ASPI driver not installed.	1. Remove the RAID adapter, if one is installed, and run the test again.
		2. Reseat the SAS hard disk drive backplane cables.
		3. Replace the following components one at a time, in the order shown, restarting the server each time:
		  a. SAS hard disk drive backplane
		  b. (Trained service technician only) I/O board

180-361-003	Failed fan LED test.	1. Reseat the fan.
		2. Replace the following components one at a time, in the order shown, restarting the server each time:
		  a. Fan
		  b. (Trained service technician only) Front fan board.
		  c. (Trained service technician only) I/O board

180-xxx-000	Diagnostics LED failure.	Run the diagnostic LED test for the failing LED.

180-xxx-001	Failed front LED panel test.	1. Reseat the operator information panel.
		2. Replace the following components one at a time, in the order shown, restarting the server each time:
		  a. Operator information panel
		  b. (Trained service technician only) I/O board

180-xxx-002	Failed diagnostics LED panel test.	1. Reseat the operator information panel.
		2. Replace the following components one at a time, in the order shown, restarting the server each time:
		  a. Operator information panel
		  b. (Trained service technician only) I/O board

180-xxx-005	Failed DASD backplane LED test.	1. Reseat the SAS hard disk drive power cable.
		2. Replace the following components one at a time, in the order shown, restarting the server each time:
		  a. SAS hard disk drive power cable
		  b. SAS hard disk drive backplane
		  c. (Trained service technician only) I/O board

- **Follow the suggested actions in the order in which they are listed in the Action column until the problem is solved.**
- **See Chapter 3, "Parts listing, System x3755 Type 8877," on page 87 to determine which components are customer replaceable units (CRU) and which components are field replaceable units (FRU).**
- **If an action step is preceded by "(Trained service technician only)," that step must be performed only by a trained service technician.**

Error code	Description	Action

180-xxx-006	Failed microprocessor/memory card LED test.	1. Reseat the microprocessor/memory card.
		2. Replace the following components one at a time, in the order shown, restarting the server each time:
		   a. Microprocessor/memory card
		   b. (Trained service technician only) I/O board

180-xxx-008	Failed I/O board LED test.	(Trained service technician only) Replace the I/O board.
201-198-xxx	Memory Test Aborted.	1. Restart the server. 2. Run the diagnostic test again. 3. Reinstall the diagnostic programs (see "Updating the firmware" on page 127). 4. Check the system-error log and the BMC log for messages that indicate the cause of the error and take the indicated action.
201-199-xxx	Memory Test Aborted: unexpected error.	1. Restart the server. 2. Run the diagnostic test again. 3. Reinstall the diagnostic programs (see "Updating the firmware" on page 127). 4. Check the system-error log and the BMC log for messages that indicate the cause of the error, and take the indicated action.

201-xxx-PBD	Failed Memory Test:
	• P = microprocessor/memory card [1 - 4]
	• B = bank [1 - 4]
	• D = failing DIMM [1 - 8] on microprocessor/memory card P
	Note: If D = 9, both DIMMs in the bank failed.
		1. Reseat the following components:
		   a. DIMM D
		   b. Microprocessor/memory card P
		2. Replace the following components one at a time, in the order shown, restarting the server each time:
		   a. DIMM
		   b. Microprocessor/memory card

204-198-000	Test aborted.	1. Run the Quick Memory Test Diagnostic All Banks (see "Running the diagnostic programs" on page 50). 2. Update the BIOS code (see "Updating the firmware" on page 127). 3. Look at the test log (see "Viewing the test log" on page 51) and correct any other errors.

- **Follow the suggested actions in the order in which they are listed in the Action column until the problem is solved.**
- **See Chapter 3, "Parts listing, System x3755 Type 8877," on page 87 to determine which components are customer replaceable units (CRU) and which components are field replaceable units (FRU).**
- **If an action step is preceded by "(Trained service technician only)," that step must be performed only by a trained service technician.**

Error code	Description	Action
204-210-000	Test failed.	1. Run the Quick Memory Test Diagnostic All Banks (see "Running the diagnostic programs" on page 50). 2. Update the BIOS code (see "Updating the firmware" on page 127). 3. Look at the test log (see "Viewing the test log" on page 51) and correct any other errors.

215-xxx-000	Failed CD or DVD test.	1. Run the test again with a different CD or DVD.
		2. Reseat the following components:
		  a. CD or DVD drive
		  b. Operator information panel
		3. Replace the following components one at a time, in the order shown, restarting the server each time:
		  a. CD or DVD drive
		  b. Operator information panel assembly

217-xxx-000	Failed Fixed disk test.	1. Reseat hard disk drive 1. 2. Replace hard disk drive 1.
217-xxx-001	Failed Fixed disk test.	1. Reseat hard disk drive 2. 2. Replace hard disk drive 2.
217-xxx-002	Failed Fixed disk test.	1. Reseat hard disk drive 3. 2. Replace hard disk drive 3.
217-xxx-003	Failed Fixed disk test.	1. Reseat hard disk drive 4. 2. Replace hard disk drive 4.
217-198-xxx	Could not establish drive parameters.	1. Check the drive cables and terminators. 2. Reseat the hard disk drive. 3. Replace the hard disk drive.

301-xxx-000	Failed keyboard test.
	Note: After installing a USB keyboard, you might have to use the Configuration/Setup Utility program to enable keyboardless operation and prevent the POST error message 301 from being displayed during startup.
		1. Reseat the keyboard.
		2. Replace the following components one at a time, in the order shown, restarting the server each time:
		  a. Keyboard
		  b. (Trained service technician only) I/O board

302-xxx-xxx	Failed mouse test.	1. Reseat the mouse.
		2. Replace the following components one at a time, in the order shown, restarting the server each time:
		  a. Mouse
		  b. (Trained service technician only) I/O board

•	**Follow the suggested actions in the order in which they are listed in the Action column until the problem is solved.**	
•	**See Chapter 3, "Parts listing, System x3755 Type 8877," on page 87 to determine which components are customer replaceable units (CRU) and which components are field replaceable units (FRU).**	
•	**If an action step is preceded by "(Trained service technician only)," that step must be performed only by a trained service technician.**	

Error code	Description	Action

305-xxx-xxx	Failed video monitor test.	1. Reseat the monitor.
		2. Replace the following components one at a time, in the order shown, restarting the server each time:
		  a. Monitor
		  b. (Trained service technician only) I/O board

405-xxx-000	Failed Ethernet test on controller on I/O board.	1. Make sure that Ethernet is not disabled in the Configuration/Setup Utility program and that the BIOS code is at the latest level. 2. (Trained service technician only) Replace the I/O board.

Recovering from a BIOS update failure

The server has an advanced recovery feature that will automatically switch to a backup BIOS page if the BIOS code in the server has become damaged, such as from a power failure during an update.

The flash memory of the server consists of a primary page and a backup page. If the BIOS code in the primary page is damaged, the baseboard management controller will detect the error and automatically switch to the backup page to start the server. If this happens, a POST message `Booted from backup POST/BIOS image` is displayed. The backup page version might not be the same version as the primary page version.

You can then recover or restore the original primary page BIOS by using a BIOS flash diskette.

To recover the BIOS code and restore the server operation to the primary page, complete the following steps:

1. Go to http://www.ibm.com/servers/eserver/support/xseries/index.html.
2. From the **Hardware** list, select **System x3755**.
3. From the **Software** list, select the applicable operating environment and click **Go**.
4. Click the **Download** tab.
5. Click **BIOS, drivers, and firmware** for the applicable operating environment.
6. Download the latest BIOS code update.
7. Update the BIOS code, following the instructions that come with the update file that you downloaded. This automatically restores and updates the primary page.
8. Restart the server.

If that procedure fails, the server might not restart correctly or might not display video. To manually restore the BIOS code, complete the following steps:

1. Read the safety information that begins on page vii and "Handling static-sensitive devices" on page 95.
2. Turn off the server and peripheral devices and disconnect all external cables and power cords; then, remove the cover.
3. Locate the boot recovery jumper (J64 on the I/O board) (see "I/O board jumpers" on page 9).
4. Disconnect the server from the ac power source.
5. Move the J64 jumper to pins 2 and 3 to enable the backup page.
6. Wait 30 seconds; then, connect the server to the ac power source.
7. Insert the BIOS flash diskette into the diskette drive.
8. Restart the server.
9. When POST starts, select **1 - Update POST/BIOS** from the menu that contains various flash (update) options.
10. When you are asked whether you want to save the current code to a diskette, type N.
11. Type 1 and press Enter to continue.
    Attention: Do not restart or turn off the server until the update is completed.
12. When the update is completed, turn off the server.
13. Disconnect the server from the ac power source.
14. Move the J64 jumper back to pins 1 and 2 to return to startup from the primary page.
15. Wait 30 seconds; then, connect the server to the ac power source.
16. Replace the cover; then, restart the server.

System-error log messages

A system-error log is generated only if a Remote Supervisor Adapter II SlimLine is installed. The system-error log can contain messages of three types:

Information Information messages do not require action; they record significant system-level events, such as when the server is started.

Warning Warning messages do not require immediate action; they indicate possible problems, such as when the recommended maximum ambient temperature is exceeded.

Error Error messages might require action; they indicate system errors, such as when a fan is not detected.

Each message contains date and time information, and it indicates the source of the message (POST/BIOS or the service processor).

Note: The BMC log, which you can view through the Configuration/Setup Utility program, also contains many information, error, and warning messages.

In the following example, the system-error log message indicates that the server was turned on at the recorded time.

```
- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
   Date/Time: 2002/05/07 15:52:03
   DMI Type:
   Source: SERVPROC
   Error Code: System Complex Powered Up
   Error Code:
   Error Data:
   Error Data:
- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
```

The following table describes the possible system-error log messages and suggested actions to correct the detected problems.

- **Follow the suggested actions in the order in which they are listed in the Action column until the problem is solved.**
- **See Chapter 3, "Parts listing, System x3755 Type 8877," on page 87 to determine which components are customer replaceable units (CRU) and which components are field replaceable units (FRU).**
- **If an action step is preceded by "(Trained service technician only)," that step must be performed only by a trained service technician.**

System-error log message	Action

1.8V Fault	1. Reseat the following components:
	   a. Microprocessor/memory card
	   b. Power supply
	2. Replace the following components one at a time, in the order shown, restarting the server each time:
	   a. Microprocessor/memory card
	   b. Power supply
	   c. (Trained service technician only) I/O board
	Note: This power unit supplies power to the I/O board and the SAS backplane.

12V A Bus Fault	1. Reseat microprocessor/memory card 1.
	2. Replace the following components one at a time, in the order shown, restarting the server each time:
	   a. Microprocessor/memory card 1
	   b. (Trained service technician only) I/O board

12V B Bus Fault	1. Reseat microprocessor/memory card 2.
	2. Replace the following components one at a time, in the order shown, restarting the server each time:
	   a. Microprocessor/memory card 2
	   b. (Trained service technician only) I/O board

12V C Bus Fault	1. Reseat microprocessor/memory card 3.
	2. Replace the following components one at a time, in the order shown, restarting the server each time:
	   a. Microprocessor/memory card 3
	   b. (Trained service technician only) I/O board

12V D Bus Fault	1. Reseat microprocessor/memory card 4.
	2. Replace the following components one at a time, in the order shown, restarting the server each time:
	   a. Microprocessor/memory card 4
	   b. (Trained service technician only) I/O board

- **Follow the suggested actions in the order in which they are listed in the Action column until the problem is solved.**
- **See Chapter 3, "Parts listing, System x3755 Type 8877," on page 87 to determine which components are customer replaceable units (CRU) and which components are field replaceable units (FRU).**
- **If an action step is preceded by "(Trained service technician only)," that step must be performed only by a trained service technician.**

System-error log message	Action

12V E Bus Fault	1. Inspect and reseat the SAS power cable.
	2. Remove the following components one at a time, in the order shown, restarting the server each time to isolate the failing component:
	  a. Fan 1 and fan 4
	  b. SAS hard disk drives in bays 1 through 4
	  c. DVD drive
	3. Replace the following components one at a time, in the order shown, restarting the server each time:
	  a. Failing device
	  b. SAS hard disk drive backplane assembly
	  c. (Trained service technician only) I/O board

12V F Bus Fault	1. Reseat the PCI-E and PCI-X adapters. 2. Remove the PCI-X adapters and PCI-E adapters one at a time, restarting the server each time to isolate the failing component. 3. (Trained service technician only) Replace the I/O board.

12V G Bus Fault	1. Reseat fan 2.
	2. Remove fan 2 to isolate the problem.
	3. Reseat the DIMMs in microprocessor/memory card 1.
	4. Replace the following components one at a time, in the order shown, restarting the server each time:
	  a. Failing DIMM
	  b. Microprocessor/memory card 1
	  c. (Trained service technician only) I/O board

12V H Bus Fault	1. Reseat fan 5.
	2. Remove fan 5 to isolate the problem.
	3. Reseat the DIMMs in microprocessor/memory card 2.
	4. Replace the following components one at a time, in the order shown, restarting the server each time:
	  a. Failing DIMM
	  b. Microprocessor/memory card 2
	  c. (Trained service technician only) I/O board

12V J Bus Fault	1. Reseat fan 3.
	2. Remove fan 3 to isolate the problem.
	3. Reseat the DIMMs in microprocessor/memory card 3.
	4. Replace the following components one at a time, in the order shown, restarting the server each time:
	  a. Failing DIMM
	  b. Microprocessor/memory card 3
	  c. (Trained service technician only) I/O board

- **Follow the suggested actions in the order in which they are listed in the Action column until the problem is solved.**
- **See Chapter 3, "Parts listing, System x3755 Type 8877," on page 87 to determine which components are customer replaceable units (CRU) and which components are field replaceable units (FRU).**
- **If an action step is preceded by "(Trained service technician only)," that step must be performed only by a trained service technician.**

System-error log message	Action

12V K Bus Fault	1. Reseat fan 6.
	2. Remove fan 6 to isolate the problem.
	3. Reseat the DIMMs in microprocessor/memory card 4.
	4. Replace the following components one at a time, in the order shown, restarting the server each time:
	   a. Failing DIMM
	   b. Microprocessor/memory card 4
	   c. (Trained service technician only) I/O board

12V Planar Fault	(Trained service technician only) Replace the I/O board.
12V Planar over voltage	(Trained service technician only) Replace the I/O board.
12V Planar under voltage	(Trained service technician only) Replace the I/O board.
12V Power Good Fault	1. Reseat the microprocessor/memory cards. 2. (Trained service technician only) Replace the I/O board.
240V Fault	(Trained service technician only) Replace the I/O board.
3.3V Bus Fault	(Trained service technician only) Replace the I/O board.
3.3V Planar over voltage	(Trained service technician only) Replace the I/O board.
3.3V Planar under voltage	(Trained service technician only) Replace the I/O board.
5V Bus Fault	(Trained service technician only) Replace the I/O board.
5V Planar over voltage	(Trained service technician only) Replace the I/O board.
5V Planar under voltage	(Trained service technician only) Replace the I/O board.
Application Posted Alert to ASM	Information only
CPU X non-critical over temperature warning	1. Make sure that the fans have good airflow and are not obstructed. 2. Reseat the microprocessor/memory card. 3. Reseat the microprocessor and heat sink.
CPU X non-recoverable over temperature fault	1. Make sure that the fans have good airflow and are not obstructed. 2. Reseat the microprocessor/memory card. 3. Reseat the microprocessor and heat sink. 4. Replace the microprocessor/memory card.
CPU removal detected	Information only. If the message remains, reseat the microprocessor/memory cards.
CPU X Over Temperature	1. Check all fans and remove any obstacles from the path of the airflow. 2. Make sure that the room temperature is within the recommended range. 3. Make sure that the microprocessor heat sinks are correctly seated.

- **Follow the suggested actions in the order in which they are listed in the Action column until the problem is solved.**
- **See Chapter 3, "Parts listing, System x3755 Type 8877," on page 87 to determine which components are customer replaceable units (CRU) and which components are field replaceable units (FRU).**
- **If an action step is preceded by "(Trained service technician only)," that step must be performed only by a trained service technician.**

System-error log message	Action
Ethernet Data Rate modified from <value1> to <value2> by user <USERID>	Information only
Ethernet Duplex setting modified from <value1> to <value1> by user <USERID>	Information only
Ethernet interface <value> by user <USERID>	Information only
Ethernet locally administered MAC address modified from x:x:x:x:x:x	Information only
Ethernet MTU setting modified from x to y by user <USERID>	Information only
Fan X Failure (X of 1-6)	1. Make sure that nothing is blocking the fan. 2. Check the physical connection and make sure that the fan is correctly seated. 3. Replace fan X.
Fan X not detected (X of 1-6)	1. Make sure that nothing is blocking the fan or power supply. 2. Check the physical connection and make sure that the fan is correctly seated. 3. Replace fan X.

Hard Drive X Fault	1. Run diagnostics.
	2. Reseat the following components:
	  a. Hard disk drive
	  b. SAS backplane
	3. Replace the components listed in step 2 one at a time, in the order shown, restarting the server each time.

Hard drive X removal detected	Reseat hard disk drive X and restart the server.
Hostname set to <value> by user <USERID>	Information only
HT1000 initiated sync flood: Legacy I/O Failure	(Trained service technician only) Replace the I/O board.
HT1000 initiated sync flood: PERR on PCI-x slot	1. Reseat the failing adapter. 2. Replace the failing adapter. 3. (Trained service technician only) Replace the I/O board.
HT1000 initiated sync flood: SERR on PCI-x slot	1. Reseat the failing adapter. 2. Replace the failing adapter. 3. (Trained service technician only) Replace the I/O board.
Invalid CPU configuration	Make sure that the microprocessor/memory cards have been installed in the correct order.
Invalid Fan configuration	Replace any missing or failed fans.

- **Follow the suggested actions in the order in which they are listed in the Action column until the problem is solved.**
- **See Chapter 3, "Parts listing, System x3755 Type 8877," on page 87 to determine which components are customer replaceable units (CRU) and which components are field replaceable units (FRU).**
- **If an action step is preceded by "(Trained service technician only)," that step must be performed only by a trained service technician.**

System-error log message	Action
Loader Watchdog Triggered	1. Reconfigure the loader watchdog timer to be a higher value (twice the normal operating-system boot time). See the *Remote Supervisor Adapter II SlimLine and Remote Supervisor Adapter II User's Guide* for information. 2. Install the Remote Supervisor Adapter II SlimLine device driver for the operating system. 3. Disable the loader watchdog. See the *Remote Supervisor Adapter II SlimLine and Remote Supervisor Adapter II User's Guide*. 4. Check the integrity of the installed operating system. 5. Reinstall the operating system with the applicable device drivers.
Multiple fan failures	Replace any missing or failed fans or power supplies.
Operator information panel is not plugged in	1. Make sure that the operator panel cable is connected correctly. 2. Replace the operator information panel assembly.
OS Watchdog Triggered	1. Reconfigure the O/S watchdog timer to be a higher value. See the *Remote Supervisor Adapter II SlimLine and Remote Supervisor Adapter II User's Guide* for information. 2. Reinstall the Remote Supervisor Adapter II SlimLine device driver for the operating system. 3. Disable the O/S watchdog. See the *Remote Supervisor Adapter II SlimLine and Remote Supervisor Adapter II User's Guide* for information. 4. Check the integrity of the installed operating system. 5. Reinstall the operating system with applicable device drivers.
POST Watchdog Triggered	1. Reconfigure the POST watchdog timer to have a higher value (consistent with the time it takes to complete POST). See the *Remote Supervisor Adapter II SlimLine and Remote Supervisor Adapter II User's Guide* for information. 2. Disable the POST watchdog. See the *Remote Supervisor Adapter II SlimLine and Remote Supervisor Adapter II User's Guide* for information.
Power Good Fault detected by memory card X	1. Reseat the microprocessor/memory card. 2. Reseat the DIMMs. 3. Replace the microprocessor/memory card. 4. (Trained service technician only) Replace the I/O board.

- **Follow the suggested actions in the order in which they are listed in the Action column until the problem is solved.**
- **See Chapter 3, "Parts listing, System x3755 Type 8877," on page 87 to determine which components are customer replaceable units (CRU) and which components are field replaceable units (FRU).**
- **If an action step is preceded by "(Trained service technician only)," that step must be performed only by a trained service technician.**

System-error log message	Action
Power Supply X Temperature Warning	1. Make sure that the room temperature is within the specified range (see "Environment" at "Features and specifications" on page 3). 2. Make sure that the fan air intake areas are clear and well ventilated. 3. Make sure that all fans are installed and functioning. 4. Reseat power supply X. 5. Replace power supply X.
Power supply current exceeded max spec value	1. Install another power supply (if possible) and make sure that the ac power cords are correctly connected. 2. Remove devices that consume an extraordinary amount of power. 3. Replace the power supply. 4. (Trained service technician only) Replace the I/O board.

Power Supply X 12V Over Current Fault	1. Reseat the power supply.
	2. Replace the following components one at a time, in the order shown, restarting the server each time:
	  a. Power supply
	  b. (Trained service technician only) I/O board

Power Supply X 12V Over Voltage Fault	1. Reseat the power supply.
	2. Replace the following components one at a time, in the order shown, restarting the server each time:
	  a. Power supply
	  b. (Trained service technician only) I/O board

Power Supply X 12V Under Voltage Fault	1. Reseat the power supply.
	2. Replace the following components one at a time, in the order shown, restarting the server each time:
	  a. Power supply
	  b. (Trained service technician only) I/O board

Power Supply X AC Power Removed	1. Connect the ac power cord to power supply X. 2. Make sure that the AC power LED on the power supply is lit. 3. Replace power supply X. 4. (Trained service technician only) Replace the I/O board.

Power Supply X Current Fault	1. Reseat the power supply.
	2. Replace the following components one at a time, in the order shown, restarting the server each time:
	  a. Power supply
	  b. (Trained service technician only) I/O board

- **Follow the suggested actions in the order in which they are listed in the Action column until the problem is solved.**
- **See Chapter 3, "Parts listing, System x3755 Type 8877," on page 87 to determine which components are customer replaceable units (CRU) and which components are field replaceable units (FRU).**
- **If an action step is preceded by "(Trained service technician only)," that step must be performed only by a trained service technician.**

System-error log message	Action

Power Supply X DC Good Fault	1. If the power-on LED is lit, reduce the server to the minimum configuration and replace components one at a time to isolate the fault.
	2. Reseat the power supply.
	3. Replace the following components one at a time, in the order shown, restarting the server each time:
	  a. Power supply
	  b. (Trained service technician only) I/O board

Power Supply X Failed	1. Reseat power supply X. 2. Replace power supply X. 3. (Trained service technician only) Replace the I/O board.
Power Supply X Removed	1. Reseat power supply X. 2. Replace power supply X. 3. (Trained service technician only) Replace the I/O board.
Power Supply X Temperature Fault	1. Make sure that the room temperature is within the specified range (see "Environment" at "Features and specifications" on page 3). 2. Make sure that the fan air intake areas are clear and well ventilated. 3. Make sure that all fans are installed and functioning. 4. Reseat power supply X. 5. Replace power supply X.
Primary HT2100 initiated sync flood: ENET *n* error	(Trained service technician only) Replace the I/O board.
Primary HT2100 initiated sync flood: HT upbound/downbound link failure	(Trained service technician only) Replace the I/O board.
Primary HT2100 initiated sync flood: PCI-e slot *n* error	1. Reseat the failing adapter. 2. Replace the failing adapter. 3. (Trained service technician only) Replace the I/O board.
Primary HT2100 initiated sync flood: SAS error	(Trained service technician only) Replace the I/O board.
POST reporting memory event DIMM Disabled - multi-bit or multi-symbol error Chassis Number 1 Memory Card n Memory DIMM n	1. Reseat the failing DIMM. 2. Reseat the microprocessor/memory card. 3. Replace the microprocessor/memory card.
Processor initiated sync flood: Processor *n* failed	1. Reseat the microprocessor/memory card. 2. Replace the microprocessor/memory card.
Slot *n* error (possible timeout condition)	1. Reseat the failing adapter. 2. Replace the failing adapter. 3. (Trained service technician only) Replace the I/O board.
Remote Login Successful. Login ID:	Information only

- **Follow the suggested actions in the order in which they are listed in the Action column until the problem is solved.**
- **See Chapter 3, "Parts listing, System x3755 Type 8877," on page 87 to determine which components are customer replaceable units (CRU) and which components are field replaceable units (FRU).**
- **If an action step is preceded by "(Trained service technician only)," that step must be performed only by a trained service technician.**

System-error log message	Action
Secondary HT2100 initiated sync flood: PCI-e slot *n* error	1. Reseat the failing adapter. 2. Replace the failing adapter. 3. (Trained service technician only) Replace the I/O board.
Single fan failure	Replace any missing or failed fans or power supplies.
Software NMI	Make sure that the system software is operating correctly and does not conflict with other software; the system software has created a software NMI.
System Boot Failed	1. Check the POST/BIOS boot checkpoint indicator and see the applicable documentation. 2. Make sure that the microprocessor/memory cards and DIMMs are correctly connected and seated and that they are functional. 3. Attempt to start the server from the backup BIOS page.
System Complex Powered Down	Information only
System Complex Powered Up	Information only
System log 75%% full	Information only
System Memory Error	1. Reseat the microprocessor/memory cards and DIMMs. 2. Replace the DIMMs. 3. Replace the microprocessor/memory cards.
System resetting due to unrecoverable error	Check the operator information panel and light path diagnostics LEDs.
System RTC Battery is no longer reliable	1. Replace the battery. 2. (Trained service technician only) Replace the I/O board.
System-error log full	Clear the event log.
User <USERID> attempting to power/reset server	Information only
Voltage Regulator X Power Good Fault	1. Reseat the microprocessor/memory cards. 2. (Trained service technician only) Replace the microprocessor/memory cards.

BMC system-error log messages

The BMC system event log, which you can view through the Configuration/Setup Utility program (see "Viewing error logs from the Configuration/Setup Utility program" on page 20), contains BMC event message details.

The following illustration shows an example of a BMC log entry as viewed from the Configuration/Setup Utility program.

```
                  BMC System Event Log
-------------------------------------------------------
Get Next Entry
Get Previous Entry
Clear BMC SEL


Entry Number=      00005 / 00011
Record ID=         0005
Record Type=       02
Timestamp=         2005/01/25  16:15:17
Entry Details:     Generator ID= 0020
                   Sensor Type= 04
                   Assertion Event
                   Fan
                   Threshold
                   Lower Non-critical - going high

                   Sensor Number= 40
                   Event Direction/Type= 01

                   Event Data= 52 00 1A
```

The following fields identify an entry in the BMC system-event log:

Entry Number: This field shows the position of the entry in the log.

Entry Details: This field shows the entry detail.
> **Sensor Type:** This field shows the event class or type of sensor.
> **Sensor Number:** This field shows the ID of the sensor within the sensor device.
> **Event Data:** This field shows additional information about the entry.

The BMC log is limited in size. When the log is full, new entries will not overwrite existing entries; therefore, you must periodically clear the BMC log through the Configuration/Setup Utility program (the menu choices are described in the *User's Guide*). When you are troubleshooting an error, be sure to clear the BMC log so that you can find current errors more easily.

Entries that are written to the BMC log during the early phase of POST show an incorrect date and time as the default time stamp; however, the date and time are corrected as POST continues.

Each BMC log entry is displayed on its own page. To display all the data for an entry, use the Up Arrow and Down Arrow keys or the Page Up and Page Down keys. To move from one entry to the next, select **Get Next Entry** or **Get Previous Entry**.

The log indicates an assertion event when an event has occurred. It indicates a deassertion event when the event is no longer occurring.

Some of the error codes and messages in the BMC log are abbreviated.

If you view the BMC log through the Web interface of the optional Remote Supervisor Adapter II SlimLine, the messages can be translated.

IPMI BMC system-error log messages

The following table describes the possible IPMI BMC system-event log messages and suggested actions to correct the detected problems.

- **Follow the suggested actions in the order in which they are listed in the Action column until the problem is solved.**
- **See Chapter 3, "Parts listing, System x3755 Type 8877," on page 87 to determine which components are customer replaceable units (CRU) and which components are field replaceable units (FRU).**
- **If an action step is preceded by "(Trained service technician only)," that step must be performed only by a trained service technician.**

BMC log message	Sensor number	Sensor type	Action
System event Assertion 00 (System reconfigured)	00	12	Information only
Battery Assertion 01 (Battery failed)	00	29	Replace the battery.
System firmware progress Assertion 0002 (No usable system memory)	00	0F	1. Reseat the DIMMs. 2. Replace the DIMMs. 3. Replace the microprocessor/memory card. 4. (Trained service technician only) Replace the I/O board.
System firmware progress Assertion 000B (Firmware ROM corrupted)	00	0F	1. Use the Boot recovery (BIOS) jumper (J64) to switch to the secondary BIOS page. 2. (Trained service technician only) Replace the I/O board.
System firmware progress Assertion 010B (SMBUS error)	00	0F	(Trained service technician only) Replace the I/O board.
Memory error Assertion 35xx (Correctable ECC memory error logging limit reached DIMM xx	00	0C	Information only

System power monitor
 	
Assertion:
    00 (Power off/power down)
    01 (Power cycle)
    03 (Interlock power down)
    04 (AC lost)
    07 (Predictive failure)
	01	09	Information only

System power monitor Assertion 02 (240VA Power down) or 05 (Soft power control failure)	01	09	(Trained service technician only) Replace the I/O board.
System power monitor Assertion 06 (Power unit failure detected)	01	09	1. Check the primary voltages to the power supply. 2. Replace the power supply. 3. (Trained service technician only) Replace the I/O board.

- **Follow the suggested actions in the order in which they are listed in the Action column until the problem is solved.**
- **See Chapter 3, "Parts listing, System x3755 Type 8877," on page 87 to determine which components are customer replaceable units (CRU) and which components are field replaceable units (FRU).**
- **If an action step is preceded by "(Trained service technician only)," that step must be performed only by a trained service technician.**

BMC log message	Sensor number	Sensor type	Action
Watchdog	03	23	Information only
Planar 3.3V	16	02	(Trained service technician only) Replace the I/O board.
Planar 5V	17	02	(Trained service technician only) Replace the I/O board.
Planar 12V	18	02	1. Reseat the power supplies. 2. Replace the power supplies. 3. (Trained service technician only) Replace the I/O board.
Planar VBAT	1C	02	1. Replace the battery. 2. (Trained service technician only) Replace the I/O board.
Not redundant	1E	08	1. Install another power supply (if possible) and make sure that the ac power cords are connected to properly grounded electrical outlets. 2. Remove devices that consume an extraordinary amount of power. 3. (Trained service technician only) Replace the I/O board.
3V fault	20	02	(Trained service technician only) Replace the I/O board.
5V fault	21	02	(Trained service technician only) Replace the I/O board.
12V	22	02	1. Reseat the power supplies. 2. Replace the power supplies. 3. (Trained service technician only) Replace the I/O board.
VRD 1 status Assertion 00 (Presence detected)	24	08	Information only
VRD 1 status Assertion 01 (Power unit failure)	24	08	1. Reseat the microprocessor/memory card. 2. Reseat the microprocessor and heat sink. 3. Replace the microprocessor/memory card.
VRD 2 status Assertion 00 (Presence detected)	25	08	Information only
VRD 2 status Assertion 01 (Power unit failure)	25	08	1. Reseat the microprocessor/memory card. 2. Reseat the microprocessor and heat sink. 3. Replace the microprocessor/memory card.
VRD 3 status Assertion 00 (Presence detected)	26	08	Information only

- **Follow the suggested actions in the order in which they are listed in the Action column until the problem is solved.**
- **See Chapter 3, "Parts listing, System x3755 Type 8877," on page 87 to determine which components are customer replaceable units (CRU) and which components are field replaceable units (FRU).**
- **If an action step is preceded by "(Trained service technician only)," that step must be performed only by a trained service technician.**

BMC log message	Sensor number	Sensor type	Action
VRD 3 status Assertion 01 (Power unit failure)	26	08	1. Reseat the microprocessor/memory card. 2. Reseat the microprocessor and heat sink. 3. Replace the microprocessor/memory card.
VRD 4 status Assertion 00 (Presence detected)	27	08	Information only
VRD 4 status Assertion 01 (Power unit failure)	27	08	1. Reseat the microprocessor/memory card. 2. Reseat the microprocessor and heat sink. 3. Replace the microprocessor/memory card.
VRD 5V Assertion 00 (Presence detected)	28	08	Information only

VRD 5V
 	
Assertion 01 (Power unit failure)
	28	08	1. Remove the following components one at a time, in the order shown, restarting the server each time to isolate the failing component:
			  a. Keyboard, mouse, and USB devices
			  b. DASD devices
			  c. PCI adapters
			  d. DVD drive
			2. If the problems remains:
			  a. Inspect the SAS power cable and the IDE power cable.
			  b. Inspect the front panel USB cable.
			  c. (Trained service technician only) Replace the I/O board.

VRD 3.3V Assertion 00 (Presence detected)	29	08	Information only
VRD 3.3V Assertion 01 (Power unit failure)	29	08	1. Remove the PCI adapters one at a time, to isolate the failing component. 2. Inspect the IDE power cable. 3. (Trained service technician only) Replace the I/O board. 4. Replace the SAS backplane assembly.
VRD 2.5V Assertion 00 (Presence detected)	2A	08	Information only
VRD 2.5V Assertion 01 (Power unit failure)	2A	08	1. Reseat the microprocessor/memory cards. 2. (Trained service technician only) Replace the I/O board.

- **Follow the suggested actions in the order in which they are listed in the Action column until the problem is solved.**
- **See Chapter 3, "Parts listing, System x3755 Type 8877," on page 87 to determine which components are customer replaceable units (CRU) and which components are field replaceable units (FRU).**
- **If an action step is preceded by "(Trained service technician only)," that step must be performed only by a trained service technician.**

BMC log message	Sensor number	Sensor type	Action
VRD 2.1V Assertion 00 (Presence detected)	2B	08	Information only
VRD 2.1V Assertion 01 (Power unit failure)	2B	08	1. Inspect the SAS power cable. 2. Replace the SAS backplane assembly. 3. (Trained service technician only) Replace the I/O board.
12V faults	2C	09	(Trained service technician only) Replace the I/O board.
VRD 1.8V Assertion 00 (Presence detected)	2D	08	Information only

VRD 1.8V
 	
Assertion 01 (Power unit failure)
	2D	08	1. Reseat the following components:
			  a. Microprocessor/memory card
			  b. Power supply
			2. Replace the following components one at a time, in the order shown, restarting the server each time:
			  a. Microprocessor/memory card
			  b. Power supply
			  c. (Trained service technician only) I/O board
			Note: This power unit supplies power to the I/O board and the SAS backplane.

VRD 1.4V Assertion 00 (Presence detected)	2E	08	Information only
VRD 1.4V Assertion 01 (Power unit failure)	2E	08	1. Inspect the SAS power cable. 2. Replace the SAS backplane assembly. 3. (Trained service technician only) Replace the I/O board.
VRD 1.2V Assertion 00 (Presence detected)	2F	08	Information only
VRD 1.2V Assertion 01 (Power unit failure)	2F	08	1. (Trained service technician only) Replace the I/O board. 2. Isolate the failing microprocessor/memory card. 3. Replace the microprocessor/memory card.
Ambient temperature	32	01	Make sure that the fans have good airflow and are not obstructed.
Exhaust temperature	33	01	Make sure that the fans have good airflow and are not obstructed.
Power supply 1 fault	38	08	1. Reseat power supply 1. 2. Replace power supply 1. 3. (Trained service technician only) Replace the I/O board.

- **Follow the suggested actions in the order in which they are listed in the Action column until the problem is solved.**
- **See Chapter 3, "Parts listing, System x3755 Type 8877," on page 87 to determine which components are customer replaceable units (CRU) and which components are field replaceable units (FRU).**
- **If an action step is preceded by "(Trained service technician only)," that step must be performed only by a trained service technician.**

BMC log message	Sensor number	Sensor type	Action
Power supply 2 fault	39	08	1. Reseat power supply 2. 2. Replace power supply 2. 3. (Trained service technician only) Replace the I/O board.
Fan 1 tach	40	04	1. Reseat fan 1. 2. Replace fan 1. 3. (Trained service technician only) Replace the I/O board.
Fan 2 tach	41	04	1. Reseat fan 2. 2. Replace fan 2. 3. Replace the front fan board. 4. (Trained service technician only) Replace the I/O board.
Fan 3 tach	42	04	1. Reseat fan 3. 2. Replace fan 3. 3. Replace the front fan board. 4. (Trained service technician only) Replace the I/O board.
Fan 4 tach	43	04	1. Reseat fan 4. 2. Replace fan 4. 3. (Trained service technician only) Replace the I/O board.
Fan 5 tach	44	04	1. Reseat fan 5. 2. Replace fan 5. 3. (Trained service technician only) Replace the I/O board.
Fan 6 tach	45	04	1. Reseat fan 6. 2. Replace fan 6. 3. (Trained service technician only) Replace the I/O board.
Power supply configuration error	4F	0A	Make sure that the power supplies are installed in the correct order and that the power supplies are operating properly.
Fan 1 detected Assertion 00 (Not detected)	50	04	Replace or install the fan.
Fan 1 detected Assertion 01 (Presence detected)	50	04	Information only
Fan 2 detected Assertion 00 (Not detected)	51	04	Replace or install the fan.

- **Follow the suggested actions in the order in which they are listed in the Action column until the problem is solved.**
- **See Chapter 3, "Parts listing, System x3755 Type 8877," on page 87 to determine which components are customer replaceable units (CRU) and which components are field replaceable units (FRU).**
- **If an action step is preceded by "(Trained service technician only)," that step must be performed only by a trained service technician.**

BMC log message	Sensor number	Sensor type	Action
Fan 2 detected Assertion 01 (Presence detected)	51	04	Information only
Fan 3 detected Assertion 00 (Not detected)	52	04	Replace or install the fan.
Fan 3 detected Assertion 01 (Presence detected)	52	04	Information only
Fan 4 detected Assertion 00 (Not detected)	53	04	Replace or install the fan.
Fan 4 detected Assertion 01 (Presence detected)	53	04	Information only
Fan 5 detected Assertion 00 (Not detected)	54	04	Replace or install the fan.
Fan 5 detected Assertion 01 (Presence detected)	54	04	Information only
Fan 6 detected Assertion 00 (Not detected)	55	04	Replace or install the fan.
Fan 6 detected Assertion 01 (Presence detected)	55	04	Information only
Drive 1 status	60	C1	Information only
Drive 2 status	61	C1	Information only
Drive 3 status	62	C1	Information only
Drive 4 status	63	C1	Information only
Power supply 1 status Assertion 00 (Presence detected)	70	08	Information only

- **Follow the suggested actions in the order in which they are listed in the Action column until the problem is solved.**
- **See Chapter 3, "Parts listing, System x3755 Type 8877," on page 87 to determine which components are customer replaceable units (CRU) and which components are field replaceable units (FRU).**
- **If an action step is preceded by "(Trained service technician only)," that step must be performed only by a trained service technician.**

BMC log message	Sensor number	Sensor type	Action
Power supply 1 status Assertion 01 (Power supply failure) or 03 (Power supply ac loss)	70	08	1. Check the primary voltages to the power supply. 2. Reseat power supply 1. 3. Replace power supply 1. 4. (Trained service technician only) Replace the I/O board.
Power supply 2 status Assertion 00 (Presence detected)	71	08	Information only
Power supply 2 status Assertion 01 (Power supply failure) or 03 (Power supply ac loss)	71	08	1. Check the primary voltages to the power supply. 2. Reseat power supply 2. 3. Replace power supply 2. 4. (Trained service technician only) Replace the I/O board.
NMI state	80	13	Make sure that the system software is operating correctly and does not conflict with other software; the system software has created a software NMI.
Front cable panel detect	83	1B	1. Make sure that the operator panel cable is connected. 2. Replace the operator information panel assembly.
USB cable detect	84	1B	1. Make sure that the front panel USB cable is connected. 2. Replace the front panel USB cable.
DASD backplane detect	85	1B	1. Make sure that the SAS signal cable is connected. 2. Replace the SAS signal cable.
IDE cable detect	86	1B	1. Make sure that the IDE power cable is connected. 2. Replace the IDE power cable.
Remote Supervisor Adapter II SlimLine detect	8C	17	1. Make sure that the Remote Supervisor Adapter II SlimLine is fully seated in the connector. 2. Replace the Remote Supervisor Adapter II SlimLine.
ABR status	8F	0F	Information only
CPU 1 status Assertion 01 (Thermal trip)	90	07	Information only; if the message remains: 1. Make sure that the fans have good airflow and are not obstructed. 2. Reseat the microprocessor and heat sink. 3. Replace the microprocessor/memory card.
CPU 1 status Assertion 05 (Configuration error)	90	07	Make sure that the microprocessor/memory card is installed correctly.

- **Follow the suggested actions in the order in which they are listed in the Action column until the problem is solved.**
- **See Chapter 3, "Parts listing, System x3755 Type 8877," on page 87 to determine which components are customer replaceable units (CRU) and which components are field replaceable units (FRU).**
- **If an action step is preceded by "(Trained service technician only)," that step must be performed only by a trained service technician.**

BMC log message	Sensor number	Sensor type	Action
CPU 1 status Assertion 07 (Processor presence detected) or 0A (Processor automatically throttled)	90	07	Information only
CPU 1 status Assertion 08 (Processor disabled)	90	07	1. Check the DIMM error LEDs on the microprocessor/memory card. 2. Reseat the microprocessor/memory card. 3. Reseat the microprocessor and heat sink. 4. Replace the microprocessor/memory card.
CPU 2 status Assertion 01 (Thermal trip)	91	07	Information only; if the message remains: 1. Make sure that the fans have good airflow and are not obstructed. 2. Reseat the microprocessor and heat sink. 3. Replace the microprocessor/memory card.
CPU 2 status Assertion 05 (Configuration error)	91	07	Make sure that the microprocessor/memory card is installed correctly.
CPU 2 status Assertion 07 (Processor presence detected) or 0A (Processor automatically throttled)	91	07	Information only
CPU 2 status Assertion 08 (Processor disabled)	91	07	1. Check the DIMM error LEDs on the microprocessor/memory card. 2. Reseat the microprocessor/memory card. 3. Reseat the microprocessor and heat sink. 4. Replace the microprocessor/memory card.
CPU 3 status Assertion 01 (Thermal trip)	92	07	Information only; if the message remains: 1. Make sure that the fans have good airflow and are not obstructed. 2. Reseat the microprocessor and heat sink. 3. Replace the microprocessor/memory card.
CPU 3 status Assertion 05 (Configuration error)	92	07	Make sure that the microprocessor/memory card is installed correctly.

- **Follow the suggested actions in the order in which they are listed in the Action column until the problem is solved.**
- **See Chapter 3, "Parts listing, System x3755 Type 8877," on page 87 to determine which components are customer replaceable units (CRU) and which components are field replaceable units (FRU).**
- **If an action step is preceded by "(Trained service technician only)," that step must be performed only by a trained service technician.**

BMC log message	Sensor number	Sensor type	Action
CPU 3 status Assertion 07 (Processor presence detected) or 0A (Processor automatically throttled)	92	07	Information only
CPU 3 status Assertion 08 (Processor disabled)	92	07	1. Check the DIMM error LEDs on the microprocessor/memory card. 2. Reseat the microprocessor/memory card. 3. Reseat the microprocessor and heat sink. 4. Replace the microprocessor/memory card.
CPU 4 status Assertion 01 (Thermal trip)	93	07	Information only; if the message remains: 1. Make sure that the fans have good airflow and are not obstructed. 2. Reseat the microprocessor and heat sink. 3. Replace the microprocessor/memory card.
CPU 4 status Assertion 05 (Configuration error)	93	07	Make sure that the microprocessor/memory card is installed correctly.
CPU 4 status Assertion 07 (Processor presence detected) or 0A (Processor automatically throttled)	93	07	Information only
CPU 4 status Assertion 08 (Processor disabled)	93	07	1. Check the DIMM error LEDs on the microprocessor/memory card. 2. Reseat the microprocessor/memory card. 3. Reseat the microprocessor and heat sink. 4. Replace the microprocessor/memory card.
CPU 1 temperature	98	01	1. Check all fans and remove any obstacles from the path of the airflow. 2. Make sure that the room temperature is within the recommended range.
CPU 2 temperature	99	01	1. Check all fans and remove any obstacles from the path of the airflow. 2. Make sure that the room temperature is within the recommended range.
CPU 3 temperature	9A	01	1. Check all fans and remove any obstacles from the path of the airflow. 2. Make sure that the room temperature is within the recommended range.

- **Follow the suggested actions in the order in which they are listed in the Action column until the problem is solved.**
- **See Chapter 3, "Parts listing, System x3755 Type 8877," on page 87 to determine which components are customer replaceable units (CRU) and which components are field replaceable units (FRU).**
- **If an action step is preceded by "(Trained service technician only)," that step must be performed only by a trained service technician.**

BMC log message	Sensor number	Sensor type	Action
CPU 4 temperature	9B	01	1. Check all fans and remove any obstacles from the path of the airflow. 2. Make sure that the room temperature is within the recommended range.
CPU 1 volt	9C	02	1. Reseat the microprocessor/memory cards. 2. Reseat the DIMMs. 3. (Trained service technician only) Replace the I/O board.
CPU 2 volt	9D	02	1. Reseat the microprocessor/memory cards. 2. Reseat the DIMMs. 3. (Trained service technician only) Replace the I/O board.
CPU 3 volt	9E	02	1. Reseat the microprocessor/memory cards. 2. Reseat the DIMMs. 3. (Trained service technician only) Replace the I/O board.
CPU 4 volt	9F	02	1. Reseat the microprocessor/memory cards. 2. Reseat the DIMMs. 3. (Trained service technician only) Replace the I/O board.
PCI slot faults	AB	21	Information only
HT1000 initiated sync flood: Legacy I/O failure	AB-AC	21	(Trained service technician only) Replace the I/O board.
HT1000 initiated sync flood: PERR on PCI-x slot	AB-AC	21	1. Reseat the failing adapter. 2. Replace the failing adapter. 3. (Trained service technician only) Replace the I/O board.
HT1000 initiated sync flood: SERR on PCI-x slot	AB-AC	21	1. Reseat the failing adapter. 2. Replace the failing adapter. 3. (Trained service technician only) Replace the I/O board.
Primary HT2100 initiated sync flood: ENET n error	AB-AC	21	(Trained service technician only) Replace the I/O board.
Primary HT2100 initiated sync flood: HT upbound/downbound link failure	AB-AC	21	(Trained service technician only) Replace the I/O board.
Primary HT2100 initiated sync flood: PCI-e slot n error	AB-AC	21	1. Reseat the failing adapter. 2. Replace the failing adapter. 3. (Trained service technician only) Replace the I/O board.
Primary HT2100 initiated sync flood: SAS error	AB-AC	21	(Trained service technician only) Replace the I/O board.

- **Follow the suggested actions in the order in which they are listed in the Action column until the problem is solved.**
- **See Chapter 3, "Parts listing, System x3755 Type 8877," on page 87 to determine which components are customer replaceable units (CRU) and which components are field replaceable units (FRU).**
- **If an action step is preceded by "(Trained service technician only)," that step must be performed only by a trained service technician.**

BMC log message	Sensor number	Sensor type	Action
Processor n initiated sync flood: DIMM n failed	AB-AC	21	1. Reseat the failing DIMM. 2. Reseat the microprocessor/memory card. 3. Replace the microprocessor/memory card.
Processor n initiated sync flood: Processor n failed	AB-AC	21	1. Reseat the microprocessor/memory card. 2. Replace the microprocessor/memory card.
Processor n initiated sync flood: Slot n error (possible timeout condition)	AB-AC	21	1. Reseat the failing adapter. 2. Replace the failing adapter. 3. (Trained service technician only) Replace the I/O board.
Secondary HT2100 initiated sync flood: PCI-e slot n error	AB-AC	21	1. Reseat the failing adapter. 2. Replace the failing adapter. 3. (Trained service technician only) Replace the I/O board.
PCI PME	AC	09	Information only
DASD backplane detect	AD	1B	Information only
IDE cable detect	AE	1B	Information only
SEL fullness	B6	D0	Information only
CPU 1 hot	C0	01	Information only
CPU 2 hot	C1	01	Information only
CPU 3 hot	C2	01	Information only
CPU 4 hot	C3	01	Information only

BIOS-logged BMC system-error log messages

BIOS can log two types of system-event log messages: POST events, which occur during system startup, and SMI events, which are generally run time errors detected by hardware.

The server logs OEM-specific BIOS messages in the BMC system-event log. The following table describes the four BIOS sensor types logged in the BMC system-event log. You can obtain third-party software to provide BMC system-event log translations for detailed byte definitions and repair actions.

- **Follow the suggested actions in the order in which they are listed in the Action column until the problem is solved.**
- **See Chapter 3, "Parts listing, System x3755 Type 8877," on page 87 to determine which components are customer replaceable units (CRU) and which components are field replaceable units (FRU).**
- **If an action step is preceded by "(Trained service technician only)," that step must be performed only by a trained service technician.**

Sensor type	Record type code	Byte definition and description
OEM POST with time stamp	0xC0	Byte 11 POST Error/Event Type 0x00 POST PCI POST Event/Error 0x01 POST PCI Processor Event/Error 0x02 POST Memory Event/Error 0x04 POST Bus Event/Error 0x05 POST Chipset Event/Error
OEM POST without time stamp	0xE0	Byte 4 POST Error/Event Type 0x00 POST PCI POST Event/Error 0x01 POST PCI Processor Event 0x02 POST Memory Error 0x04 POST Bus Event 0x05 POST Chipset Event
OEM SMI handler with time stamp	0xC1	Byte 11 SMI Error/Event Type 0x00 SMI PCI Event/Error 0x01 SMI Processor Event/Error 0x02 SMI Memory Event/Error 0x04 SMI Bus Event/Error 0x05 SMI Chipset Event/Error
OEM SMI handler without time stamp	0xE1	Byte 4 SMI Error/Event Type 0x00 SMI PCI Event/Error 0x01 SMI Processor Event/Error 0x02 SMI Memory Event/Error 0x04 SMI Bus Event/Error 0x05 SMI Chipset Event/Error

Solving SCSI problems

Note: This information also applies to Serial Attached SCSI (SAS) problems.

For any SCSI error message, one or more of the following devices might be causing the problem:
- A failing SCSI device (adapter, drive, or controller)
- An incorrect SCSI termination jumper setting
- Duplicate SCSI IDs in the same SCSI chain
- A missing or incorrectly installed SCSI terminator
- A defective SCSI terminator
- An incorrectly installed cable
- A defective cable

For any SCSI error message, follow these suggested actions in the order in which they are listed until the problem is solved:

1. Make sure that external SCSI devices are turned on before you turn on the server.
2. Make sure that the cables for all external SCSI devices are connected correctly.

3. If an external SCSI device is attached, make sure that the external SCSI termination is set to automatic.

4. Make sure that the last device in each SCSI chain is terminated correctly.

5. Make sure that the SCSI devices are configured correctly.

Solving power problems

Power problems can be difficult to solve. For example, a short circuit can exist anywhere on any of the power distribution buses. Usually, a short circuit will cause the power subsystem to shut down because of an overcurrent condition. To diagnose a power problem, use the following general procedure:

1. Turn off the server and disconnect all ac power cords.

2. Check for loose cables in the power subsystem. Also check for short circuits, for example, if a loose screw is causing a short circuit on a circuit board.

3. Remove the adapters and disconnect the cables and power cords to all internal and external devices until the server is at the minimum configuration that is required for the server to start (see "Solving undetermined problems" on page 85 for the minimum configuration).

4. Reconnect all ac power cords and turn on the server. If the server starts successfully, replace the adapters and devices one at a time until the problem is isolated.

If the server does not start from the minimum configuration, replace the components in the minimum configuration one at a time until the problem is isolated.

Solving Ethernet controller problems

The method that you use to test the Ethernet controller depends on which operating system you are using. See the operating-system documentation for information about Ethernet controllers, and see the Ethernet controller device-driver readme file.

Try the following procedures:
- Make sure that the correct device drivers are installed and that they are at the latest level.
- Make sure that the Ethernet cable is installed correctly.
    - The cable must be securely attached at all connections. If the cable is attached but the problem remains, try a different cable.
    - If you set the Ethernet controller to operate at 100 Mbps, you must use Category 5 cabling.
    - If you directly connect two servers (without a hub), or if you are not using a hub with X ports, use a crossover cable. To determine whether a hub has an X port, check the port label. If the label contains an X, the hub has an X port.
- Determine whether the hub supports auto-negotiation. If it does not, try configuring the integrated Ethernet controller manually to match the speed and duplex mode of the hub.
- Check the Ethernet controller LEDs on the rear panel of the server. These LEDs indicate whether there is a problem with the connector, cable, or hub.
    - The Ethernet link status LED is lit when the Ethernet controller receives a link pulse from the hub. If the LED is off, there might be a defective connector or cable or a problem with the hub.
    - The Ethernet transmit/receive activity LED is lit when the Ethernet controller sends or receives data over the Ethernet network. If the Ethernet transmit/receive activity light is off, make sure that the hub and network are operating and that the correct device drivers are installed.

- Check the LAN activity LED on the rear of the server. The LAN activity LED is lit when data is active on the Ethernet network. If the LAN activity LED is off, make sure that the hub and network are operating and that the correct device drivers are installed.
- Check for operating-system-specific causes of the problem.
- Make sure that the device drivers on the client and server are using the same protocol.

If the Ethernet controller still cannot connect to the network but the hardware appears to be working, the network administrator must investigate other possible causes of the error.

Solving undetermined problems

If the diagnostic tests did not diagnose the failure or if the server is inoperative, use the information in this section.

If you suspect that a software problem is causing failures (continuous or intermittent), see "Software problems" on page 40.

Damaged data in CMOS memory or damaged BIOS code can cause undetermined problems. To reset the CMOS data, use the power-on password jumper to override the power-on password and clear the CMOS memory; see "I/O board jumpers" on page 9. If you suspect that the BIOS code is damaged, see "Recovering from a BIOS update failure" on page 60.

Check the LEDs on all the power supplies (see "Power-supply LEDs" on page 48). If the LEDs indicate that the power supplies are working correctly, complete the following steps:
1. Check the operator information panel and light path diagnostics LEDs.
2. View error logs.
3. Turn off the server.
4. Make sure that the server is cabled correctly.
5. Remove or disconnect the following devices, one at a time, until you find the failure. Turn on the server and reconfigure it each time.
   - Any external devices.
   - Surge-suppressor device (on the server).
   - Modem, printer, mouse, and non-IBM devices.
   - Each adapter.
   - Hard disk drives.
   - Memory modules. The minimum configuration requirement is 1 GB (two 512 MB DIMMs).
   - Baseboard management controller.
6. Turn on the server. If the problem remains, suspect the following components in the following order:
   a. I/O board
   b. Microprocessor/memory cards

If the problem is solved when you remove an adapter from the server but the problem recurs when you reinstall the same adapter, suspect the adapter; if the problem recurs when you replace the adapter with a different one, suspect the I/O board.

If you suspect a networking problem and the server passes all the system tests, suspect a network cabling problem that is external to the server.

Calling IBM for service

See Appendix A, "Getting help and technical assistance," on page 139 for information about calling IBM for service.

When you call for service, have as much of the following information available as possible:
- Machine type and model
- Microprocessor and hard disk drive upgrades
- Failure symptoms
  - Does the server fail the diagnostic programs? If so, what are the error codes?

- What occurs? When? Where?
- Is the failure repeatable?
- Has the current server configuration ever worked?
- What changes, if any, were made before it failed?
- Is this the original reported failure, or has this failure been reported before?
- Diagnostic program type and version level
- Hardware configuration (print screen of the system summary)
- BIOS code level
- Operating-system type and version level

You can solve some problems by comparing the configuration and software setups between working and nonworking servers. When you compare servers to each other for diagnostic purposes, consider them identical only if all the following factors are exactly the same in all the servers:
- Machine type and model
- BIOS level
- Adapters and attachments, in the same locations
- Address jumpers, terminators, and cabling
- Software versions and levels
- Diagnostic program type and version level
- Configuration option settings
- Operating-system control-file setup

Chapter 3. Parts listing, System x3755 Type 8877

The following replacement parts are available for the System x3755 Type 8877 server, except as specified otherwise in Table 3 on page 89. To check for an updated parts listing on the Web, complete the following steps:

1. Go to http://www.ibm.com/servers/eserver/support/xseries/index.html.
2. From the **Hardware** list, select **System x3755** and click **Go**.
3. Click the **Install and use** tab.
4. Under **Technical resources**, click **Parts information**.
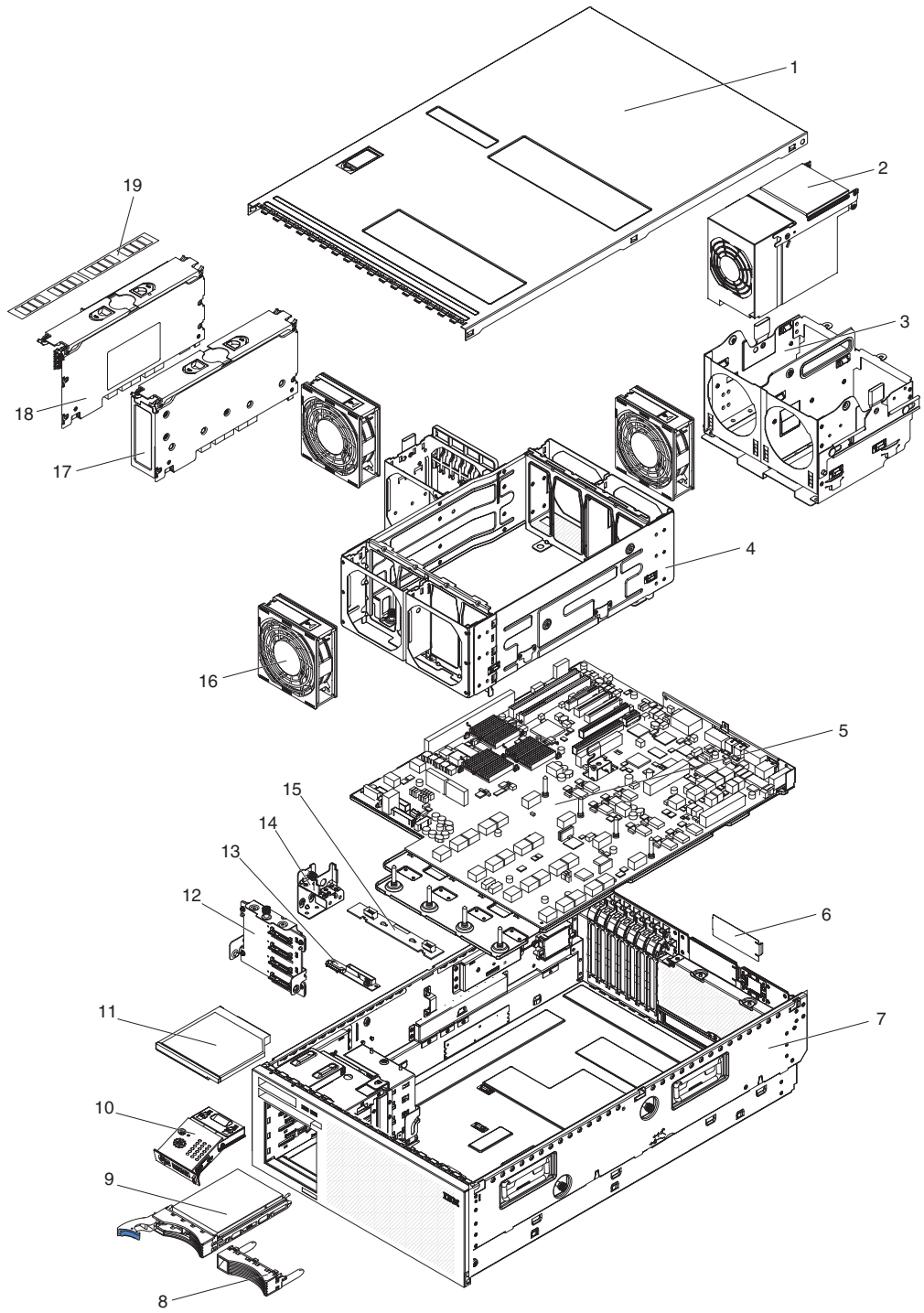
Replaceable server components

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:** 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 and getting service and assistance, see the *Warranty and Support Information* document.

Table 3. Parts listing, Type 8877

Index	Description	CRU part number (Tier 1)	CRU part number (Tier 2)	FRU part number
1	Top cover	41Y0888		
2	Power supply, 1500 W	24R2744		
3	Power supply structure	41Y0885		
4	Microprocessor/memory card structure		41Y0887	
5	IO board			40K7424
6	Power supply filler	40K7533		
7	Chassis assembly			41Y0883
8	Hard disk drive filler	39M4375		
9	Hard disk drive	varies		
10	Operator information panel assembly		42D3098	
11	CD-RW/DVD drive, 24/8X, HLDS	39M3541		
12	SAS hard disk drive backplane assembly			40K7464
13	CD/DVD media backplane	41Y8735		
14	Top cover latch	41Y0884		
15	Front fan board and cable			42D9872
16	Fan (120 mm)	42D3058		
17	Passthru card	40K7463		
18	Microprocessor/memory card 2.0 GHZ	40K7534		
18	Microprocessor/memory card 2.2 GHZ	40K7535		
18	Microprocessor/memory card 2.6 GHZ	40K7536		
18	Microprocessor/memory card 2.8 GHZ	40K7537		
19	Memory, 512 MB PC2-5300 ECC	41Y2758		
19	Memory, 1 GB PC2-5300 ECC	41Y2761		
19	Memory, 2 GB PC2-5300 ECC	41Y2764		
19	Memory, 4 GB PC2-5300 ECC	41Y2767		
	System service label	40K7530		
	Cable management arm	40K6556		

Table 3. Parts listing, Type 8877 (continued)

Index	Description	CRU part number (Tier 1)	CRU part number (Tier 2)	FRU part number
	Remote Supervisor Adapter II SlimLine guide	40K7599		
	Slide kit		42D3062	
	Slide shipping brackets	42D3063		
	EIA mounting bracket	42D3064		
	Microprocessor/memory card air baffle	42D3107		
	ServeRAID-8k SAS Controller (optional) with battery	25R8079		
	Cable, front panel USB	26K8058		
	Cable, SAS signal	42D9863		
	Cable, IDE signal	42D9865		
	Cable, IDE power	42D9867		
	Cable, SAS power	42D9871		

Power cords

For your safety, IBM provides a power cord with a grounded attachment plug to use with this IBM product. To avoid electrical shock, always use the power cord and plug with a properly grounded outlet.

IBM power cords used in the United States and Canada are listed by Underwriter's Laboratories (UL) and certified by the Canadian Standards Association (CSA).

For units intended to be operated at 115 volts: Use a UL-listed and CSA-certified cord set consisting of a minimum 18 AWG, Type SVT or SJT, three-conductor cord, a maximum of 15 feet in length and a parallel blade, grounding-type attachment plug rated 15 amperes, 125 volts.

For units intended to be operated at 230 volts (U.S. use): Use a UL-listed and CSA-certified cord set consisting of a minimum 18 AWG, Type SVT or SJT, three-conductor cord, a maximum of 15 feet in length and a tandem blade, grounding-type attachment plug rated 15 amperes, 250 volts.

For units intended to be operated at 230 volts (outside the U.S.): Use a cord set with a grounding-type attachment plug. The cord set should have the appropriate safety approvals for the country in which the equipment will be installed.

IBM power cords for a specific country or region are usually available only in that country or region.

IBM power cord part number	Used in these countries and regions
39M5206	China
39M5102	Australia, Fiji, Kiribati, Nauru, New Zealand, Papua New Guinea

IBM power cord part number	Used in these countries and regions
39M5123	Afghanistan, Albania, Algeria, Andorra, Angola, Armenia, Austria, Azerbaijan, Belarus, Belgium, Benin, Bosnia and Herzegovina, Bulgaria, Burkina Faso, Burundi, Cambodia, Cameroon, Cape Verde, Central African Republic, Chad, Comoros, Congo (Democratic Republic of), Congo (Republic of), Cote D'Ivoire (Ivory Coast), Croatia (Republic of), Czech Republic, Dahomey, Djibouti, Egypt, Equatorial Guinea, Eritrea, Estonia, Ethiopia, Finland, France, French Guyana, French Polynesia, Germany, Greece, Guadeloupe, Guinea, Guinea Bissau, Hungary, Iceland, Indonesia, Iran, Kazakhstan, Kyrgyzstan, Laos (People's Democratic Republic of), Latvia, Lebanon, Lithuania, Luxembourg, Macedonia (former Yugoslav Republic of), Madagascar, Mali, Martinique, Mauritania, Mauritius, Mayotte, Moldova (Republic of), Monaco, Mongolia, Morocco, Mozambique, Netherlands, New Caledonia, Niger, Norway, Poland, Portugal, Reunion, Romania, Russian Federation, Rwanda, Sao Tome and Principe, Saudi Arabia, Senegal, Serbia, Slovakia, Slovenia (Republic of), Somalia, Spain, Suriname, Sweden, Syrian Arab Republic, Tajikistan, Tahiti, Togo, Tunisia, Turkey, Turkmenistan, Ukraine, Upper Volta, Uzbekistan, Vanuatu, Vietnam, Wallis and Futuna, Yugoslavia (Federal Republic of), Zaire
39M5121	Denmark
39M5144	Bangladesh, Lesotho, Macao, Maldives, Namibia, Nepal, Pakistan, Samoa, South Africa, Sri Lanka, Swaziland, Uganda
39M5151	Abu Dhabi, Bahrain, Botswana, Brunei Darussalam, Channel Islands, China (Hong Kong S.A.R.), Cyprus, Dominica, Gambia, Ghana, Grenada, Iraq, Ireland, Jordan, Kenya, Kuwait, Liberia, Malawi, Malaysia, Malta, Myanmar (Burma), Nigeria, Oman, Polynesia, Qatar, Saint Kitts and Nevis, Saint Lucia, Saint Vincent and the Grenadines, Seychelles, Sierra Leone, Singapore, Sudan, Tanzania (United Republic of), Trinidad and Tobago, United Arab Emirates (Dubai), United Kingdom, Yemen, Zambia, Zimbabwe
39M5158	Liechtenstein, Switzerland
39M5165	Chile, Italy, Libyan Arab Jamahiriya
39M5172	Israel
39M5095	Antigua and Barbuda, Aruba, Bahamas, Barbados, Belize, Bermuda, Bolivia, Brazil, Caicos Islands, Canada, Cayman Islands, Costa Rica, Colombia, Cuba, Dominican Republic, Ecuador, El Salvador, Guam, Guatemala, Haiti, Honduras, Jamaica, Japan, Mexico, Micronesia (Federal States of), Netherlands Antilles, Nicaragua, Panama, Peru, Philippines, Taiwan, United States of America, Venezuela
39M5219	Korea (Democratic People's Republic of), Korea (Republic of)
39M5199	Japan
39M5068	Argentina, Paraguay, Uruguay
39M5233	Brazil

IBM power cord part number	Used in these countries and regions
39M5081	Antigua and Barbuda, Aruba, Bahamas, Barbados, Belize, Bermuda, Bolivia, Caicos Islands, Canada, Cayman Islands, Colombia, Costa Rica, Cuba, Dominican Republic, Ecuador, El Salvador, Guam, Guatemala, Haiti, Honduras, Jamaica, Mexico, Micronesia (Federal States of), Netherlands Antilles, Nicaragua, Panama, Peru, Philippines, Saudi Arabia, Thailand, Taiwan, United States of America, Venezuela

Chapter 4. Removing and replacing server components

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:** 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.

See Chapter 3, "Parts listing, System x3755 Type 8877," on page 87 to determine whether a component is a Tier 1 CRU, Tier 2 CRU, or FRU.

For information about the terms of the warranty and getting service and assistance, see the *Warranty and Support Information* document.

Installation guidelines

Before you remove or replace a component, read the following information:

- Read the safety information that begins on page vii, "Working inside the server with the power on" on page 94, and the guidelines in "Handling static-sensitive devices" on page 95. This information will help you work safely.
- Before you install optional hardware devices, make sure that the server is working correctly. Start the server, and make sure that the operating system starts, if an operating system is installed, or that a 19990305 error code is displayed, indicating that an operating system was not found but the server is otherwise working correctly. If the server is not working correctly, see Chapter 2, "Diagnostics," on page 13 for diagnostic information.
- When you install your new server, take the opportunity to download and apply the most recent firmware updates. This step will help to ensure that any known issues are addressed and that your server is ready to function at maximum levels of performance. To download firmware updates for your server, go to http://www.ibm.com/servers/eserver/support/xseries/index.html, select **System x3755** from the **Hardware** list, and click the **Download** tab. For additional information about tools for updating, managing, and deploying firmware, see the System x and xSeries Tools Center at http://publib.boulder.ibm.com/infocenter/toolsctr/v1r0/index.jsp.
- Observe good housekeeping in the area where you are working. Place removed covers and other parts in a safe place.
- If you must start the server while the cover is removed, make sure that no one is near the server and that no other objects have been left inside the server.
- 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 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 server, 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 server to install or replace hot-swap power supplies, hot-swap fans, hot-plug adapters, or hot-plug Universal Serial Bus (USB) devices. However, you must turn off the server before you perform any steps that involve removing or installing adapter cables.
- Blue on a component indicates touch points, where you can grip the component to remove it from or install it in the server, open or close a latch, and so on.
- Orange on a component or an orange label on or near a component indicates that the component can be hot-swapped, which means that if the server and operating system support hot-swap capability, you can remove or install the component while the server 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.
- When you are finished working on the server, reinstall all safety shields, guards, labels, and ground wires.
- For a list of supported optional devices for the server, see http://www.ibm.com/ servers/eserver/serverproven/compat/us/.

System reliability guidelines

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

- Each of the drive bays has a drive or a filler panel and electromagnetic compatibility (EMC) shield installed in it.
- There is adequate space around the server to allow the server cooling system to work properly. Leave approximately 50 mm (2 in.) of open space around the front and rear of the server. Do not place objects in front of the fans. For proper cooling and airflow, replace the server cover before you turn on the server. Operating the server for extended periods of time (more than 30 minutes) with the server cover removed might damage server components.
- If the server has redundant power, each of the power-supply bays has a power supply installed.
- You have followed the cabling instructions that come with optional adapters.
- You have replaced a failed fan as soon as possible.
- You have replaced a hot-swap drive within 2 minutes of removal.
- You do not operate the server without the air baffles installed. Operating the server without the air baffles might cause some components to overheat.
- For redundant operation, the power supplies are connected to 200 - 240 V ac.

Working inside the server with the power on

Attention: Static electricity that is released to internal server components when the server is powered-on might cause the server to halt, which might result in the loss of data. To avoid this potential problem, always use an electrostatic-discharge wrist strap or other grounding system when you work inside the server with the power on.

The server supports hot-swap devices and is designed to operate safely while it is turned on and the cover is removed. Follow these guidelines when you work inside a server that is turned on:

- Avoid wearing loose-fitting clothing on your forearms. Button long-sleeved shirts before you work inside the server; do not wear cuff links while you are working inside the server.
- Do not allow your necktie or scarf to hang inside the server.
- Remove jewelry, such as bracelets, necklaces, rings, and loose-fitting wrist watches.
- Remove items from your shirt pocket, such as pens and pencils, that might fall into the server as you lean over it.
- Avoid dropping any metallic objects, such as paper clips, hairpins, and screws, into the server.

Handling static-sensitive devices

Attention: Static electricity can damage the server 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 damage from electrostatic discharge, observe the following precautions:

- Limit your movement. Movement can cause static electricity to build up around you.
- The use of a grounding system is recommended. For example, wear an electrostatic-discharge wrist strap, if one is available. Always use an electrostatic-discharge wrist strap or other grounding system when you work inside the server with the power on.
- 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 on the outside of the server 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 server 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 server cover or on a metal surface.
- Take additional care when you handle devices during cold weather. Heating reduces indoor humidity and increases static electricity.

Returning a device or component

If you are instructed to return a device or component, follow all packaging instructions, and use any packaging materials for shipping that are supplied to you.

Connecting the cables

You must turn off the server before you connect any cables to or disconnect any cables from the server.

See the documentation that comes with optional devices for additional cabling instructions. It might be easier for you to route cables before you install certain devices.

For details about the locations and functions of the input/output connectors, see "Server controls, connectors, LEDs, and power" on page 4.

The following illustrations show the locations of the input/output connectors. Detailed cabling instructions for installing the server in a rack are in the *Rack Installation Instructions* that come with the server.

Rear view
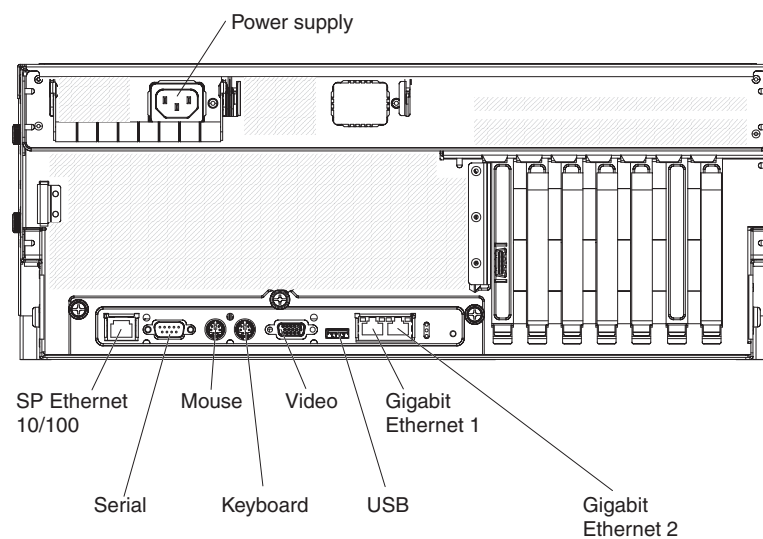
Front view
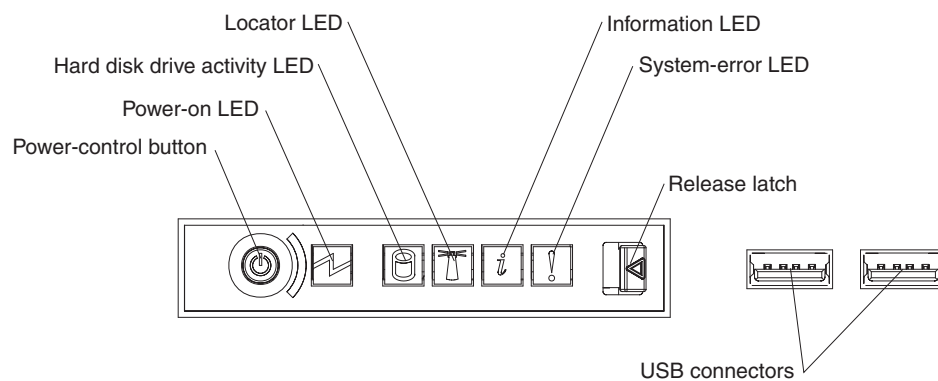
Removing and replacing Tier 1 CRUs

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.

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

Removing the top cover

Attention: For proper cooling and airflow, replace the top cover before you turn on the server. Operating the server for more than 2 minutes with the top cover removed might damage server components.

To remove the top cover, complete the following steps:

1. Read the safety information that begins on page vii and "Installation guidelines" on page 93.
2. If you are installing or replacing a non-hot-swap component, turn off the server and all attached peripheral devices. Disconnect all power cords; then, disconnect all external signal cables from the server.
3. Slide the server out of the rack until the slide rails lock into place.
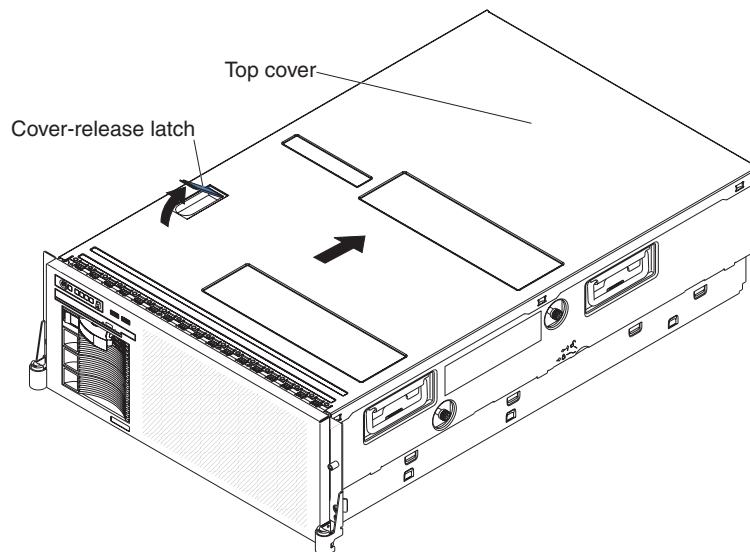
4. Lift the cover-release latch. The cover slides to the rear approximately 13 mm (0.5 inch). Lift the cover off the server.
5. If you are instructed to return the top cover, follow all packaging instructions, and use any packaging materials for shipping that are supplied to you.
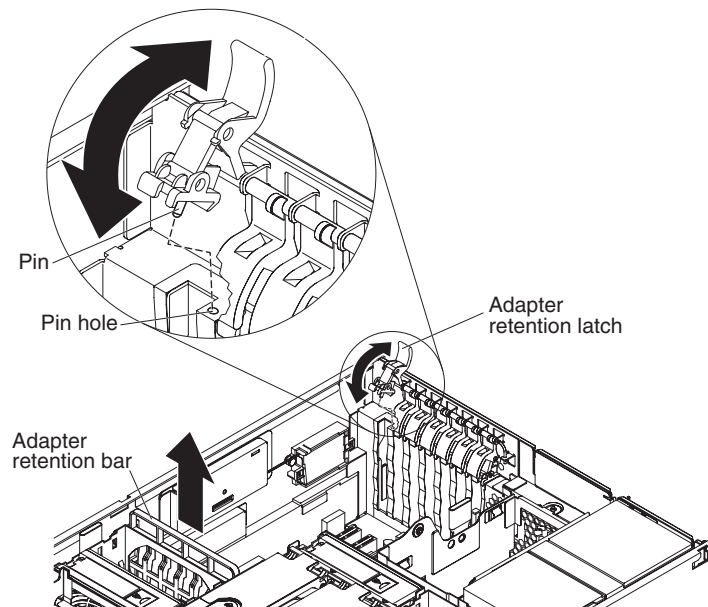
Replacing the top cover

To install the top cover, complete the following steps:

1. Make sure that all internal cables are correctly routed.
2. Set the cover on top of the server so that approximately 13 mm (0.5 inch) extends from the rear.
3. Make sure that the cover-release latch is up.
4. Slide the top cover forward and into position, pressing the release latch closed.

Removing an adapter

To remove an adapter, complete the following steps.

1. Read the safety information that begins on page vii and "Installation guidelines" on page 93.
2. Turn off the server and peripheral devices, and disconnect the power cords and all external cables.
3. Remove the top cover (see "Removing the top cover" on page 97).
4. Disconnect any cables from the adapter.
5. Open the adapter retention latch by lifting the front edge.
6. Lift open the adapter retention bar.
7. Carefully grasp the adapter by its top edge or upper corners, and pull the adapter from the server.
8. If you are instructed to return the adapter, follow all packaging instructions, and use any packaging materials for shipping that are supplied to you.

Replacing the adapter

To install the replacement adapter, complete the following steps:

1. See the documentation that comes with the adapter for instructions for setting jumpers or switches and for cabling.

   Note: Route adapter cables before you install the adapter.

2. Carefully grasp the adapter by its top edge or upper corners, and align it with the connector on the I/O board.

3. If necessary, remove the adapter guide before you install a full-length adapter.

4. Press the adapter *firmly* into the adapter connector.

5. Replace the adapter retention bar to stabilize the adapter.

6. Close the adapter retention latch. Be sure to align the pin on the latch with the matching hole in the chassis.

7. Connect any required cables to the adapter.

8. Install the top cover (see "Replacing the top cover" on page 98).

9. Connect the cables and power cords (see "Connecting the cables" on page 96 for cabling instructions).

10. Turn on all attached devices and the server.

Removing the adapter retention bar

To remove the adapter retention bar, complete the following steps.
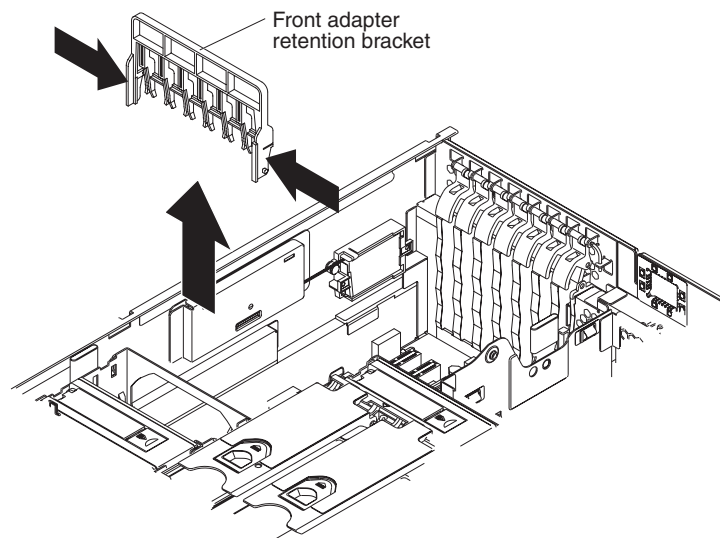
Front adapter
retention bracket

1. Read the safety information that begins on page vii and "Installation guidelines" on page 93.

2. Turn off the server and peripheral devices, and disconnect the power cords and all external cables necessary to replace the device.

3. Remove the top cover (see "Removing the top cover" on page 97).

4. Remove the adapters (see "Removing an adapter" on page 98).

5. Lift open the adapter retention bar.

6. Press the sides of the adapter retention bar and lift it out of the server.

7. If you are instructed to return the adapter retention bar, follow all packaging instructions, and use any packaging materials for shipping that are supplied to you.

Replacing the adapter retention bar

To install the replacement adapter retention bar, complete the following steps:

1. Press the sides of the adapter retention bar and install it.

2. Install the adapters (see "Replacing the adapter" on page 98).

3. Install the top cover (see "Replacing the top cover" on page 98).

4. Connect the cables and power cords (see "Connecting the cables" on page 96 for cabling instructions).

5. Turn on all attached devices and the server.

Removing the hot-swap fan

The server supports a maximum of six hot-swap fans. When a fan fails or is removed, the other fans in the server speed up to maintain a safe operating temperature in the server until the fan is reinstalled or replaced. When the fan is installed correctly, the other fans will slow down.

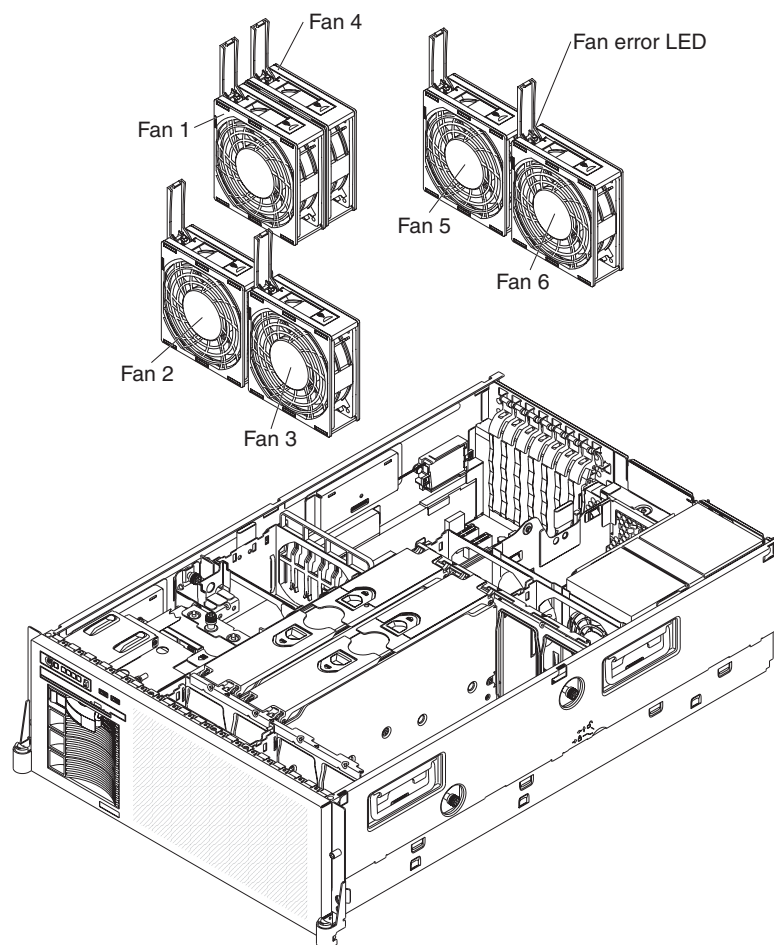If you install or remove a hot-swap fan, observe the following precautions.

Statement 27:

CAUTION:
Hazardous moving parts are nearby.

To remove a hot-swap fan, complete the following steps.

1. Read the safety information that begins on page vii and "Installation guidelines" on page 93.

2. Remove the top cover (see "Removing the top cover" on page 97).
3. Open the fan-locking handle by sliding the orange release latch in the direction of the arrow.
4. Pull upward on the free end of the handle to lift the fan out of the server.
5. If you are instructed to return the fan, follow all packaging instructions, and use any packaging materials for shipping that are supplied to you.

Replacing the hot-swap fan

To install the replacement hot-swap fan, complete the following steps:
1. Open the fan-locking handle on the replacement fan.
2. Lower the fan into the socket, and close the handle to the locked position.
3. Install the top cover (see "Replacing the top cover" on page 98).

Removing the hot-swap hard disk drive

To remove a hot-swap hard disk drive, complete the following steps.
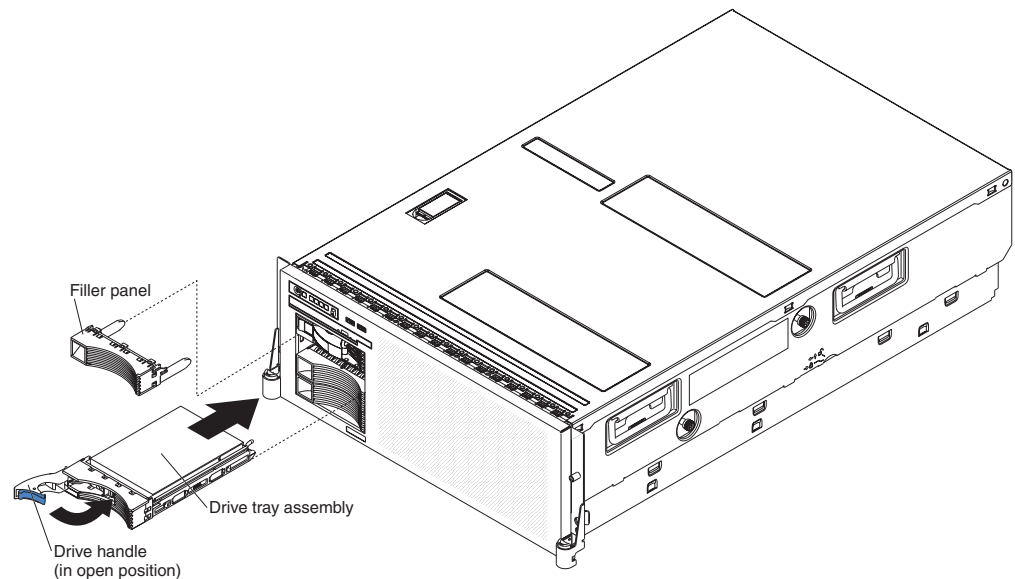
Filler panel

Drive tray assembly

Drive handle
(in open position)

1. Read the safety information that begins on page vii and "Installation guidelines" on page 93.
2. Open the drive handle and pull the hard disk drive out of the server.
3. If you are instructed to return the hot-swap hard disk drive, follow all packaging instructions, and use any packaging materials for shipping that are supplied to you.

Replacing the hot-swap hard disk drive

To install a hot-swap hard disk drive, complete the following steps:
1. Touch the static-protective package that contains the hard disk drive to any unpainted surface on the outside of the server; then, remove the hard disk drive from the package.
2. Make sure that the tray handle is open; then, install the hard disk drive into the hot-swap bay.
3. Check the hard disk drive status LEDs to make sure that the hard disk drive is operating correctly.

If the amber hard disk drive status LED for a drive is lit continuously, that drive is faulty and must be replaced. If the green hard disk drive activity LED is flashing, the drive is being accessed.

Removing the hot-swap power supply

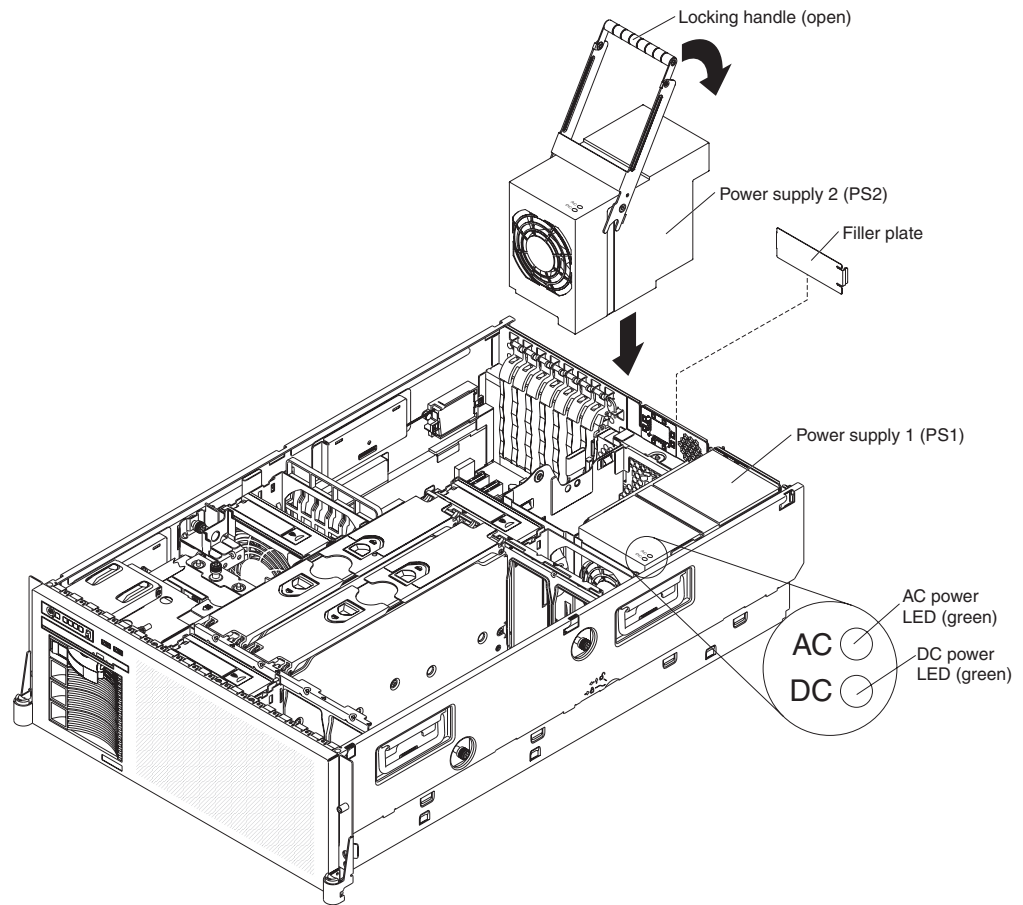When you remove or install a hot-swap power supply, observe the following precautions.

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.

To remove a hot-swap power supply, complete the following steps.

Locking handle (open)

Power supply 2 (PS2)

Filler plate

Power supply 1 (PS1)

AC power LED (green)

AC

DC power LED (green)

DC

1. Read the safety information that begins on page vii and "Installation guidelines" on page 93.
2. Remove the top cover (see "Removing the top cover" on page 97).
3. Disconnect the power cord from the connector on the back of the power supply.
4. Lift the power-supply handle to the open position.
5. Pull the power supply out of the bay.
6. If you are instructed to return the hot-swap power supply, follow all packaging instructions, and use any packaging materials for shipping that are supplied to you.

Replacing the hot-swap power supply

To install the replacement hot-swap power supply, complete the following steps:

1. Lift the handle on the power supply to the open position.
2. Place the power supply into the bay and press the handle to the closed position.
3. Connect one end of the power cord for the new power supply into the connector on the back of the power supply, and connect the other end of the power cord into a properly grounded electrical outlet.
4. Make sure that both the ac and dc power LEDs on the power supply are lit, indicating that the power supply is operating correctly.
5. Install the top cover (see "Replacing the top cover" on page 98).

Removing a DIMM

To remove a DIMM, complete the following steps.
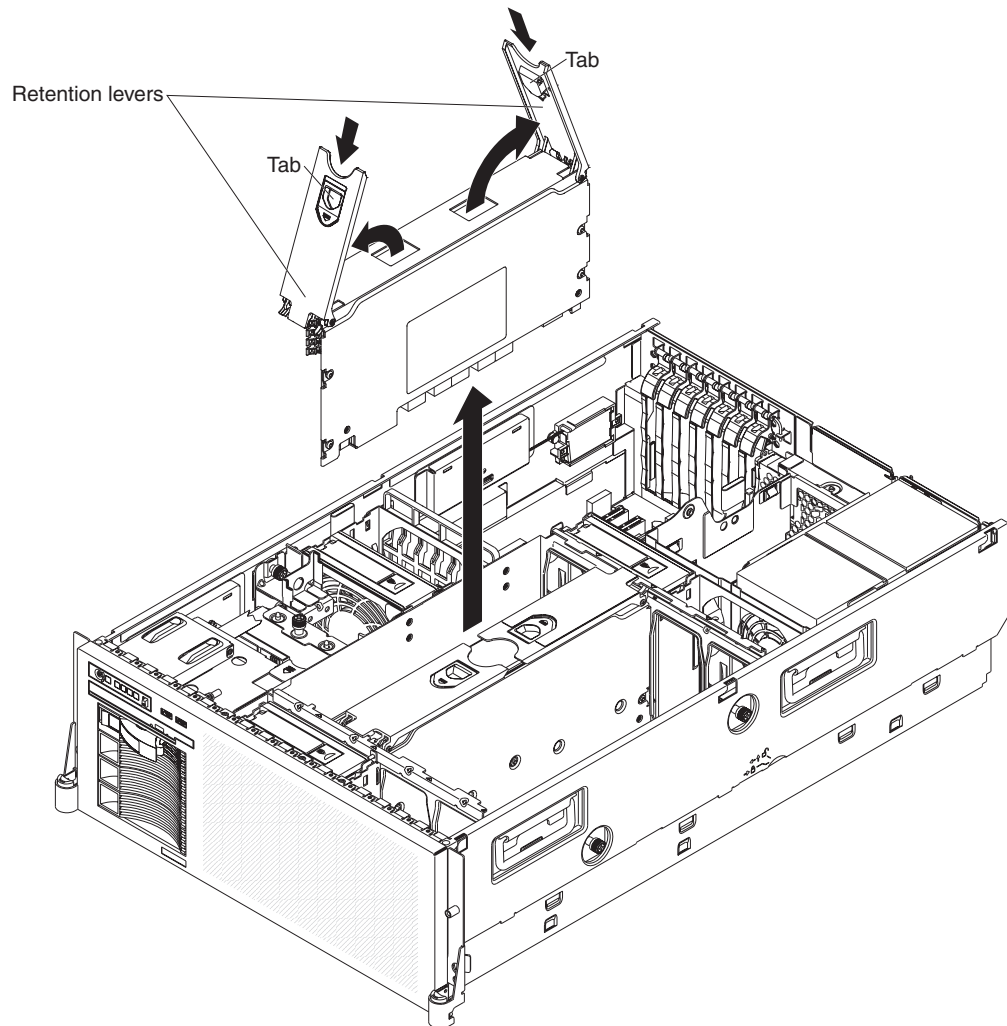
1. Read the safety information that begins on page vii and "Installation guidelines" on page 93.
2. Turn off the server and peripheral devices, and disconnect the power cords and all external cables necessary to replace the device.
3. Remove the top cover (see "Removing the top cover" on page 97).
4. Remove the microprocessor/memory card (see "Removing a microprocessor/memory card" on page 107).
5. Place the microprocessor/memory card on a flat surface with the DIMM connectors facing up.
6. Lift open the microprocessor/memory card air baffle.

Air baffle
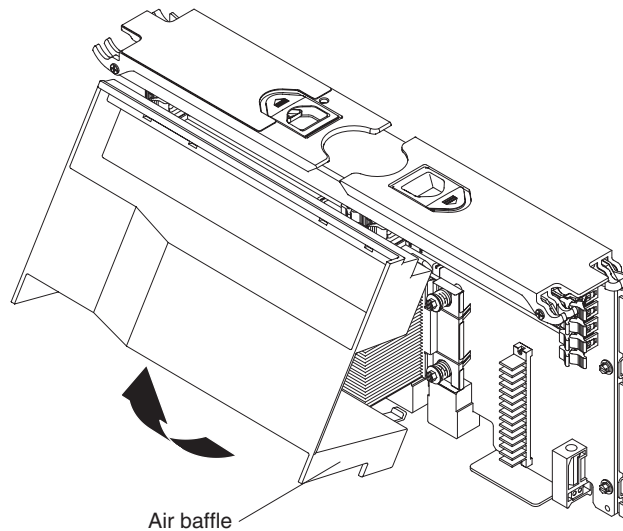
Attention: To avoid breaking the DIMM retaining clips or damaging the DIMM connectors, open and close the clips gently.

7. Open the retaining clip on each end of the DIMM connector and remove the DIMM from the connector.

8. If you are instructed to return the DIMM, follow all packaging instructions, and use any packaging materials for shipping that are supplied to you.

Replacing a DIMM

The server supports 667 MHz, 1.8 V, 240-pin, PC2-5300 single-ranked or dual-ranked double data-rate (DDR) II, registered synchronous dynamic random-access memory (SDRAM) with error correcting code (ECC) DIMMs. These DIMMs must be compatible with the latest PC2-5300 SDRAM Registered DIMM specifications. For a list of the supported options for the server, see http://www.ibm.com/servers/eserver/serverproven/compat/us/.

DIMMs must be installed in pairs of the same type and speed.

To install the replacement DIMM, complete the following steps:

1. Open the retaining clip on each end of the DIMM connector.

2. Touch the static-protective package that contains the DIMM to any unpainted metal surface on the server. Then, remove the DIMM from the package.

3. Turn the DIMM so that the DIMM keys align correctly with the slot.

DIMM
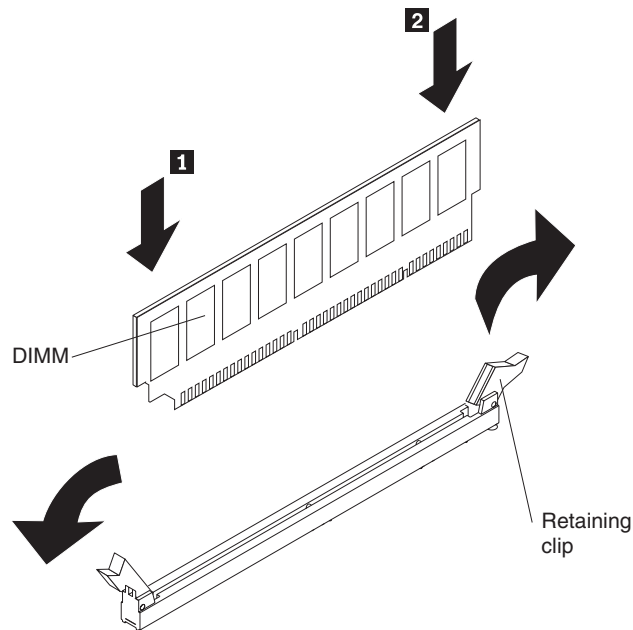
Retaining clip

4. Insert the DIMM into the connector by aligning the edges of the DIMM with the slots at the ends of the DIMM connector.
5. Firmly press one end of the DIMM into the connector; then, press the other end into the connector. The retaining clips snap into the locked position when the DIMM is seated in the connector. If there is a gap between the DIMM and the retaining clips, the DIMM has not been correctly inserted; open the retaining clips, remove the DIMM, and then reinsert it.
6. Close the microprocessor/memory card air baffle.
7. Replace the microprocessor/memory card (see "Replacing a microprocessor/memory card" on page 107).
8. Install the top cover (see "Replacing the top cover" on page 98).
9. Connect the cables and power cords (see "Connecting the cables" on page 96 for cabling instructions).
10. Turn on all attached devices and the server.

Removing a microprocessor/memory card

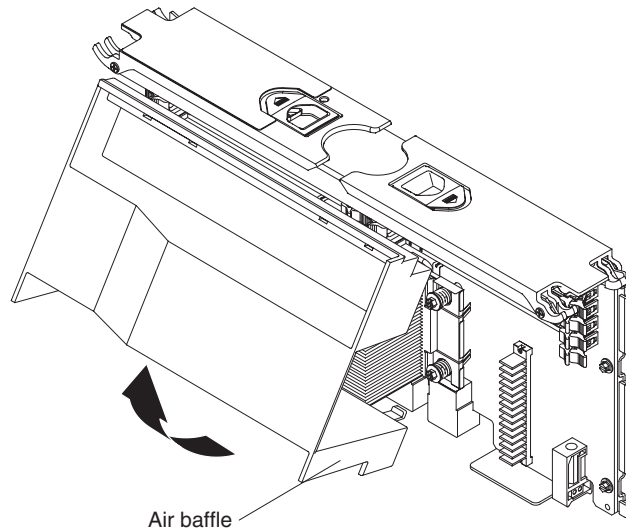To remove a microprocessor/memory card, complete the following steps.
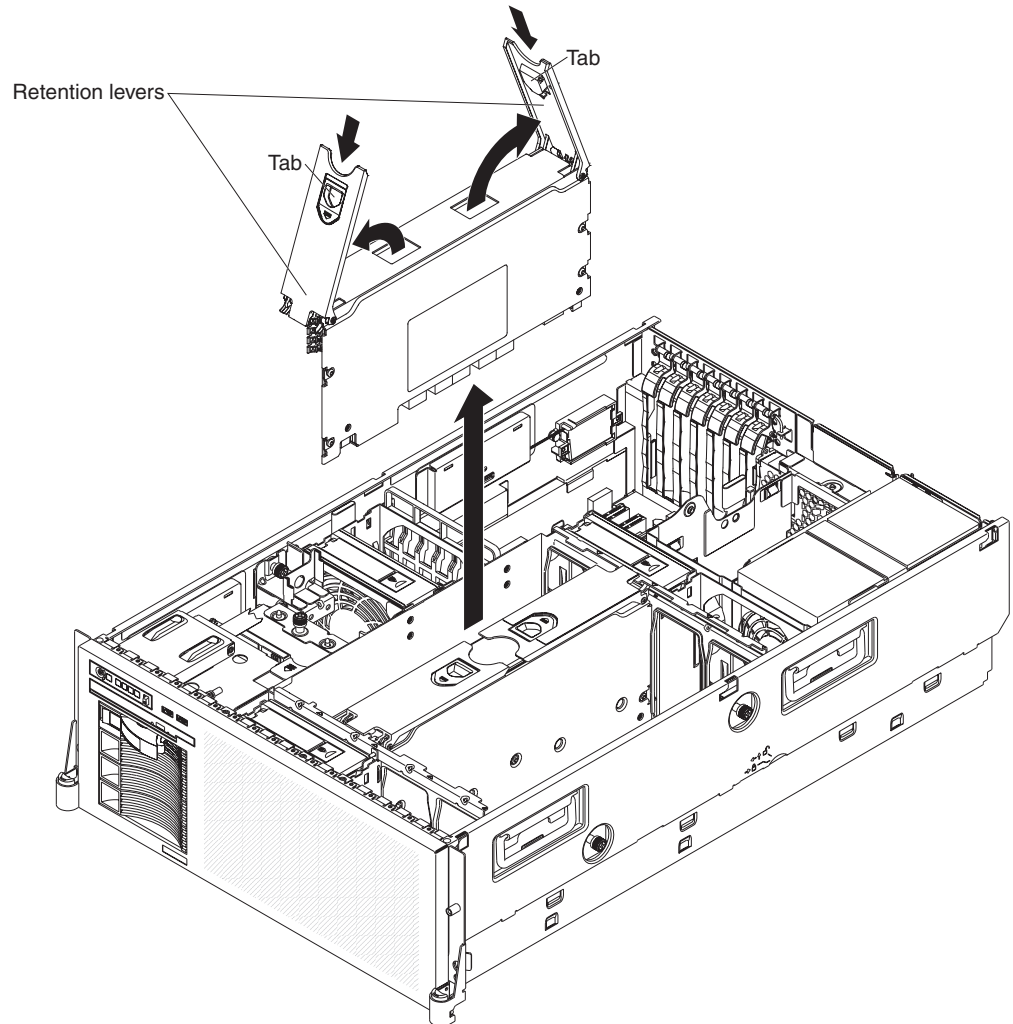
1. Read the safety information that begins on page vii and "Installation guidelines" on page 93.
2. Turn off the server and peripheral devices, and disconnect the power cords and all external cables necessary to replace the device.
3. Remove the top cover (see "Removing the top cover" on page 97).
4. Slide the retention tabs to the open position and lift the retention levers on the top of the microprocessor/memory card.
5. While you hold the retention levers open, lift the microprocessor/memory card out of the server.
6. If necessary, remove all DIMMs (see "Removing a DIMM" on page 104).
7. If you are instructed to return the microprocessor/memory card, follow all packaging instructions, and use any packaging materials for shipping that are supplied to you.

Replacing a microprocessor/memory card

At least one microprocessor/memory card with one pair of DIMMs must be installed for the server to operate correctly.

To install the replacement microprocessor/memory card, complete the following steps:

1. If necessary, install DIMMs (see "Replacing a DIMM" on page 105) and close the microprocessor/memory card air baffle.


Air baffle

2. Open the retention levers on the microprocessor/memory card.
3. Align the microprocessor/memory card with the guides.
4. Press the microprocessor/memory card into the connectors and close the retention levers. Make sure that the retention tabs lock the card in place.
5. Install the top cover (see "Replacing the top cover" on page 98).
6. Connect the cables and power cords (see "Connecting the cables" on page 96 for cabling instructions).
7. Turn on all attached devices and the server.

Removing the battery

To remove the battery, complete the following steps:

1. Read the safety information that begins on page vii and "Installation guidelines" on page 93.
2. Turn off the server and peripheral devices, and disconnect the power cords and all external cables necessary to replace the device.
3. Remove the top cover (see "Removing the top cover" on page 97).
4. If necessary, remove any adapter blocking access to the battery (see "Removing an adapter" on page 98).
5. Remove the battery:
   a. Use one finger to push the battery horizontally out of its housing.
   b. Lift the battery from the socket.
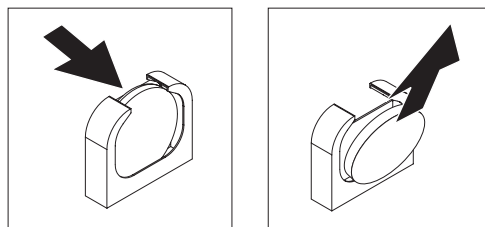
6. Dispose of the battery as required by local ordinances or regulations (see "Battery return program" on page 144 for information about disposing of the battery).

Replacing the battery

The following notes describe information that you must consider when replacing the battery in the server.

- When replacing the battery, you must replace it with a lithium battery of the same type from the same manufacturer.
- To order replacement batteries, call 1-800-426-7378 within the United States, and 1-800-465-7999 or 1-800-465-6666 within Canada. Outside the U.S. and Canada, call your IBM marketing representative or authorized reseller.
- After you replace the battery, you must reconfigure the server and reset the system date and time.
- To avoid possible danger, read and follow the following safety statement.

Statement 2:

CAUTION:
When replacing the lithium battery, use only IBM Part Number 33F8354 or an equivalent type battery recommended by the manufacturer. If your system has a module containing a lithium battery, replace it only with the same module type made by the same manufacturer. The battery contains lithium and can explode if not properly used, handled, or disposed of.

Do not:
- **Throw or immerse into water**
- **Heat to more than 100°C (212°F)**
- **Repair or disassemble**

Dispose of the battery as required by local ordinances or regulations.

To install the replacement battery, complete the following steps:

1. Follow any special handling and installation instructions that come with the replacement battery.
2. Insert the new battery:
   a. Hold the battery in a vertical orientation so that the smaller side is facing the housing.
   b. Place the battery into its socket, and press the battery toward the housing until it snaps into place.
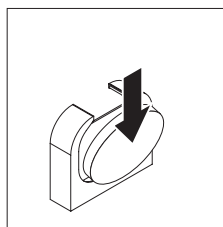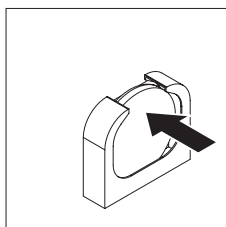
3. If you removed an adapter, install the adapter (see "Replacing the adapter" on page 98).
4. Install the top cover (see "Replacing the top cover" on page 98).
5. Connect the cables and power cords (see "Connecting the cables" on page 96 for cabling instructions).
6. Turn on all attached devices and the server.
7. Start the Configuration/Setup Utility program and reset the configuration:
   - Set the system date and time.
   - Set the power-on password.
   - Reconfigure the server.

   See "Using the Configuration/Setup Utility program" on page 128 for details.

Removing a DVD drive

To remove a DVD drive, complete the following steps:
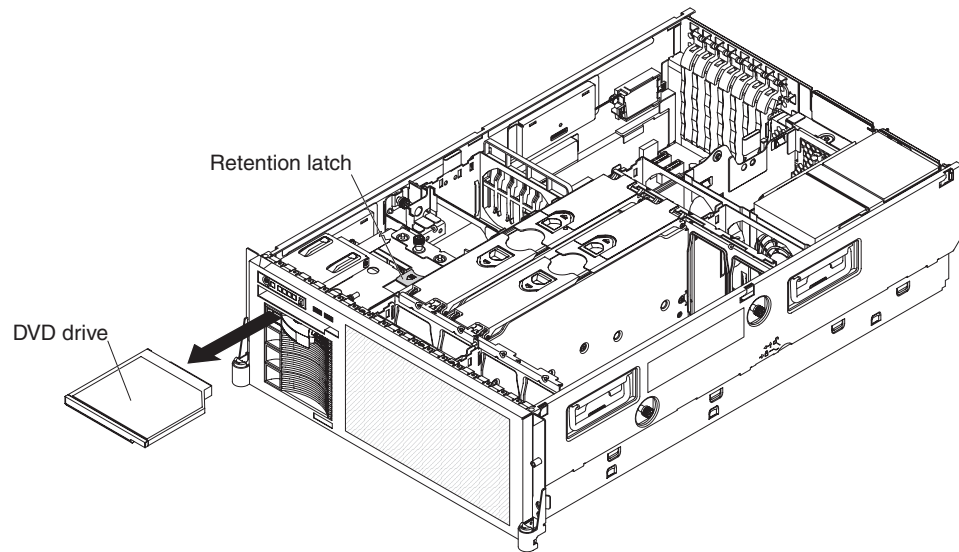
1. Read the safety information that begins on page vii and "Installation guidelines" on page 93.
2. Turn off the server and peripheral devices, and disconnect the power cords and all external cables necessary to replace the device.
3. Remove the top cover (see "Removing the top cover" on page 97).
4. Pull the blue retention latch forward and pull the DVD drive out of the server.
5. If you are instructed to return the DVD drive, follow all packaging instructions, and use any packaging materials for shipping that are supplied to you.

Replacing a DVD drive

To install the replacement DVD drive, compete the following steps:
1. Slide the DVD drive into the drive bay until the drive engages.
2. Install the top cover (see "Replacing the top cover" on page 98).
3. Connect the cables and power cords (see "Connecting the cables" on page 96 for cabling instructions).
4. Turn on all attached devices and the server.

Removing the power-supply structure

To remove the power-supply structure, complete the following steps.
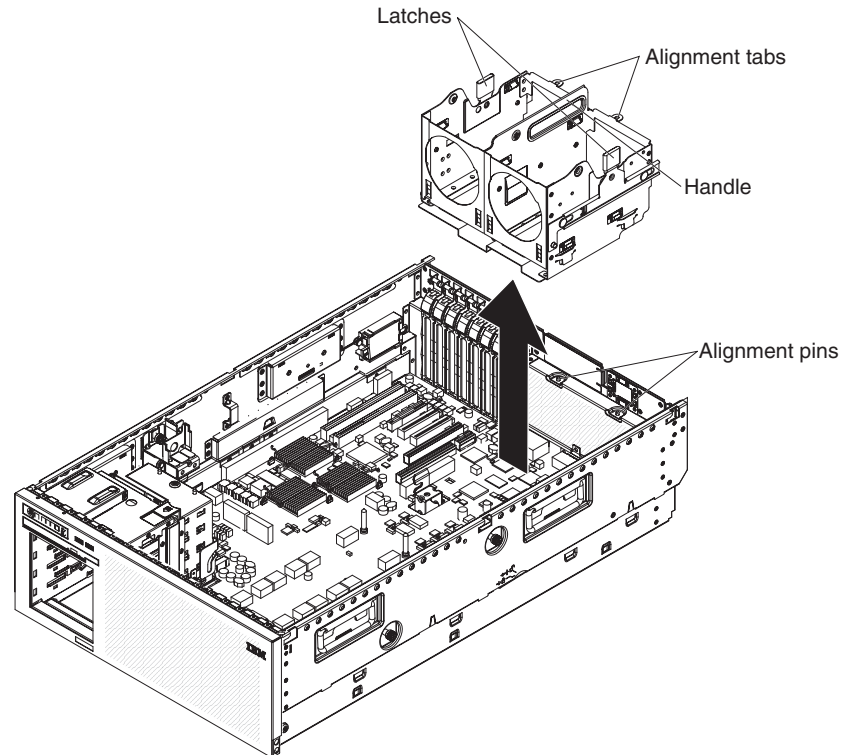
1. Read the safety information that begins on page vii and "Installation guidelines" on page 93.
2. Turn off the server and peripheral devices, and disconnect the power cords and all external cables necessary to replace the device.
3. Remove the top cover (see "Removing the top cover" on page 97).
4. Remove all power supplies (see "Removing the hot-swap power supply" on page 102).
5. Pull the two blue latches on the structure toward the front of the server; the structure disengages from the chassis.
6. Grasp the handle in the middle of the structure and lift the structure out of the server.
7. If you are instructed to return the power-supply structure, follow all packaging instructions, and use any packaging materials for shipping that are supplied to you.

Replacing the power-supply structure

To install the replacement power-supply structure, complete the following steps.

1. Align the structure with the alignment pins on the rear of the chassis and with the connectors on the I/O board, and gently lower the structure into the server. Make sure that the structure is firmly seated in the chassis.

2. Push the two blue latches of the structure toward the rear of the server until the latches lock the structure into position.

3. Install all power supplies (see "Replacing the hot-swap power supply" on page 103).

4. Install the top cover (see "Replacing the top cover" on page 98).

5. Connect the cables and power cords (see "Connecting the cables" on page 96 for cabling instructions).

6. Turn on all attached devices and the server.

Removing the top-cover latch bracket

To remove the top-cover latch bracket, complete the following steps.
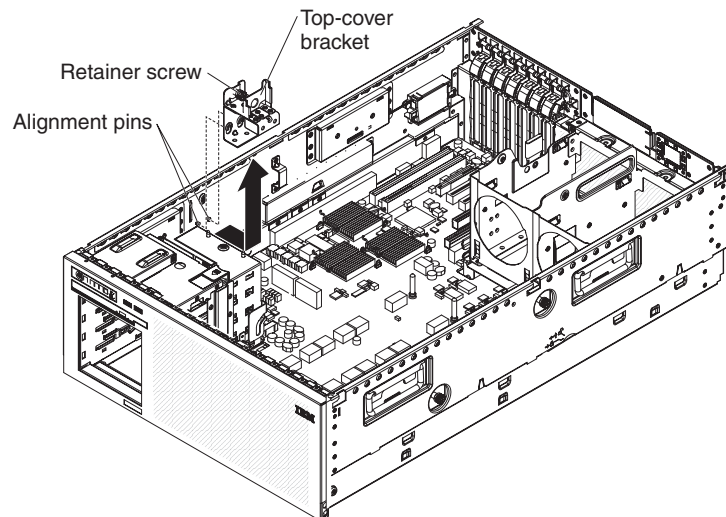
1. Read the safety information that begins on page vii and "Installation guidelines" on page 93.

2. Turn off the server and peripheral devices, and disconnect the power cords and all external cables necessary to replace the device.

3. Remove the top cover (see "Removing the top cover" on page 97).

4. Loosen the retainer screw on the top-cover latch bracket.

5. Grasp the top-cover latch bracket and lift it out of the server.

6. If you are instructed to return the top-cover latch bracket, follow all packaging instructions, and use any packaging materials for shipping that are supplied to you.

Replacing the top-cover latch bracket

To install the replacement top-cover latch bracket, complete the following steps:

1. Align the top-cover latch bracket with the alignment pins on the chassis and tighten the retainer screw. Make sure that the bracket is securely supported and fastened.

2. Install the top cover (see "Replacing the top cover" on page 98).

3. Connect the cables and power cords (see "Connecting the cables" on page 96 for cabling instructions).

4. Turn on all attached devices and the server.

Removing the Remote Supervisor Adapter II SlimLine

To remove the Remote Supervisor Adapter II SlimLine, complete the following steps.
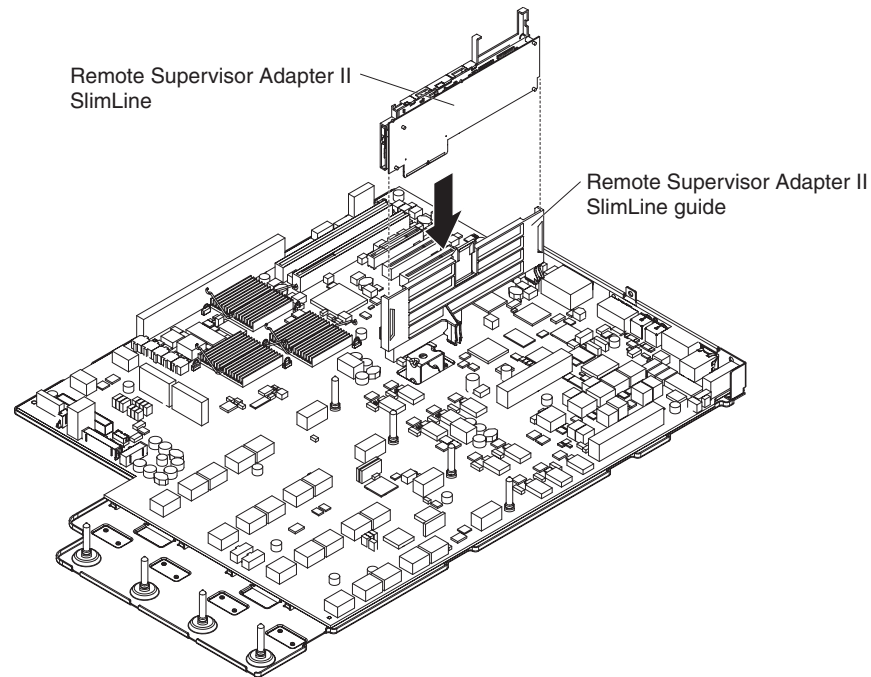
Remote Supervisor Adapter II SlimLine

Remote Supervisor Adapter II SlimLine guide

1. Read the safety information that begins on page vii and "Installation guidelines" on page 93.

2. Turn off the server and peripheral devices, and disconnect the power cords and all external cables necessary to replace the device.

3. Remove the top cover (see "Removing the top cover" on page 97).

4. Open the retention latch on the Remote Supervisor Adapter II SlimLine guide.

5. Lift the Remote Supervisor Adapter II SlimLine out of the server.

6. If you are instructed to return the Remote Supervisor Adapter II SlimLine, follow all packaging instructions, and use any packaging materials for shipping that are supplied to you.

## Replacing the Remote Supervisor Adapter II SlimLine

To install the replacement Remote Supervisor Adapter II SlimLine, complete the following steps:

1. Carefully grasp the Remote Supervisor Adapter II SlimLine assembly by its top edge or upper corners, and align it with the guide and the connector on the I/O board.

   Attention: Incomplete insertion might cause damage to the server or the adapter.

2. Press the assembly firmly into the connector and under the retention latch on the guide.

3. Install the top cover (see "Replacing the top cover" on page 98).

4. Connect the cables and power cords (see "Connecting the cables" on page 96 for cabling instructions).
5. Turn on all attached devices and the server.

Removing the ServeRAID-8k or ServeRAID-8k-l SAS controller

To remove the ServeRAID-8k or ServeRAID-8k-l SAS controller, complete the following steps.
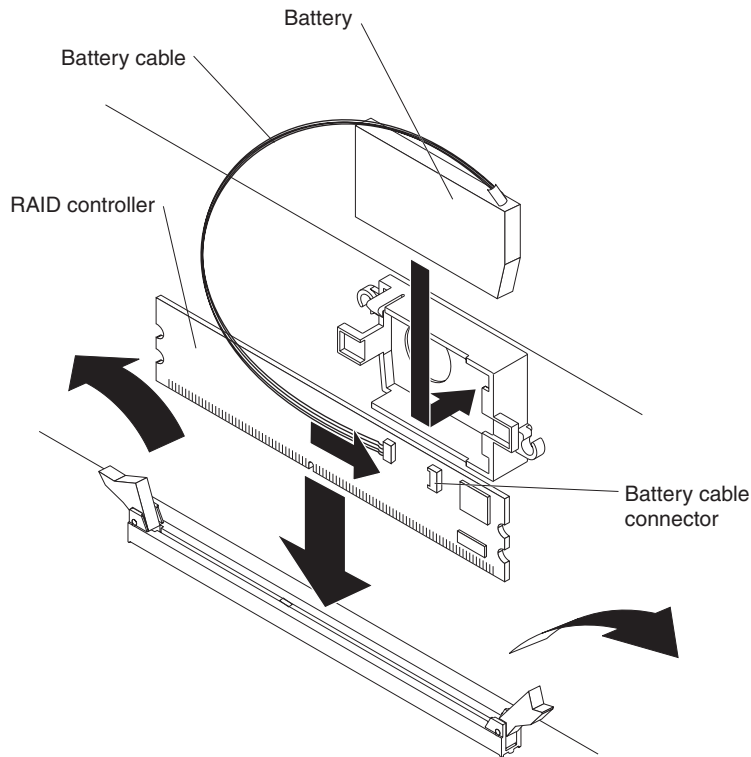
1. Read the safety information that begins on page vii and "Installation guidelines" on page 93.
2. Turn off the server and peripheral devices, and disconnect the power cords and all external cables necessary to replace the device.
3. Remove the top cover (see "Removing the top cover" on page 97).
4. If the controller is a ServeRAID-8k SAS controller, disconnect the battery from the controller; then, lift the battery out of the mounting bracket on the server wall and remove the battery from the server.
5. Open the retaining clip on each end of the connector and remove the controller from the connector.
6. If you are instructed to return the ServeRAID-8k or ServeRAID-8k-l SAS controller, follow all packaging instructions, and use any packaging materials for shipping that are supplied to you.

## Replacing the ServeRAID-8k or ServeRAID-8k-l SAS controller

To install the replacement ServeRAID-8k or ServeRAID-8k-l SAS controller, complete the following steps:
1. Open the retaining clip on each end of the connector.
2. Touch the static-protective package that contains the controller to any unpainted metal surface on the outside of the server; then, remove the controller from the package.

3. Turn the controller so that the keys align correctly with the slot.

4. Insert the controller into the connector by aligning the edges of the controller with the slots at the ends of the connector.

   Attention: Incomplete insertion might cause damage to the server or the controller.

5. Firmly press the controller straight down into the connector by applying pressure on both ends simultaneously. The retaining clips snap into the locked position when the controller is seated in the connector.

6. If you are installing a ServeRAID-8k SAS controller, complete the following steps:

   a. Install the battery in the mounting bracket on the server wall.

   b. Connect the battery to the controller.

7. Install the top cover (see "Replacing the top cover" on page 98).

8. Connect the cables and power cords (see "Connecting the cables" on page 96 for cabling instructions).

9. Turn on all attached devices and the server.

Removing the CD/DVD media backplane

To remove the CD/DVD media backplane, complete the following steps.
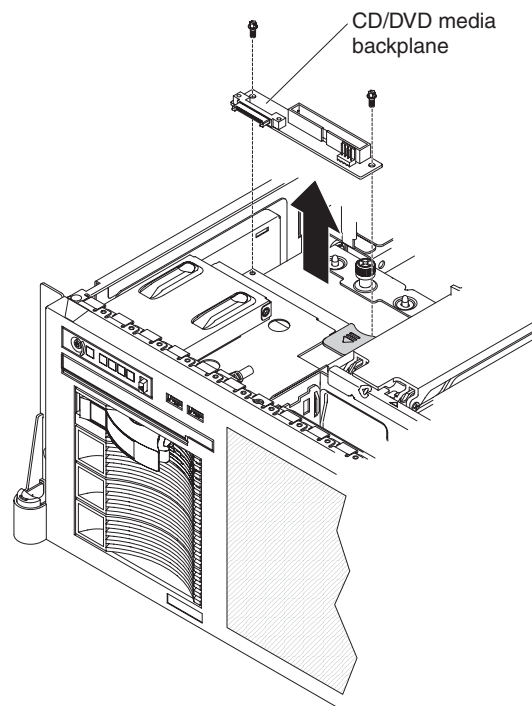
CD/DVD media backplane

1. Read the safety information that begins on page vii and "Installation guidelines" on page 93.

2. Turn off the server and peripheral devices, and disconnect the power cords and all external cables necessary to replace the device.

3. Remove the top cover (see "Removing the top cover" on page 97).

4. Remove the top-cover latch bracket (see "Removing the top-cover latch bracket" on page 112).

5. Note where the operator information panel ribbon cable is connected to the I/O board, and disconnect the cable.

6. Separate the hook-and-loop fastener that holds the ribbon cable to the chassis.

7. Note where the DVD drive signal and DVD drive power cables are connected, and disconnect the cables.
8. Pull the blue retention latch forward and pull the DVD drive out of the bay slightly.
9. Remove the two screws that secure the media backplane to the chassis.
10. Lift the media backplane out of the server.
11. If you are instructed to return the CD/DVD media backplane, follow all packaging instructions, and use any packaging materials for shipping that are supplied to you.

Replacing the CD/DVD media backplane

To install the replacement CD/DVD media backplane, complete the following steps:
1. Align the CD/DVD media backplane at the rear of the CD/DVD bay.
2. Install the two screws that secure the backplane.
3. Connect the DVD drive signal and DVD drive power cables.
4. Connect the operator information panel ribbon cable and secure the ribbon cable to the chassis, using the hook-and-loop fastener.
5. Slide the DVD drive into the drive bay until the drive engages.
6. Install the top-cover latch bracket (see "Replacing the top-cover latch bracket" on page 112).
7. Install the top cover (see "Replacing the top cover" on page 98).
8. Connect the cables and power cords (see "Connecting the cables" on page 96 for cabling instructions).
9. Turn on all attached devices and the server.

Removing the Remote Supervisor Adapter II SlimLine guide

To remove the Remote Supervisor Adapter II SlimLine guide, complete the following steps.
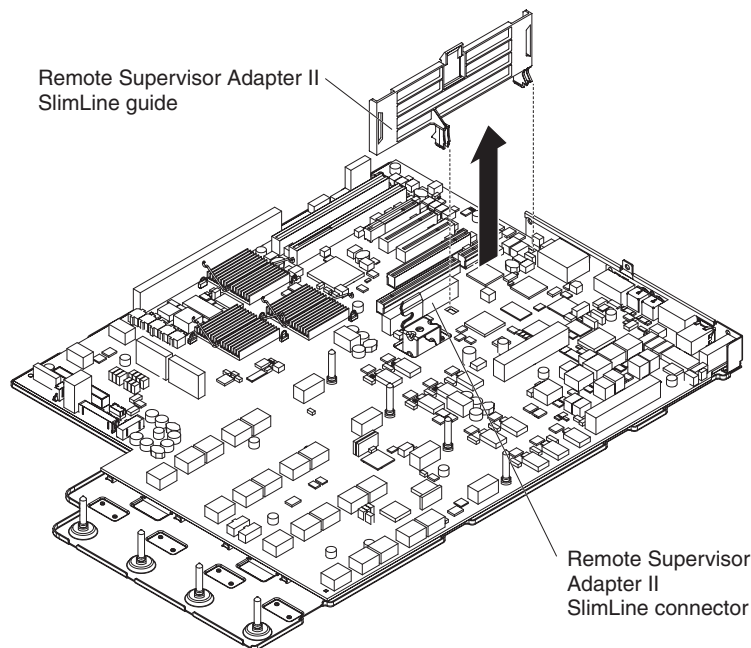
Remote Supervisor Adapter II SlimLine guide

Remote Supervisor Adapter II SlimLine connector

1. Read the safety information that begins on page vii and "Installation guidelines" on page 93.

2. Turn off the server and peripheral devices, and disconnect the power cords and all external cables necessary to replace the device.

3. Remove the top cover (see "Removing the top cover" on page 97).

4. Remove the Remote Supervisor Adapter II SlimLine (see "Removing the Remote Supervisor Adapter II SlimLine" on page 113).

5. Remove the two screws that secure the bracket to the chassis.

6. If you are instructed to return the Remote Supervisor Adapter II SlimLine guide, follow all packaging instructions, and use any packaging materials for shipping that are supplied to you.

Replacing the Remote Supervisor Adapter II SlimLine guide

To install the replacement Remote Supervisor Adapter II SlimLine guide, complete the following steps:

1. Align the Remote Supervisor Adapter II SlimLine guide on the chassis and install the two screws.

2. Install the Remote Supervisor Adapter II SlimLine (see "Replacing the Remote Supervisor Adapter II SlimLine" on page 113).

3. Install the top cover (see "Replacing the top cover" on page 98).

4. Connect the cables and power cords (see "Connecting the cables" on page 96 for cabling instructions).

5. Turn on all attached devices and the server.

Removing a microprocessor/memory card air baffle

To remove a microprocessor/memory card air baffle, complete the following steps.
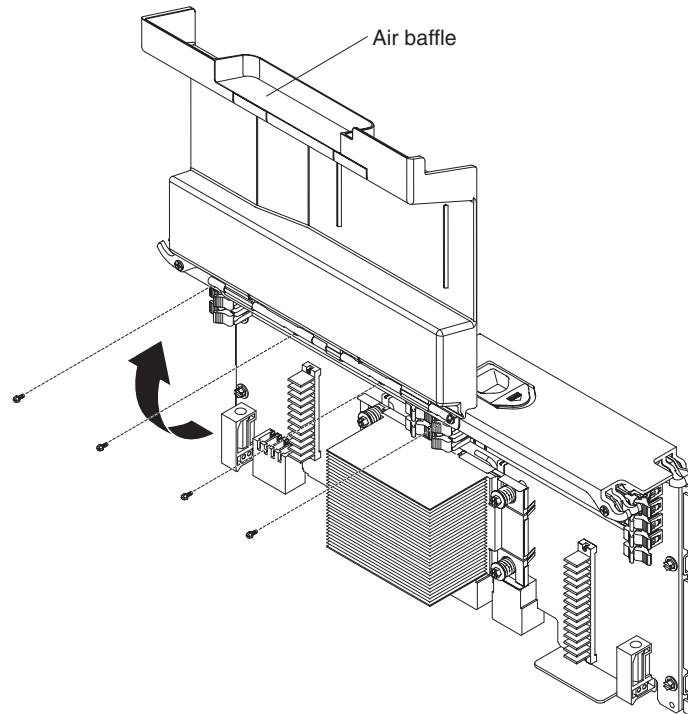
Air baffle

1. Read the safety information that begins on page vii and "Installation guidelines" on page 93.

2. Turn off the server and peripheral devices, and disconnect the power cords and all external cables necessary to replace the device.

3. Remove the top cover (see "Removing the top cover" on page 97).

4. Remove the microprocessor/memory card (see "Removing a microprocessor/memory card" on page 107).

5. Place the microprocessor/memory card on a flat surface with the DIMM connectors facing up.

6. Lift open the microprocessor/memory card air baffle.

7. Remove the four screws that secure the microprocessor/memory card air baffle.

8. If you are instructed to return the microprocessor/memory card air baffle, follow all packaging instructions, and use any packaging materials for shipping that are supplied to you.

Replacing a microprocessor/memory card air baffle

To install the replacement microprocessor/memory card air baffle, complete the following steps:

1. Align the air baffle on the microprocessor/memory card.

2. Install the four screws that secure the air baffle.

3. Close the microprocessor/memory card air baffle.

4. Replace the microprocessor/memory card (see "Replacing a microprocessor/memory card" on page 107).

5. Install the top cover (see "Replacing the top cover" on page 98).

6. Connect the cables and power cords (see "Connecting the cables" on page 96 for cabling instructions).

7. Turn on all attached devices and the server.

Removing and replacing Tier 2 CRUs

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.

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

Removing the microprocessor/memory card structure

To remove the microprocessor/memory card structure, complete the following steps.
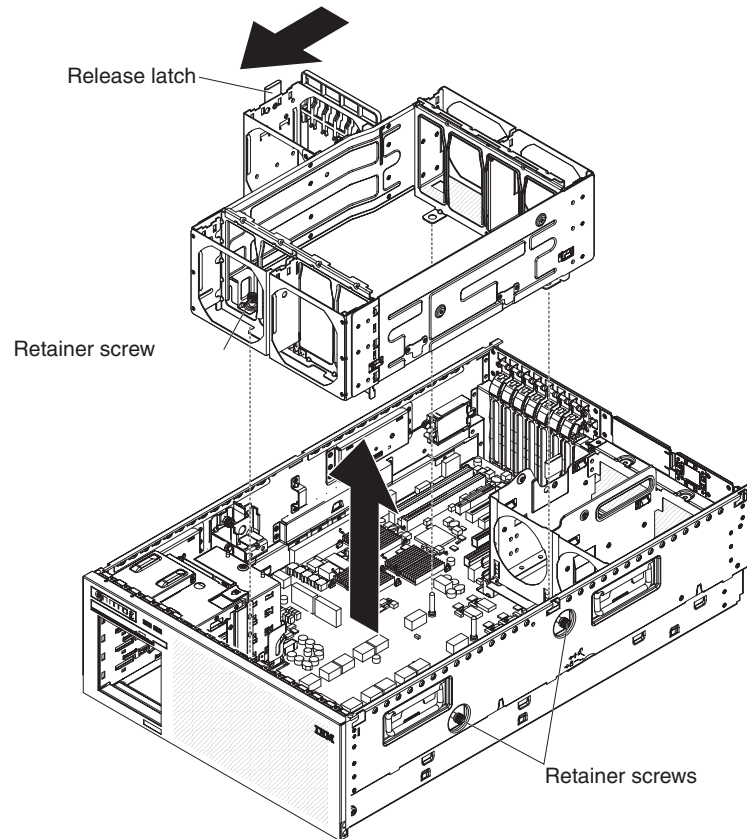
Release latch

Retainer screw

Retainer screws

1. Read the safety information that begins on page vii and "Installation guidelines" on page 93.
2. Turn off the server and peripheral devices, and disconnect the power cords and all external cables necessary to replace the device.
3. Remove the top cover (see "Removing the top cover" on page 97).

   Note: You might find it helpful to note where each adapter is installed before you remove the adapters.
4. Remove all adapters and place the adapters on a static-protective surface.
5. Remove all fans (see "Removing the hot-swap fan" on page 100).
6. Remove all microprocessor/memory cards (see "Removing a microprocessor/memory card" on page 107).
7. Loosen the two retainer screws on the exterior right-side (as viewed from the server front) of the chassis.
8. Loosen the retainer screw on the bottom of the structure.
9. Pull the blue latch on the left-side interior (as viewed from the server front) of the chassis toward the front of the server; the structure disengages from the chassis.
10. Lift the structure from the server.
11. If you are instructed to return the microprocessor/memory card structure, follow all packaging instructions, and use any packaging materials for shipping that are supplied to you.

Replacing the microprocessor/memory card structure

To install the replacement microprocessor/memory card structure, complete the following steps:

1. Align the structure with the connectors on the I/O board and place the structure in the chassis.
2. Push the blue latch of the structure toward the rear of the server until it locks the structure into position.
3. Tighten the three retainer screws to secure the structure.
4. Install all microprocessor/memory cards (see "Replacing a microprocessor/ memory card" on page 107).
5. Install all fans (see "Replacing the hot-swap fan" on page 101).
6. Install all adapters (see "Replacing the adapter" on page 98).
7. Install the top cover (see "Replacing the top cover" on page 98).
8. Connect the cables and power cords (see "Connecting the cables" on page 96 for cabling instructions).
9. Turn on all attached devices and the server.

Removing the operator information panel assembly

To remove the operator information panel assembly, complete the following steps.
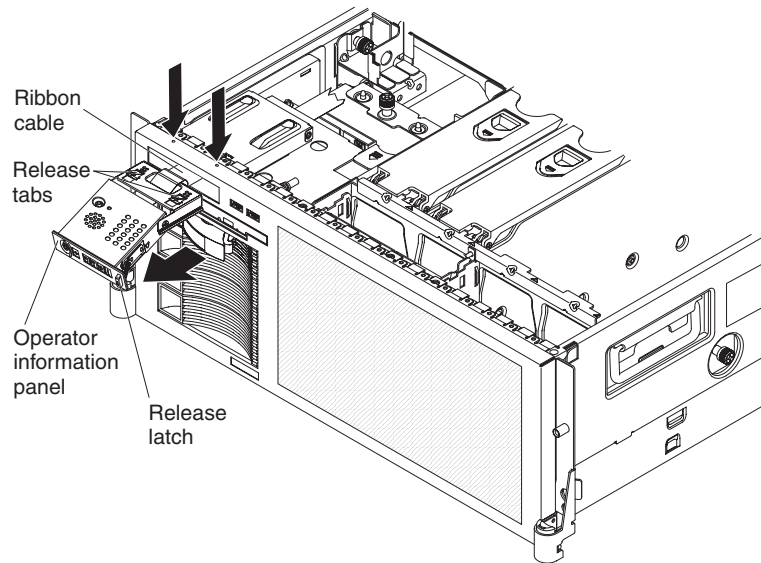
1. Read the safety information that begins on page vii and "Installation guidelines" on page 93.
2. Turn off the server and peripheral devices, and disconnect the power cords and all external cables necessary to replace the device.
3. Remove the top cover (see "Removing the top cover" on page 97).
4. Remove the top-cover latch bracket (see "Removing the top-cover latch bracket" on page 112).
5. Note where the operator information panel ribbon cable is connected to the I/O board, and disconnect the cable.
6. Separate the hook-and-loop fastener that holds the ribbon cable to the chassis.
7. Slide the release latch to the left and pull the panel out of the server.
8. Press the release tabs through the holes on the bezel; then, pull the assembly and the ribbon cable out of the server.

9. If you are instructed to return the operator information panel assembly, follow all packaging instructions, and use any packaging materials for shipping that are supplied to you.

Replacing the operator information panel assembly

To install the replacement operator information panel assembly, complete the following steps:

1. Thread the operator information panel ribbon cable through the opening in the front of the server; then, connect the ribbon cable.
2. Slide the panel into the server until it clicks into place.
3. Secure the ribbon cable to the chassis, using the hook-and-loop fastener.
4. Install the top-cover latch bracket (see "Replacing the top-cover latch bracket" on page 112).
5. Install the top cover (see "Replacing the top cover" on page 98).
6. Connect the cables and power cords (see "Connecting the cables" on page 96 for cabling instructions).
7. Turn on all attached devices and the server.

Removing and replacing FRUs

FRUs must be installed only by trained service technicians.

Removing the front fan board

To remove the front fan board, complete the following steps.
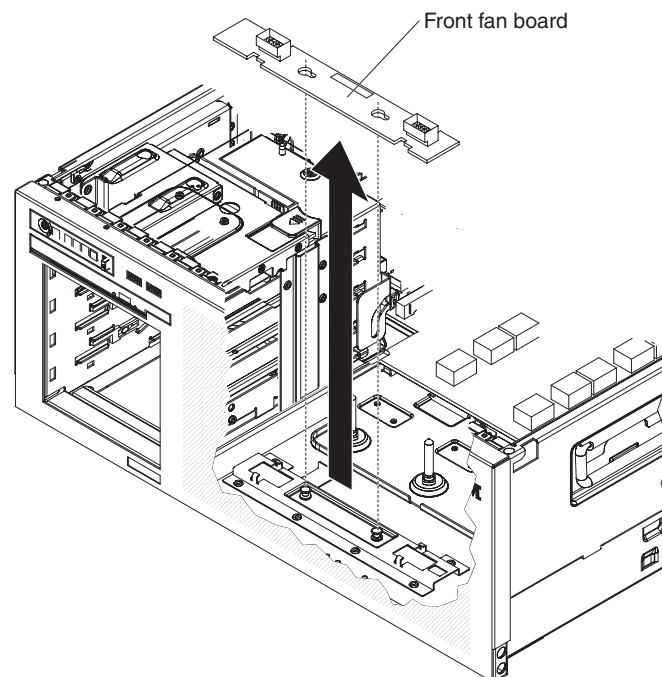
Front fan board

1. Read the safety information that begins on page vii and "Installation guidelines" on page 93.
2. Turn off the server and peripheral devices, and disconnect the power cords and all external cables necessary to replace the device.
3. Remove the top cover (see "Removing the top cover" on page 97).

4. Remove the microprocessor/memory card support structure (see "Removing the microprocessor/memory card structure" on page 119).

5. Note where the fan cable is connected to the I/O board and disconnect the cable.

6. Remove the front fan board from the alignment pins and lift the board out of the server.

7. If you are instructed to return the front fan board, follow all packaging instructions, and use any packaging materials for shipping that are supplied to you.

Replacing the front fan board

To install the replacement front fan board, complete the following steps:

1. Align the front fan board with the alignment pins on the chassis and install the board.

2. Connect the fan cable.

3. Install the microprocessor/memory card support structure (see "Replacing the microprocessor/memory card structure" on page 120).

4. Install the top cover (see "Replacing the top cover" on page 98).

5. Connect the cables and power cords (see "Connecting the cables" on page 96 for cabling instructions).

6. Turn on all attached devices and the server.

Removing the I/O board assembly

To remove the I/O board assembly, complete the following steps.
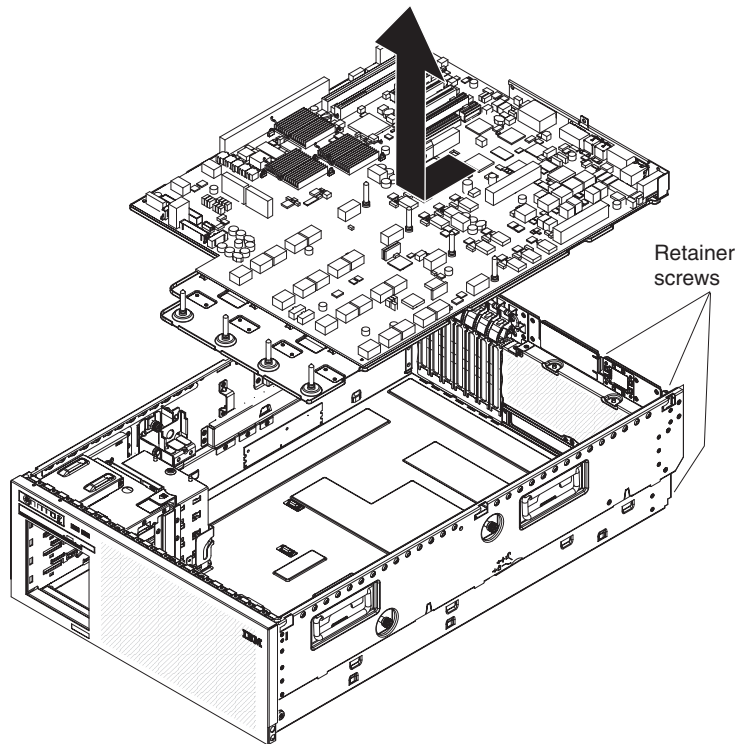
Retainer screws

1. Read the safety information that begins on page vii and "Installation guidelines" on page 93.

2. Turn off the server and peripheral devices, and disconnect the power cords and all external cables necessary to replace the device.

3. Remove the top cover (see "Removing the top cover" on page 97).

4. Remove the top-cover latch bracket (see "Removing the top-cover latch bracket" on page 112).

5. Disconnect all cables from the I/O board.

6. Remove all power supplies (see "Removing the hot-swap power supply" on page 102).

7. Remove all adapters and place the adapters on a static-protective surface.

    Note: You might find it helpful to note where each adapter is installed before removing the adapters.

8. Remove the Remote Supervisor Adapter II SlimLine, if one is installed (see "Removing the Remote Supervisor Adapter II SlimLine" on page 113).

9. Remove the Remote Supervisor Adapter II SlimLine guide (see "Removing the Remote Supervisor Adapter II SlimLine guide" on page 116).

10. Remove the ServeRAID-8k or ServeRAID-8k-l SAS controller (see "Removing the ServeRAID-8k or ServeRAID-8k-l SAS controller" on page 114).

11. Remove all fans (see "Removing the hot-swap fan" on page 100).

12. Remove all microprocessor/memory cards (see "Removing a microprocessor/memory card" on page 107).

13. Remove the power-supply structure (see "Removing the power-supply structure" on page 111).

14. Remove the microprocessor/memory card support structure (see "Removing the microprocessor/memory card structure" on page 119).

15. Remove the battery (see "Removing the battery" on page 108).

16. Loosen the three retainer screws on the rear of the server.

17. Slide the I/O board assembly toward the front of the server and lift the assembly from the server.

18. If you are instructed to return the I/O board assembly, follow all packaging instructions, and use any packaging materials for shipping that are supplied to you.

Replacing the I/O board assembly

To install the replacement I/O board assembly, complete the following steps:

1. Place the assembly in the chassis and slide the assembly toward the rear of the server.

2. Tighten the retainer screws.

3. Install the battery (see "Replacing the battery" on page 109).

4. Install the power supply structure (see "Replacing the hot-swap power supply" on page 103).

5. Install the microprocessor/memory card support structure (see "Replacing the microprocessor/memory card structure" on page 120).

6. Install all power supplies (see "Replacing the hot-swap power supply" on page 103).

7. Install all adapters (see "Replacing the adapter" on page 98).

8. Install the Remote Supervisor Adapter II SlimLine guide (see "Replacing the Remote Supervisor Adapter II SlimLine guide" on page 117).

9. Install the Remote Supervisor Adapter II SlimLine (see "Replacing the Remote Supervisor Adapter II SlimLine" on page 113).

10. Install the ServeRAID-8k-I or ServeRAID-8k SAS controller (see "Replacing the ServeRAID-8k or ServeRAID-8k-I SAS controller" on page 114).

11. Install all fans (see "Replacing the hot-swap fan" on page 101).

12. Install all microprocessor/memory cards (see "Replacing a microprocessor/memory card" on page 107).

13. Install the top-cover latch bracket (see "Replacing the top-cover latch bracket" on page 112).

14. Connect all cables to the I/O board assembly.

15. Install the top cover (see "Replacing the top cover" on page 98).

16. Connect the cables and power cords (see "Connecting the cables" on page 96 for cabling instructions).

17. Turn on all attached devices and the server.

Removing the SAS backplane assembly

To remove the Serial Attached SCSI (SAS) backplane assembly, complete the following steps.
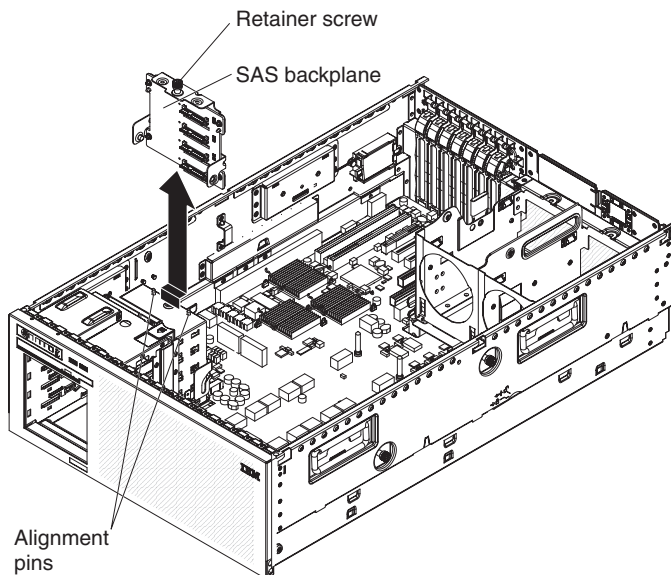
1. Read the safety information that begins on page vii and "Installation guidelines" on page 93.

2. Turn off the server and peripheral devices, and disconnect the power cords and all external cables necessary to replace the device.

3. Remove the top cover (see "Removing the top cover" on page 97).

4. Pull the hard disk drives out of the server.

5. Remove the top-cover latch bracket (see "Removing the top-cover latch bracket" on page 112).

6. Remove the microprocessor/memory card support structure (see "Removing the microprocessor/memory card structure" on page 119).

7. Note where the operator information panel ribbon cable is connected to the I/O board, and disconnect the cable.

8. Separate the hook-and-loop fastener that holds the ribbon cable to the chassis.

9. Note where the front USB connector cable is connected, and disconnect the cable.

10. Note where the DVD drive signal and DVD drive power cables are connected, and disconnect the cables.
11. Loosen the retainer screw on top of the SAS backplane assembly.
12. Grasp the top edge of the SAS backplane assembly and lift it out of the server.
13. Note where the SAS signal cable and SAS power cable are connected on the backplane, and disconnect the cables.
14. If you are instructed to return the SAS backplane assembly, follow all packaging instructions, and use any packaging materials for shipping that are supplied to you.

Replacing the SAS backplane assembly

To install the replacement SAS backplane assembly, complete the following steps:

1. Connect the SAS signal cable and SAS power cable to the backplane assembly.
2. Align the SAS backplane assembly with the card guides on the top of the SAS hard disk drive cage, press the backplane into place, and tighten the retainer screw.
3. Connect the DVD drive signal and DVD drive power cables.
4. Connect the front USB connector cable.
5. Connect the operator information panel ribbon cable and secure the ribbon cable to the chassis, using the hook-and-loop fastener.
6. Install the microprocessor/memory card support structure (see "Replacing the microprocessor/memory card structure" on page 120).
7. Install the top-cover latch bracket (see "Replacing the top-cover latch bracket" on page 112).
8. Install the hard disk drives.
9. Install the top cover (see "Replacing the top cover" on page 98).
10. Connect the cables and power cords (see "Connecting the cables" on page 96 for cabling instructions).
11. Turn on all attached devices and the server.

Chapter 5. Configuration information and instructions

This chapter provides information about updating the firmware and using the configuration utilities.

Updating the firmware

The firmware in the server is periodically updated and is available for download on the Web. Go to http://www.ibm.com/servers/eserver/support/xseries/index.html to check for the latest level of firmware, such as BIOS code, vital product data (VPD) code, device drivers, and service processor firmware.

When you replace a device in the server, you might have to either update the server with the latest version of the firmware that is stored in memory on the device or restore the pre-existing firmware from a diskette or CD image.

- BIOS code and the diagnostics programs are stored in ROM on the I/O board.
- BMC firmware is stored in ROM on the baseboard management controller on the I/O board.
- Ethernet firmware is stored in ROM on the Ethernet controller on the I/O board.
- ServeRAID firmware is stored in ROM on the ServeRAID controller on the I/O board.
- SAS firmware is stored in ROM on the SAS controller on the I/O board.
- Major components contain vital product data (VPD) code. You can select to update the VPD code during the BIOS code update procedure.

Configuring the server

The *ServerGuide Setup and Installation* CD provides software setup tools and installation tools that are specifically designed for your IBM server. Use this CD during the initial installation of the server to configure basic hardware features and to simplify the operating-system installation.

In addition to the *ServerGuide Setup and Installation* CD, you can use the following configuration programs to customize the server hardware:

- Update*Xpress* program
- Configuration/Setup Utility program
- Baseboard management controller utility programs
- RAID configuration programs
  - Adaptec RAID Configuration Utility program
  - ServeRAID Manager
- Remote Supervisor Adapter II Web interface

This section contains basic information about these programs. For detailed information about these programs, see "Configuring the server" in the *User's Guide* on the IBM *System x Documentation* CD.

Using the ServerGuide Setup and Installation CD

The *ServerGuide Setup and Installation* CD provides programs to detect the server model and installed optional hardware devices, configure the server hardware, provide device drivers, and help you install the operating system. For information about the supported operating-system versions, see the label on the CD. If the

ServerGuide Setup and Installation CD did not come with the server, you can download the latest version from http://www.ibm.com/pc/qtechinfo/MIGR-4ZKPPT.html.

To start the *ServerGuide Setup and Installation* CD, complete the following steps:

1. Insert the CD, and restart the server. If the server does not start, see "ServerGuide problems" on page 40.
2. Follow the instructions on the screen to:
   a. Select your language.
   b. Select your keyboard layout and country.
   c. View the overview to learn about ServerGuide features.
   d. View the readme file to review installation tips about your operating system and adapter.
   e. Start the setup and hardware configuration programs.
   f. Start the operating-system installation. You will need your operating-system CD.

Using the Update*Xpress* program

The Update*Xpress* program is available for most IBM System x and xSeries servers and server options. It detects supported and installed device drivers and firmware in the server and installs available updates. You can download the Update*Xpress* program from the Web at no additional cost, or you can purchase it on a CD. To download the program or purchase the CD, go to http://www.ibm.com/servers/eserver/xseries/systems_management/ibm_director/extensions/xpress.html. Additional information about Update*Xpress* is available from the System x and xSeries Tools Center at http://publib.boulder.ibm.com/infocenter/toolsctr/v1r0/index.jsp.

Using the Configuration/Setup Utility program

Use the Configuration/Setup Utility program to perform the following tasks:

- View configuration information
- View and change assignments for devices and I/O ports
- Set the date and time
- Set and change the power-on password
- Set the startup characteristics of the server and the order of startup devices
- Set and change settings for advanced hardware features
- View and clear error logs
- Change interrupt request (IRQ) settings
- Enable USB legacy keyboard and mouse support
- Resolve configuration conflicts

Starting the Configuration/Setup Utility program

To start the Configuration/Setup Utility program, complete the following steps:

1. Turn on the server.
2. When the prompt `Press F1 for Configuration/Setup` appears, press F1. If you have set both a power-on password and an administrator password, you must type the administrator password to access the full Configuration/Setup Utility menu. If you do not type the administrator password, a limited Configuration/Setup Utility menu is available.
3. Select settings to view or change.

Configuration/Setup Utility menu choices

The following choices are on the Configuration/Setup Utility main menu. Depending on the version of the BIOS code, some menu choices might differ slightly from these descriptions.

- **System Summary**

  Select this choice to view configuration information, including the type, speed, and cache sizes of the microprocessors and the amount of installed memory. When you make configuration changes through other choices in the Configuration/Setup Utility program, the changes are reflected in the system summary; you cannot change settings directly in the system summary.

  This choice is on the full and limited Configuration/Setup Utility menu.

  - **Processor Summary**

    Select this choice to view information about the microprocessors.

- **System Information**

  Select this choice to view information about the server. When you make changes through other options in the Configuration/Setup Utility program, some of those changes are reflected in the system information; you cannot change settings directly in the system information.

  This choice is on the full Configuration/Setup Utility menu only.

  - **Product Data**

    Select this choice to view the machine type and model of the server, the serial number, and the revision level or issue date of the BIOS, diagnostics, and BMC code that are stored in electrically erasable programmable ROM (EEPROM).

  - **System Card Data**

    Select this choice to view vital product data (VPD) for some server components.

- **Devices and I/O Ports**

  Select this choice to view or change assignments for devices and input/output (I/O) ports.

  Select this choice to enable or disable integrated SAS and Ethernet controllers and all standard ports (such as serial). **Enable** is the default setting for all controllers. If you disable a device, it cannot be configured, and the operating system will not be able to detect it (this is equivalent to disconnecting the device).

  This choice is on the full Configuration/Setup Utility menu only.

  - **Remote Console Redirection**

    Select this choice to enable Serial over LAN (SOL) and to set remote console communication parameters.

  - **Video**

    Select this choice to view information about the integrated video controller.

  - **IDE Configuration Menu**

    Select this choice to enable or disable the IDE controller.

  - **System MAC Addresses**

    Select this choice to view the Ethernet 1 controller and Ethernet 2 controller MAC addresses.

- **Date and Time**

  Select this choice to set the date and time in the server, in 24-hour format (*hour*:*minute*:*second*).

This choice is on the full Configuration/Setup Utility menu only.

- **System Security**

  Select this choice to view or change the security options.

  This choice is on the full Configuration/Setup Utility menu only.

  - **Power-on Password**

    Select this choice to set a power-on password. See "Power-on password" on page 132 for more information.

  - **Administrator Password**

    Attention: If you set an administrator password and then forget it, there is no way to change, override, or remove it. You must replace the I/O board.

    Select this choice to set or change an administrator password. An administrator password is intended to be used by a system administrator; it limits access to the full Configuration/Setup Utility menu. If an administrator password is set, the full Configuration/Setup Utility menu is available only if you type the administrator password at the password prompt. See "Administrator password" on page 133 for more information.

    This choice is on the Configuration/Setup Utility menu only if a Remote Supervisor Adapter II SlimLine is installed.

  - **TPM Setting**

    Select this choice to enable or disable the integrated TPM chip.

- **Start Options**

  Select this choice to view or change the start options. Changes in the start options take effect when you restart the server.

  This choice is on the full Configuration/Setup Utility menu only.

  - **Startup Sequence Options**

    Select this choice to view the startup device sequence that is set for the server.

    You can specify whether the server starts with the keyboard number lock on or off. You can enable the server to run without a diskette drive, monitor, or keyboard.

    The startup sequence specifies the order in which the server checks devices to find a boot record. The server starts from the first boot record that it finds. If the server has Wake on LAN® hardware and software and the operating system supports Wake on LAN functions, you can specify a startup sequence for the Wake on LAN functions.

    If you enable the boot fail count, the BIOS default settings will be restored after three consecutive failures to find a boot record.

    You can enable a virus-detection test that checks for changes in the boot record when the server starts.

    You can enable the use of a USB legacy keyboard in a DOS or System Setup environment. If a keyboard is detected, the USB legacy operation will be disabled.

- **Advanced Setup**

  Select this choice to change settings for advanced hardware features.

  Important: The server might malfunction if these settings are incorrectly configured. Follow the instructions on the screen carefully.

  This choice is on the full Configuration/Setup Utility menu only.

  - **Memory Settings**

Select this choice to manually enable a pair of memory connectors, memory node interleaving, and Chipkill memory (if it is supported).

If a memory error is detected during POST or memory configuration, the server automatically disables the failing memory pair of memory connectors and continues operating with reduced memory. After the problem is corrected, you must enable the memory connectors. Use the arrow keys to highlight the pair of memory connectors that you want to enable, and use the arrow keys to select **Enable**.

– **CPU Options**

Select this choice to disable the microprocessor cache or to set the microprocessor cache to use the write-back or the write-through method. Write-back caching generally provides better system performance. Also select this choice to set the microprocessor power-management option. **Disable** is the default setting.

– **PCI Bus Control**

Select this choice to view and set interrupts for PCI devices and to configure the master-latency-timer (MLT) value for the server.

– **Baseboard Management Controller (BMC) Settings**

Select this choice to change BMC settings.

-   **BMC Network Configuration**

    Select this choice to set the network addresses of the BMC.

-   **BMC System Event Log**

    Select this choice to view and clear BMC event log entries.

-   **User Account Settings**

    Select this choice to define user names and passwords for remote access to the BMC.

– **RSA II Settings**

Select this choice to view and change Remote Supervisor Adapter II SlimLine settings. Select **Save Values and Reboot RSA II** to save the changes that you have made in the settings and restart the Remote Supervisor Adapter II SlimLine.

This choice is on the Configuration/Setup Utility menu only if a Remote Supervisor Adapter II SlimLine is installed.

- **Event/Error Logs**

Select this choice to view and clear the POST error log and the system event/error log.

– **Post Error Log**

Select this choice to view the three most recent error codes and messages that were generated during POST. Select **Clear POST Error Log** to clear the POST error log.

– **System Event/Error Log**

Note: This choice is on the Configuration/Setup Utility menu only if a Remote Supervisor Adapter II SlimLine is installed.

Select this choice to view the error messages in the system event/error log. You can use the arrow keys to move between pages in the error log. Select **Clear System Event/Error Log** to clear the system event/error log.

The system event/error log contains all event and error messages that have been generated during POST by the systems-management interface handler and the service processor.

- **Save Settings**

  Select this choice to save the changes that you have made in the settings.
- **Restore Settings**

  Select this choice to cancel the changes that you have made in the settings and restore the previous settings.
- **Load Default Settings**

  Select this choice to cancel the changes you have made in the settings and restore the factory settings.
- **Exit Setup**

  Select this choice to exit from the Configuration/Setup Utility program. If you have not saved the changes that you have made in the settings, you are asked whether you want to save the changes or exit without saving them.

Passwords

From the **System Security** choice, you can set, change, and delete a power-on password and an administrator password. The **System Security** choice is on the full Configuration/Setup Utility menu only.

If you set only a power-on password, you must type the power-on password to complete the system startup; you have access to the full Configuration/Setup Utility menu.

An administrator password is intended to be used by a system administrator; it limits access to the full Configuration/Setup Utility menu. If you set only an administrator password, you do not have to type a password to complete the system startup, but you must type the administrator password to access the Configuration/Setup Utility menu.

If you set a power-on password for a user and an administrator password for a system administrator, you can type either password to complete the system startup. A system administrator who types the administrator password has access to the full Configuration/Setup Utility menu; the system administrator can give the user authority to set, change, and delete the power-on password. A user who types the power-on password has access to only the limited Configuration/Setup Utility menu; the user can set, change, and delete the power-on password, if the system administrator has given the user that authority.
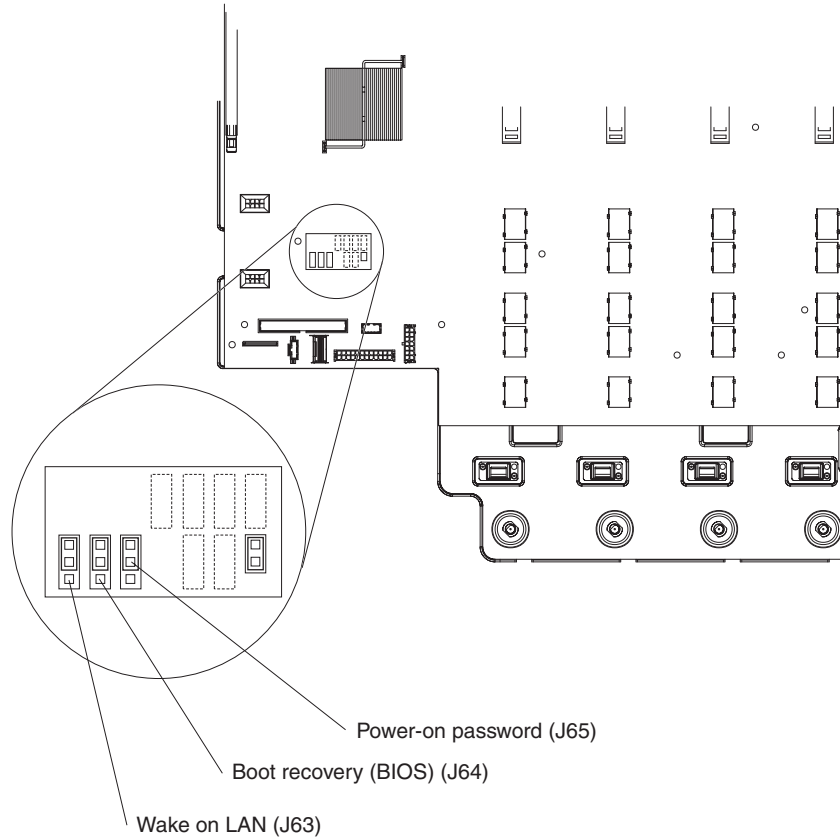
Power-on password: If a power-on password is set, when you turn on the server, you must type the power-on password to complete the system startup. You can use any combination of up to seven characters (A–Z, a–z, and 0–9) for the password.

If a power-on password is set, you can enable the Unattended Start mode, in which the keyboard and mouse remain locked but the operating system can start. You can unlock the keyboard and mouse by typing the power-on password.

If you forget the power-on password, you can regain access to the server in any of the following ways:
- If an administrator password is set, type the administrator password at the password prompt. Start the Configuration/Setup Utility program and reset the power-on password.
- Remove the battery from the server and then reinstall it. For instructions for removing the battery, see "Removing the battery" on page 108.
- Change the position of the power-on password jumper (J65 on the I/O board) to bypass the power-on password check.

Attention: Before you change any switch settings or move any jumpers, turn off the server; then, disconnect all power cords and external cables. See the safety information that begins on page v. Do not change settings or move jumpers on any switch or jumper blocks that are not shown in this document.

The following illustration shows the locations of the power-on password, boot recovery, and Wake on LAN jumpers.

Power-on password (J65)

Boot recovery (BIOS) (J64)

Wake on LAN (J63)

While the server is turned off, move the jumper on J65 from pins 1 and 2 to pins 2 and 3. You can then start the Configuration/Setup Utility program and reset the power-on password. After you reset the password, turn off the server again and move the jumper back to pins 1 and 2.

The power-on password jumper does not affect the administrator password.

Administrator password: If an administrator password is set, you must type the administrator password for access to the full Configuration/Setup Utility menu. You can use any combination of up to seven characters (A–Z, a–z, and 0–9) for the password. The **Administrator Password** choice is on the Configuration/Setup Utility menu only if an optional IBM Remote Supervisor Adapter II SlimLine is installed.

Attention: If you set an administrator password and then forget it, there is no way to change, override, or remove it. You must replace the I/O board.

Installing and using the baseboard management controller utility programs

The baseboard management controller provides basic service-processor environmental monitoring functions. If an environmental condition exceeds a

threshold or if a system component fails, the baseboard management controller lights LEDs to help you diagnose the problem and also records the error in the BMC system event log.

Also use the baseboard management controller to establish a Serial over LAN (SOL) connection to manage servers from a remote location. You can remotely view and change the BIOS settings, restart the server, identify the server, and perform other management functions. Any standard Telnet client application can access the SOL connection.

Use the baseboard management controller configuration utility program to view or change the baseboard management controller configuration settings. You can also use the utility program to save the configuration to a file for use on multiple servers.

To download the program, go to http://www.ibm.com/servers/eserver/support/ xseries/index.html; then, copy the bmc_cfg.exe file to a configuration utility diskette on a USB-connected diskette drive.

To start the baseboard management controller configuration utility program, complete the following steps:

1. Insert the configuration utility diskette into the USB diskette drive and restart the server.
2. From a command-line prompt, type `bmc_cfg` and press Enter.
3. Follow the instructions on the screen.

Notes:

1. The default BMC IP address is 10.1.1.97
2. To ensure proper server operation, be sure to update the server baseboard management controller firmware before you update the BIOS code.

Using the RAID configuration programs

Use the IBM ServeRAID Configuration Utility program and ServeRAID Manager to configure and manage redundant array of independent disks (RAID) arrays. Be sure to use these programs as described in this document.

- Use the IBM ServeRAID Configuration Utility program to:
  - Perform a low-level format on a hard disk drive
  - View or change IDs for attached devices
  - Set protocol parameters on hard disk drives
- Use ServeRAID Manager to:
  - Configure arrays
  - View the RAID configuration and associated devices
  - Monitor operation of the RAID controller

Consider the following information when using the IBM ServeRAID Configuration Utility program and ServeRAID Manager to configure and manage arrays:

- The ServeRAID-8k-I SAS controller that comes with the server supports only RAID level-0, level-1, and level-10. You can replace it with a ServeRAID-8k SAS controller that supports additional RAID levels.
- Hard disk drive capacities affect how you create arrays. The drives in an array can have different capacities, but the ServeRAID controller treats them as if they all have the capacity of the smallest hard disk drive.

- To help ensure signal quality, do not mix drives with different speeds and data rates.
- To update the firmware and BIOS code for an optional ServeRAID controller, you must use the IBM *ServeRAID Support* CD that comes with the ServeRAID option.

Using the IBM ServeRAID Configuration Utility program

Use the IBM ServeRAID Configuration Utility programs to perform the following tasks:

- Configure a redundant array of independent disks (RAID) array
- View or change the RAID configuration and associated devices

Starting the IBM ServeRAID Configuration Utility program: To start the IBM ServeRAID Configuration Utility program, complete the following steps:

1. Turn on the server.
2. When the prompt `<<< Press <CTRL><A> for IBM ServeRAID Configuration Utility! >>>` appears, press Ctrl+A. If you have set an administrator password, you are prompted to type the password.
3. To select a choice from the menu, use the arrow keys.
4. Use the arrow keys to select the channel for which you want to change settings.
5. To change the settings of the selected items, follow the instructions on the screen. Be sure to press Enter to save your changes.

IBM ServeRAID Configuration Utility menu choices: The following choices are on the IBM ServeRAID Configuration Utility menu:

- **Array Configuration Utility**

  Select this choice to create, manage, or delete arrays, or to initialize drives.
- **SerialSelect Utility**

  Select this choice to configure the controller interface definitions or to configure the physical transfer and SAS address of the selected drive.
- **Disk Utilities**

  Select this choice to format a disk or verify the disk media. Select a device from the list and read the instructions on the screen carefully before making a selection.

Using ServeRAID Manager

Use ServeRAID Manager, which is on the *IBM ServeRAID Support* CD, to perform the following tasks:

- Configure a redundant array of independent disks (RAID) array
- Erase all data from a hard disk drive and return the disk to the factory-default settings
- View the RAID configuration and associated devices
- Monitor the operation of the RAID controller

To perform some tasks, you can run ServeRAID Manager as an installed program. However, to configure the RAID controller and perform an initial RAID configuration on the server, you must run ServeRAID Manager in Startable CD mode, as described in the instructions in this section.

See the ServeRAID documentation on the *IBM ServeRAID Support* CD for additional information about RAID technology and instructions for using ServeRAID Manager to configure the RAID controller. Additional information about ServeRAID

Manager is also available from the **Help** menu. For information about a specific object in the ServeRAID Manager tree, select the object and click **Actions --> Hints and tips**.

Configuring the RAID controller: By running ServeRAID Manager in Startable CD mode, you can configure the RAID controller before you install the operating system. The information in this section assumes that you are running ServeRAID Manager in Startable CD mode.

To run ServeRAID Manager in Startable CD mode, turn on the server; then, insert the CD into the CD-RW/DVD drive. If ServeRAID Manager detects an unconfigured controller and ready drives, the Configuration wizard starts.

In the Configuration wizard, you can select express configuration or custom configuration. Express configuration automatically configures the controller by grouping the first two physical drives in the ServeRAID Manager tree into an array and creating a RAID level-1 logical drive. If you select custom configuration, you can select the two physical drives that you want to group into an array and create a hot-spare drive.

Using express configuration: To use express configuration, complete the following steps:

1. In the ServeRAID Manager tree, click the controller.
2. Click **Express configuration**.
3. Click Next.
4. In the "Configuration summary" window, review the information. To change the configuration, click **Modify arrays**.
5. Click **Apply**; when you are asked whether you want to apply the new configuration, click **Yes**. The configuration is saved in the controller and in the physical drives.
6. Exit from ServeRAID Manager and remove the CD from the CD-RW/DVD drive.
7. Restart the server.

Using custom configuration: To use custom configuration, complete the following steps:

1. In the ServeRAID Manager tree, click the controller.
2. Click **Custom configuration**.
3. Click **Next**.
4. In the "Create arrays" window, from the list of ready drives, select the drives that you want to group into the array.
5. Click the (Add selected drives) icon to add the drives to the array.
6. If you want to configure a hot-spare drive, complete the following steps:
   a. Click the **Spares** tab.
   b. Select the physical drive that you want to designate as the hot-spare drive, and click the (Add selected drives) icon.
7. Click **Next**.
8. Review the information in the "Configuration summary" window. To change the configuration, click **Back**.
9. Click **Apply**; when you are asked whether you want to apply the new configuration, click **Yes**. The configuration is saved in the controller and in the physical drives.

10. Exit from ServeRAID Manager and remove the CD from the CD-RW/DVD drive.

11. Restart the server.

Viewing the configuration: You can use ServeRAID Manager to view information about RAID controllers and the RAID subsystem (such as arrays, logical drives, hot-spare drives, and physical drives). When you click an object in the ServeRAID Manager tree, information about that object appears in the right pane. To display a list of available actions for an object, click the object and click **Actions**.

Using the Remote Supervisor Adapter II Web interface

The Remote Supervisor Adapter II Web interface is a graphical user interface that you can use to perform many of the tasks that were previously only available through the Configuration/Setup Utility program. The Remote Supervisor Adapter II Web interface is in the Remote Supervisor Adapter II integrated service processor and is accessed using a Web browser on the administrator console or another computer that is connected to the server through the serial connector on the rear of the server.

Before you use the Remote Supervisor Adapter II Web interface, read the following information:

- A Remote Supervisor Adapter II SlimLine must be installed in the server.
- You must have a Web browser to access the Web interface.
- You must know the IP address or the host name of the Remote Supervisor Adapter II SlimLine that you are connecting to.
- You can find the IP address and the host name in the Configuration/Setup Utility program or from your network administrator.
- You can connect directly to the server or use an Ethernet network to access the service processor and the Remote Supervisor Adapter II Web interface.
- You must connect one of the following cables:
  - Crossover cable from the serial connector to a computer.
  - An Ethernet cable that is connected to an Ethernet network.

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 system 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.

  Note: For some IntelliStation models, the *Hardware Maintenance Manual and Troubleshooting Guide* is available only from the IBM support Web site.

- Go to the IBM support Web site at http://www.ibm.com/servers/eserver/support/ xseries/index.html 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/servers/eserver/support/xseries/ 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 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 IntelliStation information is http://www.ibm.com/intellistation/.

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

Important: When you call for service, you will be asked to provide the four-digit machine type of your system, which is 8877.

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

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
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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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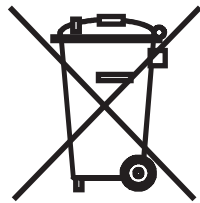
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In the Netherlands, the following applies.

For Taiwan: Please recycle batteries.

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 89/336/EEC on the approximation of the laws of the Member States relating to electromagnetic compatibility. IBM cannot accept responsibility for any failure to satisfy the protection requirements resulting from a nonrecommended modification of the product, including the fitting of non-IBM option cards.

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Taiwanese Class A warning statement

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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
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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

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