

IBM System x3400 M2 Types 7836 and 7837



# Problem Determination and Service Guide





IBM System x3400 M2 Types 7836 and 7837



# 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 297, and the *IBM Safety Information*, *IBM Environmental Notices and User's Guide*, and the *Warranty and Support Information* document on the IBM *System x Documentation CD*.

**Tenth Edition (May 2013)**

**© Copyright IBM Corporation 2013.**

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

---

# Contents

<b>Safety</b> . . . . .	vii
Guidelines for trained service technicians . . . . .	viii
Inspecting for unsafe conditions . . . . .	viii
Guidelines for servicing electrical equipment . . . . .	ix
Safety statements . . . . .	x
 <b>Chapter 1. Start here.</b> . . . . .	1
Diagnosing a problem . . . . .	1
Undocumented problems . . . . .	4
 <b>Chapter 2. Introduction.</b> . . . . .	5
Related documentation . . . . .	5
Notices and statements in this document . . . . .	6
Features and specifications . . . . .	8
Server controls, LEDs, and connectors . . . . .	10
Front view . . . . .	10
Rear view . . . . .	14
Server power features . . . . .	16
Turning on the server . . . . .	16
Turning off the server . . . . .	17
Internal connectors, LEDs, and switches . . . . .	18
System-board internal connectors . . . . .	18
System-board external connectors . . . . .	19
System-board option connectors . . . . .	20
System-board LEDs . . . . .	21
System-board jumpers and switches . . . . .	22
 <b>Chapter 3. Diagnostics</b> . . . . .	25
Diagnostic tools . . . . .	25
POST . . . . .	26
Event logs . . . . .	27
POST error codes . . . . .	30
System event log . . . . .	41
Integrated management module (IMM) error messages . . . . .	41
Checkout procedure . . . . .	71
About the checkout procedure . . . . .	71
Performing the checkout procedure . . . . .	72
Troubleshooting tables . . . . .	73
CD or DVD drive problems . . . . .	73
Diskette drive problems . . . . .	74
General problems . . . . .	75
Hard disk drive problems . . . . .	75
Intermittent problems . . . . .	76
Keyboard, mouse, or pointing-device problems . . . . .	76
Memory problems . . . . .	77
Microprocessor problems . . . . .	78
Monitor or video problems . . . . .	78
Optional-device problems . . . . .	80
Power problems . . . . .	81
Serial port problems . . . . .	82
ServerGuide problems . . . . .	83
Software problems . . . . .	83
Universal Serial Bus (USB) port problems . . . . .	84

Error LEDs . . . . .	85
Power-supply LEDs . . . . .	88
Diagnostic programs and messages . . . . .	91
Running the diagnostic programs . . . . .	92
Diagnostic text messages . . . . .	92
Viewing the test log . . . . .	92
Diagnostic messages . . . . .	93
Recovering the server firmware . . . . .	145
Automated boot recovery (ABR) . . . . .	148
Nx boot failure . . . . .	148
Solving SCSI problems . . . . .	149
Solving power problems . . . . .	149
Solving Ethernet controller problems . . . . .	150
Solving undetermined problems . . . . .	151
Problem determination tips . . . . .	152
 <b>Chapter 4. Parts listing, System x3400 M2 Types 7836 and 7837.</b> . . . .	 153
Replaceable server components . . . . .	153
Consumable parts . . . . .	157
Power cords . . . . .	158
 <b>Chapter 5. Removing and replacing server components</b> . . . . .	 161
Installation guidelines . . . . .	161
System reliability guidelines. . . . .	162
Working inside the server with the power on . . . . .	163
Handling static-sensitive devices . . . . .	163
Returning a device or component . . . . .	163
Internal cable routing and connectors . . . . .	164
Removing and replacing Tier 1 CRUs . . . . .	173
Removing the left-side cover . . . . .	173
Installing the left-side cover. . . . .	173
Removing the bezel . . . . .	174
Replacing the bezel. . . . .	176
Opening and closing the bezel media door . . . . .	178
Removing the air baffle . . . . .	179
Installing the air baffle . . . . .	180
Removing a power supply . . . . .	181
Installing a power supply. . . . .	184
Installing a redundant power supply. . . . .	185
Removing an adapter . . . . .	186
Installing an adapter . . . . .	187
Removing and installing drives . . . . .	190
Removing a memory module . . . . .	208
Installing a memory module. . . . .	210
Removing the virtual media key . . . . .	216
Installing the virtual media key. . . . .	217
Removing the battery . . . . .	217
Installing the battery . . . . .	219
Removing a hot-swap fan . . . . .	221
Installing a hot-swap fan . . . . .	222
Removing the rear adapter retention bracket . . . . .	222
Installing the rear adapter retention bracket . . . . .	223
Removing the front adapter-retention bracket . . . . .	223
Installing the front adapter-retention bracket. . . . .	224
Removing and replacing Tier 2 CRUs . . . . .	224
Removing the front USB connector assembly . . . . .	224

Installing the front USB connector assembly . . . . .	226
Removing the fan cage assembly . . . . .	227
Installing the fan cage assembly . . . . .	229
Removing the simple-swap backplate . . . . .	230
Installing the simple-swap backplate . . . . .	233
Removing the 2.5-inch hot-swap hard disk drive backplate . . . . .	234
Installing the 2.5-inch hot-swap hard disk drive backplate . . . . .	236
Removing the 3.5-inch hot-swap hard disk drive backplate . . . . .	239
Installing the 3.5-inch hard disk drive backplate . . . . .	241
Removing a voltage regulator module (VRM) . . . . .	244
Installing a voltage regulator module (VRM) . . . . .	245
Removing and replacing FRUs . . . . .	246
Removing the microprocessor and heat sink . . . . .	246
Installing a microprocessor and heat sink . . . . .	249
Removing the control-panel assembly . . . . .	255
Installing the control-panel assembly . . . . .	257
Opening the power-supply cage . . . . .	258
Closing the power-supply cage . . . . .	260
Removing the heat-sink retention module . . . . .	261
Installing a heat-sink retention module . . . . .	263
Removing a microprocessor retention module . . . . .	264
Installing a microprocessor retention module . . . . .	265
Removing the system board . . . . .	267
Installing the system board . . . . .	269
Removing a PCI extender card . . . . .	270
Installing a PCI extender card . . . . .	271
<b>Chapter 6. Configuration information and instructions . . . . .</b>	<b>273</b>
Updating the firmware . . . . .	273
Configuring the server . . . . .	273
Using the ServerGuide Setup and Installation CD . . . . .	275
Using the Setup utility . . . . .	277
Using the Boot Manager program . . . . .	281
Starting the backup server firmware . . . . .	281
Changing the Power Policy option to the default settings after loading UEFI defaults . . . . .	282
Using the integrated management module . . . . .	282
Using the remote presence capability and blue-screen capture . . . . .	283
Enabling the Broadcom Gigabit Ethernet Utility program . . . . .	285
Configuring the Ethernet controller . . . . .	286
Using the LSI Configuration Utility program . . . . .	286
IBM Advanced Settings Utility program . . . . .	288
Updating IBM Systems Director . . . . .	288
Updating the Universal Unique Identifier (UUID) . . . . .	289
Updating the DMI/SMBIOS data . . . . .	292
<b>Appendix A. Getting help and technical assistance . . . . .</b>	<b>295</b>
Before you call . . . . .	295
Using the documentation . . . . .	295
Getting help and information from the World Wide Web . . . . .	295
Software service and support . . . . .	296
Hardware service and support . . . . .	296
IBM Taiwan product service . . . . .	296
<b>Appendix B. Notices . . . . .</b>	<b>297</b>
Trademarks . . . . .	297

Important notes . . . . .	298
Particulate contamination. . . . .	299
Documentation format . . . . .	299
Telecommunication regulatory statement . . . . .	300
Electronic emission notices . . . . .	300
Federal Communications Commission (FCC) statement . . . . .	300
Industry Canada Class A emission compliance statement . . . . .	300
Avis de conformité à la réglementation d'Industrie Canada . . . . .	300
Australia and New Zealand Class A statement . . . . .	300
European Union EMC Directive conformance statement . . . . .	301
Germany Electromagnetic Compatibility Directive . . . . .	301
VCCI Class A statement . . . . .	302
Japan Electronics and Information Technology Industries Association (JEITA) statement . . . . .	302
Korea Communications Commission (KCC) statement . . . . .	302
Russia Electromagnetic Interference (EMI) Class A statement . . . . .	302
People's Republic of China Class A electronic emission statement . . . . .	303
Taiwan Class A compliance statement . . . . .	303
<b>Index . . . . .</b>	<b>305</b>

## Safety

Before installing this product, read the Safety Information.

قبل تركيب هذا المنتج، يجب قراءة الملاحظات الأمنية

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

在安裝本產品之前，請仔細閱讀 **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 ασφαλείας (safety information).

לפני שתתקינו מוצר זה, קראו את הוראות הבטיחות.

A termék telepítése előtt olvassa el a Biztonsági előírásokat!

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

製品の設置の前に、安全情報をお読みください。

본 제품을 설치하기 전에 안전 정보를 읽으십시오.

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

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

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

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

Перед установкой продукта прочтите инструкции по технике безопасности.

Pred inštaláciou tohto zariadenia si pečítajte Bezpečnostné predpisy.

Pred namestitvijo tega proizvoda preberite Varnostne informacije.

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

Läs säkerhetsinformationen innan du installerar den här produkten.

---

## 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 or leaking 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 158.
  - 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, power surges, 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 currents.
- 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 are working 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 using 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 measuring 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 is labeled with a number. This number is used to cross reference an English-language caution or danger statement with translated versions of the caution or danger statement in the *Safety Information* document.

For example, if a caution statement is labeled with “Statement 1”, translations for that caution statement are in the *Safety Information* document under “Statement 1”.

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

**Statement 1:**



**DANGER**

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

**To avoid a shock hazard:**

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

**To Connect:**

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

**To Disconnect:**

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

**Statement 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.

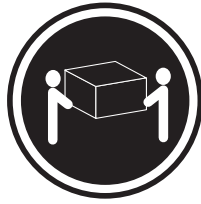


**DANGER**

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:**

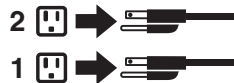
Use safe practices when lifting.

**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 10:**



**CAUTION:**

Do not place any object weighing more than 82 kg (180 lb) on top of rack-mounted devices.



>82 kg (180 lb)

**Statement 11:**



**CAUTION:**

The following label indicates sharp edges, corners, or joints nearby.



**Statement 12:**



**CAUTION:**

The following label indicates a hot surface nearby.



Statement 13:



**DANGER**

Overloading a branch circuit is potentially a fire hazard and a shock hazard under certain conditions. To avoid these hazards, ensure that your system electrical requirements do not exceed branch circuit protection requirements. Refer to the information that is provided with your device for electrical specifications.

Statement 15:



**CAUTION:**

Make sure that the rack is secured properly to avoid tipping when the server unit is extended.

Statement 17:



**CAUTION:**

The following label indicates moving parts nearby.



Statement 26:



**CAUTION:**

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



**Attention:** This server is suitable for use on an IT power distribution system whose maximum phase-to-phase voltage is 240 V under any distribution fault condition.



---

# Chapter 1. Start here

You can solve many problems without outside assistance by following the troubleshooting procedures in this *Problem Determination and Service Guide* and on the IBM Web site. This document describes the diagnostic tests that you can perform, troubleshooting procedures, and explanations of error messages and error codes. The documentation that comes with your operating system and software also contains troubleshooting information.

---

## Diagnosing a problem

Before you contact IBM or an approved warranty service provider, follow these procedures in the order in which they are presented to diagnose a problem with your server:

1. **Determine what has changed.**

Determine whether any of the following items were added, removed, replaced, or updated before the problem occurred:

- IBM System x Server Firmware (formerly BIOS firmware)
- Device drivers
- Firmware
- Hardware components
- Software

If possible, return the server to the condition it was in before the problem occurred.

2. **Collect data.**

Thorough data collection is necessary for diagnosing hardware and software problems.

a. **Document error codes and system-board LEDs.**

- **System error codes:** See “POST error codes” on page 30 for information about a specific error code.
- See “System-board LEDs” on page 21 for the location of the system-board LEDs.
- **Software or operating-system error codes:** See the documentation for the software or operating system for information about a specific error code. See the manufacturer's Web site for documentation.

b. **Collect system data.**

Run Dynamic System Analysis (DSA) Preboot diagnostics program to collect information about the hardware, firmware, software, and operating system. Have this information available when you contact IBM or an approved warranty service provider. See “Running the diagnostic programs” on page 92 for the instructions to run the DSA Preboot program.

If you need to download the latest version of DSA Preboot, go to <http://www.ibm.com/systems/support/supportsite.wss/docdisplay?brandind=5000008&Indocid=SERV-DSA> or 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/systems/support/>.
- 2) Under **Product support**, click **System x**.

- 3) Under **Popular links**, click **Software and device drivers**.
- 4) Under **Related downloads**, click **Dynamic System Analysis (DSA)**.

For information about DSA command-line options, go to [http://publib.boulder.ibm.com/infocenter/toolsctr/v1r0/index.jsp?topic=/com.ibm.xseries.tools.doc/erep\\_tools\\_dsa.html](http://publib.boulder.ibm.com/infocenter/toolsctr/v1r0/index.jsp?topic=/com.ibm.xseries.tools.doc/erep_tools_dsa.html) or complete the following steps:

- 1) Go to <http://publib.boulder.ibm.com/infocenter/toolsctr/v1r0/index.jsp>.
  - 2) In the navigation pane, click **IBM System x and BladeCenter Tools Center**.
  - 3) Click **Tools reference > Error reporting and analysis tools > IBM Dynamic System Analysis**.
3. **Follow the problem-resolution procedures.**

The four problem-resolution procedures are presented in the order in which they are most likely to solve your problem. Follow these procedures in the order in which they are presented:

a. **Check for and apply code updates.**

Most problems that appear to be caused by faulty hardware are actually caused by the server firmware (formerly BIOS firmware), device firmware, or device drivers that are not at the latest levels.

1) **Determine the existing code levels.**

In DSA, click **Firmware/VPD** to view system firmware levels, or click **Software** to view operating-system levels.

2) **Download and install updates of code that is not at the latest level.**

**Important:** Some cluster solutions require specific code levels or coordinated code updates. If the device is part of a cluster solution, verify that the latest level of code is supported for the cluster solution before you update the code.

To display a list of available updates for your server, go to <http://www.ibm.com/systems/support/supportsite.wss/docdisplay?brandind=5000008&Indocid=MIGR-4JTS2T> or 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.

- a) Go to <http://www.ibm.com/systems/support/>.
- b) Under **Product support**, click **System x**.
- c) Under **Popular links**, click **Software and device drivers**.
- d) Click **System x3400 M2** to display the list of downloadable files for the server.

You can install code updates that are packaged as an *UpdateXpress* System Pack or *UpdateXpress* CD image. An *UpdateXpress* System Pack contains an integration-tested bundle of online firmware and device-driver updates for your server. Use *UpdateXpress* System Pack Installer to acquire and apply *UpdateXpress* System Packs and individual firmware and device-driver updates. For additional information and to download the *UpdateXpress* System Pack Installer, go to the System x and BladeCenter Tools Center at <http://publib.boulder.ibm.com/infocenter/toolsctr/v1r0/index.jsp> and click **UpdateXpress System Pack Installer**.

Be sure to separately install any listed critical updates that have release dates that are later than the release date of the UpdateXpress System Pack or UpdateXpress image.

When you click an update, an information page is displayed, including a list of the problems that the update fixes. Review this list for your specific problem; however, even if your problem is not listed, installing the update might solve the problem.

b. **Check for and correct an incorrect configuration.**

If the server is incorrectly configured, a system function can fail to work when you enable it; if you make an incorrect change to the server configuration, a system function that has been enabled can stop working.

1) **Make sure that all installed hardware and software are supported.**

See <http://www.ibm.com/servers/eserver/serverproven/compat/us/> to verify that the server supports the installed operating system, optional devices, and software levels. If any hardware or software component is not supported, uninstall it to determine whether it is causing the problem. You must remove nonsupported hardware before you contact IBM or an approved warranty service provider for support.

2) **Make sure that the server, operating system, and software are installed and configured correctly.**

Many configuration problems are caused by loose power or signal cables or incorrectly seated adapters. You might be able to solve the problem by turning off the server, reconnecting cables, reseating adapters, and turning the server back on. See "Checkout procedure" on page 71 for the instructions to perform the checkout procedures.

If the problem is associated with a specific function (for example, if a RAID hard disk drive is marked offline in the RAID array), see the documentation for the associated controller and management or controlling software to verify that the controller is correctly configured.

Problem determination information is available for many devices such as RAID and network adapters.

For problems with operating systems or IBM software or devices, 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.

- a) Go to <http://www.ibm.com/systems/support/>.
- b) Under **Product support**, click **System x**.
- c) From the **Product family** list, select **System x3400 M2**.
- d) Under **Support & downloads**, click **Documentation**, **Install**, and **Use** to search for related documentation.

c. **Check for service bulletins.**

IBM service bulletins document known problems and suggested solutions. To search for service bulletins, 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/systems/support/>.
- 2) Under **Product support**, click **System x**.
- 3) From the **Product family** list, select **System x3400 M2**.
- 4) Under **Support & downloads**, click **Troubleshoot**.

d. **Check for and replace defective hardware.**

If a hardware component is not operating within specifications, it can cause unpredictable results. Most hardware failures are reported as error codes in a system or operating-system log. See “Troubleshooting tables” on page 73 and Chapter 5, “Removing and replacing server components,” on page 161 for more information.

Troubleshooting procedures are also provided on the IBM Web site. A single problem might cause multiple symptoms. Follow the diagnostic procedure for the most obvious symptom. If that procedure does not diagnose the problem, use the procedure for another symptom, if possible. To locate troubleshooting procedures for your server, 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/systems/support/>.
- 2) Under **Product support**, click **System x**.
- 3) From the **Product family** list, select **System x3400 M2**.
- 4) Under **Support & downloads**, click **Troubleshoot**.
- 5) Under **Diagnostic**, select the troubleshooting procedure for the symptom that you are observing.

For more troubleshooting information, see Chapter 3, “Diagnostics,” on page 25.

If the problem remains, contact IBM or an approved warranty service provider for assistance with additional problem determination and possible hardware replacement. To open an online service request, go to <http://www.ibm.com/support/electronic/>. Be prepared to provide information about any error codes and collected data.

---

## Undocumented problems

If you have completed the diagnostic procedure and the problem remains, the problem might not have been previously identified by IBM. After you have verified that all code is at the latest level, all hardware and software configurations are valid, and no light path diagnostics LEDs or log entries indicate a hardware component failure, contact IBM or an approved warranty service provider for assistance. To open an online service request, go to <http://www.ibm.com/support/electronic/>. Be prepared to provide information about any error codes and collected data and the problem determination procedures that you have used.

---

## Chapter 2. Introduction

This *Problem Determination and Service Guide* contains information to help you solve problems that might occur in the IBM System x3400 M2 Types 7836 and 7837. It describes the diagnostic tools that come with the server, error codes and suggested actions, and instructions for replacing failing components.

The most recent version of this document is available at <http://www.ibm.com/systems/support/>.

The four types of replaceable components are:

- **Consumables:** Purchase and replacement of consumables (components, such as batteries and printer cartridges, that have depleting life) is your responsibility. If IBM acquires or installs a consumable component at your request, you will be charged for the service. For a list of consumable parts, see “Consumable parts” on page 157.
- **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 the server.
- **Field replaceable unit (FRU):** FRUs must be installed only by trained service technicians.

For a list of replaceable components for the server, see “Replaceable server components” on page 153.

For information about the terms of the warranty and getting service and assistance, see the *Warranty and Support Information* document on the IBM System x Documentation CD.

---

## Related documentation

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

- *Environmental Notices and User Guide*

This document is in PDF format on the IBM System x Documentation CD. It contains translated environmental notices.

- *IBM License Agreement for Machine Code*

This document is in PDF on the IBM Documentation CD. It provides translated versions of the *IBM License Agreement for Machine Code* for your product.

- *Warranty Information*

This is a document that comes with the server. It contains information about the terms of the warranty and getting service and assistance.

- *Installation and User's Guide*

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

- *Licenses and Attributions Documents*

This document is in PDF. It provides the open-source notices.

- *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.

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>.

The server might have features that are not described in the documentation that come 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/systems/support/>.
2. Under **Product support**, click **System x**.
3. Under **Popular links**, click **Publications lookup**.
4. From the **Product family** menu, select **System x3400 M2** and click **Go**.

---

## 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 your language in the *Safety Information* document.

The following notices and statements are used in this document:

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

- **Danger:** These statements indicate situations that can be potentially lethal or extremely hazardous to you. A danger statement is placed just before the description of a potentially lethal or extremely hazardous procedure step or situation.



## Features and specifications

The following information is a summary of the features and specifications for Machine Types 7836 and 7837. Depending on the server model, some features might not be available, or some specifications might not apply.

Table 1. Features and specifications

<p><b>Microprocessor:</b></p> <ul style="list-style-type: none"> <li>Supports up to two Intel Pentium dual-core or quad-core microprocessors (one installed) with integrated memory controller and QuickPath Interconnect (QPI) architecture. The second microprocessor comes with a pluggable VRM</li> <li>Designed for LGA 1366 socket</li> <li>Scalable up to four cores</li> <li>32 KB instruction cache, 32 KB data cache, and 8 MB cache that is shared among the cores</li> <li>Support for Intel Extended Memory 64 Technology (EM64T)</li> </ul> <p><b>Note:</b></p> <ul style="list-style-type: none"> <li>Use the Setup utility to determine the type and speed of the microprocessors.</li> <li>For a list of supported microprocessors, see <a href="http://www.ibm.com/servers/eserver/serverproven/compat/us/">http://www.ibm.com/servers/eserver/serverproven/compat/us/</a>.</li> </ul> <p><b>Memory:</b></p> <ul style="list-style-type: none"> <li>Minimum: 1GB</li> <li>Maximum: 96 GB (48 GB in mirrored mode) <ul style="list-style-type: none"> <li>24 GB using unbuffered DIMMs (UDIMMs)</li> <li>96 GB using registered DIMMs (RDIMMs)</li> </ul> </li> <li>Types: PC3-10600R-900 (single-rank or dual-rank, 800, 1066, and 1333 MHz, ECC, DDR3 registered SDRAM DIMMs only)</li> <li>RDIMMs sizes: 1 GB, 2 GB, 4 GB and 8 GB single-rank, dual-rank or quad rank</li> <li>UDIMMs sizes: 1 GB and 2 GB single-rank or dual-rank</li> </ul>	<p><b>Fans:</b></p> <p>Three speed-controlled hot-swap fans</p> <p><b>Power supply:</b></p> <p>One 670 watt (100 - 240 V ac)</p> <p>Two 920-watt</p> <p><b>Size:</b></p> <ul style="list-style-type: none"> <li>Height: 440 mm (17.3 in.)</li> <li>Depth: 767 mm (30.2 in.)</li> <li>Width: 218 mm (8.6 in.)</li> <li>Weight: 20 kg (42 lb) to 34 kg (75 lb) depending upon configuration</li> </ul> <p><b>RAID controllers:</b></p> <ul style="list-style-type: none"> <li>A ServeRAID-BR10i SAS/SATA adapter that provides RAID levels 0, 1, and 1E (comes standard on some hot-swap SAS and hot-swap SATA models).</li> <li>An optional ServeRAID-MR10i SAS/SATA adapter that provides RAID levels 0, 1, 5, 6, 10, 50, and 60 can also be ordered.</li> <li>An optional ServeRAID-MR10is SAS/SATA adapter that provides RAID levels 0, 1, 5, 6, 10, 50, and 60 can also be ordered.</li> </ul> <p><b>Drives (depending on the model):</b></p> <ul style="list-style-type: none"> <li>Optical drives: SATA</li> <li>Hard disk drives: SAS and SATA</li> </ul>	<p><b>Drive bays (depending on the model):</b></p> <ul style="list-style-type: none"> <li>Three 5.25-in. bays (one half-high DVD-ROM drive installed). Optionally you can install one full-high or two half-high internal tape drives in bays 2 and 3.</li> <li>One of the following: <ul style="list-style-type: none"> <li>Four 3.5-inch simple-swap SATA drives</li> <li>Four 3.5-inch hot-swap SAS or SATA drives</li> <li>Sixteen or eight 2.5-inch hot-swap SAS or SATA drives</li> </ul> </li> </ul> <p><b>Integrated functions:</b></p> <ul style="list-style-type: none"> <li>Integrated Management Module (IMM), which provides service processor control and monitoring functions, video controller, and (when the optional virtual media key is installed) remote keyboard, video, mouse, and remote hard disk drive capabilities</li> <li>Broadcom BCM5709 Gb Ethernet controller with TCP/IP Offload Engine (TOE) and Wake on LAN support</li> <li>Onboard SATA controller (simple-swap models)</li> <li>Seven Universal Serial Bus (USB) 2.0 ports (two front and four rear of the chassis), and one for the internal USB tape drive.</li> <li>Two Ethernet ports</li> <li>One System Management RJ-45 on the rear to connect to a systems management network. This system management connector is dedicated to the IMM functions. This connector is active with or without the optional IBM Virtual Media Key installed.</li> <li>One serial port</li> <li>Six SATA ports (four through the iPASS connector for simple-swap drives and two for the optical drives)</li> </ul>
---	---	---



Table 1. Features and specifications (continued)

<p><b>Acoustical noise emissions:</b></p> <ul style="list-style-type: none"> <li>• Sound power, idling: 5.5 bel</li> <li>• Sound power, operating: 6.0 bel</li> </ul> <p><b>Environment:</b></p> <ul style="list-style-type: none"> <li>• Air temperature: <ul style="list-style-type: none"> <li>– Server on: 10° to 35°C (50° to 95°F) Altitude: 0 to 915 m (3000 ft)</li> <li>– Server on: 10° to 32°C (50° to 90°F) Altitude: 0 to 915 m (3000 ft) to 2134 m (7000 ft)</li> <li>– Server on: 10° to 28°C (50° to 83°F) Altitude: 2134 m (7000 ft) to 3050 m (10000 ft)</li> <li>– Server off: 5° to 45°C (41.0° to 113°F)</li> <li>– Shipping: -40° to 60°C (-40° to 140°F)</li> </ul> </li> <li>• Humidity (operating and storage): <ul style="list-style-type: none"> <li>– Server on: 20% to 80%, Maximum dew point 21°C, Maximum rate of change 5°C/hr.</li> <li>– Server off: 8% to 80%, Maximum dew point 27°C</li> </ul> </li> </ul> <p><b>Heat output:</b> Approximate heat output in British thermal units (Btu) per hour:</p> <ul style="list-style-type: none"> <li>• Minimum configuration: 693 Btu per hour (203 watts)</li> <li>• Maximum configuration: 2788 Btu per hour (817 watts)</li> </ul>	<p><b>Up to eight expansion slots (depending on the model):</b></p> <ul style="list-style-type: none"> <li>• Six expansion slots on the system board <ul style="list-style-type: none"> <li>– Four PCI Express Gen2 x8 slots (two x8 links and two x4 link)</li> <li>– One PCI Express Gen2 x16 slot (x8 link)</li> <li>– One PCI 32-bit/33 MHz slot</li> </ul> </li> <li>• One PCI Express Gen1 x8 (x4) slot on the one-slot extender card</li> <li>• Two PCI-X 32-bit/64-bit 133/100/66/MHz slots on the two-slot extender card</li> </ul> <p><b>Video controller:</b></p> <ul style="list-style-type: none"> <li>• Matrox G200eV video on system board</li> <li>• Compatible with SVGA and VGA</li> </ul> <p><b>Diagnostic LEDs:</b></p> <ul style="list-style-type: none"> <li>• Fan</li> <li>• Microprocessor</li> <li>• Memory</li> <li>• Power supply</li> <li>• Voltage regulator module (VRM)</li> <li>• PCI</li> <li>• Battery</li> <li>• IMM heartbeat</li> <li>• Enclosure manager heartbeat</li> </ul>	<p><b>Electrical input:</b></p> <ul style="list-style-type: none"> <li>• Sine-wave input (50 or 60 Hz) required</li> <li>• Input voltage and frequency ranges automatically selected</li> <li>• Input voltage low range: <ul style="list-style-type: none"> <li>– Minimum: 100 V ac</li> <li>– Maximum: 127 V ac</li> </ul> </li> <li>• Input voltage high range: <ul style="list-style-type: none"> <li>– Minimum: 200 V ac</li> <li>– Maximum: 240 V ac</li> </ul> </li> <li>• Input kilovolt-amperes (kVA) approximately: <ul style="list-style-type: none"> <li>– Minimum: 0.21 kVA (all models)</li> <li>– Maximum: 0.82 kVA</li> </ul> </li> </ul> <p><b>Notes:</b></p> <ol style="list-style-type: none"> <li>1. Power consumption and heat output vary depending on the number and type of optional features installed and the power-management optional features in use.</li> <li>2. These levels were measured in controlled acoustical environments according to the procedures 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 values stated 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.</li> </ol>
---	---	--

---

## Server controls, LEDs, and connectors

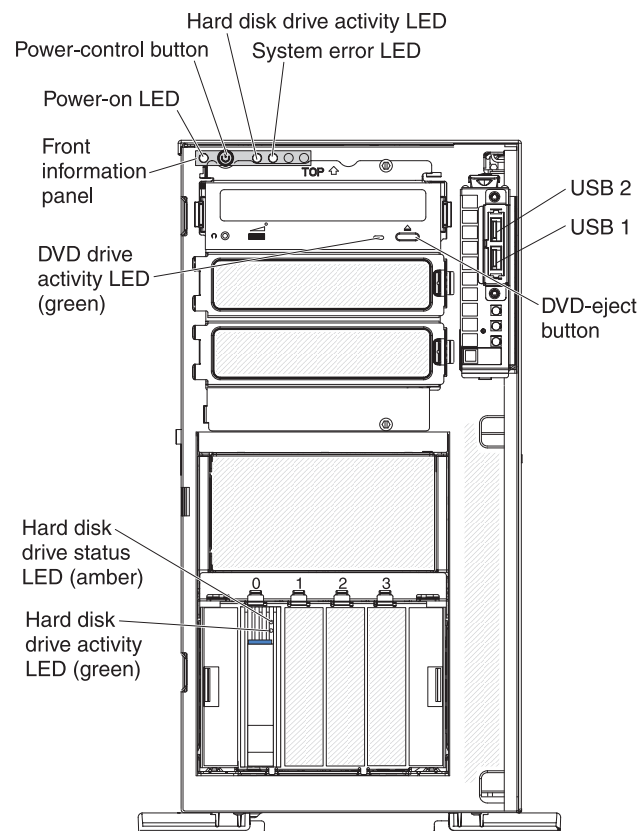
This section describes the controls, light-emitting diodes (LEDs), and connectors on the front and rear of the server, and how to turn the server on and off. For the location of the LEDs on the system board, see “System-board LEDs” on page 21.

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

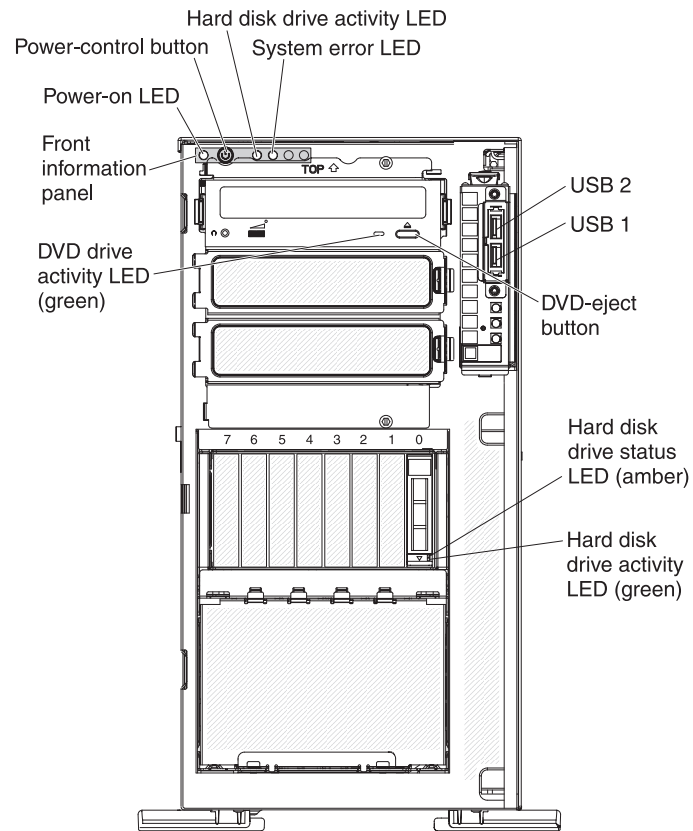
### Front view

The following illustrations show the controls, LEDs, and connectors on the front of the server models.

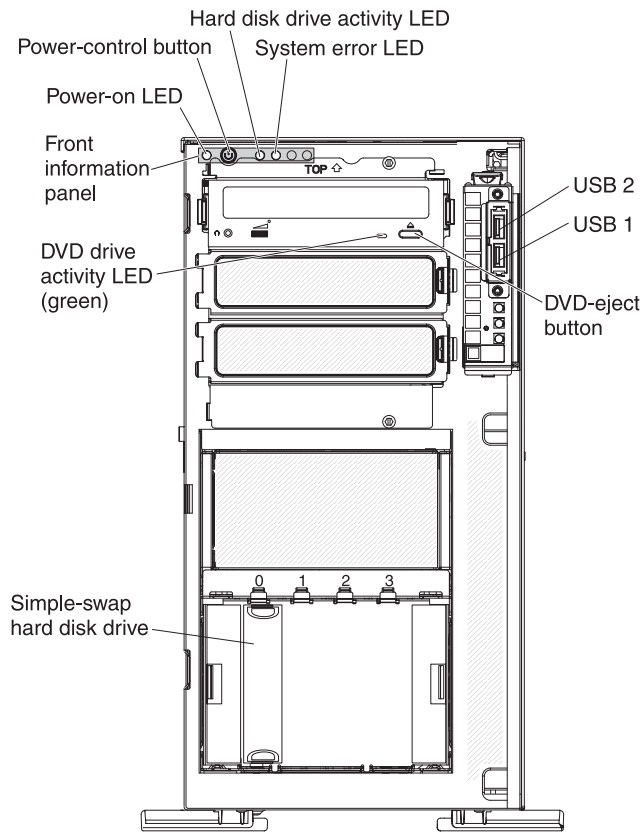
The following illustration shows the 3.5-inch SAS/SATA hot-swap hard disk drive model.



The following illustration shows the 2.5-inch SAS/SATA hot-swap hard disk drive model.



The following illustration shows the -inch SATA simple-swap hard disk drive model.



### Power control button and power-on LED

Press this button to turn the server on and off manually or to wake the server from a reduced-power state. The states of the power-on LED are as follows:

**Off:** AC power is not present, or the power supply or the LED itself has failed.

**Flashing rapidly (4 times per second):** The server is turned off and is not ready to be turned on. The power-control button is disabled. This will last approximately 1 to 3 minutes.

**Flashing slowly (once per second):** The server is turned off and is ready to be turned on. You can press the power-control button to turn on the server.

**Lit:** The server is turned on.

**Fading on and off:** The server is in a reduced-power state. To wake the server, press the power-control button or use the IMM Web interface. See "Logging on to the Web interface" on page 285 for information on logging on to the IMM Web interface.

### Hard disk drive activity LED

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

### System-error LED

When this amber LED is lit, it indicates that a system error has occurred. An LED on the system board might also be lit to help isolate the error. See Chapter 3, "Diagnostics," on page 25 for additional information.

**USB connectors**

Connect USB devices to these connectors.

**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.

**Hot-swap hard disk drive activity LED (some models)**

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

When the drive is removed, this LED also is visible on the SAS/SATA backplate, next to the drive connector. The backplate is the printed circuit board behind drive bays 4 through 7 on 3.5-inch hard disk drive models and bays 4 through 19 on 2.5-inch hard disk drive models.

**Hot-swap hard disk drive status LED (some models)**

On some server models, each hot-swap hard disk drive has an amber status LED. If this amber status LED for a drive is lit, it indicates that the associated hard disk drive has failed.

If an optional ServeRAID adapter is installed in the server and the LED flashes slowly (one flash per second), the drive is being rebuilt. If the LED flashes rapidly (three flashes per second), the adapter is identifying the drive.

When the drive is removed, this LED also is visible on the SAS/SATA backplate, below the hot-swap hard disk drive activity LED.

## Rear view

The following illustration shows the LEDs and connectors on the rear of the server, depending on your server model.

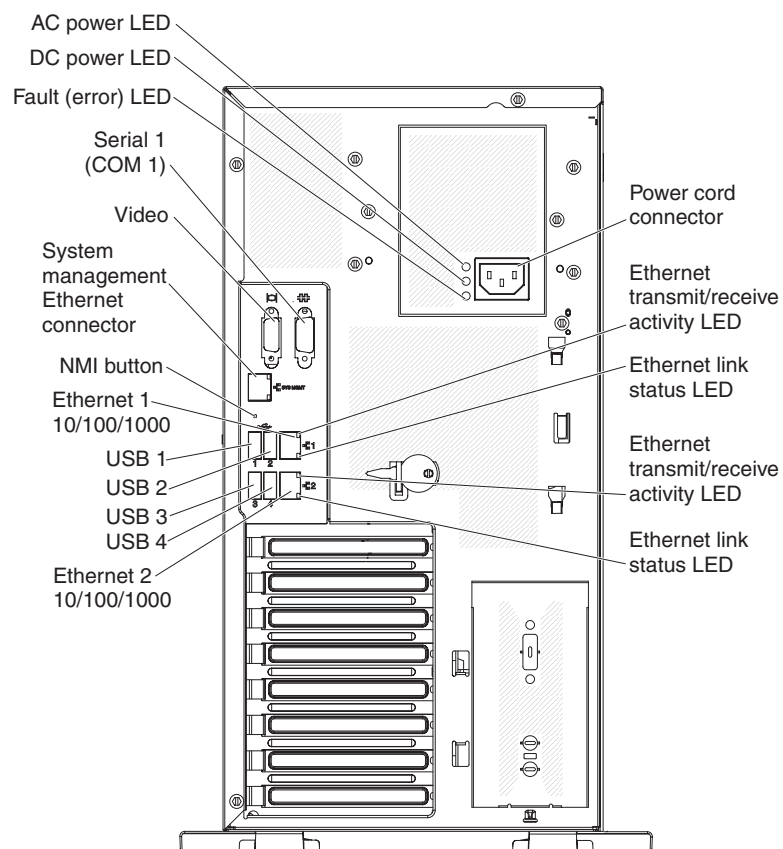


Figure 1. Fixed power supply

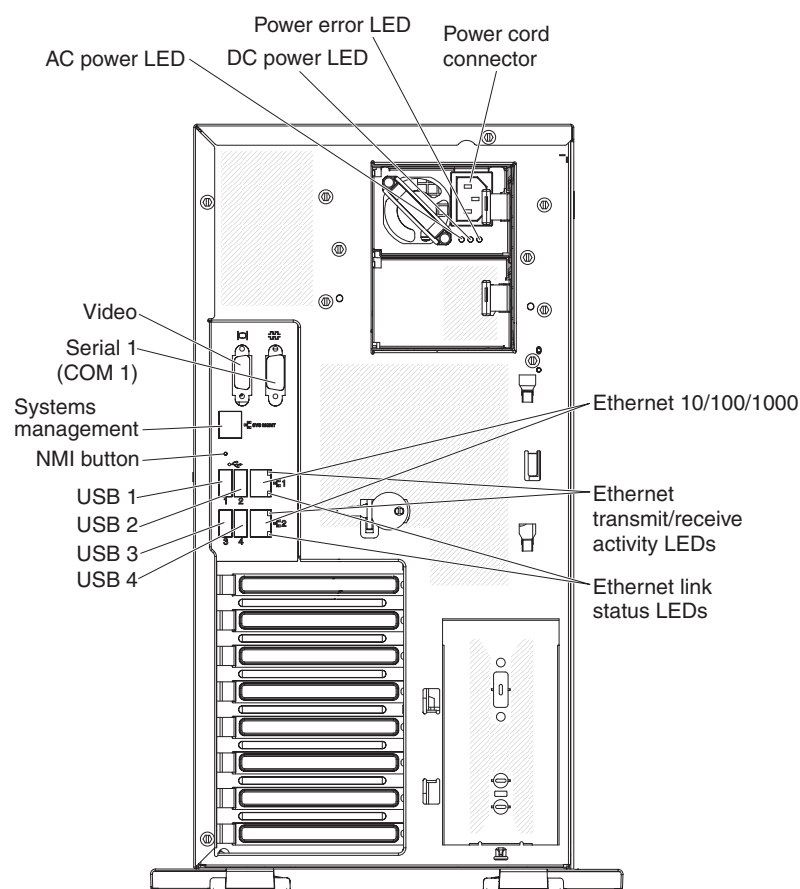


Figure 2. Redundant power supply

#### Power-cord connector

Connect the power cord to this connector.

#### AC power LED

This green LED provides status information about the power supply. During typical operation, both the ac and dc power LEDs are lit. For any other combination of LEDs, see the “Power-supply LEDs” on page 88.

**Note:** In a redundant power configuration, the dc power LED on one power supply might be off.

#### DC power LED

This green LED provides status information about the power supply. During typical operation, both the ac and dc power LEDs are lit. For any other combination of LEDs, see the “Power-supply LEDs” on page 88.

#### Power-error (Fault) LED

When this amber LED is lit, it indicates that the power supply has failed.

#### Video connector

Connect a monitor to this connector.

**Note:** The maximum video resolution is 1600 x 1200 at 85 Hz.

#### Serial connector

Connect a 9-pin serial device to this connector.

**Systems-management Ethernet connector**

Use this connector to manage the server, using a dedicated management network. If you use this connector, the IMM cannot be accessed directly from a production network. A dedicated management network provides additional security by physically separating the management network traffic from the production network. You can use the Setup utility to configure the server to use a dedicated systems management network or a shared network (see “Using the Setup utility” on page 277).

**USB connectors**

Connect USB devices to these connectors.

**Ethernet connectors**

Use these connectors to connect the server to a network.

**Ethernet transmit/receive activity LED**

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

**Ethernet link status LED**

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

---

## Server power features

When the server is connected to an ac power source but is not turned on, the operating system does not run, and all core logic except for the service processor (the Integrated Management Module) is shut down; however, the server can respond to requests to the service processor, such as a remote request to turn on the server. The power-on LED flashes to indicate that the server is connected to ac power but is not turned on.

## Turning on the server

Approximately 5 seconds after the server is connected to ac power, one or more fans might start running to provide cooling while the server is connected to power and the power-on button LED flashes rapidly. Approximately 1 to 3 minutes after the server is connected to ac power, the power-control button becomes active (the power-on LED flashes slowly). You can turn on the server by pressing the power-control button.

The server can also be turned on in any of the following ways:

- If a power failure occurs while the server is turned on, the server will restart automatically when power is restored.
- If your operating system supports the Wake on LAN feature, the Wake on LAN feature can turn on the server.

**Note:** When 4 GB or more of memory (physical or logical) is installed, some memory is reserved for various system resources and is unavailable to the operating system. The amount of memory that is reserved for system resources depends on the operating system, the configuration of the server, and the configured peripheral component interconnect (PCI) options.



## Turning off the server

When you turn off the server and leave it connected to ac power, the server can respond to requests to the service processor, such as a remote request to turn on the server. While the server remains connected to ac power, one or more fans might continue to run. To remove all power from the server, you must disconnect it from the power source.

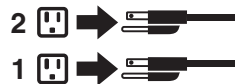
Some operating systems require an orderly shutdown before you turn off the server. See your operating-system documentation for information about shutting down the operating system.

### 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.



The server can be turned off in any of the following ways:

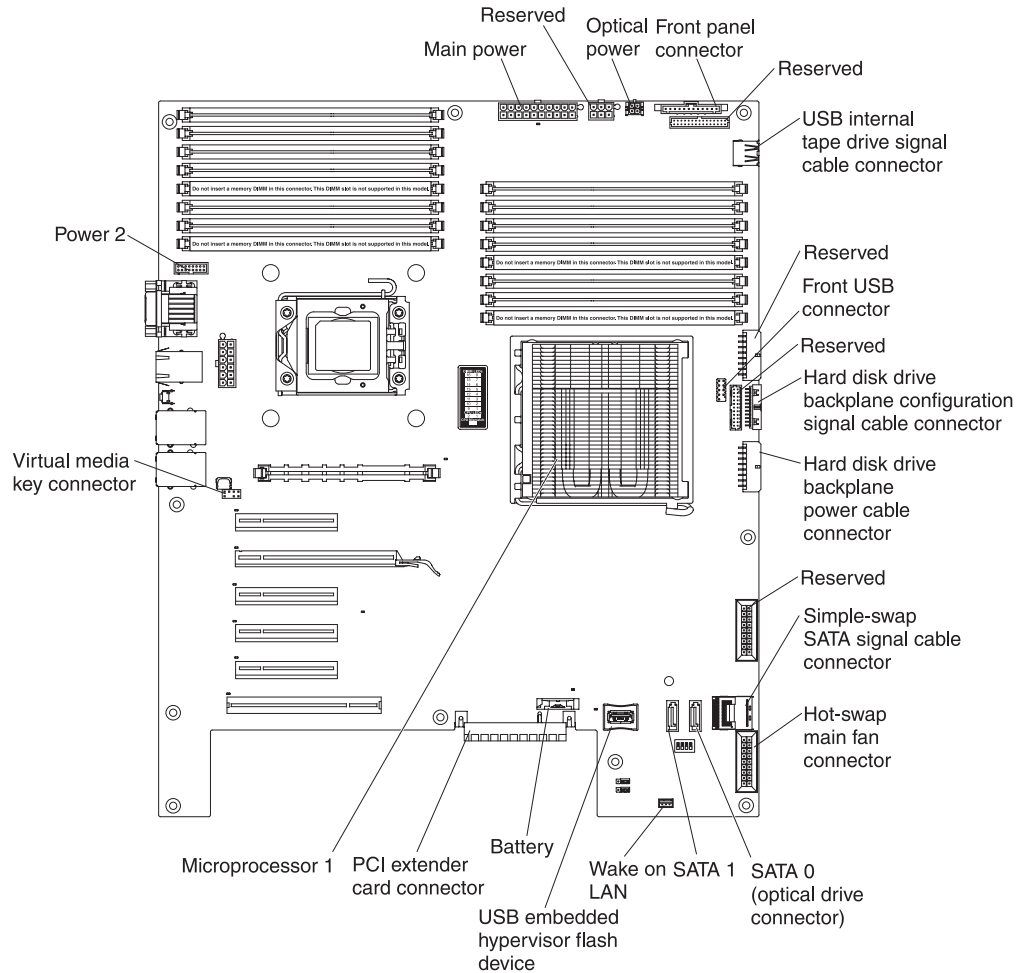
- You can turn off the server from the operating system, if your operating system supports this feature. After an orderly shutdown of the operating system, the server will be turned off automatically.
- You can press the power-control button to start an orderly shutdown of the operating system and turn off the server, if your operating system supports this feature.
- If the operating system stops functioning, you can press and hold the power-control button for more than 4 seconds to turn off the server.
- The server can be turned off by Wake on LAN feature.
- The integrated management module (IMM) can turn off the server as an automatic response to a critical system failure.

## Internal connectors, LEDs, and switches

The following illustrations show the connectors, light-emitting diodes (LEDs), and switches on the system board. The illustrations might differ slightly from your hardware.

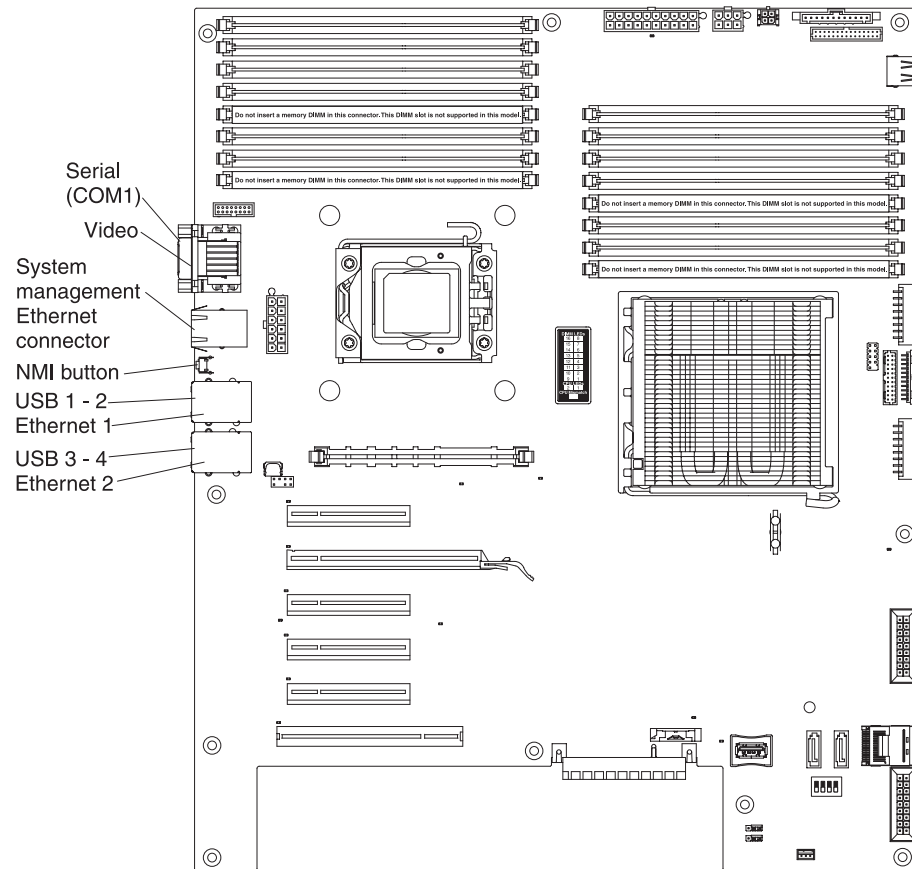
### System-board internal connectors

The following illustration shows the internal connectors on the system board.



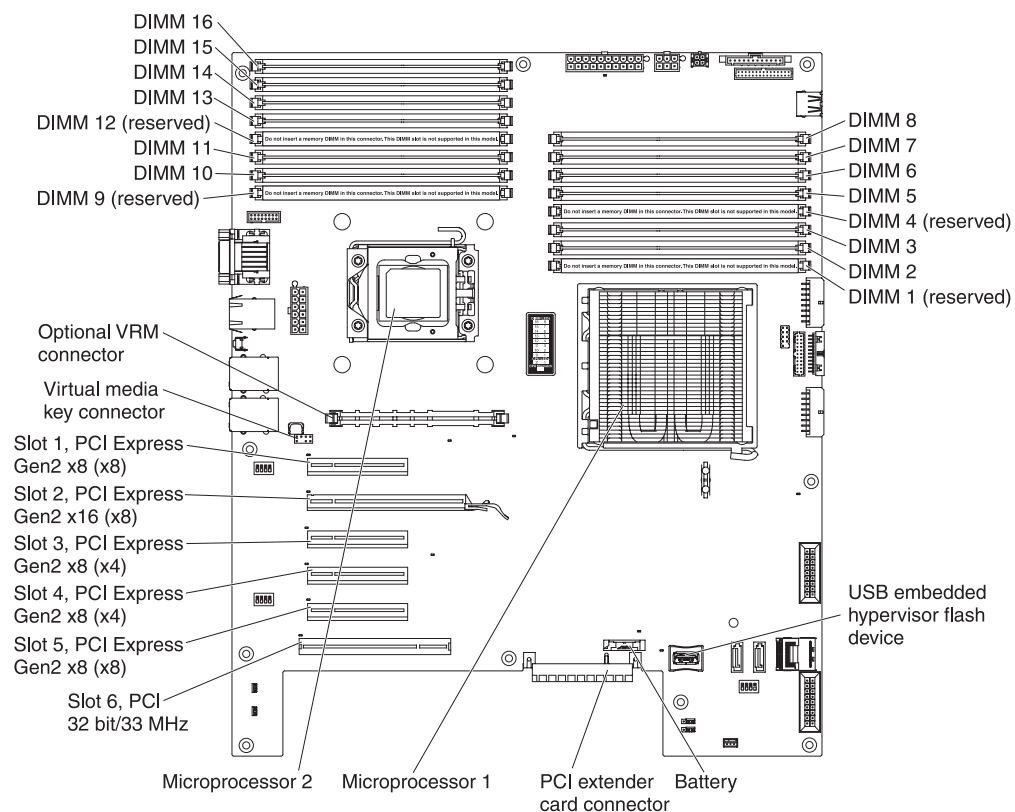
## System-board external connectors

The following illustration shows the external input/output (I/O) connectors on the system board.



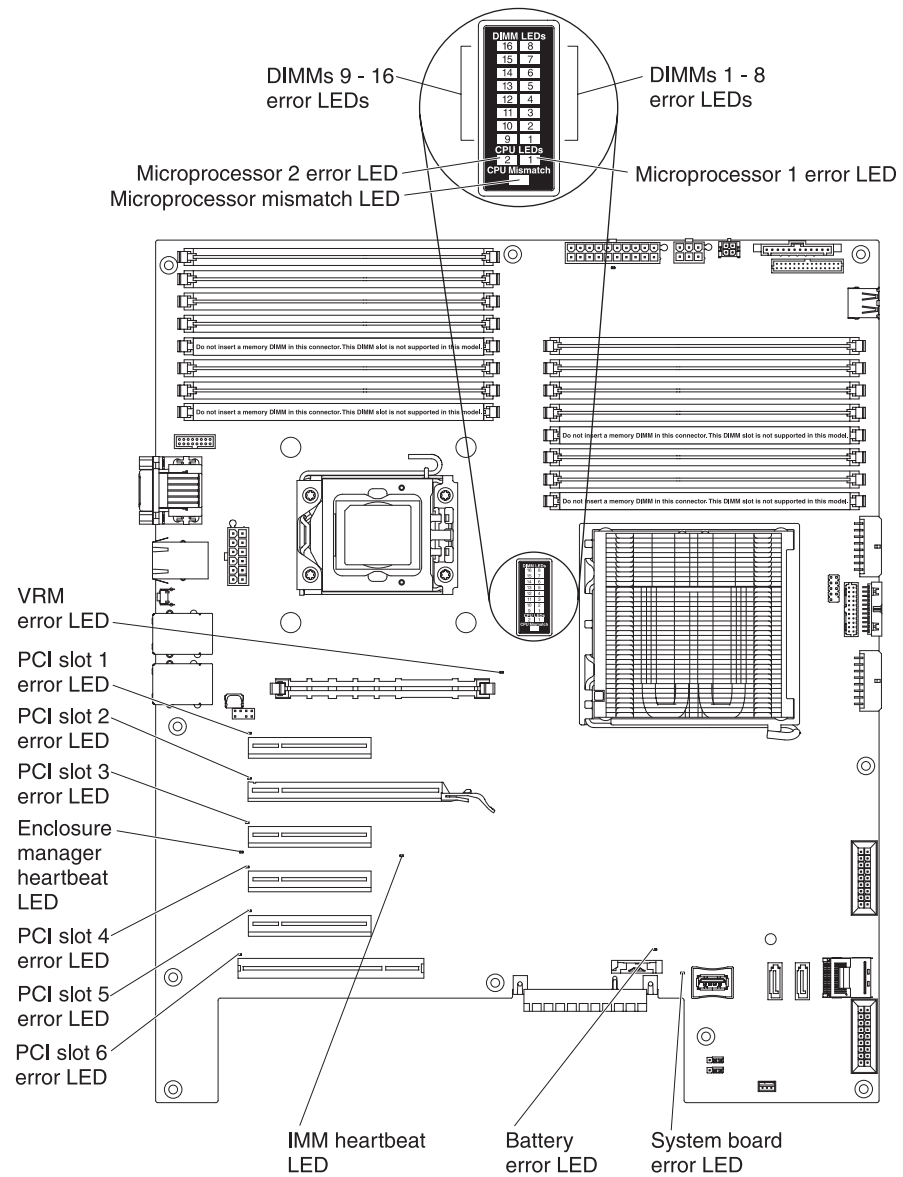
## System-board option connectors

The following illustration shows the system-board connectors for user-installable optional devices.



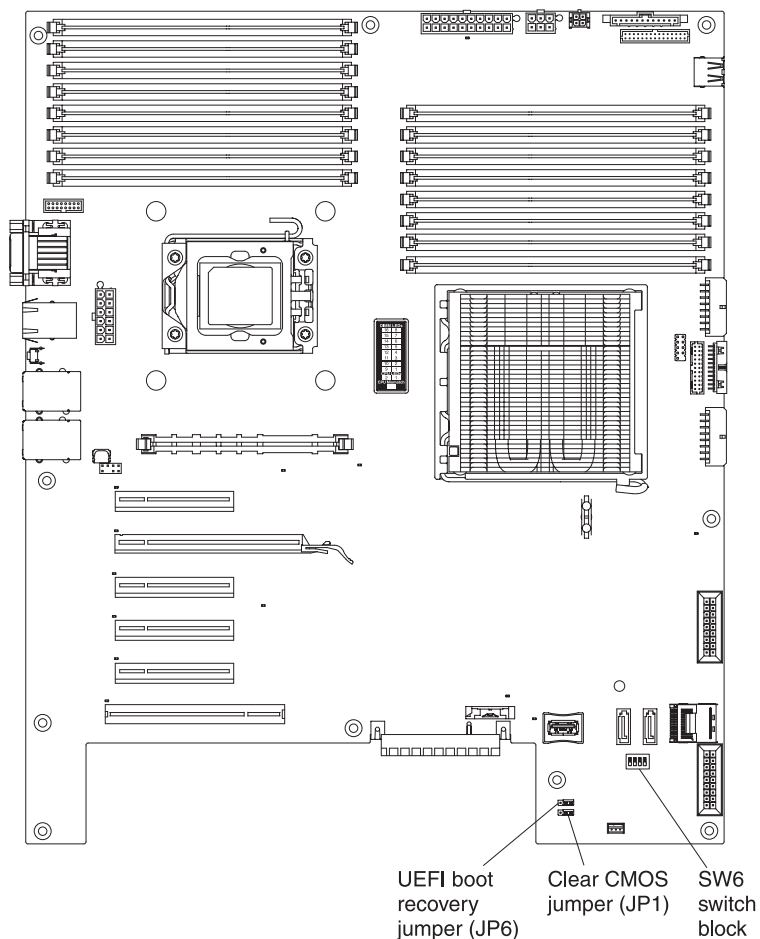
## System-board LEDs

The following illustration shows the LEDs on the system board.



## System-board jumpers and switches

The following illustration shows the jumpers and switches on the system board.



The following table describes the jumpers on the system board.

Table 2. System board jumpers

Jumper number	Jumper name	Jumper setting
JP1	Clear CMOS jumper	<ul style="list-style-type: none"> <li>Pins 1 and 2: Normal (default) - This keeps the CMOS data.</li> <li>Pins 2 and 3: This clears the CMOS data, which clears the power-on password and administrator password.</li> </ul> <p><b>Attention:</b> If you set an administrator password and then forget it, there is no way to change, override, or remove it. You must replace the system board.</p>

Table 2. System board jumpers (continued)

Jumper number	Jumper name	Jumper setting
JP6	UEFI boot recovery jumper	<ul style="list-style-type: none"> <li>Pins 1 and 2: Normal (default) - Loads the primary server firmware ROM.</li> <li>Pins 2 and 3: This enables the server to recovery if the server firmware becomes damaged.</li> </ul>
<p>Notes:</p> <ul style="list-style-type: none"> <li>If no jumper is present, the server responds as if the pins are set to 1 and 2.</li> <li>Changing the position of the UEFI boot recovery jumper from pins 1 and 2 to pins 2 and 3 before the server is turned on alters which flash ROM page is loaded. Do not change the jumper pin position after the server is turned on. This can cause an unpredictable problem.</li> </ul>		

The following table describes the function of each pin on the SW 6 switch block.

Table 3. System board switches

Switch pin number	Default value	Description
1	Off	Reserved.
2	Off	<p>Power-on password override. Changing the position of this switch bypasses the power-on password check the next time the server is turned on and starts the Setup utility so that you can change or delete the power-on password. You do not have to move the switch back to the default position after the power-on password is overridden.</p> <p>Changing the position of this switch does not affect the administrator password check if an administrator password is set.</p> <p><b>Attention:</b> If you set an administrator password and then forget it, there is no way to change, override, or remove it. You must replace the system board.</p> <p>See “Passwords” on page 280 for additional information about passwords.</p>
3	Off	Reserved.

Table 3. System board switches (continued)

Switch pin number	Default value	Description
4	Off	<ul style="list-style-type: none"> <li>When this switch is on <b>Off</b>, this is normal mode. This loads the primary IMM firmware ROM page.</li> <li>When this switch is toggled to <b>On</b>, this loads the secondary (backup) IMM firmware ROM page.</li> </ul>

**Important:**

- Before you change any switch settings or move any jumpers, turn off the server, then, disconnect all power cords and external cables. Review the information in “Installation guidelines” on page 161, “Handling static-sensitive devices” on page 163, and “Turning off the server” on page 17.
- Any system-board switch blocks or jumpers that are not shown in the illustrations in this document are reserved.

The following illustration shows the SW 5 switch and the jumpers on the system board. See the tables below the illustration for information about the switch settings.

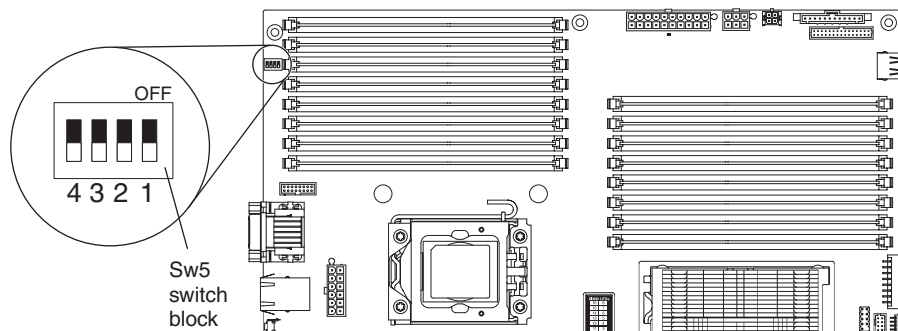


Table 4. System-board switch 5

SW 5 Switches	Switch description
1	Reserved (default off)
2	Reserved (default off)
3	Reserved (default off)
4	When this switch is off, TPM physical present is de-asserted (default off). When this switch is on, TPM physical present is asserted.

**Notes:**

- Before you change any switch settings or move any jumpers, turn off the server; then, disconnect all power cords and external cables. (Review the information in vii and “Installation guidelines” on page 161.)
- Any system-board switch or jumper blocks that are not shown in the illustrations in this document are reserved.



---

## Chapter 3. Diagnostics

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

If you cannot locate and correct the problem using the information in this chapter, see Appendix A, “Getting help and technical assistance,” on page 295 for more information.

---

### Diagnostic tools

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

- **POST error messages and event logs**

The power-on self-test (POST) generates messages to indicate successful test completion or the detection of a problem. See “POST” on page 26, “Event logs” on page 27, and “POST error codes” on page 30 for more information.

- **System-event log**

The system-event log contains all IMM, POST, and system management interrupt (SMI) events. See “Event logs” on page 27 and “System event log” on page 41 for more information.

- **Troubleshooting tables**

These tables list problem symptoms and actions to correct the problems. See “Troubleshooting tables” on page 73 for more information.

- **Dynamic System Analysis (DSA) Preboot diagnostic programs**

The DSA Preboot diagnostic programs provide problem isolation, configuration analysis, and event log collection. The diagnostic programs are the primary method of testing the major components of the server and are stored in integrated USB memory. The diagnostic programs collect the following information about the server:

- System configuration
- Network interfaces and settings
- Installed hardware
- Service processor status and configuration
- Vital product data, firmware, and UEFI configuration
- Hard disk drive health
- RAID controller configuration
- Controller event logs, including the following information:
  - System event logs
  - Temperature, voltage, and fan speed information
  - Self-monitoring Analysis, and Reporting Technology (SMART) data
  - Machine check registers
  - USB information
  - Monitor configuration information
  - PCI slot information

The diagnostic programs create a merged log that includes events from all collected logs. The information is collected into a file that you can send to IBM service and support. Additionally, you can view the server information locally through a generated text report file. You can also copy the log to removable media and view the log from a Web browser. See “Running the diagnostic programs” on page 92 and “Diagnostic messages” on page 93 for more information.

- **Server LEDs**

Use the LEDs on the server to diagnose system errors quickly. See “Error LEDs” on page 85 for more information.

- **IBM Electronic Service Agent**

IBM Electronic Service Agent is a software tool that monitors the server for hardware error events and automatically submits electronic service requests to IBM service and support. In addition, it can collect and transmit system configuration information on a scheduled basis so that the information is available to you and your support representative. It uses minimal system resources, and is available free of charge. For more information and to download IBM Electronic Service Agent, go to <http://www.ibm.com/support/electronic/>

---

## 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.

**Note:** This server does not use beep codes for server status.

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

If POST detects a problem, an error message is displayed. See “POST error codes” on page 30 for more information.

## Event logs

Error codes and messages are displayed in the following types of event logs. Some of the error codes and messages in the logs are abbreviated. When you are troubleshooting PCI-X slots, note that the event logs report the PCI-X buses numerically. The numerical assignments vary depending on the configuration. You can check the assignments by running the Setup utility (see “Using the Setup utility” on page 277 for more information).

- **POST event log:** This log contains the three most recent error codes and messages that were generated during POST. You can view the contents of the POST event log from the Setup utility (see “Starting the Setup utility” on page 277).
- **System-event log:** This log contains messages that were generated during POST and all system status messages from the service processor. You can view the contents of the system-event log from the Setup utility (see “Viewing event logs from the Setup utility” for more information).

The system-event log is limited in size. When it is full, new entries will not overwrite existing entries; therefore, you must periodically clear the system-event log through the Setup utility (when the IMM logs an event that indicates that the log is more than 75% full). When you are troubleshooting an error, be sure to clear the system-event log so that you can find current errors more easily.

Each system-event log entry is displayed on its own page. Messages are listed on the left side of the screen, and details about the selected message are displayed on the right side of the screen. To move from one entry to the next, use the Up Arrow (↑) and Down Arrow (↓) keys.

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

- **Integrated management module (IMM) event log:** This log contains a superset of IMM, POST, and system management interrupt (SMI) information that is in the system-event log. You can only access the event log through the IMM Web interface. For more information, see “Logging on to the Web interface” on page 285.
- **DSA log:** This log is generated by the Dynamic System Analysis (DSA) Preboot program, and it contains merged contents of the system-event log and the IMM system event log. You can view the DSA log from the DSA Preboot program (see “Viewing event logs without restarting the server” on page 28).

### Viewing event logs from the Setup utility

To view the event logs, complete the following steps:

1. Turn on the server.
2. When the prompt <F1> 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 event logs.
3. Select **System Event Logs** and use one of the following procedures:
  - To view the POST event log, select **POST Event Viewers**.
  - To view the IMM system-event log, select **System Event Log**.

**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 system board.

## Viewing event logs without restarting the server

When the server is not hung and the IMM is connected to a network, methods are available for you to view one or more event logs without having to restart the server.

If you have installed Portable or Installable Dynamic System Analysis (DSA), you can use it to view the system event log (as the IPMI event log), the IMM event log (as the ASM event log) or merged DSA log, which merges the contents of the system-event log and the IMM system event log. You can also use DSA Preboot to view the DSA log, although you must restart the server to use DSA Preboot. To install Portable DSA or DSA Preboot or download a DSA Preboot CD image, go to <http://www.ibm.com/systems/support/supportsite.wss/docdisplay?Indocid=SERV-DSA&brandind=5000008> or 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/systems/support/>.
2. Under **Product support**, click **System x**.
3. Under **Popular links**, click **Software and device drivers**.
4. Under **Related downloads**, click **Dynamic System Analysis (DSA)** to display the matrix of downloadable DSA files.

If IPMITool is installed in the server, you can use it to view the system-event log. Most recent versions of the Linux operating system come with a current version of IPMITool. For information about IPMITool, see [http://publib.boulder.ibm.com/infocenter/toolsctr/v1r0/index.jsp?topic=/com.ibm.xseries.tools.doc/config\\_tools\\_ipmitool.html](http://publib.boulder.ibm.com/infocenter/toolsctr/v1r0/index.jsp?topic=/com.ibm.xseries.tools.doc/config_tools_ipmitool.html) or 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://publib.boulder.ibm.com/infocenter/toolsctr/v1r0/index.jsp>.
2. In the navigation pane, click **IBM System x and BladeCenter Tools Center**.
3. Expand **Tools reference**, expand **Configuration tools**, expand **IPMI tools**, and click **IPMITool**.

For an overview of IPMI, go to <http://publib.boulder.ibm.com/infocenter/systems/index.jsp?topic=/liaai/ipmi/liaaiipmi.htm> or complete the following steps:

1. Go to <http://publib.boulder.ibm.com/infocenter/systems/index.jsp>.
2. In the navigation pane, click **IBM Systems Information Center**.
3. Expand **Operating systems**, expand **Linux information**, expand **Blueprints for Linux on IBM systems**, and click **Using Intelligent Platform Management Interface (IPMI) on IBM Linux platforms**.

You can view the IMM system event log through the **Event Log** link in the integrated management module (IMM) Web interface. For more information, see "Logging on to the Web interface" on page 285.

The following table describes the methods that you can use to view the event logs, depending on the condition of the server. The first three conditions generally do not require that you restart the server.

Table 5. Methods for viewing event logs

Condition	Action
The server is not hung and is connected to a network.	Run Portable or Installable DSA to view the event log or create an output file that you can send to IBM service and support.  Alternatively, you can use IPMITool to view the system-event log.
The server is not hung and is not connected to a network.	Use IPMITool locally to view the system-event log.
The server is not hung and the integrated management module (IMM) is connected to a network.	In a Web browser, type the IP address for the IMM and go to the Event Log page. For more information, see "Obtaining the IP address for the IMM" on page 284 and "Logging on to the Web interface" on page 285.
The server is hung.	<ul style="list-style-type: none"> <li>• If DSA Preboot is installed, restart the server and press F2 to start DSA Preboot and view the event logs (see "Running the diagnostic programs" on page 92 for more information).</li> <li>• If DSA Preboot is not installed, insert the DSA Preboot CD and restart the server to start DSA Preboot and view the event logs.</li> <li>• Alternatively, you can restart the server and press F1 to start the Setup utility and view the POST event log or system-event log. For more information, see "Viewing event logs from the Setup utility" on page 27.</li> </ul>

## Clearing the event logs

To clear the event logs, complete the following steps.

**Note:** The POST event log is automatically cleared each time the server is restarted.

**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 system board.

1. Turn on the server.
2. When the prompt <F1> 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 event logs.
3. Use one of the following procedures:
  - To clear the IMM system-event log, select **System Event Logs --> System Event Log**. Select **Clear System Event Log**; then, press **Enter** twice.

## POST error codes

The following table describes the POST error codes and suggested actions to correct the detected problems. These errors can appear as severe, warning, or informational.

<ul style="list-style-type: none"> <li>Follow the suggested actions in the order in which they are listed in the Action column until the problem is solved.</li> <li>See Chapter 4, “Parts listing, System x3400 M2 Types 7836 and 7837,” on page 153 to determine which components are customer replaceable units (CRU) and which components are field replaceable units (FRU).</li> <li>If an action step is preceded by “(Trained service technician only),” that step must be performed only by a trained service technician.</li> <li>Go to the IBM support Web site at <a href="http://www.ibm.com/systems/support/">http://www.ibm.com/systems/support/</a> to check for technical information, hints, tips, and new device drivers or to submit a request for information.</li> </ul>		
Error code	Description	Action
0010002	Microprocessor not supported.	<ol style="list-style-type: none"> <li>Reseat the following components one at a time, in the order shown, restarting the server each time.               <ol style="list-style-type: none"> <li>(Trained service technician only) Microprocessor 1.</li> <li>(Trained service technician only) Microprocessor 2 (if installed.)</li> </ol> </li> <li>(Trained service technician only) Remove microprocessor 2 and restart the server.</li> <li>(Trained service technician only) Remove microprocessor 1 and install microprocessor 2 in the microprocessor 1 connector. Restart the server. If the error is corrected, then microprocessor 1 is bad and must be replaced.</li> <li>Replace the following components one at a time, in the order shown, restarting the server each time.               <ol style="list-style-type: none"> <li>(Trained service technician only) Microprocessor 1.</li> <li>(Trained service technician only) Microprocessor 2.</li> <li>(Trained service technician only) System board.</li> </ol> </li> </ol>
0011000	Invalid microprocessor type.	<ol style="list-style-type: none"> <li>Update the server firmware to the latest level (see “Updating the firmware” on page 273).</li> <li>(Trained service technician only) Remove and replace the affected microprocessor (error LED is lit) with a supported type (see “Installing a microprocessor and heat sink” on page 249).</li> </ol>
0011002	Microprocessor mismatch.	<ol style="list-style-type: none"> <li>Run the Setup utility and select <b>System Information → System Summary → Processor Details</b> to view the microprocessor information to compare the installed microprocessor specifications.</li> <li>(Trained service technician only) Remove and replace one of the microprocessors so that they both match.</li> </ol>

- Follow the suggested actions in the order in which they are listed in the Action column until the problem is solved.
- See Chapter 4, “Parts listing, System x3400 M2 Types 7836 and 7837,” on page 153 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.
- Go to the IBM support Web site at <http://www.ibm.com/systems/support/> to check for technical information, hints, tips, and new device drivers or to submit a request for information.

Error code	Description	Action
0011004	Microprocessor failed BIST.	<ol style="list-style-type: none"> <li>1. Update the server firmware to the latest level (see “Updating the firmware” on page 273).</li> <li>2. (Trained service technician only) Reseat microprocessor 2.</li> <li>3. Replace the following components one at a time, in the order shown, restarting the server each time: <ol style="list-style-type: none"> <li>a. (Trained service technician only) Microprocessor</li> <li>b. (Trained service technician only) System board</li> </ol> </li> </ol>
001100A	Microcode updated failed.	<ol style="list-style-type: none"> <li>1. Update the server firmware to the latest level (see “Updating the firmware” on page 273).</li> <li>2. (Trained service technician only) Replace the microprocessor.</li> </ol>
0050001	DIMM disabled.	<p><b>Note:</b> Each time you install or remove a DIMM, you must disconnect the server from the power source; then, wait 10 seconds before restarting the server.</p> <ol style="list-style-type: none"> <li>1. Make sure the DIMM is installed correctly (see “Installing a memory module” on page 210).</li> <li>2. If the DIMM was disabled because of a memory fault, follow the suggested actions for that error event and restart the server.</li> <li>3. Check the IBM support website for an applicable retain tip or firmware update that applies to this memory event. If no memory fault is recorded in the logs and no DIMM connector error LED is lit, you can re-enable the DIMM through the Setup utility or the Advanced Settings Utility (ASU).</li> </ol>

- Follow the suggested actions in the order in which they are listed in the Action column until the problem is solved.
- See Chapter 4, “Parts listing, System x3400 M2 Types 7836 and 7837,” on page 153 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.
- Go to the IBM support Web site at <http://www.ibm.com/systems/support/> to check for technical information, hints, tips, and new device drivers or to submit a request for information.

Error code	Description	Action
0051003	Uncorrectable DIMM error	<p><b>Note:</b> Each time you install or remove a DIMM, you must disconnect the server from the power source; then, wait 10 seconds before restarting the server.</p> <ol style="list-style-type: none"> <li>1. Check the IBM support website for an applicable retain tip or firmware update that applies to this memory error.</li> <li>2. Manually re-enable all affected DIMMs if the server firmware version is older than UEFI v1.10. If the server firmware version is UEFI v1.10 or newer, disconnect and reconnect the server to the power source and restart the server.</li> <li>3. If the problem remains, replace the failing DIMM (see “Removing a memory module” on page 208 and “Installing a memory module” on page 210).</li> <li>4. (Trained service technician only) If the problem occurs on the same DIMM connector, check the DIMM connector. If the connector contains any foreign material or is damaged, replace the system board (see “Removing the system board” on page 267 and “Installing the system board” on page 269).</li> <li>5. (Trained service technician only) Remove the affected microprocessor and check the microprocessor socket pins for any damaged pins. If a damage is found, replace the system board (see “Removing the system board” on page 267 and “Installing the system board” on page 269).</li> <li>6. (Trained Service technician only) Replace the affected microprocessor (see “Removing the microprocessor and heat sink” on page 246 and “Installing a microprocessor and heat sink” on page 249).</li> </ol>
0051006	DIMM mismatch detected	Make sure that the DIMMs match and are installed in the correct sequence (see “Installing a memory module” on page 210).



- Follow the suggested actions in the order in which they are listed in the Action column until the problem is solved.
- See Chapter 4, “Parts listing, System x3400 M2 Types 7836 and 7837,” on page 153 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.
- Go to the IBM support Web site at <http://www.ibm.com/systems/support/> to check for technical information, hints, tips, and new device drivers or to submit a request for information.

Error code	Description	Action
0051009	No memory detected.	<ol style="list-style-type: none"> <li>1. Make sure that the server contains DIMMs.</li> <li>2. Reseat the DIMMs (see “Removing a memory module” on page 208 and “Installing a memory module” on page 210).</li> <li>3. Install DIMMs in the correct sequence (see “Installing a memory module” on page 210).</li> <li>4. (Trained service technician only) Replace the failing microprocessor (see “Removing the microprocessor and heat sink” on page 246 and “Installing a microprocessor and heat sink” on page 249).</li> <li>5. (Trained service technician only) Replace the system board (see “Removing the system board” on page 267 and “Installing the system board” on page 269).</li> </ol>
005100A	No usable memory detected.	<ol style="list-style-type: none"> <li>1. Make sure that the server contains DIMMs.</li> <li>2. Reseat the DIMMs (see “Removing a memory module” on page 208 and “Installing a memory module” on page 210).</li> <li>3. Install DIMMs in the correct sequence (see “Installing a memory module” on page 210).</li> <li>4. Clear CMOS memory to re-enable all the memory connectors (see “System-board jumpers and switches” on page 22). Note that all firmware settings will be reset to the default settings.</li> </ol>

- Follow the suggested actions in the order in which they are listed in the Action column until the problem is solved.
- See Chapter 4, “Parts listing, System x3400 M2 Types 7836 and 7837,” on page 153 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.
- Go to the IBM support Web site at <http://www.ibm.com/systems/support/> to check for technical information, hints, tips, and new device drivers or to submit a request for information.

Error code	Description	Action
0058001	PFA threshold exceeded	<ol style="list-style-type: none"> <li>1. Check the IBM support website for an applicable retain tip or firmware update that applies to this memory error.</li> <li>2. Swap the affected DIMMs (as indicated by the error LEDs on the system board or the event logs) to a different memory channel or microprocessor (see “Installing a memory module” on page 210 for memory population).</li> <li>3. If the error still occurs on the same DIMM, replace the affected DIMM.</li> <li>4. (Trained service technician only) If the problem occurs on the same DIMM connector, check the DIMM connector. If the connector contains any foreign material or is damaged, replace the system board (see “Removing the system board” on page 267 and “Installing the system board” on page 269).</li> <li>5. (Trained service technician only) Remove the affected microprocessor and check the microprocessor socket pins for any damaged pins. If a damage is found, replace the system board (see “Removing the system board” on page 267 and “Installing the system board” on page 269).</li> <li>6. (Trained Service technician only) Replace the affected microprocessor (see “Removing the microprocessor and heat sink” on page 246 and “Installing a microprocessor and heat sink” on page 249).</li> </ol>
0058007	DIMM population is unsupported.	<ol style="list-style-type: none"> <li>1. Reseat the DIMMs, and then restart the server (see “Removing a memory module” on page 208 and “Installing a memory module” on page 210).</li> <li>2. Make sure that the DIMMs are installed in the proper sequence (see “Installing a memory module” on page 210).</li> </ol>

- Follow the suggested actions in the order in which they are listed in the Action column until the problem is solved.
- See Chapter 4, “Parts listing, System x3400 M2 Types 7836 and 7837,” on page 153 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.
- Go to the IBM support Web site at <http://www.ibm.com/systems/support/> to check for technical information, hints, tips, and new device drivers or to submit a request for information.

Error code	Description	Action
0058008	DIMM failed memory test.	<ol style="list-style-type: none"> <li>1. Check the IBM support website for an applicable retain tip or firmware update that applies to this memory error.</li> <li>2. Manually re-enable all affected DIMMs if the server firmware version is older than UEFI v1.10. If the server firmware version is UEFI v1.10 or newer, disconnect and reconnect the server to the power source and restart the server.</li> <li>3. Swap the affected DIMMs (as indicated by the error LEDs on the system board or the event logs) to a different memory channel or microprocessor (see “Installing a memory module” on page 210 for memory population).</li> <li>4. If the problem is related to a DIMM, replace the failing DIMM (see “Removing a memory module” on page 208 and “Installing a memory module” on page 210).</li> <li>5. (Trained service technician only) If the problem occurs on the same DIMM connector, check the DIMM connector. If the connector contains any foreign material or is damaged, replace the system board (see “Removing the system board” on page 267 and “Installing the system board” on page 269).</li> <li>6. (Trained service technician only) Remove the affected microprocessor and check the microprocessor socket pins for any damaged pins. If a damage is found, replace the system board (see “Removing the system board” on page 267 and “Installing the system board” on page 269).</li> <li>7. (Trained service technician only) If the problem is related to microprocessor socket pins, replace the system board (see “Removing the system board” on page 267 and “Installing the system board” on page 269).</li> <li>8. (Trained Service technician only) Replace the affected microprocessor (see “Removing the microprocessor and heat sink” on page 246 and “Installing a microprocessor and heat sink” on page 249).</li> </ol>
00580A1	Invalid DIMM population for mirroring mode	<ol style="list-style-type: none"> <li>1. If a fault LED is lit, resolve the failure.</li> <li>2. Install the DIMMs in the correct sequence (see “Installing a memory module” on page 210).</li> </ol>
00580A4	Memory population changed.	Information only. Memory has been added, moved, or changed.

- Follow the suggested actions in the order in which they are listed in the Action column until the problem is solved.
- See Chapter 4, “Parts listing, System x3400 M2 Types 7836 and 7837,” on page 153 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.
- Go to the IBM support Web site at <http://www.ibm.com/systems/support/> to check for technical information, hints, tips, and new device drivers or to submit a request for information.

Error code	Description	Action
00580A5	Mirror failover complete	Information only. Memory redundancy has been lost. Check the event log for uncorrected DIMM failure events (see “Event logs” on page 27).
0068002	CMOS battery cleared.	<ol style="list-style-type: none"> <li>1. Reseat the battery.</li> <li>2. Clear the CMOS memory (see Table 2 on page 22).</li> <li>3. Replace the following components one at a time, in the following order, restarting the server after each one: <ol style="list-style-type: none"> <li>a. Battery</li> <li>b. (Trained service technician only) System board.</li> </ol> </li> </ol>
2011001	PCI-X PERR	<ol style="list-style-type: none"> <li>1. Reseat all affected adapters.</li> <li>2. Update the PCI adapter firmware.</li> <li>3. Remove the adapter.</li> <li>4. Replace the following components one at a time, in the order shown, restarting the server each time: <ol style="list-style-type: none"> <li>a. Adapter</li> <li>b. (Trained service technician only) System board</li> </ol> </li> </ol>
2018001	PCI Express uncorrected or uncorrected error	<ol style="list-style-type: none"> <li>1. Reseat all affected adapters.</li> <li>2. Update the PCI adapter firmware.</li> <li>3. Remove the adapter.</li> <li>4. Replace the following components one at a time, in the order shown, restarting the server each time: <ol style="list-style-type: none"> <li>a. Adapter</li> <li>b. (Trained service technician only) System board</li> </ol> </li> </ol>

- Follow the suggested actions in the order in which they are listed in the Action column until the problem is solved.
- See Chapter 4, “Parts listing, System x3400 M2 Types 7836 and 7837,” on page 153 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.
- Go to the IBM support Web site at <http://www.ibm.com/systems/support/> to check for technical information, hints, tips, and new device drivers or to submit a request for information.

Error code	Description	Action
2018002	Option ROM resource allocation failure	<p>Informational message that some devices might not be initialized.</p> <ol style="list-style-type: none"> <li>1. If possible, rearrange the order of the adapters in the PCI slots to change the load order of the optional-device ROM code.</li> <li>2. Run the Setup utility, select <b>Startup Options</b>, and change the boot priority to change the load order of the optional-device ROM code.</li> <li>3. Run the Setup utility and disable some other resources, if their functions are not being used, to make more space available. <ol style="list-style-type: none"> <li>a. Select <b>Startup Options</b>, then <b>Planar Ethernet (PXE/DHCP)</b> to disable the integrated Ethernet controller ROM.</li> <li>b. Select <b>Advanced Functions</b>, then <b>PCI Bus Control</b>, then <b>PCI ROM Control Execution</b> to disable the ROM of the adapter in the PCI slots.</li> <li>c. Select <b>Devices and I/O Ports</b> to disable any of the integrated devices.</li> </ol> </li> <li>4. Replace the following components one at a time, in the order shown, restarting the server each time: <ol style="list-style-type: none"> <li>a. Each adapter</li> <li>b. (Trained service technician only) System board</li> </ol> </li> </ol>
3xx0007 (xx can be 00 - 19)	Firmware fault detected, system halted	<ol style="list-style-type: none"> <li>1. Recover the server firmware to the latest level (see “Updating the firmware” on page 273).</li> <li>2. Undo any recent configuration changes, or clear CMOS memory to restore the settings to the default values (see Table 2 on page 22).</li> <li>3. Remove any recently installed hardware.</li> </ol>
3038003	Firmware corrupted	<ol style="list-style-type: none"> <li>1. Run the Setup utility, select <b>Load Default Settings</b>, and save the settings to recover the server firmware.</li> <li>2. (Trained service technician only) Replace the system board.</li> </ol>
3048005	Booted secondary (backup) UEFI Image	Information only. The backup switch was used to boot the secondary bank.

- Follow the suggested actions in the order in which they are listed in the Action column until the problem is solved.
- See Chapter 4, “Parts listing, System x3400 M2 Types 7836 and 7837,” on page 153 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.
- Go to the IBM support Web site at <http://www.ibm.com/systems/support/> to check for technical information, hints, tips, and new device drivers or to submit a request for information.

Error code	Description	Action
3048006	Booted secondary (backup) UEFI image because of ABR	<ol style="list-style-type: none"> <li>1. Run the Setup utility, select <b>Load Default Settings</b>, and save the settings to recover the primary UEFI settings.</li> <li>2. Turn off the server and remove it from the power source.</li> <li>3. Reconnect the server to the power source, then turn on the server.</li> </ol>
3058000A	RTC date/time is incorrect	<ol style="list-style-type: none"> <li>1. Adjust the date and time settings in the Setup utility, and then restart the server.</li> <li>2. Reseat the battery.</li> <li>3. Replace the following components one at a time, in the order shown, restarting the server each time:               <ol style="list-style-type: none"> <li>a. Battery</li> <li>b. (Trained service technician only) System board</li> </ol> </li> </ol>
3058001	System configuration invalid	<ol style="list-style-type: none"> <li>1. Run the Setup utility, and select <b>Save Settings</b>.</li> <li>2. Run the Setup utility, select <b>Load Default Settings</b>, and save the settings.</li> <li>3. Reseat the following components one at a time in the order shown, restarting the server each time:               <ol style="list-style-type: none"> <li>a. Battery</li> <li>b. Failing device (if the device is a FRU, then it must be reseated by a trained service technician only)</li> </ol> </li> <li>4. Replace the following components one at a time, in the order shown, restarting the server each time:               <ol style="list-style-type: none"> <li>a. Battery</li> <li>b. Failing device (if the device is a FRU, then it must be replaced by a trained service technician only)</li> <li>c. (Trained service technician only) System board</li> </ol> </li> </ol>

- Follow the suggested actions in the order in which they are listed in the Action column until the problem is solved.
- See Chapter 4, “Parts listing, System x3400 M2 Types 7836 and 7837,” on page 153 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.
- Go to the IBM support Web site at <http://www.ibm.com/systems/support/> to check for technical information, hints, tips, and new device drivers or to submit a request for information.

Error code	Description	Action
3058004	Three boot failure	<ol style="list-style-type: none"> <li>1. Undo any recent system changes, such as new settings or newly installed devices.</li> <li>2. Make sure that the server is attached to a reliable power source.</li> <li>3. Remove all hardware that is not listed on the ServerProven Web site at <a href="http://www.ibm.com/servers/eserver/serverproven/compat/us/">http://www.ibm.com/servers/eserver/serverproven/compat/us/</a>.</li> <li>4. Make sure that the operating system is not corrupted.</li> <li>5. Run the Setup utility, save the configuration, and then restart the server.</li> </ol>
3108007	System configuration restored to default settings	Information only. This message is usually associated with the CMOS battery clear event.
3138002	Boot configuration error	<ol style="list-style-type: none"> <li>1. Remove any recent configuration changes made to the Setup utility.</li> <li>2. Run the Setup utility, select <b>Load Default Settings</b>, and save the settings.</li> </ol>
3808000	IMM communication failure	<ol style="list-style-type: none"> <li>1. Remove power from the server for 30 seconds, and then reconnect the server to power and restart it.</li> <li>2. Update the IMM firmware to the latest level (see “Updating the firmware” on page 273).</li> <li>3. Make sure that the virtual media key is seated and not damaged.</li> <li>4. (Trained service technician only) Replace the system board.</li> </ol>
3808002	Error updating system configuration to IMM	<ol style="list-style-type: none"> <li>1. Remove power from the server, and then reconnect the server to power and restart it.</li> <li>2. Run the Setup utility and select <b>Save Settings</b>.</li> <li>3. Update the IMM firmware to the latest level (see “Updating the firmware” on page 273).</li> </ol>
3808003	Error retrieving system configuration from IMM	<ol style="list-style-type: none"> <li>1. Remove power from the server, and then reconnect the server to power and restart it.</li> <li>2. Run the Setup utility and select <b>Save Settings</b>.</li> <li>3. Update the IMM firmware to the latest level (see “Updating the firmware” on page 273).</li> </ol>

- Follow the suggested actions in the order in which they are listed in the Action column until the problem is solved.
- See Chapter 4, “Parts listing, System x3400 M2 Types 7836 and 7837,” on page 153 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.
- Go to the IBM support Web site at <http://www.ibm.com/systems/support/> to check for technical information, hints, tips, and new device drivers or to submit a request for information.

Error code	Description	Action
3808004	IMM system event log full	<ul style="list-style-type: none"> <li>• When using out-of-band, use the IMM Web interface or IPMITool to clear the logs from the operating system.</li> <li>• When using the local console: <ol style="list-style-type: none"> <li>1. Run the Setup utility.</li> <li>2. Select <b>System Event Log</b>.</li> <li>3. Select <b>Clear System Event Log</b>.</li> <li>4. Restart the server.</li> </ol> </li> </ul>
3818001	Core Root of Trust Measurement (CRTM) update failed	<ol style="list-style-type: none"> <li>1. Run the Setup utility, select <b>Load Default Settings</b>, and save the settings.</li> <li>2. (Trained service technician only) Replace the system board.</li> </ol>
3818002	Core Root of Trust Measurement (CRTM) update aborted	<ol style="list-style-type: none"> <li>1. Run the Setup utility, select <b>Load Default Settings</b>, and save the settings.</li> <li>2. (Trained service technician only) Replace the system board.</li> </ol>
3818003	Core Root of Trust Measurement (CRTM) flash lock failed	<ol style="list-style-type: none"> <li>1. Run the Setup utility, select <b>Load Default Settings</b>, and save the settings.</li> <li>2. (Trained service technician only) Replace the system board.</li> </ol>
3818004	Core Root of Trust Measurement (CRTM) system error	<ol style="list-style-type: none"> <li>1. Run the Setup utility, select <b>Load Default Settings</b>, and save the settings.</li> <li>2. (Trained service technician only) Replace the system board.</li> </ol>
3818005	Current Bank Core Root of Trust Measurement (CRTM) capsule signature invalid	<ol style="list-style-type: none"> <li>1. Run the Setup utility, select <b>Load Default Settings</b>, and save the settings.</li> <li>2. (Trained service technician only) Replace the system board.</li> </ol>
3818006	Opposite bank CRTM capsule signature invalid	<ol style="list-style-type: none"> <li>1. Switch the server firmware bank to the backup bank (see “Starting the backup server firmware” on page 281).</li> <li>2. Run the Setup utility, select <b>Load Default Settings</b>, and save the settings.</li> <li>3. Switch the bank back to the primary bank.</li> <li>4. (Trained service technician only) Replace the system board.</li> </ol>



<ul style="list-style-type: none"> <li>Follow the suggested actions in the order in which they are listed in the Action column until the problem is solved.</li> <li>See Chapter 4, “Parts listing, System x3400 M2 Types 7836 and 7837,” on page 153 to determine which components are customer replaceable units (CRU) and which components are field replaceable units (FRU).</li> <li>If an action step is preceded by “(Trained service technician only),” that step must be performed only by a trained service technician.</li> <li>Go to the IBM support Web site at <a href="http://www.ibm.com/systems/support/">http://www.ibm.com/systems/support/</a> to check for technical information, hints, tips, and new device drivers or to submit a request for information.</li> </ul>		
Error code	Description	Action
3818007	CRTM update capsule signature invalid	<ol style="list-style-type: none"> <li>Run the Setup utility, select <b>Load Default Settings</b>, and save the settings.</li> <li>(Trained service technician only) Replace the system board.</li> </ol>
3828004	AEM power capping disabled	<ol style="list-style-type: none"> <li>Check the settings and the event logs.</li> <li>Make sure that the Active Energy Manager feature is enabled in the Setup utility. Select <b>System Settings, Power, Active Energy</b>, and <b>Capping Enabled</b>.</li> <li>Update the server firmware to the latest level (see “Updating the firmware” on page 273).</li> <li>Update the IMM firmware to the latest level (see “Updating the firmware” on page 273).</li> </ol>

## System event log

The system event log contains 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 or the IMM).

## Integrated management module (IMM) error messages

The following table describes the IMM error messages and suggested actions to correct the detected problems. For more information about IMM, see the *Integrated Management Module User's Guide* at <http://www.ibm.com/systems/support/supportsite.wss/docdisplay?Indocid=MIGR-5079770&brandind=5000008>.

- Follow the suggested actions in the order in which they are listed in the Action column until the problem is solved.
- See Chapter 4, “Parts listing, System x3400 M2 Types 7836 and 7837,” on page 153 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.

Message	Severity	Description	Action
Numeric sensor Ambient Temp going high (upper critical) has asserted.	Error	An upper critical sensor going high has asserted.	Reduce the ambient temperature.
Numeric sensor Ambient Temp going high (upper non-recoverable) has asserted.	Error	An upper nonrecoverable sensor going high has asserted.	Reduce the ambient temperature.
Numeric sensor Planar 3.3V going low (lower critical) has asserted.	Error	A lower critical sensor going low has asserted.	(Trained service technician only) Replace the system board.
Numeric sensor Planar 3.3V going high (upper critical) has asserted.	Error	An upper critical sensor going high has asserted.	(Trained service technician only) Replace the system board.
Numeric sensor Planar 5V going low (lower critical) has asserted.	Error	A lower critical sensor going low has asserted.	(Trained service technician only) Replace the system board.
Numeric sensor Planar 5V going high (upper critical) has asserted.	Error	An upper critical sensor going high has asserted.	(Trained service technician only) Replace the system board.
Numeric sensor Planar VBAT going low (lower critical) has asserted.	Error	A lower critical sensor going low has asserted.	Replace the 3 V battery.
Numeric sensor Fan <i>n</i> Tach going low (lower critical) has asserted. ( <i>n</i> = fan number)	Error	A lower critical sensor going low has asserted.	1. Reseat the failing fan <i>n</i> , which is indicated by a lit LED on the fan. 2. Replace the failing fan. ( <i>n</i> = fan number)
The Processor CPU <i>n</i> Status has Failed with IERR. ( <i>n</i> = microprocessor number)	Error	A processor failed - IERR condition has occurred.	1. Make sure that the latest levels of firmware and device drivers are installed for all adapters and standard devices, such as Ethernet, SCSI, and SAS. <b>Important:</b> Some cluster solutions require specific code levels or coordinated code updates. If the device is part of a cluster solution, verify that the latest level of code is supported for the cluster solution before you update the code. 2. Run the DSA program for the hard disk drives and other I/O devices. 3. (Trained service technician only) Replace microprocessor <i>n</i> . ( <i>n</i> = microprocessor number)

<ul style="list-style-type: none"> <li>• Follow the suggested actions in the order in which they are listed in the Action column until the problem is solved.</li> <li>• See Chapter 4, “Parts listing, System x3400 M2 Types 7836 and 7837,” on page 153 to determine which components are customer replaceable units (CRU) and which components are field replaceable units (FRU).</li> <li>• If an action step is preceded by “(Trained service technician only),” that step must be performed only by a trained service technician.</li> </ul>			
An Over-Temperature Condition has been detected on the Processor CPU <i>n</i> Status. ( <i>n</i> = microprocessor number)	Error	An overtemperature condition has occurred for microprocessor <i>n</i> . ( <i>n</i> = microprocessor number)	<ol style="list-style-type: none"> <li>1. Make sure that the fans are operating, that there are no obstructions to the airflow, that the air baffle is in place and correctly installed, and that the server cover is installed and completely closed.</li> <li>2. Make sure that the heat sink for microprocessor <i>n</i> is installed correctly.</li> <li>3. (Trained service technician only) Replace microprocessor <i>n</i>.</li> </ol> ( <i>n</i> = microprocessor number)
The Processor CPU <i>n</i> Status has Failed with FRB1/BIST condition. ( <i>n</i> = microprocessor number)	Error	A processor failed - FRB1/BIST condition has occurred.	<ol style="list-style-type: none"> <li>1. Check for a server firmware update. <b>Important:</b> Some cluster solutions require specific code levels or coordinated code updates. If the device is part of a cluster solution, verify that the latest level of code is supported for the cluster solution before you update the code.</li> <li>2. Make sure that the installed microprocessors are compatible with each other (see “Installing a microprocessor and heat sink” on page 249 for information about microprocessor requirements).</li> <li>3. (Trained service technician only) Reseat microprocessor <i>n</i>.</li> <li>4. (Trained service technician only) Replace microprocessor <i>n</i>.</li> </ol> ( <i>n</i> = microprocessor number)

<ul style="list-style-type: none"> <li>• Follow the suggested actions in the order in which they are listed in the Action column until the problem is solved.</li> <li>• See Chapter 4, “Parts listing, System x3400 M2 Types 7836 and 7837,” on page 153 to determine which components are customer replaceable units (CRU) and which components are field replaceable units (FRU).</li> <li>• If an action step is preceded by “(Trained service technician only),” that step must be performed only by a trained service technician.</li> </ul>			
The Processor CPU <i>n</i> Status has a Configuration Mismatch. ( <i>n</i> = microprocessor number)	Error	A processor configuration mismatch has occurred.	<ol style="list-style-type: none"> <li>1. Make sure that the installed microprocessors are compatible with each other (see “Installing a microprocessor and heat sink” on page 249 for information about microprocessor requirements).</li> <li>2. (Trained service technician only) Replace the incompatible microprocessor.</li> </ol>
An SM BIOS Uncorrectable CPU complex error for Processor CPU <i>n</i> Status has asserted. ( <i>n</i> = microprocessor number)	Error	An SMBIOS uncorrectable CPU complex error has asserted.	<ol style="list-style-type: none"> <li>1. Check for a server firmware update. <b>Important:</b> Some cluster solutions require specific code levels or coordinated code updates. If the device is part of a cluster solution, verify that the latest level of code is supported for the cluster solution before you update the code.</li> <li>2. Make sure that the installed microprocessors are compatible with each other (see “Installing a microprocessor and heat sink” on page 249 for information about microprocessor requirements).</li> <li>3. (Trained service technician only) Reseat microprocessor <i>n</i>.</li> <li>4. (Trained service technician only) Replace microprocessor <i>n</i>.</li> </ol> <p>(<i>n</i> = microprocessor number)</p>

<ul style="list-style-type: none"> <li>• Follow the suggested actions in the order in which they are listed in the Action column until the problem is solved.</li> <li>• See Chapter 4, “Parts listing, System x3400 M2 Types 7836 and 7837,” on page 153 to determine which components are customer replaceable units (CRU) and which components are field replaceable units (FRU).</li> <li>• If an action step is preceded by “(Trained service technician only),” that step must be performed only by a trained service technician.</li> </ul>			
Sensor CPU <i>n</i> OverTemp has transitioned to critical from a less severe state. ( <i>n</i> = microprocessor number)	Error	A sensor has changed to Critical state from a less severe state.	<ol style="list-style-type: none"> <li>1. Make sure that the fans are operating, that there are no obstructions to the airflow, that the air baffle is in place and correctly installed, and that the server cover is installed and completely closed.</li> <li>2. Make sure that the heat sink for microprocessor <i>n</i> is installed correctly.</li> <li>3. (Trained service technician only) Replace microprocessor <i>n</i>.</li> </ol> ( <i>n</i> = microprocessor number)
Sensor CPU <i>n</i> OverTemp has transitioned to non-recoverable from a less severe state. ( <i>n</i> = microprocessor number)	Error	A sensor has changed to Nonrecoverable state from a less severe state.	<ol style="list-style-type: none"> <li>1. Make sure that the fans are operating, that there are no obstructions to the airflow, that the air baffle is in place and correctly installed, and that the server cover is installed and completely closed.</li> <li>2. Make sure that the heat sink for microprocessor <i>n</i> is installed correctly.</li> <li>3. (Trained service technician only) Replace microprocessor <i>n</i>.</li> </ol> ( <i>n</i> = microprocessor number)
Sensor CPU <i>n</i> OverTemp has transitioned to critical from a non-recoverable state. ( <i>n</i> = microprocessor number)	Error	A sensor has changed to Critical state from Nonrecoverable state.	<ol style="list-style-type: none"> <li>1. Make sure that the fans are operating, that there are no obstructions to the airflow, that the air baffle is in place and correctly installed, and that the server cover is installed and completely closed.</li> <li>2. Make sure that the heat sink for microprocessor <i>n</i> is installed correctly.</li> <li>3. (Trained service technician only) Replace microprocessor <i>n</i>.</li> </ol> ( <i>n</i> = microprocessor number)

<ul style="list-style-type: none"> <li>Follow the suggested actions in the order in which they are listed in the Action column until the problem is solved.</li> <li>See Chapter 4, “Parts listing, System x3400 M2 Types 7836 and 7837,” on page 153 to determine which components are customer replaceable units (CRU) and which components are field replaceable units (FRU).</li> <li>If an action step is preceded by “(Trained service technician only),” that step must be performed only by a trained service technician.</li> </ul>			
Sensor CPU <i>n</i> OverTemp has transitioned to non-recoverable. ( <i>n</i> = microprocessor number)	Error	A sensor has changed to Nonrecoverable state.	<ol style="list-style-type: none"> <li>Make sure that the fans are operating, that there are no obstructions to the airflow, that the air baffle is in place and correctly installed, and that the server cover is installed and completely closed.</li> <li>Make sure that the heat sink for microprocessor <i>n</i> is installed correctly.</li> <li>(Trained service technician only) Replace microprocessor <i>n</i>.</li> </ol> ( <i>n</i> = microprocessor number)
A bus timeout has occurred on system %1. (%1 = CIM_ComputerSystem.ElementName)	Error	A bus timeout has occurred.	<ol style="list-style-type: none"> <li>Remove the adapter from the PCI slot that is indicated by a lit LED.</li> <li>Replace the extender card.</li> <li>Remove all PCI adapters.</li> <li>(Trained service technicians only) Replace the system board.</li> </ol>
The System %1 encountered a POST Error. (%1 = CIM_ComputerSystem.ElementName)	Error	A POST error has occurred. (Sensor = ABR Status)	<ol style="list-style-type: none"> <li>Make sure that the system configuration has the minimum hardware requirements to start.</li> <li>Recover the server firmware from the backup page (see “Recovering the server firmware” on page 145).</li> <li>Update the server firmware to the latest level.</li> </ol> <p><b>Important:</b> Some cluster solutions require specific code levels or coordinated code updates. If the device is part of a cluster solution, verify that the latest level of code is supported for the cluster solution before you update the code.</p>

<ul style="list-style-type: none"> <li>• Follow the suggested actions in the order in which they are listed in the Action column until the problem is solved.</li> <li>• See Chapter 4, “Parts listing, System x3400 M2 Types 7836 and 7837,” on page 153 to determine which components are customer replaceable units (CRU) and which components are field replaceable units (FRU).</li> <li>• If an action step is preceded by “(Trained service technician only),” that step must be performed only by a trained service technician.</li> </ul>			
The System %1 encountered a POST Error. (%1 = CIM_ComputerSystem.ElementName)	Error	A POST error has occurred. (Sensor = Firmware Error)	<ol style="list-style-type: none"> <li>1. Make sure that the system configuration has the minimum hardware requirements to start.</li> <li>2. Update the server firmware on the primary page. <b>Important:</b> Some cluster solutions require specific code levels or coordinated code updates. If the device is part of a cluster solution, verify that the latest level of code is supported for the cluster solution before you update the code.</li> <li>3. (Trained service technician only) Replace the system board.</li> </ol>
A Uncorrectable Bus Error has occurred on system %1. (%1 = CIM_ComputerSystem.ElementName)	Error	A bus uncorrectable error has occurred. (Sensor = Critical Int PCI)	<ol style="list-style-type: none"> <li>1. Check the system-event log.</li> <li>2. Check the PCI error LEDs.</li> <li>3. Remove the adapter from the indicated PCI slot.</li> <li>4. Check for a server firmware update. <b>Important:</b> Some cluster solutions require specific code levels or coordinated code updates. If the device is part of a cluster solution, verify that the latest level of code is supported for the cluster solution before you update the code.</li> <li>5. (Trained service technician only) Replace the system board.</li> </ol>

- Follow the suggested actions in the order in which they are listed in the Action column until the problem is solved.
- See Chapter 4, “Parts listing, System x3400 M2 Types 7836 and 7837,” on page 153 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.

A Uncorrectable Bus Error has occurred on system %1. (%1 = CIM_ComputerSystem.ElementName)	Error	A bus uncorrectable error has occurred. (Sensor = Critical Int CPU)	<ol style="list-style-type: none"> <li>1. Check the system-event log.</li> <li>2. Check the microprocessor error LEDs.</li> <li>3. Remove the failing microprocessor from the system board.</li> <li>4. Check for a server firmware update. <b>Important:</b> Some cluster solutions require specific code levels or coordinated code updates. If the device is part of a cluster solution, verify that the latest level of code is supported for the cluster solution before you update the code.</li> <li>5. Make sure that the two microprocessors are matching.</li> <li>6. (Trained service technician only) Replace the system board.</li> </ol>
A Uncorrectable Bus Error has occurred on system %1. (%1 = CIM_ComputerSystem.ElementName)	Error	A bus uncorrectable error has occurred. (Sensor = Critical Int DIM)	<ol style="list-style-type: none"> <li>1. Check the system-event log.</li> <li>2. Check the DIMM error LEDs.</li> <li>3. Remove the failing DIMM from the system board.</li> <li>4. Check for a server firmware update. <b>Important:</b> Some cluster solutions require specific code levels or coordinated code updates. If the device is part of a cluster solution, verify that the latest level of code is supported for the cluster solution before you update the code.</li> <li>5. Make sure that the installed DIMMs are supported and configured correctly.</li> <li>6. (Trained service technician only) Replace the system board.</li> </ol>



<ul style="list-style-type: none"> <li>• Follow the suggested actions in the order in which they are listed in the Action column until the problem is solved.</li> <li>• See Chapter 4, “Parts listing, System x3400 M2 Types 7836 and 7837,” on page 153 to determine which components are customer replaceable units (CRU) and which components are field replaceable units (FRU).</li> <li>• If an action step is preceded by “(Trained service technician only),” that step must be performed only by a trained service technician.</li> </ul>			
Sensor Sys Board Fault has transitioned to critical from a less severe state.	Error	A sensor has changed to Critical state from a less severe state.	<ol style="list-style-type: none"> <li>1. Check the system-event log.</li> <li>2. Check for an error LED on the system board.</li> <li>3. Replace any failing device.</li> <li>4. Check for a server firmware update. <b>Important:</b> Some cluster solutions require specific code levels or coordinated code updates. If the device is part of a cluster solution, verify that the latest level of code is supported for the cluster solution before you update the code.</li> <li>5. (Trained service technician only) Replace the system board.</li> </ol>
Sensor RAID Error has transitioned to critical from a less severe state.	Error	A sensor has changed to Critical state from a less severe state.	<ol style="list-style-type: none"> <li>1. Check the hard disk drive LEDs.</li> <li>2. Reseat the hard disk drive for which the status LED is lit.</li> <li>3. Replace the defective hard disk drive.</li> </ol>
The Drive <i>n</i> Status has been removed from unit Drive 0 Status. ( <i>n</i> = hard disk drive number)	Error	A drive has been removed.	Reseat hard disk drive <i>n</i> . ( <i>n</i> = hard disk drive number)
The Drive <i>n</i> Status has been disabled due to a detected fault. ( <i>n</i> = hard disk drive number)	Error	A drive has been disabled because of a fault.	<ol style="list-style-type: none"> <li>1. Run the hard disk drive diagnostic test on drive <i>n</i>.</li> <li>2. Reseat the following components: <ol style="list-style-type: none"> <li>a. Hard disk drive</li> <li>b. Cable from the system board to the backplate</li> </ol> </li> <li>3. Replace the following components one at a time, in the order shown, restarting the server each time: <ol style="list-style-type: none"> <li>a. Hard disk drive</li> <li>b. Cable from the system board to the backplate</li> <li>c. Hard disk drive backplate</li> </ol> </li> </ol> <p>(<i>n</i> = hard disk drive number)</p>

- Follow the suggested actions in the order in which they are listed in the Action column until the problem is solved.
- See Chapter 4, “Parts listing, System x3400 M2 Types 7836 and 7837,” on page 153 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.

Array %1 is in critical condition. (%1 = CIM_ComputerSystem. ElementName)	Error	An array is in Critical state. (Sensor = Drive <i>n</i> Status) ( <i>n</i> = hard disk drive number)	Replace the hard disk drive that is indicated by a lit status LED.
Array %1 has failed. (%1 = CIM_ComputerSystem. ElementName)	Error	An array is in Failed state. (Sensor = Drive <i>n</i> Status) ( <i>n</i> = hard disk drive number)	Replace the hard disk drive that is indicated by a lit status LED.
Memory uncorrectable error detected for DIMM All DIMMs on Memory Subsystem All DIMMs.	Error	A memory uncorrectable error has occurred.	<ol style="list-style-type: none"> <li>1. Check the IBM support website for an applicable retain tip or firmware update that applies to this memory error.</li> <li>2. Manually re-enable all affected DIMMs if the server firmware version is older than UEFI v1.10. If the server firmware version is UEFI v1.10 or newer, disconnect and reconnect the server to the power source and restart the server.</li> <li>3. Swap the affected DIMMs (as indicated by the error LEDs on the system board or the event logs) to a different memory channel or microprocessor (see “Installing a memory module” on page 210 for memory population).</li> <li>4. If the problem follows the DIMM, replace the failing DIMM (see “Removing a memory module” on page 208 and “Installing a memory module” on page 210).</li> </ol> <p>(Continued on the next page)</p>

<ul style="list-style-type: none"> <li>• Follow the suggested actions in the order in which they are listed in the Action column until the problem is solved.</li> <li>• See Chapter 4, “Parts listing, System x3400 M2 Types 7836 and 7837,” on page 153 to determine which components are customer replaceable units (CRU) and which components are field replaceable units (FRU).</li> <li>• If an action step is preceded by “(Trained service technician only),” that step must be performed only by a trained service technician.</li> </ul>			
Memory uncorrectable error detected for DIMM All DIMMs on Memory Subsystem All DIMMs.	Error	A memory uncorrectable error has occurred.	<p>5. (Trained service technician only) If the problem occurs on the same DIMM connector, check the DIMM connector. If the connector contains any foreign material or is damaged, replace the system board (see “Removing the system board” on page 267 and “Installing the system board” on page 269).</p> <p>6. (Trained service technician only) Remove the affected microprocessor and check the microprocessor socket pins for any damaged pins. If a damage is found, replace the system board (see “Removing the system board” on page 267 and “Installing the system board” on page 269).</p> <p>7. (Trained Service technician only) Replace the affected microprocessor (see “Removing the microprocessor and heat sink” on page 246 and “Installing a microprocessor and heat sink” on page 249).</p>

<ul style="list-style-type: none"> <li>• Follow the suggested actions in the order in which they are listed in the Action column until the problem is solved.</li> <li>• See Chapter 4, “Parts listing, System x3400 M2 Types 7836 and 7837,” on page 153 to determine which components are customer replaceable units (CRU) and which components are field replaceable units (FRU).</li> <li>• If an action step is preceded by “(Trained service technician only),” that step must be performed only by a trained service technician.</li> </ul>			
Memory Logging Limit Reached for DIMM All DIMMs on Memory Subsystem All DIMMs.	Error	The memory logging limit has been reached.	<ol style="list-style-type: none"> <li>1. Check the IBM support website for an applicable retain tip or firmware update that applies to this memory error.</li> <li>2. Swap the affected DIMMs (as indicated by the error LEDs on the system board or the event logs) to a different memory channel or microprocessor (see “Installing a memory module” on page 210 for memory population).</li> <li>3. If the error still occurs on the same DIMM, replace the affected DIMM.</li> <li>4. (Trained service technician only) If the problem occurs on the same DIMM connector, check the DIMM connector. If the connector contains any foreign material or is damaged, replace the system board (see “Removing the system board” on page 267 and “Installing the system board” on page 269).</li> <li>5. (Trained service technician only) Remove the affected microprocessor and check the microprocessor socket pins for any damaged pins. If a damage is found, replace the system board (see “Removing the system board” on page 267 and “Installing the system board” on page 269).</li> <li>6. (Trained Service technician only) Replace the affected microprocessor (see “Removing the microprocessor and heat sink” on page 246 and “Installing a microprocessor and heat sink” on page 249).</li> </ol>
Memory DIMM Configuration Error for All DIMMs on Memory Subsystem All DIMMs.	Error	A DIMM configuration error has occurred.	Make sure that DIMMs are installed in the correct sequence and have the same size, type, speed, and technology.

<ul style="list-style-type: none"> <li>• Follow the suggested actions in the order in which they are listed in the Action column until the problem is solved.</li> <li>• See Chapter 4, “Parts listing, System x3400 M2 Types 7836 and 7837,” on page 153 to determine which components are customer replaceable units (CRU) and which components are field replaceable units (FRU).</li> <li>• If an action step is preceded by “(Trained service technician only),” that step must be performed only by a trained service technician.</li> </ul>			
Memory DIMM disabled for All DIMMs on Memory Subsystem All DIMMs.	Info	DIMM disabled	<ol style="list-style-type: none"> <li>1. Make sure the DIMM is installed correctly (see “Installing a memory module” on page 210).</li> <li>2. If the DIMM was disabled because of a memory fault (memory uncorrectable error or memory logging limit reached), follow the suggested actions for that error event and restart the server.</li> <li>3. Check the IBM support website for an applicable retain tip or firmware update that applies to this memory event. If no memory fault is recorded in the logs and no DIMM connector error LED is lit, you can re-enable the DIMM through the Setup utility or the Advanced Settings Utility (ASU).</li> </ol>

- Follow the suggested actions in the order in which they are listed in the Action column until the problem is solved.
- See Chapter 4, “Parts listing, System x3400 M2 Types 7836 and 7837,” on page 153 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.

Memory uncorrectable error detected for DIMM One of the DIMMs on Memory Subsystem One of the DIMMs.	Error	A memory uncorrectable error has occurred.	<ol style="list-style-type: none"> <li>1. Check the IBM support website for an applicable retain tip or firmware update that applies to this memory error.</li> <li>2. Manually re-enable all affected DIMMs if the server firmware version is older than UEFI v1.10. If the server firmware version is UEFI v1.10 or newer, disconnect and reconnect the server to the power source and restart the server.</li> <li>3. Swap the affected DIMMs (as indicated by the error LEDs on the system board or the event logs) to a different memory channel or microprocessor (see “Installing a memory module” on page 210 for memory population).</li> <li>4. If the problem follows the DIMM, replace the failing DIMM (see “Removing a memory module” on page 208 and “Installing a memory module” on page 210).</li> </ol> <p>(Continued on the next page)</p>
---	-------	--	---

<ul style="list-style-type: none"> <li>• Follow the suggested actions in the order in which they are listed in the Action column until the problem is solved.</li> <li>• See Chapter 4, “Parts listing, System x3400 M2 Types 7836 and 7837,” on page 153 to determine which components are customer replaceable units (CRU) and which components are field replaceable units (FRU).</li> <li>• If an action step is preceded by “(Trained service technician only),” that step must be performed only by a trained service technician.</li> </ul>			
Memory uncorrectable error detected for DIMM One of the DIMMs on Memory Subsystem One of the DIMMs.	Error	A memory uncorrectable error has occurred.	<p>5. (Trained service technician only) If the problem occurs on the same DIMM connector, check the DIMM connector. If the connector contains any foreign material or is damaged, replace the system board (see “Removing the system board” on page 267 and “Installing the system board” on page 269).</p> <p>6. (Trained service technician only) Remove the affected microprocessor and check the microprocessor socket pins for any damaged pins. If a damage is found, replace the system board (see “Removing the system board” on page 267 and “Installing the system board” on page 269).</p> <p>7. (Trained Service technician only) Replace the affected microprocessor (see “Removing the microprocessor and heat sink” on page 246 and “Installing a microprocessor and heat sink” on page 249).</p>

<ul style="list-style-type: none"> <li>• Follow the suggested actions in the order in which they are listed in the Action column until the problem is solved.</li> <li>• See Chapter 4, “Parts listing, System x3400 M2 Types 7836 and 7837,” on page 153 to determine which components are customer replaceable units (CRU) and which components are field replaceable units (FRU).</li> <li>• If an action step is preceded by “(Trained service technician only),” that step must be performed only by a trained service technician.</li> </ul>			
Memory Logging Limit Reached for DIMM One of the DIMMs on Memory Subsystem One of the DIMMs.	Error	The memory logging limit has been reached.	<ol style="list-style-type: none"> <li>1. Check the IBM support website for an applicable retain tip or firmware update that applies to this memory error.</li> <li>2. Swap the affected DIMMs (as indicated by the error LEDs on the system board or the event logs) to a different memory channel or microprocessor (see “Installing a memory module” on page 210 for memory population).</li> <li>3. If the error still occurs on the same DIMM, replace the affected DIMM.</li> <li>4. (Trained service technician only) If the problem occurs on the same DIMM connector, check the DIMM connector. If the connector contains any foreign material or is damaged, replace the system board (see “Removing the system board” on page 267 and “Installing the system board” on page 269).</li> <li>5. (Trained service technician only) Remove the affected microprocessor and check the microprocessor socket pins for any damaged pins. If a damage is found, replace the system board (see “Removing the system board” on page 267 and “Installing the system board” on page 269).</li> <li>6. (Trained Service technician only) Replace the affected microprocessor (see “Removing the microprocessor and heat sink” on page 246 and “Installing a microprocessor and heat sink” on page 249).</li> </ol>
Memory DIMM Configuration Error for One of the DIMMs on Memory Subsystem One of the DIMMs.	Error	A DIMM configuration error has occurred.	Make sure that DIMMs are installed in the correct sequence and have the same size, type, speed, and technology.



<ul style="list-style-type: none"> <li>• Follow the suggested actions in the order in which they are listed in the Action column until the problem is solved.</li> <li>• See Chapter 4, “Parts listing, System x3400 M2 Types 7836 and 7837,” on page 153 to determine which components are customer replaceable units (CRU) and which components are field replaceable units (FRU).</li> <li>• If an action step is preceded by “(Trained service technician only),” that step must be performed only by a trained service technician.</li> </ul>			
Memory DIMM disabled for One of the DIMMs on Memory Subsystem One of the DIMMs.	Info	DIMM disabled	<ol style="list-style-type: none"> <li>1. Make sure the DIMM is installed correctly (see “Installing a memory module” on page 210).</li> <li>2. If the DIMM was disabled because of a memory fault (memory uncorrectable error or memory logging limit reached), follow the suggested actions for that error event and restart the server.</li> <li>3. Check the IBM support website for an applicable retain tip or firmware update that applies to this memory event. If no memory fault is recorded in the logs and no DIMM connector error LED is lit, you can re-enable the DIMM through the Setup utility or the Advanced Settings Utility (ASU).</li> </ol>

- Follow the suggested actions in the order in which they are listed in the Action column until the problem is solved.
- See Chapter 4, “Parts listing, System x3400 M2 Types 7836 and 7837,” on page 153 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.

Memory uncorrectable error detected for DIMM <i>n</i> Status on Memory Subsystem DIMM <i>n</i> Status. ( <i>n</i> = DIMM number)	Error	A memory uncorrectable error has occurred.	<ol style="list-style-type: none"> <li>1. Check the IBM support website for an applicable retain tip or firmware update that applies to this memory error.</li> <li>2. Manually re-enable all affected DIMMs if the server firmware version is older than UEFI v1.10. If the server firmware version is UEFI v1.10 or newer, disconnect and reconnect the server to the power source and restart the server.</li> <li>3. Swap the affected DIMMs (as indicated by the error LEDs on the system board or the event logs) to a different memory channel or microprocessor (see “Installing a memory module” on page 210 for memory population).</li> <li>4. If the problem follows the DIMM, replace the failing DIMM (see “Removing a memory module” on page 208 and “Installing a memory module” on page 210).</li> </ol> <p>(Continued on the next page)</p>
---	-------	--	---

<ul style="list-style-type: none"> <li>• Follow the suggested actions in the order in which they are listed in the Action column until the problem is solved.</li> <li>• See Chapter 4, “Parts listing, System x3400 M2 Types 7836 and 7837,” on page 153 to determine which components are customer replaceable units (CRU) and which components are field replaceable units (FRU).</li> <li>• If an action step is preceded by “(Trained service technician only),” that step must be performed only by a trained service technician.</li> </ul>			
Memory uncorrectable error detected for DIMM <i>n</i> Status on Memory Subsystem DIMM <i>n</i> Status. ( <i>n</i> = DIMM number)	Error	A memory uncorrectable error has occurred.	<p>5. (Trained service technician only) If the problem occurs on the same DIMM connector, check the DIMM connector. If the connector contains any foreign material or is damaged, replace the system board (see “Removing the system board” on page 267 and “Installing the system board” on page 269).</p> <p>6. (Trained service technician only) Remove the affected microprocessor and check the microprocessor socket pins for any damaged pins. If a damage is found, replace the system board (see “Removing the system board” on page 267 and “Installing the system board” on page 269).</p> <p>7. (Trained Service technician only) Replace the affected microprocessor (see “Removing the microprocessor and heat sink” on page 246 and “Installing a microprocessor and heat sink” on page 249).</p>

<ul style="list-style-type: none"> <li>Follow the suggested actions in the order in which they are listed in the Action column until the problem is solved.</li> <li>See Chapter 4, “Parts listing, System x3400 M2 Types 7836 and 7837,” on page 153 to determine which components are customer replaceable units (CRU) and which components are field replaceable units (FRU).</li> <li>If an action step is preceded by “(Trained service technician only),” that step must be performed only by a trained service technician.</li> </ul>			
Memory Logging Limit Reached for DIMM <i>n</i> Status on Memory Subsystem DIMM <i>n</i> Status. ( <i>n</i> = DIMM number)	Error	The memory logging limit has been reached.	<ol style="list-style-type: none"> <li>1. Check the IBM support website for an applicable retain tip or firmware update that applies to this memory error.</li> <li>2. Swap the affected DIMMs (as indicated by the error LEDs on the system board or the event logs) to a different memory channel or microprocessor (see “Installing a memory module” on page 210 for memory population).</li> <li>3. If the error still occurs on the same DIMM, replace the affected DIMM.</li> <li>4. (Trained service technician only) If the problem occurs on the same DIMM connector, check the DIMM connector. If the connector contains any foreign material or is damaged, replace the system board (see “Removing the system board” on page 267 and “Installing the system board” on page 269).</li> <li>5. (Trained service technician only) Remove the affected microprocessor and check the microprocessor socket pins for any damaged pins. If a damage is found, replace the system board (see “Removing the system board” on page 267 and “Installing the system board” on page 269).</li> <li>6. (Trained Service technician only) Replace the affected microprocessor (see “Removing the microprocessor and heat sink” on page 246 and “Installing a microprocessor and heat sink” on page 249).</li> </ol>
Memory DIMM Configuration Error for DIMM <i>n</i> Status on Memory Subsystem DIMM <i>n</i> Status. ( <i>n</i> = DIMM number)	Error	A DIMM configuration error has occurred.	Make sure that DIMMs are installed in the correct sequence and have the same size, type, speed, and technology.

<ul style="list-style-type: none"> <li>• Follow the suggested actions in the order in which they are listed in the Action column until the problem is solved.</li> <li>• See Chapter 4, “Parts listing, System x3400 M2 Types 7836 and 7837,” on page 153 to determine which components are customer replaceable units (CRU) and which components are field replaceable units (FRU).</li> <li>• If an action step is preceded by “(Trained service technician only),” that step must be performed only by a trained service technician.</li> </ul>			
Memory DIMM disabled for DIMM <i>n</i> Status on Memory Subsystem DIMM <i>n</i> Status. ( <i>n</i> = DIMM number)	Info	DIMM disabled	<ol style="list-style-type: none"> <li>1. Make sure the DIMM is installed correctly (see “Installing a memory module” on page 210).</li> <li>2. If the DIMM was disabled because of a memory fault (memory uncorrectable error or memory logging limit reached), follow the suggested actions for that error event and restart the server.</li> <li>3. Check the IBM support website for an applicable retain tip or firmware update that applies to this memory event. If no memory fault is recorded in the logs and no DIMM connector error LED is lit, you can re-enable the DIMM through the Setup utility or the Advanced Settings Utility (ASU).</li> </ol>
Sensor DIMM <i>n</i> Temp has transitioned to critical from a less severe state. ( <i>n</i> = DIMM number)	Error	A sensor has changed to Critical state from a less severe state.	<ol style="list-style-type: none"> <li>1. Make sure that the fans are operating, that there are no obstructions to the airflow, that the air baffles are in place and correctly installed, and that the server cover is installed and completely closed.</li> <li>2. If a fan has failed, complete the action for a fan failure.</li> <li>3. Replace DIMM <i>n</i>. (<i>n</i> = DIMM number)</li> </ol>

- Follow the suggested actions in the order in which they are listed in the Action column until the problem is solved.
- See Chapter 4, “Parts listing, System x3400 M2 Types 7836 and 7837,” on page 153 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.

A PCI PERR has occurred on system %1. (%1 = CIM_ComputerSystem.ElementName)	Error	A PCI PERR has occurred. (Sensor = PCI Slot <i>n</i> ; <i>n</i> = PCI slot number)	<ol style="list-style-type: none"> <li>1. Check the extender-card LEDs.</li> <li>2. Reseat the affected adapters and extender card.</li> <li>3. Update the server (UEFI and IMM) and adapter firmware . <b>Important:</b> Some cluster solutions require specific code levels or coordinated code updates. If the device is part of a cluster solution, verify that the latest level of code is supported for the cluster solution before you update the code.</li> <li>4. Remove the adapter from slot <i>n</i>.</li> <li>5. Replace the PCIe adapter.</li> <li>6. Replace extender card <i>n</i>.</li> </ol> <p>(<i>n</i> = PCI slot number)</p>
A PCI SERR has occurred on system %1. (%1 = CIM_ComputerSystem.ElementName)	Error	A PCI SERR has occurred. (Sensor = PCI Slot <i>n</i> ; <i>n</i> = PCI slot number)	<ol style="list-style-type: none"> <li>1. Check the extender-card LEDs.</li> <li>2. Reseat the affected adapters and extender card.</li> <li>3. Update the server (UEFI and IMM) and adapter firmware. <b>Important:</b> Some cluster solutions require specific code levels or coordinated code updates. If the device is part of a cluster solution, verify that the latest level of code is supported for the cluster solution before you update the code.</li> <li>4. Remove the adapter from slot <i>n</i>.</li> <li>5. Replace the PCIe adapter.</li> <li>6. Replace extender card <i>n</i>.</li> </ol> <p>(<i>n</i> = PCI slot number)</p>

<ul style="list-style-type: none"> <li>• Follow the suggested actions in the order in which they are listed in the Action column until the problem is solved.</li> <li>• See Chapter 4, “Parts listing, System x3400 M2 Types 7836 and 7837,” on page 153 to determine which components are customer replaceable units (CRU) and which components are field replaceable units (FRU).</li> <li>• If an action step is preceded by “(Trained service technician only),” that step must be performed only by a trained service technician.</li> </ul>			
A PCI PERR has occurred on system %1. (%1 = CIM_ComputerSystem.ElementName)	Error	A PCI PERR has occurred. (Sensor = One of PCI Err)	<ol style="list-style-type: none"> <li>1. Check the extender-card LEDs.</li> <li>2. Reseat the affected adapters and riser card.</li> <li>3. Update the server (UEFI and IMM) and adapter firmware. <b>Important:</b> Some cluster solutions require specific code levels or coordinated code updates. If the device is part of a cluster solution, verify that the latest level of code is supported for the cluster solution before you update the code.</li> <li>4. Remove both adapters.</li> <li>5. Replace the PCIe adapter.</li> <li>6. Replace the extender card.</li> <li>7. (Trained service technician only) Replace the system board.</li> </ol>
A PCI SERR has occurred on system %1. (%1 = CIM_ComputerSystem.ElementName)	Error	A PCI SERR has occurred. (Sensor = One of PCI Err)	<ol style="list-style-type: none"> <li>1. Check the extender-card LEDs.</li> <li>2. Reseat the affected adapters and extender card.</li> <li>3. Update the server (UEFI and IMM) and adapter firmware. <b>Important:</b> Some cluster solutions require specific code levels or coordinated code updates. If the device is part of a cluster solution, verify that the latest level of code is supported for the cluster solution before you update the code.</li> <li>4. Remove both adapters.</li> <li>5. Replace the PCIe adapter.</li> <li>6. Replace the extender card.</li> <li>7. (Trained service technician only) Replace the system board.</li> </ol>

- Follow the suggested actions in the order in which they are listed in the Action column until the problem is solved.
- See Chapter 4, “Parts listing, System x3400 M2 Types 7836 and 7837,” on page 153 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.

Fault in slot System board on system %1. (%1 = CIM_ComputerSystem.ElementName)	Error		<ol style="list-style-type: none"> <li>1. Check the extender-card LEDs.</li> <li>2. Reseat the affected adapters and extender card.</li> <li>3. Update the server (UEFI and IMM) and adapter firmware. <b>Important:</b> Some cluster solutions require specific code levels or coordinated code updates. If the device is part of a cluster solution, verify that the latest level of code is supported for the cluster solution before you update the code.</li> <li>4. Remove both adapters.</li> <li>5. Replace the PCIe adapter.</li> <li>6. Replace the extender card.</li> <li>7. (Trained service technician only) Replace the system board.</li> </ol>
Redundancy Bckup Mem Status has been reduced.	Error	Redundancy has been lost and is insufficient to continue operation.	<ol style="list-style-type: none"> <li>1. Check the system-event log for DIMM failure events (uncorrectable or PFA) and correct the failures.</li> <li>2. Re-enable mirroring in the Setup utility.</li> </ol>
IMM Network Initialization Complete.	Info	An IMM network has completed initialization.	No action; information only.
Certificate Authority %1 has detected a %2 Certificate Error. (%1 = IBM_CertificateAuthority.CADistinguishedName; %2 = CIM_PublicKeyCertificate.ElementName)	Error	A problem has occurred with the SSL Server, SSL Client, or SSL Trusted CA certificate that has been imported into the IMM. The imported certificate must contain a public key that corresponds to the key pair that was previously generated by the <b>Generate a New Key and Certificate Signing Request</b> link.	<ol style="list-style-type: none"> <li>1. Make sure that the certificate that you are importing is correct.</li> <li>2. Try importing the certificate again.</li> </ol>
Ethernet Data Rate modified from %1 to %2 by user %3. (%1 = CIM_EthernetPort.Speed; %2 = CIM_EthernetPort.Speed; %3 = user ID)	Info	A user has modified the Ethernet port data rate.	No action; information only.



<ul style="list-style-type: none"> <li>• Follow the suggested actions in the order in which they are listed in the Action column until the problem is solved.</li> <li>• See Chapter 4, “Parts listing, System x3400 M2 Types 7836 and 7837,” on page 153 to determine which components are customer replaceable units (CRU) and which components are field replaceable units (FRU).</li> <li>• If an action step is preceded by “(Trained service technician only),” that step must be performed only by a trained service technician.</li> </ul>			
Ethernet Duplex setting modified from %1 to %2 by user %3. (%1 = CIM_EthernetPort.FullDuplex; %2 = CIM_EthernetPort.FullDuplex; %3 = user ID)	Info	A user has modified the Ethernet port duplex setting.	No action; information only.
Ethernet MTU setting modified from %1 to %2 by user %3. (%1 = CIM_EthernetPort.ActiveMaximumTransmissionUnit; %2 = CIM_EthernetPort.ActiveMaximumTransmissionUnit; %3 = user ID)	Info	A user has modified the Ethernet port MTU setting.	No action; information only.
Ethernet Duplex setting modified from %1 to %2 by user %3. (%1 = CIM_EthernetPort.NetworkAddresses; %2 = CIM_EthernetPort.NetworkAddresses; %3 = user ID)	Info	A user has modified the Ethernet port MAC address setting.	No action; information only.
Ethernet interface %1 by user %2. (%1 = CIM_EthernetPort.EnabledState; %2 = user ID)	Info	A user has enabled or disabled the Ethernet interface.	No action; information only.
Hostname set to %1 by user %2. (%1 = CIM_DNSProtocolEndpoint.Hostname; %2 = user ID)	Info	A user has modified the host name of the IMM.	No action; information only.
IP address of network interface modified from %1 to %2 by user %3. (%1 = CIM_IPProtocolEndpoint.IPv4Address; %2 = CIM_StaticIPAssignmentSettingData.IPAddress; %3 = user ID)	Info	A user has modified the IP address of the IMM.	No action; information only.
IP subnet mask of network interface modified from %1 to %2 by user %3s. (%1 = CIM_IPProtocolEndpoint.SubnetMask; %2 = CIM_StaticIPAssignmentSettingData.SubnetMask; %3 = user ID)	Info	A user has modified the IP subnet mask of the IMM.	No action; information only.

<ul style="list-style-type: none"> <li>• Follow the suggested actions in the order in which they are listed in the Action column until the problem is solved.</li> <li>• See Chapter 4, “Parts listing, System x3400 M2 Types 7836 and 7837,” on page 153 to determine which components are customer replaceable units (CRU) and which components are field replaceable units (FRU).</li> <li>• If an action step is preceded by “(Trained service technician only),” that step must be performed only by a trained service technician.</li> </ul>			
IP address of default gateway modified from %1 to %2 by user %3s. (%1 = CIM_IPProtocolEndpoint.GatewayIPv4Address; %2 = CIM_StaticIPAssignmentSettingData.DefaultGatewayAddress; %3 = user ID)	Info	A user has modified the default gateway IP address of the IMM.	No action; information only.
OS Watchdog response %1 by %2. (%1 = Enabled or Disabled; %2 = user ID)	Info	A user has enabled or disabled an OS Watchdog.	No action; information only.
DHCP[%1] failure, no IP address assigned. (%1 = IP address, xxx.xxx.xxx.xxx)	Info	A DHCP server has failed to assign an IP address to the IMM.	<ol style="list-style-type: none"> <li>1. Make sure that the network cable is connected.</li> <li>2. Make sure that there is a DHCP server on the network that can assign an IP address to the IMM.</li> </ol>
Remote Login Successful. Login ID: %1 from %2 at IP address %3. (%1 = user ID; %2 = ValueMap(CIM_ProtocolEndpoint.ProtocolIFType; %3 = IP address, xxx.xxx.xxx.xxx)	Info	A user has successfully logged in to the IMM.	No action; information only.
Attempting to %1 server %2 by user %3. (%1 = Power Up, Power Down, Power Cycle, or Reset; %2 = IBM_ComputerSystem.ElementName; %3 = user ID)	Info	A user has used the IMM to perform a power function on the server.	No action; information only.
Security: Userid: '%1' had %2 login failures from WEB client at IP address %3. (%1 = user ID; %2 = MaximumSuccessiveLoginFailures (currently set to 5 in the firmware); %3 = IP address, xxx.xxx.xxx.xxx)	Error	A user has exceeded the maximum number of unsuccessful login attempts from a Web browser and has been prevented from logging in for the lockout period.	<ol style="list-style-type: none"> <li>1. Make sure that the correct login ID and password are being used.</li> <li>2. Have the system administrator reset the login ID or password.</li> </ol>
Security: Login ID: '%1' had %2 login failures from CLI at %3. (%1 = user ID; %2 = MaximumSuccessiveLoginFailures (currently set to 5 in the firmware); %3 = IP address, xxx.xxx.xxx.xxx)	Error	A user has exceeded the maximum number of unsuccessful login attempts from the command-line interface and has been prevented from logging in for the lockout period.	<ol style="list-style-type: none"> <li>1. Make sure that the correct login ID and password are being used.</li> <li>2. Have the system administrator reset the login ID or password.</li> </ol>

<ul style="list-style-type: none"> <li>Follow the suggested actions in the order in which they are listed in the Action column until the problem is solved.</li> <li>See Chapter 4, “Parts listing, System x3400 M2 Types 7836 and 7837,” on page 153 to determine which components are customer replaceable units (CRU) and which components are field replaceable units (FRU).</li> <li>If an action step is preceded by “(Trained service technician only),” that step must be performed only by a trained service technician.</li> </ul>			
Remote access attempt failed. Invalid userid or password received. Userid is '%1' from WEB browser at IP address %2. (%1 = user ID; %2 = IP address, xxx.xxx.xxx.xxx)	Error	A user has attempted to log in from a Web browser by using an invalid login ID or password.	<ol style="list-style-type: none"> <li>Make sure that the correct login ID and password are being used.</li> <li>Have the system administrator reset the login ID or password.</li> </ol>
Remote access attempt failed. Invalid userid or password received. Userid is '%1' from TELNET client at IP address %2. (%1 = user ID; %2 = IP address, xxx.xxx.xxx.xxx)	Error	A user has attempted to log in from a Telnet session by using an invalid login ID or password.	<ol style="list-style-type: none"> <li>Make sure that the correct login ID and password are being used.</li> <li>Have the system administrator reset the login ID or password.</li> </ol>
The Chassis Event Log (CEL) on system %1 cleared by user %2. (%1 = CIM_ComputerSystem.ElementName; %2 = user ID)	Info	A user has cleared the IMM event log.	No action; information only.
IMM reset was initiated by user %1. (%1 = user ID)	Info	A user has initiated a reset of the IMM.	No action; information only.
ENET[0] DHCP-HSTN=%1, DN=%2, IP@=%3, SN=%4, GW@=%5, DNS1@=%6. (%1 = CIM_DNSProtocolEndpoint.Hostname; %2 = CIM_DNSProtocolEndpoint.DomainName; %3 = CIM_IPProtocolEndpoint.IPv4Address; %4 = CIM_IPProtocolEndpoint.SubnetMask; %5 = IP address, xxx.xxx.xxx.xxx; %6 = IP address, xxx.xxx.xxx.xxx)	Info	The DHCP server has assigned an IMM IP address and configuration.	No action; information only.
ENET[0] IP-Cfg:HstName=%1, IP@%2, NetMsk=%3, GW@=%4. (%1 = CIM_DNSProtocolEndpoint.Hostname; %2 = CIM_StaticIPSettingData.IPv4Address; %3 = CIM_StaticIPSettingData.SubnetMask; %4 = CIM_StaticIPSettingData.DefaultGatewayAddress)	Info	An IMM IP address and configuration have been assigned using client data.	No action; information only.
LAN: Ethernet[0] interface is no longer active.	Info	The IMM Ethernet interface has been disabled.	No action; information only.
LAN: Ethernet[0] interface is now active.	Info	The IMM Ethernet interface has been enabled.	No action; 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 4, “Parts listing, System x3400 M2 Types 7836 and 7837,” on page 153 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.

DHCP setting changed to by user %1. (%1 = user ID)	Info	A user has changed the DHCP mode.	No action; information only.
IMM: Configuration %1 restored from a configuration file by user %2. (%1 = CIM_ConfigurationData.ConfigurationName; %2 = user ID)	Info	A user has restored the IMM configuration by importing a configuration file.	No action; information only.
Watchdog %1 Screen Capture Occurred. (%1 = OS Watchdog or Loader Watchdog)	Error	An operating-system error has occurred, and the screen capture was successful.	<ol style="list-style-type: none"> <li>1. Reconfigure the watchdog timer to a higher value.</li> <li>2. Make sure that the IMM Ethernet over USB interface is enabled.</li> <li>3. Reinstall the RNDIS or cdc_ether device driver for the operating system.</li> <li>4. Disable the watchdog.</li> <li>5. Check the integrity of the installed operating system.</li> </ol>
Watchdog %1 Failed to Capture Screen. (%1 = OS Watchdog or Loader Watchdog)	Error	An operating-system error has occurred, and the screen capture failed.	<ol style="list-style-type: none"> <li>1. Reconfigure the watchdog timer to a higher value.</li> <li>2. Make sure that the IMM Ethernet over USB interface is enabled.</li> <li>3. Reinstall the RNDIS or cdc_ether device driver for the operating system.</li> <li>4. Disable the watchdog.</li> <li>5. Check the integrity of the installed operating system.</li> <li>6. Update the IMM firmware. <b>Important:</b> Some cluster solutions require specific code levels or coordinated code updates. If the device is part of a cluster solution, verify that the latest level of code is supported for the cluster solution before you update the code.</li> </ol>

<ul style="list-style-type: none"> <li>• Follow the suggested actions in the order in which they are listed in the Action column until the problem is solved.</li> <li>• See Chapter 4, “Parts listing, System x3400 M2 Types 7836 and 7837,” on page 153 to determine which components are customer replaceable units (CRU) and which components are field replaceable units (FRU).</li> <li>• If an action step is preceded by “(Trained service technician only),” that step must be performed only by a trained service technician.</li> </ul>			
Running the backup IMM main application.	Error	The IMM has resorted to running the backup main application.	Update the IMM firmware. <b>Important:</b> Some cluster solutions require specific code levels or coordinated code updates. If the device is part of a cluster solution, verify that the latest level of code is supported for the cluster solution before you update the code.
Please ensure that the IMM is flashed with the correct firmware. The IMM is unable to match its firmware to the server.	Error	The server does not support the installed IMM firmware version.	Update the IMM firmware to a version that the server supports. <b>Important:</b> Some cluster solutions require specific code levels or coordinated code updates. If the device is part of a cluster solution, verify that the latest level of code is supported for the cluster solution before you update the code.
IMM reset was caused by restoring default values.	Info	The IMM has been reset because a user has restored the configuration to its default settings.	No action; information only.
IMM clock has been set from NTP server %1. (%1 = IBM_NTPTService.ElementName)	Info	The IMM clock has been set to the date and time that is provided by the Network Time Protocol server.	No action; information only.
SSL data in the IMM configuration data is invalid. Clearing configuration data region and disabling SSL+H25.	Error	There is a problem with the certificate that has been imported into the IMM. The imported certificate must contain a public key that corresponds to the key pair that was previously generated through the <b>Generate a New Key and Certificate Signing Request</b> link.	<ol style="list-style-type: none"> <li>1. Make sure that the certificate that you are importing is correct.</li> <li>2. Try to import the certificate again.</li> </ol>
Flash of %1 from %2 succeeded for user %3. (%1 = CIM_ManagedElement.ElementName; %2 = Web or LegacyCLI; %3 = user ID)	Info	A user has successfully updated one of the following firmware components: <ul style="list-style-type: none"> <li>• IMM main application</li> <li>• IMM boot ROM</li> <li>• Server (UEFI) firmware</li> <li>• Diagnostics</li> <li>• Integrated service processor</li> </ul>	No action; information only.

<ul style="list-style-type: none"> <li>Follow the suggested actions in the order in which they are listed in the Action column until the problem is solved.</li> <li>See Chapter 4, “Parts listing, System x3400 M2 Types 7836 and 7837,” on page 153 to determine which components are customer replaceable units (CRU) and which components are field replaceable units (FRU).</li> <li>If an action step is preceded by “(Trained service technician only),” that step must be performed only by a trained service technician.</li> </ul>			
Flash of %1 from %2 failed for user %3. (%1 = CIM_ManagedElement.ElementName; %2 = Web or LegacyCLI; %3 = user ID)	Info	An attempt to update a firmware component from the interface and IP address has failed.	Try to update the firmware again.
The Chassis Event Log (CEL) on system %1 is 75% full. (%1 = CIM_ComputerSystem.ElementName)	Info	The IMM event log is 75% full. When the log is full, older log entries are replaced by newer ones.	To avoid losing older log entries, save the log as a text file and clear the log.
The Chassis Event Log (CEL) on system %1 is 100% full. (%1 = CIM_ComputerSystem.ElementName)	Info	The IMM event log is full. When the log is full, older log entries are replaced by newer ones.	To avoid losing older log entries, save the log as a text file and clear the log.
%1 Platform Watchdog Timer expired for %2. (%1 = OS Watchdog or Loader Watchdog; %2 = OS Watchdog or Loader Watchdog)	Error	A Platform Watchdog Timer Expired event has occurred.	<ol style="list-style-type: none"> <li>1. Reconfigure the watchdog timer to a higher value.</li> <li>2. Make sure that the IMM Ethernet over USB interface is enabled.</li> <li>3. Reinstall the RNDIS or cdc_ether device driver for the operating system.</li> <li>4. Disable the watchdog.</li> <li>5. Check the integrity of the installed operating system.</li> </ol>
IMM Test Alert Generated by %1. (%1 = user ID)	Info	A user has generated a test alert from the IMM.	No action; information only.
Security: Userid: '%1' had %2 login failures from an SSH client at IP address %3. (%1 = user ID; %2 = MaximumSuccessiveLoginFailures (currently set to 5 in the firmware); %3 = IP address, xxx.xxx.xxx.xxx)	Error	A user has exceeded the maximum number of unsuccessful login attempts from SSH and has been prevented from logging in for the lockout period.	<ol style="list-style-type: none"> <li>1. Make sure that the correct login ID and password are being used.</li> <li>2. Have the system administrator reset the login ID or password.</li> </ol>
Invalid or Unsupported firmware or software was detected on System n. (n = system serial number)	Error	IMM firmware failover has occurred and IMM has reverted to a previous version of the firmware.	<ol style="list-style-type: none"> <li>1. Check the IBM support website for an applicable firmware update that applies to the tower server.</li> <li>2. Reboot IMM and verify the IMM is running correct firmware level after firmware update.</li> </ol>

---

## Checkout procedure

This section contains a checkout procedure that you should follow to solve hardware problems 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 controller, 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 multiple error codes or light path diagnostics LEDs indicate a microprocessor error, the error might be in a microprocessor or in a microprocessor socket. See “Microprocessor problems” on page 78 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 “Event logs” on page 27. If the server is halted and no error message is displayed, see “System-board jumpers and switches” on page 22 and “Solving undetermined problems” on page 151.
- For information about power-supply problems, see “Solving power problems” on page 149 and “Power-supply LEDs” on page 88.
- For intermittent problems, check the event log; see “Event logs” on page 27 and “Diagnostic messages” on page 93.

## 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 display 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 73.
  - f. Check the system-error LED on the control panel. If it is lit, check the LEDs on the system board (see “Error LEDs” on page 85).
  - g. Check for the following results:
    - Successful completion of POST.
    - Successful completion of startup, which is indicated by a readable display of the operating-system desktop
3. Are there readable instructions on the main menu or was a POST error code displayed?
  - **Yes:** Find the “POST error codes” on page 30; if necessary, see “Solving undetermined problems” on page 151.
  - **No:** Find the failure symptom in “Troubleshooting tables” on page 73; if necessary, run the diagnostic programs (see “Running the diagnostic programs” on page 92).
    - If you receive an error, see “Diagnostic messages” on page 93.
    - If the diagnostic programs were completed successfully and you still suspect a problem, see “Solving undetermined problems” on page 151.



---

## Troubleshooting tables

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

If you cannot find the problem in these tables, see “Running the diagnostic programs” on page 92 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 using the troubleshooting tables:

1. Check the LEDs on the control panel or the system board (see “Error LEDs” on page 85).
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

<ul style="list-style-type: none"><li>• Follow the suggested actions in the order in which they are listed in the Action column until the problem is solved.</li><li>• See Chapter 4, “Parts listing, System x3400 M2 Types 7836 and 7837,” on page 153 to determine which components are customer replaceable units (CRU) and which components are field replaceable units (FRU).</li><li>• If an action step is preceded by “(Trained service technician only),” that step must be performed only by a trained service technician.</li></ul>	
Symptom	Action
The CD or DVD drive is not recognized.	<ol style="list-style-type: none"><li>1. Make sure that:<ul style="list-style-type: none"><li>• The SATA channel to which the CD or DVD drive is attached (primary or secondary) is enabled in the Setup utility.</li><li>• All cables and jumpers are installed correctly.</li><li>• The correct device driver is installed for the CD or DVD drive.</li></ul></li><li>2. Run the CD or DVD drive diagnostic programs.</li><li>3. Reseat the CD or DVD drive cable.</li><li>4. Replace the following components one at a time, in the order shown, restarting the server each time:<ol style="list-style-type: none"><li>a. CD or DVD drive cable</li><li>b. CD or DVD drive</li><li>c. (Trained service technician only) System board</li></ol></li></ol>
A CD or DVD is not working correctly.	<ol style="list-style-type: none"><li>1. Clean the CD or DVD.</li><li>2. Run the CD or DVD drive diagnostic programs.</li><li>3. Reseat the CD or DVD drive cable.</li><li>4. Replace the following components one at a time, in the order shown, restarting the server each time:<ol style="list-style-type: none"><li>a. CD or DVD drive cable</li><li>b. CD or DVD drive</li></ol></li></ol>

<ul style="list-style-type: none"> <li>• Follow the suggested actions in the order in which they are listed in the Action column until the problem is solved.</li> <li>• See Chapter 4, “Parts listing, System x3400 M2 Types 7836 and 7837,” on page 153 to determine which components are customer replaceable units (CRU) and which components are field replaceable units (FRU).</li> <li>• If an action step is preceded by “(Trained service technician only),” that step must be performed only by a trained service technician.</li> </ul>	
Symptom	Action
The CD or DVD drive tray is not working.	<ol style="list-style-type: none"> <li>1. Make sure that the server is turned on.</li> <li>2. Insert the end of a straightened paper clip into the manual tray-release opening.</li> <li>3. Reseat the CD or DVD drive cable.</li> <li>4. Replace the following components one at a time, in the order shown, restarting the server each time:               <ol style="list-style-type: none"> <li>a. CD or DVD drive cable</li> <li>b. CD or DVD drive</li> </ol> </li> </ol>

## Diskette drive problems

<ul style="list-style-type: none"> <li>• Follow the suggested actions in the order in which they are listed in the Action column until the problem is solved.</li> <li>• See Chapter 4, “Parts listing, System x3400 M2 Types 7836 and 7837,” on page 153 to determine which components are customer replaceable units (CRU) and which components are field replaceable units (FRU).</li> <li>• If an action step is preceded by “(Trained service technician only),” that step must be performed only by a trained service technician.</li> </ul>	
Symptom	Action
The optional diskette drive activity LED stays lit, or the server bypasses the diskette drive.	<ul style="list-style-type: none"> <li>• If there is a diskette in the drive, make sure that:               <ul style="list-style-type: none"> <li>– The diskette drive cables are correctly and securely connected.</li> <li>– The diskette drive is enabled in the Setup utility.</li> <li>– The diskette is good and not damaged. (Try another diskette if you have one.)</li> <li>– The diskette is inserted correctly in the drive.</li> <li>– The diskette contains the necessary files to start the server.</li> <li>– Your software program is working properly.</li> </ul> </li> <li>• To prevent diskette drive read/write errors, make sure that the distance between monitors and diskette drives is at least 76 mm (3 in.).</li> </ul> <p>If the problem remains, replace the internal diskette drive.</p>

## General problems

<ul style="list-style-type: none"><li>• Follow the suggested actions in the order in which they are listed in the Action column until the problem is solved.</li><li>• See Chapter 4, “Parts listing, System x3400 M2 Types 7836 and 7837,” on page 153 to determine which components are customer replaceable units (CRU) and which components are field replaceable units (FRU).</li><li>• If an action step is preceded by “(Trained service technician only),” that step must be performed only by a trained service technician.</li></ul>	
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.
The server is hung while the screen is on. Cannot start the Setup utility by pressing F1.	<ol style="list-style-type: none"><li>1. See “Nx boot failure” on page 148 for more information.</li><li>2. See “Recovering the server firmware” on page 145 for more information.</li></ol>

## Hard disk drive problems

<ul style="list-style-type: none"><li>• Follow the suggested actions in the order in which they are listed in the Action column until the problem is solved.</li><li>• See Chapter 4, “Parts listing, System x3400 M2 Types 7836 and 7837,” on page 153 to determine which components are customer replaceable units (CRU) and which components are field replaceable units (FRU).</li><li>• If an action step is preceded by “(Trained service technician only),” that step must be performed only by a trained service technician.</li></ul>	
Symptom	Action
Not all drives are recognized by the hard disk drive diagnostic test (the Fixed Disk Test).	Remove the drive that is indicated by 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.
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 Fixed Disk Test or SCSI Attached Disk Test, but the problem remains.	Run the diagnostic SCSI Attached Disk Test (see “Running the diagnostic programs” on page 92). <b>Note:</b> This test is supported on server models with RAID arrays that use the ServeRAID-BR10i, ServeRAID-MR10i, or ServeRAID-MR10is controllers or servers with SATA hard disk drives that use the onboard SATA/SAS controller to create RAID arrays. Use the Fixed Disk Test for SATA hard disk drives or servers that have RAID arrays.

## 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 4, “Parts listing, System x3400 M2 Types 7836 and 7837,” on page 153 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.	<ol style="list-style-type: none"><li>1. Make sure that:<ul style="list-style-type: none"><li>• All cables and cords are connected securely to the rear of the server and attached devices.</li><li>• 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.</li></ul></li><li>2. Check the system-event log or IMM system event log (see “Event logs” on page 27).</li></ol>

## 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 4, “Parts listing, System x3400 M2 Types 7836 and 7837,” on page 153 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.	<ol style="list-style-type: none"><li>1. Make sure that:<ul style="list-style-type: none"><li>• The keyboard cable is securely connected.</li><li>• The server and the monitor are turned on.</li></ul></li><li>2. 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.</li><li>3. Replace the following components one at a time, in the order shown, restarting the server each time:<ol style="list-style-type: none"><li>a. Keyboard</li><li>b. (Trained service technician only) System board</li></ol></li></ol>
The mouse or pointing device does not work.	<ol style="list-style-type: none"><li>1. Make sure that:<ul style="list-style-type: none"><li>• The mouse or pointing-device cable is securely connected to the server.</li><li>• The mouse or pointing-device drivers are installed correctly.</li><li>• The server and the monitor are turned on.</li><li>• The mouse option is enabled in the Setup utility program.</li></ul></li><li>2. 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.</li><li>3. Replace the following components one at a time, in the order shown, restarting the server each time:<ol style="list-style-type: none"><li>a. Mouse or pointing device</li><li>b. (Trained service technician only) System board</li></ol></li></ol>

## 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 4, “Parts listing, System x3400 M2 Types 7836 and 7837,” on page 153 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.	<ol style="list-style-type: none"> <li>1. Make sure that: <ul style="list-style-type: none"> <li>• No error LEDs are lit on the control-panel assembly or on the system board.</li> <li>• Memory mirroring does not account for the discrepancy.</li> <li>• The memory modules are seated correctly.</li> <li>• You have installed the correct type of memory.</li> <li>• All DIMMs are enabled. The server might have automatically disabled a DIMM when it detected a problem.</li> </ul> </li> <li>2. Check the POST event log for error message 289: <ul style="list-style-type: none"> <li>• If a DIMM was disabled by a system-management interrupt (SMI), replace the DIMM.</li> </ul> </li> <li>3. Run memory diagnostics (see “Running the diagnostic programs” on page 92).</li> <li>4. Make sure that there is no memory mismatch when the server is over the minimum memory configuration (one 1 GB DIMM) and that you have installed the correct number of DIMMs (see the <i>User's Guide</i> on the IBM <i>System x Documentation</i> CD for information about installing memory modules).</li> <li>5. Reseat the DIMMs.</li> <li>6. Replace the following components one at a time, in the order shown, restarting the server each time: <ol style="list-style-type: none"> <li>a. DIMMs</li> <li>b. (Trained service technician only) System board</li> </ol> </li> </ol>
Multiple rows of DIMMs in a branch are identified as failing.	<ol style="list-style-type: none"> <li>1. Reseat the DIMMs; then, restart the server.</li> <li>2. Replace the failing DIMM.</li> <li>3. (Trained service technician only) Replace the system board.</li> </ol>

## 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 4, “Parts listing, System x3400 M2 Types 7836 and 7837,” on page 153 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 microprocessor LED is lit during POST, indicating that the startup (boot) microprocessor is not working correctly.	<ol style="list-style-type: none"><li>1. Make sure that the server supports all the microprocessors and that the microprocessors match in speed and cache size.</li><li>2. Reseat the following components:<ol style="list-style-type: none"><li>a. (Trained service technician only) Microprocessor</li><li>b. VRM</li></ol></li><li>3. (Trained service technician only) If there is no indication of which microprocessor has failed, isolate the error by testing with one microprocessor at a time.</li><li>4. Replace the following components one at a time, in the order shown, restarting the server each time:<ol style="list-style-type: none"><li>a. (Trained service technician only) Microprocessor</li><li>b. (Trained service technician only) System board</li></ol></li><li>5. (Trained service technician only) If there are multiple error codes or LEDs that indicate a microprocessor error, reverse the locations of the microprocessors or with a microprocessor socket.</li></ol>

## Monitor or video 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 4, “Parts listing, System x3400 M2 Types 7836 and 7837,” on page 153 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	<ol style="list-style-type: none"><li>1. Make sure that the monitor cables are firmly connected.</li><li>2. Try using a different monitor on the server, or try using the monitor that is being tested on a different server.</li><li>3. Run the diagnostic programs. If the monitor passes the diagnostic programs, the problem might be a video device driver.</li><li>4. Replace the following components one at a time, in the order shown, restarting the server each time:<ol style="list-style-type: none"><li>a. (Trained service technician only) System board</li></ol></li></ol>

- Follow the suggested actions in the order in which they are listed in the Action column until the problem is solved.
- See Chapter 4, “Parts listing, System x3400 M2 Types 7836 and 7837,” on page 153 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 screen is blank.	<ol style="list-style-type: none"> <li>1. Make sure that: <ul style="list-style-type: none"> <li>• The server is turned on. If there is no power to the server, see “Power problems” on page 81.</li> <li>• The monitor cables are connected correctly.</li> <li>• The monitor is turned on and the brightness and contrast controls are adjusted correctly.</li> </ul> </li> <li>2. Make sure that the correct server is controlling the monitor, if applicable.</li> <li>3. Make sure that damaged server firmware is not affecting the video; see “Recovering the server firmware” on page 145.</li> <li>4. See “Solving undetermined problems” on page 151.</li> </ol>
The monitor works when you turn on the server, but the screen goes blank when you start some application programs.	<ol style="list-style-type: none"> <li>1. Make sure that: <ul style="list-style-type: none"> <li>• The application program is not setting a display mode that is higher than the capability of the monitor.</li> <li>• You installed the necessary device drivers for the application.</li> </ul> </li> <li>2. Run video diagnostics (see “Running the diagnostic programs” on page 92). <ul style="list-style-type: none"> <li>• If the server passes the video diagnostics, the video is good; see “Solving undetermined problems” on page 151.</li> <li>• (Trained service technician only) If the server fails the video diagnostics, replace the system board.</li> </ul> </li> </ol>
The monitor has screen jitter, or the screen image is wavy, unreadable, rolling, or distorted.	<ol style="list-style-type: none"> <li>1. If the monitor self-tests show 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. <p><b>Attention:</b> Moving a color monitor while it is turned on might cause screen discoloration.</p> <p>Move the device and the monitor at least 305 mm (12 in.) apart, and turn on the monitor.</p> <p><b>Notes:</b></p> <ol style="list-style-type: none"> <li>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.).</li> <li>b. Non-IBM monitor cables might cause unpredictable problems.</li> </ol> </li> <li>2. Reseat the following components: <ol style="list-style-type: none"> <li>a. Monitor cable</li> </ol> </li> <li>3. Replace the following components one at a time, in the order shown, restarting the server each time: <ol style="list-style-type: none"> <li>a. Monitor</li> <li>b. (Trained service technician only) System board</li> </ol> </li> </ol>

<ul style="list-style-type: none"> <li>• Follow the suggested actions in the order in which they are listed in the Action column until the problem is solved.</li> <li>• See Chapter 4, “Parts listing, System x3400 M2 Types 7836 and 7837,” on page 153 to determine which components are customer replaceable units (CRU) and which components are field replaceable units (FRU).</li> <li>• If an action step is preceded by “(Trained service technician only),” that step must be performed only by a trained service technician.</li> </ul>	
Symptom	Action
Wrong characters appear on the screen.	<ol style="list-style-type: none"> <li>1. If the wrong language is displayed, update the server firmware with the correct language (see “Updating the firmware” on page 273).</li> <li>2. Reseat the monitor cable.</li> <li>3. Replace the following components one at a time, in the order shown, restarting the server each time:               <ol style="list-style-type: none"> <li>a. Monitor</li> <li>b. (Trained service technician only) System board</li> </ol> </li> </ol>

## Optional-device problems

<ul style="list-style-type: none"> <li>• Follow the suggested actions in the order in which they are listed in the Action column until the problem is solved.</li> <li>• See Chapter 4, “Parts listing, System x3400 M2 Types 7836 and 7837,” on page 153 to determine which components are customer replaceable units (CRU) and which components are field replaceable units (FRU).</li> <li>• If an action step is preceded by “(Trained service technician only),” that step must be performed only by a trained service technician.</li> </ul>	
Symptom	Action
An IBM optional device that was just installed does not work.	<ol style="list-style-type: none"> <li>1. Make sure that:               <ul style="list-style-type: none"> <li>• The device is designed for the server (see <a href="http://www.ibm.com/servers/eserver/serverproven/compat/us/">http://www.ibm.com/servers/eserver/serverproven/compat/us/</a>).</li> <li>• You followed the installation instructions that came with the device and the device is installed correctly.</li> <li>• You have not loosened any other installed devices or cables.</li> <li>• You updated the configuration information in the Setup utility program. Whenever memory or any other device is changed, you must update the configuration.</li> </ul> </li> <li>2. Reseat the device that you just installed.</li> <li>3. Replace the device that you just installed.</li> </ol>
An IBM optional device that used to work does not work now.	<ol style="list-style-type: none"> <li>1. Make sure that all of the hardware and cable connections for the device are secure.</li> <li>2. If the device comes with test instructions, use those instructions to test the device.</li> <li>3. Reseat the failing device.</li> <li>4. Replace the failing device.</li> </ol>



## 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 4, “Parts listing, System x3400 M2 Types 7836 and 7837,” on page 153 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
<p>The power-control button does not work (the server does not start).</p> <p><b>Note:</b> The power-control button will not function until 1 to 3 minutes after the server has been connected to ac power.</p>	<ol style="list-style-type: none"> <li>1. Make sure that the control-panel assembly power-control button is working correctly: <ol style="list-style-type: none"> <li>a. Disconnect the server power cords.</li> <li>b. Reconnect the power cords.</li> <li>c. Press the power-control button. If the server does not start, check the power-control button for damage.</li> </ol> </li> <li>2. Make sure that: <ul style="list-style-type: none"> <li>• The power cords are correctly connected to the server and to a working electrical outlet.</li> <li>• The power LEDs (AC, DC) are lit correctly.</li> <li>• The server power-on LED on the front information panel is flashing after AC power cord is connected and that it stays on after the power-button is pressed.</li> <li>• The server contains the correct type of DIMMs.</li> <li>• The DIMMs are correctly seated.</li> <li>• The LEDs on the power supply do not indicate a problem.</li> <li>• The microprocessor is correctly installed.</li> </ul> </li> <li>3. Reseat the following components: <ol style="list-style-type: none"> <li>a. DIMMs</li> <li>b. Power-supply cables to all internal components</li> </ol> </li> <li>4. Replace the following components one at a time, in the order shown, restarting the server each time: <ol style="list-style-type: none"> <li>a. DIMMs</li> <li>b. (Trained service technician only) Power supply</li> </ol> </li> <li>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 supply supports.</li> <li>6. See “Solving undetermined problems” on page 151.</li> </ol>
<p>The server does not turn off.</p>	<ol style="list-style-type: none"> <li>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: <ol style="list-style-type: none"> <li>a. Press Ctrl+Alt+Delete.</li> <li>b. Turn off the server by holding the power-control button for 5 seconds.</li> <li>c. Restart the server.</li> <li>d. If the server fails POST and the power-control button does not work, disconnect the ac power cord for 20 seconds; then, reconnect the ac power cord and restart the server.</li> </ol> </li> <li>2. (Trained service technician only) If the problem remains or if you are using an ACPI-aware operating system, suspect the system board.</li> </ol>

<ul style="list-style-type: none"> <li>• Follow the suggested actions in the order in which they are listed in the Action column until the problem is solved.</li> <li>• See Chapter 4, “Parts listing, System x3400 M2 Types 7836 and 7837,” on page 153 to determine which components are customer replaceable units (CRU) and which components are field replaceable units (FRU).</li> <li>• If an action step is preceded by “(Trained service technician only),” that step must be performed only by a trained service technician.</li> </ul>	
Symptom	Action
The server unexpectedly shuts down, and the LEDs on the control-panel assembly are not lit.	See “Solving undetermined problems” on page 151.

## Serial port problems

<ul style="list-style-type: none"> <li>• Follow the suggested actions in the order in which they are listed in the Action column until the problem is solved.</li> <li>• See Chapter 4, “Parts listing, System x3400 M2 Types 7836 and 7837,” on page 153 to determine which components are customer replaceable units (CRU) and which components are field replaceable units (FRU).</li> <li>• If an action step is preceded by “(Trained service technician only),” that step must be performed only by a trained service technician.</li> </ul>	
Symptom	Action
The number of serial ports that are identified by the operating system is less than the number of installed serial ports.	<ol style="list-style-type: none"> <li>1. Make sure that: <ul style="list-style-type: none"> <li>• Each port is assigned a unique address in the Setup utility program and none of the serial ports is disabled.</li> <li>• The serial port adapter (if one is present) is seated correctly.</li> </ul> </li> <li>2. Reseat the serial port adapter.</li> <li>3. Replace the serial port adapter.</li> </ol>
A serial device does not work.	<ol style="list-style-type: none"> <li>1. Make sure that: <ul style="list-style-type: none"> <li>• The device is compatible with the server.</li> <li>• The serial port is enabled and is assigned a unique address.</li> <li>• The device is connected to the correct connector (see “Internal connectors, LEDs, and switches” on page 18).</li> </ul> </li> <li>2. Reseat the following components: <ol style="list-style-type: none"> <li>a. Failing serial device</li> <li>b. Serial cable</li> </ol> </li> <li>3. Replace the following components one at a time, in the order shown, restarting the server each time: <ol style="list-style-type: none"> <li>a. Failing serial device</li> <li>b. Serial cable</li> <li>c. (Trained service technician only) System board</li> </ol> </li> </ol>

## ServerGuide problems

<ul style="list-style-type: none"> <li>Follow the suggested actions in the order in which they are listed in the Action column until the problem is solved.</li> <li>See Chapter 4, “Parts listing, System x3400 M2 Types 7836 and 7837,” on page 153 to determine which components are customer replaceable units (CRU) and which components are field replaceable units (FRU).</li> <li>If an action step is preceded by “(Trained service technician only),” that step must be performed only by a trained service technician.</li> </ul>	
Symptom	Action
The <i>ServerGuide Setup and Installation</i> CD will not start.	<ul style="list-style-type: none"> <li>Make sure that the server supports the ServerGuide program and has a startable (bootable) CD or DVD drive.</li> <li>If the startup (boot) sequence settings have been changed, make sure that the CD or DVD drive is first in the startup sequence.</li> <li>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.</li> </ul>
The ServeRAID program cannot view all installed drives, or the operating system cannot be installed.	<ul style="list-style-type: none"> <li>Make sure that there are no duplicate IRQ assignments.</li> <li>Make sure that the hard disk drive is connected correctly.</li> </ul>
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 <i>ServerGuide Setup and Installation</i> 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 operating system is supported on the server. If the operating system is supported, no logical drive is defined (RAID servers). Run the ServerGuide program and make sure that setup is complete.

## Software problems

<ul style="list-style-type: none"> <li>Follow the suggested actions in the order in which they are listed in the Action column until the problem is solved.</li> <li>See Chapter 4, “Parts listing, System x3400 M2 Types 7836 and 7837,” on page 153 to determine which components are customer replaceable units (CRU) and which components are field replaceable units (FRU).</li> <li>If an action step is preceded by “(Trained service technician only),” that step must be performed only by a trained service technician.</li> </ul>	
Symptom	Action
You suspect a software problem.	<ol style="list-style-type: none"> <li>To determine whether the problem is caused by the software, make sure that: <ul style="list-style-type: none"> <li>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.</li> <li>The software is designed to operate on the server.</li> <li>Other software works on the server.</li> <li>The software works on another server.</li> </ul> </li> <li>If you receive any error messages when using the software, see the information that comes with the software for a description of the messages and suggested solutions to the problem.</li> <li>Contact your place of purchase of the software.</li> </ol>

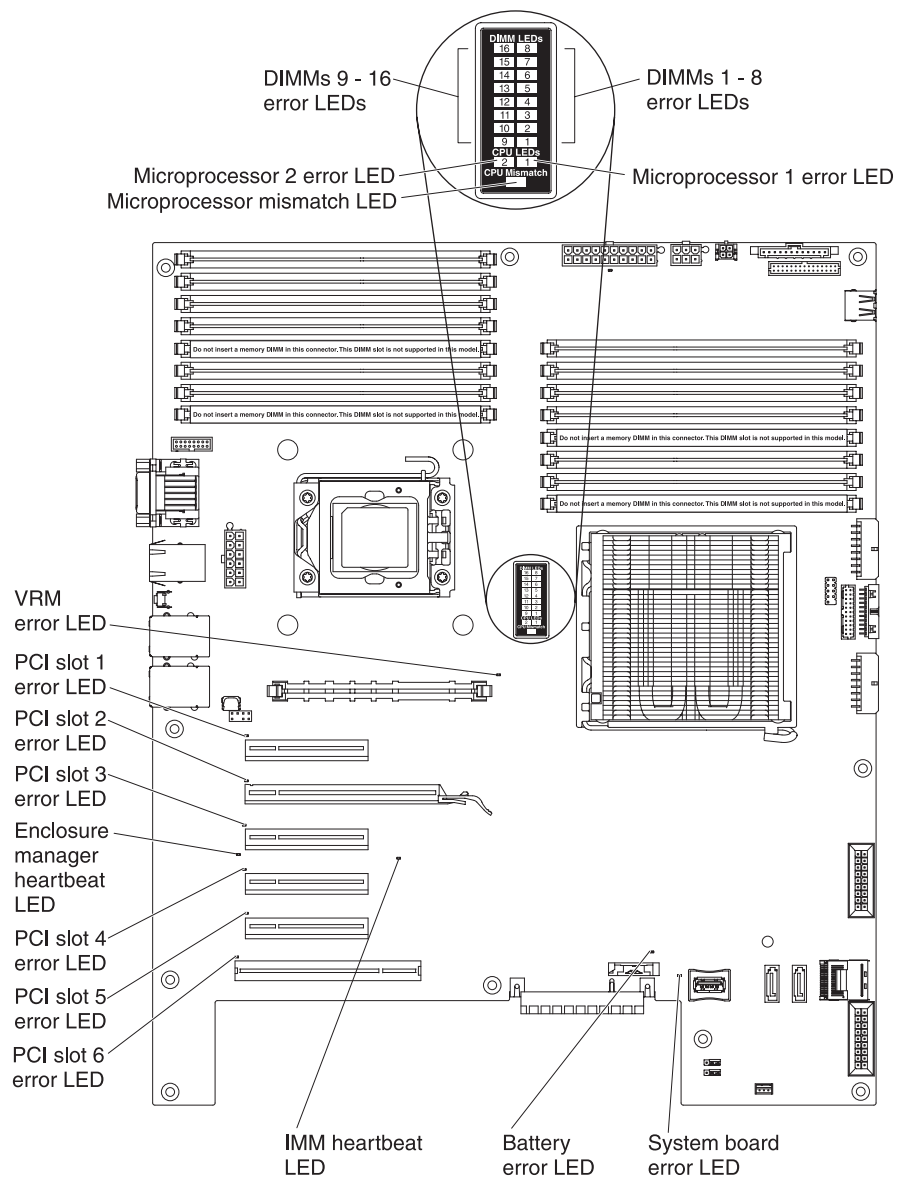
## Universal Serial Bus (USB) port problems

- Follow the suggested actions in the order in which they are listed in the Action column until the problem is solved.
- See Chapter 4, “Parts listing, System x3400 M2 Types 7836 and 7837,” on page 153 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.

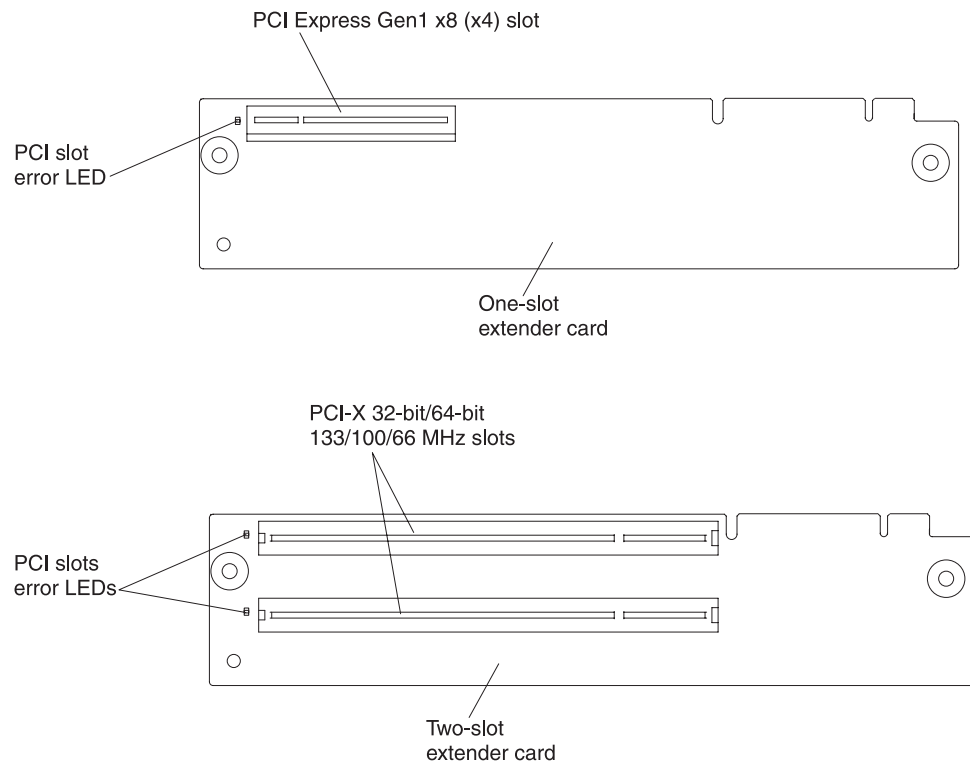
Symptom	Action
A USB device does not work.	<ol style="list-style-type: none"><li>1. Run USB diagnostics (see “Running the diagnostic programs” on page 92).</li><li>2. Make sure that:<ul style="list-style-type: none"><li>• The correct USB device driver is installed.</li><li>• The operating system supports USB devices.</li><li>• 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.</li></ul></li><li>3. Make sure that the USB configuration options are set correctly in the Setup utility program.</li><li>4. If you are using a USB hub, disconnect the USB device from the hub and connect it directly to the server.</li></ol>

## Error LEDs

The following is an illustration of the system board LEDs. The system board has error LEDs that will help to locate the source of the error. Run the diagnostic programs to find out the cause of the error (see “Running the diagnostic programs” on page 92).



The following illustrations show the LEDs on the PCI extender cards



The server is designed so that LEDs remain lit when the server is connected to an ac power source but is not turned on, provided that the power supply is operating correctly. This feature helps you to isolate the problem when the operating system is shut down.

Many errors are first indicated by a lit system-error LED on the control-panel assembly of the server. If this LED is lit, one or more LEDs elsewhere in the server might also be lit and can direct you to the source of the error.

Before working inside the server to view the LEDs, read the safety information that begins on page vii and “Handling static-sensitive devices” on page 163.

If an error occurs, view the server LEDs in the following order:

1. Check the control-panel assembly on the front of the server. If the system-error LED is lit, it indicates that an error has occurred.
2. Check the front and rear of the server to determine whether any component LEDs are lit.
3. Remove the server cover and look inside the server for lit LEDs. Certain components inside the server have LEDs that will be lit to indicate the location of a problem. For example, a DIMM error will light the LED next to the failing DIMM on the system board.

Look at the system service label inside the left-side cover of the server, which gives an overview of internal components. This information can often provide enough information to correct the error.

The following table describes the LEDs on the system board and PCI extender cards and suggested actions to correct the detected problems.

<ul style="list-style-type: none"> <li>Follow the suggested actions in the order in which they are listed in the Action column until the problem is solved.</li> <li>See Chapter 4, “Parts listing, System x3400 M2 Types 7836 and 7837,” on page 153 to determine which components are customer replaceable units (CRU) and which components are field replaceable units (FRU).</li> <li>If an action step is preceded by “(Trained service technician only),” that step must be performed only by a trained service technician.</li> </ul>		
Component LED	Description	Action
DIMM error LEDs	A memory DIMM has failed or is incorrectly installed.	<ol style="list-style-type: none"> <li>Remove the DIMM that has the lit error LED.</li> <li>Reseat the DIMM.</li> <li>Replace the following components one at a time, in the order shown, restarting the server each time: <ol style="list-style-type: none"> <li>DIMM</li> <li>(Trained service technician only) System board</li> </ol> </li> </ol>
CPU error LEDs	Microprocessor has failed, is missing, or has been incorrectly installed. <b>Note:</b> (Trained service technician only) Make sure that the microprocessors are installed in the correct sequence; see “Installing a microprocessor and heat sink” on page 249.	<ol style="list-style-type: none"> <li>Check the system-event log to determine the reason for the lit LED.</li> <li>(Trained service technician) Reseat the failing microprocessor</li> <li>Replace the following components one at a time, in the order shown, restarting the server each time: <ol style="list-style-type: none"> <li>(Trained service technician only) Failing microprocessor</li> <li>(Trained service technician only) System board</li> </ol> </li> </ol>
CPU mismatch LED	A mismatched microprocessor has been installed. <b>Note:</b> All microprocessors must have the same speed and cache size.	<ol style="list-style-type: none"> <li>Run the Setup utility and view the microprocessor information to compare the installed microprocessor specifications.</li> <li>(Trained service technician only) Remove and replace one of the microprocessors so that they both match.</li> </ol>
VRM failure LED	Microprocessor 2 VRM has failed or is incorrectly installed.	<ol style="list-style-type: none"> <li>Reseat the VRM.</li> <li>Replace the following components one at a time, in the order shown, restarting the server each time: <ol style="list-style-type: none"> <li>VRM</li> <li>(Trained service technician only) System board</li> </ol> </li> </ol>
System-board error LED	System-board CPU VRD and/or power voltage regulators have failed.	(Trained service technician only) Replace the system board.
Battery failure LED	Battery low.	<ol style="list-style-type: none"> <li>Replace the CMOS lithium battery, if necessary.</li> <li>(Trained service technician only) Replace the system board.</li> </ol>

- Follow the suggested actions in the order in which they are listed in the Action column until the problem is solved.
- See Chapter 4, “Parts listing, System x3400 M2 Types 7836 and 7837,” on page 153 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.

Component LED	Description	Action
PCI slots error LEDs	An error has occurred on a PCI bus or on the system board. An additional LED is lit next to a failing PCI slot.	<ol style="list-style-type: none"> <li>1. Check the system-event log for information about the error.</li> <li>2. If you cannot isolate the failing adapter through the LEDs and the information in the system-event log, remove one adapter at a time, and restart the server after each adapter is removed.</li> <li>3. If the failure remains, go to <a href="http://www.ibm.com/systems/support/supportsite.wss/docdisplay?brandind=5000008&amp;Indocid=SERV-CALL">http://www.ibm.com/systems/support/supportsite.wss/docdisplay?brandind=5000008&amp;Indocid=SERV-CALL</a> for additional troubleshooting information.</li> </ol>
IMM heartbeat LED	<p>Indicates the status of the boot process of the IMM.</p> <p>When the server is connected to power this LED flashes quickly to indicate that the IMM code is loading. When the loading is complete, the LED stops flashing briefly and then flashes slowly to indicate that the IMM is fully operational and you can press the power-control button to start the server.</p>	<p>If the LED does not begin flashing within 30 seconds of when the server is connected to power, complete the following steps:</p> <ol style="list-style-type: none"> <li>1. (Trained service technician only) Use the IMM recovery switch (on the SW6 switch block) to recover the firmware (see Table 3 on page 23).</li> <li>2. (Trained service technician only) Replace the system board.</li> </ol>
Enclosure manager heartbeat LED	power-on and power-off sequencing.	<ol style="list-style-type: none"> <li>1. If the LED flashes at 1Hz, it is functioning properly and no action is necessary.</li> <li>2. If the LED is not flashing, (trained service technician only) replace the system board.</li> </ol>

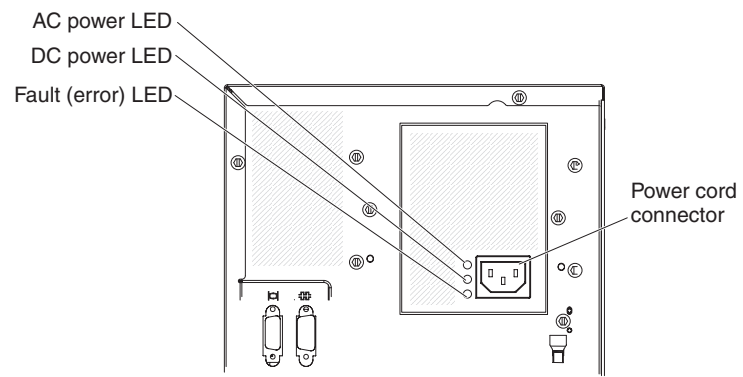
## Power-supply LEDs

The following minimum configuration is required for the server to start:

- One microprocessor
- One 1 GB DIMMs
- Power supply
- Power cord
- ServeRAID SAS/SATA adapter
- System board assembly

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





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

Table 6. Power-supply LEDs

Power-supply LEDs			Description	Action	Notes
AC	DC	Error			
Off	Off	Off	No ac power to the server or a problem with the ac power source	<ol style="list-style-type: none"> <li>1. Check the ac power to the server.</li> <li>2. Make sure that the power cord is connected to a functioning power source.</li> <li>3. Turn the server off and then turn the server back on.</li> <li>4. If the problem remains, replace the power supply.</li> </ol>	This is a normal condition when no ac power is present.
Off	Off	On	No ac power to the server or a problem with the ac power source and the power supply had detected an internal problem	<ol style="list-style-type: none"> <li>1. Replace the power supply.</li> <li>2. Make sure that the power cord is connected to a functioning power source.</li> </ol>	This happens only when a second power supply is providing power to the server.
Off	On	Off	Faulty power supply	Replace the power supply.	
Off	On	On	Faulty power supply	Replace the power supply.	
On	Off	Off	Power supply not fully seated, faulty system board, or faulty power supply	<ol style="list-style-type: none"> <li>1. If the system board error (fault) LED is not lit, replace the power supply.</li> <li>2. If the system board error (fault) LED is lit, (Trained service technician only) replace the system board.</li> </ol>	Typically indicates that a power supply is not fully seated.
On	Off or Flashing	On	Faulty power supply	Replace the power supply.	
On	On	Off	Normal operation		
On	On	On	Power supply is faulty but still operational	Replace the power supply.	

---

## Diagnostic programs and messages

The diagnostic programs are the primary method of testing the major components of the server. As you run the diagnostic programs, text messages are displayed on the screen and are saved in the test log. A diagnostic text message indicates that a problem has been detected and provides the action you should take as a result of the text message.

Make sure that the server has the latest version of the diagnostic programs. To download the latest version, 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/systems/support/>.
2. Under **Product support**, click **System x**.
3. Under **Popular links**, click **Software and device drivers**.
4. Click **IBM System x3400 M2** to display the matrix of downloadable files for the server.

Utilities are available to reset and update the diagnostics code on the integrated USB flash device, if the diagnostic partition becomes damaged and does not start the diagnostic programs. For more information and to download the utilities, go to <http://www.ibm.com/systems/support/supportsite.wss/docdisplay?Indocid=MIGR-5072294&brandind=5000008>.

The DSA diagnostic programs collect information about the following aspects of the system:

- System configuration
- Network interfaces and settings
- Hardware inventory, including PCI and USB information
- Drive health information
- SAS/SATA RAID and controller configuration
- Event logs for ServeRAID controllers and service processors

The DSA diagnostic programs can also provide diagnostics for the following system components, if they are installed in the system:

- BroadCom Dual Gigabit Ethernet
- Optical drives
- Hard disk drives
- SAS/SATA RAID controller
- Integrated management module (IMM)
- Trusted Platform Module chip
- Memory
- Microprocessor

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/toolctr/v1r0/index.jsp>.

## Running the diagnostic programs

To run the DSA Preboot 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> Diagnostics is displayed, press F2.

**Note:** The DSA Preboot diagnostic program might appear to be unresponsive for an unusual length of time when you start the program. This is normal operation while the program loads.

4. Optionally, select **Quit to DSA** to exit from the stand-alone memory diagnostic program.

**Note:** After you exit from the stand-alone memory diagnostic environment, you must restart the server to access the stand-alone memory diagnostic environment again.

5. Select **gui** to display the graphical user interface, or select **cmd** to display the DSA interactive menu.
6. Follow the instructions on the screen to select the diagnostic test to run.

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 multiple error codes or LEDs indicate a microprocessor error, the error might be in a microprocessor or in a microprocessor socket. See “Microprocessor problems” on page 78 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.

## 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.

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

## Viewing the test log

To view the test log when the tests are completed, type the **view** command in the DSA interactive menu, or select **Diagnostic Event Log** in the graphical user interface. To transfer DSA Preboot collections to an external USB device, type the **copy** command in the DSA interactive menu.

## Diagnostic messages

The following table describes the messages that the diagnostic programs might generate and suggested actions to correct the detected problems. Follow the suggested actions in the order in which they are listed in the action column.

Table 7. DSA Preboot messages

<ul style="list-style-type: none"> <li>Follow the suggested actions in the order in which they are listed in the Action column until the problem is solved.</li> <li>See Chapter 4, “Parts listing, System x3400 M2 Types 7836 and 7837,” on page 153 to determine which components are customer replaceable units (CRU) and which components are field replaceable units (FRU).</li> <li>If an action step is preceded by “(Trained service technician only),” that step must be performed only by a Trained service technician.</li> <li>Go to the IBM support Web site at <a href="http://www.ibm.com/systems/support/">http://www.ibm.com/systems/support/</a> to check for technical information, hints, tips, and new device drivers or to submit a request for information.</li> </ul>					
Message number	Component	Test	State	Description	Action
089-801-xxx	CPU	CPU Stress Test	Aborted	Internal program error.	<ol style="list-style-type: none"> <li>Turn off and restart the system.</li> <li>Make sure that the DSA code is at the latest level. For the latest level of DSA code, go to <a href="http://www.ibm.com/support/docview.wss?uid=psg1SERV-DSA">http://www.ibm.com/support/docview.wss?uid=psg1SERV-DSA</a>.</li> <li>Run the test again.</li> <li>Make sure that the system firmware is at the latest level. The installed firmware level is shown in the DSA event log in the Firmware/VPD section for this component. For more information, see “Updating the firmware” on page 273.</li> <li>Run the test again.</li> <li>Turn off and restart the system if necessary to recover from a hung state.</li> <li>Run the test again.</li> <li>Replace the following components one at a time, in the order shown, and run this test again to determine whether the problem has been solved:               <ol style="list-style-type: none"> <li>(Trained service technician only) Microprocessor board</li> <li>(Trained service technician only) Microprocessor</li> </ol> </li> <li>If the failure remains, go to the IBM Web site for more troubleshooting information at <a href="http://www.ibm.com/systems/support/supportsite.wss/docdisplay?brandind=5000008&amp;Indocid=SERV-CALL">http://www.ibm.com/systems/support/supportsite.wss/docdisplay?brandind=5000008&amp;Indocid=SERV-CALL</a>.</li> </ol>

Table 7. DSA Preboot messages (continued)

<ul style="list-style-type: none"> <li>• Follow the suggested actions in the order in which they are listed in the Action column until the problem is solved.</li> <li>• See Chapter 4, “Parts listing, System x3400 M2 Types 7836 and 7837,” on page 153 to determine which components are customer replaceable units (CRU) and which components are field replaceable units (FRU).</li> <li>• If an action step is preceded by “(Trained service technician only),” that step must be performed only by a Trained service technician.</li> <li>• Go to the IBM support Web site at <a href="http://www.ibm.com/systems/support/">http://www.ibm.com/systems/support/</a> to check for technical information, hints, tips, and new device drivers or to submit a request for information.</li> </ul>					
Message number	Component	Test	State	Description	Action
089-802-xxx	CPU	CPU Stress Test	Aborted	System resource availability error.	<ol style="list-style-type: none"> <li>1. Turn off and restart the system.</li> <li>2. Make sure that the DSA code is at the latest level. For the latest level of DSA code, go to <a href="http://www.ibm.com/support/docview.wss?uid=psg1SERV-DSA">http://www.ibm.com/support/docview.wss?uid=psg1SERV-DSA</a>.</li> <li>3. Run the test again.</li> <li>4. Make sure that the system firmware is at the latest level. The installed firmware level is shown in the DSA event log in the Firmware/VPD section for this component. For the latest level of firmware, go to <a href="http://www.ibm.com/support/docview.wss?uid=psg1MIGR-4JTS2T">http://www.ibm.com/support/docview.wss?uid=psg1MIGR-4JTS2T</a> and select your system to display a matrix of available firmware.</li> <li>5. Run the test again.</li> <li>6. Turn off and restart the system if necessary to recover from a hung state.</li> <li>7. Run the test again.</li> <li>8. Make sure that the system firmware is at the latest level. The installed firmware level is shown in the DSA event log in the Firmware/VPD section for this component. For more information, see “Updating the firmware” on page 273.</li> <li>9. Run the test again.</li> </ol>
089-802-xxx	CPU	CPU Stress Test	Aborted	System resource availability error.	<ol style="list-style-type: none"> <li>1. Replace the following components one at a time, in the order shown, and run this test again to determine whether the problem has been solved:               <ol style="list-style-type: none"> <li>a. (Trained service technician only) Microprocessor board</li> <li>b. (Trained service technician only) Microprocessor</li> </ol> </li> <li>2. If the failure remains, go to the IBM Web site for more troubleshooting information at <a href="http://www.ibm.com/systems/support/supportsite.wss/docdisplay?brandind=5000008&amp;Indocid=SERV-CALL">http://www.ibm.com/systems/support/supportsite.wss/docdisplay?brandind=5000008&amp;Indocid=SERV-CALL</a>.</li> </ol>

Table 7. DSA Preboot messages (continued)

<ul style="list-style-type: none"> <li>• Follow the suggested actions in the order in which they are listed in the Action column until the problem is solved.</li> <li>• See Chapter 4, “Parts listing, System x3400 M2 Types 7836 and 7837,” on page 153 to determine which components are customer replaceable units (CRU) and which components are field replaceable units (FRU).</li> <li>• If an action step is preceded by “(Trained service technician only),” that step must be performed only by a Trained service technician.</li> <li>• Go to the IBM support Web site at <a href="http://www.ibm.com/systems/support/">http://www.ibm.com/systems/support/</a> to check for technical information, hints, tips, and new device drivers or to submit a request for information.</li> </ul>					
Message number	Component	Test	State	Description	Action
089-901-xxx	CPU	CPU Stress Test	Failed	Test failure.	<ol style="list-style-type: none"> <li>1. Turn off and restart the system if necessary to recover from a hung state.</li> <li>2. Make sure that the DSA code is at the latest level. For the latest level of DSA code, go to <a href="http://www.ibm.com/support/docview.wss?uid=psg1SERV-DSA">http://www.ibm.com/support/docview.wss?uid=psg1SERV-DSA</a>.</li> <li>3. Run the test again.</li> <li>4. Make sure that the system firmware is at the latest level. The installed firmware level is shown in the DSA event log in the Firmware/VPD section for this component. For more information, see “Updating the firmware” on page 273.</li> <li>5. Run the test again.</li> <li>6. Turn off and restart the system if necessary to recover from a hung state.</li> <li>7. Run the test again.</li> <li>8. Replace the following components one at a time, in the order shown, and run this test again to determine whether the problem has been solved:               <ol style="list-style-type: none"> <li>a. (Trained service technician only) Microprocessor board</li> <li>b. (Trained service technician only) Microprocessor</li> </ol> </li> <li>9. If the failure remains, go to the IBM Web site for more troubleshooting information at <a href="http://www.ibm.com/systems/support/supportsite.wss/docdisplay?brandind=5000008&amp;Indocid=SERV-CALL">http://www.ibm.com/systems/support/supportsite.wss/docdisplay?brandind=5000008&amp;Indocid=SERV-CALL</a>.</li> </ol>

Table 7. DSA Preboot messages (continued)

<ul style="list-style-type: none"> <li>• Follow the suggested actions in the order in which they are listed in the Action column until the problem is solved.</li> <li>• See Chapter 4, “Parts listing, System x3400 M2 Types 7836 and 7837,” on page 153 to determine which components are customer replaceable units (CRU) and which components are field replaceable units (FRU).</li> <li>• If an action step is preceded by “(Trained service technician only),” that step must be performed only by a Trained service technician.</li> <li>• Go to the IBM support Web site at <a href="http://www.ibm.com/systems/support/">http://www.ibm.com/systems/support/</a> to check for technical information, hints, tips, and new device drivers or to submit a request for information.</li> </ul>					
Message number	Component	Test	State	Description	Action
166-801-xxx	IMM	IMM I2C Test	Aborted	IMM I2C test stopped: the IMM returned an incorrect response length.	<ol style="list-style-type: none"> <li>1. Turn off the system and disconnect it from the power source. You must disconnect the system from ac power to reset the IMM.</li> <li>2. After 45 seconds, reconnect the system to the power source and turn on the system.</li> <li>3. Run the test again.</li> <li>4. Make sure that the DSA code is at the latest level. For the latest level of DSA code, go to <a href="http://www.ibm.com/support/docview.wss?uid=psg1SERV-DSA">http://www.ibm.com/support/docview.wss?uid=psg1SERV-DSA</a>.</li> <li>5. Make sure that the IMM firmware is at the latest level. The installed firmware level is shown in the DSA event log in the Firmware/VPD section for this component. For more information, see “Updating the firmware” on page 273.</li> <li>6. Run the test again.</li> <li>7. If the failure remains, go to the IBM Web site for more troubleshooting information at <a href="http://www.ibm.com/systems/support/supportsite.wss/docdisplay?brandind=5000008&amp;Indocid=SERV-CALL">http://www.ibm.com/systems/support/supportsite.wss/docdisplay?brandind=5000008&amp;Indocid=SERV-CALL</a>.</li> </ol>



Table 7. DSA Preboot messages (continued)

<ul style="list-style-type: none"> <li>• Follow the suggested actions in the order in which they are listed in the Action column until the problem is solved.</li> <li>• See Chapter 4, “Parts listing, System x3400 M2 Types 7836 and 7837,” on page 153 to determine which components are customer replaceable units (CRU) and which components are field replaceable units (FRU).</li> <li>• If an action step is preceded by “(Trained service technician only),” that step must be performed only by a Trained service technician.</li> <li>• Go to the IBM support Web site at <a href="http://www.ibm.com/systems/support/">http://www.ibm.com/systems/support/</a> to check for technical information, hints, tips, and new device drivers or to submit a request for information.</li> </ul>					
Message number	Component	Test	State	Description	Action
166-802-xxx	IMM	IMM I2C Test	Aborted	IMM I2C test stopped: the test cannot be completed for an unknown reason.	<ol style="list-style-type: none"> <li>1. Turn off the system and disconnect it from the power source. You must disconnect the system from ac power to reset the IMM.</li> <li>2. After 45 seconds, reconnect the system to the power source and turn on the system.</li> <li>3. Run the test again.</li> <li>4. Make sure that the DSA code is at the latest level. For the latest level of DSA code, go to <a href="http://www.ibm.com/support/docview.wss?uid=psg1SERV-DSA">http://www.ibm.com/support/docview.wss?uid=psg1SERV-DSA</a>.</li> <li>5. Make sure that the IMM firmware is at the latest level. The installed firmware level is shown in the DSA event log in the Firmware/VPD section for this component. For more information, see “Updating the firmware” on page 273.</li> <li>6. Run the test again.</li> <li>7. If the failure remains, go to the IBM Web site for more troubleshooting information at <a href="http://www.ibm.com/systems/support/supportsite.wss/docdisplay?brandind=5000008&amp;Indocid=SERV-CALL">http://www.ibm.com/systems/support/supportsite.wss/docdisplay?brandind=5000008&amp;Indocid=SERV-CALL</a>.</li> </ol>

Table 7. DSA Preboot messages (continued)

<ul style="list-style-type: none"> <li>• Follow the suggested actions in the order in which they are listed in the Action column until the problem is solved.</li> <li>• See Chapter 4, “Parts listing, System x3400 M2 Types 7836 and 7837,” on page 153 to determine which components are customer replaceable units (CRU) and which components are field replaceable units (FRU).</li> <li>• If an action step is preceded by “(Trained service technician only),” that step must be performed only by a Trained service technician.</li> <li>• Go to the IBM support Web site at <a href="http://www.ibm.com/systems/support/">http://www.ibm.com/systems/support/</a> to check for technical information, hints, tips, and new device drivers or to submit a request for information.</li> </ul>					
Message number	Component	Test	State	Description	Action
166-803-xxx	IMM	IMM I2C Test	Aborted	IMM I2C test stopped: the node is busy; try later.	<ol style="list-style-type: none"> <li>1. Turn off the system and disconnect it from the power source. You must disconnect the system from ac power to reset the IMM.</li> <li>2. After 45 seconds, reconnect the system to the power source and turn on the system.</li> <li>3. Run the test again.</li> <li>4. Make sure that the DSA code is at the latest level. For the latest level of DSA code, go to <a href="http://www.ibm.com/support/docview.wss?uid=psg1SERV-DSA">http://www.ibm.com/support/docview.wss?uid=psg1SERV-DSA</a>.</li> <li>5. Make sure that the IMM firmware is at the latest level. The installed firmware level is shown in the DSA event log in the Firmware/VPD section for this component. For more information, see “Updating the firmware” on page 273.</li> <li>6. Run the test again.</li> <li>7. If the failure remains, go to the IBM Web site for more troubleshooting information at <a href="http://www.ibm.com/systems/support/supportsite.wss/docdisplay?brandind=5000008&amp;Indocid=SERV-CALL">http://www.ibm.com/systems/support/supportsite.wss/docdisplay?brandind=5000008&amp;Indocid=SERV-CALL</a>.</li> </ol>

Table 7. DSA Preboot messages (continued)

<ul style="list-style-type: none"> <li>• Follow the suggested actions in the order in which they are listed in the Action column until the problem is solved.</li> <li>• See Chapter 4, “Parts listing, System x3400 M2 Types 7836 and 7837,” on page 153 to determine which components are customer replaceable units (CRU) and which components are field replaceable units (FRU).</li> <li>• If an action step is preceded by “(Trained service technician only),” that step must be performed only by a Trained service technician.</li> <li>• Go to the IBM support Web site at <a href="http://www.ibm.com/systems/support/">http://www.ibm.com/systems/support/</a> to check for technical information, hints, tips, and new device drivers or to submit a request for information.</li> </ul>					
Message number	Component	Test	State	Description	Action
166-804-xxx	IMM	IMM I2C Test	Aborted	IMM I2C test stopped: invalid command.	<ol style="list-style-type: none"> <li>1. Turn off the system and disconnect it from the power source. You must disconnect the system from ac power to reset the IMM.</li> <li>2. After 45 seconds, reconnect the system to the power source and turn on the system.</li> <li>3. Run the test again.</li> <li>4. Make sure that the DSA code is at the latest level. For the latest level of DSA code, go to <a href="http://www.ibm.com/support/docview.wss?uid=psg1SERV-DSA">http://www.ibm.com/support/docview.wss?uid=psg1SERV-DSA</a>.</li> <li>5. Make sure that the IMM firmware is at the latest level. The installed firmware level is shown in the DSA event log in the Firmware/VPD section for this component. For more information, see “Updating the firmware” on page 273.</li> <li>6. Run the test again.</li> <li>7. If the failure remains, go to the IBM Web site for more troubleshooting information at <a href="http://www.ibm.com/systems/support/supportsite.wss/docdisplay?brandind=5000008&amp;Indocid=SERV-CALL">http://www.ibm.com/systems/support/supportsite.wss/docdisplay?brandind=5000008&amp;Indocid=SERV-CALL</a>.</li> </ol>

Table 7. DSA Preboot messages (continued)

<ul style="list-style-type: none"> <li>• Follow the suggested actions in the order in which they are listed in the Action column until the problem is solved.</li> <li>• See Chapter 4, “Parts listing, System x3400 M2 Types 7836 and 7837,” on page 153 to determine which components are customer replaceable units (CRU) and which components are field replaceable units (FRU).</li> <li>• If an action step is preceded by “(Trained service technician only),” that step must be performed only by a Trained service technician.</li> <li>• Go to the IBM support Web site at <a href="http://www.ibm.com/systems/support/">http://www.ibm.com/systems/support/</a> to check for technical information, hints, tips, and new device drivers or to submit a request for information.</li> </ul>					
Message number	Component	Test	State	Description	Action
166-805-xxx	IMM	IMM I2C Test	Aborted	IMM I2C test stopped: invalid command for the given LUN.	<ol style="list-style-type: none"> <li>1. Turn off the system and disconnect it from the power source. You must disconnect the system from ac power to reset the IMM.</li> <li>2. After 45 seconds, reconnect the system to the power source and turn on the system.</li> <li>3. Run the test again.</li> <li>4. Make sure that the DSA code is at the latest level. For the latest level of DSA code, go to <a href="http://www.ibm.com/support/docview.wss?uid=psg1SERV-DSA">http://www.ibm.com/support/docview.wss?uid=psg1SERV-DSA</a>.</li> <li>5. Make sure that the IMM firmware is at the latest level. The installed firmware level is shown in the DSA event log in the Firmware/VPD section for this component. For more information, see “Updating the firmware” on page 273.</li> <li>6. Run the test again.</li> <li>7. If the failure remains, go to the IBM Web site for more troubleshooting information at <a href="http://www.ibm.com/systems/support/supportsite.wss/docdisplay?brandind=5000008&amp;Indocid=SERV-CALL">http://www.ibm.com/systems/support/supportsite.wss/docdisplay?brandind=5000008&amp;Indocid=SERV-CALL</a>.</li> </ol>

Table 7. DSA Preboot messages (continued)

<ul style="list-style-type: none"> <li>• Follow the suggested actions in the order in which they are listed in the Action column until the problem is solved.</li> <li>• See Chapter 4, “Parts listing, System x3400 M2 Types 7836 and 7837,” on page 153 to determine which components are customer replaceable units (CRU) and which components are field replaceable units (FRU).</li> <li>• If an action step is preceded by “(Trained service technician only),” that step must be performed only by a Trained service technician.</li> <li>• Go to the IBM support Web site at <a href="http://www.ibm.com/systems/support/">http://www.ibm.com/systems/support/</a> to check for technical information, hints, tips, and new device drivers or to submit a request for information.</li> </ul>					
Message number	Component	Test	State	Description	Action
166-806-xxx	IMM	IMM I2C Test	Aborted	IMM I2C test stopped: timeout while processing the command.	<ol style="list-style-type: none"> <li>1. Turn off the system and disconnect it from the power source. You must disconnect the system from ac power to reset the IMM.</li> <li>2. After 45 seconds, reconnect the system to the power source and turn on the system.</li> <li>3. Run the test again.</li> <li>4. Make sure that the DSA code is at the latest level. For the latest level of DSA code, go to <a href="http://www.ibm.com/support/docview.wss?uid=psg1SERV-DSA">http://www.ibm.com/support/docview.wss?uid=psg1SERV-DSA</a>.</li> <li>5. Make sure that the IMM firmware is at the latest level. The installed firmware level is shown in the DSA event log in the Firmware/VPD section for this component. For more information, see “Updating the firmware” on page 273.</li> <li>6. Run the test again.</li> <li>7. If the failure remains, go to the IBM Web site for more troubleshooting information at <a href="http://www.ibm.com/systems/support/supportsite.wss/docdisplay?brandind=5000008&amp;Indocid=SERV-CALL">http://www.ibm.com/systems/support/supportsite.wss/docdisplay?brandind=5000008&amp;Indocid=SERV-CALL</a>.</li> </ol>

Table 7. DSA Preboot messages (continued)

<ul style="list-style-type: none"> <li>• Follow the suggested actions in the order in which they are listed in the Action column until the problem is solved.</li> <li>• See Chapter 4, “Parts listing, System x3400 M2 Types 7836 and 7837,” on page 153 to determine which components are customer replaceable units (CRU) and which components are field replaceable units (FRU).</li> <li>• If an action step is preceded by “(Trained service technician only),” that step must be performed only by a Trained service technician.</li> <li>• Go to the IBM support Web site at <a href="http://www.ibm.com/systems/support/">http://www.ibm.com/systems/support/</a> to check for technical information, hints, tips, and new device drivers or to submit a request for information.</li> </ul>					
Message number	Component	Test	State	Description	Action
166-807-xxx	IMM	IMM I2C Test	Aborted	IMM I2C test stopped: out of space.	<ol style="list-style-type: none"> <li>1. Turn off the system and disconnect it from the power source. You must disconnect the system from ac power to reset the IMM.</li> <li>2. After 45 seconds, reconnect the system to the power source and turn on the system.</li> <li>3. Run the test again.</li> <li>4. Make sure that the DSA code is at the latest level. For the latest level of DSA code, go to <a href="http://www.ibm.com/support/docview.wss?uid=psg1SERV-DSA">http://www.ibm.com/support/docview.wss?uid=psg1SERV-DSA</a>.</li> <li>5. Make sure that the IMM firmware is at the latest level. The installed firmware level is shown in the DSA event log in the Firmware/VPD section for this component. For more information, see “Updating the firmware” on page 273.</li> <li>6. Run the test again.</li> <li>7. If the failure remains, go to the IBM Web site for more troubleshooting information at <a href="http://www.ibm.com/systems/support/supportsite.wss/docdisplay?brandind=5000008&amp;Indocid=SERV-CALL">http://www.ibm.com/systems/support/supportsite.wss/docdisplay?brandind=5000008&amp;Indocid=SERV-CALL</a>.</li> </ol>

Table 7. DSA Preboot messages (continued)

<ul style="list-style-type: none"> <li>• Follow the suggested actions in the order in which they are listed in the Action column until the problem is solved.</li> <li>• See Chapter 4, “Parts listing, System x3400 M2 Types 7836 and 7837,” on page 153 to determine which components are customer replaceable units (CRU) and which components are field replaceable units (FRU).</li> <li>• If an action step is preceded by “(Trained service technician only),” that step must be performed only by a Trained service technician.</li> <li>• Go to the IBM support Web site at <a href="http://www.ibm.com/systems/support/">http://www.ibm.com/systems/support/</a> to check for technical information, hints, tips, and new device drivers or to submit a request for information.</li> </ul>					
Message number	Component	Test	State	Description	Action
166-808-xxx	IMM	IMM I2C Test	Aborted	IMM I2C test stopped: reservation canceled or invalid reservation ID.	<ol style="list-style-type: none"> <li>1. Turn off the system and disconnect it from the power source. You must disconnect the system from ac power to reset the IMM.</li> <li>2. After 45 seconds, reconnect the system to the power source and turn on the system.</li> <li>3. Run the test again.</li> <li>4. Make sure that the DSA code is at the latest level. For the latest level of DSA code, go to <a href="http://www.ibm.com/support/docview.wss?uid=psg1SERV-DSA">http://www.ibm.com/support/docview.wss?uid=psg1SERV-DSA</a>.</li> <li>5. Make sure that the IMM firmware is at the latest level. The installed firmware level is shown in the DSA event log in the Firmware/VPD section for this component. For more information, see “Updating the firmware” on page 273.</li> <li>6. Run the test again.</li> <li>7. If the failure remains, go to the IBM Web site for more troubleshooting information at <a href="http://www.ibm.com/systems/support/supportsite.wss/docdisplay?brandind=5000008&amp;Indocid=SERV-CALL">http://www.ibm.com/systems/support/supportsite.wss/docdisplay?brandind=5000008&amp;Indocid=SERV-CALL</a>.</li> </ol>

Table 7. DSA Preboot messages (continued)

<ul style="list-style-type: none"> <li>• Follow the suggested actions in the order in which they are listed in the Action column until the problem is solved.</li> <li>• See Chapter 4, “Parts listing, System x3400 M2 Types 7836 and 7837,” on page 153 to determine which components are customer replaceable units (CRU) and which components are field replaceable units (FRU).</li> <li>• If an action step is preceded by “(Trained service technician only),” that step must be performed only by a Trained service technician.</li> <li>• Go to the IBM support Web site at <a href="http://www.ibm.com/systems/support/">http://www.ibm.com/systems/support/</a> to check for technical information, hints, tips, and new device drivers or to submit a request for information.</li> </ul>					
Message number	Component	Test	State	Description	Action
166-809-xxx	IMM	IMM I2C Test	Aborted	IMM I2C test stopped: request data was truncated.	<ol style="list-style-type: none"> <li>1. Turn off the system and disconnect it from the power source. You must disconnect the system from ac power to reset the IMM.</li> <li>2. After 45 seconds, reconnect the system to the power source and turn on the system.</li> <li>3. Run the test again.</li> <li>4. Make sure that the DSA code is at the latest level. For the latest level of DSA code, go to <a href="http://www.ibm.com/support/docview.wss?uid=psg1SERV-DSA">http://www.ibm.com/support/docview.wss?uid=psg1SERV-DSA</a>.</li> <li>5. Make sure that the IMM firmware is at the latest level. The installed firmware level is shown in the DSA event log in the Firmware/VPD section for this component. For more information, see “Updating the firmware” on page 273.</li> <li>6. Run the test again.</li> <li>7. If the failure remains, go to the IBM Web site for more troubleshooting information at <a href="http://www.ibm.com/systems/support/supportsite.wss/docdisplay?brandind=5000008&amp;Indocid=SERV-CALL">http://www.ibm.com/systems/support/supportsite.wss/docdisplay?brandind=5000008&amp;Indocid=SERV-CALL</a>.</li> </ol>



Table 7. DSA Preboot messages (continued)

<ul style="list-style-type: none"> <li>• Follow the suggested actions in the order in which they are listed in the Action column until the problem is solved.</li> <li>• See Chapter 4, “Parts listing, System x3400 M2 Types 7836 and 7837,” on page 153 to determine which components are customer replaceable units (CRU) and which components are field replaceable units (FRU).</li> <li>• If an action step is preceded by “(Trained service technician only),” that step must be performed only by a Trained service technician.</li> <li>• Go to the IBM support Web site at <a href="http://www.ibm.com/systems/support/">http://www.ibm.com/systems/support/</a> to check for technical information, hints, tips, and new device drivers or to submit a request for information.</li> </ul>					
Message number	Component	Test	State	Description	Action
166-810-xxx	IMM	IMM I2C Test	Aborted	IMM I2C test stopped: request data length is invalid.	<ol style="list-style-type: none"> <li>1. Turn off the system and disconnect it from the power source. You must disconnect the system from ac power to reset the IMM.</li> <li>2. After 45 seconds, reconnect the system to the power source and turn on the system.</li> <li>3. Run the test again.</li> <li>4. Make sure that the DSA code is at the latest level. For the latest level of DSA code, go to <a href="http://www.ibm.com/support/docview.wss?uid=psg1SERV-DSA">http://www.ibm.com/support/docview.wss?uid=psg1SERV-DSA</a>.</li> <li>5. Make sure that the IMM firmware is at the latest level. The installed firmware level is shown in the DSA event log in the Firmware/VPD section for this component. For more information, see “Updating the firmware” on page 273.</li> <li>6. Run the test again.</li> <li>7. If the failure remains, go to the IBM Web site for more troubleshooting information at <a href="http://www.ibm.com/systems/support/supportsite.wss/docdisplay?brandind=5000008&amp;Indocid=SERV-CALL">http://www.ibm.com/systems/support/supportsite.wss/docdisplay?brandind=5000008&amp;Indocid=SERV-CALL</a>.</li> </ol>

Table 7. DSA Preboot messages (continued)

<ul style="list-style-type: none"> <li>• Follow the suggested actions in the order in which they are listed in the Action column until the problem is solved.</li> <li>• See Chapter 4, “Parts listing, System x3400 M2 Types 7836 and 7837,” on page 153 to determine which components are customer replaceable units (CRU) and which components are field replaceable units (FRU).</li> <li>• If an action step is preceded by “(Trained service technician only),” that step must be performed only by a Trained service technician.</li> <li>• Go to the IBM support Web site at <a href="http://www.ibm.com/systems/support/">http://www.ibm.com/systems/support/</a> to check for technical information, hints, tips, and new device drivers or to submit a request for information.</li> </ul>					
Message number	Component	Test	State	Description	Action
166-811-xxx	IMM	IMM I2C Test	Aborted	IMM I2C test stopped: request data field length limit is exceeded.	<ol style="list-style-type: none"> <li>1. Turn off the system and disconnect it from the power source. You must disconnect the system from ac power to reset the IMM.</li> <li>2. After 45 seconds, reconnect the system to the power source and turn on the system.</li> <li>3. Run the test again.</li> <li>4. Make sure that the DSA code is at the latest level. For the latest level of DSA code, go to <a href="http://www.ibm.com/support/docview.wss?uid=psg1SERV-DSA">http://www.ibm.com/support/docview.wss?uid=psg1SERV-DSA</a>.</li> <li>5. Make sure that the IMM firmware is at the latest level. The installed firmware level is shown in the DSA event log in the Firmware/VPD section for this component. For more information, see “Updating the firmware” on page 273.</li> <li>6. Run the test again.</li> <li>7. If the failure remains, go to the IBM Web site for more troubleshooting information at <a href="http://www.ibm.com/systems/support/supportsite.wss/docdisplay?brandind=5000008&amp;Indocid=SERV-CALL">http://www.ibm.com/systems/support/supportsite.wss/docdisplay?brandind=5000008&amp;Indocid=SERV-CALL</a>.</li> </ol>

Table 7. DSA Preboot messages (continued)

<ul style="list-style-type: none"> <li>• Follow the suggested actions in the order in which they are listed in the Action column until the problem is solved.</li> <li>• See Chapter 4, “Parts listing, System x3400 M2 Types 7836 and 7837,” on page 153 to determine which components are customer replaceable units (CRU) and which components are field replaceable units (FRU).</li> <li>• If an action step is preceded by “(Trained service technician only),” that step must be performed only by a Trained service technician.</li> <li>• Go to the IBM support Web site at <a href="http://www.ibm.com/systems/support/">http://www.ibm.com/systems/support/</a> to check for technical information, hints, tips, and new device drivers or to submit a request for information.</li> </ul>					
Message number	Component	Test	State	Description	Action
166-812-xxx	IMM	IMM I2C Test	Aborted	IMM I2C Test stopped a parameter is out of range.	<ol style="list-style-type: none"> <li>1. Turn off the system and disconnect it from the power source. You must disconnect the system from ac power to reset the IMM.</li> <li>2. After 45 seconds, reconnect the system to the power source and turn on the system.</li> <li>3. Run the test again.</li> <li>4. Make sure that the DSA code is at the latest level. For the latest level of DSA code, go to <a href="http://www.ibm.com/support/docview.wss?uid=psg1SERV-DSA">http://www.ibm.com/support/docview.wss?uid=psg1SERV-DSA</a>.</li> <li>5. Make sure that the IMM firmware is at the latest level. The installed firmware level is shown in the DSA event log in the Firmware/VPD section for this component. For more information, see “Updating the firmware” on page 273.</li> <li>6. Run the test again.</li> <li>7. If the failure remains, go to the IBM Web site for more troubleshooting information at <a href="http://www.ibm.com/systems/support/supportsite.wss/docdisplay?brandind=5000008&amp;Indocid=SERV-CALL">http://www.ibm.com/systems/support/supportsite.wss/docdisplay?brandind=5000008&amp;Indocid=SERV-CALL</a>.</li> </ol>

Table 7. DSA Preboot messages (continued)

<ul style="list-style-type: none"> <li>• Follow the suggested actions in the order in which they are listed in the Action column until the problem is solved.</li> <li>• See Chapter 4, “Parts listing, System x3400 M2 Types 7836 and 7837,” on page 153 to determine which components are customer replaceable units (CRU) and which components are field replaceable units (FRU).</li> <li>• If an action step is preceded by “(Trained service technician only),” that step must be performed only by a Trained service technician.</li> <li>• Go to the IBM support Web site at <a href="http://www.ibm.com/systems/support/">http://www.ibm.com/systems/support/</a> to check for technical information, hints, tips, and new device drivers or to submit a request for information.</li> </ul>					
Message number	Component	Test	State	Description	Action
166-813-xxx	IMM	IMM I2C Test	Aborted	IMM I2C test stopped: cannot return the number of requested data bytes.	<ol style="list-style-type: none"> <li>1. Turn off the system and disconnect it from the power source. You must disconnect the system from ac power to reset the IMM.</li> <li>2. After 45 seconds, reconnect the system to the power source and turn on the system.</li> <li>3. Run the test again.</li> <li>4. Make sure that the DSA code is at the latest level. For the latest level of DSA code, go to <a href="http://www.ibm.com/support/docview.wss?uid=psg1SERV-DSA">http://www.ibm.com/support/docview.wss?uid=psg1SERV-DSA</a>.</li> <li>5. Make sure that the IMM firmware is at the latest level. The installed firmware level is shown in the DSA event log in the Firmware/VPD section for this component. For more information, see “Updating the firmware” on page 273.</li> <li>6. Run the test again.</li> <li>7. If the failure remains, go to the IBM Web site for more troubleshooting information at <a href="http://www.ibm.com/systems/support/supportsite.wss/docdisplay?brandind=5000008&amp;Indocid=SERV-CALL">http://www.ibm.com/systems/support/supportsite.wss/docdisplay?brandind=5000008&amp;Indocid=SERV-CALL</a>.</li> </ol>

Table 7. DSA Preboot messages (continued)

<ul style="list-style-type: none"> <li>• Follow the suggested actions in the order in which they are listed in the Action column until the problem is solved.</li> <li>• See Chapter 4, “Parts listing, System x3400 M2 Types 7836 and 7837,” on page 153 to determine which components are customer replaceable units (CRU) and which components are field replaceable units (FRU).</li> <li>• If an action step is preceded by “(Trained service technician only),” that step must be performed only by a Trained service technician.</li> <li>• Go to the IBM support Web site at <a href="http://www.ibm.com/systems/support/">http://www.ibm.com/systems/support/</a> to check for technical information, hints, tips, and new device drivers or to submit a request for information.</li> </ul>					
Message number	Component	Test	State	Description	Action
166-814-xxx	IMM	IMM I2C Test	Aborted	IMM I2C test stopped: requested sensor, data, or record is not present.	<ol style="list-style-type: none"> <li>1. Turn off the system and disconnect it from the power source. You must disconnect the system from ac power to reset the IMM.</li> <li>2. After 45 seconds, reconnect the system to the power source and turn on the system.</li> <li>3. Run the test again.</li> <li>4. Make sure that the DSA code is at the latest level. For the latest level of DSA code, go to <a href="http://www.ibm.com/support/docview.wss?uid=psg1SERV-DSA">http://www.ibm.com/support/docview.wss?uid=psg1SERV-DSA</a>.</li> <li>5. Make sure that the IMM firmware is at the latest level. The installed firmware level is shown in the DSA event log in the Firmware/VPD section for this component. For more information, see “Updating the firmware” on page 273.</li> <li>6. Run the test again.</li> <li>7. If the failure remains, go to the IBM Web site for more troubleshooting information at <a href="http://www.ibm.com/systems/support/supportsite.wss/docdisplay?brandind=5000008&amp;Indocid=SERV-CALL">http://www.ibm.com/systems/support/supportsite.wss/docdisplay?brandind=5000008&amp;Indocid=SERV-CALL</a>.</li> </ol>

Table 7. DSA Preboot messages (continued)

<ul style="list-style-type: none"> <li>• Follow the suggested actions in the order in which they are listed in the Action column until the problem is solved.</li> <li>• See Chapter 4, “Parts listing, System x3400 M2 Types 7836 and 7837,” on page 153 to determine which components are customer replaceable units (CRU) and which components are field replaceable units (FRU).</li> <li>• If an action step is preceded by “(Trained service technician only),” that step must be performed only by a Trained service technician.</li> <li>• Go to the IBM support Web site at <a href="http://www.ibm.com/systems/support/">http://www.ibm.com/systems/support/</a> to check for technical information, hints, tips, and new device drivers or to submit a request for information.</li> </ul>					
Message number	Component	Test	State	Description	Action
166-815-xxx	IMM	IMM I2C Test	Aborted	IMM I2C test stopped: invalid data field in the request.	<ol style="list-style-type: none"> <li>1. Turn off the system and disconnect it from the power source. You must disconnect the system from ac power to reset the IMM.</li> <li>2. After 45 seconds, reconnect the system to the power source and turn on the system.</li> <li>3. Run the test again.</li> <li>4. Make sure that the DSA code is at the latest level. For the latest level of DSA code, go to <a href="http://www.ibm.com/support/docview.wss?uid=psg1SERV-DSA">http://www.ibm.com/support/docview.wss?uid=psg1SERV-DSA</a>.</li> <li>5. Make sure that the IMM firmware is at the latest level. The installed firmware level is shown in the DSA event log in the Firmware/VPD section for this component. For more information, see “Updating the firmware” on page 273.</li> <li>6. Run the test again.</li> <li>7. If the failure remains, go to the IBM Web site for more troubleshooting information at <a href="http://www.ibm.com/systems/support/supportsite.wss/docdisplay?brandind=5000008&amp;Indocid=SERV-CALL">http://www.ibm.com/systems/support/supportsite.wss/docdisplay?brandind=5000008&amp;Indocid=SERV-CALL</a>.</li> </ol>

Table 7. DSA Preboot messages (continued)

<ul style="list-style-type: none"> <li>• Follow the suggested actions in the order in which they are listed in the Action column until the problem is solved.</li> <li>• See Chapter 4, “Parts listing, System x3400 M2 Types 7836 and 7837,” on page 153 to determine which components are customer replaceable units (CRU) and which components are field replaceable units (FRU).</li> <li>• If an action step is preceded by “(Trained service technician only),” that step must be performed only by a Trained service technician.</li> <li>• Go to the IBM support Web site at <a href="http://www.ibm.com/systems/support/">http://www.ibm.com/systems/support/</a> to check for technical information, hints, tips, and new device drivers or to submit a request for information.</li> </ul>					
Message number	Component	Test	State	Description	Action
166-816-xxx	IMM	IMM I2C Test	Aborted	IMM I2C test stopped: the command is illegal for the specified sensor or record type.	<ol style="list-style-type: none"> <li>1. Turn off the system and disconnect it from the power source. You must disconnect the system from ac power to reset the IMM.</li> <li>2. After 45 seconds, reconnect the system to the power source and turn on the system.</li> <li>3. Run the test again.</li> <li>4. Make sure that the DSA code is at the latest level. For the latest level of DSA code, go to <a href="http://www.ibm.com/support/docview.wss?uid=psg1SERV-DSA">http://www.ibm.com/support/docview.wss?uid=psg1SERV-DSA</a>.</li> <li>5. Make sure that the IMM firmware is at the latest level. The installed firmware level is shown in the DSA event log in the Firmware/VPD section for this component. For more information, see “Updating the firmware” on page 273.</li> <li>6. Run the test again.</li> <li>7. If the failure remains, go to the IBM Web site for more troubleshooting information at <a href="http://www.ibm.com/systems/support/supportsite.wss/docdisplay?brandind=5000008&amp;Indocid=SERV-CALL">http://www.ibm.com/systems/support/supportsite.wss/docdisplay?brandind=5000008&amp;Indocid=SERV-CALL</a>.</li> </ol>

Table 7. DSA Preboot messages (continued)

<ul style="list-style-type: none"> <li>• Follow the suggested actions in the order in which they are listed in the Action column until the problem is solved.</li> <li>• See Chapter 4, “Parts listing, System x3400 M2 Types 7836 and 7837,” on page 153 to determine which components are customer replaceable units (CRU) and which components are field replaceable units (FRU).</li> <li>• If an action step is preceded by “(Trained service technician only),” that step must be performed only by a Trained service technician.</li> <li>• Go to the IBM support Web site at <a href="http://www.ibm.com/systems/support/">http://www.ibm.com/systems/support/</a> to check for technical information, hints, tips, and new device drivers or to submit a request for information.</li> </ul>					
Message number	Component	Test	State	Description	Action
166-817-xxx	IMM	IMM I2C Test	Aborted	IMM I2C test stopped: a command response could not be provided.	<ol style="list-style-type: none"> <li>1. Turn off the system and disconnect it from the power source. You must disconnect the system from ac power to reset the IMM.</li> <li>2. After 45 seconds, reconnect the system to the power source and turn on the system.</li> <li>3. Run the test again.</li> <li>4. Make sure that the DSA code is at the latest level. For the latest level of DSA code, go to <a href="http://www.ibm.com/support/docview.wss?uid=psg1SERV-DSA">http://www.ibm.com/support/docview.wss?uid=psg1SERV-DSA</a>.</li> <li>5. Make sure that the IMM firmware is at the latest level. The installed firmware level is shown in the DSA event log in the Firmware/VPD section for this component. For more information, see “Updating the firmware” on page 273.</li> <li>6. Run the test again.</li> <li>7. If the failure remains, go to the IBM Web site for more troubleshooting information at <a href="http://www.ibm.com/systems/support/supportsite.wss/docdisplay?brandind=5000008&amp;Indocid=SERV-CALL">http://www.ibm.com/systems/support/supportsite.wss/docdisplay?brandind=5000008&amp;Indocid=SERV-CALL</a>.</li> </ol>



Table 7. DSA Preboot messages (continued)

<ul style="list-style-type: none"> <li>• Follow the suggested actions in the order in which they are listed in the Action column until the problem is solved.</li> <li>• See Chapter 4, “Parts listing, System x3400 M2 Types 7836 and 7837,” on page 153 to determine which components are customer replaceable units (CRU) and which components are field replaceable units (FRU).</li> <li>• If an action step is preceded by “(Trained service technician only),” that step must be performed only by a Trained service technician.</li> <li>• Go to the IBM support Web site at <a href="http://www.ibm.com/systems/support/">http://www.ibm.com/systems/support/</a> to check for technical information, hints, tips, and new device drivers or to submit a request for information.</li> </ul>					
Message number	Component	Test	State	Description	Action
166-818-xxx	IMM	IMM I2C Test	Aborted	IMM I2C test stopped: cannot execute a duplicated request.	<ol style="list-style-type: none"> <li>1. Turn off the system and disconnect it from the power source. You must disconnect the system from ac power to reset the IMM.</li> <li>2. After 45 seconds, reconnect the system to the power source and turn on the system.</li> <li>3. Run the test again.</li> <li>4. Make sure that the DSA code is at the latest level. For the latest level of DSA code, go to <a href="http://www.ibm.com/support/docview.wss?uid=psg1SERV-DSA">http://www.ibm.com/support/docview.wss?uid=psg1SERV-DSA</a>.</li> <li>5. Make sure that the IMM firmware is at the latest level. The installed firmware level is shown in the DSA event log in the Firmware/VPD section for this component. For more information, see “Updating the firmware” on page 273.</li> <li>6. Run the test again.</li> <li>7. If the failure remains, go to the IBM Web site for more troubleshooting information at <a href="http://www.ibm.com/systems/support/supportsite.wss/docdisplay?brandind=5000008&amp;Indocid=SERV-CALL">http://www.ibm.com/systems/support/supportsite.wss/docdisplay?brandind=5000008&amp;Indocid=SERV-CALL</a>.</li> </ol>

Table 7. DSA Preboot messages (continued)

<ul style="list-style-type: none"> <li>• Follow the suggested actions in the order in which they are listed in the Action column until the problem is solved.</li> <li>• See Chapter 4, “Parts listing, System x3400 M2 Types 7836 and 7837,” on page 153 to determine which components are customer replaceable units (CRU) and which components are field replaceable units (FRU).</li> <li>• If an action step is preceded by “(Trained service technician only),” that step must be performed only by a Trained service technician.</li> <li>• Go to the IBM support Web site at <a href="http://www.ibm.com/systems/support/">http://www.ibm.com/systems/support/</a> to check for technical information, hints, tips, and new device drivers or to submit a request for information.</li> </ul>					
Message number	Component	Test	State	Description	Action
166-819-xxx	IMM	IMM I2C Test	Aborted	IMM I2C test stopped: a command response could not be provided; the SDR repository is in update mode.	<ol style="list-style-type: none"> <li>1. Turn off the system and disconnect it from the power source. You must disconnect the system from ac power to reset the IMM.</li> <li>2. After 45 seconds, reconnect the system to the power source and turn on the system.</li> <li>3. Run the test again.</li> <li>4. Make sure that the DSA code is at the latest level. For the latest level of DSA code, go to <a href="http://www.ibm.com/support/docview.wss?uid=psg1SERV-DSA">http://www.ibm.com/support/docview.wss?uid=psg1SERV-DSA</a>.</li> <li>5. Make sure that the IMM firmware is at the latest level. The installed firmware level is shown in the DSA event log in the Firmware/VPD section for this component. For more information, see “Updating the firmware” on page 273.</li> <li>6. Run the test again.</li> <li>7. If the failure remains, go to the IBM Web site for more troubleshooting information at <a href="http://www.ibm.com/systems/support/supportsite.wss/docdisplay?brandind=5000008&amp;Indocid=SERV-CALL">http://www.ibm.com/systems/support/supportsite.wss/docdisplay?brandind=5000008&amp;Indocid=SERV-CALL</a>.</li> </ol>
166-820-xxx	IMM	IMM I2C Test	Aborted	IMM I2C test stopped: a command response could not be provided; the device is in firmware update mode.	<ol style="list-style-type: none"> <li>1. Turn off the system and disconnect it from the power source. You must disconnect the system from ac power to reset the IMM.</li> <li>2. After 45 seconds, reconnect the system to the power source and turn on the system.</li> <li>3. Run the test again.</li> <li>4. Make sure that the DSA code and IMM firmware are at the latest level.</li> <li>5. Make sure that the IMM firmware is at the latest level. The installed firmware level is shown in the DSA event log in the Firmware/VPD section for this component. For more information, see “Updating the firmware” on page 273.</li> <li>6. Run the test again.</li> <li>7. If the failure remains, go to the IBM Web site for more troubleshooting information at <a href="http://www.ibm.com/systems/support/supportsite.wss/docdisplay?brandind=5000008&amp;Indocid=SERV-CALL">http://www.ibm.com/systems/support/supportsite.wss/docdisplay?brandind=5000008&amp;Indocid=SERV-CALL</a>.</li> </ol>

Table 7. DSA Preboot messages (continued)

<ul style="list-style-type: none"> <li>• Follow the suggested actions in the order in which they are listed in the Action column until the problem is solved.</li> <li>• See Chapter 4, “Parts listing, System x3400 M2 Types 7836 and 7837,” on page 153 to determine which components are customer replaceable units (CRU) and which components are field replaceable units (FRU).</li> <li>• If an action step is preceded by “(Trained service technician only),” that step must be performed only by a Trained service technician.</li> <li>• Go to the IBM support Web site at <a href="http://www.ibm.com/systems/support/">http://www.ibm.com/systems/support/</a> to check for technical information, hints, tips, and new device drivers or to submit a request for information.</li> </ul>					
Message number	Component	Test	State	Description	Action
166-821-xxx	IMM	IMM I2C Test	Aborted	IMM I2C test stopped: a command response could not be provided; IMM initialization is in progress.	<ol style="list-style-type: none"> <li>1. Turn off the system and disconnect it from the power source. You must disconnect the system from ac power to reset the IMM.</li> <li>2. After 45 seconds, reconnect the system to the power source and turn on the system.</li> <li>3. Run the test again.</li> <li>4. Make sure that the DSA code is at the latest level. For the latest level of DSA code, go to <a href="http://www.ibm.com/support/docview.wss?uid=psg1SERV-DSA">http://www.ibm.com/support/docview.wss?uid=psg1SERV-DSA</a>.</li> <li>5. Make sure that the IMM firmware is at the latest level. The installed firmware level is shown in the DSA event log in the Firmware/VPD section for this component. For more information, see “Updating the firmware” on page 273.</li> <li>6. Run the test again.</li> <li>7. If the failure remains, go to the IBM Web site for more troubleshooting information at <a href="http://www.ibm.com/systems/support/supportsite.wss/docdisplay?brandind=5000008&amp;Indocid=SERV-CALL">http://www.ibm.com/systems/support/supportsite.wss/docdisplay?brandind=5000008&amp;Indocid=SERV-CALL</a>.</li> </ol>

Table 7. DSA Preboot messages (continued)

<ul style="list-style-type: none"> <li>• Follow the suggested actions in the order in which they are listed in the Action column until the problem is solved.</li> <li>• See Chapter 4, “Parts listing, System x3400 M2 Types 7836 and 7837,” on page 153 to determine which components are customer replaceable units (CRU) and which components are field replaceable units (FRU).</li> <li>• If an action step is preceded by “(Trained service technician only),” that step must be performed only by a Trained service technician.</li> <li>• Go to the IBM support Web site at <a href="http://www.ibm.com/systems/support/">http://www.ibm.com/systems/support/</a> to check for technical information, hints, tips, and new device drivers or to submit a request for information.</li> </ul>					
Message number	Component	Test	State	Description	Action
166-822-xxx	IMM	IMM I2C Test	Aborted	IMM I2C test stopped: the destination is unavailable.	<ol style="list-style-type: none"> <li>1. Turn off the system and disconnect it from the power source. You must disconnect the system from ac power to reset the IMM.</li> <li>2. After 45 seconds, reconnect the system to the power source and turn on the system.</li> <li>3. Run the test again.</li> <li>4. Make sure that the DSA code is at the latest level. For the latest level of DSA code, go to <a href="http://www.ibm.com/support/docview.wss?uid=psg1SERV-DSA">http://www.ibm.com/support/docview.wss?uid=psg1SERV-DSA</a>.</li> <li>5. Make sure that the IMM firmware is at the latest level. The installed firmware level is shown in the DSA event log in the Firmware/VPD section for this component. For more information, see “Updating the firmware” on page 273.</li> <li>6. Run the test again.</li> <li>7. If the failure remains, go to the IBM Web site for more troubleshooting information at <a href="http://www.ibm.com/systems/support/supportsite.wss/docdisplay?brandind=5000008&amp;Indocid=SERV-CALL">http://www.ibm.com/systems/support/supportsite.wss/docdisplay?brandind=5000008&amp;Indocid=SERV-CALL</a>.</li> </ol>

Table 7. DSA Preboot messages (continued)

<ul style="list-style-type: none"> <li>• Follow the suggested actions in the order in which they are listed in the Action column until the problem is solved.</li> <li>• See Chapter 4, “Parts listing, System x3400 M2 Types 7836 and 7837,” on page 153 to determine which components are customer replaceable units (CRU) and which components are field replaceable units (FRU).</li> <li>• If an action step is preceded by “(Trained service technician only),” that step must be performed only by a Trained service technician.</li> <li>• Go to the IBM support Web site at <a href="http://www.ibm.com/systems/support/">http://www.ibm.com/systems/support/</a> to check for technical information, hints, tips, and new device drivers or to submit a request for information.</li> </ul>					
Message number	Component	Test	State	Description	Action
166-823-xxx	IMM	IMM I2C Test	Aborted	IMM I2C test stopped: cannot execute the command; insufficient privilege level.	<ol style="list-style-type: none"> <li>1. Turn off the system and disconnect it from the power source. You must disconnect the system from ac power to reset the IMM.</li> <li>2. After 45 seconds, reconnect the system to the power source and turn on the system.</li> <li>3. Run the test again.</li> <li>4. Make sure that the DSA code is at the latest level. For the latest level of DSA code, go to <a href="http://www.ibm.com/support/docview.wss?uid=psg1SERV-DSA">http://www.ibm.com/support/docview.wss?uid=psg1SERV-DSA</a>.</li> <li>5. Make sure that the IMM firmware is at the latest level. The installed firmware level is shown in the DSA event log in the Firmware/VPD section for this component. For more information, see “Updating the firmware” on page 273.</li> <li>6. Run the test again.</li> <li>7. If the failure remains, go to the IBM Web site for more troubleshooting information at <a href="http://www.ibm.com/systems/support/supportsite.wss/docdisplay?brandind=5000008&amp;Indocid=SERV-CALL">http://www.ibm.com/systems/support/supportsite.wss/docdisplay?brandind=5000008&amp;Indocid=SERV-CALL</a>.</li> </ol>

Table 7. DSA Preboot messages (continued)

<ul style="list-style-type: none"> <li>• Follow the suggested actions in the order in which they are listed in the Action column until the problem is solved.</li> <li>• See Chapter 4, “Parts listing, System x3400 M2 Types 7836 and 7837,” on page 153 to determine which components are customer replaceable units (CRU) and which components are field replaceable units (FRU).</li> <li>• If an action step is preceded by “(Trained service technician only),” that step must be performed only by a Trained service technician.</li> <li>• Go to the IBM support Web site at <a href="http://www.ibm.com/systems/support/">http://www.ibm.com/systems/support/</a> to check for technical information, hints, tips, and new device drivers or to submit a request for information.</li> </ul>					
Message number	Component	Test	State	Description	Action
166-824-xxx	IMM	IMM I2C Test	Aborted	IMM I2C test stopped: cannot execute the command.	<ol style="list-style-type: none"> <li>1. Turn off the system and disconnect it from the power source. You must disconnect the system from ac power to reset the IMM.</li> <li>2. After 45 seconds, reconnect the system to the power source and turn on the system.</li> <li>3. Run the test again.</li> <li>4. Make sure that the DSA code is at the latest level. For the latest level of DSA code, go to <a href="http://www.ibm.com/support/docview.wss?uid=psg1SERV-DSA">http://www.ibm.com/support/docview.wss?uid=psg1SERV-DSA</a>.</li> <li>5. Make sure that the IMM firmware is at the latest level. The installed firmware level is shown in the DSA event log in the Firmware/VPD section for this component. For more information, see “Updating the firmware” on page 273.</li> <li>6. Run the test again.</li> <li>7. If the failure remains, go to the IBM Web site for more troubleshooting information at <a href="http://www.ibm.com/systems/support/supportsite.wss/docdisplay?brandind=5000008&amp;Indocid=SERV-CALL">http://www.ibm.com/systems/support/supportsite.wss/docdisplay?brandind=5000008&amp;Indocid=SERV-CALL</a>.</li> </ol>

Table 7. DSA Preboot messages (continued)

<ul style="list-style-type: none"> <li>• Follow the suggested actions in the order in which they are listed in the Action column until the problem is solved.</li> <li>• See Chapter 4, “Parts listing, System x3400 M2 Types 7836 and 7837,” on page 153 to determine which components are customer replaceable units (CRU) and which components are field replaceable units (FRU).</li> <li>• If an action step is preceded by “(Trained service technician only),” that step must be performed only by a Trained service technician.</li> <li>• Go to the IBM support Web site at <a href="http://www.ibm.com/systems/support/">http://www.ibm.com/systems/support/</a> to check for technical information, hints, tips, and new device drivers or to submit a request for information.</li> </ul>					
Message number	Component	Test	State	Description	Action
166-901-xxx	IMM	IMM I2C Test	Failed	The IMM indicates a failure in the H8 bus (Bus 0)	<ol style="list-style-type: none"> <li>1. Turn off the system and disconnect it from the power source. You must disconnect the system from ac power to reset the IMM.</li> <li>2. After 45 seconds, reconnect the system to the power source and turn on the system.</li> <li>3. Run the test again.</li> <li>4. Make sure that the DSA code is at the latest level. For the latest level of DSA code, go to <a href="http://www.ibm.com/support/docview.wss?uid=psg1SERV-DSA">http://www.ibm.com/support/docview.wss?uid=psg1SERV-DSA</a>.</li> <li>5. Make sure that the IMM firmware is at the latest level. The installed firmware level is shown in the DSA event log in the Firmware/VPD section for this component. For more information, see “Updating the firmware” on page 273.</li> <li>6. Run the test again.</li> <li>7. Remove power from the system.</li> <li>8. (Trained service technician only) Replace the system board.</li> <li>9. Reconnect the system to power and turn on the system.</li> <li>10. Run the test again.</li> <li>11. If the failure remains, go to the IBM Web site for more troubleshooting information at <a href="http://www.ibm.com/systems/support/supportsite.wss/docdisplay?brandind=5000008&amp;Indocid=SERV-CALL">http://www.ibm.com/systems/support/supportsite.wss/docdisplay?brandind=5000008&amp;Indocid=SERV-CALL</a>.</li> </ol>

Table 7. DSA Preboot messages (continued)

<ul style="list-style-type: none"> <li>• Follow the suggested actions in the order in which they are listed in the Action column until the problem is solved.</li> <li>• See Chapter 4, “Parts listing, System x3400 M2 Types 7836 and 7837,” on page 153 to determine which components are customer replaceable units (CRU) and which components are field replaceable units (FRU).</li> <li>• If an action step is preceded by “(Trained service technician only),” that step must be performed only by a Trained service technician.</li> <li>• Go to the IBM support Web site at <a href="http://www.ibm.com/systems/support/">http://www.ibm.com/systems/support/</a> to check for technical information, hints, tips, and new device drivers or to submit a request for information.</li> </ul>					
Message number	Component	Test	State	Description	Action
166-902-xxx	IMM	IMM I2C Test	Failed	The IMM indicates a failure in the I/O expander (Bus 1).	<ol style="list-style-type: none"> <li>1. Turn off the system and disconnect it from the power source. You must disconnect the system from ac power to reset the IMM.</li> <li>2. After 45 seconds, reconnect the system to the power source and turn on the system.</li> <li>3. Run the test again.</li> <li>4. Make sure that the DSA code is at the latest level. For the latest level of DSA code, go to <a href="http://www.ibm.com/support/docview.wss?uid=psg1SERV-DSA">http://www.ibm.com/support/docview.wss?uid=psg1SERV-DSA</a>.</li> <li>5. Make sure that the IMM firmware is at the latest level. The installed firmware level is shown in the DSA event log in the Firmware/VPD section for this component. For more information, see “Updating the firmware” on page 273.</li> <li>6. Run the test again.</li> <li>7. Turn off the system and disconnect it from the power source.</li> <li>8. Reseat the SAS backplate.</li> <li>9. Reconnect the system to the power source and turn on the system.</li> <li>10. Run the test again.</li> <li>11. Turn off the system and disconnect it from the power source.</li> <li>12. (Trained service technician only) Replace the system board.</li> <li>13. Reconnect the system to the power source and turn on the system.</li> <li>14. Run the test again.</li> </ol>
166-902-xxx	IMM	IMM I2C Test	Failed	The IMM indicates a failure in the memory bus.	<ol style="list-style-type: none"> <li>1. If the failure remains, go to the IBM Web site for more troubleshooting information at <a href="http://www.ibm.com/systems/support/supportsite.wss/docdisplay?brandind=5000008&amp;Indocid=SERV-CALL">http://www.ibm.com/systems/support/supportsite.wss/docdisplay?brandind=5000008&amp;Indocid=SERV-CALL</a>.</li> </ol>



Table 7. DSA Preboot messages (continued)

<ul style="list-style-type: none"> <li>• Follow the suggested actions in the order in which they are listed in the Action column until the problem is solved.</li> <li>• See Chapter 4, “Parts listing, System x3400 M2 Types 7836 and 7837,” on page 153 to determine which components are customer replaceable units (CRU) and which components are field replaceable units (FRU).</li> <li>• If an action step is preceded by “(Trained service technician only),” that step must be performed only by a Trained service technician.</li> <li>• Go to the IBM support Web site at <a href="http://www.ibm.com/systems/support/">http://www.ibm.com/systems/support/</a> to check for technical information, hints, tips, and new device drivers or to submit a request for information.</li> </ul>					
Message number	Component	Test	State	Description	Action
166-903-xxx	IMM	IMM I2C Test	Failed	The IMM indicates a failure in the DIMM bus (Bus 2).	<ol style="list-style-type: none"> <li>1. Turn off the system and disconnect it from the power source. You must disconnect the system from ac power to reset the IMM.</li> <li>2. After 45 seconds, reconnect the system to the power source and turn on the system.</li> <li>3. Run the test again.</li> <li>4. Make sure that the DSA code is at the latest level. For the latest level of DSA code, go to <a href="http://www.ibm.com/support/docview.wss?uid=psg1SERV-DSA">http://www.ibm.com/support/docview.wss?uid=psg1SERV-DSA</a>.</li> <li>5. Make sure that the IMM firmware is at the latest level. The installed firmware level is shown in the DSA event log in the Firmware/VPD section for this component. For more information, see “Updating the firmware” on page 273.</li> <li>6. Run the test again.</li> <li>7. Disconnect the system from the power source.</li> <li>8. Replace the DIMMs one at a time, and run the test again after replacing each DIMM.</li> <li>9. Reconnect the system to the power source and turn on the system.</li> <li>10. Run the test again.</li> <li>11. Turn off the system and disconnect it from the power source.</li> <li>12. Reseat all of the DIMMs.</li> <li>13. Reconnect the system to the power source and turn on the system.</li> <li>14. Run the test again.</li> <li>15. Turn off the system and disconnect it from the power source.</li> <li>16. (Trained service technician only) Replace the system board.</li> <li>17. Reconnect the system to the power source and turn on the system.</li> <li>18. Run the test again.</li> <li>19. If the failure remains, go to the IBM Web site for more troubleshooting information at <a href="http://www.ibm.com/systems/support/supportsite.wss/docdisplay?brandind=5000008&amp;Indocid=SERV-CALL">http://www.ibm.com/systems/support/supportsite.wss/docdisplay?brandind=5000008&amp;Indocid=SERV-CALL</a>.</li> </ol>

Table 7. DSA Preboot messages (continued)

<ul style="list-style-type: none"> <li>• Follow the suggested actions in the order in which they are listed in the Action column until the problem is solved.</li> <li>• See Chapter 4, “Parts listing, System x3400 M2 Types 7836 and 7837,” on page 153 to determine which components are customer replaceable units (CRU) and which components are field replaceable units (FRU).</li> <li>• If an action step is preceded by “(Trained service technician only),” that step must be performed only by a Trained service technician.</li> <li>• Go to the IBM support Web site at <a href="http://www.ibm.com/systems/support/">http://www.ibm.com/systems/support/</a> to check for technical information, hints, tips, and new device drivers or to submit a request for information.</li> </ul>					
Message number	Component	Test	State	Description	Action
166-904-xxx	IMM	IMM I2C Test	Failed	The IMM indicates a failure in the power supply bus (Bus 3).	<ol style="list-style-type: none"> <li>1. Turn off the system and disconnect it from the power source. You must disconnect the system from ac power to reset the IMM.</li> <li>2. After 45 seconds, reconnect the system to the power source and turn on the system.</li> <li>3. Run the test again.</li> <li>4. Make sure that the DSA code is at the latest level. For the latest level of DSA code, go to <a href="http://www.ibm.com/support/docview.wss?uid=psg1SERV-DSA">http://www.ibm.com/support/docview.wss?uid=psg1SERV-DSA</a>.</li> <li>5. Make sure that the IMM firmware is at the latest level. The installed firmware level is shown in the DSA event log in the Firmware/VPD section for this component. For more information, see “Updating the firmware” on page 273.</li> <li>6. Run the test again.</li> <li>7. Reseat the power supply.</li> <li>8. Run the test again.</li> <li>9. Turn off the system and disconnect it from the power source.</li> <li>10. Trained service technician only) Replace the system board.</li> <li>11. Reconnect the system to the power source and turn on the system.</li> <li>12. Run the test again.</li> <li>13. If the failure remains, go to the IBM Web site for more troubleshooting information at <a href="http://www.ibm.com/systems/support/supportsite.wss/docdisplay?brandind=5000008&amp;Indocid=SERV-CALL">http://www.ibm.com/systems/support/supportsite.wss/docdisplay?brandind=5000008&amp;Indocid=SERV-CALL</a>.</li> </ol>

Table 7. DSA Preboot messages (continued)

<ul style="list-style-type: none"> <li>Follow the suggested actions in the order in which they are listed in the Action column until the problem is solved.</li> <li>See Chapter 4, “Parts listing, System x3400 M2 Types 7836 and 7837,” on page 153 to determine which components are customer replaceable units (CRU) and which components are field replaceable units (FRU).</li> <li>If an action step is preceded by “(Trained service technician only),” that step must be performed only by a Trained service technician.</li> <li>Go to the IBM support Web site at <a href="http://www.ibm.com/systems/support/">http://www.ibm.com/systems/support/</a> to check for technical information, hints, tips, and new device drivers or to submit a request for information.</li> </ul>					
Message number	Component	Test	State	Description	Action
166-905-xxx	IMM	IMM I2C Test	Failed	The IMM indicates a failure in the SAS backplate and sensor bus (Bus 4).	<ol style="list-style-type: none"> <li>Turn off the system and disconnect it from the power source. You must disconnect the system from ac power to reset the IMM.</li> <li>After 45 seconds, reconnect the system to the power source and turn on the system.</li> <li>Run the test again.</li> <li>Make sure that the DSA code is at the latest level. For the latest level of DSA code, go to <a href="http://www.ibm.com/support/docview.wss?uid=psg1SERV-DSA">http://www.ibm.com/support/docview.wss?uid=psg1SERV-DSA</a>.</li> <li>Make sure that the IMM firmware is at the latest level. The installed firmware level is shown in the DSA event log in the Firmware/VPD section for this component. For more information, see “Updating the firmware” on page 273.</li> <li>Run the test again.</li> <li>Turn off the system and disconnect it from the power source.</li> <li>Reseat the hard disk drive backplate.</li> <li>Reconnect the system to the power source and turn on the system.</li> <li>Run the test again.</li> <li>Turn off the system and disconnect it from the power source.</li> <li>Trained service technician only) Replace the system board.</li> <li>Reconnect the system to the power source and turn on the system.</li> <li>Run the test again.</li> <li>If the failure remains, go to the IBM Web site for more troubleshooting information at <a href="http://www.ibm.com/systems/support/supportsite.wss/docdisplay?brandind=5000008&amp;Indocid=SERV-CALL">http://www.ibm.com/systems/support/supportsite.wss/docdisplay?brandind=5000008&amp;Indocid=SERV-CALL</a>.</li> </ol>

Table 7. DSA Preboot messages (continued)

<ul style="list-style-type: none"> <li>• Follow the suggested actions in the order in which they are listed in the Action column until the problem is solved.</li> <li>• See Chapter 4, “Parts listing, System x3400 M2 Types 7836 and 7837,” on page 153 to determine which components are customer replaceable units (CRU) and which components are field replaceable units (FRU).</li> <li>• If an action step is preceded by “(Trained service technician only),” that step must be performed only by a Trained service technician.</li> <li>• Go to the IBM support Web site at <a href="http://www.ibm.com/systems/support/">http://www.ibm.com/systems/support/</a> to check for technical information, hints, tips, and new device drivers or to submit a request for information.</li> </ul>					
Message number	Component	Test	State	Description	Action
166-906-xxx	IMM	IMM I2C Test	Failed	The IMM indicates a failure in the PCI bus (Bus 5).	<ol style="list-style-type: none"> <li>1. Turn off the system and disconnect it from the power source. You must disconnect the system from ac power to reset the IMM.</li> <li>2. After 45 seconds, reconnect the system to the power source and turn on the system.</li> <li>3. Run the test again.</li> <li>4. Make sure that the DSA code is at the latest level. For the latest level of DSA code, go to <a href="http://www.ibm.com/support/docview.wss?uid=psg1SERV-DSA">http://www.ibm.com/support/docview.wss?uid=psg1SERV-DSA</a>.</li> <li>5. Make sure that the IMM firmware is at the latest level. The installed firmware level is shown in the DSA event log in the Firmware/VPD section for this component. For more information, see “Updating the firmware” on page 273.</li> <li>6. Run the test again.</li> <li>7. Turn off the system and disconnect it from the power source.</li> <li>8. Trained service technician only) Replace the system board.</li> <li>9. Reconnect the system to the power source and turn on the system.</li> <li>10. Run the test again.</li> <li>11. If the failure remains, go to the IBM Web site for more troubleshooting information at <a href="http://www.ibm.com/systems/support/supportsite.wss/docdisplay?brandind=5000008&amp;Indocid=SERV-CALL">http://www.ibm.com/systems/support/supportsite.wss/docdisplay?brandind=5000008&amp;Indocid=SERV-CALL</a>.</li> </ol>

Table 7. DSA Preboot messages (continued)

<ul style="list-style-type: none"> <li>• Follow the suggested actions in the order in which they are listed in the Action column until the problem is solved.</li> <li>• See Chapter 4, “Parts listing, System x3400 M2 Types 7836 and 7837,” on page 153 to determine which components are customer replaceable units (CRU) and which components are field replaceable units (FRU).</li> <li>• If an action step is preceded by “(Trained service technician only),” that step must be performed only by a Trained service technician.</li> <li>• Go to the IBM support Web site at <a href="http://www.ibm.com/systems/support/">http://www.ibm.com/systems/support/</a> to check for technical information, hints, tips, and new device drivers or to submit a request for information.</li> </ul>					
Message number	Component	Test	State	Description	Action
201-801-xxx	Memory	Memory Test	Aborted	Test canceled: the system UEFI programmed the memory controller with an invalid CBAR address	<ol style="list-style-type: none"> <li>1. Turn off and restart the system.</li> <li>2. Run the test again.</li> <li>3. Make sure that the server firmware is at the latest level. The installed firmware level is shown in the DSA event log in the Firmware/VPD section for this component. For more information, see “Updating the firmware” on page 273.</li> <li>4. Run the test again.</li> <li>5. If the failure remains, go to the IBM Web site for more troubleshooting information at <a href="http://www.ibm.com/systems/support/supportsite.wss/docdisplay?brandind=5000008&amp;Indocid=SERV-CALL">http://www.ibm.com/systems/support/supportsite.wss/docdisplay?brandind=5000008&amp;Indocid=SERV-CALL</a>.</li> </ol>
201-802-xxx	Memory	Memory Test	Aborted	Test canceled: the end address in the E820 function is less than 16 MB.	<ol style="list-style-type: none"> <li>1. Turn off and restart the system.</li> <li>2. Run the test again.</li> <li>3. Make sure that all DIMMs are enabled in the Setup utility.</li> <li>4. Make sure that the server firmware is at the latest level. The installed firmware level is shown in the DSA event log in the Firmware/VPD section for this component. For more information, see “Updating the firmware” on page 273.</li> <li>5. Run the test again.</li> <li>6. If the failure remains, go to the IBM Web site for more troubleshooting information at <a href="http://www.ibm.com/systems/support/supportsite.wss/docdisplay?brandind=5000008&amp;Indocid=SERV-CALL">http://www.ibm.com/systems/support/supportsite.wss/docdisplay?brandind=5000008&amp;Indocid=SERV-CALL</a>.</li> </ol>

Table 7. DSA Preboot messages (continued)

<ul style="list-style-type: none"> <li>• Follow the suggested actions in the order in which they are listed in the Action column until the problem is solved.</li> <li>• See Chapter 4, “Parts listing, System x3400 M2 Types 7836 and 7837,” on page 153 to determine which components are customer replaceable units (CRU) and which components are field replaceable units (FRU).</li> <li>• If an action step is preceded by “(Trained service technician only),” that step must be performed only by a Trained service technician.</li> <li>• Go to the IBM support Web site at <a href="http://www.ibm.com/systems/support/">http://www.ibm.com/systems/support/</a> to check for technical information, hints, tips, and new device drivers or to submit a request for information.</li> </ul>					
Message number	Component	Test	State	Description	Action
201-803-xxx	Memory	Memory Test	Aborted	Test canceled: could not enable the processor cache.	<ol style="list-style-type: none"> <li>1. Turn off and restart the system.</li> <li>2. Run the test again.</li> <li>3. Make sure that the server firmware is at the latest level. The installed firmware level is shown in the DSA event log in the Firmware/VPD section for this component. For more information, see “Updating the firmware” on page 273.</li> <li>4. Run the test again.</li> <li>5. If the failure remains, go to the IBM Web site for more troubleshooting information at <a href="http://www.ibm.com/systems/support/supportsite.wss/docdisplay?brandind=5000008&amp;Indocid=SERV-CALL">http://www.ibm.com/systems/support/supportsite.wss/docdisplay?brandind=5000008&amp;Indocid=SERV-CALL</a>.</li> </ol>
201-804-xxx	Memory	Memory Test	Aborted	Test canceled: the memory controller buffer request failed.	<ol style="list-style-type: none"> <li>1. Turn off and restart the system.</li> <li>2. Run the test again.</li> <li>3. Make sure that the server firmware is at the latest level. The installed firmware level is shown in the DSA event log in the Firmware/VPD section for this component. For more information, see “Updating the firmware” on page 273.</li> <li>4. Run the test again.</li> <li>5. If the failure remains, go to the IBM Web site for more troubleshooting information at <a href="http://www.ibm.com/systems/support/supportsite.wss/docdisplay?brandind=5000008&amp;Indocid=SERV-CALL">http://www.ibm.com/systems/support/supportsite.wss/docdisplay?brandind=5000008&amp;Indocid=SERV-CALL</a>.</li> </ol>
201-805-xxx	Memory	Memory Test	Aborted	Test canceled: the memory controller display/alter write operation was not completed.	<ol style="list-style-type: none"> <li>1. Turn off and restart the system.</li> <li>2. Run the test again.</li> <li>3. Make sure that the server firmware is at the latest level. The installed firmware level is shown in the DSA event log in the Firmware/VPD section for this component. For more information, see “Updating the firmware” on page 273.</li> <li>4. Run the test again.</li> <li>5. If the failure remains, go to the IBM Web site for more troubleshooting information at <a href="http://www.ibm.com/systems/support/supportsite.wss/docdisplay?brandind=5000008&amp;Indocid=SERV-CALL">http://www.ibm.com/systems/support/supportsite.wss/docdisplay?brandind=5000008&amp;Indocid=SERV-CALL</a>.</li> </ol>

Table 7. DSA Preboot messages (continued)

<ul style="list-style-type: none"> <li>• Follow the suggested actions in the order in which they are listed in the Action column until the problem is solved.</li> <li>• See Chapter 4, “Parts listing, System x3400 M2 Types 7836 and 7837,” on page 153 to determine which components are customer replaceable units (CRU) and which components are field replaceable units (FRU).</li> <li>• If an action step is preceded by “(Trained service technician only),” that step must be performed only by a Trained service technician.</li> <li>• Go to the IBM support Web site at <a href="http://www.ibm.com/systems/support/">http://www.ibm.com/systems/support/</a> to check for technical information, hints, tips, and new device drivers or to submit a request for information.</li> </ul>					
Message number	Component	Test	State	Description	Action
201-806-xxx	Memory	Memory Test	Aborted	Test canceled: the memory controller fast scrub operation was not completed.	<ol style="list-style-type: none"> <li>1. Turn off and restart the system.</li> <li>2. Run the test again.</li> <li>3. Make sure that the server firmware is at the latest level. The installed firmware level is shown in the DSA event log in the Firmware/VPD section for this component. For more information, see “Updating the firmware” on page 273.</li> <li>4. Run the test again.</li> <li>5. If the failure remains, go to the IBM Web site for more troubleshooting information at <a href="http://www.ibm.com/systems/support/supportsite.wss/docdisplay?brandind=5000008&amp;Indocid=SERV-CALL">http://www.ibm.com/systems/support/supportsite.wss/docdisplay?brandind=5000008&amp;Indocid=SERV-CALL</a>.</li> </ol>
201-807-xxx	Memory	Memory Test	Aborted	Test canceled: the memory controller buffer free request failed.	<ol style="list-style-type: none"> <li>1. Turn off and restart the system.</li> <li>2. Run the test again.</li> <li>3. Make sure that the server firmware is at the latest level. The installed firmware level is shown in the DSA event log in the Firmware/VPD section for this component. For more information, see “Updating the firmware” on page 273.</li> <li>4. Run the test again.</li> <li>5. If the failure remains, go to the IBM Web site for more troubleshooting information at <a href="http://www.ibm.com/systems/support/supportsite.wss/docdisplay?brandind=5000008&amp;Indocid=SERV-CALL">http://www.ibm.com/systems/support/supportsite.wss/docdisplay?brandind=5000008&amp;Indocid=SERV-CALL</a>.</li> </ol>
201-808-xxx	Memory	Memory Test	Aborted	Test canceled: memory controller display/alter buffer execute error.	<ol style="list-style-type: none"> <li>1. Turn off and restart the system.</li> <li>2. Run the test again.</li> <li>3. Make sure that the server firmware is at the latest level. The installed firmware level is shown in the DSA event log in the Firmware/VPD section for this component. For more information, see “Updating the firmware” on page 273.</li> <li>4. Run the test again.</li> <li>5. If the failure remains, go to the IBM Web site for more troubleshooting information at <a href="http://www.ibm.com/systems/support/supportsite.wss/docdisplay?brandind=5000008&amp;Indocid=SERV-CALL">http://www.ibm.com/systems/support/supportsite.wss/docdisplay?brandind=5000008&amp;Indocid=SERV-CALL</a>.</li> </ol>

Table 7. DSA Preboot messages (continued)

<ul style="list-style-type: none"> <li>• Follow the suggested actions in the order in which they are listed in the Action column until the problem is solved.</li> <li>• See Chapter 4, “Parts listing, System x3400 M2 Types 7836 and 7837,” on page 153 to determine which components are customer replaceable units (CRU) and which components are field replaceable units (FRU).</li> <li>• If an action step is preceded by “(Trained service technician only),” that step must be performed only by a Trained service technician.</li> <li>• Go to the IBM support Web site at <a href="http://www.ibm.com/systems/support/">http://www.ibm.com/systems/support/</a> to check for technical information, hints, tips, and new device drivers or to submit a request for information.</li> </ul>					
Message number	Component	Test	State	Description	Action
201-809-xxx	Memory	Memory Test	Aborted	Test canceled program error: operation running fast scrub.	<ol style="list-style-type: none"> <li>1. Turn off and restart the system.</li> <li>2. Run the test again.</li> <li>3. Make sure that the DSA code is at the latest level. For the latest level of DSA code, go to <a href="http://www.ibm.com/support/docview.wss?uid=psg1SERV-DSA">http://www.ibm.com/support/docview.wss?uid=psg1SERV-DSA</a>.</li> <li>4. Make sure that the server firmware is at the latest level. The installed firmware level is shown in the DSA event log in the Firmware/VPD section for this component. For more information, see “Updating the firmware” on page 273.</li> <li>5. Run the test again.</li> <li>6. If the failure remains, go to the IBM Web site for more troubleshooting information at <a href="http://www.ibm.com/systems/support/supportsite.wss/docdisplay?brandind=5000008&amp;Indocid=SERV-CALL">http://www.ibm.com/systems/support/supportsite.wss/docdisplay?brandind=5000008&amp;Indocid=SERV-CALL</a>.</li> </ol>
201-810-xxx	Memory	Memory Test	Aborted	Test stopped: unknown error code xxx received in COMMONEXIT procedure.	<ol style="list-style-type: none"> <li>1. Turn off and restart the system.</li> <li>2. Run the test again.</li> <li>3. Make sure that the DSA code is at the latest level. For the latest level of DSA code, go to <a href="http://www.ibm.com/support/docview.wss?uid=psg1SERV-DSA">http://www.ibm.com/support/docview.wss?uid=psg1SERV-DSA</a>.</li> <li>4. Make sure that the server firmware is at the latest level. The installed firmware level is shown in the DSA event log in the Firmware/VPD section for this component. For more information, see “Updating the firmware” on page 273.</li> <li>5. Run the test again.</li> <li>6. If the failure remains, go to the IBM Web site for more troubleshooting information at <a href="http://www.ibm.com/systems/support/supportsite.wss/docdisplay?brandind=5000008&amp;Indocid=SERV-CALL">http://www.ibm.com/systems/support/supportsite.wss/docdisplay?brandind=5000008&amp;Indocid=SERV-CALL</a>.</li> </ol>



Table 7. DSA Preboot messages (continued)

<ul style="list-style-type: none"> <li>• Follow the suggested actions in the order in which they are listed in the Action column until the problem is solved.</li> <li>• See Chapter 4, “Parts listing, System x3400 M2 Types 7836 and 7837,” on page 153 to determine which components are customer replaceable units (CRU) and which components are field replaceable units (FRU).</li> <li>• If an action step is preceded by “(Trained service technician only),” that step must be performed only by a Trained service technician.</li> <li>• Go to the IBM support Web site at <a href="http://www.ibm.com/systems/support/">http://www.ibm.com/systems/support/</a> to check for technical information, hints, tips, and new device drivers or to submit a request for information.</li> </ul>					
Message number	Component	Test	State	Description	Action
201-901-xxx	Memory	Memory Test	Failed	Test failure: single-bit error, failing DIMM z.	<ol style="list-style-type: none"> <li>1. Turn off the system and disconnect it from the power source.</li> <li>2. Reseat DIMM z.</li> <li>3. Reconnect the system to power and turn on the system.</li> <li>4. Make sure that the DSA code is at the latest level. For the latest level of DSA code, go to <a href="http://www.ibm.com/support/docview.wss?uid=psg1SERV-DSA">http://www.ibm.com/support/docview.wss?uid=psg1SERV-DSA</a>.</li> <li>5. Make sure that the server firmware is at the latest level. The installed firmware level is shown in the DSA event log in the Firmware/VPD section for this component. For more information, see “Updating the firmware” on page 273.</li> <li>6. Run the test again.</li> <li>7. Replace the failing DIMMs.</li> <li>8. Re-enable all memory in the Setup utility (see “Using the Setup utility” on page 277).</li> <li>9. Run the test again.</li> <li>10. Replace the failing DIMM.</li> <li>11. If the failure remains, go to the IBM Web site for more troubleshooting information at <a href="http://www.ibm.com/systems/support/supportsite.wss/docdisplay?brandind=5000008&amp;Indocid=SERV-CALL">http://www.ibm.com/systems/support/supportsite.wss/docdisplay?brandind=5000008&amp;Indocid=SERV-CALL</a>.</li> </ol>

Table 7. DSA Preboot messages (continued)

<ul style="list-style-type: none"> <li>• Follow the suggested actions in the order in which they are listed in the Action column until the problem is solved.</li> <li>• See Chapter 4, “Parts listing, System x3400 M2 Types 7836 and 7837,” on page 153 to determine which components are customer replaceable units (CRU) and which components are field replaceable units (FRU).</li> <li>• If an action step is preceded by “(Trained service technician only),” that step must be performed only by a Trained service technician.</li> <li>• Go to the IBM support Web site at <a href="http://www.ibm.com/systems/support/">http://www.ibm.com/systems/support/</a> to check for technical information, hints, tips, and new device drivers or to submit a request for information.</li> </ul>					
Message number	Component	Test	State	Description	Action
201-902-xxx	Memory	Memory Test	Failed	Test failure: single-bit and multi-bit error, failing DIMM z	<ol style="list-style-type: none"> <li>1. Turn off the system and disconnect it from the power source.</li> <li>2. Reseat DIMM z.</li> <li>3. Reconnect the system to power and turn on the system.</li> <li>4. Make sure that the DSA code is at the latest level. For the latest level of DSA code, go to <a href="http://www.ibm.com/support/docview.wss?uid=psg1SERV-DSA">http://www.ibm.com/support/docview.wss?uid=psg1SERV-DSA</a>.</li> <li>5. Make sure that the server firmware is at the latest level. The installed firmware level is shown in the DSA event log in the Firmware/VPD section for this component. For more information, see “Updating the firmware” on page 273.</li> <li>6. Run the test again.</li> <li>7. Replace the failing DIMMs.</li> <li>8. Re-enable all memory in the Setup utility see “Using the Setup utility” on page 277).</li> <li>9. Run the test again.</li> <li>10. If the failure remains, go to the IBM Web site for more troubleshooting information at <a href="http://www.ibm.com/systems/support/supportsite.wss/docdisplay?brandind=5000008&amp;Indocid=SERV-CALL">http://www.ibm.com/systems/support/supportsite.wss/docdisplay?brandind=5000008&amp;Indocid=SERV-CALL</a>.</li> </ol>

Table 7. DSA Preboot messages (continued)

<ul style="list-style-type: none"> <li>• Follow the suggested actions in the order in which they are listed in the Action column until the problem is solved.</li> <li>• See Chapter 4, “Parts listing, System x3400 M2 Types 7836 and 7837,” on page 153 to determine which components are customer replaceable units (CRU) and which components are field replaceable units (FRU).</li> <li>• If an action step is preceded by “(Trained service technician only),” that step must be performed only by a Trained service technician.</li> <li>• Go to the IBM support Web site at <a href="http://www.ibm.com/systems/support/">http://www.ibm.com/systems/support/</a> to check for technical information, hints, tips, and new device drivers or to submit a request for information.</li> </ul>					
Message number	Component	Test	State	Description	Action
202-801-xxx	Memory	Memory Stress Test	Aborted	Internal program error.	<ol style="list-style-type: none"> <li>1. Turn off and restart the system.</li> <li>2. Make sure that the DSA code is at the latest level. For the latest level of DSA code, go to <a href="http://www.ibm.com/support/docview.wss?uid=psg1SERV-DSA">http://www.ibm.com/support/docview.wss?uid=psg1SERV-DSA</a>.</li> <li>3. Make sure that the server firmware is at the latest level. The installed firmware level is shown in the DSA event log in the Firmware/VPD section for this component. For more information, see “Updating the firmware” on page 273.</li> <li>4. Run the test again.</li> <li>5. Turn off and restart the system if necessary to recover from a hung state.</li> <li>6. Run the memory diagnostics to identify the specific failing DIMM.</li> <li>7. If the failure remains, go to the IBM Web site for more troubleshooting information at <a href="http://www.ibm.com/systems/support/supportsite.wss/docdisplay?brandind=5000008&amp;Indocid=SERV-CALL">http://www.ibm.com/systems/support/supportsite.wss/docdisplay?brandind=5000008&amp;Indocid=SERV-CALL</a>.</li> </ol>
202-802-xxx	Memory	Memory Stress Test	Failed	General error: memory size is insufficient to run the test.	<ol style="list-style-type: none"> <li>1. Make sure that all memory is enabled by checking the Available System Memory in the Resource Utilization section of the DSA event log. If necessary, enable all memory in the Setup utility (see “Using the Setup utility” on page 277).</li> <li>2. Make sure that the DSA code is at the latest level. For the latest level of DSA code, go to <a href="http://www.ibm.com/support/docview.wss?uid=psg1SERV-DSA">http://www.ibm.com/support/docview.wss?uid=psg1SERV-DSA</a>.</li> <li>3. Run the test again.</li> <li>4. Run the standard memory test to validate all memory.</li> <li>5. If the failure remains, go to the IBM Web site for more troubleshooting information at <a href="http://www.ibm.com/systems/support/supportsite.wss/docdisplay?brandind=5000008&amp;Indocid=SERV-CALL">http://www.ibm.com/systems/support/supportsite.wss/docdisplay?brandind=5000008&amp;Indocid=SERV-CALL</a>.</li> </ol>

Table 7. DSA Preboot messages (continued)

<ul style="list-style-type: none"> <li>• Follow the suggested actions in the order in which they are listed in the Action column until the problem is solved.</li> <li>• See Chapter 4, “Parts listing, System x3400 M2 Types 7836 and 7837,” on page 153 to determine which components are customer replaceable units (CRU) and which components are field replaceable units (FRU).</li> <li>• If an action step is preceded by “(Trained service technician only),” that step must be performed only by a Trained service technician.</li> <li>• Go to the IBM support Web site at <a href="http://www.ibm.com/systems/support/">http://www.ibm.com/systems/support/</a> to check for technical information, hints, tips, and new device drivers or to submit a request for information.</li> </ul>					
Message number	Component	Test	State	Description	Action
202-901-xxx	Memory	Memory Stress Test	Failed	Test failure.	<ol style="list-style-type: none"> <li>1. Run the standard memory test to validate all memory.</li> <li>2. Make sure that the DSA code is at the latest level. For the latest level of DSA code, go to <a href="http://www.ibm.com/support/docview.wss?uid=psg1SERV-DSA">http://www.ibm.com/support/docview.wss?uid=psg1SERV-DSA</a>.</li> <li>3. Turn off the system and disconnect it from power.</li> <li>4. Reseat the DIMMs.</li> <li>5. Reconnect the system to power and turn on the system.</li> <li>6. Run the test again.</li> <li>7. If the failure remains, go to the IBM Web site for more troubleshooting information at <a href="http://www.ibm.com/systems/support/supportsite.wss/docdisplay?brandind=5000008&amp;Indocid=SERV-CALL">http://www.ibm.com/systems/support/supportsite.wss/docdisplay?brandind=5000008&amp;Indocid=SERV-CALL</a>.</li> </ol>

Table 7. DSA Preboot messages (continued)

<ul style="list-style-type: none"> <li>• Follow the suggested actions in the order in which they are listed in the Action column until the problem is solved.</li> <li>• See Chapter 4, “Parts listing, System x3400 M2 Types 7836 and 7837,” on page 153 to determine which components are customer replaceable units (CRU) and which components are field replaceable units (FRU).</li> <li>• If an action step is preceded by “(Trained service technician only),” that step must be performed only by a Trained service technician.</li> <li>• Go to the IBM support Web site at <a href="http://www.ibm.com/systems/support/">http://www.ibm.com/systems/support/</a> to check for technical information, hints, tips, and new device drivers or to submit a request for information.</li> </ul>					
Message number	Component	Test	State	Description	Action
215-801-xxx	Optical Drive	<ul style="list-style-type: none"> <li>• Verify Media Installed</li> <li>• Read/ Write Test</li> <li>• Self-Test</li> </ul> <p>Messages and actions apply to all three tests.</p>	Aborted	Unable to communicate with the device driver.	<ol style="list-style-type: none"> <li>1. Make sure that the DSA code is at the latest level. For the latest level of DSA code, go to <a href="http://www.ibm.com/support/docview.wss?uid=psg1SERV-DSA">http://www.ibm.com/support/docview.wss?uid=psg1SERV-DSA</a>.</li> <li>2. Run the test again.</li> <li>3. Check the drive cabling at both ends for loose or broken connections or damage to the cable. Replace the cable if it is damaged.</li> <li>4. Run the test again.</li> <li>5. For additional troubleshooting information, go to <a href="http://www.ibm.com/support/docview.wss?uid=psg1MIGR-41559">http://www.ibm.com/support/docview.wss?uid=psg1MIGR-41559</a>.</li> <li>6. Run the test again.</li> <li>7. Make sure that the system firmware is at the latest level. The installed firmware level is shown in the DSA event log in the Firmware/VPD section for this component. For more information, see “Updating the firmware” on page 273.</li> <li>8. Run the test again.</li> <li>9. Replace the CD/DVD drive.</li> <li>10. If the failure remains, go to the IBM Web site for more troubleshooting information at <a href="http://www.ibm.com/systems/support/supportsite.wss/docdisplay?brandind=5000008&amp;Indocid=SERV-CALL">http://www.ibm.com/systems/support/supportsite.wss/docdisplay?brandind=5000008&amp;Indocid=SERV-CALL</a>.</li> </ol>

Table 7. DSA Preboot messages (continued)

<ul style="list-style-type: none"> <li>• Follow the suggested actions in the order in which they are listed in the Action column until the problem is solved.</li> <li>• See Chapter 4, “Parts listing, System x3400 M2 Types 7836 and 7837,” on page 153 to determine which components are customer replaceable units (CRU) and which components are field replaceable units (FRU).</li> <li>• If an action step is preceded by “(Trained service technician only),” that step must be performed only by a Trained service technician.</li> <li>• Go to the IBM support Web site at <a href="http://www.ibm.com/systems/support/">http://www.ibm.com/systems/support/</a> to check for technical information, hints, tips, and new device drivers or to submit a request for information.</li> </ul>					
Message number	Component	Test	State	Description	Action
215-802-xxx	Optical Drive	<ul style="list-style-type: none"> <li>• Verify Media Installed</li> <li>• Read/ Write Test</li> <li>• Self-Test</li> </ul> <p>Messages and actions apply to all three tests.</p>	Aborted	The media tray is open.	<ol style="list-style-type: none"> <li>1. Close the media tray and wait 15 seconds.</li> <li>2. Run the test again.</li> <li>3. Insert a new CD/DVD into the drive and wait for 15 seconds for the media to be recognized.</li> <li>4. Run the test again.</li> <li>5. Check the drive cabling at both ends for loose or broken connections or damage to the cable. Replace the cable if it is damaged.</li> <li>6. Run the test again.</li> <li>7. Make sure that the DSA code is at the latest level. For the latest level of DSA code, go to <a href="http://www.ibm.com/support/docview.wss?uid=psg1SERV-DSA">http://www.ibm.com/support/docview.wss?uid=psg1SERV-DSA</a>.</li> <li>8. Run the test again.</li> <li>9. For additional troubleshooting information, go to <a href="http://www.ibm.com/support/docview.wss?uid=psg1MIGR-41559">http://www.ibm.com/support/docview.wss?uid=psg1MIGR-41559</a>.</li> <li>10. Run the test again.</li> <li>11. Replace the CD/DVD drive.</li> <li>12. If the failure remains, go to the IBM Web site for more troubleshooting information at <a href="http://www.ibm.com/systems/support/supportsite.wss/docdisplay?brandind=5000008&amp;Indocid=SERV-CALL">http://www.ibm.com/systems/support/supportsite.wss/docdisplay?brandind=5000008&amp;Indocid=SERV-CALL</a>.</li> </ol>
215-803-xxx	Optical Drive	<ul style="list-style-type: none"> <li>• Verify Media Installed</li> <li>• Read/ Write Test</li> <li>• Self-Test</li> </ul> <p>Messages and actions apply to all three tests.</p>	Failed	The disc might be in use by the system.	<ol style="list-style-type: none"> <li>1. Wait for the system activity to stop.</li> <li>2. Run the test again</li> <li>3. Turn off and restart the system.</li> <li>4. Run the test again.</li> <li>5. Replace the CD/DVD drive.</li> <li>6. If the failure remains, go to the IBM Web site for more troubleshooting information at <a href="http://www.ibm.com/systems/support/supportsite.wss/docdisplay?brandind=5000008&amp;Indocid=SERV-CALL">http://www.ibm.com/systems/support/supportsite.wss/docdisplay?brandind=5000008&amp;Indocid=SERV-CALL</a>.</li> </ol>

Table 7. DSA Preboot messages (continued)

<ul style="list-style-type: none"> <li>• Follow the suggested actions in the order in which they are listed in the Action column until the problem is solved.</li> <li>• See Chapter 4, “Parts listing, System x3400 M2 Types 7836 and 7837,” on page 153 to determine which components are customer replaceable units (CRU) and which components are field replaceable units (FRU).</li> <li>• If an action step is preceded by “(Trained service technician only),” that step must be performed only by a Trained service technician.</li> <li>• Go to the IBM support Web site at <a href="http://www.ibm.com/systems/support/">http://www.ibm.com/systems/support/</a> to check for technical information, hints, tips, and new device drivers or to submit a request for information.</li> </ul>					
Message number	Component	Test	State	Description	Action
215-901-xxx	Optical Drive	<ul style="list-style-type: none"> <li>• Verify Media Installed</li> <li>• Read/ Write Test</li> <li>• Self-Test</li> </ul> <p>Messages and actions apply to all three tests.</p>	Aborted	Drive media is not detected.	<ol style="list-style-type: none"> <li>1. Insert a CD/DVD into the drive or try a new media, and wait for 15 seconds.</li> <li>2. Run the test again.</li> <li>3. Check the drive cabling at both ends for loose or broken connections or damage to the cable. Replace the cable if it is damaged.</li> <li>4. Run the test again.</li> <li>5. For additional troubleshooting information, go to <a href="http://www.ibm.com/support/docview.wss?uid=psg1MIGR-41559">http://www.ibm.com/support/docview.wss?uid=psg1MIGR-41559</a>.</li> <li>6. Run the test again.</li> <li>7. Replace the CD/DVD drive.</li> <li>8. If the failure remains, go to the IBM Web site for more troubleshooting information at <a href="http://www.ibm.com/systems/support/supportsite.wss/docdisplay?brandind=5000008&amp;Indocid=SERV-CALL">http://www.ibm.com/systems/support/supportsite.wss/docdisplay?brandind=5000008&amp;Indocid=SERV-CALL</a>.</li> </ol>
215-902-xxx	Optical Drive	<ul style="list-style-type: none"> <li>• Verify Media Installed</li> <li>• Read/ Write Test</li> <li>• Self-Test</li> </ul> <p>Messages and actions apply to all three tests.</p>	Failed	Read miscompare.	<ol style="list-style-type: none"> <li>1. Insert a CD/DVD into the drive or try a new media, and wait for 15 seconds.</li> <li>2. Run the test again.</li> <li>3. Check the drive cabling at both ends for loose or broken connections or damage to the cable. Replace the cable if it is damaged.</li> <li>4. Run the test again.</li> <li>5. For additional troubleshooting information, go to <a href="http://www.ibm.com/support/docview.wss?uid=psg1MIGR-41559">http://www.ibm.com/support/docview.wss?uid=psg1MIGR-41559</a>.</li> <li>6. Run the test again.</li> <li>7. Replace the CD/DVD drive.</li> <li>8. If the failure remains, go to the IBM Web site for more troubleshooting information at <a href="http://www.ibm.com/systems/support/supportsite.wss/docdisplay?brandind=5000008&amp;Indocid=SERV-CALL">http://www.ibm.com/systems/support/supportsite.wss/docdisplay?brandind=5000008&amp;Indocid=SERV-CALL</a>.</li> </ol>

Table 7. DSA Preboot messages (continued)

<ul style="list-style-type: none"> <li>Follow the suggested actions in the order in which they are listed in the Action column until the problem is solved.</li> <li>See Chapter 4, “Parts listing, System x3400 M2 Types 7836 and 7837,” on page 153 to determine which components are customer replaceable units (CRU) and which components are field replaceable units (FRU).</li> <li>If an action step is preceded by “(Trained service technician only),” that step must be performed only by a Trained service technician.</li> <li>Go to the IBM support Web site at <a href="http://www.ibm.com/systems/support/">http://www.ibm.com/systems/support/</a> to check for technical information, hints, tips, and new device drivers or to submit a request for information.</li> </ul>					
Message number	Component	Test	State	Description	Action
215-903-xxx	Optical Drive	<ul style="list-style-type: none"> <li>Verify Media Installed</li> <li>Read/ Write Test</li> <li>Self-Test</li> </ul> <p>Messages and actions apply to all three tests.</p>	Aborted	Could not access the drive.	<ol style="list-style-type: none"> <li>1. Insert a CD/DVD into the drive or try a new media, and wait for 15 seconds.</li> <li>2. Run the test again.</li> <li>3. Check the drive cabling at both ends for loose or broken connections or damage to the cable. Replace the cable if it is damaged.</li> <li>4. Run the test again.</li> <li>5. Make sure that the DSA code is at the latest level. For the latest level of DSA code, go to <a href="http://www.ibm.com/support/docview.wss?uid=psg1SERV-DSA">http://www.ibm.com/support/docview.wss?uid=psg1SERV-DSA</a>.</li> <li>6. Run the test again.</li> <li>7. For additional troubleshooting information, go to <a href="http://www.ibm.com/support/docview.wss?uid=psg1MIGR-41559">http://www.ibm.com/support/docview.wss?uid=psg1MIGR-41559</a>.</li> <li>8. Run the test again.</li> <li>9. Replace the CD/DVD drive.</li> <li>10. If the failure remains, go to the IBM Web site for more troubleshooting information at <a href="http://www.ibm.com/systems/support/supportsite.wss/docdisplay?brandind=5000008&amp;Indocid=SERV-CALL">http://www.ibm.com/systems/support/supportsite.wss/docdisplay?brandind=5000008&amp;Indocid=SERV-CALL</a>.</li> </ol>
215-904-xxx	Optical Drive	<ul style="list-style-type: none"> <li>Verify Media Installed</li> <li>Read/ Write Test</li> <li>Self-Test</li> </ul> <p>Messages and actions apply to all three tests.</p>	Failed	A read error occurred.	<ol style="list-style-type: none"> <li>1. Insert a CD/DVD into the drive or try a new media, and wait for 15 seconds.</li> <li>2. Run the test again.</li> <li>3. Check the drive cabling at both ends for loose or broken connections or damage to the cable. Replace the cable if it is damaged.</li> <li>4. Run the test again.</li> <li>5. For additional troubleshooting information, go to <a href="http://www.ibm.com/support/docview.wss?uid=psg1MIGR-41559">http://www.ibm.com/support/docview.wss?uid=psg1MIGR-41559</a>.</li> <li>6. Run the test again.</li> <li>7. Replace the CD/DVD drive.</li> <li>8. If the failure remains, go to the IBM Web site for more troubleshooting information at <a href="http://www.ibm.com/systems/support/supportsite.wss/docdisplay?brandind=5000008&amp;Indocid=SERV-CALL">http://www.ibm.com/systems/support/supportsite.wss/docdisplay?brandind=5000008&amp;Indocid=SERV-CALL</a>.</li> </ol>



Table 7. DSA Preboot messages (continued)

<ul style="list-style-type: none"> <li>• Follow the suggested actions in the order in which they are listed in the Action column until the problem is solved.</li> <li>• See Chapter 4, “Parts listing, System x3400 M2 Types 7836 and 7837,” on page 153 to determine which components are customer replaceable units (CRU) and which components are field replaceable units (FRU).</li> <li>• If an action step is preceded by “(Trained service technician only),” that step must be performed only by a Trained service technician.</li> <li>• Go to the IBM support Web site at <a href="http://www.ibm.com/systems/support/">http://www.ibm.com/systems/support/</a> to check for technical information, hints, tips, and new device drivers or to submit a request for information.</li> </ul>					
Message number	Component	Test	State	Description	Action
217-800-xxx	SAS/SATA Hard Drive	Disk Drive Test	Aborted	Test cancelled.	Run the test again.
217-901-xxx	SAS/SATA Hard Drive	Disk Drive Test	Failed		<ol style="list-style-type: none"> <li>1. Reseat all hard disk drive backplate connections at both ends.</li> <li>2. Reseat the all drives.</li> <li>3. Run the test again.</li> <li>4. Make sure that the firmware is at the latest level.</li> <li>5. Run the test again.</li> <li>6. If the failure remains, go to the IBM Web site for more troubleshooting information at <a href="http://www.ibm.com/systems/support/supportsite.wss/docdisplay?brandind=5000008&amp;Indocid=SERV-CALL">http://www.ibm.com/systems/support/supportsite.wss/docdisplay?brandind=5000008&amp;Indocid=SERV-CALL</a>.</li> </ol>
264-901-xxx	Tape Drive	Tape Drive Test	Failed	An error was found in the tape alert log page.	<ol style="list-style-type: none"> <li>1. Clean the tape drive using the appropriate cleaning media and install new media.</li> <li>2. Run the test again.</li> <li>3. Clear the error log.</li> <li>4. Run the test again.</li> <li>5. Make sure that the firmware is at the latest level. Software for tape drives and libraries can be found on the IBM Support Web site at <a href="http://www.ibm.com/systems/support/">http://www.ibm.com/systems/support/</a>.</li> <li>6. Run the test again.</li> <li>7. If the failure remains, go to the IBM Web site for more troubleshooting information at <a href="http://www.ibm.com/systems/support/supportsite.wss/docdisplay?brandind=5000008&amp;Indocid=SERV-CALL">http://www.ibm.com/systems/support/supportsite.wss/docdisplay?brandind=5000008&amp;Indocid=SERV-CALL</a>.</li> </ol>

Table 7. DSA Preboot messages (continued)

<ul style="list-style-type: none"> <li>• Follow the suggested actions in the order in which they are listed in the Action column until the problem is solved.</li> <li>• See Chapter 4, “Parts listing, System x3400 M2 Types 7836 and 7837,” on page 153 to determine which components are customer replaceable units (CRU) and which components are field replaceable units (FRU).</li> <li>• If an action step is preceded by “(Trained service technician only),” that step must be performed only by a Trained service technician.</li> <li>• Go to the IBM support Web site at <a href="http://www.ibm.com/systems/support/">http://www.ibm.com/systems/support/</a> to check for technical information, hints, tips, and new device drivers or to submit a request for information.</li> </ul>					
Message number	Component	Test	State	Description	Action
264-902-xxx	Tape Drive	Tape Drive Test	Failed	Media is not detected.	<ol style="list-style-type: none"> <li>1. Clean the tape drive using the appropriate cleaning media and install new media.</li> <li>2. Run the test again.</li> <li>3. Clear the error log.</li> <li>4. Run the test again.</li> <li>5. Make sure that the firmware is at the latest level. Software for tape drives and libraries can be found on the IBM Support Web site at <a href="http://www.ibm.com/systems/support/">http://www.ibm.com/systems/support/</a>.</li> <li>6. Run the test again.</li> <li>7. If the failure remains, go to the IBM Web site for more troubleshooting information at <a href="http://www.ibm.com/systems/support/supportsite.wss/docdisplay?brandind=5000008&amp;Indocid=SERV-CALL">http://www.ibm.com/systems/support/supportsite.wss/docdisplay?brandind=5000008&amp;Indocid=SERV-CALL</a>.</li> </ol>
264-903-xxx	Tape Drive	Tape Drive Test	Failed	Media error.	<ol style="list-style-type: none"> <li>1. Clean the tape drive using the appropriate cleaning media and install new media.</li> <li>2. Run the test again.</li> <li>3. Clear the error log.</li> <li>4. Run the test again.</li> <li>5. Make sure that the firmware is at the latest level. Software for tape drives and libraries can be found on the IBM Support Web site at <a href="http://www.ibm.com/systems/support/">http://www.ibm.com/systems/support/</a>.</li> <li>6. Run the test again.</li> <li>7. If the failure remains, go to the IBM Web site for more troubleshooting information at <a href="http://www.ibm.com/systems/support/supportsite.wss/docdisplay?brandind=5000008&amp;Indocid=SERV-CALL">http://www.ibm.com/systems/support/supportsite.wss/docdisplay?brandind=5000008&amp;Indocid=SERV-CALL</a>.</li> </ol>

Table 7. DSA Preboot messages (continued)

<ul style="list-style-type: none"> <li>• Follow the suggested actions in the order in which they are listed in the Action column until the problem is solved.</li> <li>• See Chapter 4, “Parts listing, System x3400 M2 Types 7836 and 7837,” on page 153 to determine which components are customer replaceable units (CRU) and which components are field replaceable units (FRU).</li> <li>• If an action step is preceded by “(Trained service technician only),” that step must be performed only by a Trained service technician.</li> <li>• Go to the IBM support Web site at <a href="http://www.ibm.com/systems/support/">http://www.ibm.com/systems/support/</a> to check for technical information, hints, tips, and new device drivers or to submit a request for information.</li> </ul>					
Message number	Component	Test	State	Description	Action
264-904-xxx	Tape Drive	Tape Drive Test	Failed	Drive hardware error.	<ol style="list-style-type: none"> <li>1. Check the tape drive cabling for loose or broken connections or damage to the cable. Replace the tape drive cable if damage is present.</li> <li>2. Clean the tape drive using the appropriate cleaning media and install new media.</li> <li>3. Run the test again.</li> <li>4. Clear the error log.</li> <li>5. Run the test again.</li> <li>6. Make sure that the firmware is at the latest level. Software for tape drives and libraries can be found on the IBM Support Web site at <a href="http://www.ibm.com/systems/support/">http://www.ibm.com/systems/support/</a>.</li> <li>7. Run the test again.</li> <li>8. If the failure remains, go to the IBM Web site for more troubleshooting information at <a href="http://www.ibm.com/systems/support/supportsite.wss/docdisplay?brandind=5000008&amp;Indocid=SERV-CALL">http://www.ibm.com/systems/support/supportsite.wss/docdisplay?brandind=5000008&amp;Indocid=SERV-CALL</a>.</li> </ol>
264-905-xxx	Tape Drive	Tape Drive Test	Failed	Software error: invalid request.	<ol style="list-style-type: none"> <li>1. If the system has stopped responding, turn off and restart the system and then run the test again.</li> <li>2. Check system firmware level and upgrade if necessary. The installed firmware level can be found in the DSA Diagnostic Event Log within the Firmware/VPD section for this component. The latest level firmware for this component can be found on the IBM Support Web site at <a href="http://www.ibm.com/systems/support/">http://www.ibm.com/systems/support/</a>.</li> <li>3. Run the test again.</li> <li>4. If the system has stopped responding, turn off and restart the system.</li> <li>5. Make sure that the firmware is at the latest level. Software for tape drives and libraries can be found on the IBM Support Web site at <a href="http://www.ibm.com/systems/support/">http://www.ibm.com/systems/support/</a>.</li> <li>6. Run the test again.</li> <li>7. If the failure remains, go to the IBM Web site for more troubleshooting information at <a href="http://www.ibm.com/systems/support/supportsite.wss/docdisplay?brandind=5000008&amp;Indocid=SERV-CALL">http://www.ibm.com/systems/support/supportsite.wss/docdisplay?brandind=5000008&amp;Indocid=SERV-CALL</a>.</li> </ol>

Table 7. DSA Preboot messages (continued)

<ul style="list-style-type: none"> <li>• Follow the suggested actions in the order in which they are listed in the Action column until the problem is solved.</li> <li>• See Chapter 4, “Parts listing, System x3400 M2 Types 7836 and 7837,” on page 153 to determine which components are customer replaceable units (CRU) and which components are field replaceable units (FRU).</li> <li>• If an action step is preceded by “(Trained service technician only),” that step must be performed only by a Trained service technician.</li> <li>• Go to the IBM support Web site at <a href="http://www.ibm.com/systems/support/">http://www.ibm.com/systems/support/</a> to check for technical information, hints, tips, and new device drivers or to submit a request for information.</li> </ul>					
Message number	Component	Test	State	Description	Action
264-906-xxx	Tape Drive	Tape Drive Test	Failed	Unrecognized error.	<ol style="list-style-type: none"> <li>1. Clean the tape drive using the appropriate cleaning media and install new media.</li> <li>2. Run the test again.</li> <li>3. Clear the error log.</li> <li>4. Run the test again.</li> <li>5. Make sure that the firmware is at the latest level. Software for tape drives and libraries can be found on the IBM Support Web site at <a href="http://www.ibm.com/systems/support/">http://www.ibm.com/systems/support/</a>.</li> <li>6. Run the test again.</li> <li>7. If the failure remains, go to the IBM Web site for more troubleshooting information at <a href="http://www.ibm.com/systems/support/supportsite.wss/docdisplay?brandind=5000008&amp;Indocid=SERV-CALL">http://www.ibm.com/systems/support/supportsite.wss/docdisplay?brandind=5000008&amp;Indocid=SERV-CALL</a>.</li> </ol>
405-901-xxx	BroadCom Ethernet Device	Test Control Registers	Failed		<ol style="list-style-type: none"> <li>1. Make sure that the component firmware is at the latest level. The installed firmware level is shown in the DSA event log in the Firmware/VPD section for this component. For more information, see “Updating the firmware” on page 273.</li> <li>2. Run the test again.</li> <li>3. Replace the component that is causing the error. If the error is caused by an adapter, replace the adapter. Check the PCI Information and Network Settings information in the DSA event log to determine the physical location of the failing component.</li> <li>4. If the failure remains, go to the IBM Web site for more troubleshooting information at <a href="http://www.ibm.com/systems/support/supportsite.wss/docdisplay?brandind=5000008&amp;Indocid=SERV-CALL">http://www.ibm.com/systems/support/supportsite.wss/docdisplay?brandind=5000008&amp;Indocid=SERV-CALL</a>.</li> </ol>

Table 7. DSA Preboot messages (continued)

<ul style="list-style-type: none"> <li>• Follow the suggested actions in the order in which they are listed in the Action column until the problem is solved.</li> <li>• See Chapter 4, “Parts listing, System x3400 M2 Types 7836 and 7837,” on page 153 to determine which components are customer replaceable units (CRU) and which components are field replaceable units (FRU).</li> <li>• If an action step is preceded by “(Trained service technician only),” that step must be performed only by a Trained service technician.</li> <li>• Go to the IBM support Web site at <a href="http://www.ibm.com/systems/support/">http://www.ibm.com/systems/support/</a> to check for technical information, hints, tips, and new device drivers or to submit a request for information.</li> </ul>					
Message number	Component	Test	State	Description	Action
405-901-xxx	BroadCom Ethernet Device	Test MII Registers	Failed		<ol style="list-style-type: none"> <li>1. Make sure that the component firmware is at the latest level. The installed firmware level is shown in the DSA event log in the Firmware/VPD section for this component. For more information, see “Updating the firmware” on page 273.</li> <li>2. Run the test again.</li> <li>3. Replace the component that is causing the error. If the error is caused by an adapter, replace the adapter. Check the PCI Information and Network Settings information in the DSA event log to determine the physical location of the failing component.</li> <li>4. If the failure remains, go to the IBM Web site for more troubleshooting information at <a href="http://www.ibm.com/systems/support/supportsite.wss/docdisplay?brandind=5000008&amp;Indocid=SERV-CALL">http://www.ibm.com/systems/support/supportsite.wss/docdisplay?brandind=5000008&amp;Indocid=SERV-CALL</a>.</li> </ol>
405-902-xxx	BroadCom Ethernet Device	Test EEPROM	Failed		<ol style="list-style-type: none"> <li>1. Make sure that the component firmware is at the latest level. The installed firmware level is shown in the DSA event log in the Firmware/VPD section for this component. For more information, see “Updating the firmware” on page 273.</li> <li>2. Run the test again.</li> <li>3. Replace the component that is causing the error. If the error is caused by an adapter, replace the adapter. Check the PCI Information and Network Settings information in the DSA event log to determine the physical location of the failing component.</li> <li>4. If the failure remains, go to the IBM Web site for more troubleshooting information at <a href="http://www.ibm.com/systems/support/supportsite.wss/docdisplay?brandind=5000008&amp;Indocid=SERV-CALL">http://www.ibm.com/systems/support/supportsite.wss/docdisplay?brandind=5000008&amp;Indocid=SERV-CALL</a>.</li> </ol>

Table 7. DSA Preboot messages (continued)

<ul style="list-style-type: none"> <li>• Follow the suggested actions in the order in which they are listed in the Action column until the problem is solved.</li> <li>• See Chapter 4, “Parts listing, System x3400 M2 Types 7836 and 7837,” on page 153 to determine which components are customer replaceable units (CRU) and which components are field replaceable units (FRU).</li> <li>• If an action step is preceded by “(Trained service technician only),” that step must be performed only by a Trained service technician.</li> <li>• Go to the IBM support Web site at <a href="http://www.ibm.com/systems/support/">http://www.ibm.com/systems/support/</a> to check for technical information, hints, tips, and new device drivers or to submit a request for information.</li> </ul>					
Message number	Component	Test	State	Description	Action
405-903-xxx	BroadCom Ethernet Device	Test Internal Memory	Failed		<ol style="list-style-type: none"> <li>1. Make sure that the component firmware is at the latest level. The installed firmware level is shown in the DSA event log in the Firmware/VPD section for this component. For more information, see “Updating the firmware” on page 273.</li> <li>2. Run the test again.</li> <li>3. Check the interrupt assignments in the PCI Hardware section of the DSA event log. If the Ethernet device is sharing interrupts, if possible, use the Setup utility see “Using the Setup utility” on page 277) to assign a unique interrupt to the device.</li> <li>4. Replace the component that is causing the error. If the error is caused by an adapter, replace the adapter. Check the PCI Information and Network Settings information in the DSA event log to determine the physical location of the failing component.</li> <li>5. If the failure remains, go to the IBM Web site for more troubleshooting information at <a href="http://www.ibm.com/systems/support/supportsite.wss/docdisplay?brandind=5000008&amp;Indocid=SERV-CALL">http://www.ibm.com/systems/support/supportsite.wss/docdisplay?brandind=5000008&amp;Indocid=SERV-CALL</a>.</li> </ol>

Table 7. DSA Preboot messages (continued)

<ul style="list-style-type: none"> <li>• Follow the suggested actions in the order in which they are listed in the Action column until the problem is solved.</li> <li>• See Chapter 4, “Parts listing, System x3400 M2 Types 7836 and 7837,” on page 153 to determine which components are customer replaceable units (CRU) and which components are field replaceable units (FRU).</li> <li>• If an action step is preceded by “(Trained service technician only),” that step must be performed only by a Trained service technician.</li> <li>• Go to the IBM support Web site at <a href="http://www.ibm.com/systems/support/">http://www.ibm.com/systems/support/</a> to check for technical information, hints, tips, and new device drivers or to submit a request for information.</li> </ul>					
Message number	Component	Test	State	Description	Action
405-904-xxx	BroadCom Ethernet Device	Test Interrupt	Failed		<ol style="list-style-type: none"> <li>1. Make sure that the component firmware is at the latest level. The installed firmware level is shown in the DSA event log in the Firmware/VPD section for this component. For more information, see “Updating the firmware” on page 273.</li> <li>2. Run the test again.</li> <li>3. Check the interrupt assignments in the PCI Hardware section of the DSA event log. If the Ethernet device is sharing interrupts, if possible, use the Setup utility see “Using the Setup utility” on page 277) to assign a unique interrupt to the device.</li> <li>4. Replace the component that is causing the error. If the error is caused by an adapter, replace the adapter. Check the PCI Information and Network Settings information in the DSA event log to determine the physical location of the failing component.</li> <li>5. If the failure remains, go to the IBM Web site for more troubleshooting information at <a href="http://www.ibm.com/systems/support/supportsite.wss/docdisplay?brandind=5000008&amp;Indocid=SERV-CALL">http://www.ibm.com/systems/support/supportsite.wss/docdisplay?brandind=5000008&amp;Indocid=SERV-CALL</a>.</li> </ol>

Table 7. DSA Preboot messages (continued)

<ul style="list-style-type: none"> <li>• Follow the suggested actions in the order in which they are listed in the Action column until the problem is solved.</li> <li>• See Chapter 4, “Parts listing, System x3400 M2 Types 7836 and 7837,” on page 153 to determine which components are customer replaceable units (CRU) and which components are field replaceable units (FRU).</li> <li>• If an action step is preceded by “(Trained service technician only),” that step must be performed only by a Trained service technician.</li> <li>• Go to the IBM support Web site at <a href="http://www.ibm.com/systems/support/">http://www.ibm.com/systems/support/</a> to check for technical information, hints, tips, and new device drivers or to submit a request for information.</li> </ul>					
Message number	Component	Test	State	Description	Action
405-906-xxx	BroadCom Ethernet Device	Test Loop back at Physical Layer	Failed		<ol style="list-style-type: none"> <li>1. Check the Ethernet cable for damage and make sure that the cable type and connection are correct.</li> <li>2. Make sure that the component firmware is at the latest level. The installed firmware level is shown in the DSA event log in the Firmware/VPD section for this component. For more information, see “Updating the firmware” on page 273.</li> <li>3. Run the test again.</li> <li>4. Replace the component that is causing the error. If the error is caused by an adapter, replace the adapter. Check the PCI Information and Network Settings information in the DSA event log to determine the physical location of the failing component.</li> <li>5. If the failure remains, go to the IBM Web site for more troubleshooting information at <a href="http://www.ibm.com/systems/support/supportsite.wss/docdisplay?brandind=5000008&amp;Indocid=SERV-CALL">http://www.ibm.com/systems/support/supportsite.wss/docdisplay?brandind=5000008&amp;Indocid=SERV-CALL</a>.</li> </ol>
405-907-xxx	BroadCom Ethernet Device	Test Loop back at MAC-Layer	Failed		<ol style="list-style-type: none"> <li>1. Make sure that the component firmware is at the latest level. The installed firmware level is shown in the DSA event log in the Firmware/VPD section for this component. For more information, see “Updating the firmware” on page 273.</li> <li>2. Run the test again.</li> <li>3. Replace the component that is causing the error. If the error is caused by an adapter, replace the adapter. Check the PCI Information and Network Settings information in the DSA event log to determine the physical location of the failing component.</li> <li>4. If the failure remains, go to the IBM Web site for more troubleshooting information at <a href="http://www.ibm.com/systems/support/supportsite.wss/docdisplay?brandind=5000008&amp;Indocid=SERV-CALL">http://www.ibm.com/systems/support/supportsite.wss/docdisplay?brandind=5000008&amp;Indocid=SERV-CALL</a>.</li> </ol>



Table 7. DSA Preboot messages (continued)

<ul style="list-style-type: none"> <li>• Follow the suggested actions in the order in which they are listed in the Action column until the problem is solved.</li> <li>• See Chapter 4, “Parts listing, System x3400 M2 Types 7836 and 7837,” on page 153 to determine which components are customer replaceable units (CRU) and which components are field replaceable units (FRU).</li> <li>• If an action step is preceded by “(Trained service technician only),” that step must be performed only by a Trained service technician.</li> <li>• Go to the IBM support Web site at <a href="http://www.ibm.com/systems/support/">http://www.ibm.com/systems/support/</a> to check for technical information, hints, tips, and new device drivers or to submit a request for information.</li> </ul>					
Message number	Component	Test	State	Description	Action
405-908-xxx	BroadCom Ethernet Device	Test LEDs	Failed		<ol style="list-style-type: none"> <li>1. Make sure that the component firmware is at the latest level. The installed firmware level is shown in the DSA event log in the Firmware/VPD section for this component. For more information, see “Updating the firmware” on page 273.</li> <li>2. Run the test again.</li> <li>3. Replace the component that is causing the error. If the error is caused by an adapter, replace the adapter. Check the PCI Information and Network Settings information in the DSA event log to determine the physical location of the failing component.</li> <li>4. If the failure remains, go to the IBM Web site for more troubleshooting information at <a href="http://www.ibm.com/systems/support/supportsite.wss/docdisplay?brandind=5000008&amp;Indocid=SERV-CALL">http://www.ibm.com/systems/support/supportsite.wss/docdisplay?brandind=5000008&amp;Indocid=SERV-CALL</a>.</li> </ol>

## Recovering the server firmware

**Important:** Some cluster solutions require specific code levels or coordinated code updates. If the device is part of a cluster solution, verify that the latest level of code is supported for the cluster solution before you update the code.

If the server firmware has become corrupted, such as from a power failure during an update, you can recover the server firmware in one of two ways:

- **In-band method:** Recover server firmware, using either the boot block jumper (Automated Boot Recovery) and a server Firmware Update Package Service Pack.
- **Out-of-band method:** Use the IMM Web Interface to update the firmware, using the latest server firmware update package.

**Note:** You can obtain a server update package from one of the following sources:

- Download the server firmware update from the World Wide Web.
- Contact your IBM service representative.

To download the server firmware update package from the World Wide Web, 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.

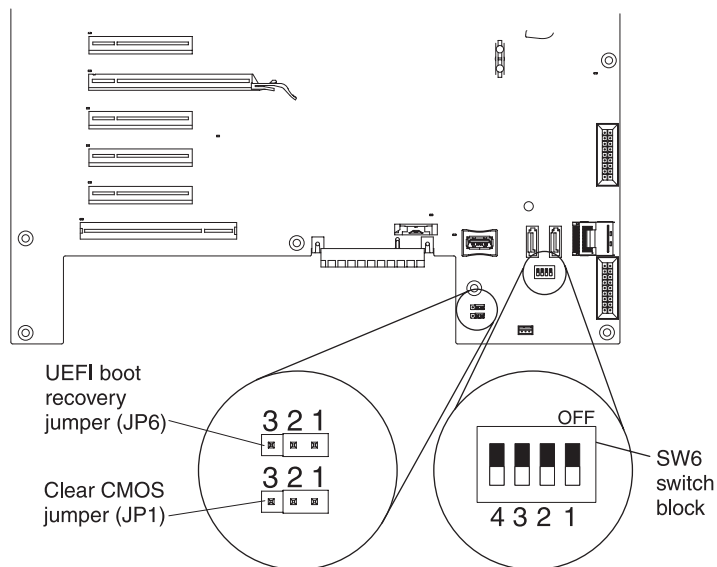
1. Go to <http://www.ibm.com/systems/support/>.
2. Under **Product support**, click **System x**.
3. Under **Popular links**, click **Software and device drivers**.
4. Click **System x3400 M2** to display the matrix of downloadable files for the server.
5. Download the latest server firmware update.

The flash memory of the server consists of a primary bank and a backup bank. It is essential that you maintain the backup bank with a bootable firmware image. If the primary bank becomes corrupted, you can either manually boot the backup bank with the boot block jumper, or in the case of image corruption, this will occur automatically with the Automated Boot Recovery function.

### In-band manual recovery method

To recover the server firmware and restore the server operation to the primary bank, complete the following steps:

1. Read the safety information that begins on page vii and “Handling static-sensitive devices” on page 163.
2. Turn off the server, and disconnect all power cords and external cables.
3. Unlock and remove the server cover. See “Removing the left-side cover” on page 173 for more information.
4. Locate the UEFI boot recovery jumper (JP6) on the system board.



5. Remove any adapters that impede access to the UEFI boot recovery jumper block (JP6) (see “Removing an adapter” on page 186).
6. Move the UEFI boot recovery jumper (JP6) from pins 1 and 2 to pins 2 and 3 to enable the UEFI recovery mode.
7. Reinstall any adapter that you removed (see “Installing an adapter” on page 187).
8. Reinstall the server cover (see “Installing the left-side cover” on page 173); then, reconnect all power cords.
9. Restart the server. The power-on self-test (POST) starts.
10. Boot the server to an operating system that is supported by the firmware update package that you downloaded.

11. Perform the firmware update by following the instructions that are in the firmware update package readme file.
12. Copy the downloaded firmware update package into a directory.
13. From a command line, type *filename-s*, where *filename* is the name of the executable file that you downloaded with the firmware update package. Monitor the firmware update until completion.
14. Turn off the server and disconnect all power cords and external cables, and then remove the server cover (see “Removing the left-side cover” on page 173).
15. Remove any adapters that impede access to the UEFI boot recovery jumper block (JP6) (see “Removing an adapter” on page 186).
16. Move the UEFI boot recovery jumper (JP6) from pins 2 and 3 back to the primary position (pins 1 and 2).
17. Reinstall any adapter that you removed (see “Installing an adapter” on page 187).
18. Reinstall the server cover (see “Installing the left-side cover” on page 173), and then reconnect all the power cables.
19. Restart the server. The power-on self-test (POST) starts. If this does not recover the primary bank, continue with the following steps.
20. Unlock and remove the left-side cover (see “Removing the left-side cover” on page 173).
21. Reset the CMOS by removing the system battery (see “Removing the battery” on page 217).
22. Leave the system battery out of the server for approximately 5 to 15 minutes.
23. Reinstall the system battery (see “Installing the battery” on page 219).
24. Reinstall the left-side cover (see “Installing the left-side cover” on page 173); then, reconnect all power cords.
25. Restart the server. The power-on self-test (POST) starts.
26. If these recovery efforts fail, contact your IBM service representative for support.

See Table 2 on page 22 and Table 3 on page 23 for more information about the jumpers and switches.

### **In-band automated boot recovery method**

**Note:** Use this method if the system board error LED is lit and there is a log entry or Booting Backup Image is displayed on the firmware splash screen; otherwise, use the in-band manual recovery method.

1. Boot the server to an operating system that is supported by the firmware update package that you downloaded.
2. Perform the firmware update by following the instructions that are in the firmware update package readme file.
3. Restart the server.
4. At the firmware splash screen, press F3 when prompted to restore to the primary bank. The server boots from the primary bank.

**Out-of-band method:** See the IMM documentation.

---

## Automated boot recovery (ABR)

While the server is starting, if the integrated management module II detects problems with the server firmware in the primary bank, the server automatically switches to the backup firmware bank and gives you the opportunity to recover the firmware in the primary bank. For instructions for recovering the UEFI firmware, see “Recovering the server firmware” on page 145. After you have recovered the firmware in the primary bank, complete the following steps:

1. Restart the server.
2. When the prompt Press F3 to restore to primary is displayed, press F3 to start the server from the primary bank.

---

## Nx boot failure

Configuration changes, such as added devices or adapter firmware updates, and firmware or application code problems can cause the server to fail POST (the power-on self-test). If this occurs, the server responds in either of the following ways:

- The server restarts automatically and attempts POST again.
- The server hangs, and you must manually restart the server for the server to attempt POST again.

After a specified number of consecutive attempts (automatic or manual), the Nx boot failure feature causes the server to revert to the default UEFI configuration and start the Setup utility so that you can make the necessary corrections to the configuration and restart the server. If the server is unable to successfully complete POST with the default configuration, there might be a problem with the system board.

To specify the number of consecutive restart attempts that will trigger the Nx boot failure feature, in the Setup utility, click **System Settings → Recovery → POST Attempts → POST Attempts Limit**. The available options are 3, 6, 9, and 255 (disable Nx boot failure).

---

## 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
- 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 151 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, which come with the server, 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 83.

Damaged data in CMOS memory or damaged server firmware can cause undetermined problems. To reset the CMOS data, use the clear CMOS jumper to clear the CMOS memory; see Table 2 on page 22. If you suspect that the server firmware is damaged, see “Recovering the server firmware” on page 145.

Check the LEDs on all the power supplies. If the LEDs indicate that the power supplies are working correctly, complete the following steps:

1. Turn off the server.
2. Make sure that the server is cabled correctly.
3. 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 two 1 GB DIMM on the system board.

The following minimum configuration is required for the server to start:

- One microprocessor
  - One 1 GB DIMM on the system board
  - One power supply
  - Power cord
  - ServeRAID SAS/SATA adapter
  - System board
4. Turn on the server. If the problem remains, suspect the following components in the following order:
    - a. Memory module
    - b. Microprocessor
    - c. System board

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 system 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.

---

## Problem determination tips

Because of the variety of hardware and software combinations that you can encounter, use the following information to assist you in problem determination. If possible, have this information available when you request assistance from IBM.

- 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?
  - Does the failure occur on a single server or on multiple servers?
  - Is the failure repeatable?
  - Has this configuration ever worked?
  - What changes, if any, were made before the configuration failed?
  - Is this the original reported failure?
- Diagnostic program type and version level
- Hardware configuration (print screen of the system summary)
- Server firmware 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
- Server firmware level
- Adapters and attachments, in the same locations
- Address jumpers, terminators, and cabling
- Software versions and levels
- Memory amount, type and configuration
- Diagnostic program type and version level
- Configuration option settings
- Operating-system control-file setup

See Appendix A, “Getting help and technical assistance,” on page 295 for information about calling IBM for service.



---

## Chapter 4. Parts listing, System x3400 M2 Types 7836 and 7837

The following replaceable components are available for the System x3400 M2 Types 7836 and 7837 servers. For an updated parts listing on the Web, 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 the document.

1. Go to <http://www.ibm.com/systems/support/>
2. Under **Product support**, click **System x**.
3. Under **Popular links**, select **Parts documents lookup**.
4. From the Product family menu, select **System x3400 M2** and click **Go**.

---

### Replaceable server components

The four types of replaceable components are:

- **Consumables:** Purchase and replacement of consumables (components, such as batteries and printer cartridges, that have depleting life) is your responsibility. If IBM acquires or installs a consumable component at your request, you will be charged for the service.
- **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 on the IBM *System x Documentation* CD.

The following illustration shows the major components in the server. The illustrations in this document might differ slightly from your hardware.

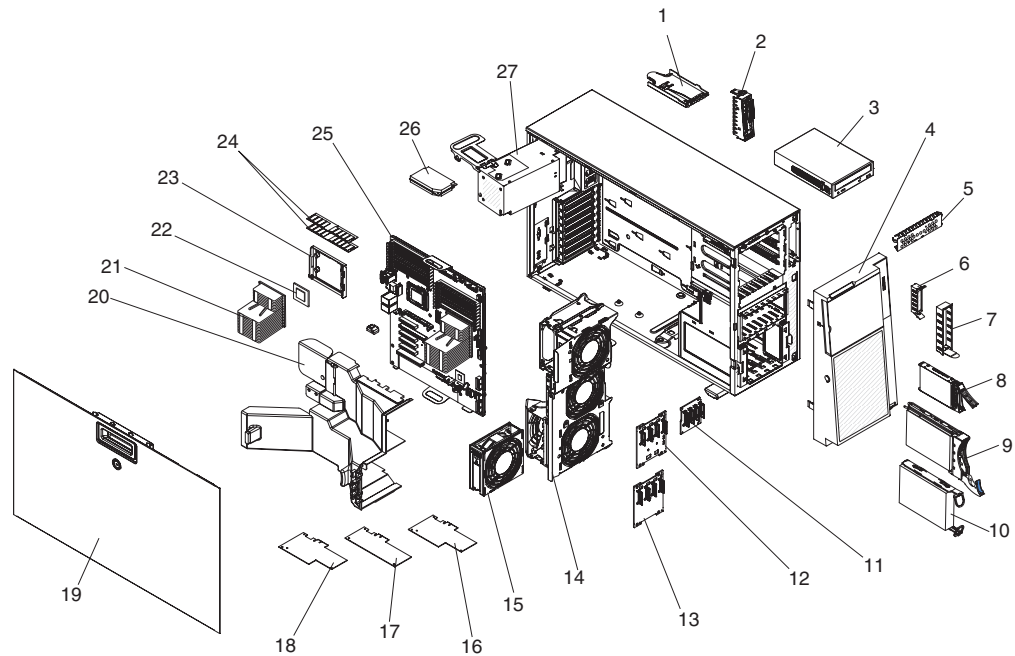


Table 8. Parts listing, Types 7836 and 7837 (depending on your model)

Index	Description	CRU part number (Tier 1)	CRU part number (Tier 2)	FRU part number
1	Control panel assembly, with bracket and cables (All models)			41Y9083
2	USB 2.0, (front) cable assembly (All models)		39Y9790	
3	Drive, SATA half-high DVD-ROM (All models)	43W8466		
4	Bezel assembly, front (All models)		46D1391	
5	filler, 5.25 optical (All models)	46C6706		
6	filler, 2.5 hard disk drive	46C6706		
7	EMC shield, (for 4 x 3.5-inch) (Type 7836 and 7837, models 14x, 34x, 52x)	46D1402		
8	Hard disk drive, IBM 146 GB 10K 6 Gbps, 2.5-inch SFF slim hot-swap SAS	42D0633		
8	Hard disk drive, IBM 300 GB 10K 6 Gbps, 2.5-inch SFF slim hot-swap SAS	42D0638		
8	Hard disk drive, IBM 73 GB 15K 6 Gbps, 2.5-inch SFF slim hot-swap SAS	42D0673		
8	Hard disk drive, IBM 146 GB 15K 6 Gbps, 2.5-inch SFF slim hot-swap SAS	42D0678		
8	Hard disk drive, IBM 73 GB 10K 2.5-inch SFF slim hot-swap SAS	43W7537		
8	Hard disk drive, IBM 146 GB 10K 2.5-inch SFF slim hot-swap SAS	43W7538		
8	Hard disk drive, IBM 73 GB 15K 2.5-inch SFF slim hot-swap SAS	43W7546		

Table 8. Parts listing, Types 7836 and 7837 (depending on your model) (continued)

Index	Description	CRU part number (Tier 1)	CRU part number (Tier 2)	FRU part number
9	Hard disk drive, 160 GB 3.5-inch hot-swap SATA II	40K6885		
9	Hard disk drive, 250 GB 3.5-inch hot-swap SATA II	40K6889		
9	Hard disk drive, 500 GB 3.5-inch hot-swap SATA II	39M4533		
9	Hard disk drive, 750 GB 3.5-inch hot-swap SATA II	43W7579		
9	Hard disk drive, IBM Server, 1 TB 7200 3.5-inch hot-swap SATA	43W7629		
9	Hard disk drive, 73 GB 15K 3.5-inch hot-swap SAS	39R7348		
9	Hard disk drive, 146 GB 15K 3.5-inch hot-swap SAS	39R7350		
9	Hard disk drive, 300 GB 15K 3.5-inch hot-swap SAS	43X0805		
10	Hard disk drive, 160 GB 3.5-inch simple-swap SATA II	39M4507		
10	Hard disk drive, 250 GB 3.5-inch simple-swap SATA II	39M4511		
10	Hard disk drive, 500 GB 3.5-inch simple-swap SATA II	39M4517		
10	Hard disk drive, 750 GB 3.5-inch simple-swap SATA II	43W7575		
11	Backplate assembly (for 2.5-inch hot-swap SAS/SATA drives) (Type 7836 and 7837 models 14x, 34x, and 52x)		43V7070	
12	Backplate assembly (for 3.5-inch hot-swap SAS/SATA drives) (Type 7836 and 7837 models 24x and 44x)		49Y4462	
13	Backplate and cable assembly (for 3.5-inch simple-swap SATA drives) (Type 7836 and 7837 models 12x, 22x, 32x, and 42x)		46D1398	
14	Fan cage/adaptor guide assembly, hot-swap (all models)		46D1384	
15	Fan assembly, 120mm hot-swap (all models)	44E4563		
16	ServeRAID-MR10i SAS/SATA adapter	43W4297		
17	ServeRAID-BR10i SAS/SATA adapter			44E8690
18	ServeRAID-MR10is VAULT SAS/SATA adapter	44E8696		
19	Cover side, assembly with latch and bezel lock (optional) (All models)	46D1389		
20	Air duct (All models)	46D1409		
21	Heat sink, microprocessor (All models)			46D1407
22	Microprocessor, 1.86 GHz/800MHz, 4MB dual-core 80W (Type 7836 and 7837 models 12x, 14x)			46D1272
22	Microprocessor, 2.00 GHz/800MHz, 4MB quad-core 80W (Type 7836 and 7837 models 22x, 24x)			46D1271
22	Microprocessor, 2.26 GHz/1066MHz, 8MB quad-core 80W (Type 7836 and 7837 models 32x, 34x)			46D1267
22	Microprocessor, 2.40 GHz/1066MHz, 8MB quad-core 80W (Type 7836 and 7837 models 42x, 44x)			46D1266
22	Microprocessor, 2.53 GHz/1066MHz, 8MB quad-core 80W (Type 7836 and 7837 models 52x)			46D1265
23	Microprocessor, retention module assembly (All models)			46D1397
24	Memory, 1 GB PC3-10600R-900, ECC DDR3/1333MHz (All models)	44T1490		

Table 8. Parts listing, Types 7836 and 7837 (depending on your model) (continued)

Index	Description	CRU part number (Tier 1)	CRU part number (Tier 2)	FRU part number
24	Memory, 2 GB dual-rank PC3-10600R-999 DDR3 ECC UDIMM	44T1573		
24	Memory, 2 GB single-rank PC3-10600R-999 DDR3 ECC UDIMM	44T1574		
25	System board			81Y6002
26	Voltage Regulator module		39Y7395	
27	Power supply, 670W			39Y7393
	Power supply, 920W	39Y7387		
	System foot kit (rear) (All models)			13N2985
	EMC shield kit (All models)	46C6706		
	EMC shield kit, 3.5 inch hot-swap (Type 7836 and 7837, models 12x, 22x, 24x, 32x, 42x)	46D1404		
	EMC plate kit, simple-swap (Type 7836 and 7837, models 12x, 22x, 24x, 32x, 42x, 44x)	46D1399		
	Extender card, PCI Express			49Y4508
	Extender card, PCI-X			49Y4509
	Mounting bracket, front USB (rack models only)		46D1385	
	System foot stabilizer kit (front ) (All models)			26K7345
	Keylock assembly, with alike keys (optional) (All models)		26K7363	
	Keylock assembly, with random keys (optional) (All models)		26K7364	
	Virtual media key assembly	46C7532		
	Fan, filler (All models)		46D1410	
	Adapter, 3U SCSI (Type 7836 and 7837, models 14x, 24x, 34x, 44x, 52x)			44E8690
	Bottom cover (rack models only)	46C6704		
	System board tray (All models)			46D1390
	Bezel, rack assembly (optional)	46D1387		
	Chassis (All models)			46D1408
	Power supply cage			39Y7389
	Battery, 3.0 volt	33F8354		
	Cable, 24" SATA, DVD signal (All models)		25R5635	
	Cable assembly, front panel USB 2.0 (All models)		39Y9790	
	Cable assembly (All models)		41Y9082	
	Cable, optical power, SATA (All models)		46D1393	
	Cable, hot-swap 120x38 fan harness (All models)		46D1394	
	Cable, 2.5-inch hard disk drive power (Type 7836 and 7837, models 14x, 34x, 52x)		46D1400	
	Cable, 2.5-inch hard disk drive backplate configuration signal (Type 7836 and 7837, models 14x, 34x, 52x)		46D1401	

Table 8. Parts listing, Types 7836 and 7837 (depending on your model) (continued)

Index	Description	CRU part number (Tier 1)	CRU part number (Tier 2)	FRU part number
	Cable, 3.5-inch hard disk drive SAS/SATA backplate power and configuration (Type 7836 and 7837, models 24x, 44x)		46D1403	
	Cable, hard disk drive SAS/SATA signal 710mm (Type 7836 and 7837, models 14x, 24x, 34x, 44x, 52x)		46M6498	
	Cable, simple-swap SATA signal/power assembly (Type 7836 and 7837, models 12x, 22x, 32x, 42x)		49Y4514	
	Cable, tape drive power converter		49Y6796	
	Cable, operator information panel			41Y9082
	Operator information panel assembly (cable and housing)			41Y9083
	Line cord, Japan (All models)	39M5199		
	Line cord, China (All models)	39M5206		
	Line cord, India (All models)	39M5226		
	Mouse, optical wheel USB (All models)	39Y9875		
	Keyboard, 103P U.S. English (All models)	42C0060		
	Keyboard, 194 Japan (All models)	42C0081		
	Shield, ODD bay, top and bottom (rack models only)	41Y9070		
	Slide rail kit		40K6679	
	Service label (All models)	46C6705		
	Top/side cover		46D1411	
	Thermal grease (All models)		41Y9292	
	Alcohol wipe (All models)		59P4739	

## Consumable parts

Consumable parts are not covered by the IBM Statement of Limited Warranty. The following consumable parts are available for purchase from the retail store.

Table 9. Consumable parts, Types 7836 and 7837

Index	Description	Part number
	ServeRAID-MR10i battery	43W4342

To order a consumable part, complete the following steps:

1. Go to <http://www.ibm.com>.
2. From the **Products** menu, select **Upgrades, accessories & parts**.
3. Click **Obtain maintenance parts**; then, follow the instructions to order the part from the retail store.

If you need help with your order, call the toll-free number that is listed on the retail parts page, or contact your local IBM representative for assistance.

---

## 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
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
39M5130	Denmark
39M5144	Bangladesh, Lesotho, Macao, Maldives, Namibia, Nepal, Pakistan, Samoa, South Africa, Sri Lanka, Swaziland, Uganda

<b>IBM power cord part number</b>	<b>Used in these countries and regions</b>
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 220 - 240 V	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
39M5081 110 - 120 V	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
39M5226	India
39M5233	Brazil





---

## Chapter 5. 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 4, “Parts listing, System x3400 M2 Types 7836 and 7837,” on page 153, 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 and the guidelines in “Working inside the server with the power on” on page 163, and “Handling static-sensitive devices” on page 163. This information will help you work safely.
- 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, complete the following steps:
  1. Go to <http://www.ibm.com/systems/support/>.
  2. Under **Product support**, click **System x**.
  3. Under **Popular links**, click **Software and device drivers**.
  4. Click **System x3400 M2** to display the matrix of downloadable files for the server.

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>.

- Before you install optional 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 1, “Start here,” on page 1 and Chapter 3, “Diagnostics,” on page 25 for diagnostic information.
- 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, a small Phillips screwdriver, and a T8 torx screwdriver available.
- You do not have to turn off the server to install or replace hot-swap fans, hot-swap hard disk drives, hot-plug adapters, or hot-plug Universal Serial Bus (USB) devices. However, you must turn off the server before performing 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 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.
- If the server has redundant power, each of the power-supply bays has a power supply 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 turning on the server. Operating the server for extended periods of time (more than 30 minutes) with the server cover removed might damage server components.
- You have followed the cabling instructions that come with optional adapters.
- You have replaced a failed fan within 48 hours.
- You have replaced a hot-swap fan within 30 seconds of removal.
- You have replaced a hot-swap drive within 10 minutes of removal.
- You do not run the server without the air baffle installed. Operating the server without the air baffle might cause the microprocessor or the DIMMs to overheat.
- The microprocessor socket always contains a microprocessor and heat sink.

## 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 could result in the loss of data. To avoid this potential problem, always use an electrostatic-discharge wrist strap or other grounding system when working inside the server with the power on.

You might have to have the server turned on while the cover is off, to look at LEDs or replace hot swap components. 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 working 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 could 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 working 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 handling 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.

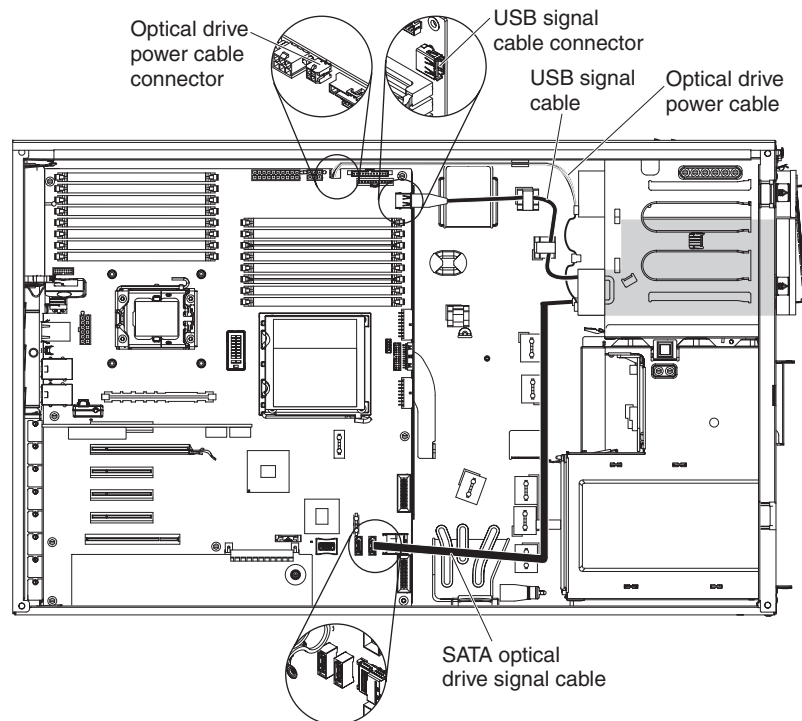
## Internal cable routing and connectors

The server uses cables to connect SATA attached, simple-swap SATA, hot-swap SATA and hot-swap SAS devices to the power supply and to the system board.

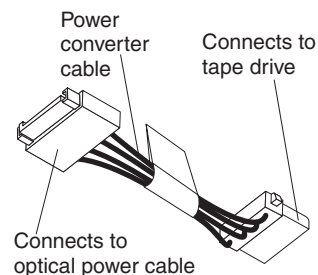
Review the following information before connecting power and signal cables to internal drives:

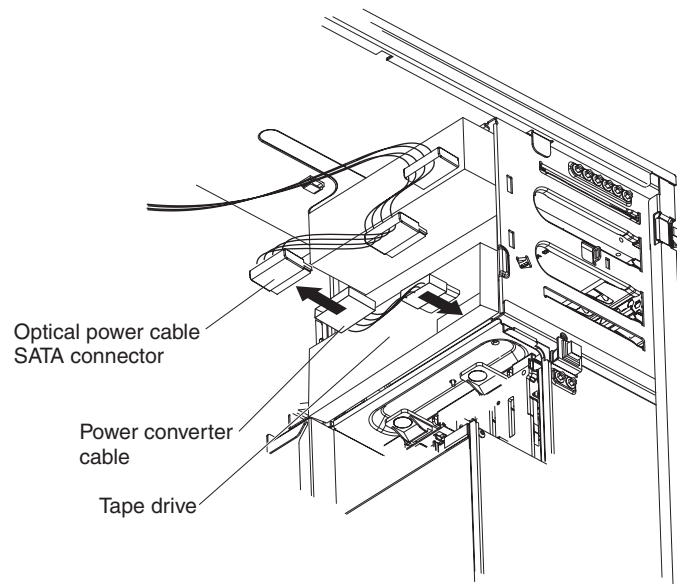
- The drives that are preinstalled in the server come with power and signal cables attached. If you replace any drives, remember which cable is attached to which drive.
- When you route a cable, make sure that it does not block the airflow to the rear of the drives or over the microprocessor or DIMMs.

You can install either a USB or SATA tape drive in the server. The following illustration shows the internal cable routing and connectors for both the USB tape drive and the SATA tape drive. It also shows the internal power cable for the optical drives.

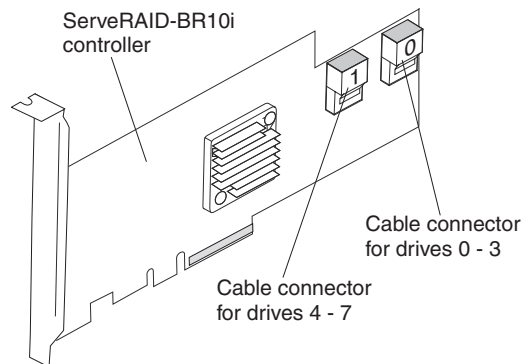


The following illustrations show the cabling information for installing the SATA to traditional power converter cable when you install an RDX internal USB tape drive in the server. This cable comes with the server in the plastic bag with the drive rails.

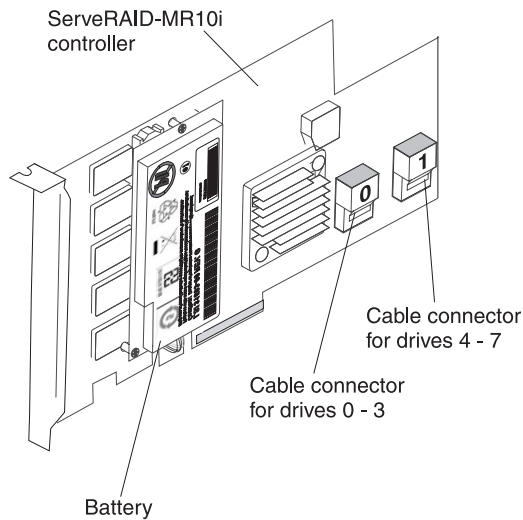




The following illustration shows the cable connectors on the ServeRAID-BR10i controller.



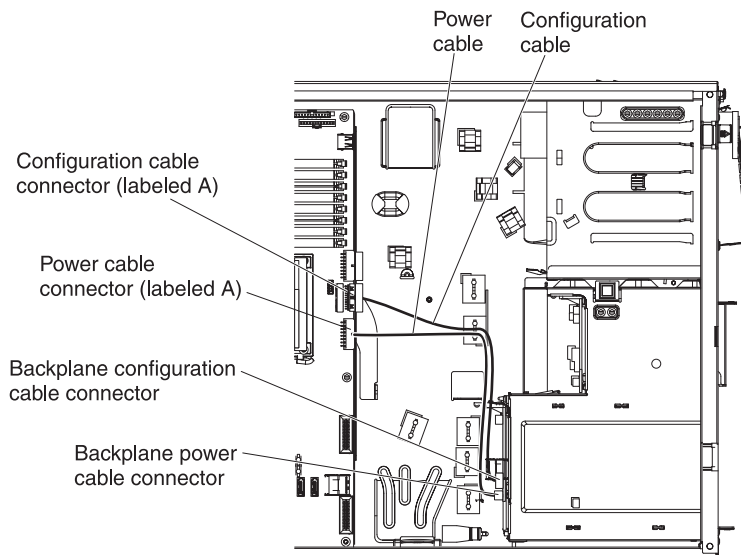
The following illustration shows the cable connectors on the ServeRAID-MR10i controller.



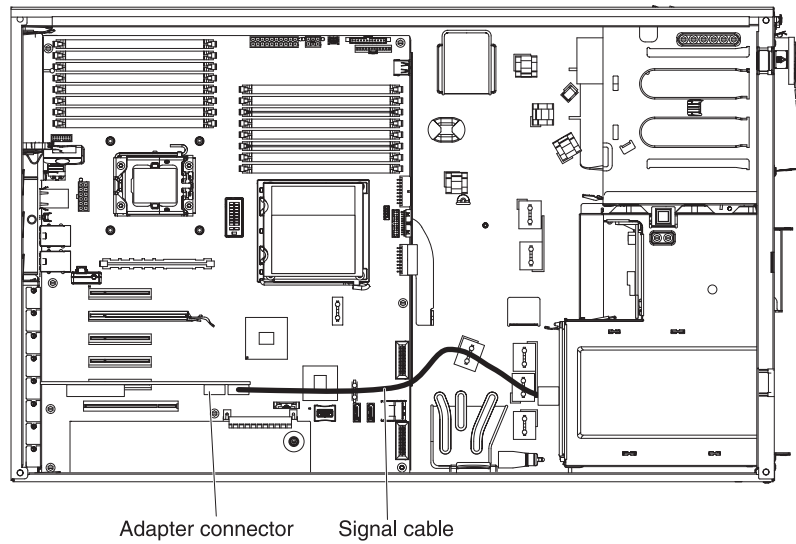
Review the following information before connecting power, configuration, and signal cables:

**1. For server models with four 3.5-inch hot-swap hard disk drives.**

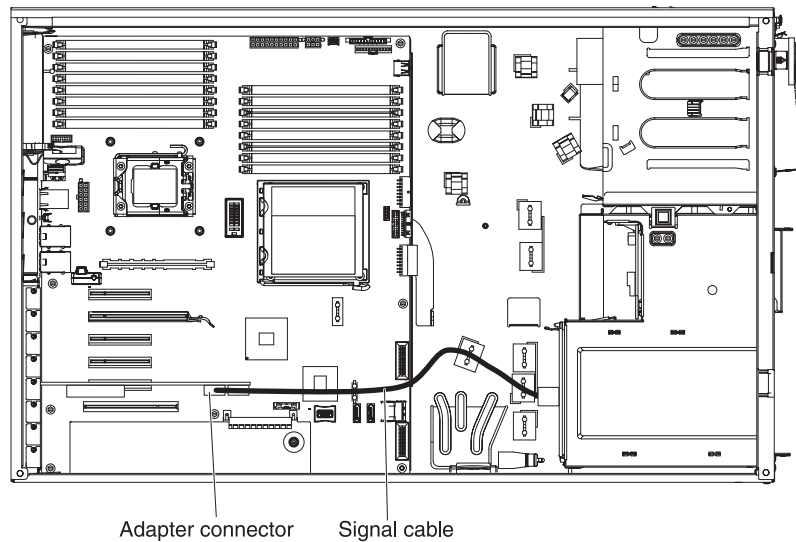
- The following illustration shows the internal power and configuration cable routing.



- The following illustration shows the internal signal cable routing for installing a ServeRAID-BR10i SAS/SATA adapter.

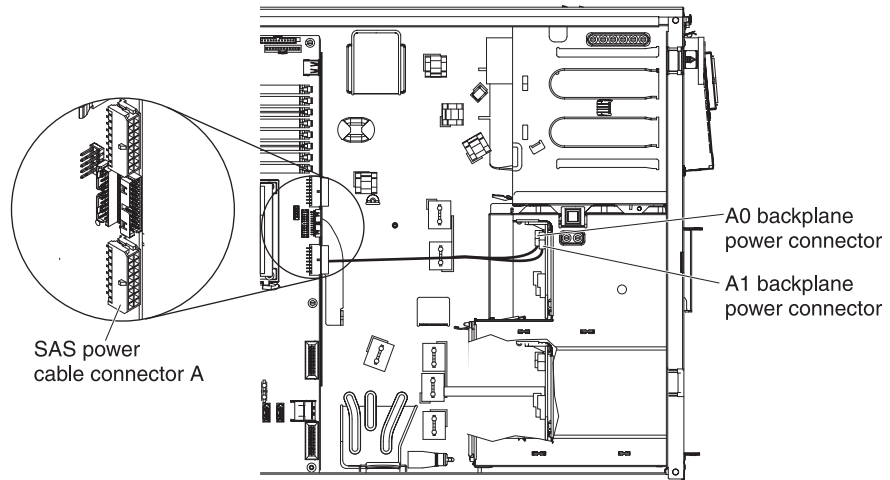


- The following illustration shows the internal signal cable routing for installing a ServerRAID-MR10i SAS/SATA adapter.

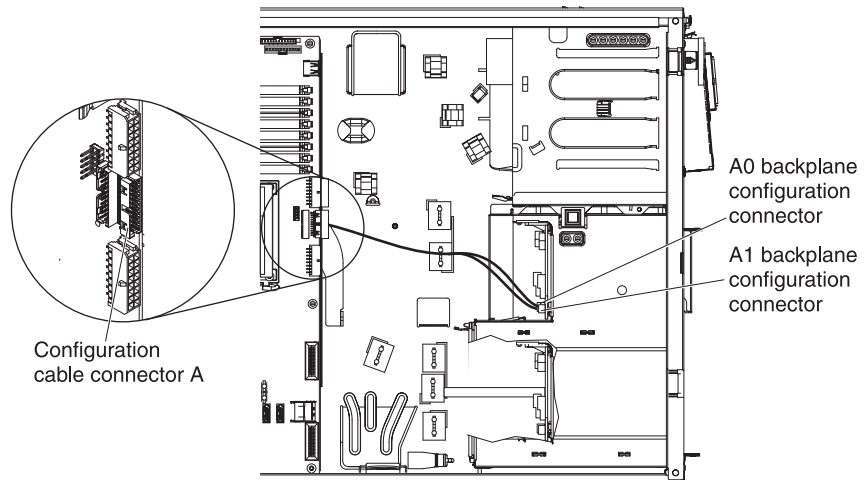


## 2. For server models with eight 2.5-inch hot-swap hard disk drives.

- The following illustration shows the internal power cable routing.

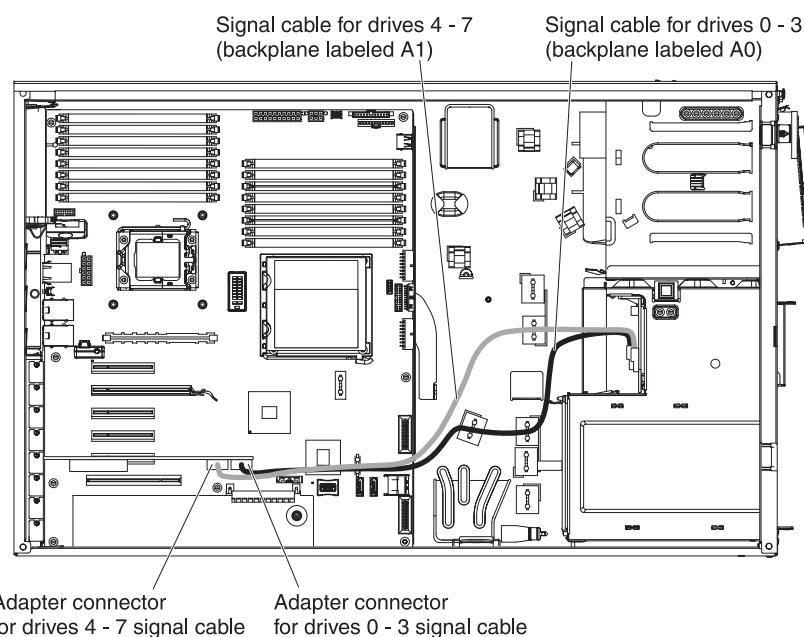


- The following illustration shows the internal configuration cable routing.

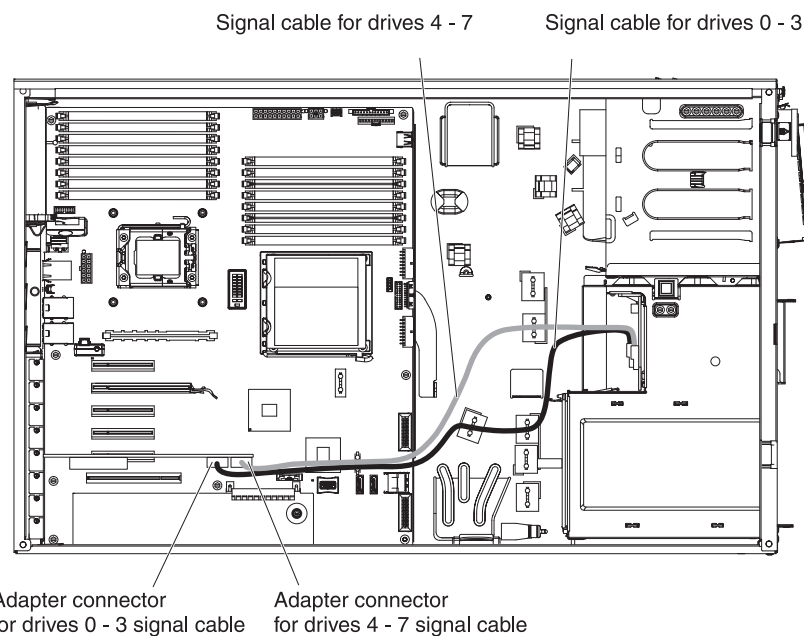


- The following illustration shows the internal signal cable routing for installing a ServeRAID-BR10i SAS/SATA adapter.

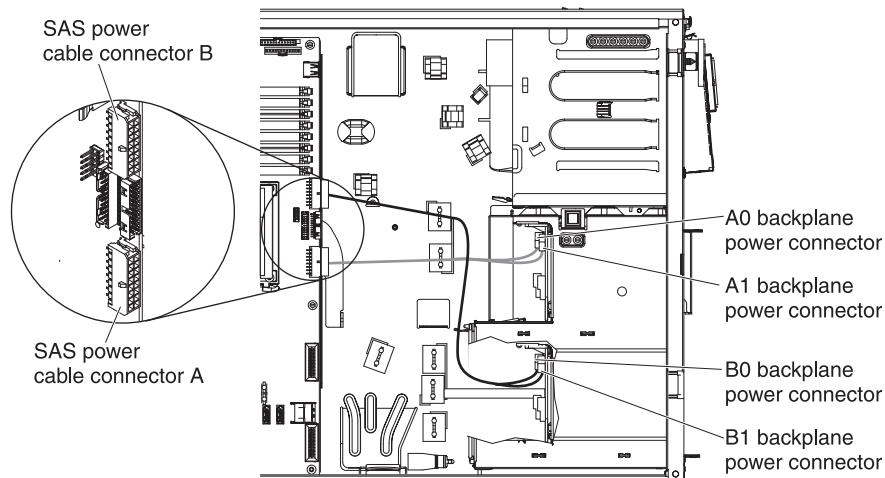




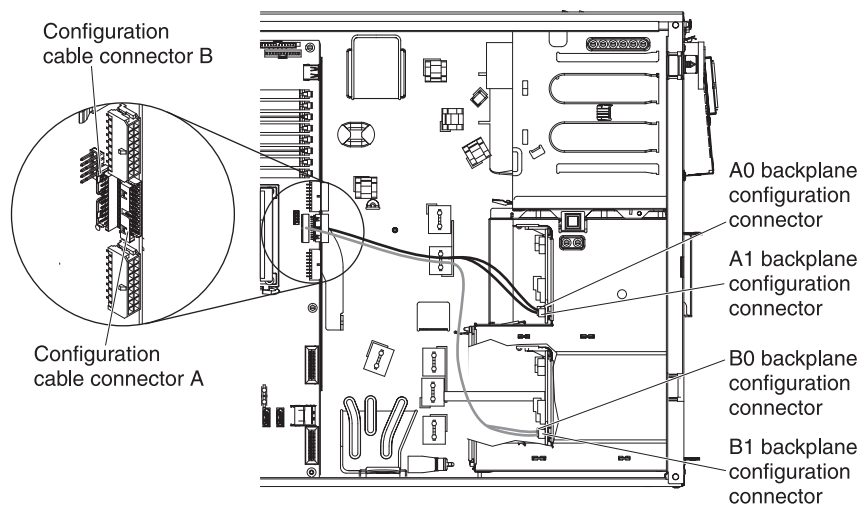
- The following illustration shows the internal signal cable routing for installing a ServerRAID-MR10i SAS/SATA adapter.



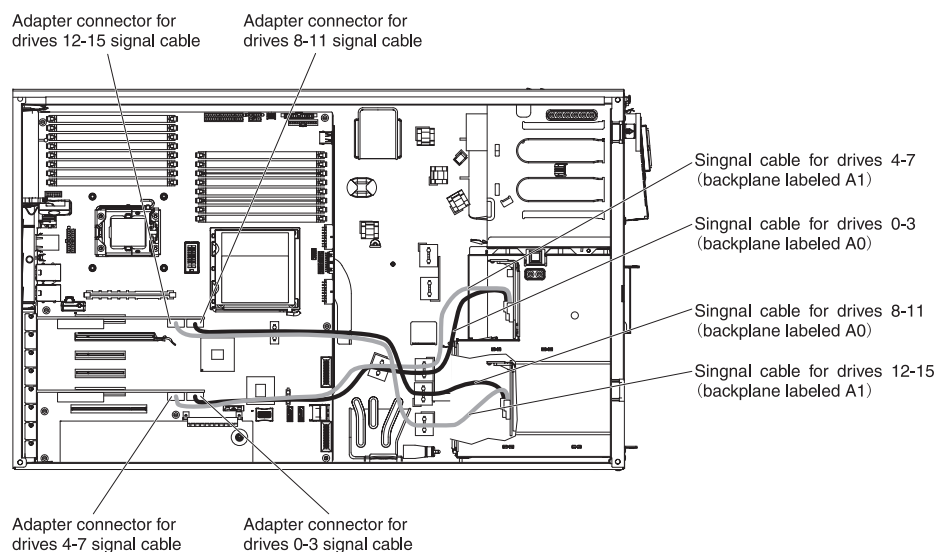
3. **For server models with sixteen 2.5-inch hot-swap hard disk drives.**
  - The following illustration shows the internal power cable routing.



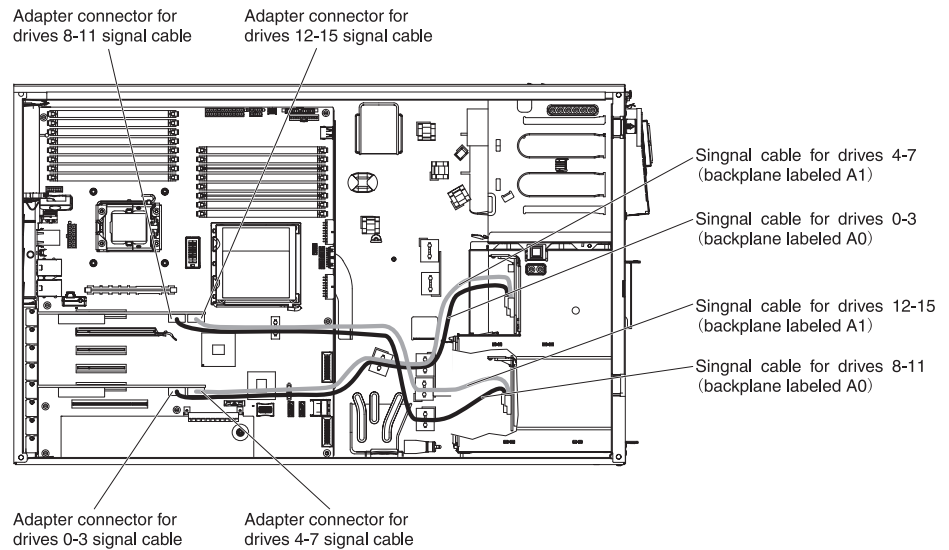
- The following illustration shows the internal configuration cable routing.



- The following illustration shows the internal signal cable routing for installing a ServerRAID-BR10i SAS/SATA adapter.

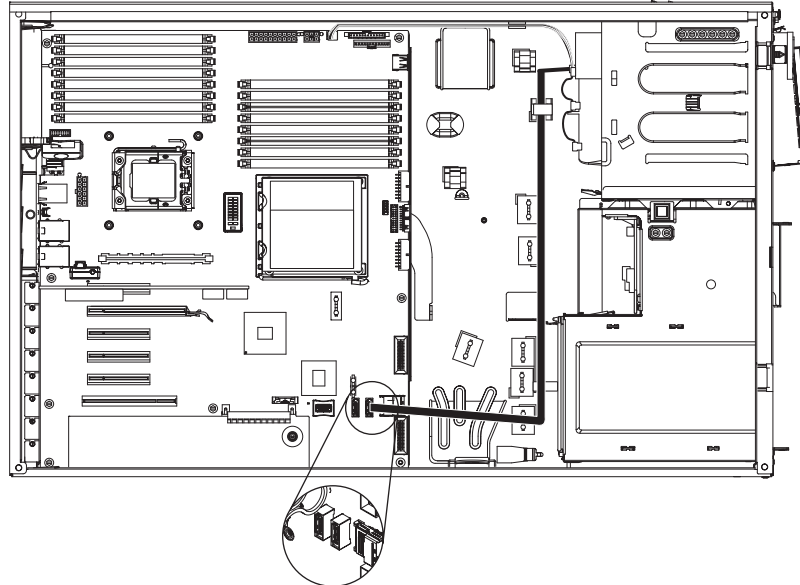


- The following illustration shows the internal signal cable routing for installing a ServeRAID-MR10i SAS/SATA adapter.

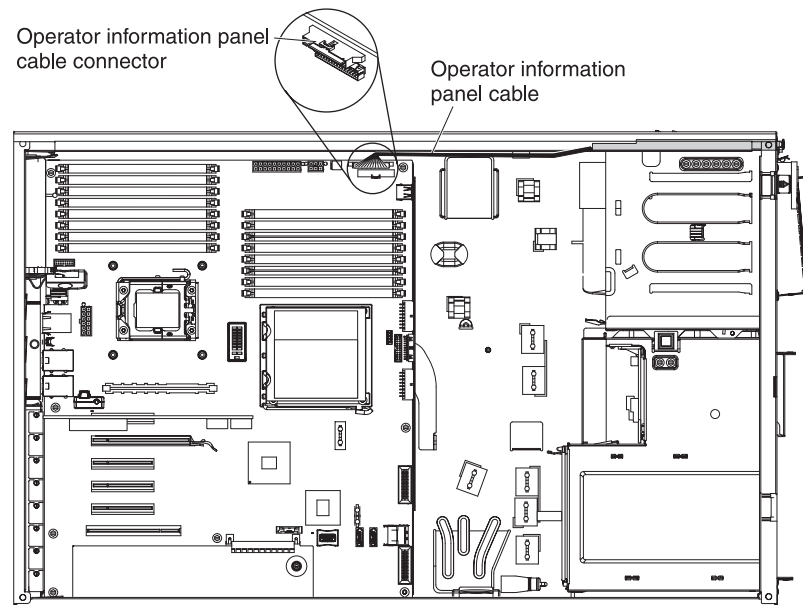


The following illustration shows the internal SATA and power cable routing and the connectors from the DVD drive to the system board.

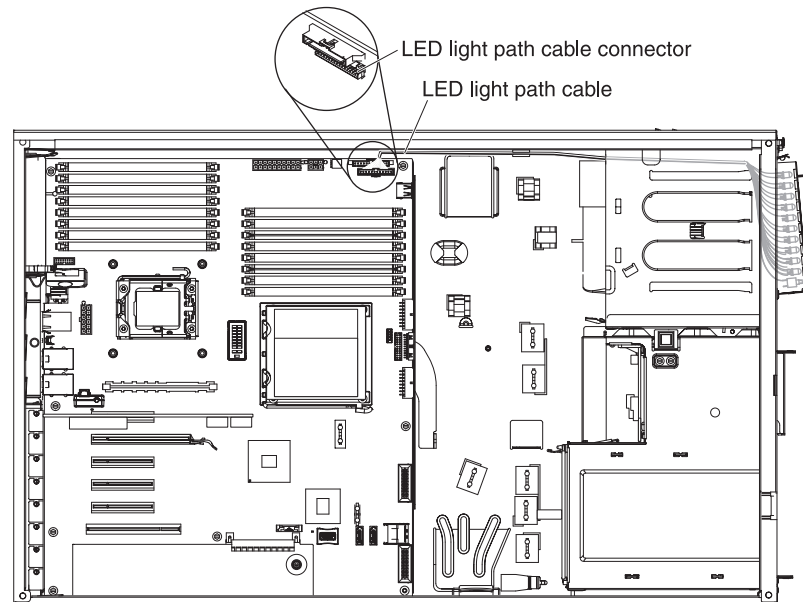
**Note:** Do not disconnect the cable by using excessive force. Failing to remove the cable properly may damage the connectors on the system board. Any damage to the connectors may require replacing the system board.



The following illustration shows the internal cable routing and connectors from the operator information panel to the system board.



The following illustration shows the internal cable routing and connectors from the light path diagnostics LED panel to the system board.



---

## Removing and replacing Tier 1 CRUs

Replacement of consumable parts and Tier 1 CRUs is your responsibility. If IBM installs a consumable part or a Tier 1 CRU at your request, you will be charged for the installation. For additional installation and reference information, see the *Installation and User's Guide* on the *System x Documentation CD*.

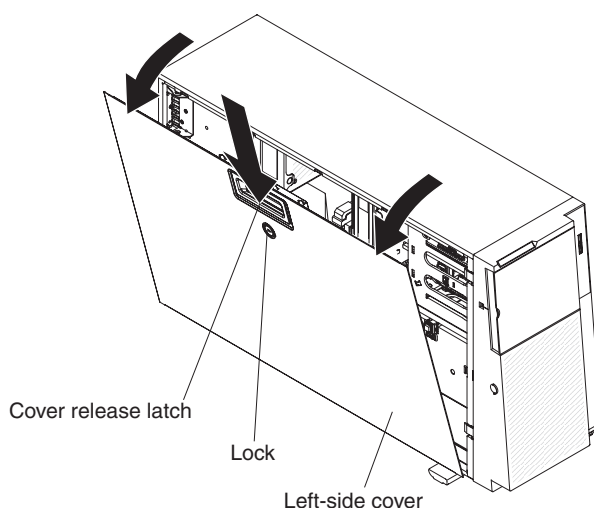
The illustrations in this document might differ slightly from your hardware.

### Removing the left-side cover

**Attention:** Operating the server for more than 30 minutes with the left-side cover removed might damage server components. For proper cooling and airflow, replace the left-side cover before turning on the server.

To remove the left-side cover, complete the following steps.

1. Read the safety information that begins on page vii and “Installation guidelines” on page 161.
2. Turn off the server and all attached devices; then, disconnect all power cords and external cables.
3. Unlock the left-side cover.
4. Press down on the cover-release latch (as shown in the illustration); then, remove the cover and set it aside.

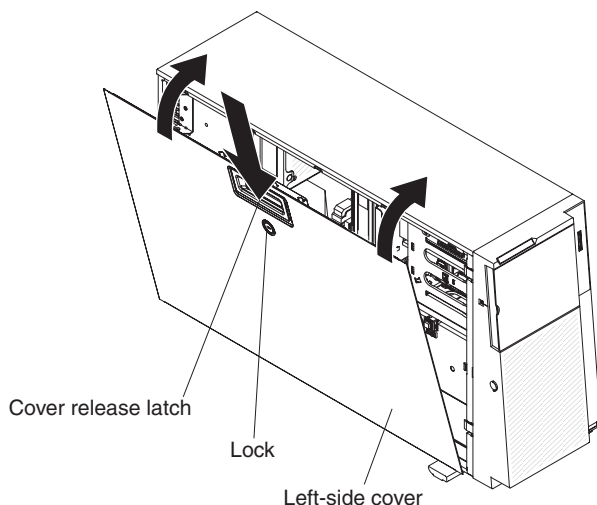


5. If you are instructed to return the left-side cover, follow all packaging instructions, and use any packaging materials for shipping that are supplied to you.

### Installing the left-side cover

**Attention:** For proper cooling and airflow, replace the left-side cover before turning on the server. Operating the server for extended periods of time (more than 30 minutes) with the left-side cover removed might damage server components.

To install the left-side cover, complete the following steps.



1. Make sure that all cables, adapters, and other components are installed and seated correctly and that you have not left loose tools or parts inside the server. Also, make sure that all internal cables are correctly routed.
2. Insert the bottom edge of the cover onto the inside lip of the chassis and rotate the cover toward the server push it closed to lock it into place.
3. Lock the left-side cover.

**Note:** When you lock the server left-side cover, it locks both the cover and the bezel.

4. Reconnect the external cables and power cords; then, turn on the attached devices and turn on the server.

## Removing the bezel

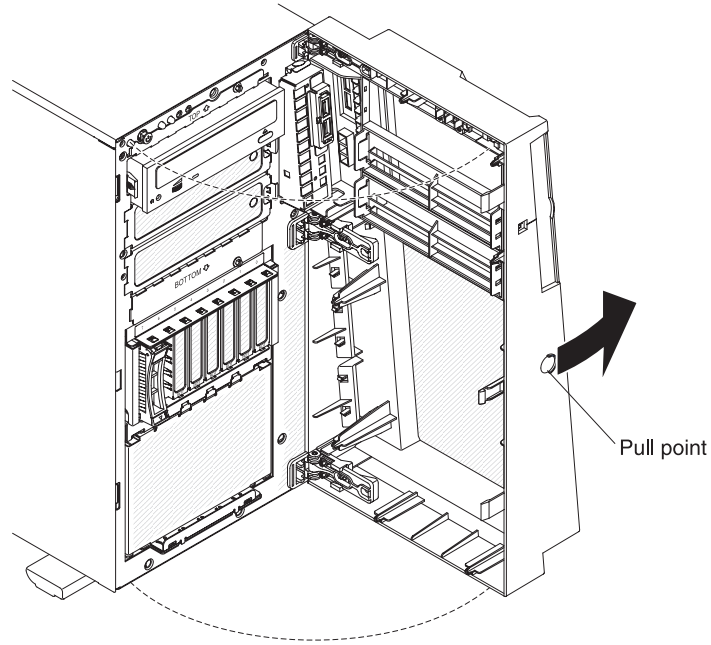
To remove the bezel, complete the following steps.

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

1. Read the safety information that begins on page vii and “Installation guidelines” on page 161.
2. Unlock the left-side cover.

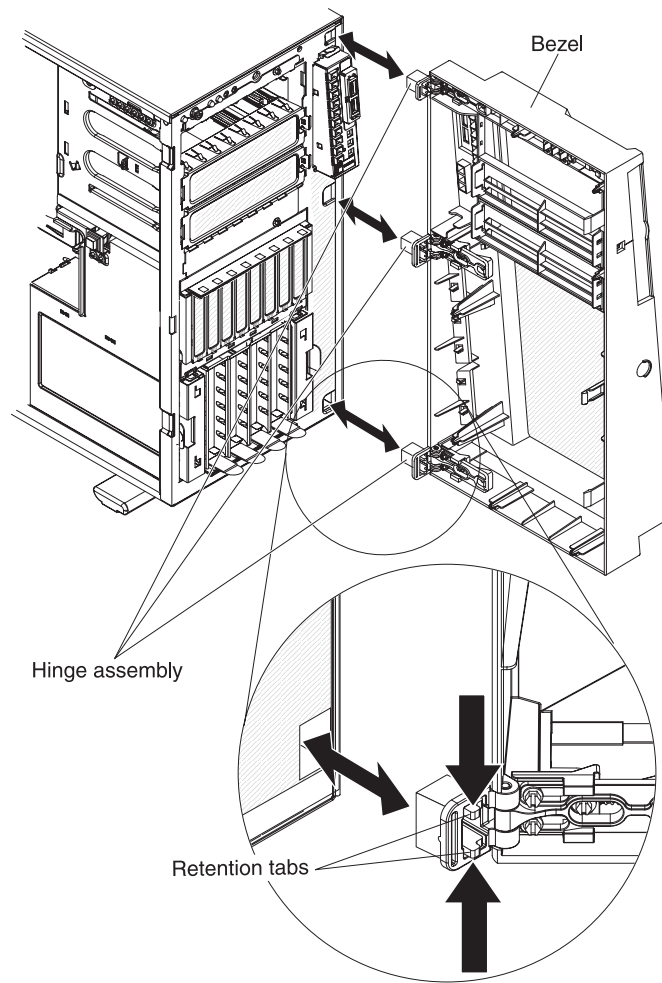
**Note:** You must unlock the left-side cover to open or remove the bezel. When you lock the server left-side cover, it locks both the cover and the bezel.

3. Grasp the pull-point area on the left side of the bezel door and rotate the bezel to the open position.



4. To remove the bezel door completely, press the retention tabs toward each other and pull the hinge out of the chassis.

**Note:** While pressing the retention tabs together, you might need a screwdriver to help pry the hinge out.



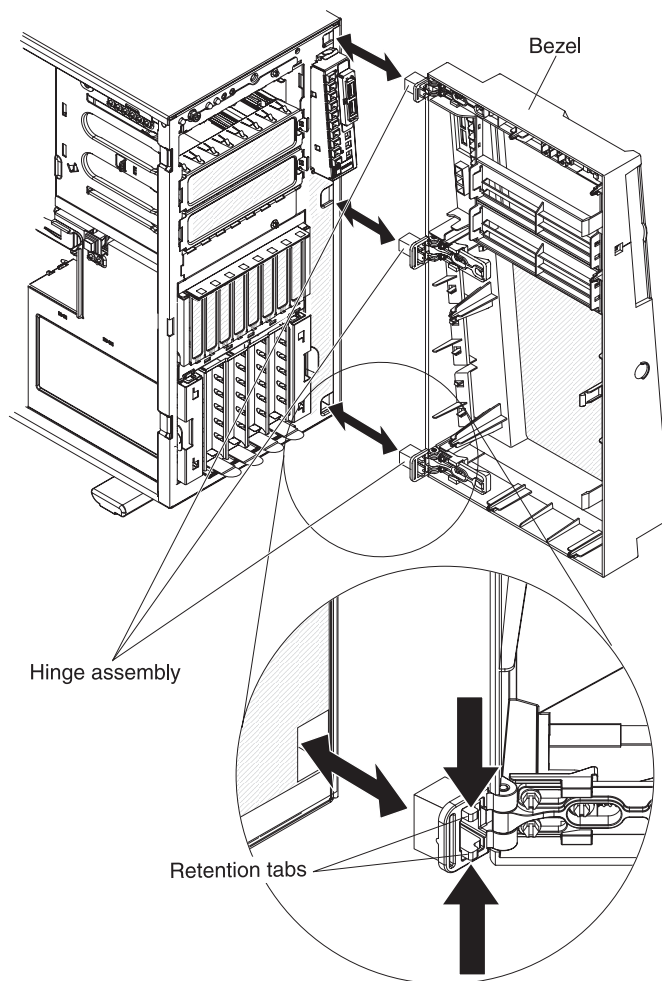
**Note:** The bezel is designed with a breakaway hinge feature and will disengage from the chassis if you rotate the bezel beyond 180°. Do not be alarmed because this is how the bezel was designed. The bezel is designed with breakaway hinges so that you can easily reattach it to the chassis.

## Replacing the bezel

To replace the bezel, complete the following steps.

1. Align the hinge with the holes on the chassis.

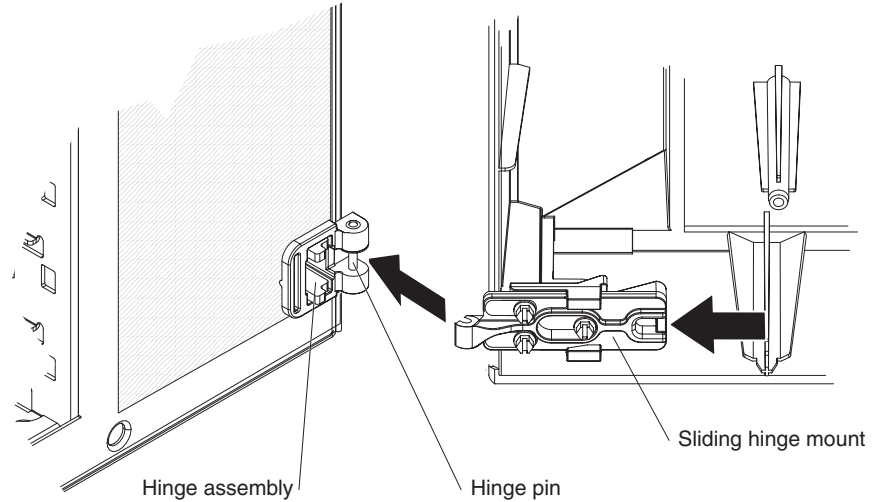




2. Push the hinge into the hole until the hinge snaps into place.
3. Close the bezel.

To replace the bezel if the bezel was removed using the breakaway hinge feature, complete the following steps.

1. Press the hinge mount until it extends beyond the edge of the bezel and hold it in place.



2. Align the hinge mount with the hinge pin.
3. Press the hinge mount against the hinge pin until it snaps in place.
4. Close the bezel.

## Opening and closing the bezel media door

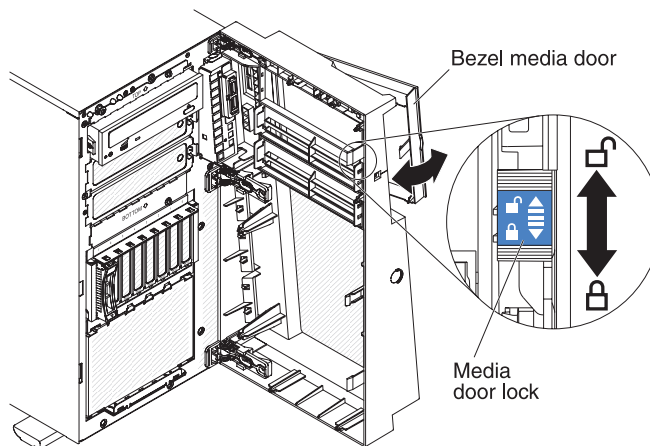
To open and close the media door, complete the following steps:

1. Read the safety information that begins on page vii and “Installation guidelines” on page 161.
2. Unlock the left-side cover.

**Note:** You must unlock the left-side cover to open or remove the bezel. When you lock the server left-side cover, it locks both the cover and the bezel.

3. Grasp the pull-point area on the left side of the bezel door and rotate the bezel to the open position.
4. From inside of the top section of the bezel door, slide the blue tab up to unlock the bezel media door; then, grasp the pull-point area on the left side of the media door and pull the door open.

**Note:** To close and lock the bezel media door, rotate the door to the closed position and slide the blue tab down to lock it.



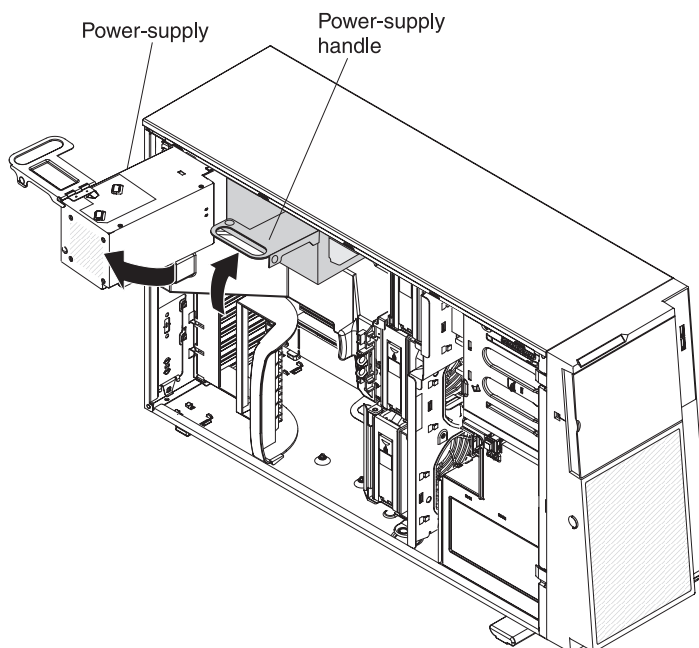
## Removing the air baffle

To remove the air baffle, complete the following steps.

1. Read the safety information that begins on page vii and “Installation guidelines” on page 161.
2. Turn off the server and all attached devices; then, disconnect all power cords and external cables.
3. Carefully lay the server on its side so that it is lying flat and the cover is facing up.

**Attention:** Be careful and do not drop the server.

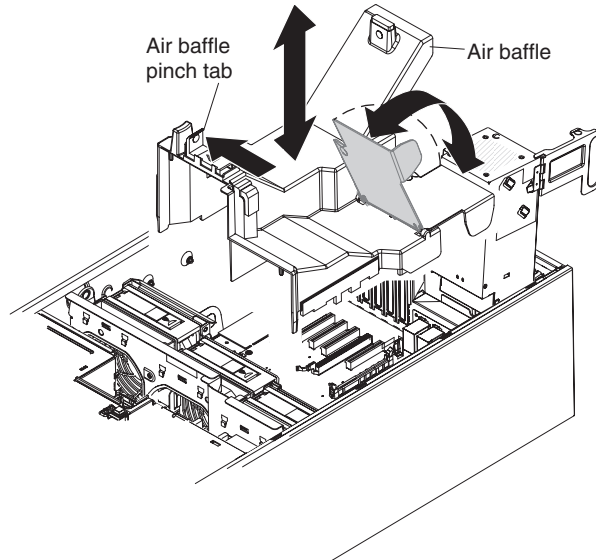
4. Remove the left-side cover (see “Removing the left-side cover” on page 173).
5. Rotate the power-supply cage assembly out of the chassis. Lift up the power-supply handle and pull the power-supply cage assembly all the way up until the retainer latch locks the cage in place on the chassis.



**Note:** Before you remove the air baffle, note the proper installation of the air baffle.

6. Remove the air baffle. Lift the rear of the air baffle up; then, press the blue release tab (on top of the fan cage) on the air baffle assembly to the left and lift it from the server and set it aside.

**Note:** It might be easier to remove the air baffle if you lift up the plastic tab that is over the DIMMs in the rear of the server.

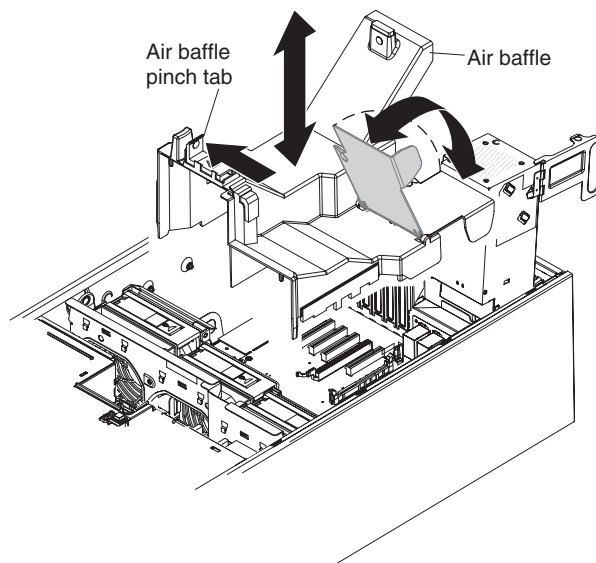


7. If you are instructed to return the microprocessor air baffle, follow all packaging instructions, and use any packaging materials for shipping that are supplied to you.

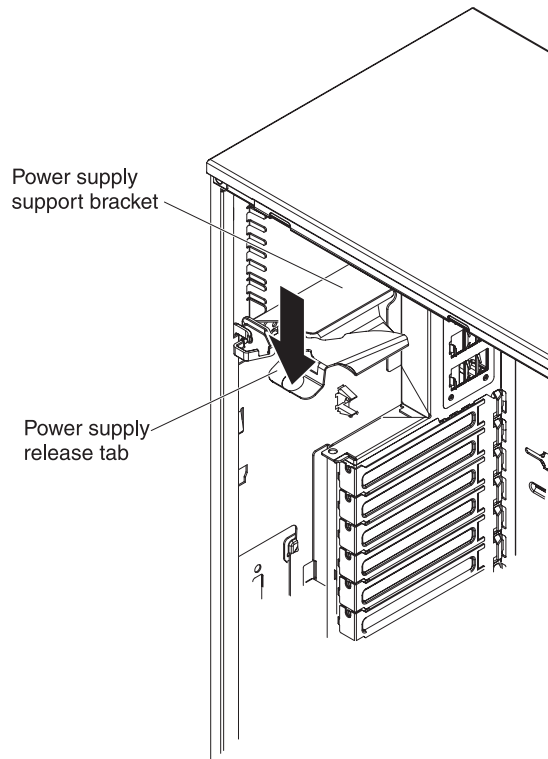
## Installing the air baffle

To install the microprocessor air baffle, complete the following steps.

1. Align the air baffle pins with the pin holes on the fan cage and the pin hole on the rear of the chassis.
2. Lower the air baffle into the server until the air baffle is seated firmly.



3. Press the power-supply release tab and rotate the power-supply back into the server.



4. Install the left-side cover (see “Installing the left-side cover” on page 173).
5. Lock the left-side cover.
6. Reconnect the external cables and power cords; then, turn on the attached devices and turn on the server.

## Removing a power supply

When you remove or install a 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.**

**Statement 11:**



**CAUTION:**

The following label indicates sharp edges, corners, or joints nearby.



**Statement 17:**



**CAUTION:**

The following label indicates moving parts nearby.

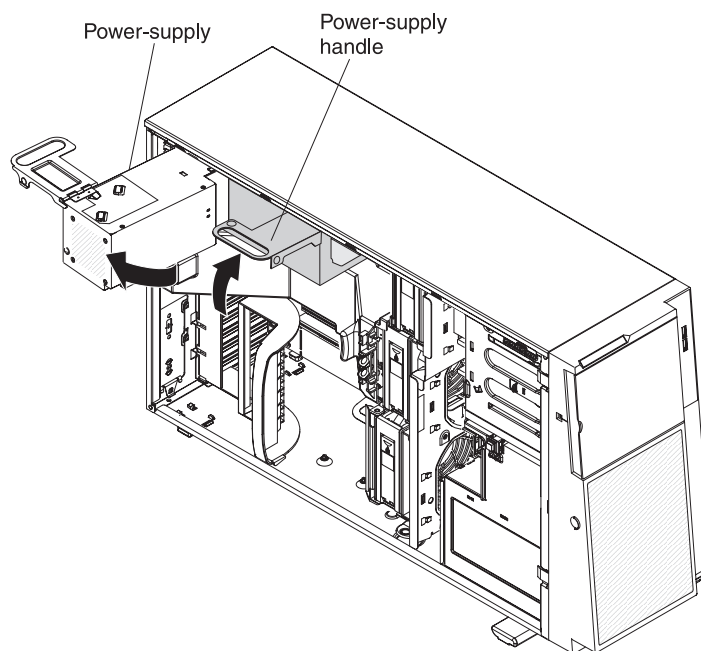


To remove a power supply, complete the following steps.

1. Read the safety information that begins on page vii and “Installation guidelines” on page 161.
2. Turn off the server and all attached devices; then, disconnect all power cords and external cables.
3. Unlock and remove the left-side cover (see “Removing the left-side cover” on page 173).

**Note:** It might be helpful to lay the server on its side for the remainder of this procedure.

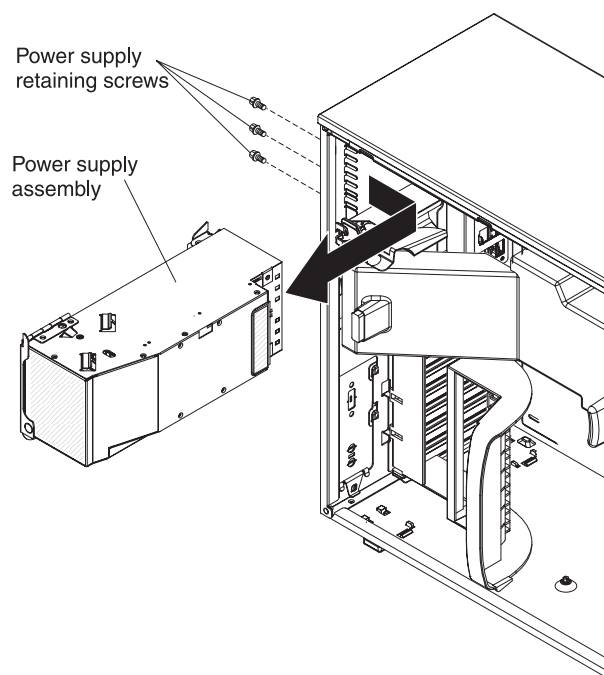
4. Rotate the power-supply cage assembly out of the chassis. Lift up the power-supply cage handle and pull the power-supply cage assembly all the way up until the retainer latch locks the cage in place on the chassis.



5. Disconnect the cables from the power supply to the system board and all internal components. Be sure to make a note of the cable routing.

**Attention:** Support the power supply while you remove the mounting screws. After the screws are removed, the power supply is loose and can damage other components in the server.

6. While you support the power-supply, remove the three screws from the pivot bracket that secure the power supply to the chassis; then, lift the power supply off the chassis. Save the screws to use when you install the replacement power supply.



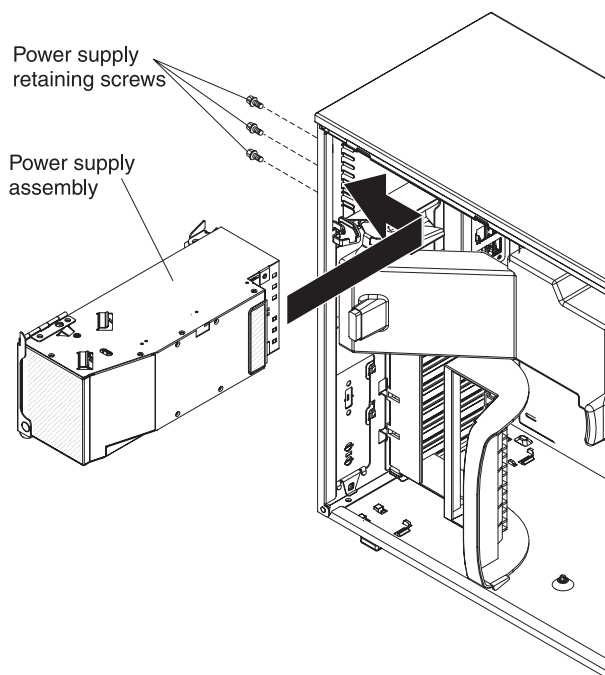
7. If you are instructed to return the power supply, follow all packaging instructions, and use any packaging materials for shipping that are supplied to you.

## Installing a power supply

To install a power supply, complete the following steps.

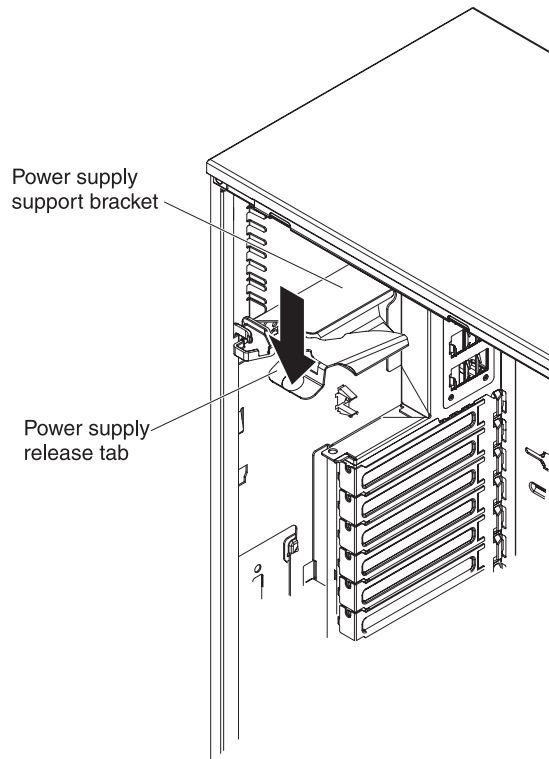
**Note:** Approximately 1 to 3 minutes after the server is connected to ac power, the power-control button becomes active.

1. Align the screw holes in the power supply cage pivot bracket with the corresponding screw holes on the rear of the chassis.



2. While you support the power supply cage, install the three screws that secure the power supply to the chassis.
3. Connect the cables from the power supply to the system board and all internal components.
4. Rotate the power-supply cage assembly back into the server. Press the power-supply cage release tab and rotate the power-supply cage assembly into the chassis.



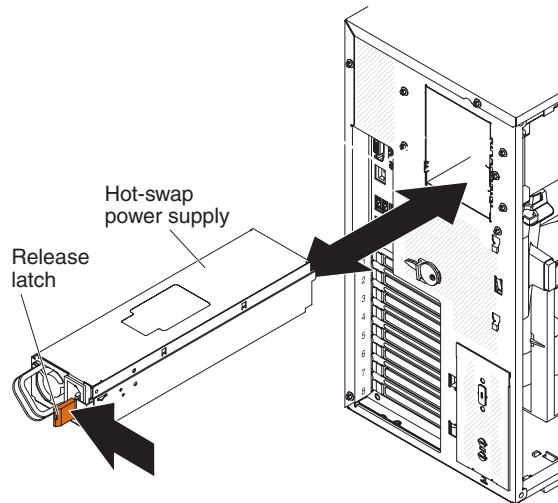


5. Install the left-side cover (see “Installing the left-side cover” on page 173).
6. Lock the left-side cover.
7. Reconnect the external cables and power cords; then, turn on the attached devices and turn on the server.

## Installing a redundant power supply

To install the redundant power, complete the following steps:

1. Read the safety information that begins on page vii and “Installation guidelines” on page 161.
2. Remove the left-side cover (see “Removing the left-side cover” on page 173 for more information).  
**Attention:** To ensure proper system cooling, do not leave the cover off the server for more than 2 minutes.
3. Slide the new power supply partially into the empty power-supply bay. Pinch the orange release latch and push the power supply the rest of the way into the bay until it is seated.



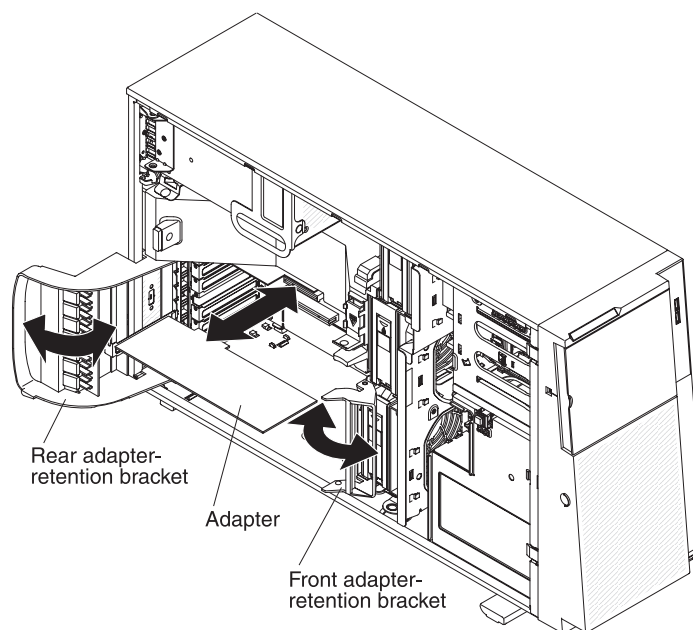
4. Install the left-side cover (see “Installing the left-side cover” on page 173).
5. Connect one end of the new power cord into the connector on the back of power supply, and connect the other end of the power cord to a properly grounded electrical outlet.
6. Make sure that the ac power LED on the top of each power supply is lit, indicating that the power supply is operating correctly. If the server is turned on, make sure that the dc power LED on the top of the power supply is lit also.

## 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 161.
2. Turn off the server and all attached devices; then, disconnect all power cords and external cables.
3. Unlock and remove the left-side cover (see “Removing the left-side cover” on page 173).
4. Disconnect any cables from the adapter or any cables that impede access to the adapter.
5. Rotate the rear adapter retention bracket to the open (unlocked) position. If you are removing a full-length adapter, open the front adapter-retention bracket also.
6. If necessary, remove the expansion-slot screw at the rear of the adapter.
7. Carefully grasp the adapter by its top edge or upper corners, and pull the adapter from the server.

**Attention:** Expansion-slot covers must be installed in all empty slots. This maintains the electronic emissions standards of the computer and ensures proper ventilation of computer components.



8. If the adapter is not being replaced, install an expansion-slot cover in the expansion-slot opening.
9. If you are instructed to return the adapter, follow all packaging instructions, and use any packaging materials for shipping that are supplied to you.

## Installing an adapter

The following notes describe the types of adapters that the server supports and other information that you must consider when installing an adapter. Adapter that the server supports might vary, depending on your server model.

- Locate the documentation that comes with the adapter and follow those instructions in addition to the instructions in this section. If you must change the switch setting or jumper settings on the adapter, follow the instructions that come with the adapter.
- Read the documentation that comes with your operating system.
- Use PCI slot 2 for video adapters.
- Do not set the maximum digital video adapter resolution above 1600 x 1200 at 85 Hz for an LCD monitor. This is the highest resolution that is supported for any add-on video adapter that you install in the server.
- Any high-definition video-out connector or stereo connector on any add-on video adapter is not supported
- The server provides up to eight adapter connectors, or slots as follows (depending on your server model):

**Note:** The x8 (x4) designation for slot 3 (for example) identifies an x8 slot that is designed to support x8 adapters and x4 adapters that can downshift to operate at the x4 bandwidth. If you install an x8 adapter in slot 3 that can downshift to the x4 bandwidth, it will run at the x4 bandwidth. The x8 connector can be used for x4 and x8 adapters. These same rules apply to the other PCI slots also. Check the information that comes with your adapter for compatibility information.

- Slots on the system board:
  - Slot 1, PCI Express Gen 2 x8 (x8)
  - Slot 2, PCI Express Gen 2 x16 (x8)

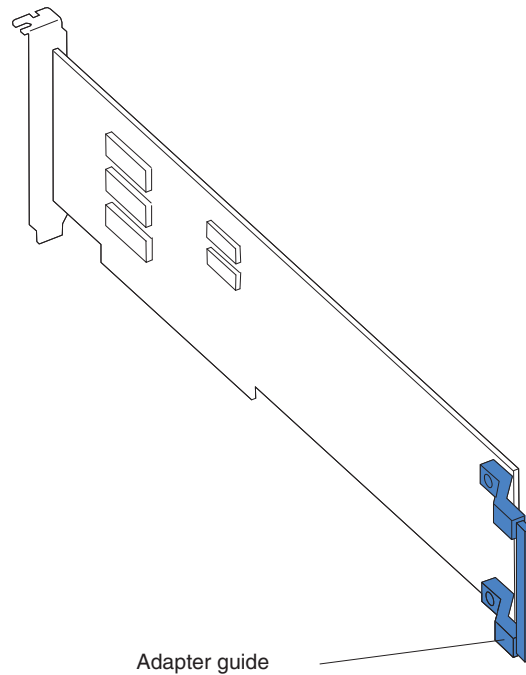
- Slot 3, PCI Express Gen 2 x8 (x4)
  - Slot 4, PCI Express Gen 2 x8 (x4)
  - Slot 5, PCI Express Gen 2 x8 (x8)
  - Slot 6, PCI 32-bit/33 MHz
  - If you install the optional one-slot PCI extender card in the server:
    - One additional PCI Express Gen 1 x8 (x4) slot is available
  - If you install the optional two-slot PCI extender card in the server:
    - Two additional PCI-X 32-bit/64-bit 133/100/66 MHz slots are available
  - You can install full-length adapters that are included in the ServerProven® list in slots 2, 3, 4, and 5 on the system board, and the slots on the one-slot or two-slot extender cards. You can only install half-length adapters in slots 1 and 6.
  - The 32-bit slot 6 supports 5.0 V keyed PCI adapters; they do not support 3.3 V keyed adapters. Universal adapters are supported in slots 4 and 5 if they are universally keyed.
  - You can install the IBM ServeRAID-BR10i SAS/SATA controller, the optional IBM ServeRAID-MR10i SAS/SATA controller, or the optional IBM ServeRAID-MR10is VAULT SAS/SATA controller in slots 1 of hot-swap SAS or hot-swap SATA models.
  - The ServeRAID-BR10i adapter comes standard on hot-swap SAS and hot-swap SATA models and provides RAID levels 0, 1, and 1E support. You can order the ServeRAID-MR10i adapter which provides RAID levels 0, 1, 5, 6, 10, 50, and 60 support, and the optional ServeRAID-MR10is adapter which provides RAID levels 0, 1, 5, 6, 10, 50, and 60 support and has an encryption 1078 DE chip.
- To ensure that any of your ServeRAID 10i, 10is, or 10M adapters function properly on UEFI-based servers, make sure that the adapter firmware level is updated to at least 11.x.x-XXX , and the supporting drivers.
- Attention:** Some cluster solutions require specific code levels or coordinated code updates. If the device is part of a cluster solution, verify that the latest level of code is supported for the cluster solution before you update the code.
- The server scans PCI Express slot 1, PCI-X slots 4 and 5, and PCI-Express slots 2 and 3 to assign system resources. Then, the server starts the devices in the following order, if you have not changed the default startup sequence: PCI Express slot 1, PCI-X slots 4 and 5, PCI Express slot 2, PCI slot 6, and PCI Express slot 3.
  - For a list of supported options for the server, see <http://www.ibm.com/servers/eserver/serverproven/compat/us/>.

To install a replacement adapter, complete the following steps.

1. Check the instructions that come with the adapter for any requirements, restrictions, or cabling instructions. It might be easier to route cables before you install the adapter.
2. Follow the instructions that come with the adapter to set jumpers or switches, if any.
3. Rotate the rear adapter retention bracket to the open (unlocked) position. If you are installing a full-length adapter, open the front adapter-retention bracket to the open position.
4. Remove the screw that secures the expansion-slot cover to the chassis. Store the expansion-slot cover and screw in a safe place for future use.

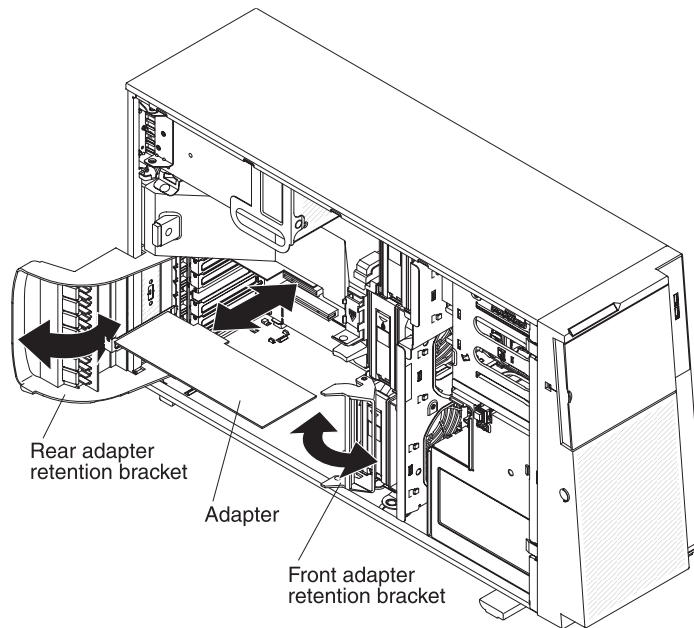
**Note:** Expansion-slot covers must be installed on all vacant slots. This maintains the electronic emissions standards of the server and ensures proper ventilation of server components.

5. Touch the static-protective package that contains the adapter to any unpainted metal surface on the server. Then, remove the adapter from the static-protective package. Avoid touching the components and gold-edge connectors on the adapter.
6. If you are installing a full-length adapter, remove the blue adapter guide (if any) from the end of the adapter.



7. Carefully grasp the adapter by the top edge or upper corner, and move the adapter directly from the static-protective package to the adapter slot. Align the adapter with the expansion slot guides; then, press the adapter firmly into the expansion slot. For a full-length adapter, make sure that the front edge of the adapter is properly seated in the correct slot in the front adapter-retention bracket.

**Note:** Make sure that the adapter is seated correctly in the expansion slot before you turn on the server. Incomplete installation of an adapter might damage the system board or the adapter.



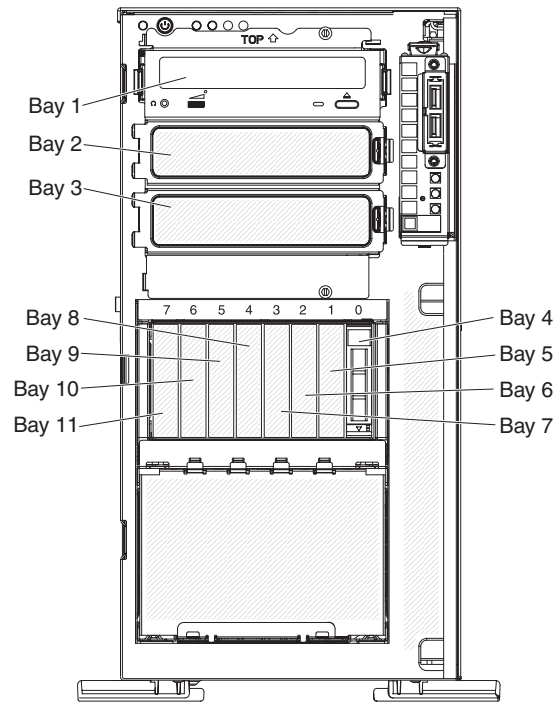
8. Connect all required cables to the adapter. Route cables so that they do not block air flow from the fans.
9. Rotate the rear and front adapter-retention brackets to the closed position.
10. Close the bezel.
11. Install the left-side cover (see “Installing the left-side cover” on page 173).
12. Lock the left-side cover.
13. Reconnect the external cables and power cords; then, turn on the attached devices and turn on the server.

## Removing and installing drives

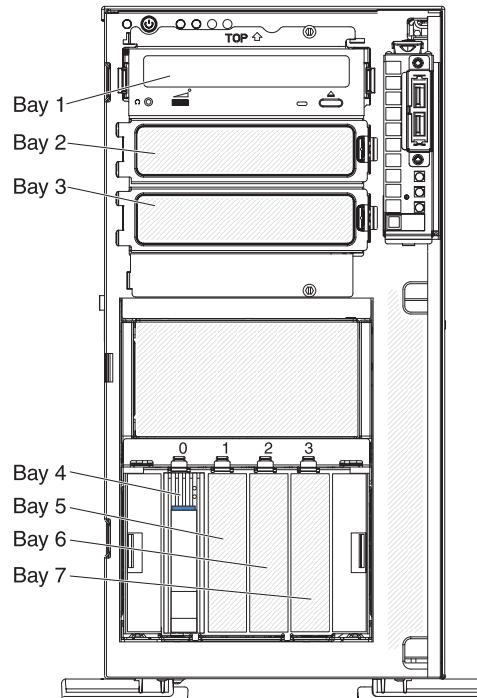
Depending on the server model, the server might come with a SATA attached DVD-ROM drive in bay 1.

The following are illustrations of the server and the location of the drive bays. Your hardware might differ, depending on the model.

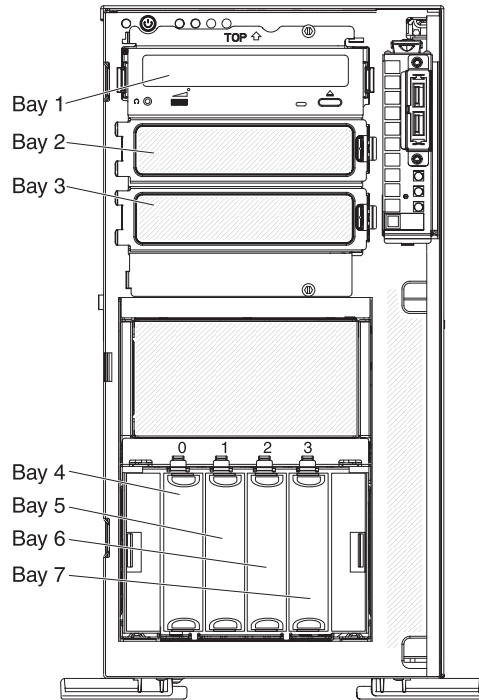
The following illustration shows the location of the drive bays in the 2.5-inch hot-swap SAS or hot-swap SATA hard disk drive server models:



The following illustration shows the location of the drive bays in the 3.5-inch hot-swap SAS or hot-swap SATA hard disk drive server models.



The following illustration shows the location of the drive bays in the 3.5 inch simple-swap SATA hard disk drive server models.



The following notes describe the types of drives that the server supports and other information that you must consider when installing a drive:

- Make sure that you have all the cables and other equipment that is specified in the documentation that comes with the drive.
- Check the instructions that come with the drive to see whether you have to set any switches or jumpers on the drive. If you are installing a SAS or SATA device, be sure to set the SAS or SATA ID for that device.
- Optional external tape drives and DVD-ROM drives are examples of removable-media drives. You can install removable-media drives only in bays 1, 2, and 3.
- To install a 3.5-in. drive in a 5.25-in. bay, you must use a 5.25-in. conversion kit.
- The electromagnetic interference (EMI) integrity and cooling of the server are protected by having all bays and PCI slots covered or occupied. When you install a drive or PCI adapter, save the EMC shield and filler panel from the bay or the PCI adapter slot cover in the event that you later remove the drive or adapter.
- For a complete list of supported options for the server, see <http://www.ibm.com/servers/eserver/serverproven/compat/us/>.

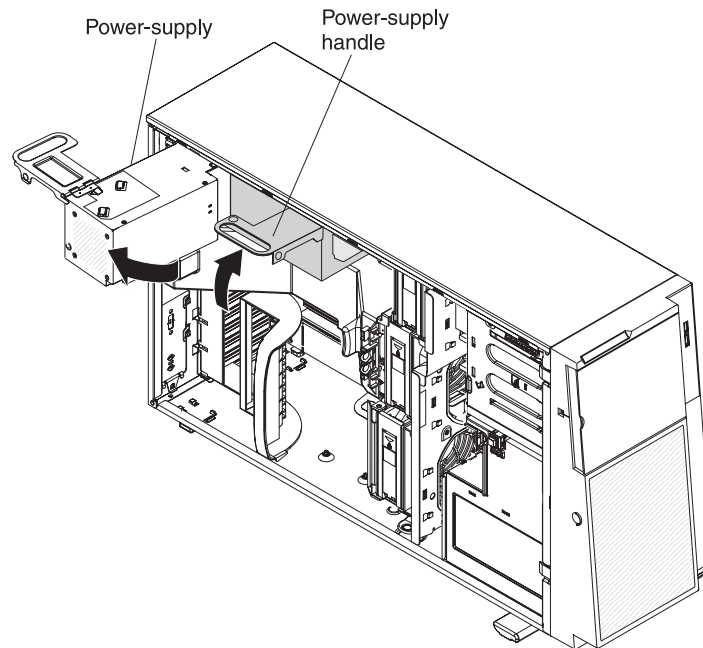
### Removing a DVD drive

To remove a DVD drive, complete the following steps.

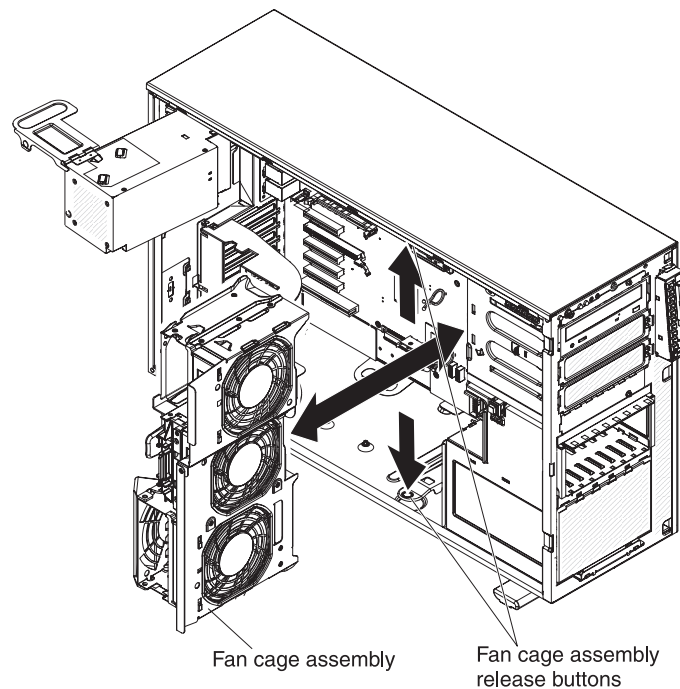
1. Read the safety information that begins on page vii and “Installation guidelines” on page 161.
2. Turn off the server and all attached devices; then, disconnect all power cords and external cables.
3. Unlock and remove the left-side cover (see “Removing the left-side cover” on page 173).



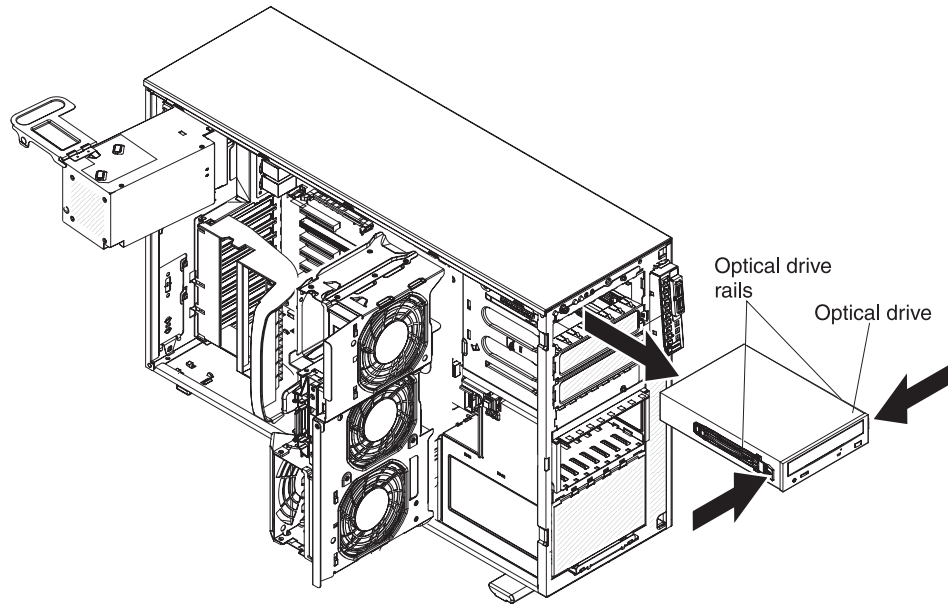
4. Open the bezel. Place your finger on the pull point area on the left side of the bezel door and rotate it away from the server.
5. Rotate the power-supply cage assembly out of the chassis. Lift up the power-supply cage handle and pull the power-supply cage assembly all the way up until the retainer latch locks the cage in place on the chassis.



6. Remove the air baffle (see “Removing the air baffle” on page 179).
7. Remove the fan cage assembly (see “Removing the fan cage assembly” on page 227).



8. Disconnect the power and signal cables from the drive that is to be removed.
9. Press and hold the blue release tabs on each side of the DVD drive to release the drive; then, pull the drive out of the front of the server.



10. Remove the blue optical drive rails from the side of the drive and save the optical rails to use when you install the replacement drive.
11. 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.

### Installing a DVD drive

To install a DVD drive, complete the following steps:

1. If you are replacing a drive, make sure that:
  - You have all the cables and other equipment that are specified in the documentation that comes with the new drive.
  - You have checked the instructions that come with the new drive to determine whether you must set any switches or jumpers in the drive.
  - You have removed the blue optical drive rails from the side of the old drive and have them available for installation on the new drive.

**Note:** If you are installing a drive that contains a laser, observe the following safety precaution.

**Statement 3:**



**CAUTION:**

When laser products (such as CD-ROMs, DVD drives, fiber optic devices, or transmitters) are installed, note the following:

- Do not remove the covers. Removing the covers of the laser product could result in exposure to hazardous laser radiation. There are no serviceable parts inside the device.
- Use of controls or adjustments or performance of procedures other than those specified herein might result in hazardous radiation exposure.



**DANGER**

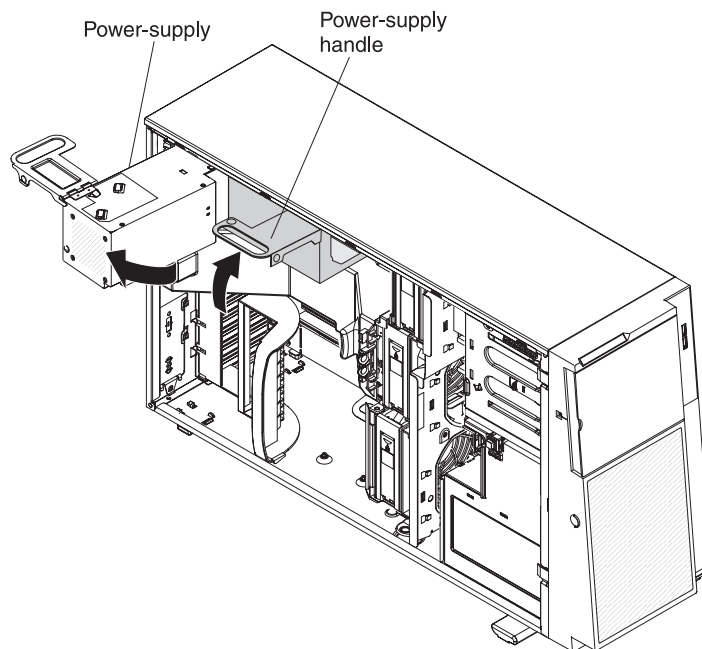
Some laser products contain an embedded Class 3A or Class 3B laser diode. Note the following.

Laser radiation when open. Do not stare into the beam, do not view directly with optical instruments, and avoid direct exposure to the beam.

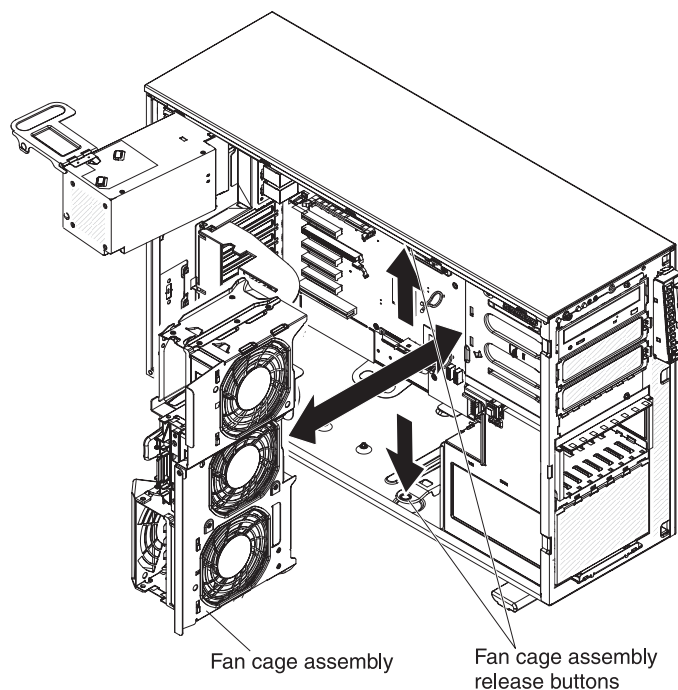


Class 1 Laser Product  
Laser Klasse 1  
Laser Klass 1  
Luokan 1 Laserlaite  
Appareil À Laser de Classe 1

2. Rotate the power-supply cage assembly out of the chassis. Lift up the power-supply cage handle and pull the power-supply cage assembly all the way up until the retainer latch locks the cage in place on the chassis.



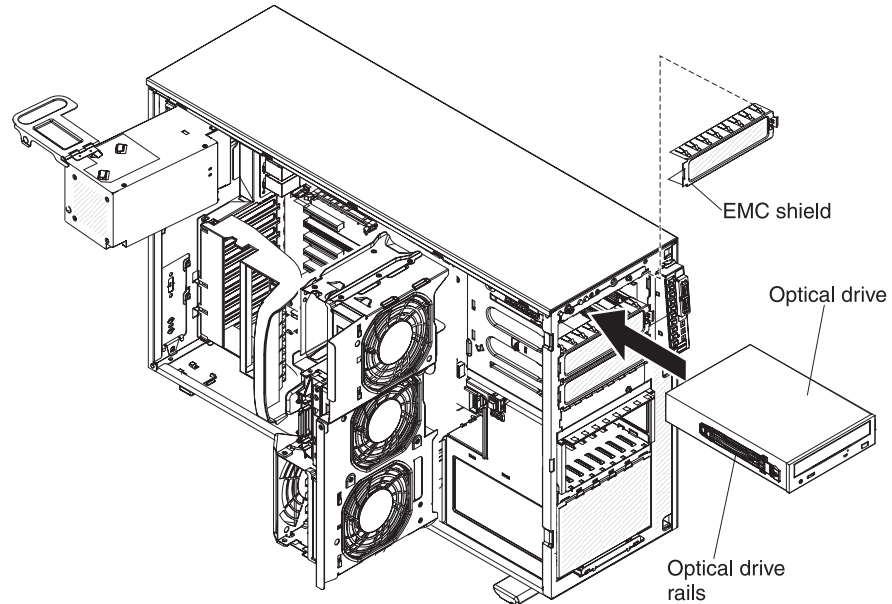
3. Remove the air baffle (see "Removing the air baffle" on page 179).
4. Remove the fan cage assembly. Press in on the fan cage assembly release buttons on the sides of the chassis to release the fan cage assembly from the connector on the chassis. Lift the fan cage assembly up and out of the chassis and set it aside.



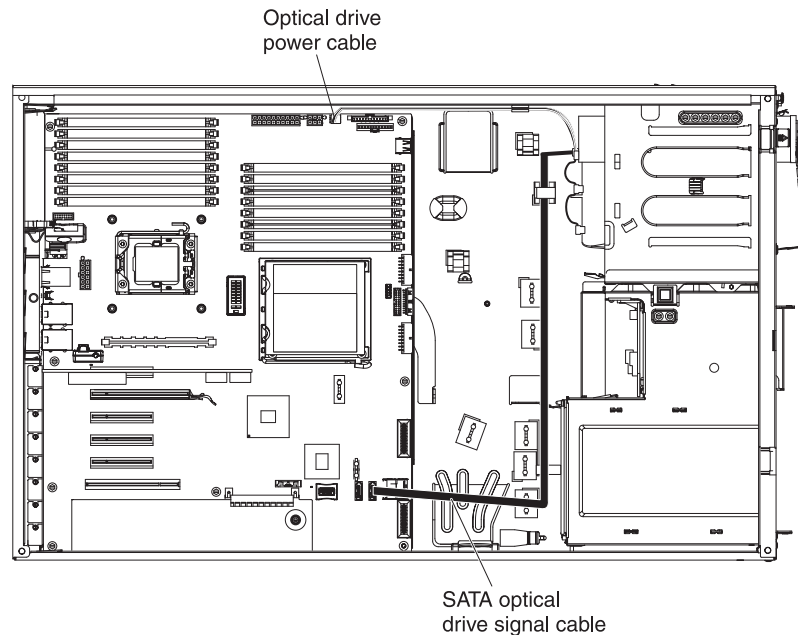
5. Touch the static-protective package that contains the new DVD drive to any unpainted metal surface on the server; then, remove the DVD drive from the package and place it on a static-protective surface.
6. Follow the instructions that come with the drive to set jumpers or switches, if there are any.

**Note:** You might find it easier to install the new drive from the front and then attach the cables.

7. Align the holes on the blue optical drive rails with the pins on the side of the drive and snap the optical drive rails onto the drive. Align the rails on the DVD drive with the guides on the drive bay and slide the drive into the drive bay until it locks into place.

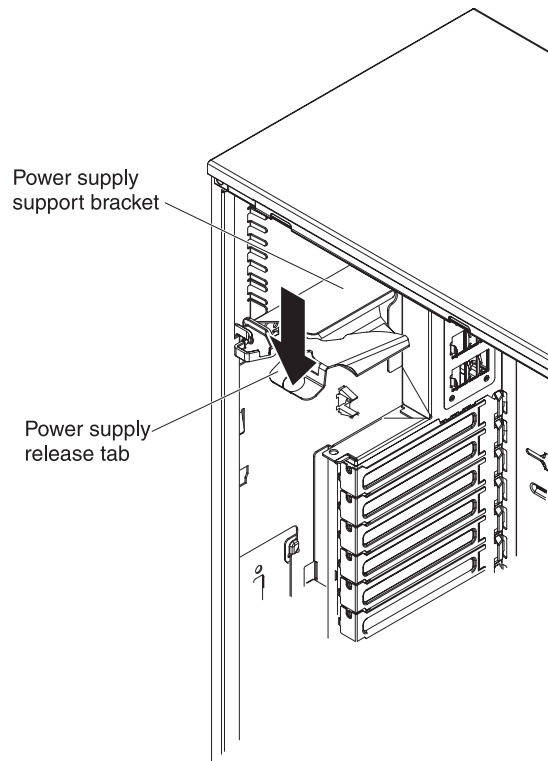


8. Reconnect the power and signal cables to the drive.
9. Make sure that the signal cable is routed through the plastic slot on the bottom of the chassis underneath the fan cage assembly so that it does not block the airflow to the rear of the drives as shown in the following illustration:



10. Install the fan cage assembly (see “Installing the fan cage assembly” on page 229).
11. Install the air baffle (see “Installing the air baffle” on page 180).

12. Rotate the power-supply cage assembly back into the server. Press the power-supply cage release tab and rotate the power-supply cage assembly into the chassis.

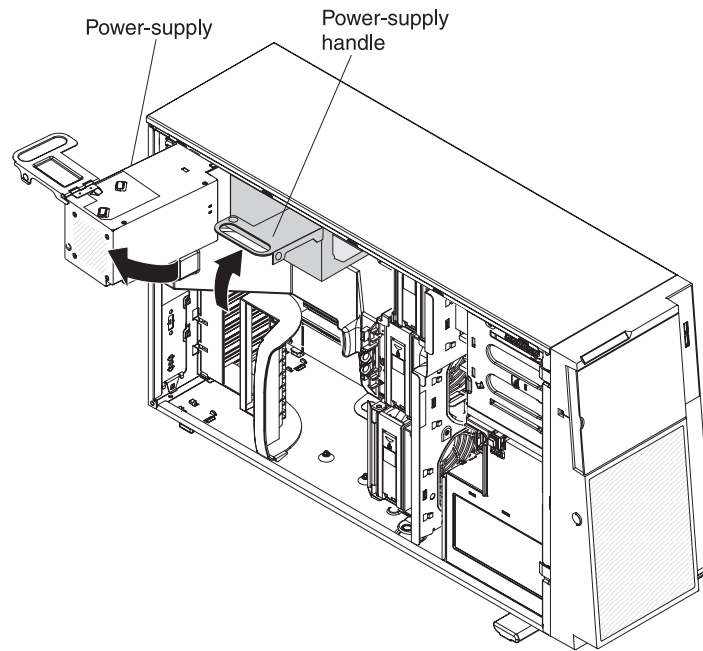


13. Close the bezel.
14. Install the left-side cover (see “Installing the left-side cover” on page 173).
15. Lock the left-side cover.
16. Reconnect the external cables and power cords; then, turn on the attached devices and turn on the server.

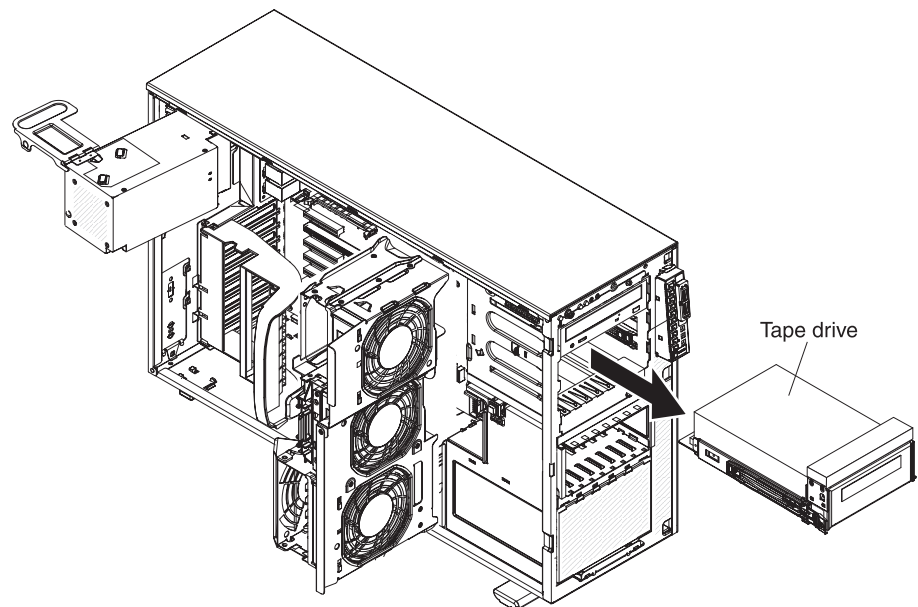
### **Removing an optional tape drive**

To remove an optional full-high tape drive, complete the following steps:

1. Read the safety information that begins on page vii and “Installation guidelines” on page 161.
2. Turn off the server and peripheral devices, and disconnect the power cords and all external cables.
3. Unlock and remove the left-side cover (see “Removing the left-side cover” on page 173).
4. Open the bezel. Place your finger on the pull point area on the left side of the bezel door and rotate it away from the server.
5. Rotate the power-supply cage assembly out of the chassis. Lift up the power-supply cage handle and pull the power-supply cage assembly all the way up until the retainer latch locks the cage in place on the chassis.



6. Remove the air baffle (see “Removing the air baffle” on page 179).
7. Remove the fan cage assembly. Press in on the fan cage assembly release buttons on the sides of the chassis to release the fan cage assembly from the connector on the chassis. Lift the fan cage assembly up and out of the chassis and set it aside.

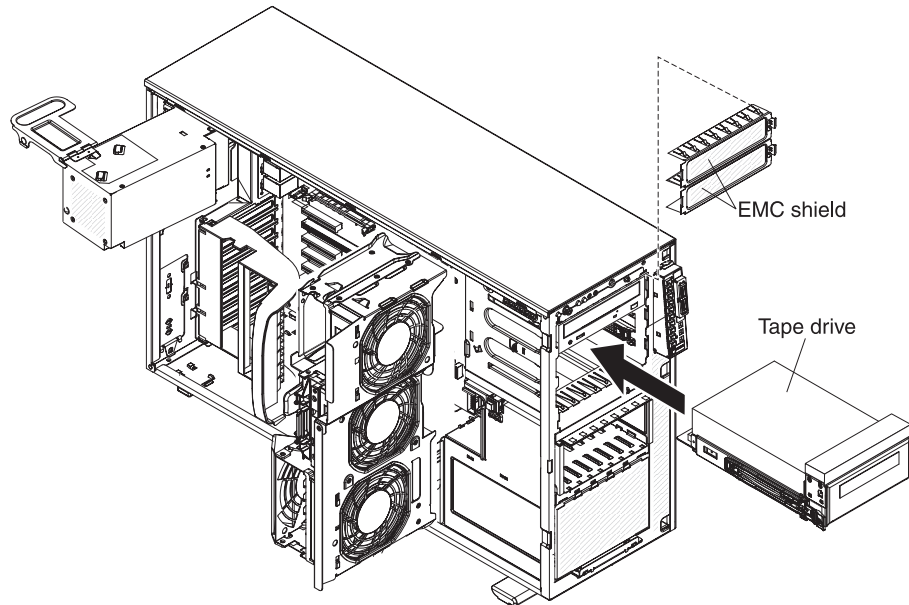


8. Disconnect the power and signal cables from the tape drive.
9. Remove the screws that secure the tape drive to the server.
10. Gently pull the drive out of the server.
11. If you are instructed to return the tape drive, follow all packaging instructions, and use any packaging materials for shipping that are supplied to you.

## Installing an optional tape drive

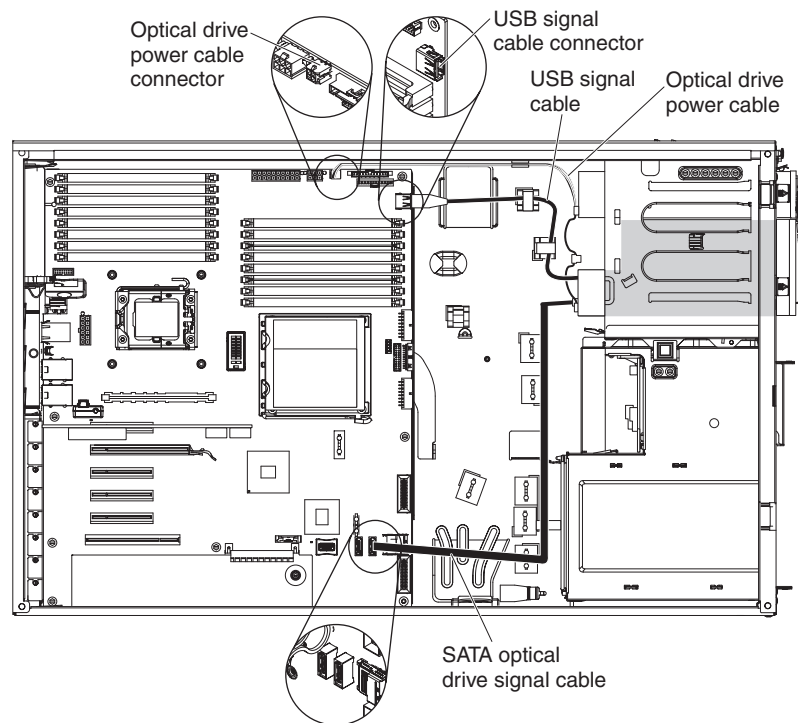
To install an optional full-high tape drive, complete the following steps.

1. Remove the EMC shields from the drive bay, if installed.
2. Touch the static-protective package that contains the tape drive to any unpainted metal surface on the server; then, remove the tape drive from the package and place it on a static-protective surface.
3. Install the blue rails on the sides of the tape drive.
4. Align the rails on tape drive with the guides in the drive bay; then, slide the tape drive into the server from the front of the server until it click into place.



5. If the tape drive comes with screws, secure the tape drive to the chassis with the supplied screws.
6. Reconnect the USB signal cable and the power cable to the tape drive.
7. Reconnect one end of the tape drive signal cable to the tape drive and the other end to the connector on the system board. Make sure that the cable is routed through the plastic slots on the bottom of the chassis underneath the fan cage assembly as shown in the following illustration:





8. Reinstall the fan cage assembly. Align the fan cage assembly over the fan cage assembly slot and with the connector on the system board. Lower the fan cage assembly into the chassis and press down firmly until the fan cage assembly is seated firmly in place.

**Note:** Make sure that all wires and cables inside the server are routed correctly before installing the fan cage assembly. Wiring that is not properly routed could be damaged or might prevent the fan cage assembly from seating properly in the server.

9. Install the air baffle (see "Installing the air baffle" on page 180 ).
10. Rotate the power-supply cage assembly back into the server. Press the power-supply cage release tab and rotate the power-supply cage assembly into the chassis.
11. Close the bezel.
12. Install the left-side cover (see "Installing the left-side cover" on page 173).
13. Lock the left-side cover.
14. Reconnect the external cables and power cords; then, turn on the attached devices and turn on the server.

### Removing a 2.5-inch hot-swap hard disk drive

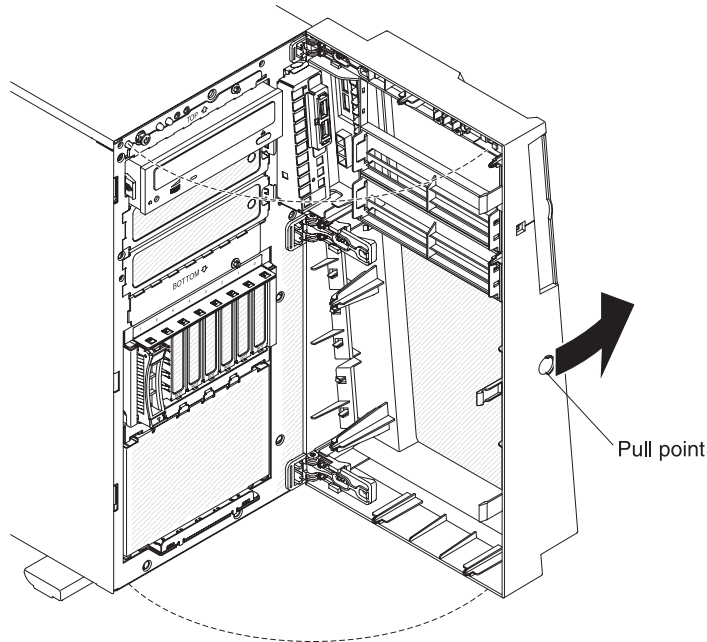
**Attention:** To maintain proper system cooling, do not operate the server for more than 10 minutes without either a drive or a filler panel installed in each drive bay.

To remove a 2.5-inch hot-swap hard disk drive, complete the following steps.

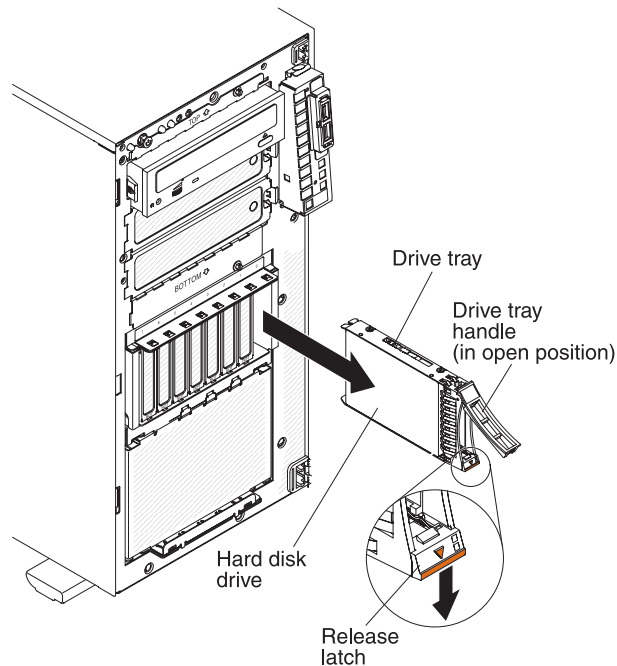
1. Read the safety information that begins on page vii and "Installation guidelines" on page 161.

**Attention:** Static electricity that is released to internal server components when 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.

2. Unlock the left-side cover.
3. Open the bezel. Place your finger on the pull point area on the left side of the bezel door and rotate it away from the server.



4. Press the release latch at the top of the drive to release the drive handle.
5. Rotate the handle on the drive upward to the open position.
6. Pull the hot-swap drive out of the bay approximately 25 mm (1 inch). Wait approximately 45 seconds while the drive spins down before you remove the drive completely from the bay.



7. If you are instructed to return the 2.5-inch hot-swap hard disk drive, follow all packaging instructions, and use any packaging materials for shipping that are supplied to you.

### Installing a 2.5-inch hot-swap hard disk drive

Before installing a 2.5-inch hot-swap hard disk drive, read the following information:

- The 2.5-inch hot-swap drives must be either all SAS hard disk drives or all SATA hard disk drives; do not mix SAS and SATA drives.
- Inspect the drive tray for signs of damage.
- To maintain proper system cooling, do not operate the server for more than 10 minutes without either a drive or a filler panel installed in each drive bay.
- You do not have to turn off the server to install hot-swap drives in the hot-swap drive bays.

Locate the documentation that comes with the hard disk drive and follow those instructions in addition to the instructions in this section.

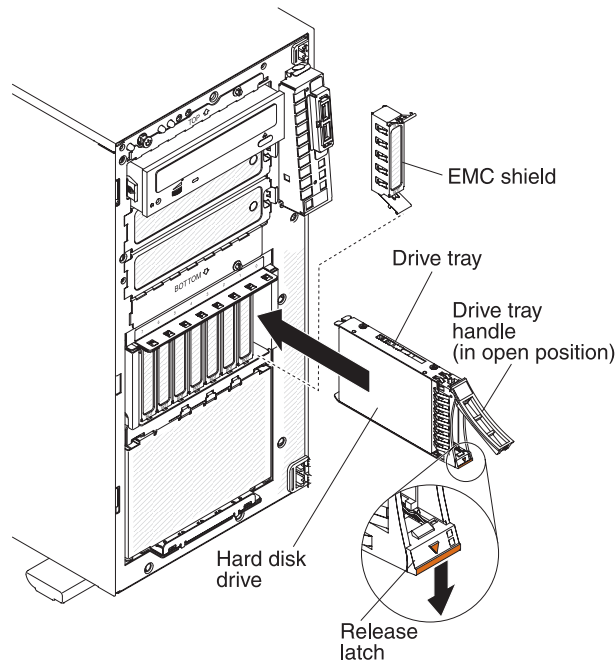
**Attention:** Static electricity that is released to internal server components when server is powered-on might cause the server to halt, which might result in the loss of data. To avoid this potential problem, always use an electrostatic-discharge wrist strap or other grounding system when you work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

To install a 2.5-inch hot-swap hard disk drive, complete the following steps.

**Attention:** To maintain proper system cooling, do not operate the server for more than 10 minutes without either a drive or a filler panel installed in each bay.

1. Read the safety information that begins on page vii and “Installation guidelines” on page 161.
2. Touch the static-protective package that contains the drive to any unpainted metal surface on the server; then, remove the drive from the package and place it on a static-protective surface.

3. Remove the filler panel from the drive bay, if one is installed.
4. Orient the drive as shown in the illustration.



5. Make sure that the tray handle is open.
6. Align the drive assembly with the guide rails in the bay.
7. Push the drive into the bay until the drive stops.
8. Push the tray handle to the closed (locked) position.
9. Check the hard disk drive status indicator to make sure that the hard disk drive is operating correctly.

After you replace a failed hard disk drive, the green activity LED flashes as the disk spins up. The amber LED turns off after approximately 1 minute. If the new drive starts to rebuild, the amber LED flashes slowly, and the green activity LED remains lit during the rebuild process. If the amber LED remains lit continuously, the drive is faulty and must be replaced., see “Hard disk drive problems” on page 75.

**Note:** You might have to reconfigure the disk arrays after you install hard disk drives. See the RAID documentation on the IBM Web site at <http://www.ibm.com/systems/support/> for information about RAID controllers.

10. Close the bezel.
11. Lock the left-side cover.

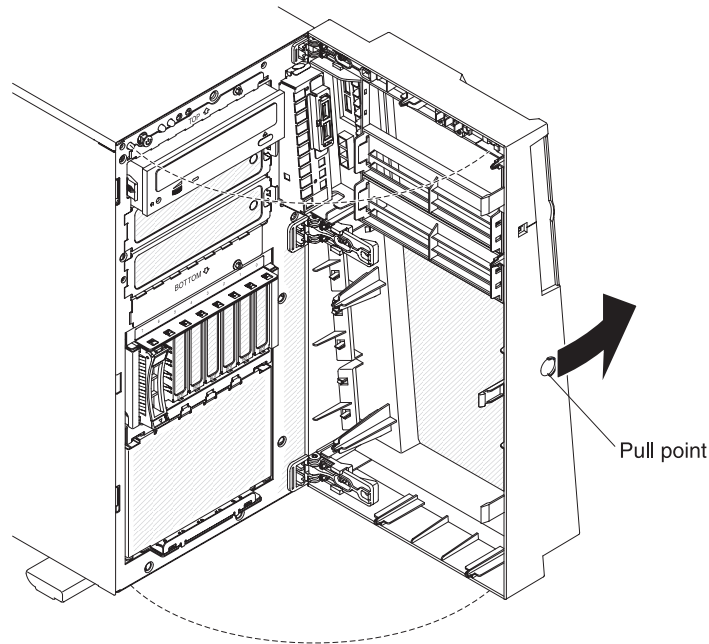
### Removing a 3.5-inch hot-swap hard disk drive

**Attention:** To maintain proper system cooling, do not operate the server for more than 10 minutes without either a drive or a filler panel installed in each drive bay.

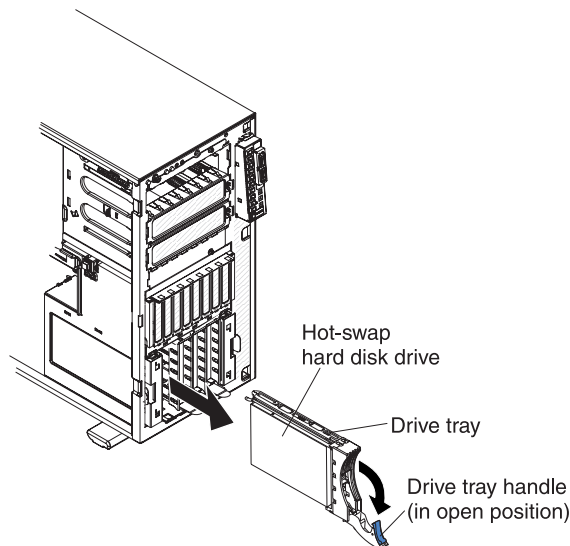
To remove a 3.5-inch hot-swap SAS or hot-swap SATA hard disk drive, complete the following steps.

1. Read the safety information that begins on page vii and “Installation guidelines” on page 161.
2. Unlock the left-side cover.

3. Open the bezel. Place your finger on the pull point area on the left side of the bezel door and rotate it away from the server.



4. Rotate the drive tray handle of the drive assembly to the open position.
5. Grasp the handle of the drive and pull the drive out of the bay.



6. If you are instructed to return the 3.5-inch hot-swap hard disk drive, follow all packaging instructions, and use any packaging materials for shipping that are supplied to you.

### Installing a 3.5-inch hot-swap hard disk drive

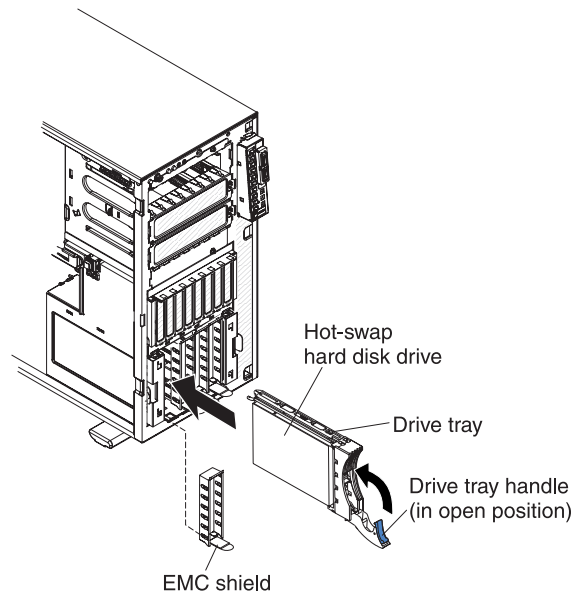
Before installing a 3.5-inch hot-swap hard disk drive, read the following information:

- The 3.5-inch hot-swap drives must be either all SAS hard disk drives or all SATA hard disk drives; do not mix SAS and SATA drives.
- Inspect the drive tray for signs of damage.
- To maintain proper system cooling, do not operate the server for more than 10 minutes without either a drive or a filler panel installed in each drive bay.

- You do not have to turn off the server to install hot-swap drives in the hot-swap drive bays.

To install a 3.5-inch hot-swap hard disk drive, complete the following steps.

1. Remove the EMC shield, if one is present.
2. Touch the static-protective package that contains the drive to any unpainted metal surface on the server; then, remove the drive from the package and place it on a static-protective surface.
3. Make sure that the drive tray handle is in the open position.
4. Align the drive assembly with the guide rails in the bay; then, carefully slide the drive assembly into the drive bay until the drive snaps into place.



5. Rotate the drive tray handle to the closed position.
6. Check the hard disk drive status indicator to make sure that the hard disk drive is operating correctly.

After you replace a failed hard disk drive, the green activity LED flashes as the disk spins up. The amber LED turns off after approximately 1 minute. If the new drive starts to rebuild, the amber LED flashes slowly, and the green activity LED remains lit during the rebuild process. If the amber LED remains lit, see “Hard disk drive problems” on page 75.

**Note:** You might have to reconfigure the disk arrays after you install hard disk drives. See the RAID documentation on the IBM Web site at <http://www.ibm.com/systems/support/> for information about RAID controllers.

7. Close the bezel.
8. Lock the left-side cover.

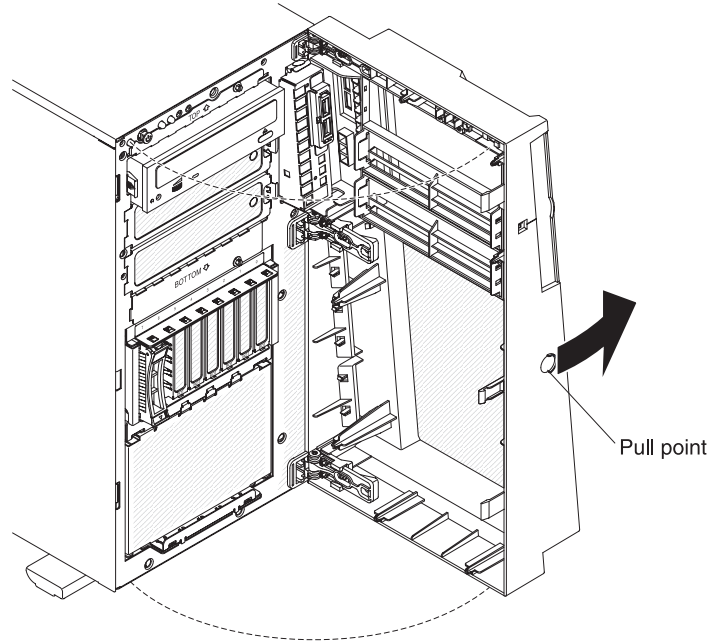
## Removing a simple-swap hard disk drive

**Attention:** Simple-swap hard disk drives are not hot-swappable. Disconnect all power from the server before removing or installing a simple-swap hard disk drive.

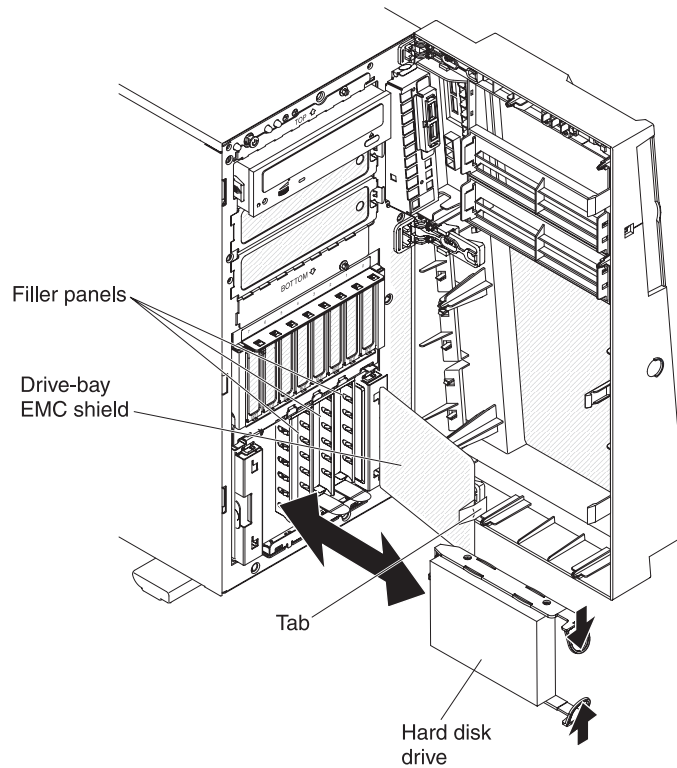
To remove a simple-swap hard disk drive, complete the following steps.

1. Read the safety information that begins on page vii and “Installation guidelines” on page 161.

2. Turn off the server and all attached devices; then, disconnect all power cords and external cables.
3. Unlock the left-side cover.
4. Open the bezel. Place your finger on the pull point area on the left side of the bezel door and rotate it away from the server.



5. Grasp the tab on the drive bay EMC shield and rotate it to the open position.



6. Pull the loops of the drive assembly that is to be removed toward each other; then, pull the drive assembly out of the bay and set it aside.



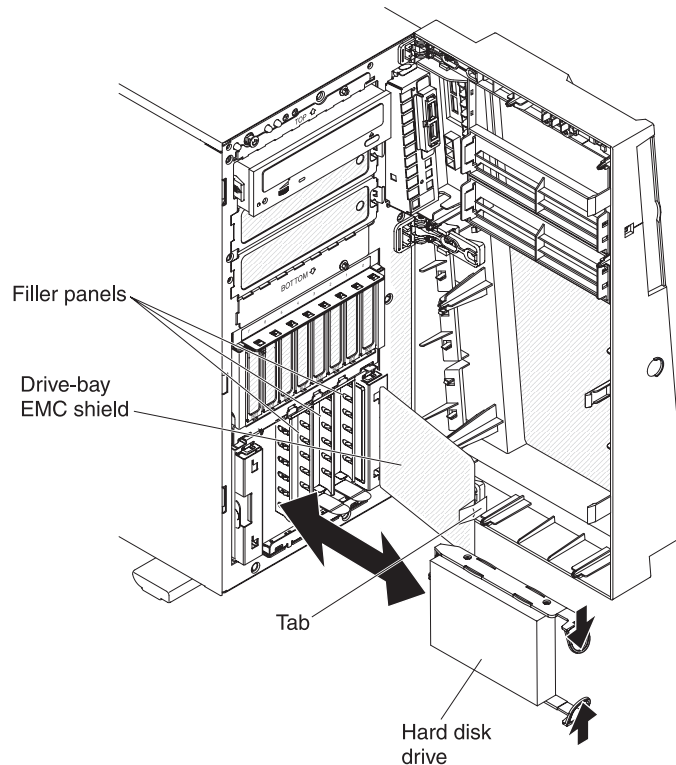
7. If you are instructed to return the simple-swap hard disk drive, follow all packaging instructions, and use any packaging materials for shipping that are supplied to you.

### Installing a simple-swap hard disk drive

**Attention:** Simple-swap hard disk drives are not hot-swappable. Disconnect all power from the server before removing or installing a simple-swap hard disk drive.

To install a simple-swap hard disk drive, complete the following steps.

1. Touch the static-protective package that contains the drive to any unpainted metal surface on the server; then, remove the drive from the package and place it on a static-protective surface.
2. Align the drive assembly with the guide rails in the bay.



3. Pull the loops of the drive assembly toward each other; then, carefully slide the drive assembly into the drive bay until it stops and release the loops.

**Note:** Do not release the loops on the drive assembly until it is completely seated.

4. Close the drive bay EMC shield.
5. Close the bezel.
6. Lock the left-side cover.
7. Reconnect the external cables and power cords; then, turn on the attached devices and turn on the server.

### Removing a memory module

To remove a DIMM, complete the following steps.

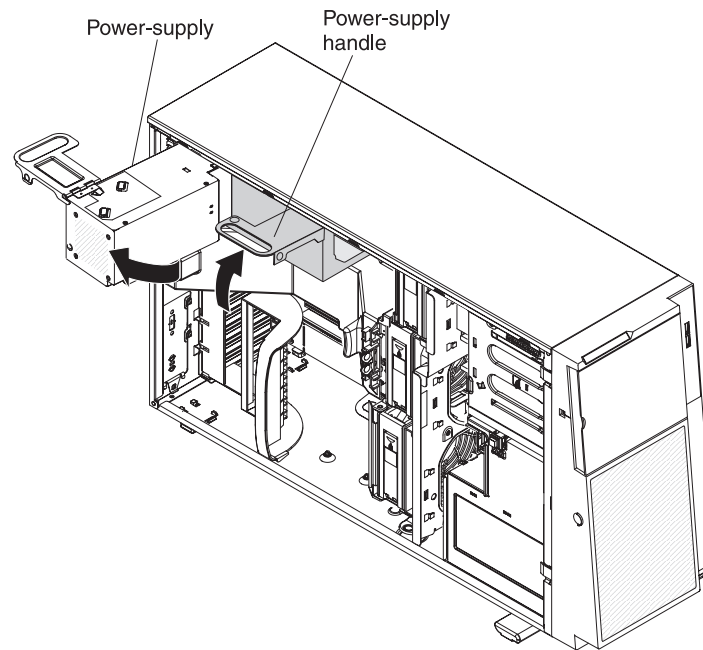
1. Read the safety information that begins on page vii and "Installation guidelines" on page 161.



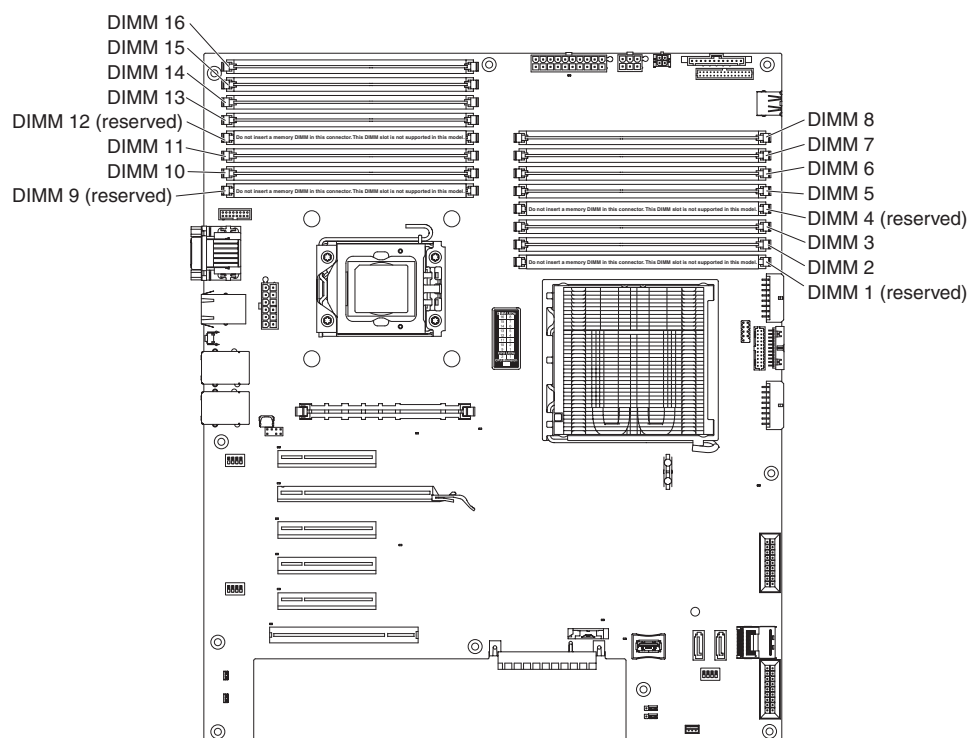
2. Turn off the server and all attached devices; then, disconnect all power cords and external cables.
3. Carefully lay the server on its side so that it is facing up.

**Note:** Be careful and do not drop the server.

4. Unlock and remove the left-side cover (see “Removing the left-side cover” on page 173).
5. Rotate the power-supply cage assembly out of the chassis. Lift up the power-supply cage handle and pull the power-supply cage assembly all the way up until the retainer latch locks the cage in place on the chassis.

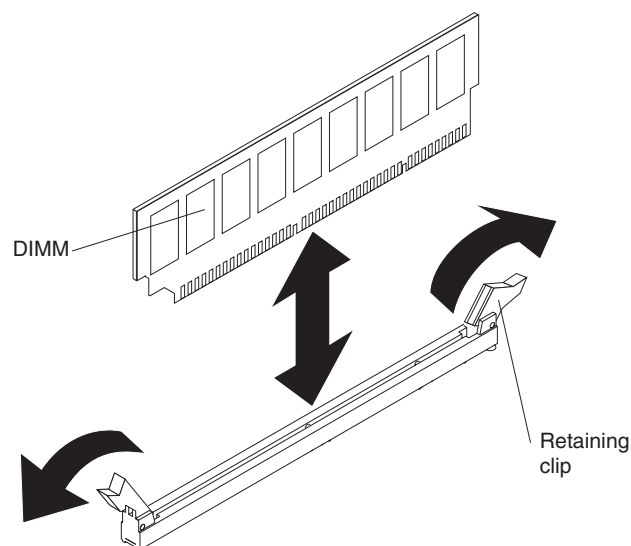


6. Remove the air baffle (see “Removing the air baffle” on page 179).
7. Locate the DIMM connector that contains the DIMM that is to be replaced



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

8. Carefully open the retaining clips on each end of the DIMM connector and remove the DIMM.



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

## Installing a memory module

**Note:** If you are replacing a faulty DIMM, make sure that the replacement DIMM is the correct type of memory. If you are adding DIMMs, install the DIMMs in the

sequence indicated in this section.

**Attention:** Do not mix UDIMMs and RDIMMs in the same server.

The following notes describe the types of dual inline memory modules (DIMMs) that the server supports and other information that you must consider when installing DIMMs (see “System-board option connectors” on page 20 for the location of the DIMM connectors):

- The server supports industry-standard, 800, 1066, or 1333 MHz, PC3-10600R-999 (single-rank or dual-rank) double-data-rate 3 (DDR3), registered, synchronous dynamic random-access memory (SDRAM) dual inline memory modules (DIMMs) with error correcting code (ECC). For a list of supported options for the server, see <http://www.ibm.com/servers/eserver/serverproven/compat/us/>; then, select your country and navigate to the list of options for the server.

- The specifications of a DDR3 DIMM are on a label on the DIMM, in the following format.

*ggg eRxff-PC3-wwwwwm-aa-bb-cc*

where:

*ggg* is the total capacity of the DIMM (for example, 1GB, 2GB, or 4GB)

*e* is the number of ranks

1 = single-rank

2 = dual-rank

4 = quad-rank

*ff* is the device organization (bit width)

4 = x4 organization (4 DQ lines per SDRAM)

8 = x8 organization

16 = x16 organization

*wwwww* is the DIMM bandwidth, in MBps

6400 = 6.40 GBps (PC3-800 SDRAMs, 8-byte primary data bus)

8500 = 8.53 GBps (PC3-1066 SDRAMs, 8-byte primary data bus)

10600 = 10.66 GBps (PC3-1333 SDRAMs, 8-byte primary data bus)

12800 = 12.80 GBps PC3-1600 SDRAMs, 8-byte primary data bus)

*m* is the DIMM type

E = Unbuffered DIMM (UDIMM) with ECC (x72-bit module data bus)

R = Registered DIMM (RDIMM)

U = Unbuffered DIMM with no ECC (x64-bit primary data bus)

*aa* is the CAS latency, in clocks at maximum operating frequency

*bb* is the JEDEC SPD Revision Encoding and Additions level

*cc* is the reference design file for the design of the DIMM

*d* is the revision number of the reference design of the DIMM

- The server supports a maximum of 12 single-rank or dual-rank DIMMs.

**Note:** To determine the type of a DIMM, see the label on the DIMM. The information on the label is in the format *xxxxx nRxxx PC3-xxxxx-xx-xx-xxx*. The numeral in the sixth numerical position indicates whether the DIMM is single-rank (*n*=1) or dual-rank (*n*=2).

- The server supports three single-rank or dual-rank DIMMs per channel. The following table shows an example of the maximum amount of memory that you can install, using ranked DIMMs.

Table 10. Maximum memory installation using ranked DIMMs

Number of DIMMs	DIMM type	DIMM size	Total memory
12	Single-rank DIMMs	4 GB	48 GB
12	Dual-rank DIMMs	4 GB	48 GB
12	Dual-rank DIMMs	8 GB	96 GB

- The DIMM options that are available for the server are 1 GB, 2 GB, 4 GB, and 8 GB. The server supports a minimum of 2 GB and a maximum of 96 GB of system memory.

**Note:** The amount of usable memory is reduced depending on the system configuration. A certain amount of memory must be reserved for system resources. To view the total amount of installed memory and the amount of configured memory, run the Setup utility. For additional information, see “Using the Setup utility” on page 277.

- A minimum of one DIMM must be installed for each microprocessor. For example, you must install a minimum of two DIMMs if the server has two microprocessors installed. However, to improve system performance, install a minimum of three DIMMs for each microprocessor.
- The maximum operating speed of the server is determined by the slowest DIMM install in the server.
- The server comes with a minimum of two 1 GB DIMMs, installed in slots 3 and 6.
- When you install additional DIMMs in independent mode, install them in the order shown in the following table to optimize system performance. All three channels on the memory interface for each microprocessor can be populated in any order and have no matching requirements.

Table 11. Independent mode DIMM installation sequence

Installed microprocessors	DIMM connector population sequence
Microprocessor socket 1	3, 6, 8, 2, 5, 7
Microprocessor socket 2	11, 14, 16, 10, 13, 15
<b>Note:</b> DIMM connectors 1, 4, 9, and 12 are not functional. Do not install DIMMs in these connectors.	

- The server supports memory mirroring (mirroring mode):
  - Memory-mirroring mode replicates and stores data on two pairs of DIMMs within two channels (channels 0 and 1) simultaneously. If a failure occurs, the memory controller switches from the primary pair of memory DIMMs to the backup pair of DIMMs. To enable memory mirroring through the Setup utility, select **System Settings → Memory**. For more information, see “Using the Setup utility” on page 277. When you use the memory mirroring feature, consider the following information:
    - When you use memory mirroring, you must install a pair of DIMMs at a time. One DIMM must be in channel 0, and the mirroring DIMM must be in the same slot in channel 1. The two DIMMs in each pair must be identical in size, type, and rank (single or dual) , and organization, but not in speed. The channels run at the speed of the slowest DIMM in any of the channels.
    - Channel 2, DIMM connectors 7, 8, 15, and 16 are not used in memory-mirroring mode.

- The maximum available memory is reduced to half of the installed memory when memory mirroring is enabled. For example, if you install 48 GB of memory, only 24 GB of addressable memory is available when you use memory mirroring.

The following table lists the usable DIMM connectors on each memory channel.

Table 12. Connectors on each memory channel

Memory channel	DIMM connectors
Channel 0	2, 3, 10, 11
Channel 1	5, 6, 13, 14
Channel 2	7, 8, 15, 16

The following table lists the installation sequence for installing DIMMs in memory-mirroring mode.

Table 13. Memory-mirroring mode DIMM population sequence

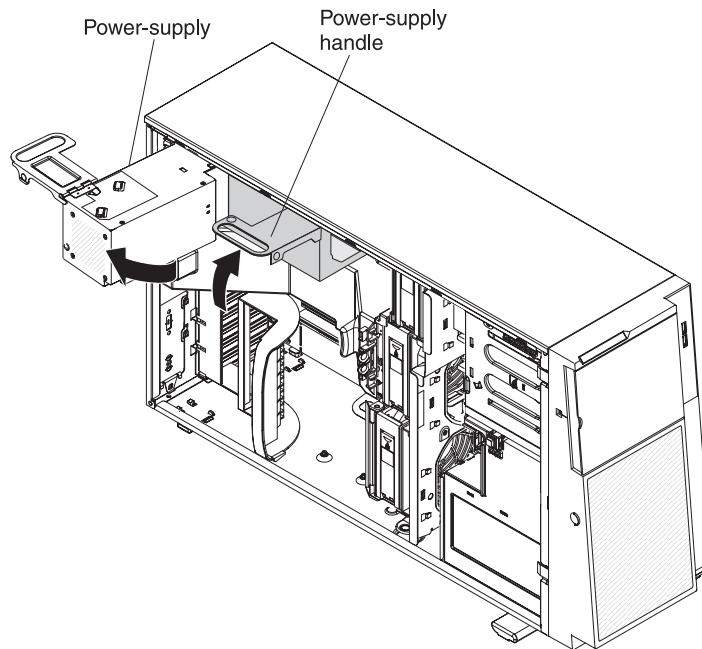
DIMMs	Number of installed microprocessors	DIMM connector
First pair of DIMMs	1	3, 6
Second pair of DIMMs	1	2, 5
Third pair of DIMMs	2	11, 14
Fourth pair of DIMMs	2	10, 13
<b>Note:</b> DIMM connectors 7, 8, 15, and 16 are not used in memory-mirroring mode and DIMM connectors 1, 4, 9, and 12 are not functional on this server. Do not install DIMMs in these connectors.		

- When you install or remove DIMMs, the server configuration information changes. When you restart the server, the system displays a message that indicates that the memory configuration has changed.

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

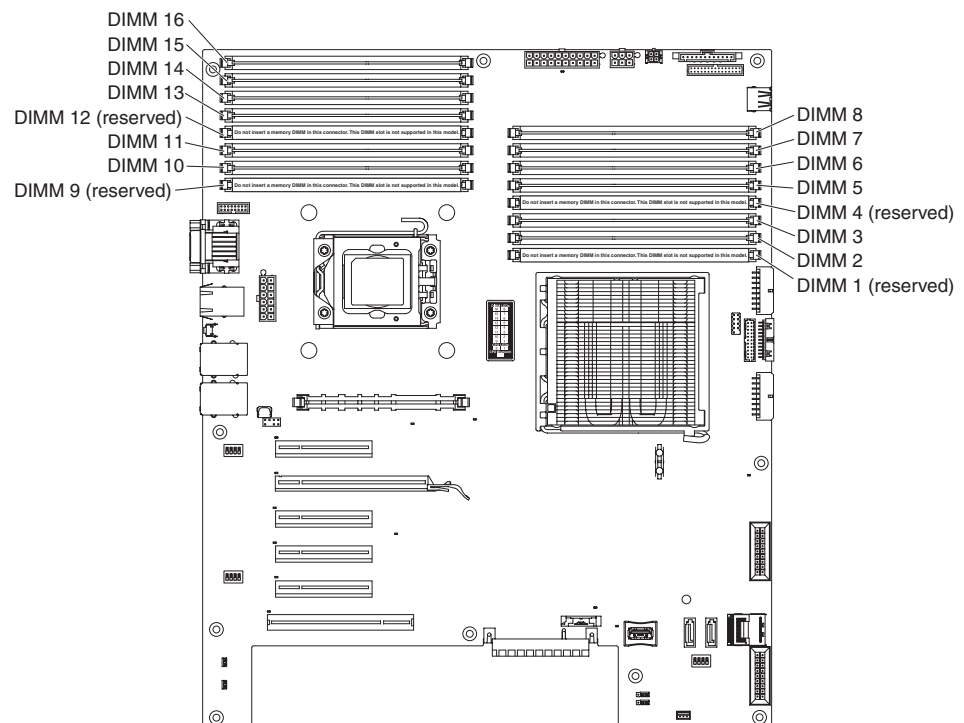
To install a DIMM, complete the following steps.

1. Turn off the server and all attached devices; then, disconnect all power cords and external cables.
2. Unlock and remove the left-side cover (see “Removing the left-side cover” on page 173).
3. Rotate the power-supply cage assembly out of the chassis. Lift up the power-supply cage handle and pull the power-supply cage assembly all the way up until the retainer latch locks the cage in place on the chassis.



4. Remove the air baffle (see “Removing the air baffle” on page 179).
5. Locate the DIMM connectors on the system board. Determine the connector in which you will install the DIMM. Install the DIMMs in the sequence indicated earlier in this section.

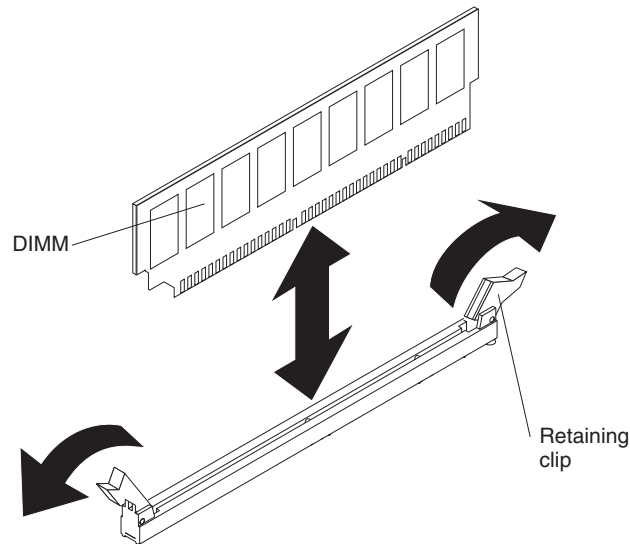
**Note:** DIMM connectors 1, 4, 9, and 12 are not functional in this server. Do not install DIMMs in these connectors.



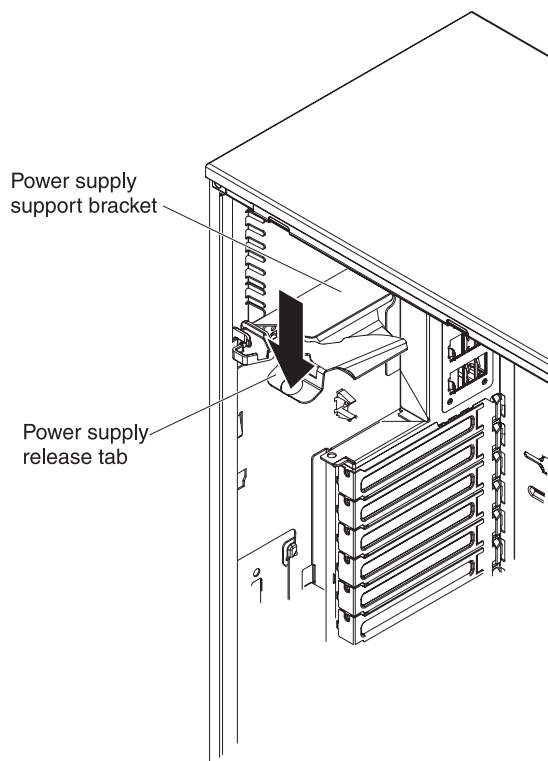
6. Open the retaining clips on DIMM connector.

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

7. Touch the static-protective package that contains the DIMM to any unpainted metal surface on the server; then, remove the new DIMM from the package.
8. Turn the DIMM so that the DIMM keys align correctly with the connector.



9. Insert the DIMM into the connector by aligning the edges of the DIMM with the slots at the ends of the DIMM connector. Firmly press the DIMM straight down into the connector by applying pressure on both ends of the DIMM simultaneously. The retaining clips snap into the locked position when the DIMM is firmly seated in the connector. If there is a gap between the DIMM and the retaining clips, the DIMM has not been correctly installed. Open the retaining clips, remove the DIMM, and then reinsert it.
10. Install the air baffle (see “Installing the air baffle” on page 180).
11. Rotate the power-supply cage assembly back into the server. Press the power-supply cage release tab and rotate the power-supply cage assembly into the chassis.



12. Install the left-side cover (see “Installing the left-side cover” on page 173).
13. Lock the left-side cover.
14. Reconnect the external cables and power cords; then, turn on the attached devices and turn on the server.

## Removing the virtual media key

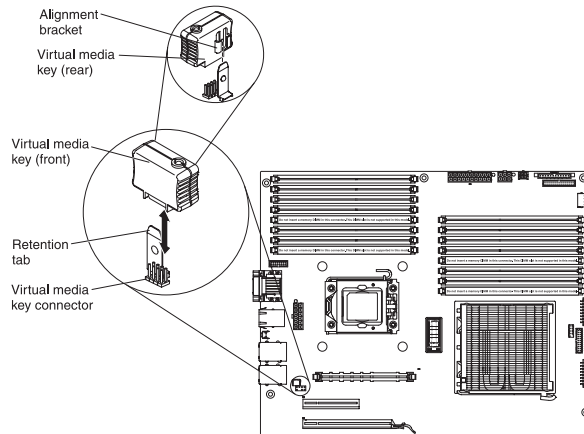
To remove the virtual media key, complete the following steps:

1. Read the safety information beginning on page vii, and “Installation guidelines” on page 161.
2. Turn off the server and peripheral devices, and disconnect the power cords and all external cables. Unlock and remove the left-side cover (see “Removing the left-side cover” on page 173).
3. Carefully lay the server on its side so that it is lying flat and facing up.

**Note:** Be careful and do not drop the server.

4. Rotate the rear adapter-retention bracket to the open (unlocked) position.
5. Remove any adapters that prevent you from accessing the virtual media key connector on the system board (see “Removing an adapter” on page 186).
6. Press outward on the retention tab and pull the virtual media key out of the connector.



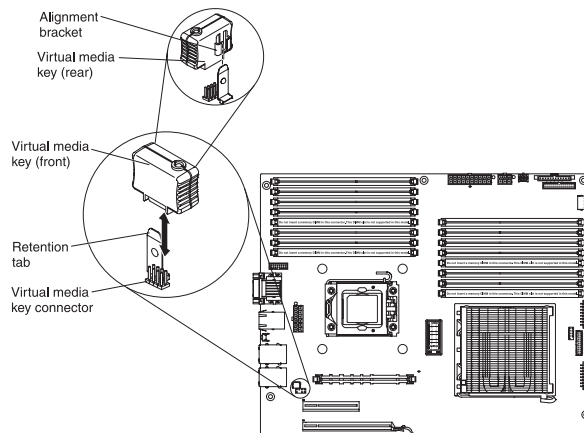


7. If you are instructed to return the virtual media key, follow all packaging instructions, and use any packaging materials for shipping that are supplied to you.

## Installing the virtual media key

To install a virtual media key, complete the following steps:

1. Align the alignment bracket on the rear of the key with the retention tab on the system board; then, slide the key down into the virtual media key connector on the system board until it is firmly seated in place.



2. Reinstall any adapters that you removed (see “Installing an adapter” on page 187).
3. Close the rear adapter retention bracket (closed) position.
4. Install the left-side cover (see “Installing the left-side cover” on page 173).
5. Lock the left-side cover.
6. Reconnect the external cables and power cords; then, turn on the attached devices and turn on the server.

## Removing the battery

The following notes describe information that you must consider when removing and replacing the battery in the server:

- IBM has designed this product with your safety in mind. The lithium battery must be handled correctly to avoid possible danger. If you replace the battery, you must adhere to the following instructions.

**Note:** In the U.S., call 1-800-IBM 4333 for information about battery disposal.

- You must replace the battery 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 support center or authorized reseller.

**Note:** 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:***

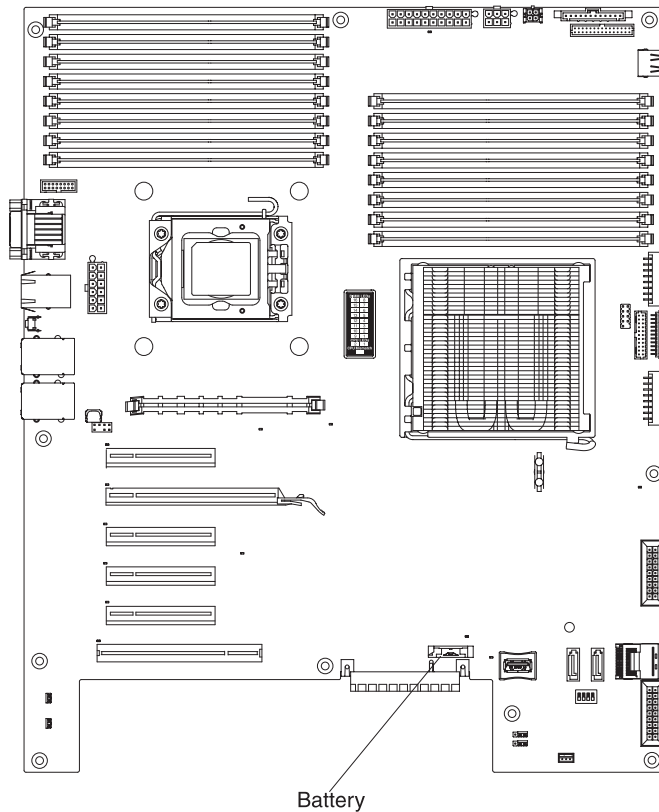
- **Throw or immerse into water**
- **Heat to more than 100°C (212°F)**
- **Repair or disassemble**

To remove the battery, complete the following steps.

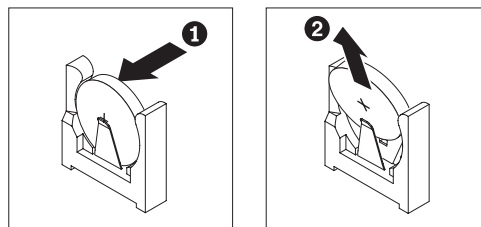
1. Read the safety information that begins on page vii and “Installation guidelines” on page 161.
2. Follow any special handling and installation instructions that come with the battery.
3. Turn off the server and all attached devices; then, disconnect all power cords and external cables.
4. Carefully lay the server flat on its side so that it is facing up.

**Note:** Be careful and do not drop the server.

5. Unlock and remove the left-side cover (see “Removing the left-side cover” on page 173).
6. Remove any adapters that impede access to the battery.
7. Locate the battery on the system board.



8. Remove the battery:
  - a. Use a finger to push the battery horizontally out of its socket, pushing it away from the socket.  
**Attention:** Neither tilt nor push the battery by using excessive force.
  - b. Lift and remove the battery from the socket.  
**Attention:** Failing to remove the battery properly may damage the socket on the system board. Any damage to the socket may require replacing the system board.



9. Dispose of the battery as required by local ordinances or regulations (see the *Environmental Notices and User's Guide* on the IBM System x Documentation CD for information about disposing of the battery).

## Installing the battery

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

- After you replace the battery, you must reconfigure the server and reset the system date and time.

- IBM has designed this product with your safety in mind. The lithium battery must be handled correctly to avoid possible danger. If you replace the battery, you must adhere to the following instructions.

**Note:** In the U.S., call 1-800-IBM 4333 for information about battery disposal.

- You must replace the battery 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 support center or authorized reseller.
- To avoid possible danger, read and follow the following safety statement.

**Statement 2:**



**CAUTION:**

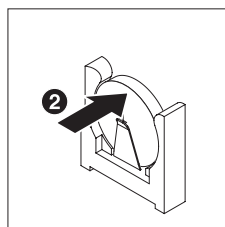
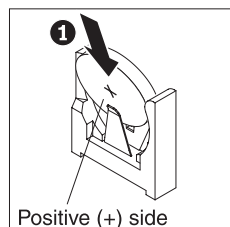
**When replacing the lithium battery, use only IBM Part Number 33F8354 or an equivalent type battery recommended by the manufacturer. If your system has a module containing a lithium battery, replace it only with the same module type made by the same manufacturer. The battery contains lithium and can 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**

To install the 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. Position the battery so that it is tilted slightly and the smaller side is facing the socket.
  - b. Place the battery into the socket towards the right side of the socket, press it down and slide it to the left of the socket housing until it snaps firmly in place.



3. Install the left-side cover (see “Installing the left-side cover” on page 173).
4. Lock the left-side cover.
5. Reconnect the external cables and power cords; then, turn on the attached devices and turn on the server.

**Note:** You must wait approximately 1 to 3 minutes after you connect the power cord of the server to an electrical outlet before pressing the power-control button.

6. Start the Setup utility and reset the configuration.
  - Set the system date and time.
  - Set the power-on password.
  - Reconfigure the server.

See “Starting the Setup utility” on page 277 for details.

## Removing a hot-swap fan

**Attention:**

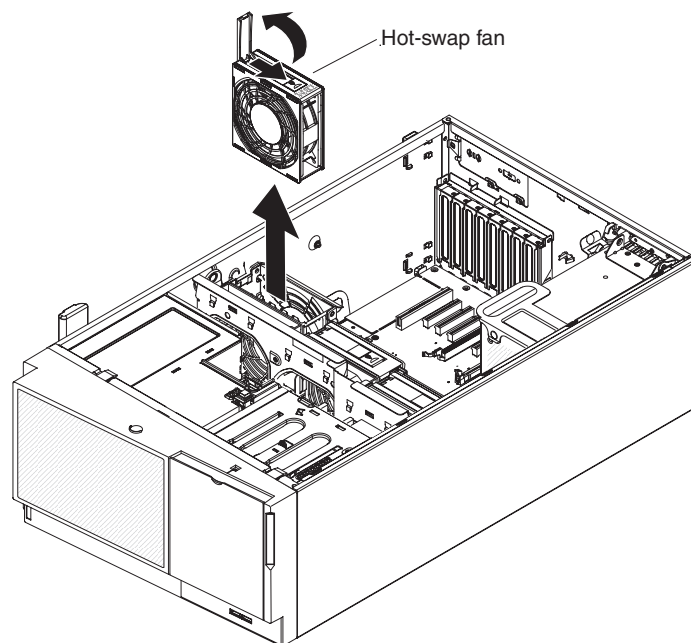
- Replace a hot-swap fan within 30 seconds of removal.
- To ensure proper cooling and airflow, do not operate the server for more than 2 minutes with the left-side cover removed.

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 161.

**Attention:** Static electricity that is released to internal server components when 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.

2. Unlock and remove the left-side cover (see “Removing the left-side cover” on page 173).
3. With your finger, slide the orange release tab on the fan in the direction indicated by the arrow on the top of the fan to unlock the fan handle. Grasp the fan handle and pull the fan out of the fan cage.



4. If you are instructed to return the hot-swap fan, follow all packaging instructions, and use any packaging materials for shipping that are supplied to you.

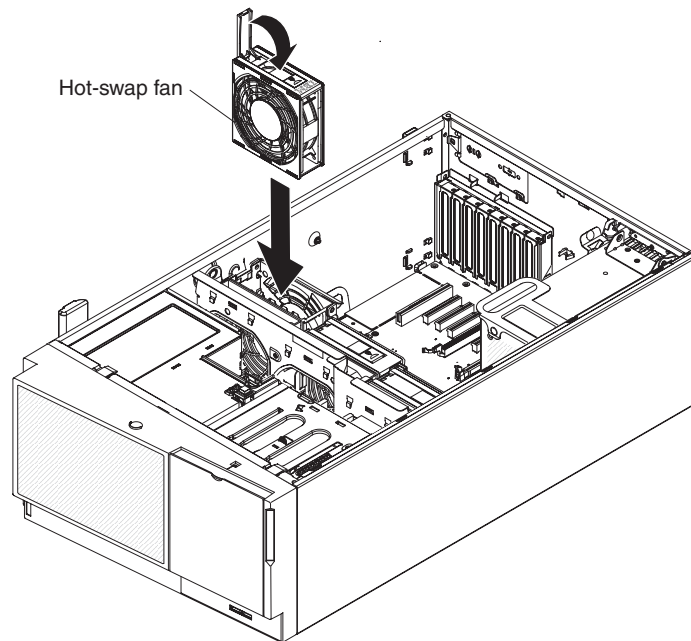
## Installing a hot-swap fan

### Attention:

- Replace a hot-swap fan within 30 seconds of removal.
- To ensure proper cooling and airflow, do not operate the server for more than 2 minutes with the left-side cover removed.

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

1. Touch the static-protective package that contains the hot-swap fan to any unpainted metal surface on the server; then, remove the fan from the package and place it on a static-protective surface.
2. Align the fan over the fan slot and lower fan into the slot in the fan cage assembly.



3. Press down on the fan until it locks into place; then, close the fan handle to the locking position.
4. Install the left-side cover (see "Installing the left-side cover" on page 173).
5. Lock the left-side cover.

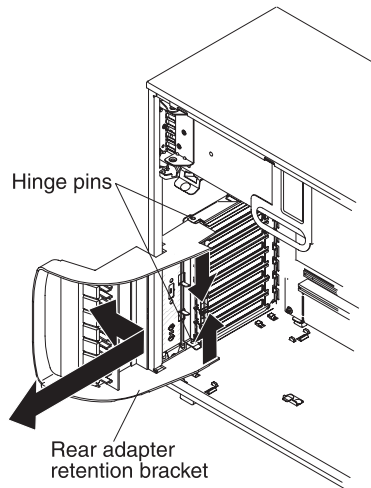
## Removing the rear adapter retention bracket

To remove the rear adapter-retention bracket, complete the following steps:

1. Turn off the server and all attached devices; then, disconnect all power cords and external cables.
2. Unlock and remove the left-side cover (see "Removing the left-side cover" on page 173).
3. Remove all adapters and place the adapters on static-protective surface (see "Removing an adapter" on page 186).

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

4. Open the rear adapter retention bracket.
5. Press the rear adapter retention bracket and release the top hinge point; then, release the other hinge point and remove the bracket from the chassis.

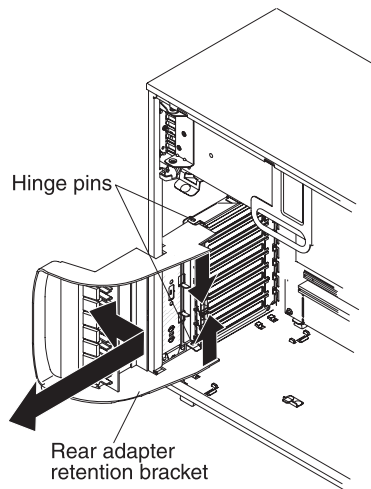


6. If you are instructed to return the rear adapter-retention bracket, follow all packaging instructions, and use any packaging materials for shipping that are supplied to you.

## Installing the rear adapter retention bracket

To install the rear adapter retention bracket, complete the following steps:

1. Insert the bottom hinge point on the rear adapter retention bracket into the matching hole in the chassis; then, insert the top hinge point into the matching hole.



2. Install the adapters (see “Installing an adapter” on page 187).
3. Close the rear adapter retention bracket.
4. Install the left-side cover (see “Installing the left-side cover” on page 173).
5. Lock the left-side cover, if necessary.
6. Reconnect the external cables and power cords; then, turn on the attached devices and turn on the server.

## Removing the front adapter-retention bracket

To remove the front adapter-retention bracket, complete the following steps:

1. Read the safety information that begins on page vii and “Installation guidelines” on page 161.

2. Turn off the server and all attached devices; then, disconnect all power cords and external cables.
3. Unlock and remove the left-side cover (see “Removing the left-side cover” on page 173).
4. Open the front and rear adapter-retention brackets.
5. Remove all adapters and place the adapters on static-protective surface (see “Removing an adapter” on page 186).

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

6. Lift the top of the front adapter-retainer bracket and release the hinge point; then, remove the bottom hinge point and remove the bracket from the chassis.
7. If you are instructed to return the front adapter-retention bracket, follow all packaging instructions, and use any packaging materials for shipping that are supplied to you.

## Installing the front adapter-retention bracket

To install the front adapter retention bracket, complete the following steps:

1. Insert one hole on the front adapter-retention bracket into the hinge point.
2. Position the other hole and insert the adapter-retention bracket into the hinge point.
3. Install the adapters (see “Installing an adapter” on page 187).
4. Close the front and rear adapter retention brackets.
5. Install the left-side cover (see “Installing the left-side cover” on page 173).
6. Lock the left-side cover.
7. Reconnect the external cables and power cords; then, turn on the attached devices and turn on 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 the server.

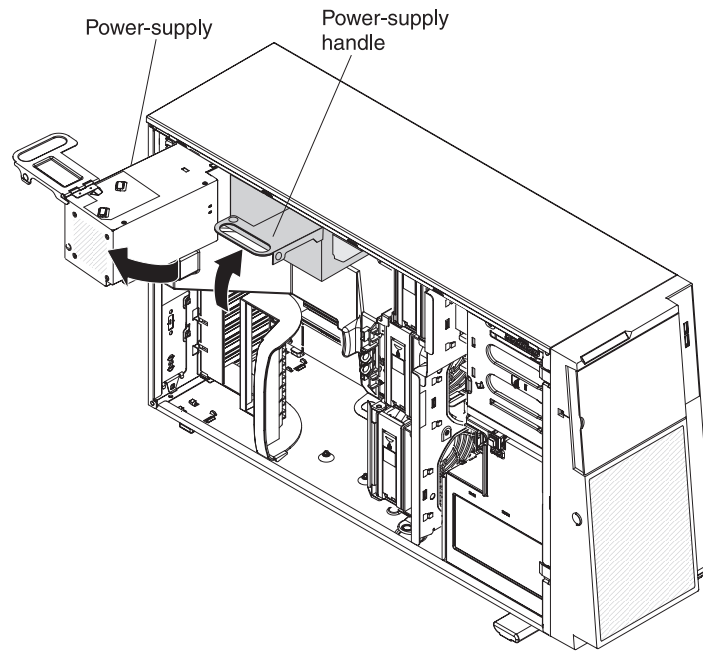
The illustrations in this document might differ slightly from your hardware.

## Removing the front USB connector assembly

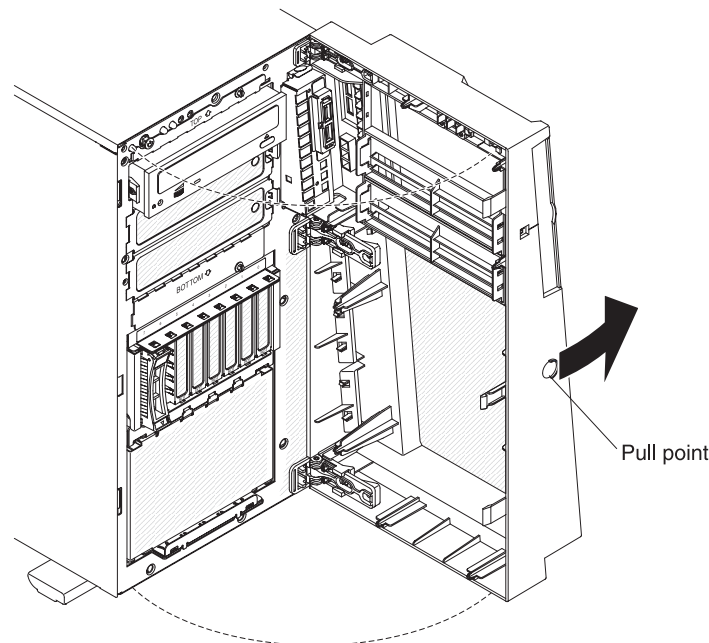
To remove the front USB connector assembly, complete the following steps.

1. Read the safety information that begins on page vii and “Installation guidelines” on page 161.
2. Turn off the server and all attached devices; then, disconnect all power cords and external cables.
3. Unlock and remove the left-side cover (see “Removing the left-side cover” on page 173).
4. Rotate the power-supply cage assembly out of the chassis. Lift up the power-supply cage handle and pull the power-supply cage assembly all the way up until the retainer latch locks the cage in place on the chassis.

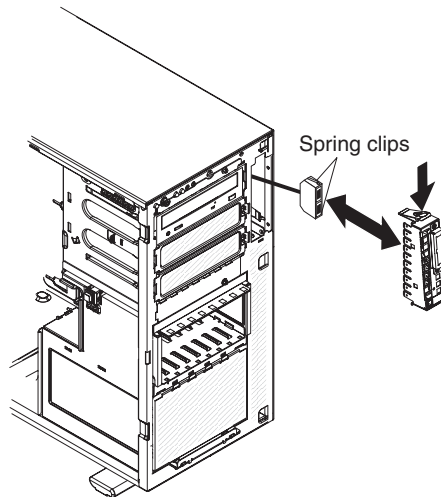




5. Remove the air baffle (see “Removing the air baffle” on page 179).
6. Remove the fan cage assembly (see “Removing the fan cage assembly” on page 227).
7. Open the bezel. Place your finger on the pull point area on the left side of the bezel door and rotate it away from the server.



8. Disconnect the front USB cable from the system board, noting the routing of the cable (see “System-board internal connectors” on page 18 for the location of the front USB connector).
9. Press the release tab on the front USB housing; then, tilt the top of the housing away from the chassis and lift the housing out of the chassis.

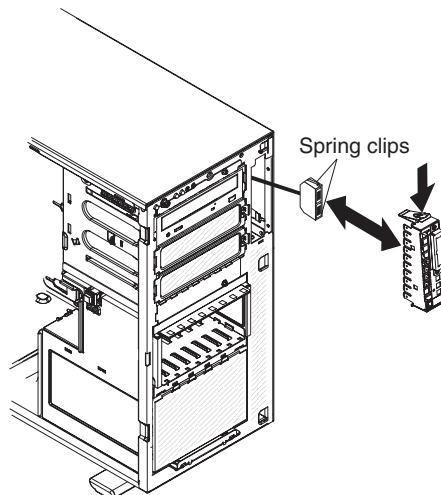


10. Squeeze the spring clips on the sides of the front USB connector assembly and pull the assembly out of the back of the housing.
11. Pull the front USB cable out of the chassis.
12. If you are instructed to return the front USB connector assembly, follow all packaging instructions, and use any packaging materials for shipping that are supplied to you.

## Installing the front USB connector assembly

To install the front USB connector assembly, complete the following steps.

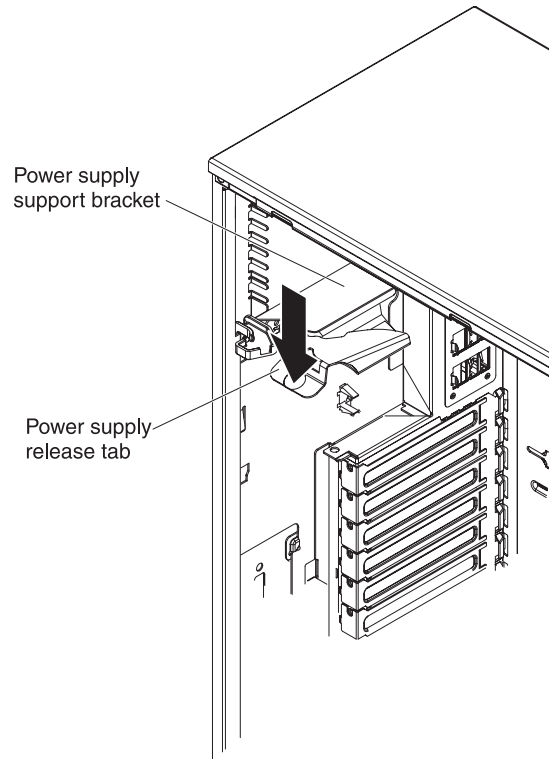
1. Feed the front USB cable through the opening in the front of the chassis.
2. Squeeze the spring clips on the front USB connector assembly and insert the assembly into the housing.
3. Place the bottom edge of the housing into the chassis; then, tilt the top of the housing into position until it clicks into place.



4. Route and connect the front USB cable to the system board (see "System-board internal connectors" on page 18 for the location of the front USB connector).
5. Close the bezel.
6. Install the fan cage assembly (see "Installing the fan cage assembly" on page 229).

**Note:** Make sure that all cables are routed so that they are not damaged when inserting the fan cage assembly into the server.

7. Install the air baffle (see “Installing the air baffle” on page 180).
8. Rotate the power-supply cage assembly back into the server. Press the power-supply cage release tab and rotate the power-supply cage assembly into the chassis.



9. Install the left-side cover (see “Installing the left-side cover” on page 173).
10. Lock the left-side cover.
11. Reconnect the external cables and power cords; then, turn on the attached devices and turn on the server.

## Removing the fan cage assembly

### Attention:

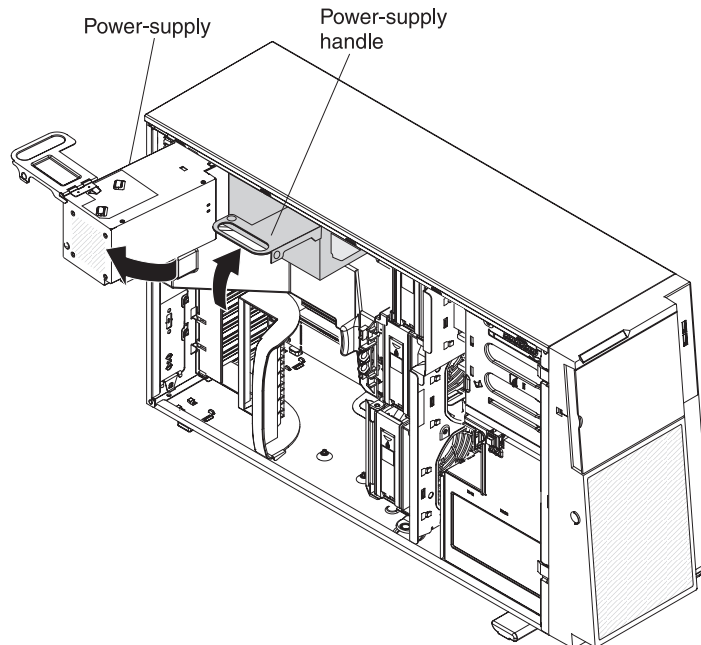
- Replace a hot-swap fan within 30 seconds of removal.
- To ensure proper cooling and airflow, do not operate the server for more than 2 minutes with the left-side cover removed.

To remove the fan cage, complete the following steps.

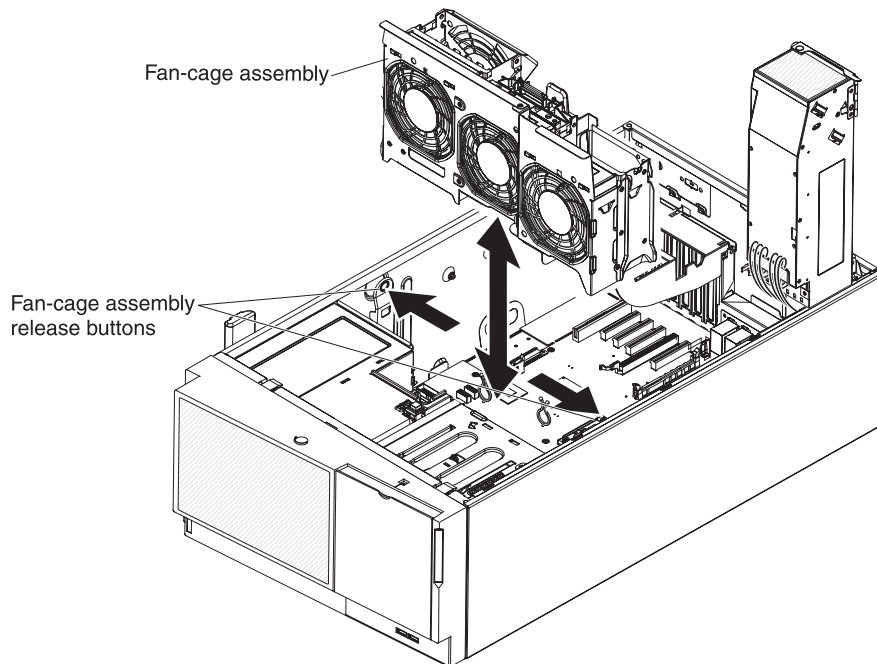
1. Read the safety information that begins on page vii and “Installation guidelines” on page 161.
2. Turn off the server and all attached devices; then, disconnect all power cords and external cables.
3. Unlock and remove the left-side cover (see “Removing the left-side cover” on page 173).
4. Carefully lay the server on its side so that it is lying flat and facing up.

**Note:** Be careful and do not drop the server.

5. Rotate the power-supply cage assembly out of the chassis. Lift up the power-supply cage handle and pull the power-supply cage assembly all the way up until the retainer latch locks the cage in place on the chassis.



6. Remove the air baffle (see "Removing the air baffle" on page 179)
7. Press in on the fan cage assembly release buttons on both sides of the chassis to release the fan cage assembly from the connector on the chassis. Lift the fan cage assembly up and out of the chassis and set it aside.



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

## Installing the fan cage assembly

### Attention:

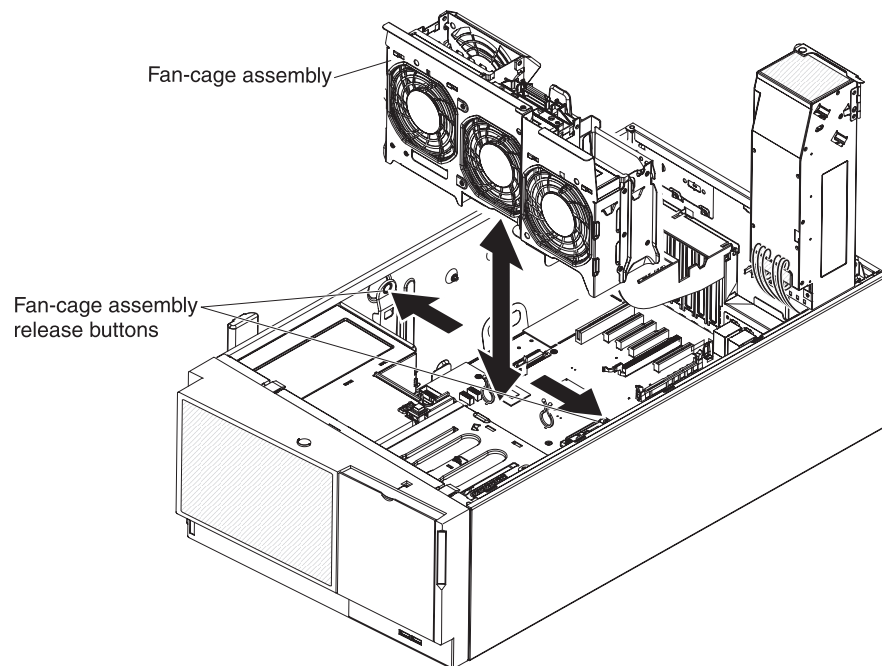
- Replace a hot-swap fan within 30 seconds of removal.
- To ensure proper cooling and airflow, do not operate the server for more than 2 minutes with the left-side cover removed.

To install the fan cage assembly, complete the following steps.

**Note:** If you have to order a replacement fan cage assembly, it comes pre-routed with two cables. Only one of the cables is necessary for this server.

1. Make sure that server is laying flat on its side and align the fan cage with the guide rails on the sides of the chassis.

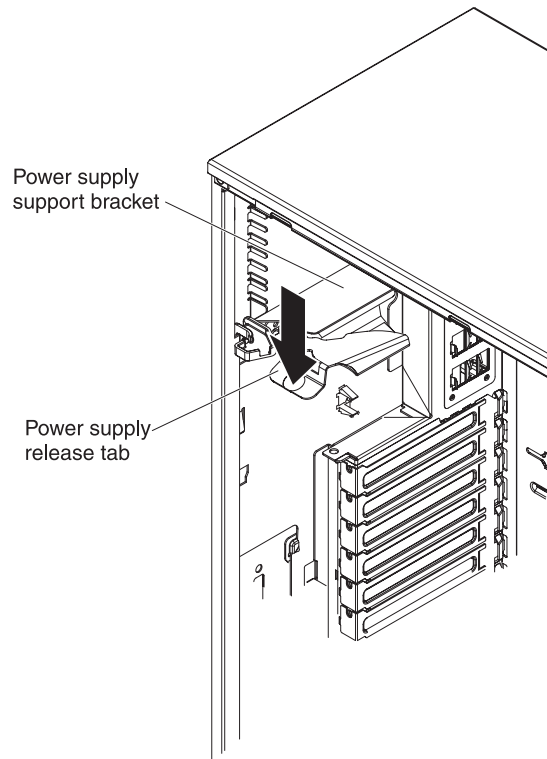
**Note:** Make sure that all cables are routed so that they are not damaged when inserting the fan cage assembly into the server.



2. Slide the fan cage into the chassis and press firmly until the fan cage is seated firmly in place.

**Note:** Make sure that both release buttons click into place.

3. Install the air baffle (see "Installing the air baffle" on page 180).
4. Rotate the power-supply cage assembly back into the server. Press the power-supply release tab and rotate the power-supply cage assembly into the chassis.

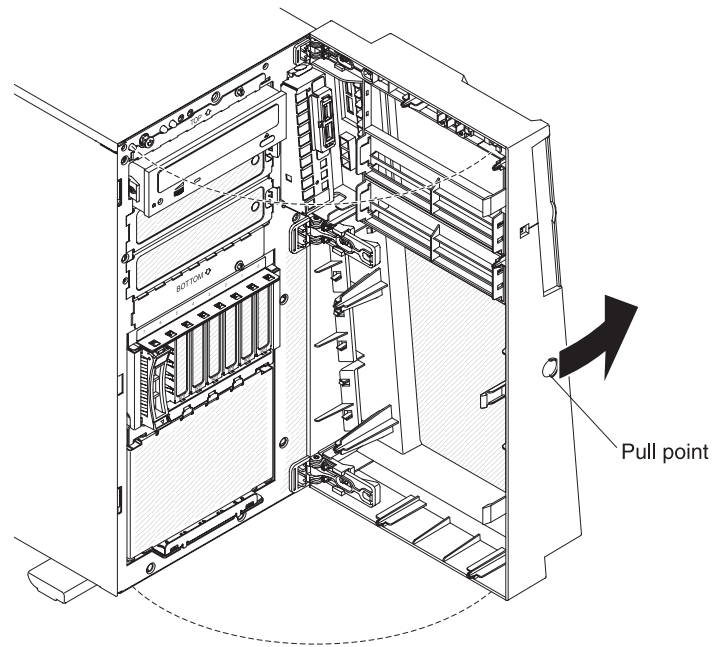


5. Install the left-side cover (see “Installing the left-side cover” on page 173).
6. Lock the left-side cover.
7. Reconnect the external cables and power cords; then, turn on the attached devices and turn on the server.

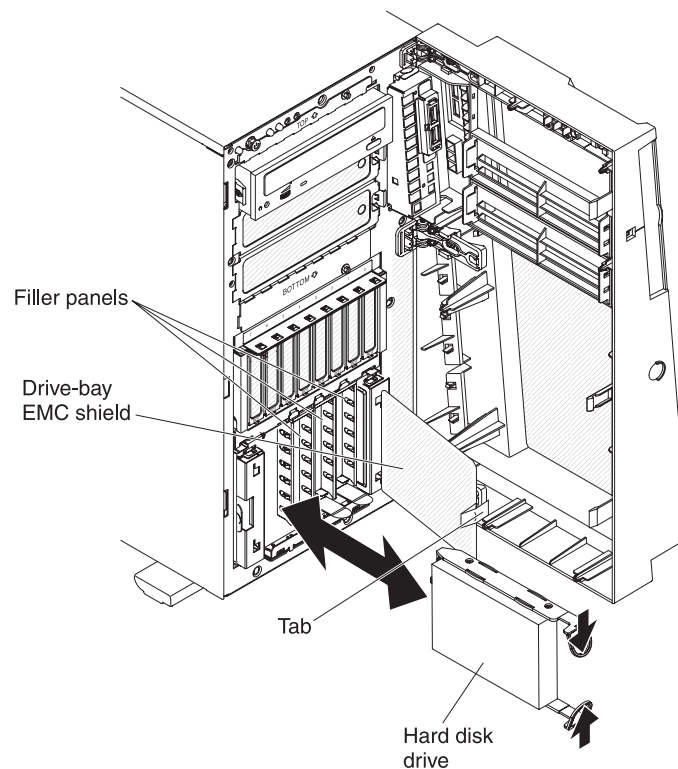
## Removing the simple-swap backplate

To remove the simple-swap backplate, complete the following steps.

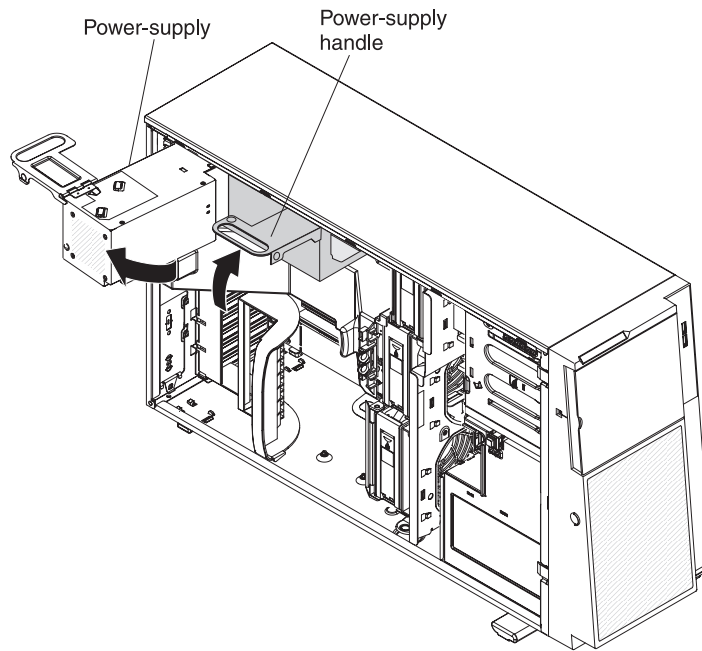
1. Read the safety information that begins on page vii and “Installation guidelines” on page 161.
2. Turn off the server and all attached devices; then, disconnect all power cords and external cables.
3. Unlock and remove the left-side cover (see “Removing the left-side cover” on page 173).
4. Open the bezel. Position your finger on the pull point area on the left side of the bezel and rotate the bezel away from the server.



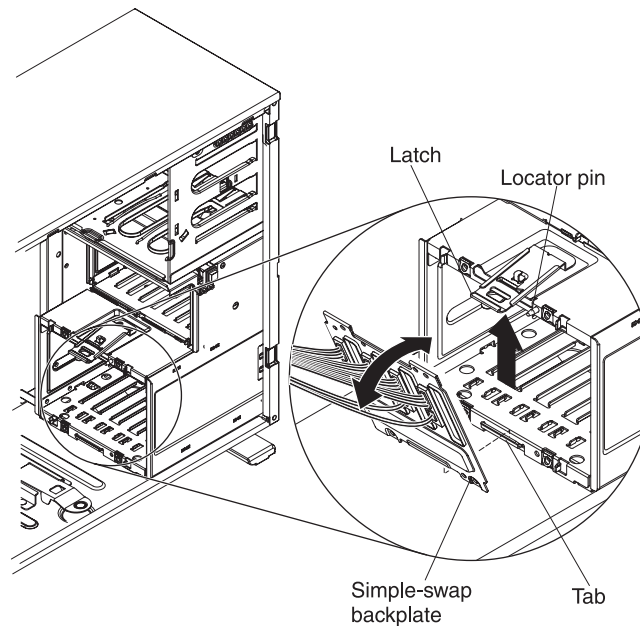
5. Grasp the tab on the drive bay EMC shield and rotate it to the open position.



6. Rotate the power-supply cage assembly out of the chassis. Lift up the power-supply cage handle and pull the power-supply cage assembly all the way up until the retainer latch locks the cage in place on the chassis.



7. Remove the air baffle (see "Removing the air baffle" on page 179).
8. Remove the fan cage assembly (see "Removing the fan cage assembly" on page 227).
9. Remove the simple-swap hard disk drives that are installed in the hard disk drive cage (see "Removing a simple-swap hard disk drive" on page 206).
10. Disconnect the combination signal/power cable from the system board.
11. Lift the latch and rotate the simple-swap backplate away from the drive cage as shown in the illustration.



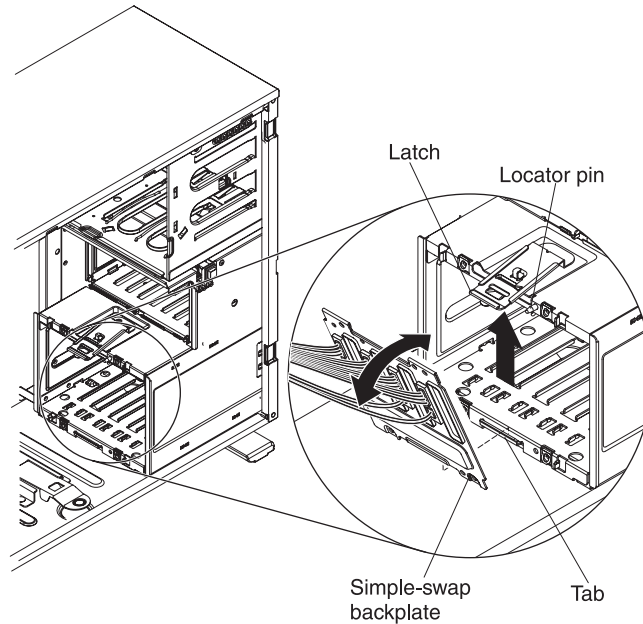
12. Remove the simple-swap backplate and set it aside.
13. If you are instructed to return the simple-swap backplate, follow all packaging instructions, and use any packaging materials for shipping that are supplied to you.



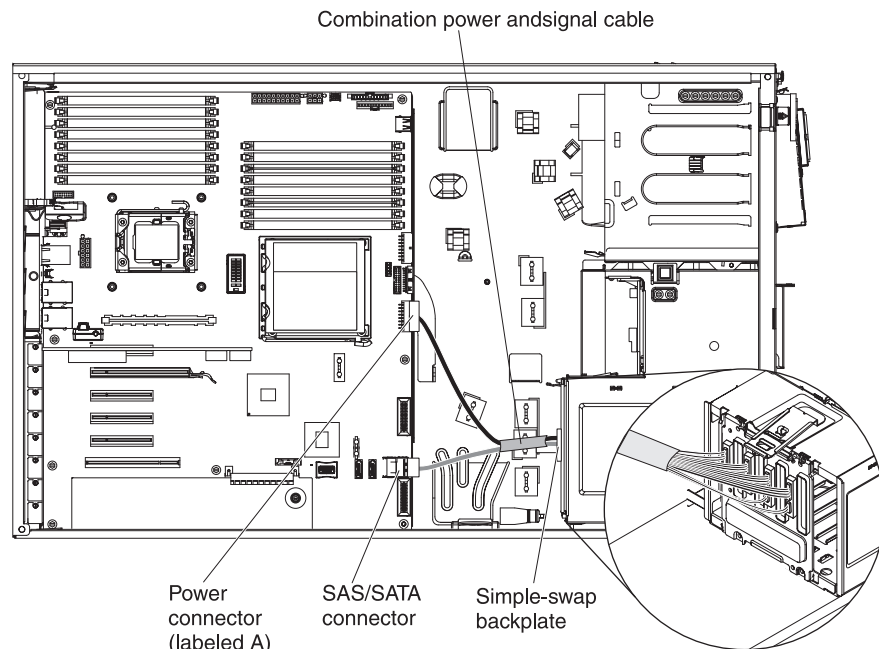
## Installing the simple-swap backplate

To install the simple-swap backplate, complete the following steps.

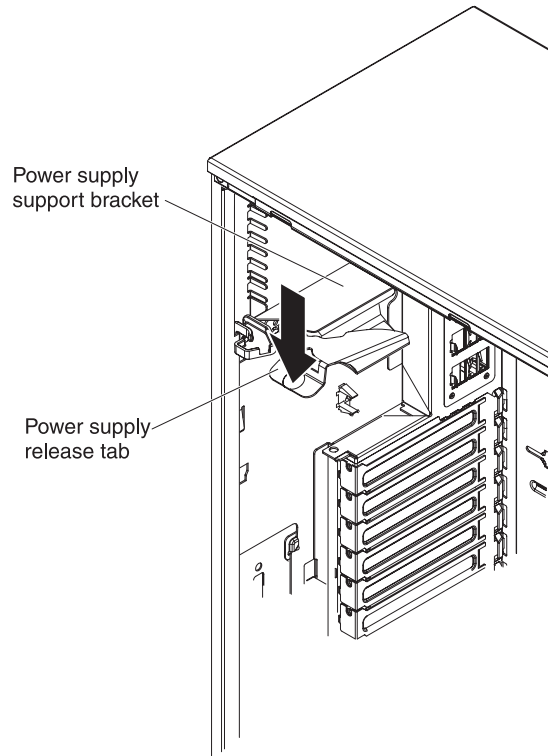
1. Insert the bottom tabs of the replacement simple-swap backplate onto the slots on the lower lip of the drive cage.
2. Rotate the simple-swap backplate toward the drive cage (make sure to align it with the locator pin) until it locks in place in the retaining tabs of the spring-release latch on the drive cage.



3. Connect the combination signal/power cable to the system board as shown in the following illustration. See “System-board internal connectors” on page 18 for the location of the connectors on the system board). See “Internal cable routing and connectors” on page 164 for additional information about cabling.



4. Install the simple-swap hard disk drives (see “Installing a simple-swap hard disk drive” on page 208).
5. Install the fan cage assembly (see “Installing the fan cage assembly” on page 229).
6. Install the air baffle (see “Installing the air baffle” on page 180).
7. Rotate the power-supply cage assembly back into the server. Press the power-supply release tab and rotate the power-supply cage assembly into the chassis.

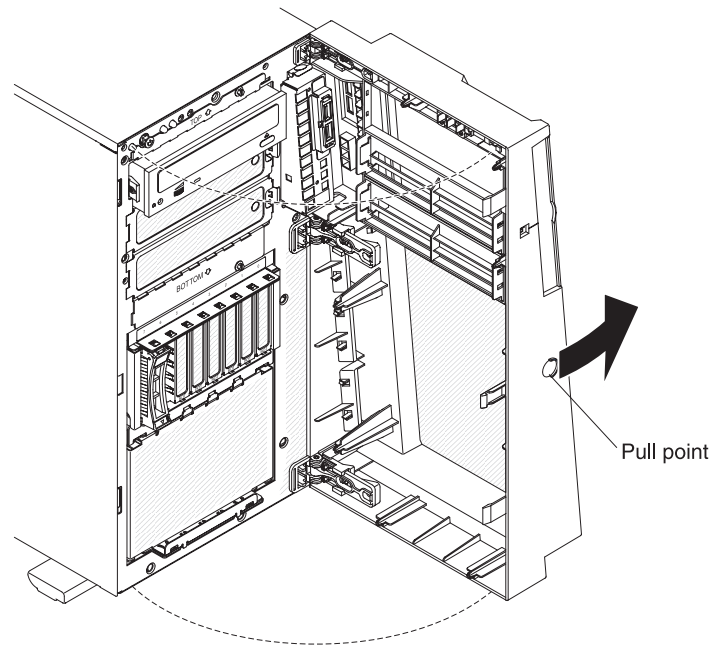


8. Close the bezel.
9. Install the left-side cover (see “Installing the left-side cover” on page 173).
10. Lock the left-side cover if it was unlocked during removal.
11. Reconnect the external cables and power cords; then, turn on the attached devices and turn on the server.

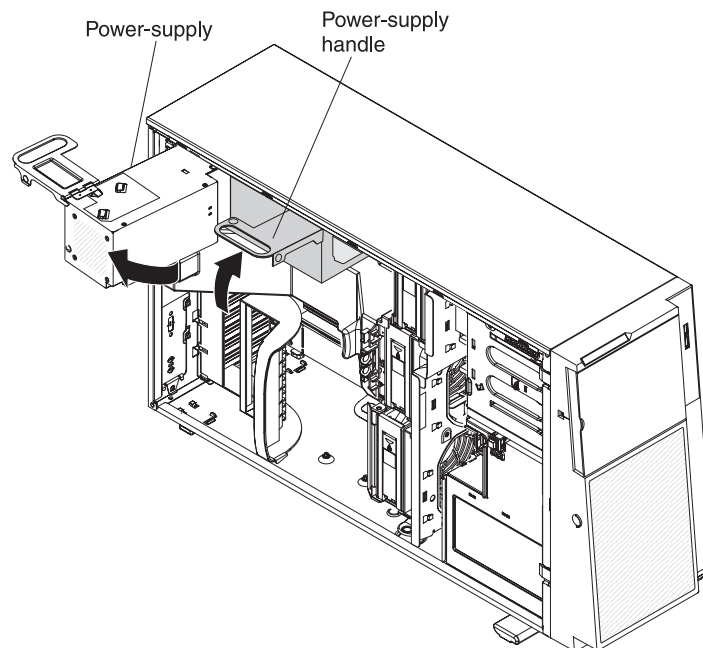
## Removing the 2.5-inch hot-swap hard disk drive backplate

To remove the 2.5-inch hard disk drive backplate, complete the following steps.

1. Read the safety information that begins on page vii and “Installation guidelines” on page 161.
2. Turn off the server and all attached devices; then, disconnect all power cords and external cables.
3. Unlock and remove the left-side cover (see “Removing the left-side cover” on page 173).
4. Open the bezel. Position your finger on the pull point area on the left side of the bezel and rotate the bezel away from the server.

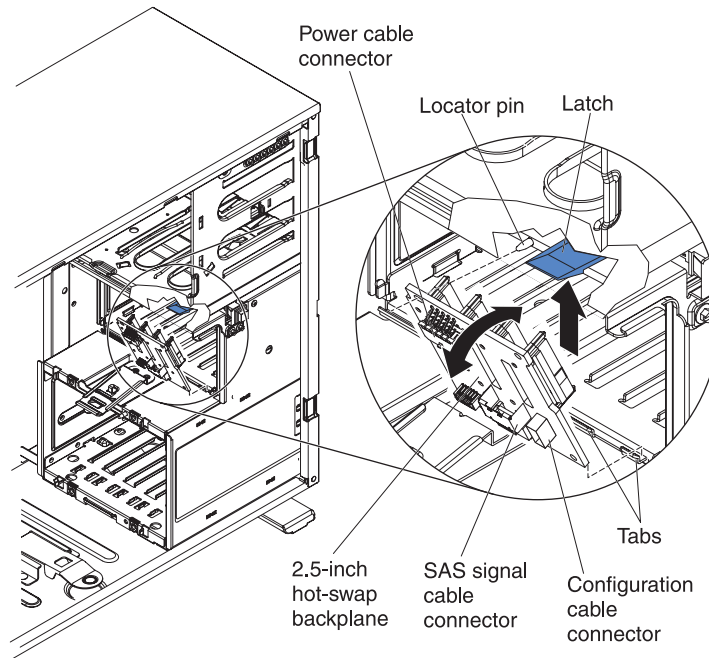


5. Remove the 2.5-inch hot-swap hard disk drives that are installed in the hard disk drive cage (see “Removing a 2.5-inch hot-swap hard disk drive” on page 201).
6. Rotate the power-supply cage assembly out of the chassis. Lift up the power-supply cage handle and pull the power-supply cage assembly all the way up until the retainer latch locks the cage in place on the chassis.



7. Remove the air baffle (see “Removing the air baffle” on page 179).
8. Remove the fan cage assembly (see “Removing the fan cage assembly” on page 227).
9. Disconnect the power, configuration, and signal cables from the 2.5-inch hard disk drive backplate.

10. Lift up on the spring release latch on the drive cage and rotate the backplate away from the drive cage until the backplate tab disengages from the cage.

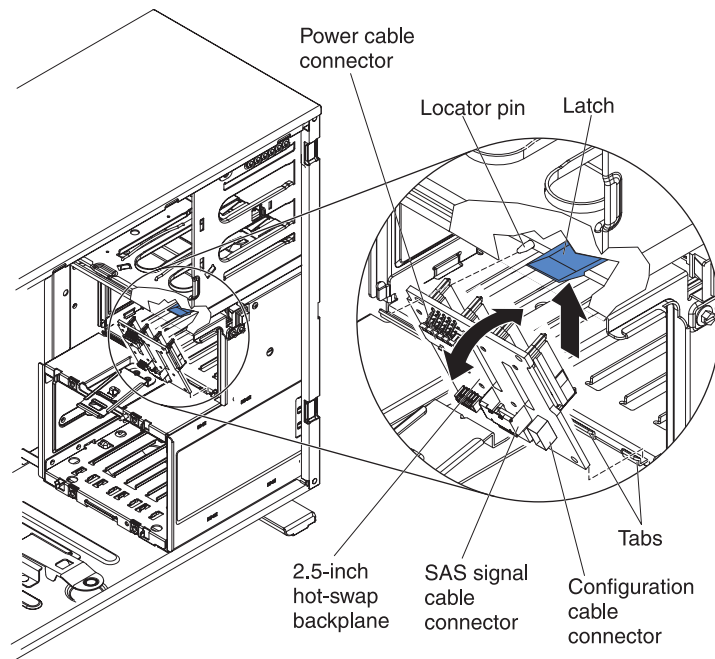


11. If you are instructed to return the 2.5-inch hard disk drive backplate, follow all packaging instructions, and use any packaging materials for shipping that are supplied to you.

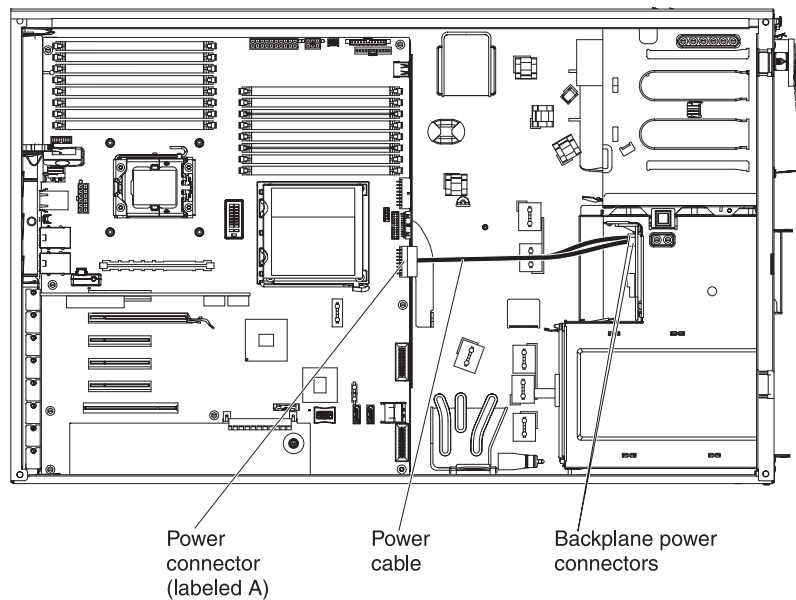
## Installing the 2.5-inch hot-swap hard disk drive backplate

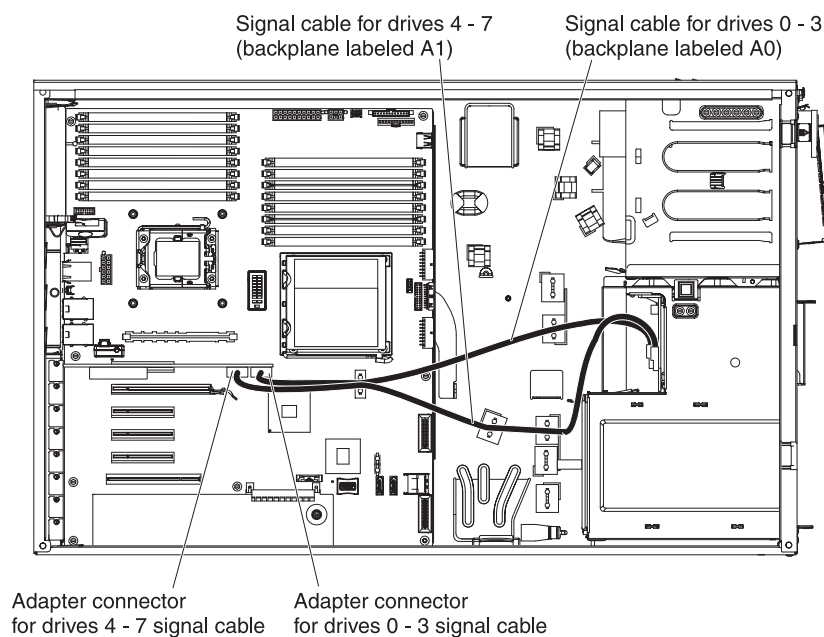
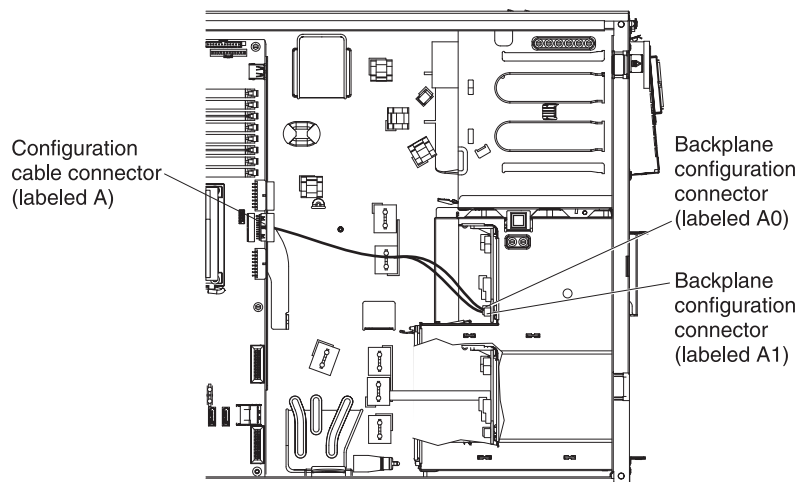
To install the 2.5-inch hard disk drive backplate, complete the following steps.

1. Insert the bottom tabs of the 2.5-inch hard disk drive backplate onto the lower lip of the drive cage.
2. Rotate the backplate toward the drive cage until it locks in place in the retention tab of the spring-release latch on the drive cage.



3. Connect the power, configuration, and signal cables to the 2.5-inch hard disk drive backplate. The following illustrations show the cabling information for these cables. See “Internal cable routing and connectors” on page 164 for additional information about cabling.

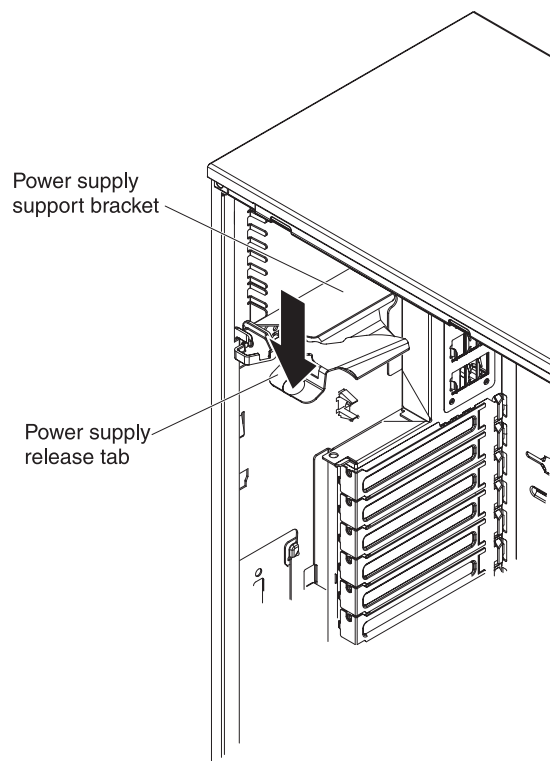




4. Install the 2.5-inch hot-swap hard disk drives (see “Installing a 2.5-inch hot-swap hard disk drive” on page 203).
5. Install the fan cage assembly (see “Installing the fan cage assembly” on page 229).

**Note:** Make sure that the cables are routed so that when you insert the fan cage assembly it does not damage the cables.

6. Install the air baffle (see “Installing the air baffle” on page 180).
7. Rotate the power-supply cage assembly back into the server. Press the power-supply cage release tab and rotate the power-supply cage assembly into the chassis.

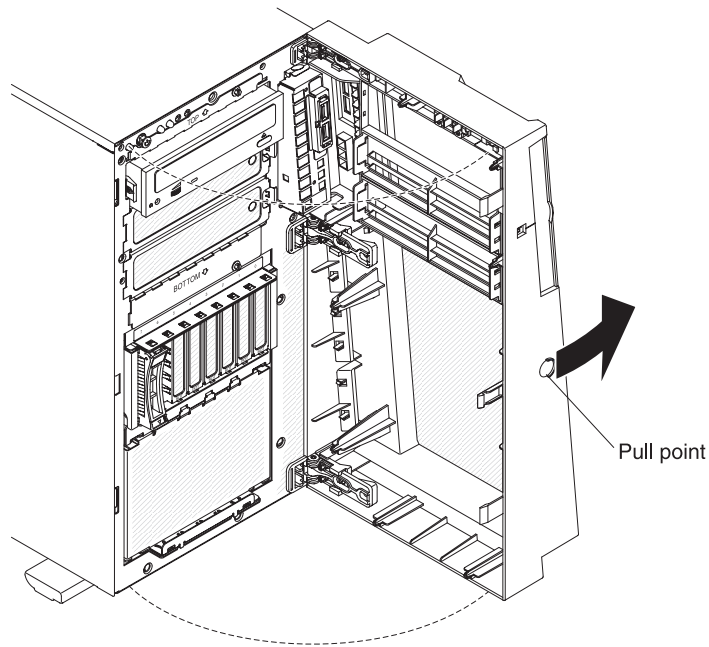


8. Close the bezel.
9. Install the left-side cover (see “Installing the left-side cover” on page 173).
10. Lock the left-side cover.
11. Reconnect the external cables and power cords; then, turn on the attached devices and turn on the server.

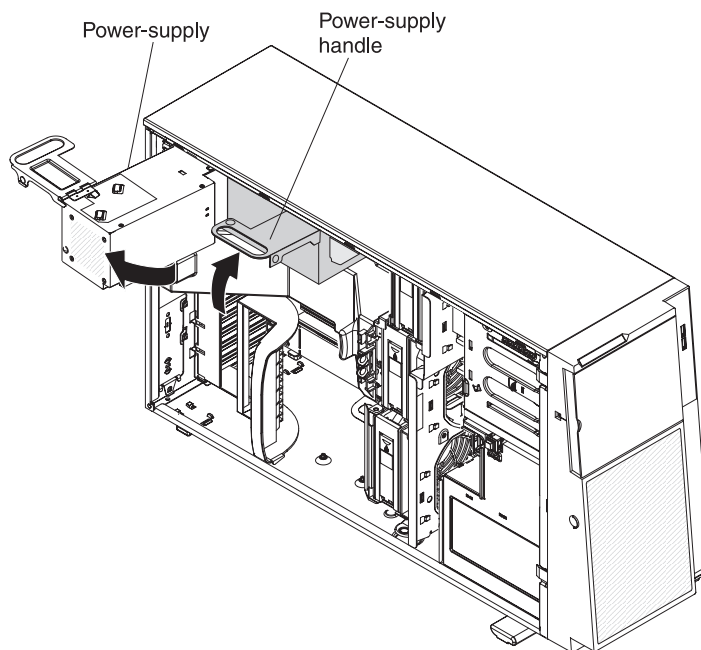
## Removing the 3.5-inch hot-swap hard disk drive backplate

To remove the 3.5-inch hot-swap hard disk drive backplate, complete the following steps.

1. Read the safety information that begins on page vii and “Installation guidelines” on page 161.
2. Turn off the server and all attached devices; then, disconnect all power cords and external cables.
3. Unlock and remove the left-side cover (see “Removing the left-side cover” on page 173).
4. Open the bezel. Position your finger on the pull point area on the left side of the bezel and rotate the bezel away from the server.



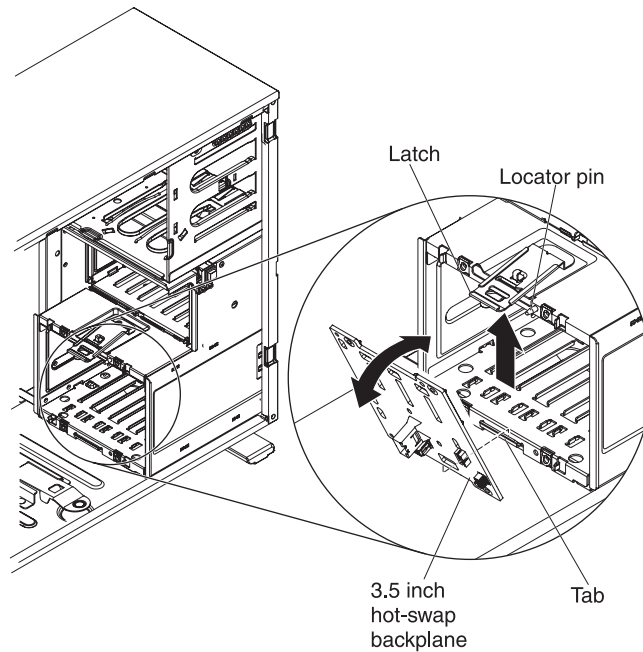
5. Remove the hot-swap hard disk drives that are installed in the hard disk drive cage (see “Removing a 3.5-inch hot-swap hard disk drive” on page 204).
6. Rotate the power-supply cage assembly out of the chassis. Lift up the power-supply cage handle and pull the power-supply cage assembly all the way up until the retainer latch locks the cage in place on the chassis.



7. Remove the air baffle (see “Removing the air baffle” on page 179).
8. Remove the fan cage assembly (see “Removing the fan cage assembly” on page 227).
9. Disconnect the power, signal, and configuration cables from the 3.5-inch hard disk drive backplate.



10. Lift up on the spring-release latch on the drive cage and rotate the backplate away from the drive cage until the backplate tabs disengage from the drive cage.

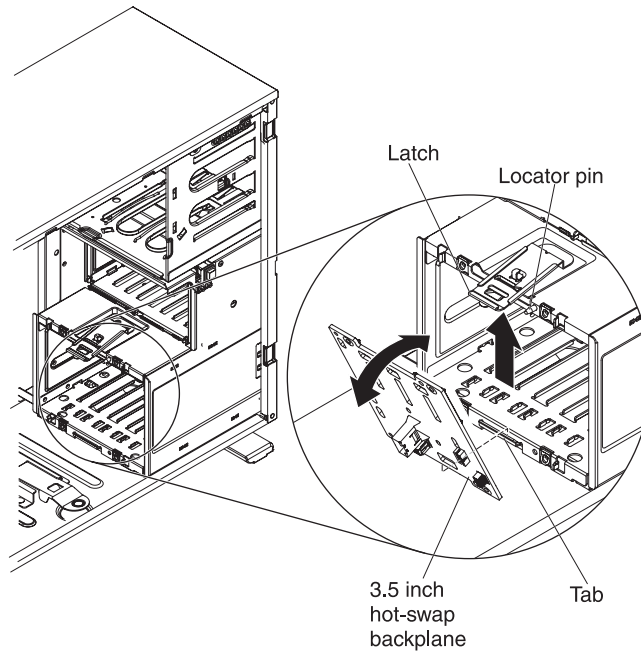


11. If you are instructed to return the 3.5-inch hot-swap hard disk drive backplate, follow all packaging instructions, and use any packaging materials for shipping that are supplied to you.

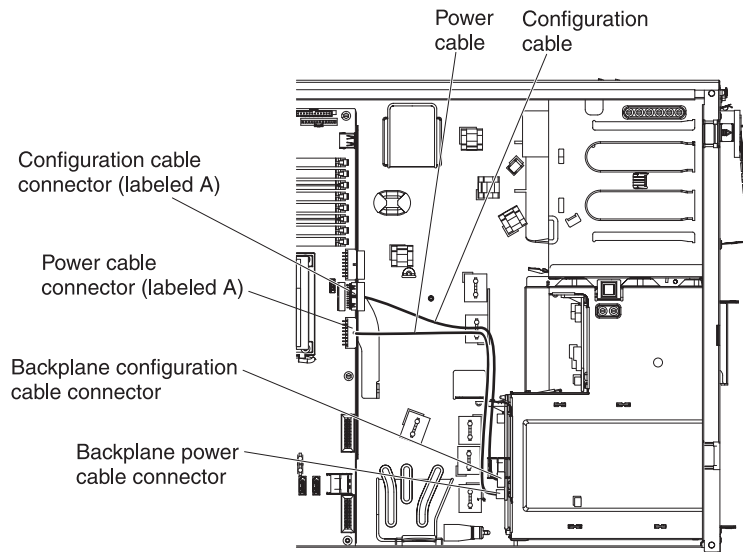
## Installing the 3.5-inch hard disk drive backplate

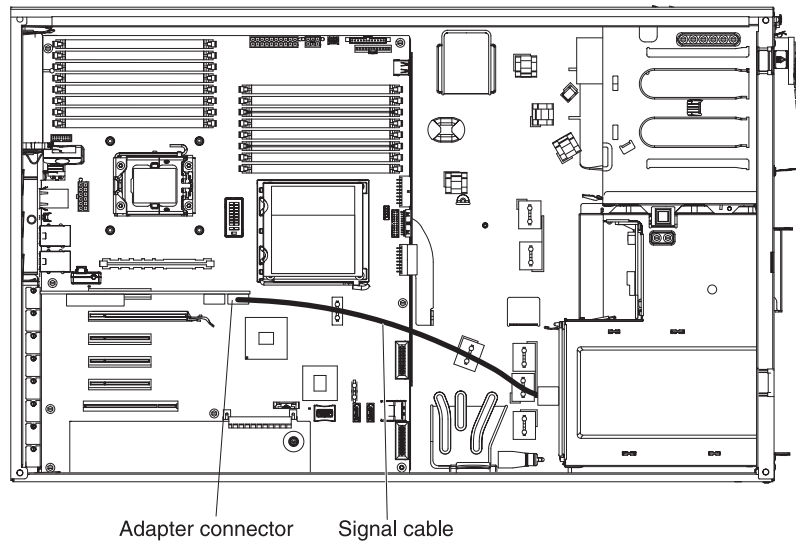
To install the 3.5-inch hard disk drive backplate, complete the following steps.

1. Insert the bottom tabs of the 3.5-inch hard disk drive backplate onto the lower lip of the drive cage.
2. Rotate the backplate toward the drive cage until it locks in place in the retention tab of the spring-release latch on the drive cage.

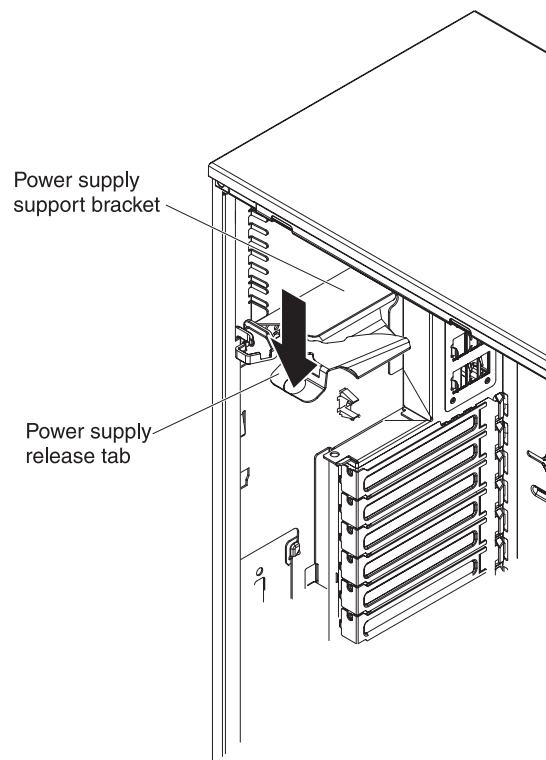


3. Reconnect the power, configuration, and signal cables to the 3.5-inch hard disk drive backplate. The following illustrations show the information for cabling these cables. See "Internal cable routing and connectors" on page 164 for additional information about cabling.





4. Install the hot-swap hard disk drives that were removed from the hard disk drive cage (see “Installing a 3.5-inch hot-swap hard disk drive” on page 205).
5. Install the fan cage assembly (see “Installing the fan cage assembly” on page 229).
6. Install the air baffle (see “Installing the air baffle” on page 180).
7. Rotate the power-supply cage assembly back into the server. Press the power-supply cage release tab and rotate the power-supply cage assembly into the chassis.



8. Close the bezel.
9. Install the left-side cover (see “Installing the left-side cover” on page 173).
10. Lock the left-side cover.

11. Reconnect the external cables and power cords; then, turn on the attached devices and turn on the server.

---

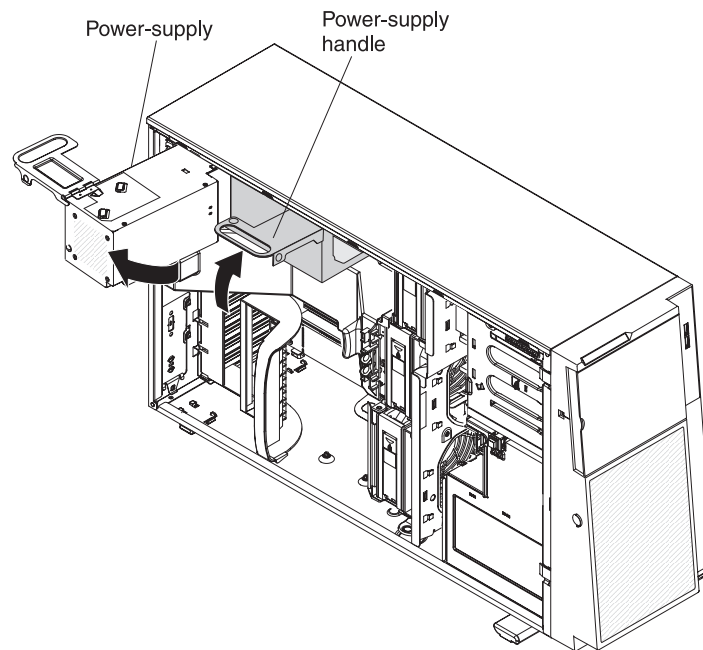
## Removing a voltage regulator module (VRM)

To remove a VRM, complete the following steps:

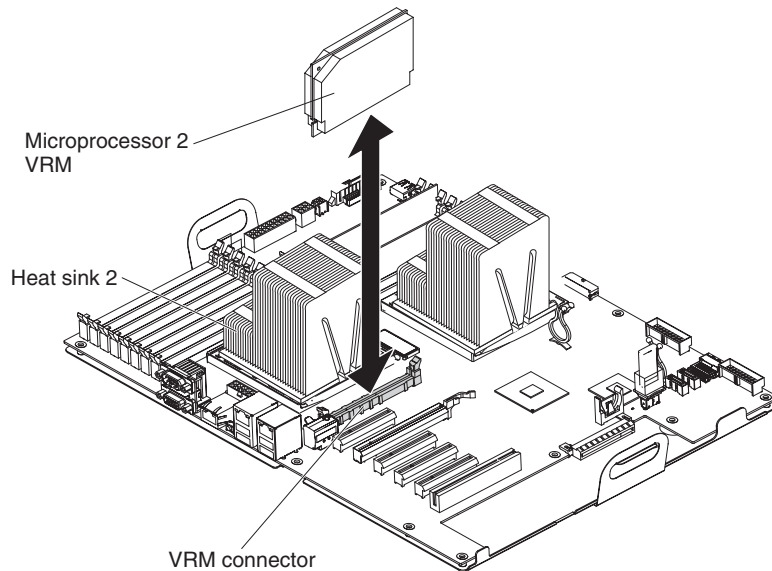
1. Read the safety information that begins on page vii and “Installation guidelines” on page 161.
2. Turn off the server and all attached devices; then, disconnect all power cords and external cables.
3. Carefully lay the server on its side so that it is lying flat and facing up.

**Note:** Be careful and do not drop the server.

4. Unlock and remove the left-side cover (see “Removing the left-side cover” on page 173).
5. Rotate the power-supply cage assembly out of the chassis. Lift up the power-supply cage handle and pull the power-supply cage assembly all the way up until the retainer latch locks the cage in place on the chassis.



6. Remove the air baffle (see “Removing the air baffle” on page 179).
7. Open the retaining clip on each end of the VRM connector on the system board.



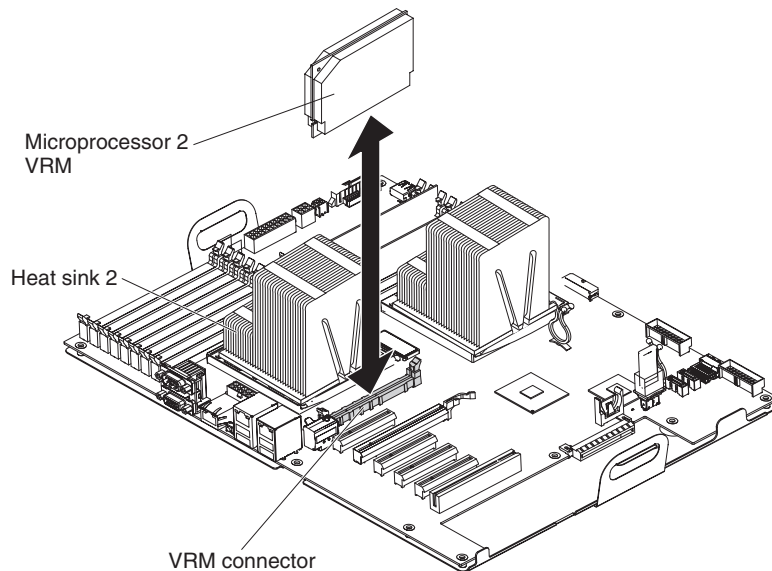
8. Remove the voltage regulator module (VRM) from the VRM connector.
9. If you are instructed to return the VRM, follow all packaging instructions, and use any packaging materials for shipping that are supplied to you.

---

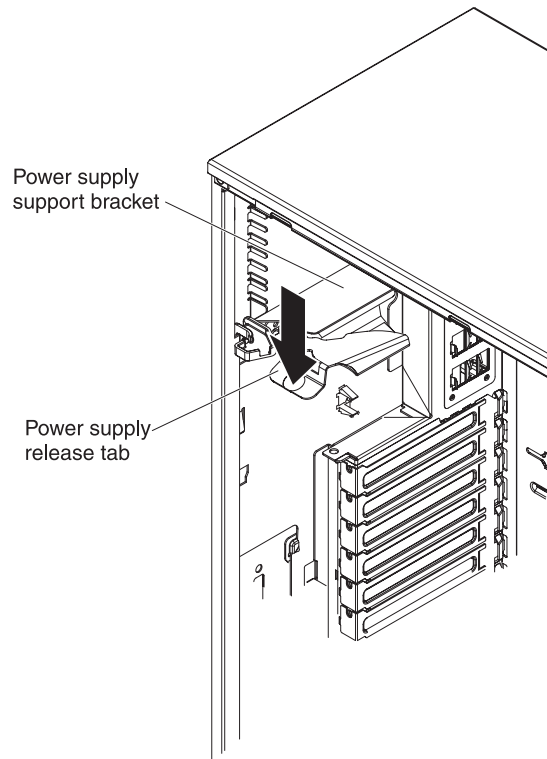
## Installing a voltage regulator module (VRM)

To install a VRM, complete the following steps:

1. Turn the VRM so that the VRM keys align correctly with the slot connector.
2. Firmly press the VRM straight down into the connector by applying pressure on both ends of the VRM simultaneously.



3. Make sure that the retaining clips are in the locked position when the VRM is firmly seated in the connector.
4. Install the air baffle (see "Installing the air baffle" on page 180).
5. Rotate the power-supply cage assembly back into the server. Press the power-supply cage release tab and rotate the power-supply cage assembly into the chassis.



6. Install the left-side cover (see “Installing the left-side cover” on page 173).
7. Lock the left-side cover.
8. Reconnect the external cables and power cords; then, turn on the attached devices and turn on the server.

---

## Removing and replacing FRUs

Field replaceable units (FRUs) must be installed only by trained service technicians.

### Removing the microprocessor and heat sink

**Attention:**

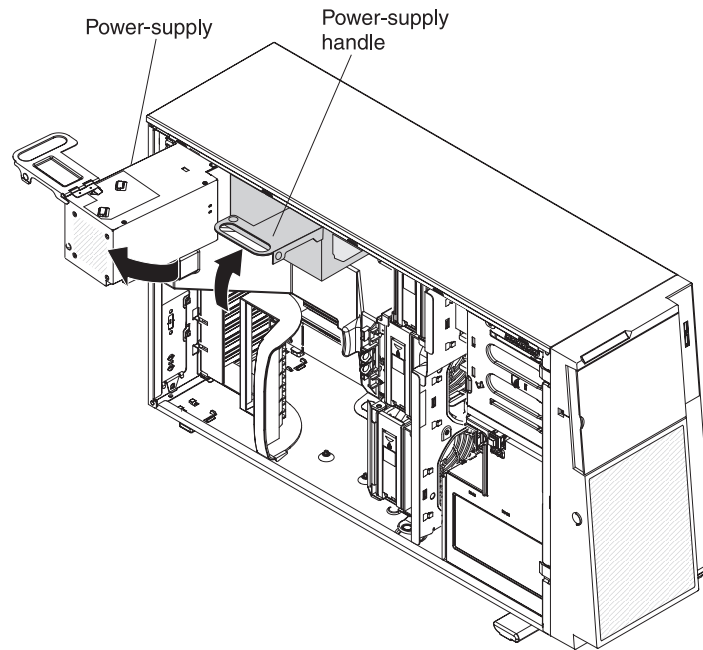
- Do not allow the thermal grease on the microprocessor and heat sink to come in contact with anything. Contact with any surface can compromise the thermal grease and the microprocessor socket.
- Dropping the microprocessor during installation or removal can damage the contacts.
- Do not touch the microprocessor contacts; handle the microprocessor by the edges only. Contaminants on the microprocessor contacts, such as oil from your skin, can cause connection failures between the contacts and the socket.

To remove the microprocessor and heat sink, complete the following steps.

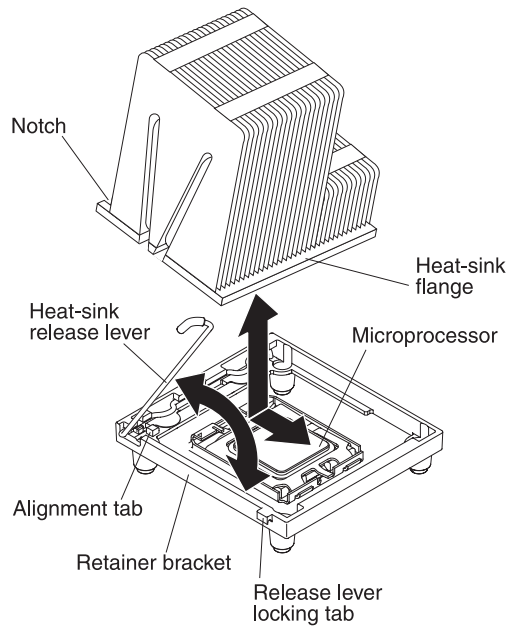
1. Read the safety information that begins on page vii and “Installation guidelines” on page 161.
2. Turn off the server and all attached devices; then, disconnect all power cords and external cables.
3. Carefully lay the server on its side so that it is lying flat and facing up.

**Note:** Be careful and do not drop the server.

4. Unlock and remove the left-side cover (see “Removing the left-side cover” on page 173).
5. Rotate the power-supply cage assembly out of the chassis. Lift up the power-supply cage handle and pull the power-supply cage assembly all the way up until the retainer latch locks the cage in place on the chassis.

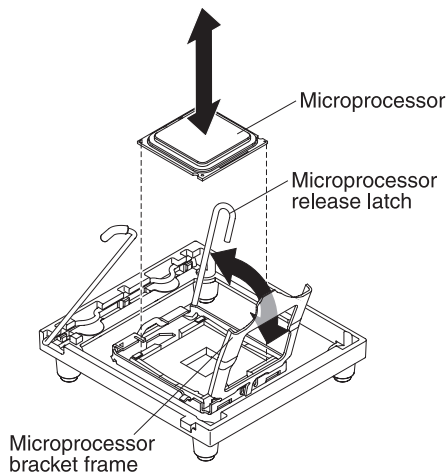


6. Remove the air baffle (see “Removing the air baffle” on page 179).
7. Disconnect any cables that impede access to the heat sink and microprocessor.
8. Remove the heat sink from the microprocessor.  
**Attention:** The microprocessor release latch is spring-loaded when the microprocessor is in place. Releasing the latch too quickly or allowing it to spring upward can damage the microprocessor and surrounding components.
9. Lift the heat-sink release lever and slowly move it upward to the fully open position.



**Important:** Be careful when you handle the microprocessor and heat sink. If the microprocessor and heat sink will be reused, do not contaminate the thermal grease between them.

10. Tilt the heat sink to the side to remove it from the lower flange of the retainer bracket; then, remove it from the server. After removal, place the heat sink on its side on a clean, flat surface.
11. Release the microprocessor release latch by pressing down on the end, moving it to the side, and slowly releasing it to the open (up) position.



12. Open the microprocessor bracket frame by lifting up the tab on the top edge. Keep the bracket frame in the open position.
13. Carefully lift the microprocessor straight up and out of the socket, and place it on a static-protective surface.
14. If you are instructed to return the microprocessor and heat sink, follow all packaging instructions, and use any packaging materials for shipping that are supplied to you.



## Installing a microprocessor and heat sink

The following notes describe the type of microprocessor that the server supports and other information that you must consider when installing a microprocessor:

**Important:** Some cluster solutions require specific code levels or coordinated code updates. If the device is part of a cluster solution, verify that the latest level of code is supported for the cluster solution before you update the code.

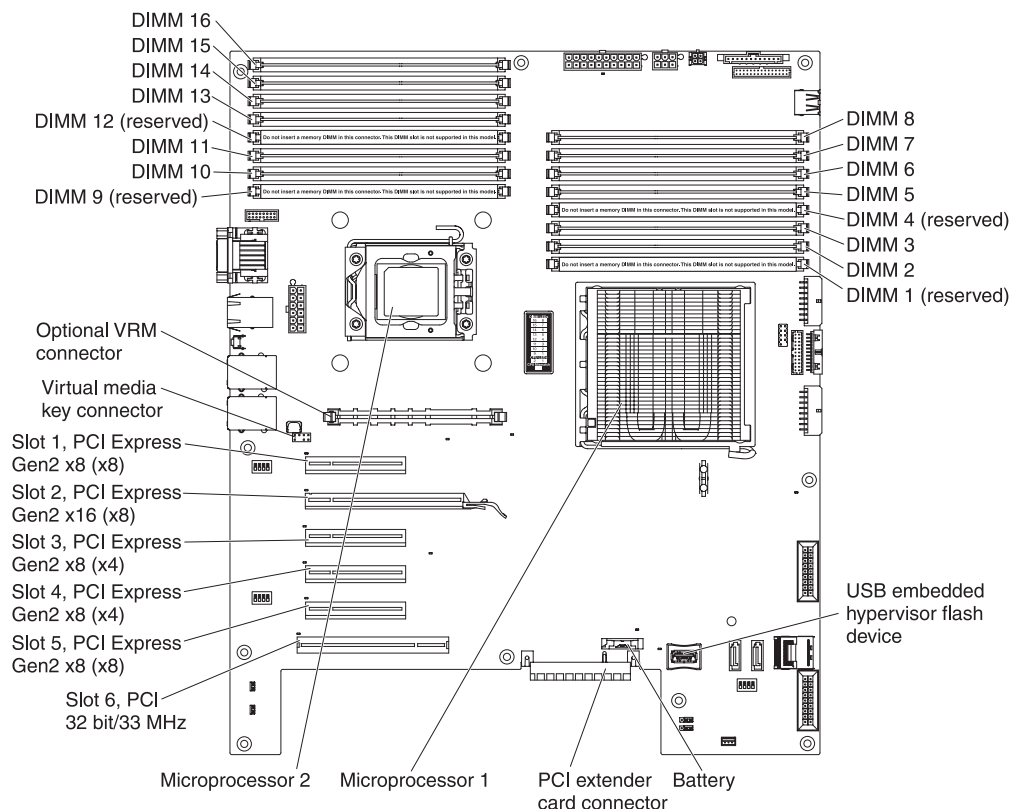
- Read the documentation that comes with the microprocessor to determine whether you have to update the server firmware. To download the most current level of server firmware, complete the following steps:
  1. Go to <http://www.ibm.com/systems/support/>.
  2. Under **Product support**, click **System x**.
  3. Under **Popular links**, click **Software and device drivers**.
  4. Click **System x3400 M2** to display the matrix of downloadable files for the server.
- The server comes with one microprocessor installed, but supports up to two microprocessors.

**Note:** A microprocessor must be installed and removed only by a trained service technician.

- The first microprocessor must always be installed in microprocessor socket 1.
- When one microprocessor is installed, a heat sink filler is not required for microprocessor socket 2, however, the air baffle must be installed to provide proper system cooling.
- Do not remove the first microprocessor from the system board when you install the second microprocessor.
- When you install the second microprocessor, you must also install additional memory. See “Installing a memory module” on page 210.
- The first microprocessor voltage regulator module (VRM) is integrated on the system board.
- When you install a second microprocessor, you must also install the voltage regulator module (VRM), which comes with the microprocessor option kit, in the VRM connector on the system board.
- Some models support dual-core microprocessors or quad-core microprocessors. Do not mix dual-core microprocessors and quad-core microprocessors in the same system. Install all dual-core or all quad-core microprocessors in the server.
- To ensure proper server operation when you install an additional microprocessor, use microprocessors that have the same QuickPath Interconnect (QPI) link speed, integrated memory controller frequency, core frequency, power segment, internal cache size, and type. You can use the Setup utility to determine the specific type of microprocessor that is installed on the system board.
- Mixing microprocessors of different stepping levels within the same server model is supported. You do not have to install the microprocessor with the lowest stepping level and features in microprocessor socket 1.
- The microprocessor speeds are automatically set for this server; therefore, you do not have to set any microprocessor frequency-selection jumpers or switches.
- If the thermal-grease protective cover (for example, a plastic cap or tape liner) is removed from the heat sink, do not touch the thermal grease on the bottom of the heat sink or set down the heat sink.

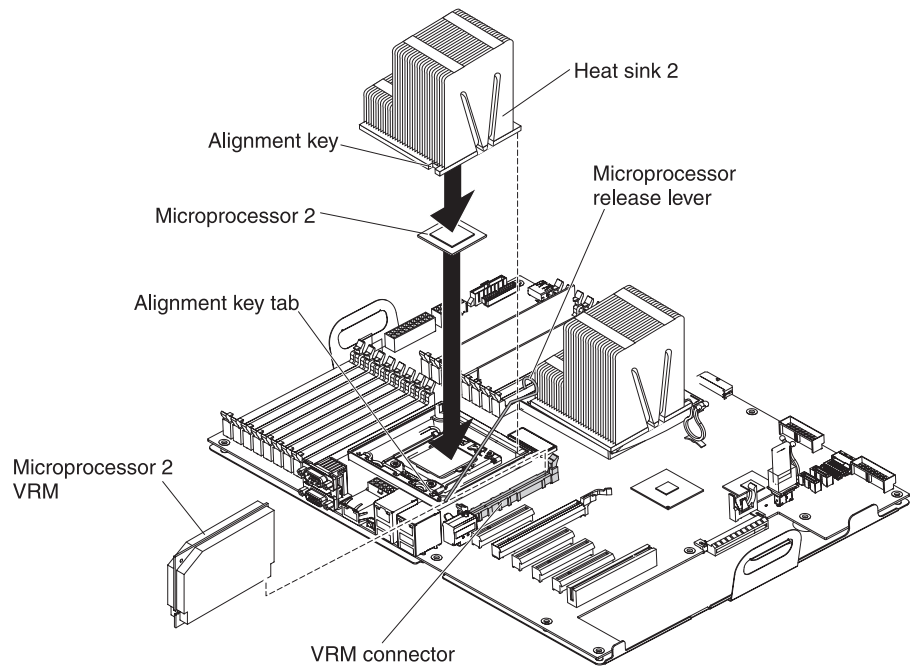
- If you are installing a new heat-sink assembly that did not come with thermal grease, see “Thermal grease” on page 254 for instructions for applying thermal grease.
- If you are installing a heat sink that has contaminated thermal grease, see “Thermal grease” on page 254 for instructions for replacing the thermal grease.
- If you have to replace a microprocessor, call for service.
- To order additional microprocessor options, contact your IBM marketing representative or authorized reseller.

The following illustration shows the location of the microprocessor connectors and the VRM connector.



To install the microprocessor and heat sink, complete the following steps.

1. Touch the static-protective package that contains the microprocessor to any unpainted metal surface on the server. Then, remove the microprocessor from the package.
2. Install the VRM in the VRM connector:
  - a. Open the retaining clip on each end of the VRM connector on the system board.
  - b. Turn the VRM so that the VRM keys align correctly with the slot connector.
  - c. Firmly press the VRM straight down into the connector by applying pressure on both ends of the VRM simultaneously.

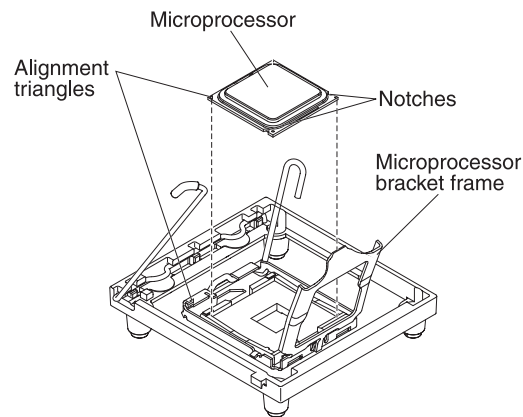


- d. Make sure that the retaining clips are in the locked position when the VRM is firmly seated in the connector.
3. Locate the microprocessor connector on the system board.
4. Rotate the microprocessor release latch on the socket from its closed and locked position until it stops in the fully open position.

**Attention:**

- Do not touch the microprocessor contact; handle the microprocessor by the edges only. Contaminants on the microprocessor contacts, such as oil from your skin, can cause connection failures between the contacts and the socket.
  - Handle the microprocessor carefully. Dropping the microprocessor during installation or removal can damage the contacts.
  - Do not use excessive force when you press the microprocessor into the socket.
  - Make sure that the microprocessor is oriented and aligned and positioned in the socket before you try to close the latch.
5. Align the microprocessor with the socket (note the alignment mark and the position of the notches); then, carefully place the microprocessor on the socket. Close the microprocessor bracket frame.

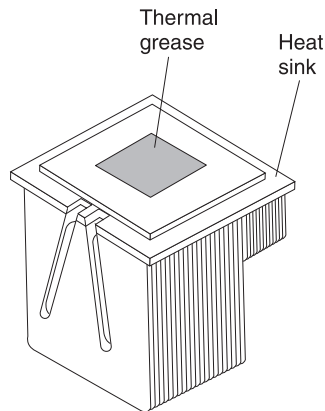
**Note:** The microprocessor fits only one way on the socket.



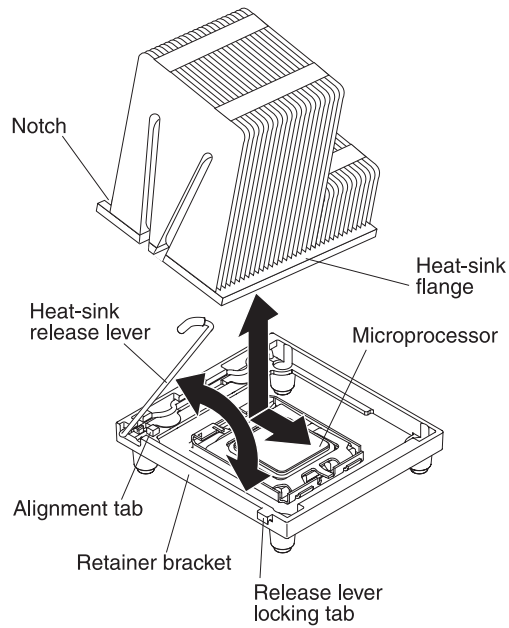
6. Carefully close the microprocessor release latch to secure the microprocessor in the socket.
7. Install the heat sink.

**Attention:** Do not touch the thermal grease on the bottom of the heat sink or set down the heat sink after you remove the plastic cover. Touching the thermal grease will contaminate it.

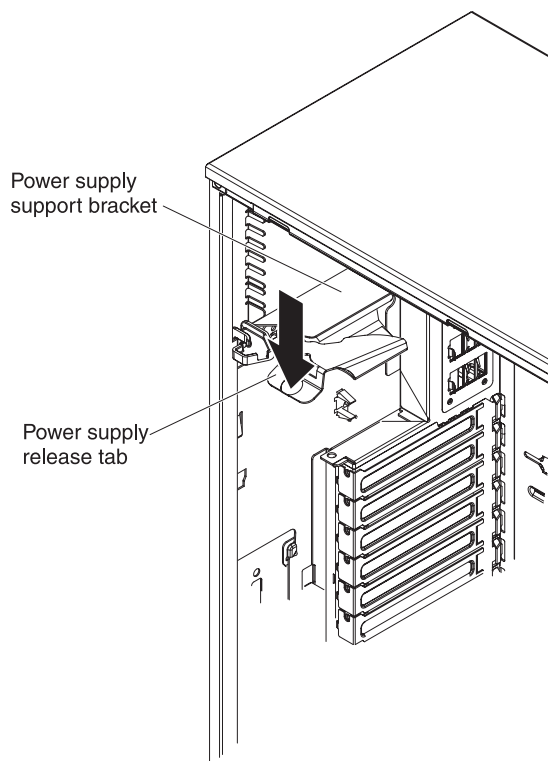
The following illustration shows the bottom surface of the heat sink.



- a. Make sure that the heat-sink release lever is in the open position.
- b. Remove the plastic protective cover from the bottom of the heat sink.
- c. If the new heat sink did not come with thermal grease, apply thermal grease on the microprocessor before you install the heat sink (see "Thermal grease" on page 254).
- d. Align the heat sink above the microprocessor with the thermal grease side down.



- e. Tilt the heat sink slightly to the side and slide the heat sink flange underneath the flange of the heat sink retainer bracket.
  - f. Press down firmly on the heat sink until it is seated securely.
  - g. Rotate the heat-sink release lever to the closed position and hook it underneath the lock tab.
8. Reconnect any cables that you disconnected.
  9. Install the air baffle (see “Installing the air baffle” on page 180).
  10. Rotate the power-supply cage assembly back into the server. Press the power-supply cage release tab and rotate the power-supply cage assembly into the chassis.



11. Install the left-side cover (see “Installing the left-side cover” on page 173).
12. Lock the left-side cover.
13. Reconnect the external cables and power cords; then, turn on the attached devices and turn on the server.

### Thermal grease

The thermal grease must be replaced whenever the heat sink has been removed from the top of the microprocessor and is going to be reused or when debris is found in the grease.

When you are installing the heat sink on the same microprocessor that it was removed from, make sure that:

- The thermal grease on the heat sink and microprocessor is not contaminated.
- Additional thermal grease is not added to the existing thermal grease on the heat sink and microprocessor.

#### Note:

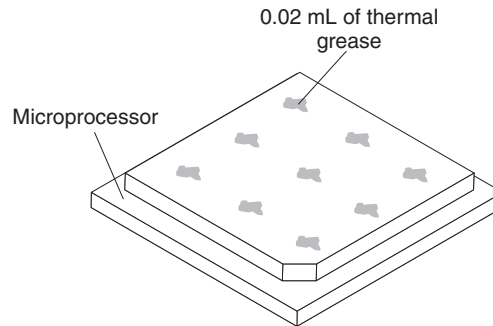
- Read the Safety information on page vii.
- Read the “Installation guidelines” on page 161.
- Read “Handling static-sensitive devices” on page 163.

To replace damaged or contaminated thermal grease on the microprocessor and heat sink, complete the following steps:

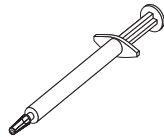
1. Place the heat sink on a clean work surface.
2. Remove the cleaning pad from its package and unfold it completely.
3. Use the cleaning pad to wipe the thermal grease from the bottom of the heat sink.

**Note:** Make sure that all of the thermal grease is removed.

4. Use a clean area of the cleaning pad to wipe the thermal grease from the microprocessor; then, dispose of the cleaning pad after all of the thermal grease is removed.



5. Use the thermal-grease syringe to place 9 uniformly spaced dots of 0.02 mL each on the top of the microprocessor. The outermost dots must be within approximately 5 mm of the edge of the microprocessor, this is to ensure uniform distribution of the grease.



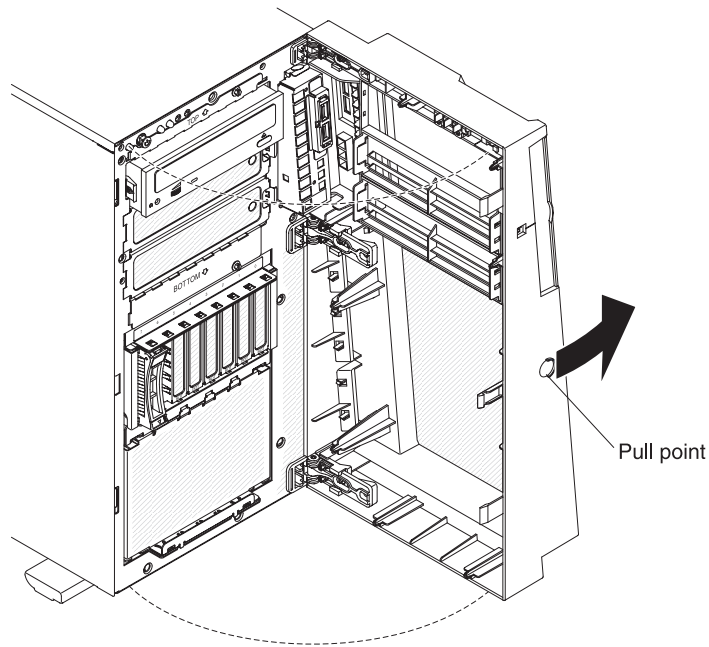
**Note:** If the grease is properly applied, approximately half of the grease will remain in the syringe.

6. Install the heat sink onto the microprocessor as described in “Installing a microprocessor and heat sink” on page 249.

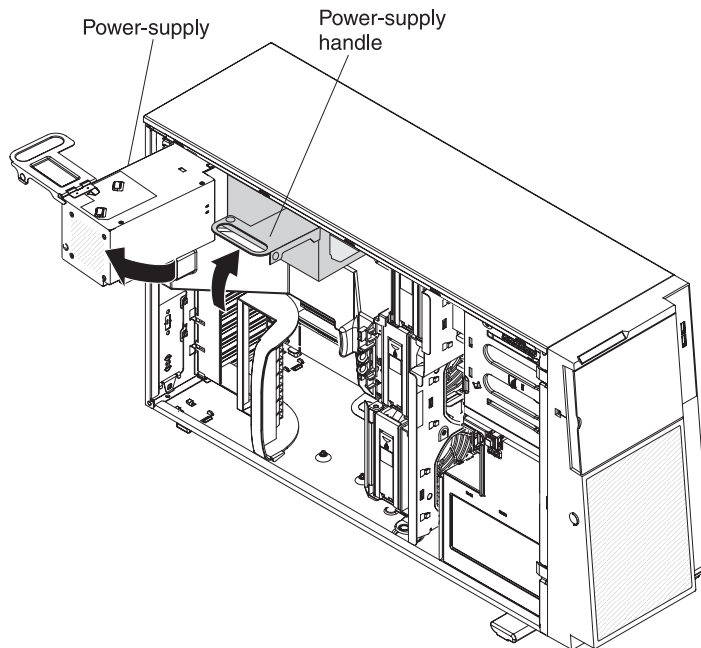
## Removing the control-panel assembly

To remove the control-panel assembly, complete the following steps.

1. Read the safety information that begins on page vii and “Installation guidelines” on page 161.
2. Turn off the server and all attached devices; then, disconnect all power cords and external cables.
3. Unlock and remove the left-side cover (see “Removing the left-side cover” on page 173).
4. Open the bezel. Place your finger on the pull point area on the left side of the bezel door and rotate it away from the server.



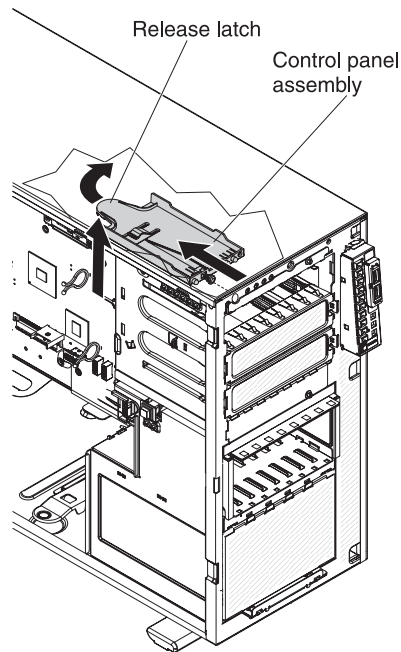
5. Rotate the power-supply cage assembly out of the chassis. Lift up the power-supply cage handle and pull the power-supply cage assembly all the way up until the retainer latch locks the cage in place on the chassis.



6. Remove the air baffle (see "Removing the air baffle" on page 179).
7. Remove the fan cage assembly (see "Removing the fan cage assembly" on page 227).
8. Slide the drives in bay 1 and bay 2 forward slightly toward the front of the server (see "Removing a DVD drive" on page 192 for more information). It is not necessary to remove these drives.
9. Disconnect the control-panel assembly cable from the system board, noting the routing of the cable (see "System-board internal connectors" on page 18 for the location of the front panel connector).



10. Locate the control-panel assembly release latch.
11. Press down the release latch of the control-panel assembly and pull the assembly toward the rear of the server. After you pull the assembly out approximately halfway, start turning it downward and pull it out of the chassis.

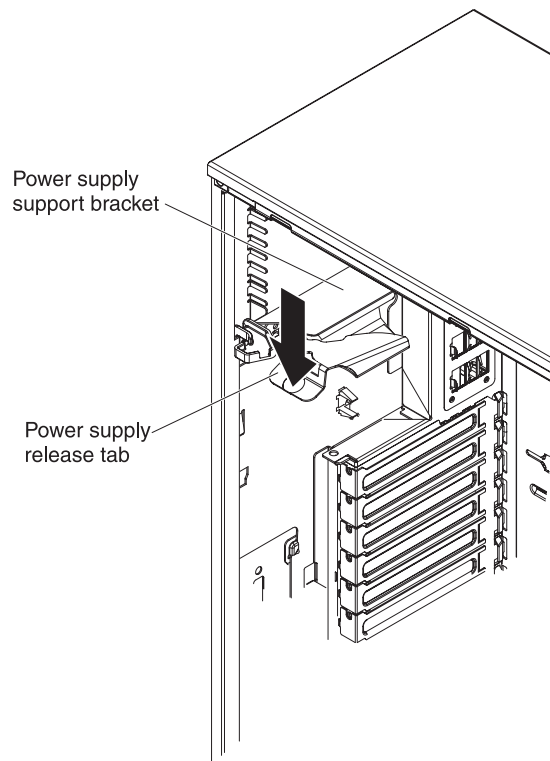


12. If you are instructed to return the control-panel assembly, follow all packaging instructions, and use any packaging materials for shipping that are supplied to you.

## Installing the control-panel assembly

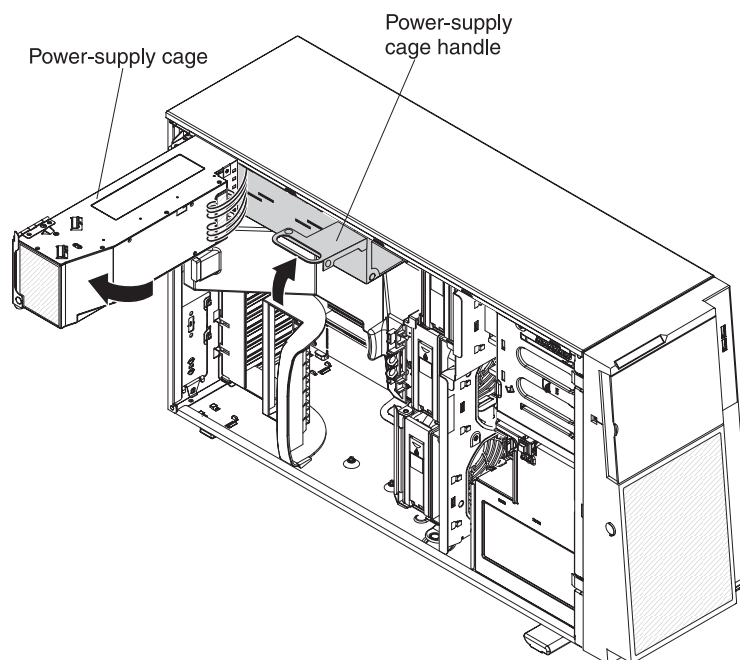
To install the control-panel assembly, complete the following steps.

1. Position the front end of the control-panel assembly in the channel above drive bay 1.
2. Slide the control-panel assembly toward the front of the chassis until it clicks into place.
3. Route and connect the control-panel assembly cable to the system board (see “System-board internal connectors” on page 18 for the location of the front control panel connector).
4. Slide the drives in bay 1 and bay 2 back into the drive bays, if necessary (see “Installing a DVD drive” on page 194 for more information).
5. Install the fan cage assembly (see “Installing the fan cage assembly” on page 229).
6. Install the air baffle (see “Installing the air baffle” on page 180).
7. Rotate the power-supply cage assembly back into the server. Press the power-supply cage release tab and rotate the power-supply cage assembly into the chassis.



8. Close the bezel.
9. Install the left-side cover (see "Installing the left-side cover" on page 173).
10. Lock the left-side cover.
11. Reconnect the external cables and power cords; then, turn on the attached devices and turn on the server.

## Opening the power-supply cage



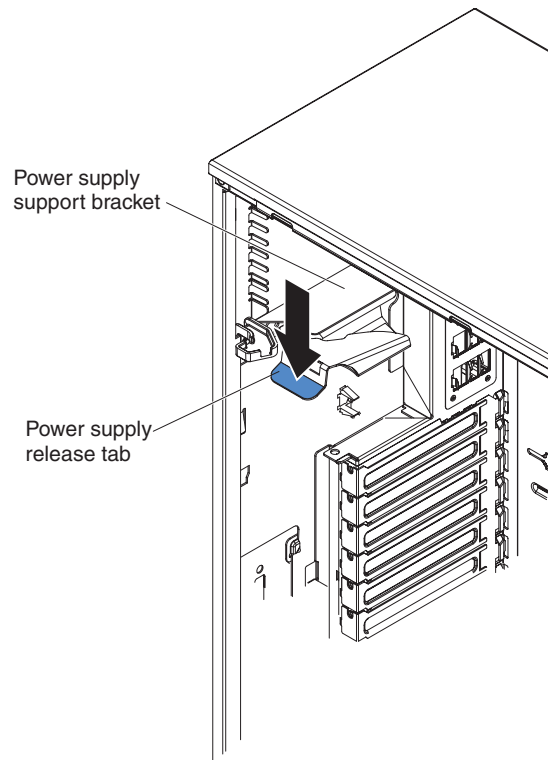
Opening the power-supply cage allows access to the air baffle, microprocessors, and DIMMs. To open the power-supply cage, complete the following steps:

1. Read the safety information that begins on pagevii, and “Handling static-sensitive devices” on page 163.
2. Turn off the server and peripheral devices, and disconnect the power cords and all external cables.
3. Remove the hot-swap power supply or power supplies, if any are installed (see “Installing a redundant power supply” on page 185).
4. Unlock and remove the left-side cover (see “Removing the left-side cover” on page 173).
5. Pull up on the power-supply cage handle to unlock the cage; then, rotate the cage out until it stops. The tab on the rear power-supply latch bracket clicks into place when the cage is completely out of the way.
6. Let the power-supply cage rest on the rear power-supply latch bracket.

## Closing the power-supply cage

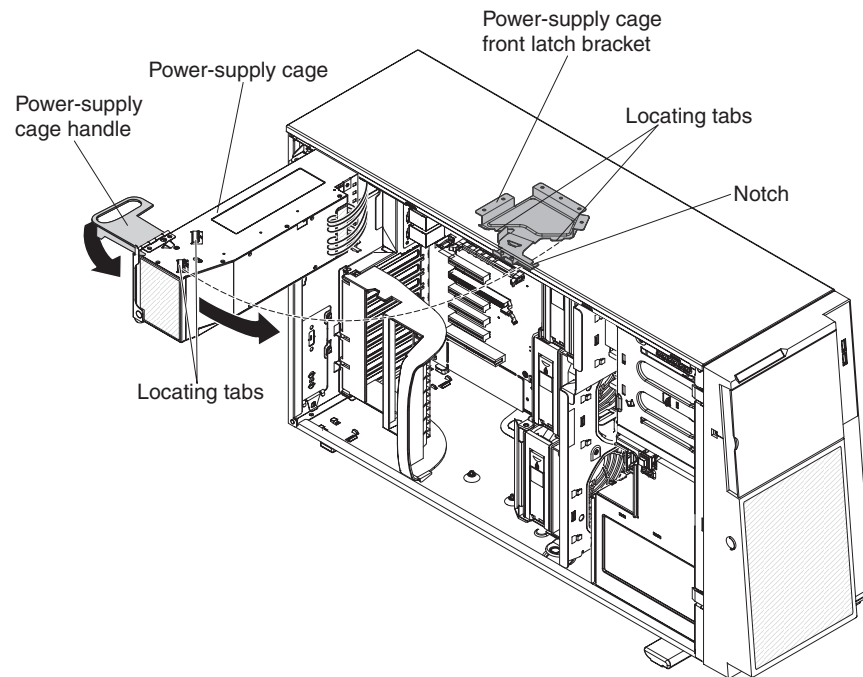
To return the power-supply cage to its closed position, complete the following steps:

1. Rotate the power-supply cage back slightly; then, push down on the release tab on the rear power-supply support bracket.



2. Rotate the power-supply cage into the server chassis. The locating tabs on the power-supply cage must fit over the corresponding tabs on the front latch bracket.

**Attention:** Do not allow the power-supply cage cables to be caught or pinched while you rotate the power-supply cage into the chassis.



3. Rotate the power-supply cage handle down until the handle tip engages the notch in the front latch bracket; then, lower the handle until it locks in place.
4. Install and lock the left-side cover (see “Installing the left-side cover” on page 173).
5. Install the hot-swap power supplies(see “Installing a redundant power supply” on page 185).
6. Reconnect the external cables and power cords; then, turn on the attached devices and turn on the server.

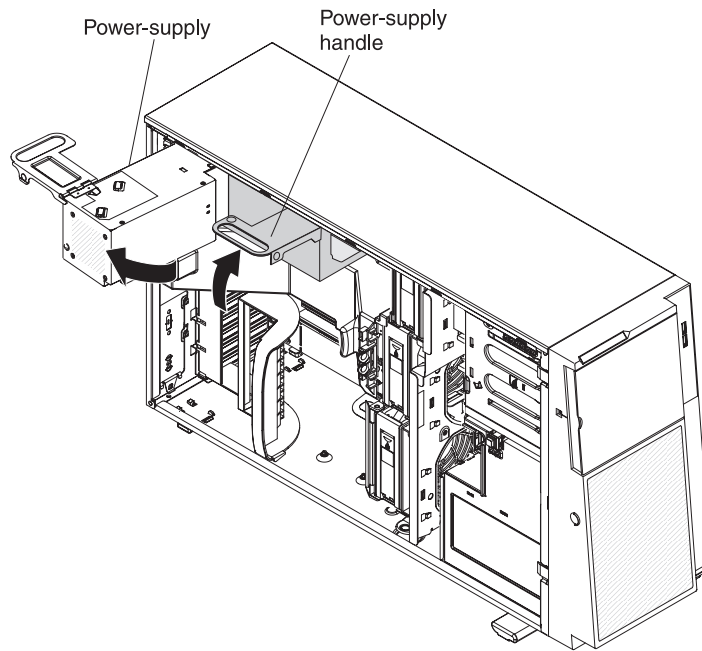
## Removing the heat-sink retention module

To remove the heat-sink retention module, complete the following steps.

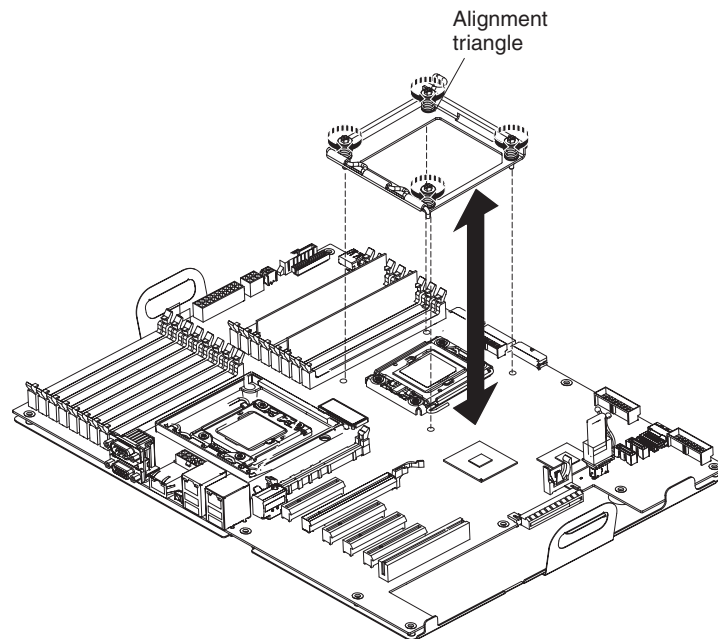
1. Read the safety information that begins on page vii and “Installation guidelines” on page 161.
2. Turn off the server and all attached devices; then, disconnect all power cords and external cables.
3. Carefully lay the server on its side so that it is lying flat and facing up.

**Note:** Be careful and do not drop the server.

4. Unlock and remove the left-side cover (see “Removing the left-side cover” on page 173).
5. Rotate the power-supply cage assembly out of the chassis. Lift up the power-supply cage handle and pull the power-supply cage assembly all the way up until the retainer latch locks the cage in place on the chassis.



6. Remove the air baffle (see “Removing the air baffle” on page 179).
7. Remove the fan cage assembly (see “Removing the fan cage assembly” on page 227).
8. Remove the heat sink and microprocessor. See “Removing the microprocessor and heat sink” on page 246 for instructions; then, continue with step 9.
9. Using a Phillips screwdriver, remove the four screws that secure the heat-sink retention module to the system board; then, lift the heat-sink retention module from the system board.



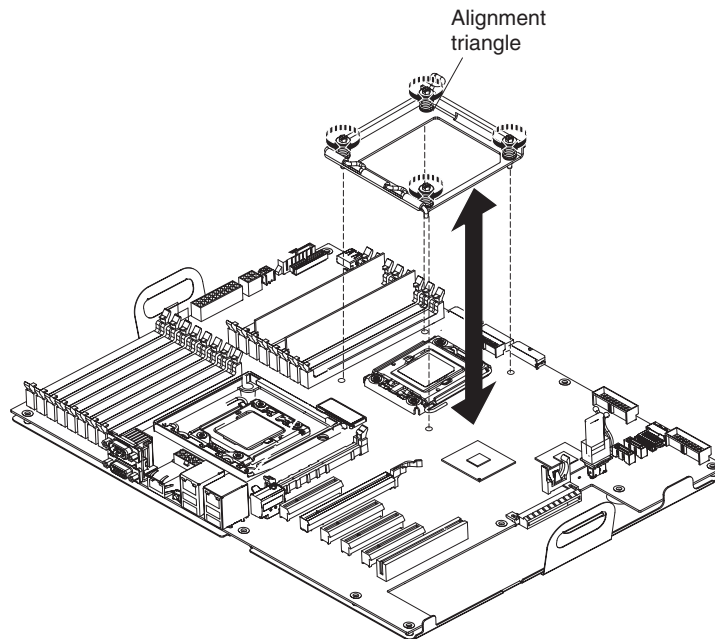
10. If you are instructed to return the heat-sink retention module, follow all packaging instructions, and use any packaging materials for shipping that are supplied to you.

## Installing a heat-sink retention module

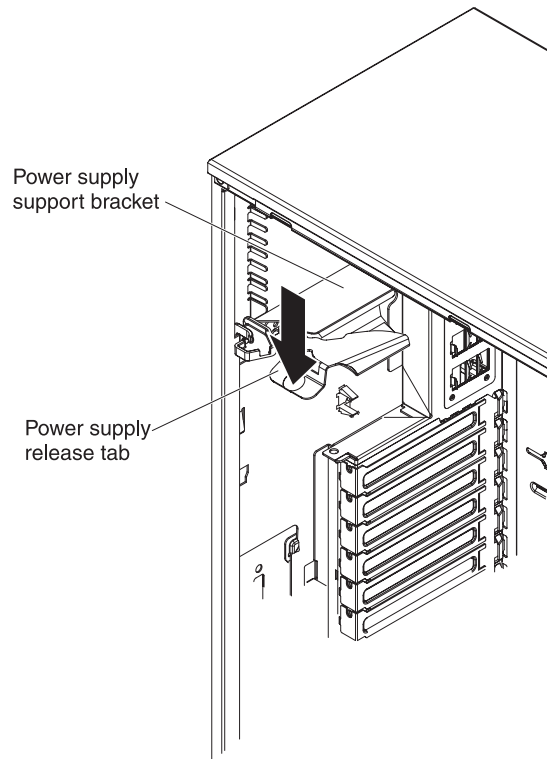
To install the heat-sink retention module, complete the following steps.

1. Place the heat-sink retention module in the microprocessor location on the system board.
2. Using a Phillips screwdriver, install the four screws that secure the module to the system board.

**Attention:** Make sure that you install each heat sink with its paired microprocessor.



3. Install the microprocessor and heat sink (see “Installing a microprocessor and heat sink” on page 249).
4. Install the fan cage assembly (see “Installing the fan cage assembly” on page 229).
5. Install the air baffle (see “Installing the air baffle” on page 180).
6. Rotate the power-supply cage assembly back into the server. Press the power-supply cage release tab and rotate the power-supply cage assembly into the chassis.



7. Install the left-side cover (see “Installing the left-side cover” on page 173).
8. Lock the left-side cover.
9. Reconnect the external cables and power cords; then, turn on the attached devices and turn on the server.

## Removing a microprocessor retention module

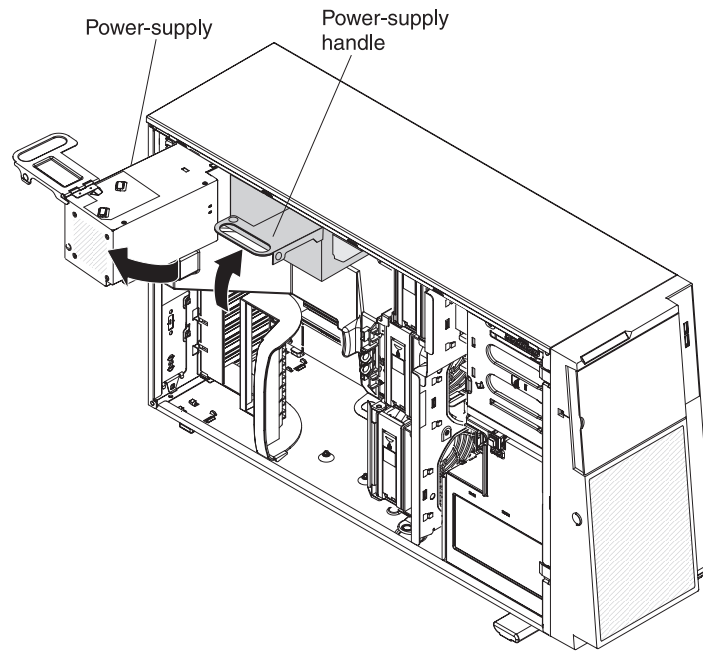
To remove a microprocessor retention module, complete the following steps:

1. Read the safety information that begins on page vii and “Installation guidelines” on page 161.
2. Turn off the server and all attached devices; then, disconnect all power cords and external cables.
3. Carefully lay the server on its side so that it is lying flat and facing up.

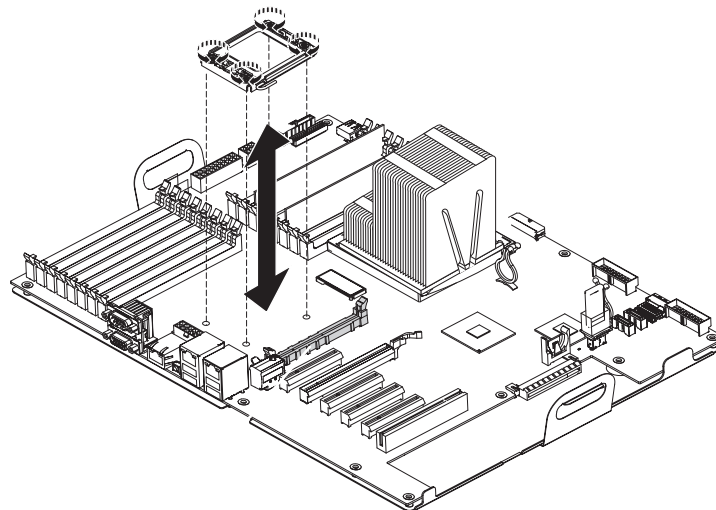
**Note:** Be careful and do not drop the server.

4. Unlock and remove the left-side cover (see “Removing the left-side cover” on page 173).
5. Rotate the power-supply cage assembly out of the chassis. Lift up the power-supply cage handle and pull the power-supply cage assembly all the way up until the retainer latch locks the cage in place on the chassis.





6. Remove the air baffle (see “Removing the air baffle” on page 179).
7. Remove the fan cage assembly (see “Removing the fan cage assembly” on page 227).
8. Remove the microprocessor and heat sink (see “Removing the microprocessor and heat sink” on page 246).
9. Using a T8 Torx screwdriver, remove the four screws that secure the microprocessor retention module to the system board; then lift the microprocessor retention module from the system board.

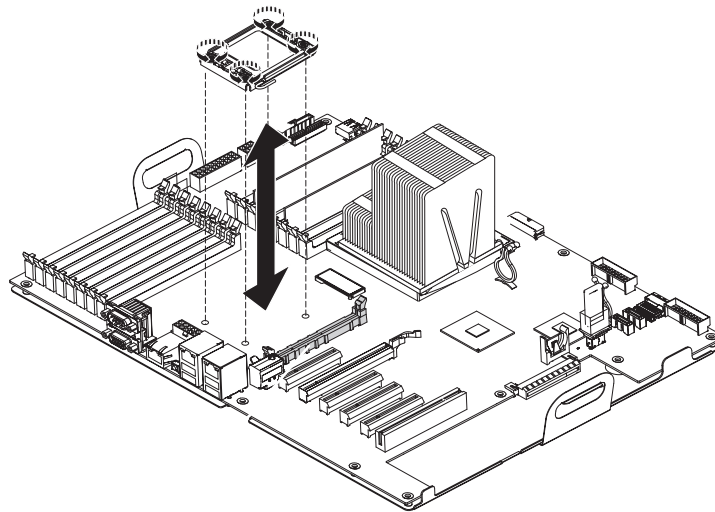


10. If you are instructed to return the microprocessor retention module, follow all packaging instructions, and use any packaging materials for shipping that are supplied to you.

## Installing a microprocessor retention module

To install a microprocessor retention module, complete the following steps:

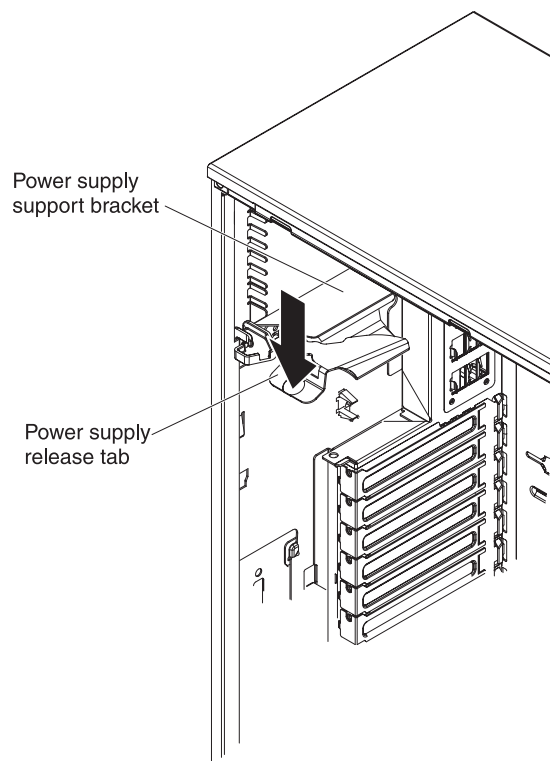
1. Orient the triangle-shape indicator on one corner of the microprocessor retention module to the corresponding alignment triangle on the system board.



2. Place the microprocessor retention module in the microprocessor location on the system board.
3. Using a T8 Tork screwdriver, install the four screws that secure the module to the system board.

**Attention:** Make sure that you install each heat sink with its paired microprocessor.

4. Install the microprocessor and heat sink (see “Installing a microprocessor and heat sink” on page 249).
5. Install the fan cage assembly (see “Installing the fan cage assembly” on page 229).
6. Install the air baffle (see “Installing the air baffle” on page 180).
7. Rotate the power-supply cage assembly back into the server. Press the power-supply cage release tab and rotate the power-supply cage assembly into the chassis.



8. Install the left-side cover (see “Installing the left-side cover” on page 173).
9. Lock the left-side cover.
10. Reconnect the external cables and power cords; then, turn on the attached devices and turn on the server.

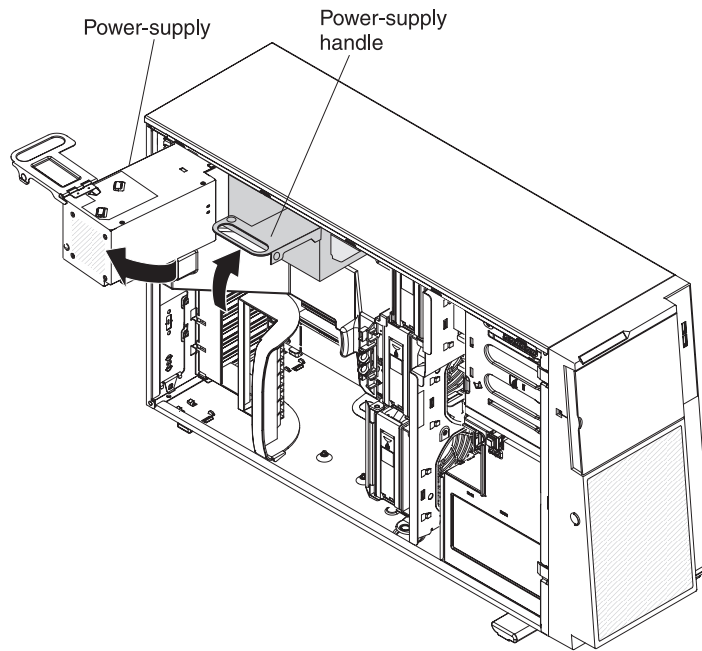
## Removing the system board

To remove the system board, complete the following steps.

1. Read the safety information that begins on page vii and “Installation guidelines” on page 161.
2. Turn off the server and all attached devices; then, disconnect all power cords and external cables.
3. Carefully lay the server on its side so that it is lying flat and facing up.

**Note:** Be careful and do not drop the server.

4. Unlock and remove the left-side cover (see “Removing the left-side cover” on page 173).
5. Rotate the power-supply cage assembly out of the chassis. Lift up the power-supply cage handle and pull the power-supply cage assembly all the way up until the retainer latch locks the cage in place on the chassis.

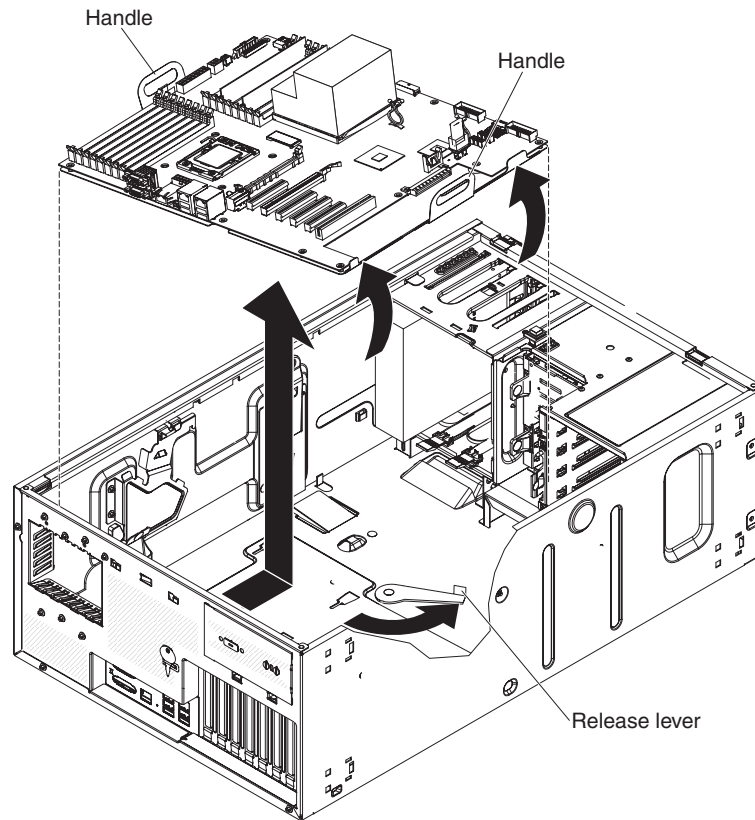


6. Remove the air baffle (see “Removing the air baffle” on page 179).
7. Remove the fan cage assembly (see “Removing the fan cage assembly” on page 227).
8. Note where each cable is connected; then, disconnect all cables from the system board.

**Attention:** Disengage all latches, release tabs or locks on cable connectors when you disconnect all cables from the system board (see “Internal cable routing and connectors” on page 164 for more information). Failing to release them before removing the cables will damage the cable sockets on the system board. The cable sockets on the system board are fragile. Any damage to the cable sockets may require replacing the system board.

9. Remove any of the following components that are installed on the system board and put them in a safe, static-protective place:
  - Adapters (see “Removing an adapter” on page 186).
  - Microprocessor and heat sink (see “Removing the microprocessor and heat sink” on page 246).
  - DIMMs (see “Removing a memory module” on page 208).
  - Battery (see “Removing the battery” on page 217).
10. Rotate the release lever toward the rear of the chassis.
11. Slide the system board toward the front of the server to disengage the tabs from the chassis; then, grasp the handles and carefully lift the system board out of the server.

**Attention:** When you lift the system board out of the server, being careful neither to damage any surrounding components nor to bend the pins inside the microprocessor sockets.



12. Remove the socket covers from the microprocessor sockets on the new system board and place them on the microprocessor sockets of the system board that you are removing.

**Attention:** Make sure to place the socket covers for the microprocessor sockets on the system board before you return the old system board.

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

## Installing the system board

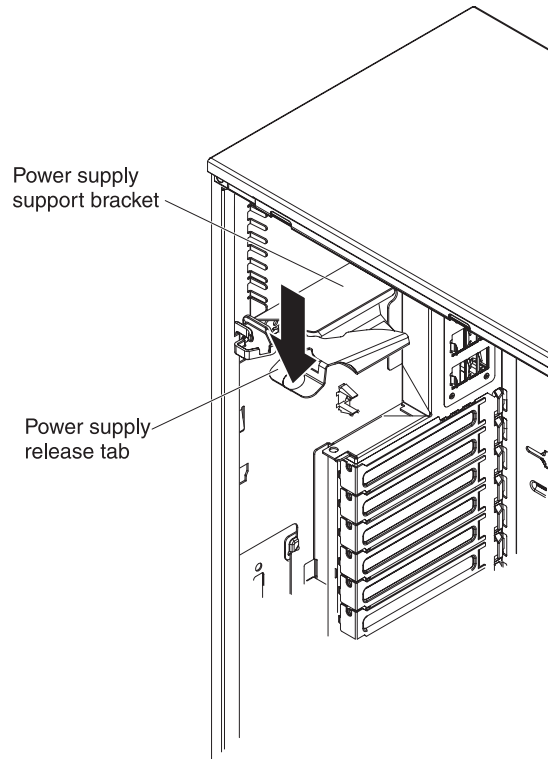
To install the system board, complete the following steps.

1. Hold the system board by the handles and insert the system board into the chassis at an angle and slide it toward the rear of the server until it engages into the tabs in the chassis.

**Note:** Make sure that none of the cables are caught under the system board.

2. Press down on the retention modules; then, rotate the release lever toward the rear of the server to secure the system board to the chassis.
3. Install any of the components that were removed from the system board:
  - Battery (see “Installing the battery” on page 219).
  - DIMMs (see “Installing a memory module” on page 210).
  - Microprocessor and heat sink (see “Installing a microprocessor and heat sink” on page 249).
  - Adapters (see “Installing an adapter” on page 187).
4. Reconnect any cables to the system board (see “Internal cable routing and connectors” on page 164).

5. Install the fan cage assembly (see “Installing the fan cage assembly” on page 229).
6. Install the air baffle (see “Installing the air baffle” on page 180).
7. Rotate the power-supply cage assembly back into the server. Press the power-supply cage release tab and rotate the power-supply cage assembly into the chassis.



8. Install the left-side cover (see “Installing the left-side cover” on page 173).
9. Lock the left-side cover.
10. Reconnect the external cables and power cords; then, turn on the attached devices and turn on the server.

## Removing a PCI extender card

To remove a PCI extender card, complete the following steps:

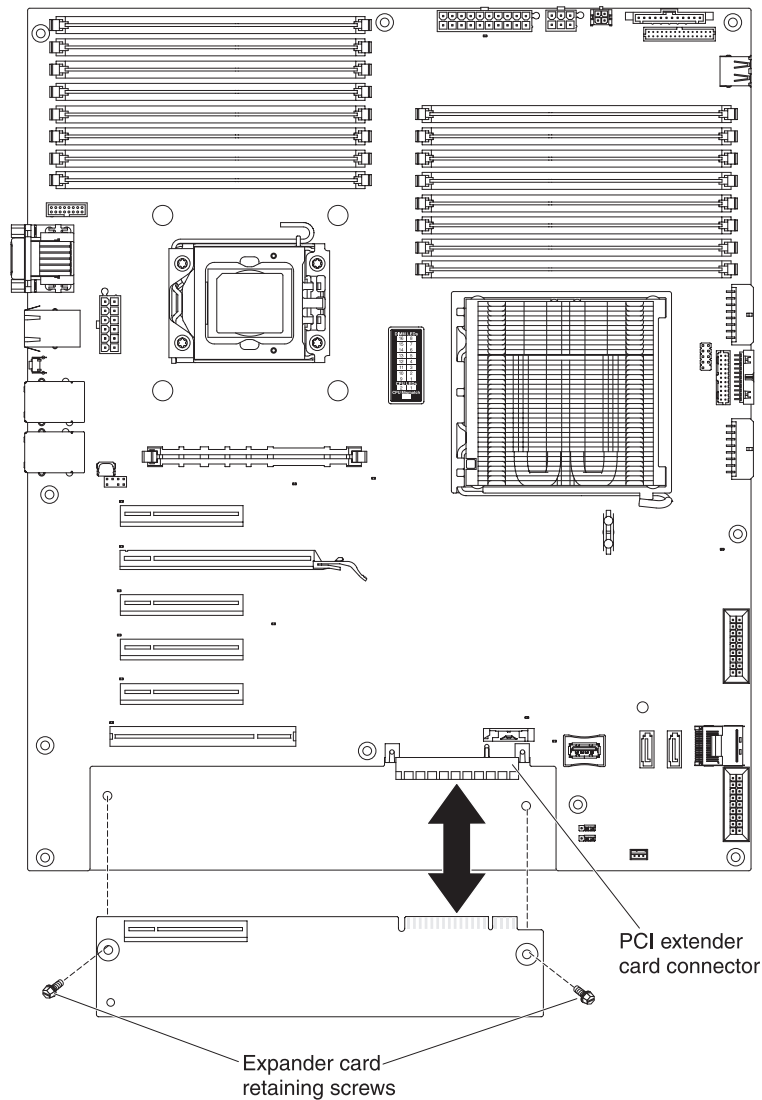
1. Read the safety information that begins on page vii and “Installation guidelines” on page 161.
2. Turn off the server and all attached devices; then, disconnect all power cords and external cables.
3. Carefully lay the server on its side so that it is lying flat and facing up.

**Note:** Be careful and do not drop the server.

4. Unlock and remove the left-side cover (see “Removing the left-side cover” on page 173).
5. Remove any adapters that are installed in the PCI slots (see “Removing an adapter” on page 186).
6. Remove the system board and place it on a static-protective surface (see “Removing the system board” on page 267).

**Note:** You do not need to remove the DIMMs, heat sinks, microprocessors, VRM, or battery from the system board.

7. Remove the two screws that secure the PCI extender card to the system-board tray.

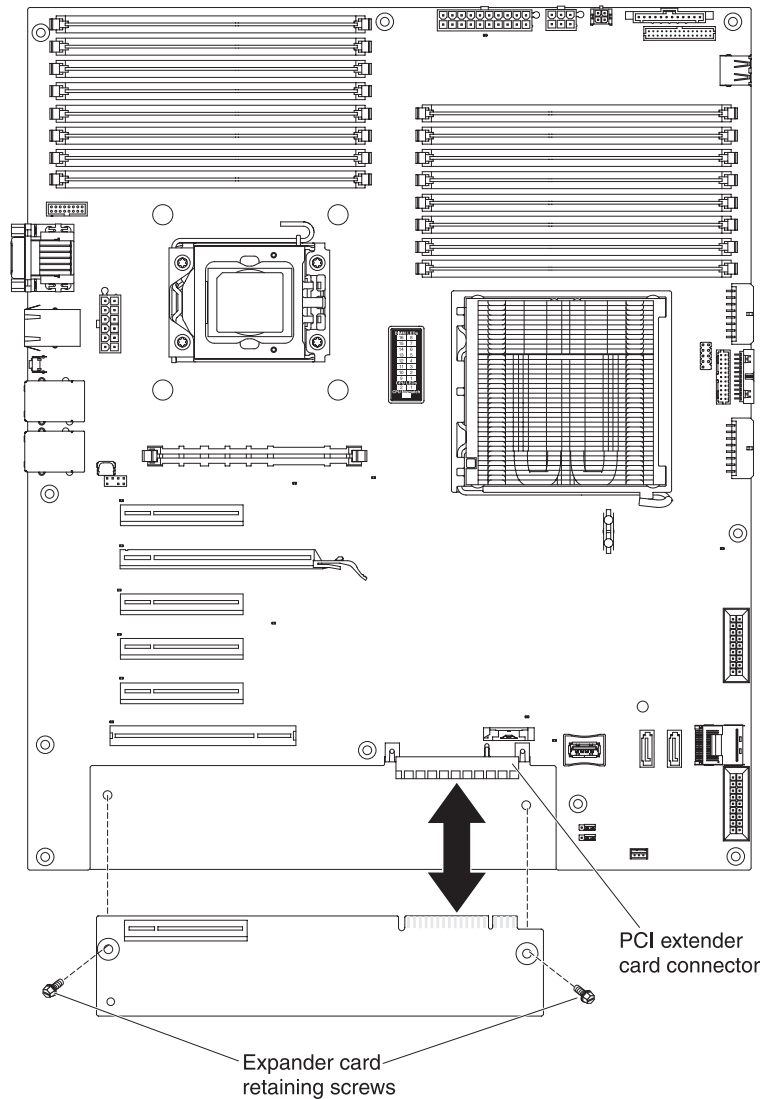


8. Pull the PCI extender card out of the PCI connector on the system board.
9. If you are instructed to return the PCI extender card, follow all packaging instructions, and use any packaging materials for shipping that are supplied to you.

## Installing a PCI extender card

To install a PCI extender card, complete the following steps:

1. Touch the static-protective package that contains the PCI extender card to any unpainted metal surface on the server; then, remove the extender card from the package.
2. Align the PCI extender card with the PCI extender card connector on the system board; then, push the PCI extender card into the connector on the system board until it is firmly seated.



3. Install the two screws that secure the PCI extender card to the system-board tray.
4. Reinstall the system board (see “Installing the system board” on page 269).
5. Install any adapters that you removed from the PCI slots (see “Installing an adapter” on page 187).
6. Reinstall and lock the left-side cover (see “Installing the left-side cover” on page 173).
7. Reconnect the external cables and power cords; then, turn on the attached devices and turn on the server.



---

## Chapter 6. Configuration information and instructions

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

---

### Updating the firmware

**Important::** Some cluster solutions require specific code levels or coordinated code updates. If the device is part of a cluster solution, verify that the latest level of code is supported for the cluster solution before you update the code.

The firmware for the server is periodically updated and is available for download on the IBM Web site. To check for the latest level of firmware, such as the server firmware, vital product data (VPD) code, device drivers, and service processor firmware, 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/systems/support/>.
2. Under **Product support**, click **System x**.
3. Under **Popular links**, click **Software and device drivers**.
4. Click **System x3400 M2** to display the matrix of downloadable files for the server.

Download the latest firmware for the server; then, install the firmware, using the instructions that are included with the downloaded files.

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.

The following items are downloadable from the Web at <http://www.ibm.com/systems/support/>:

- Server firmware is stored in ROM on the system board.
- IMM firmware is stored in ROM on the system board.
- Ethernet firmware is stored in ROM on the Ethernet controller.
- ServeRAID firmware is stored in ROM on the ServeRAID adapter.
- SAS/SATA firmware is stored in ROM on the SAS/SATA controller on the system board.

Major components contain VPD code. You can select to update the VPD code during the server firmware update procedure.

---

### Configuring the server

The *ServerGuide* program provides software-setup tools and installation tools that are designed for the server. Use this CD during the installation of the server to configure basic hardware features, such as an integrated SAS/SATA controller with RAID capabilities, and to simplify the installation of your operating system. For information about using this CD, see “Using the ServerGuide Setup and Installation CD” on page 275.

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

- **Setup utility**

The Setup utility is part of the basic input/output system firmware. Use it to change the startup-device sequence, set the date and time, and set passwords. For information about using this program, see “Using the Setup utility” on page 277.

- **Boot Manager program**

The Boot Manager program is part of the server firmware. Use it to override the startup sequence that is set in the Setup utility and temporarily assign a device to be first in the startup sequence. For more information about using this program, see “Using the Boot Manager program” on page 281.

- **Integrated Management Module**

Use the integrated management module (IMM) for configuration, to update the firmware and sensor data record/field replaceable unit (SDR/FRU) data, and to remotely manage a network. For information about using these programs, see “Using the integrated management module” on page 282.

- **Remote presence capability and blue-screen capture**

The remote presence and blue-screen capture feature are integrated into the Integrated Management Module (IMM). The virtual media key is required to enable the remote presence functions. When the optional virtual media key is installed in the server, it activates the remote presence functions. Without the virtual media key, you will not be able to access the network remotely to mount or unmount drives or images on the client system. However, you will still be able to access the host graphical user interface through the Web interface without the Virtual Media Key. To order the optional IBM Virtual Media Key, contact your IBM marketing representative or authorized reseller. For more information about how to enable the remote presence function, see “Enabling the remote presence feature” on page 284.

- **Ethernet controller configuration**

For information about configuring the Ethernet controller, see “Configuring the Ethernet controller” on page 286.

- **IBM Advanced Settings Utility (ASU) program**

Use this program as an alternative to the Setup utility for modifying UEFI settings. Use the ASU program online or out of band to modify UEFI settings from the command line without the need to restart the server to access the Setup utility. For more information about using this program, see “IBM Advanced Settings Utility program” on page 288.

- **LSI Configuration Utility program**

Use the LSI Configuration Utility program to configure the integrated SAS/SATA controller with RAID capabilities and the devices that are attached to it. For information about using this program, see “Using the LSI Configuration Utility program” on page 286.

The following table lists the different server configurations and the applications that are available for configuring and managing RAID arrays.

Table 14. Server configuration and applications for configuring and managing RAID arrays

Server configuration	RAID array configuration (before operating system is installed)	RAID array management (after operating system is installed)
ServeRAID-BR10i adapter (LSI 1068) installed	LSI Utility (Setup utility, press Ctrl+C), ServerGuide	MegaRAID Storage Manager (for monitoring storage only)

Table 14. Server configuration and applications for configuring and managing RAID arrays (continued)

Server configuration	RAID array configuration (before operating system is installed)	RAID array management (after operating system is installed)
ServeRAID-MR10i adapter (LSI 1078) installed	MegaRAID Storage Manager (MSM),, MegaRAID BIOS Configuration Utility (press C to start), ServerGuide	MegaRAID Storage Manager (MSM)

## Using the ServerGuide Setup and Installation CD

The *ServerGuide Setup and Installation* CD contains a setup and installation program that is designed for your server. The ServerGuide program detects the server model and optional hardware devices that are installed and uses that information during setup to configure the hardware. The ServerGuide program simplifies operating-system installations by providing updated device drivers and, in some cases, installing them automatically. You can download a free image of the *ServerGuide Setup and Installation* CD or purchase the CD from the ServerGuide fulfillment Web site at <http://www.ibm.com/systems/management/serverguide/sub.html>. To download the free image, click **IBM Service and Support Site**.

The ServerGuide program has the following features:

- An easy-to-use interface
- Diskette-free setup, and configuration programs that are based on detected hardware
- ServeRAID Manager program, which configures your ServeRAID adapter
- Device drivers that are provided for your server model and detected hardware
- Operating-system partition size and file-system type that are selectable during setup

### ServerGuide features

Features and functions can vary slightly with different versions of the ServerGuide program. To learn more about the version that you have, start the *ServerGuide Setup and Installation* CD and view the online overview. Not all features are supported on all server models.

The ServerGuide program requires a supported IBM server with an enabled startable (bootable) CD drive. In addition to the *ServerGuide Setup and Installation* CD, you must have your operating-system CD to install the operating system.

The ServerGuide program performs the following tasks:

- Sets system date and time
- Detects the RAID adapter or controller and runs the SAS/SATA RAID configuration program
- Checks the microcode (firmware) levels of a ServeRAID adapter and determines whether a later level is available from the CD
- Detects installed hardware options and provides updated device drivers for most adapters and devices
- Provides diskette-free installation for supported Windows operating systems
- Includes an online readme file with links to tips for your hardware and operating-system installation

## Setup and configuration overview

When you use the *ServerGuide Setup and Installation* CD, you do not need setup diskettes. You can use the CD to configure any supported IBM server model. The setup program provides a list of tasks that are required to set up your server model. On a server with a ServeRAID adapter or SAS/SATA controller with RAID capabilities, you can run the SAS/SATA RAID configuration program to create logical drives.

**Note:** Features and functions can vary slightly with different versions of the ServerGuide program.

When you start the *ServerGuide Setup and Installation* CD, the program prompts you to complete the following tasks:

- Select your language.
- Select your keyboard layout and country.
- View the overview to learn about ServerGuide features.
- View the readme file to review installation tips for your operating system and adapter.
- Start the operating-system installation. You will need your operating-system CD.

## Typical operating-system installation

The ServerGuide program can reduce the time it takes to install an operating system. It provides the device drivers that are required for your hardware and for the operating system that you are installing. This section describes a typical ServerGuide operating-system installation.

**Note:** Features and functions can vary slightly with different versions of the ServerGuide program.

1. After you have completed the setup process, the operating-system installation program starts. (You will need your operating-system CD to complete the installation.)
2. The ServerGuide program stores information about the server model, service processor, hard disk drive controllers, and network adapters. Then, the program checks the CD for newer device drivers. This information is stored and then passed to the operating-system installation program.
3. The ServerGuide program presents operating-system partition options that are based on your operating-system selection and the installed hard disk drives.
4. The ServerGuide program prompts you to insert your operating-system CD and restart the server. At this point, the installation program for the operating system takes control to complete the installation.

## Installing your operating system without using ServerGuide

If you have already configured the server hardware and you are not using the ServerGuide program to install your operating system, complete the following steps to download the latest operating-system installation instructions from the IBM Web site.

**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/systems/support/>.
2. Under **Product support**, click **System x**.
3. From the menu on the left side of the page, click **System x support search**.
4. From the **Task** menu, select **Install**.

5. From the **Product family** menu, select **System x3400 M2**.
6. From the **Operating system** menu, select your operating system, and then click **Search** to display the available installation documents.

## Using the Setup utility

Use the Unified Extensible Firmware Interface (UEFI), formerly BIOS, Setup utility to perform the following tasks:

- View configuration information
- View and change assignments for devices and I/O ports
- Set the date and time
- Set the startup characteristics of the server and the order of startup devices
- Set and change settings for advanced hardware features
- View, set, and change settings for power-management features
- View and clear event logs
- Resolve configuration conflicts

### Starting the Setup utility

To start the Setup utility, complete the following steps:

1. Turn on the server.

**Note:** Approximately 1 to 3 minutes after the server is connected to ac power, the power-control button becomes active.

2. When the prompt <F1> Setup is displayed, press F1. If you have set an administrator password, you must type the administrator password to access the full Setup utility menu. If you do not type the administrator password, a limited Setup utility menu is available.
3. Select settings to view or change.

**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 system board.

### Setup utility menu choices

The following choices are on the Setup utility main menu for the UEFI. Depending on the version of the firmware, some menu choices might differ slightly from these descriptions.

- **System Information**

Select this choice to view information about the server. When you make changes through other choices in the Setup utility, 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 Setup utility menu only.

- **System Summary**

Select this choice to view configuration information, including the ID, speed, and cache size of the microprocessors, machine type and model of the server, the serial number, the system UUID, and the amount of installed memory. When you make configuration changes through other options in the Setup utility, the changes are reflected in the system summary; you cannot change settings directly in the system summary.

- **Product Data**

Select this choice to view the system-board identifier, the revision level or issue date of the firmware, the integrated management module and diagnostics code, and the version and date.

This choice is on the full Setup utility menu only.

- **System Settings**

Select this choice to view or change the server component settings.

- **Processors**

Select this choice to view or change the processor settings.

- **Memory**

Select this choice to view or change the memory settings.

- **Devices and I/O Ports**

Select this choice to view or change assignments for devices and input/output (I/O) ports. You can configure the serial ports, configure remote console redirection, enable or disable integrated Ethernet controllers, the SAS/SATA controller, SATA optical drive channels, PCI slots. 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).

- **Power**

Select this choice to view or change power capping to control consumption, processors, and performance states.

- **Legacy Support**

Select this choice to view or set legacy support.

- **Force Legacy Video on Boot**

Select this choice to force INT video support, if the operating system does not support UEFI video output standards.

- **Rehook INT 19h**

Select this choice to enable or disable devices from taking control of the boot process. The default is **Disable**.

- **Legacy Thunk Support**

Select this choice to enable or disable UEFI to interact with PCI mass storage devices that are non-UEFI compliant.

- **Integrated Management Module**

Select this choice to view or change the settings for the integrated management module.

- **POST Watchdog Timer**

Select this choice to view or enable the POST watchdog timer.

- **POST Watchdog Timer Value**

Select this choice to view or set the POST loader watchdog timer value.

- **Reboot System on NMI**

Enable or disable restarting the system whenever a nonmaskable interrupt (NMI) occurs. **Enable** is the default.

- **Commands on USB Interface Preference**

Select this choice to enable or disable the Ethernet over USB interface on IMM.

- **Network Configuration**

Select this choice to view the system management network interface port, the IMM MAC address, the current IMM IP address, and host name; define the static IMM IP address, subnet mask, and gateway address, specify whether to use the static IP address or have DHCP assign the IMM IP address, save the network changes.

- **Reset IMM to Defaults**

Select this choice to view or reset IMM to the default settings.

- **Reset IMM**

Select this choice to reset IMM.

- **System Security**

Select this choice to view or configure Trusted Platform Module (TPM) support.

- **Adapters and UEFI Drivers**

Select this choice to view information about the UEFI 1.10 and UEFI 2.0 compliant adapters and drivers installed in the server.

- **Network**

Select this choice to view or configure the network device options, such as iSCSI, PXE, and network devices.

**Note:** The configuration forms for UEFI 2.1 and greater compliant add-on network devices might be located here.

- **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 Setup utility menu only.

- **Start Options**

Select this choice to view or boot to devices, including the startup sequence, . The server starts from the first boot record that it finds.

This choice is on the full Setup utility menu only.

- **Boot Manager**

Select this choice to view, add, delete, or change the device boot priority, boot from a file, select a one-time boot, or reset the boot order to the default setting. 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. For example, you can define a startup sequence that checks for a disc in the DVD drive, then checks the hard disk drive, and then checks a network adapter.

- **System Event Logs**

Select this choice to enter the System Event Manager, where you can view the error messages in the system event logs. You can use the arrow keys to move between pages in the event log.

The system event logs contain all event and error messages that have been generated during POST, by the systems-management interface handler, and by the system service processor (IMM). Run the diagnostic programs to get more information about error codes that occur. See “Running the diagnostic programs” on page 92 for instructions on running the diagnostic programs. See “Event logs” on page 27 for more information about the logs.

**Important:** If the system-error LED on the front of the server is lit but there are no other error indications, clear the IMM system-event log. Also, after you complete a repair or correct an error, clear the IMM system-event log to turn off the system-error LED on the front of the server.

- **POST Event Viewer**

Select this choice to enter the POST event viewer to view the error messages in the POST event log.

- **System Event Log**

Select this choice to view the IMM system event log error messages.

- **Clear System Event Log**



Select this choice to clear the IMM system event log.

- **User Security**

Select this choice to set, change, or clear passwords. See “Passwords” for more information.

This choice is on the full and limited Setup utility menu.

- **Set Power-on Password**

Select this choice to set or change a power-on password. See “Power-on password” on page 281 for more information.

- **Clear Power-on Password**

Select this choice to clear a power-on password. See “Power-on password” on page 281 for more information.

- **Set Administrator Password**

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 Setup utility menu. If an administrator password is set, the full Setup utility menu is available only if you type the administrator password at the password prompt. For more information, see “Administrator password” on page 281.

**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 system board.

- **Clear Administrator Password**

Select this choice to clear an administrator password. For more information, see “Administrator password” on page 281.

**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 system board.

- **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 that you have made in the settings and restore the factory settings.

- **Exit Setup**

Select this choice to exit from the Setup utility. 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 **User Security** menu choice, you can set, change, and delete a power-on password and an administrator password. The **User Security** choice is on the full Setup utility menu only.

**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 system board.

If you set only a power-on password, you must type the power-on password to complete the system startup and to have access to the full Setup utility menu.

An administrator password is intended to be used by a system administrator; it limits access to the full 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 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 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 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, the system startup will not be completed until you type the power-on password. You can use any combination of up to seven characters (A - Z, a - z, and 0 - 9) for the password.

If you forget the power-on password, you can regain access to the server in the following way:

- If an administrator password is set, type the administrator password at the password prompt. Start the Setup utility and reset the power-on 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 system board.

**Administrator password:** An administrator password is intended to be used by a system administrator; it limits access to the full Setup utility menu. You can use any combination of up to seven characters (A - Z, a - z, and 0 - 9) for the 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 system board.

## Using the Boot Manager program

The Boot Manager program is a built-in, menu-driven configuration utility program that you can use to temporarily redefine the first startup device without changing settings in the Setup utility.

To use the Boot Manager program, complete the following steps:

1. Turn off the server.
2. Restart the server.
3. When the prompt <F12> Select Boot Device is displayed, press F12. If a bootable USB mass storage device is installed, a submenu item (**USB Key/Disk**) is displayed.
4. Use the Up arrow and Down arrow keys to select an item from the **Boot Selection Menu** and press Enter.

The next time the server starts, it returns to the startup sequence that is set in the Setup utility.

## Starting the backup server firmware

The system board contains a backup copy area for the IBM System x Server Firmware (server firmware, formerly BIOS firmware). This is a secondary copy of the server firmware that you update only during the process of updating the server firmware. If the primary copy of the server firmware becomes damaged, use this backup copy.

To force the server to start from the backup copy, turn off the server; then, place the J6 jumper in the backup position (pins 2 and 3).

Use the backup copy of the server firmware until the primary copy is restored. After the primary copy is restored, turn off the server; then, move the J6 jumper back to the primary position (pins 1 and 2).

## Changing the Power Policy option to the default settings after loading UEFI defaults

The default settings for the Power Policy option are set by the IMM. To change the Power Policy option to the default settings, complete the following steps:

1. Turn on the server.

**Note:** Approximately 1 to 3 minutes after the server is connected to ac power, the power-control button becomes active.

2. When the prompt <F1> Setup is displayed, press F1. If you have set an administrator password, you must type the administrator password to access the full Setup utility menu. If you do not type the administrator password, a limited Setup utility menu is available.
3. Select **System Settings** → **Integrated Management Module** → **Reset IMM to Defaults**.
4. Wait several minutes while IMM initializes all of the default values.
5. Go back and check the Power Policy setting to verify that it is set to **Restore** (the default).

**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 system board.

## Using the integrated management module

The integrated management module (IMM) is a second generation of the functions that were formerly provided by the baseboard management controller hardware. It combines service processor functions, video controller, and (when an optional virtual media key is installed) remote presence function in a single chip.

The IMM supports the following basic system management features:

- Environmental monitor with fan speed control for temperature, voltages, fan failure, and power supply failure.
- Light path diagnostics LEDs indicators to report errors that occur with fans, power supplies, microprocessor, hard disk drives, and system errors.
- DIMM error assistance. The Unified Extensible Firmware Interface (UEFI) disables a failing DIMM that is detected during POST, and the IMM lights the associated system error LED and the failing DIMM error LED.
- System event log (SEL).
- ROM-based IMM firmware flash updates.
- Auto Boot Failure Recovery (ABR).
- A virtual media key, which enables remote presence support (remote video, remote keyboard/mouse, and remote storage).
- Automatic microprocessor disable on failure and restart in a two-microprocessor configuration when one microprocessor signals an internal error.
- Nonmaskable interrupt (NMI) detection and reporting.
- Automatic Server Restart (ASR) when POST is not complete or the operating system hangs and the operating system watchdog timer times-out. The IMM

might be configured to watch for the operating system watchdog timer and reboot the system after a timeout, if the ASR feature is enabled. Otherwise, the IMM allows the administrator to generate a nonmaskable interrupt (NMI) by pressing an NMI button on the system board for an operating-system memory dump. ASR is supported by IPMI.

- Intelligent Platform Management Interface (IPMI) Specification V2.0 and Intelligent Platform Management Bus (IPMB) support.
- Serial port redirection over Telnet or SSH.
- Serial over LAN (SOL).
- Active Energy Manager.
- Query power-supply input power.
- PECI 2 support.
- Power/reset control (power-on, hard and soft shutdown, hard and soft reset, schedule power control).
- Alerts (in-band and out-of-band alerting, PET traps - IPMI style, SNMP, e-mail).
- Operating-system failure blue screen capture.
- Command-line interface.
- Configuration save and restore.
- PCI configuration data.
- Boot sequence manipulation.

The IMM also provides the following remote server management capabilities through the OSA SMBridge management utility program:

- **Command-line interface (IPMI Shell)**

The command-line interface provides direct access to server management functions through the IPMI 2.0 protocol. Use the command-line interface to issue commands to control the server power, view system information, and identify the server. You can also save one or more commands as a text file and run the file as a script.

- **Serial over LAN**

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

For more information about IMM, see the *Integrated Management Module User's Guide* at <http://www.ibm.com/systems/support/supportsite.wss/docdisplay?Indocid=MIGR-5079770&brandind=5000008>.

## Using the remote presence capability and blue-screen capture

The remote presence and blue-screen capture features are integrated functions of the integrated management module (IMM). When the optional IBM Virtual Media Key is installed in the server, it activates the remote presence functions. The virtual media key is required to enable the integrated remote presence and blue-screen capture features. Without the virtual media key, you will not be able to access the network remotely to mount or unmount drives or images on the client system. However, you can still access the Web interface without the key.

After the virtual media key is installed in the server, it is authenticated to determine whether it is valid. If the key is not valid, you receive a message from the Web

interface (when you attempt to start the remote presence feature) indicating that the hardware key is required to use the remote presence feature.

The virtual media key has an LED. When this LED is lit and green, it indicates that the key is installed and functioning correctly. When the LED is not lit, it indicates that the key might not be installed correctly.

The remote presence feature provides the following functions:

- Remotely viewing video with graphics resolutions up to 1600 x 1200 at 85 Hz, regardless of the system state
- Remotely accessing the server, using the keyboard and mouse from a remote client
- Mapping the CD or DVD drive, diskette drive, and USB flash drive on a remote client, and mapping ISO and diskette image files as virtual drives that are available for use by the server
- Uploading a diskette image to the IMM memory and mapping it to the server as a virtual drive

The blue-screen capture feature captures the video display contents before the IMM restarts the server when the IMM detects an operating-system hang condition. A system administrator can use the blue-screen capture to assist in determining the cause of the hang condition.

### Enabling the remote presence feature

To enable the remote presence feature, complete the following steps:

1. Install the virtual media key into the dedicated slot on the system board (see “System-board option connectors” on page 20).
2. Turn on the server.

**Note:** Approximately 1 to 3 minutes after the server is connected to ac power, the power-control button becomes active.

### Obtaining the IP address for the IMM

To access the Web interface, you need the IP address for IMM. You can obtain the IMM IP address through the Setup utility. The server comes with a default IP address for the IMM of 192.168.70.125. To locate the IP address, complete the following steps:

1. Turn on the server.

**Note:** Approximately 1 to 3 minutes after the server is connected to ac power, the power-control button becomes active.

2. When the prompt <F1> Setup is displayed, press F1. (This prompt is displayed on the screen for only a few seconds. You must press F1 quickly.) If you have set both a power-on password and an administrator password, you must type the administrator password to access the full Setup utility menu.

**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 system board.

3. From the Setup utility main menu, select **System Settings**.
4. On the next screen, select **Integrated Management Module**.
5. On the next screen, select **Network Configuration**.
6. Find the IP address and write it down.
7. Exit from the Setup utility.

## Logging on to the Web interface

To log onto the Web interface to use the remote presence functions, complete the following steps:

1. Open a Web browser and in the **address** or **URL** field, type the IP address or host name of the IMM to which you want to connect.

**Note:** The IMM defaults to DHCP. If a DHCP host is not available, the IMM assigns a static IP address of 192.168.70.125.

2. On the Login page, type the user name and password. If you are using the IMM for the first time, you can obtain the user name and password from your system administrator. All login attempts are documented in the event log.

**Note:** The IMM is set initially with a user name of USERID and password of PASSWORD (passw0rd with a zero, not a the letter O). You have read/write access. You must change the default password the first time you log on.

3. On the Welcome page, type a timeout value (in minutes) in the field that is provided. The IMM will log you off of the Web interface if your browser is inactive for the number of minutes that you entered for the timeout value.
4. Click **Continue** to start the session. The System Health page provides a quick view of the system status.

## Enabling the Broadcom Gigabit Ethernet Utility program

The Broadcom Gigabit Ethernet Utility program is part of the server firmware. You can use it to configure the network as a startable device, and you can customize where the network startup option appears in the startup sequence.

To enable the Broadcom Gigabit Ethernet Utility program, complete the following steps:

1. From the Setup utility main menu, select **Devices and I/O Ports** and press Enter.
2. Select **Enable/Disable onboard device(s)** and press Enter.
3. Select **Ethernet** and press Enter.
4. Select **Enable** and press Enter.
5. Exit to the main menu and select **Save Settings** and press Enter.

## Configuring the Ethernet controller

The Ethernet controller is integrated on the system board. It provides an interface for connecting to a 10-Mbps, 100-Mbps, or 1-Gbps network and provides full-duplex (FDX) capability, which enables simultaneous transmission and reception of data on the network. If the Ethernet ports in the server support auto-negotiation, the controller detects the data-transfer rate (10BASE-T, 100BASE-TX, or 1000BASE-T) and duplex mode (full-duplex or half-duplex) of the network and automatically operates at that rate and mode.

You do not have to set any jumpers or configure the controller. However, you must install a device driver to enable the operating system to address the controller. To find updated information about configuring the controller, 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/systems/support/>.
2. Under **Product support**, click **System x**.
3. Under **Popular links**, click **Software and device drivers**.
4. From the **Product family** menu, select **System x3400 M2** and click **Go**.

## Using the LSI Configuration Utility program

Use the LSI Configuration Utility program to configure and manage redundant array of independent disks (RAID) arrays on hot-swap models of the server. Be sure to use this program as described in this document.

- Use the LSI Configuration Utility program to perform the following tasks:
  - Perform a low-level format on a hard disk drive
  - Create an array of hard disk drives with or without a hot-spare drive
  - Set protocol parameters on hard disk drives

The integrated SAS/SATA controller with RAID capabilities supports RAID arrays. The hot-swap server models come with the ServerRAID-BR10i adapter installed, which provides RAID levels 0, 1, and 1E support. You can use the LSI Configuration Utility program to configure RAID 1 (IM), RAID 1E (IME), and RAID 0 (IS) for a single pair of attached devices. If you install the optional ServeRAID-MR10i SAS/SATA controller or the optional ServeRAID-MR10is VAULT SAS/SATA controller with an encryption 1078 DE chip, they provide RAID levels 0, 1, 5, 6, 10, 50, and 60 support. If you install a different type of RAID adapter, follow the instructions in the documentation that comes with the adapter to view or change settings for attached devices.

In addition, you can download an LSI command-line configuration program from <http://www.ibm.com/systems/support/>.

When you are using the LSI Configuration Utility program to configure and manage arrays on hot-swap models of the server, consider the following information:

- The integrated SAS/SATA controller with RAID capabilities supports the following features:
  - Integrated Mirroring (IM) with hot-spare support (also known as RAID 1)  
Use this option to create an integrated array of two disks plus up to two optional hot spares. All data on the primary disk can be migrated.

- Integrated Mirroring Enhanced (IME) with hot-spare support (also known as RAID 1E)  
Use this option to create an integrated mirror enhanced array of three to eight disks, including up to two optional hot spares. All data on the array disks will be deleted.
- Integrated Striping (IS) (also known as RAID 0)  
Use this option to create an integrated striping array of two to eight disks. All data on the array disks will be deleted.
- Hard disk drive capacities affect how you create arrays. The drives in an array can have different capacities, but the RAID controller treats them as if they all have the capacity of the smallest hard disk drive.
- If you use an integrated SAS/SATA controller with RAID capabilities to configure a RAID 1 (mirrored) array after you have installed the operating system, you will lose access to any data or applications that were previously stored on the secondary drive of the mirrored pair.
- If you install a different type of RAID controller, see the documentation that comes with the controller for information about viewing and changing settings for attached devices.

## Starting the LSI Configuration Utility program

To start the LSI Configuration Utility program, complete the following steps:

1. Turn on the server.

**Note:** Approximately 1 to 3 minutes after the server is connected to ac power, the power-control button becomes active.

2. When the prompt <F1 Setup> is displayed, press F1. If you have set an administrator password, you are prompted to type the password.
3. Select **System Settings → Adapters and UEFI drivers**.
4. Select **Please refresh this page on the first visit** and press Enter.
5. Select **LSI controller\_driver\_name Driver** and press Enter, where *controller\_driver\_name* is the name of the SAS/SATA controller driver. For the SAS/SATA controller driver name, see the documentation that comes with your controller.
6. To perform storage-management tasks, follow the procedures in the documentation that comes with the SAS/SATA controller.

**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 system board.

When you have finished changing settings, press Esc to exit from the program; select **Save** to save the settings that you have changed.

## Formatting a hard disk drive

Low-level formatting removes all data from the hard disk. If there is data on the disk that you want to save, back up the hard disk before you perform this procedure.

**Note:** Before you format a hard disk, make sure that the disk is not part of a mirrored pair.

To format a drive, complete the following steps:

1. From the list of adapters, select the controller (channel) for the drive that you want to format and press Enter.
2. Select **SAS Topology** and press Enter.



3. Select **Direct Attach Devices** and press Enter.
4. To highlight the drive that you want to format, use the Up Arrow and Down Arrow keys. To scroll left and right, use the Left Arrow and Right Arrow keys or the End key. Press Alt+D.
5. To start the low-level formatting operation, select **Format** and press Enter.

### Creating a RAID array of hard disk drives

To create a RAID array of hot-swap hard disk drives, complete the following steps:

1. From the list of adapters, select the controller (channel) for the drives that you want to mirror.
2. Select **RAID Properties**.
3. Select the type of array that you want to create.
4. Use the arrow keys to highlight the first drive in the pair; then, press the Minus (-) or Plus (+) key to change the mirror value to **Primary**.
5. Continue to select the next drive using the Minus (-) or Plus (+) key until you have selected all the drives for your array.
6. Press C to create the disk array.
7. Select **Apply changes and exit menu** to create the array.

## IBM Advanced Settings Utility program

The IBM Advanced Settings Utility (ASU) program is an alternative to the Setup utility for modifying UEFI settings. Use the ASU program online or out of band to modify UEFI settings from the command line without the need to restart the system to access the Setup utility.

You can also use the ASU program to configure the optional remote presence features or other IMM settings. The remote presence features provide enhanced systems-management capabilities.

In addition, the ASU program provides limited settings for configuring the IPMI function in the IMM through the command-line interface.

Use the command-line interface to issue setup commands. You can save any of the settings as a file and run the file as a script. The ASU program supports scripting environments through a batch-processing mode.

For more information and to download the ASU program, go to <http://www.ibm.com/systems/support/>.

## Updating IBM Systems Director

If you plan to use IBM Systems Director to manage the server, you must check for the latest applicable IBM Systems Director updates and interim fixes.

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

To locate and install a newer version of IBM Systems Director, complete the following steps:

1. Check for the latest version of IBM Systems Director:
  - a. Go to <http://www.ibm.com/systems/management/director/downloads.html>.



- b. If a newer version of IBM Systems Director than what comes with the server is shown in the drop-down list, follow the instructions on the Web page to download the latest version.
2. Install the IBM Systems Director program.

If your management server is connected to the Internet, to locate and install updates and interim fixes, complete the following steps:

1. Make sure that you have run the Discovery and Inventory collection tasks.
2. On the Welcome page of the IBM Systems Director Web interface, click **View updates**.
3. Click **Check for updates**. The available updates are displayed in a table.
4. Select the updates that you want to install, and click **Install** to start the installation wizard.

If your management server is not connected to the Internet, to locate and install updates and interim fixes, complete the following steps:

1. Make sure that you have run the Discovery and Inventory collection tasks.
2. On a system that is connected to the Internet, go to <http://www.ibm.com/eserver/support/fixes/fixcentral/>.
3. From the **Product family** list, select **IBM Systems Director**.
4. From the **Product** list, select **IBM Systems Director**.
5. From the **Installed version** list, select the latest version, and click **Continue**.
6. Download the available updates.
7. Copy the downloaded files to the management server.
8. On the management server, on the Welcome page of the IBM Systems Director Web interface, click the **Manage** tab, and click **Update Manager**.
9. Click **Import updates** and specify the location of the downloaded files that you copied to the management server.
10. Return to the Welcome page of the Web interface, and click **View updates**.
11. Select the updates that you want to install, and click **Install** to start the installation wizard.

## Updating the Universal Unique Identifier (UUID)

The Universal Unique Identifier (UUID) must be updated when the system board is replaced. Use the Advanced Settings Utility to update the UUID in the UEFI-based server. The ASU is an online tool that supports several operating systems. Make sure that you download the version for your operating system. You can download the ASU from the IBM Web site. To download the ASU and update the UUID, 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. Download the Advanced Settings Utility (ASU):
  - a. Go to <http://www.ibm.com/systems/support/>.
  - b. Under Product support, select **System x**.
  - c. Under Popular links, select **Tools and utilities**.
  - d. In the left pane, click **System x and BladeCenter Tools Center**.
  - e. Scroll down and click **Tools reference**.
  - f. Scroll down and click the plus-sign (+) for Configuration tools to expand the list; then, select **Advanced Settings Utility (ASU)**.

- g. In the next window under Related Information, click the **Advanced Settings Utility** link and download the ASU version for your operating system.
2. ASU sets the UUID in the Integrated Management Module (IMM). Select one of the following methods to access the Integrated Management Module (IMM) to set the UUID:
- Online from the target system (LAN or keyboard console style (KCS) access)
  - Remote access to the target system (LAN based)
  - Bootable media containing ASU (LAN or KCS, depending upon the bootable media)
- Note:** IBM provides a method for building a bootable media. You can create a bootable media using the Bootable Media Creator (BoMC) application from the Tools Center Web site.
3. Copy and unpack the ASU package, which also includes other required files, to the server. Make sure that you unpack the ASU and the required files to the same directory. In addition to the application executable (asu or asu64), the following files are required:
- For Windows based operating systems:
    - ibm\_rndis\_server\_os.inf
    - device.cat
  - For Linux based operating systems:
    - cdc\_interface.sh
4. After you install ASU, use the following command syntax to set the UUID:

```
asu set SYSTEM_PROD_DATA.SysInfoUUID <uuid_value> [access_method]
```

Where:

*<uuid\_value>*

Up to 16-byte hexadecimal value assigned by you.

*[access\_method]*

The access method that you selected to use from the following methods:

- Online authenticated LAN access, type the command:  
[host <imm\_internal\_ip>] [user <imm\_user\_id>] [password <imm\_password>]

Where:

*imm\_internal\_ip*

The IMM internal LAN/USB IP address. The default value is 169.254.95.118.

*imm\_user\_id*

The IMM account (1 of 12 accounts). The default value is USERID.

*imm\_password*

The IMM account password (1 of 12 accounts). The default value is PASSWORD (with a zero 0 not an O).

**Note:** If you do not specify any of these parameters, ASU will use the default values. When the default values are used and ASU is unable to access the IMM using the online authenticated LAN access method, ASU will automatically use the unauthenticated KCS access method.

The following commands are examples of using the userid and password default values and not using the default values:

Example that does not use the userid and password default values:  
asu set SYSTEM\_PROD\_DATA.SysInfoUUID <uuid\_value> --user <user\_id>  
--password <password>

Example that does use the userid and password default values:  
asu set SYSTEM\_PROD\_DATA.SysInfoUUID <uuid\_value>

- Online KCS access (unauthenticated and user restricted):

You do not need to specify a value for *access\_method* when you use this access method.

Example:

```
asu set SYSTEM_PROD_DATA.SysInfoUUID <uuid_value>
```

The KCS access method uses the IPMI/KCS interface. This method requires that the IPMI driver be installed. Some operating systems have the IPMI driver installed by default. ASU provides the corresponding mapping layer. See the *Advanced Settings Utility Users Guide* for more details. You can access the ASU Users Guide from the IBM Web site.

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

- a. Go to <http://www.ibm.com/systems/support/>.
  - b. Under Product support, select **System x**.
  - c. Under Popular links, select **Tools and utilities**.
  - d. In the left pane, click **System x and BladeCenter Tools Center**.
  - e. Scroll down and click **Tools reference**.
  - f. Scroll down and click the plus-sign (+) for Configuration tools to expand the list; then, select **Advanced Settings Utility (ASU)**.
  - g. In the next window under Related Information, click the **Advanced Settings Utility** link.
- Remote LAN access, type the command:

**Note:** When using the remote LAN access method to access IMM using the LAN from a client, the *host* and the *imm\_external\_ip* address are required parameters.

```
host <imm_external_ip> [user <imm_user_id>] [password <imm_password>]
```

Where:

*imm\_external\_ip*

The external IMM LAN IP address. There is no default value. This parameter is required.

*imm\_user\_id*

The IMM account (1 of 12 accounts). The default value is USERID.

*imm\_password*

The IMM account password (1 of 12 accounts). The default value is PASSWORD (with a zero 0 not an O).

The following commands are examples of using the userid and password default values and not using the default values:

Example that does not use the userid and password default values:  
asu set SYSTEM\_PROD\_DATA.SysInfoUUID <uuid\_value> --host <imm\_ip>  
--user <user\_id> --password <password>

Example that does use the userid and password default values:  
asu set SYSTEM\_PROD\_DATA.SysInfoUUID <uuid\_value> --host <imm\_ip>

- Bootable media:

You can also build a bootable media using the applications available through the Tools Center Web site at <http://publib.boulder.ibm.com/infocenter/toolscctr/v1r0/index.jsp>. From the left pane, click **IBM System x and BladeCenter Tools Center**, then click **Tool reference** for the available tools.

5. Restart the server.

## Updating the DMI/SMBIOS data

The Desktop Management Interface (DMI) must be updated when the system board is replaced. Use the Advanced Settings Utility to update the DMI in the UEFI-based server. The ASU is an online tool that supports several operating systems. Make sure that you download the version for your operating system. You can download the ASU from the IBM Web site. To download the ASU and update the DMI, 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. Download the Advanced Settings Utility (ASU):
  - a. Go to <http://www.ibm.com/systems/support/>.
  - b. Under Product support, select **System x**.
  - c. Under Popular links, select **Tools and utilities**.
  - d. In the left pane, click **System x and BladeCenter Tools Center**.
  - e. Scroll down and click **Tools reference**.
  - f. Scroll down and click the plus-sign (+) for Configuration tools to expand the list; then, select **Advanced Settings Utility (ASU)**.
  - g. In the next window under Related Information, click the **Advanced Settings Utility** link and download the ASU version for your operating system.
2. ASU sets the DMI in the Integrated Management Module (IMM). Select one of the following methods to access the Integrated Management Module (IMM) to set the DMI:
  - Online from the target system (LAN or keyboard console style (KCS) access)
  - Remote access to the target system (LAN based)
  - Bootable media containing ASU (LAN or KCS, depending upon the bootable media)

**Note:** IBM provides a method for building a bootable media. You can create a bootable media using the Bootable Media Creator (BoMC) application from the Tools Center Web site.

3. Copy and unpack the ASU package, which also includes other required files, to the server. Make sure that you unpack the ASU and the required files to the same directory. In addition to the application executable (asu or asu64), the following files are required:
  - For Windows based operating systems:
    - ibm\_rndis\_server\_os.inf
    - device.cat
  - For Linux based operating systems:
    - cdc\_interface.sh
4. After you install ASU, Type the following commands to set the DMI:

```
asu set SYSTEM_PROD_DATA.SysInfoProdName <m/t_model> [access_method]
asu set SYSTEM_PROD_DATA.SysInfoSerialNum <s/n> [access_method]
asu set SYSTEM_PROD_DATA.SysEncloseAssetTag <asset_tag> [access_method]
```

Where:

*<m/t\_model>*

The server machine type and model number. Type *mtm xxxxyyy*, where *xxxx* is the machine type and *yyy* is the server model number.

*<s/n>* The serial number on the server. Type *sn zzzzzzz*, where *zzzzzzz* is the serial number.

*<asset\_method>*

The server asset tag number. Type *asset aaaaaaaaaaaaaaaaaaaaaaaaaaaaaa*, where *aaaaaaaaaaaaaaaaaaaaaaaaaaaaa* is the asset tag number.

*[access\_method]*

The access method that you select to use from the following methods:

- Online authenticated LAN access, type the command:  
[host *<imm\_internal\_ip>*] [user *<imm\_user\_id>*] [password *<imm\_password>*]

Where:

*imm\_internal\_ip*

The IMM internal LAN/USB IP address. The default value is 169.254.95.118.

*imm\_user\_id*

The IMM account (1 of 12 accounts). The default value is USERID.

*imm\_password*

The IMM account password (1 of 12 accounts). The default value is PASSWORD (with a zero 0 not an O).

**Note:** If you do not specify any of these parameters, ASU will use the default values. When the default values are used and ASU is unable to access the IMM using the online authenticated LAN access method, ASU will automatically use the following unauthenticated KCS access method.

The following commands are examples of using the userid and password default values and not using the default values:

Examples that do not use the userid and password default values:

```
asu set SYSTEM_PROD_DATA.SysInfoProdName <m/t_model>
--user <imm_user_id> --password <imm_password>
asu set SYSTEM_PROD_DATA.SysInfoSerialNum <s/n> --user <imm_user_id>
--password <imm_password>
asu set SYSTEM_PROD_DATA.SysEncloseAssetTag <asset_tag>
--user <imm_user_id> --password <imm_password>
```

Examples that do use the userid and password default values:

```
asu set SYSTEM_PROD_DATA.SysInfoProdName <m/t_model>
asu set SYSTEM_PROD_DATA.SysInfoSerialNum <s/n>
asu set SYSTEM_PROD_DATA.SysEncloseAssetTag <asset_tag>
```

- Online KCS access (unauthenticated and user restricted):

You do not need to specify a value for *access\_method* when you use this access method.

The KCS access method uses the IPMI/KCS interface. This method requires that the IPMI driver be installed. Some operating systems have the IPMI driver installed by default. ASU provides the corresponding mapping layer. See the *Advanced Settings Utility Users Guide* at <http://www-947.ibm.com/systems/support/supportsite.wss/docdisplay?brandind=5000008&Indocid=MIGR-55021> for more details.

The following commands are examples of using the userid and password default values and not using the default values:

Examples that do not use the userid and password default values:

```
asu set SYSTEM_PROD_DATA.SYsInfoProdName <m/t_model>
asu set SYSTEM_PROD_DATA.SYsInfoSerialNum <s/n>
asu set SYSTEM_PROD_DATA.SYsEncloseAssetTag <asset_tag>
```

- Remote LAN access, type the command:

**Note:** When using the remote LAN access method to access IMM using the LAN from a client, the *host* and the *imm\_external\_ip* address are required parameters.

```
host <imm_external_ip> [user <imm_user_id>] [password <imm_password>]
```

Where:

*imm\_external\_ip*

The external IMM LAN IP address. There is no default value. This parameter is required.

*imm\_user\_id*

The IMM account (1 of 12 accounts). The default value is USERID.

*imm\_password*

The IMM account password (1 of 12 accounts). The default value is PASSWORD (with a zero 0 not an O).

The following commands are examples of using the userid and password default values and not using the default values:

Examples that do not use the userid and password default values:

```
asu set SYSTEM_PROD_DATA.SYsInfoProdName <m/t_model> --host <imm_ip>
--user <imm_user_id> --password <imm_password>
asu set SYSTEM_PROD_DATA.SYsInfoSerialNum <s/n> --host <imm_ip>
--user <imm_user_id> --password <imm_password>
asu set SYSTEM_PROD_DATA.SYsEncloseAssetTag <asset_tag>
--host <imm_ip> --user <imm_user_id> --password <imm_password>
```

Examples that do use the userid and password default values:

```
asu set SYSTEM_PROD_DATA.SysInfoProdName <m/t_model> --host <imm_ip>
asu set SYSTEM_PROD_DATA.SysInfoSerialNum <s/n> --host <imm_ip>
asu set SYSTEM_PROD_DATA.SysEncloseAssetTag <asset_tag>
--host <imm_ip>
```

- Bootable media:

You can also build a bootable media using the applications available through the Tools Center Web site at <http://publib.boulder.ibm.com/infocenter/toolsctr/v1r0/index.jsp>. From the left pane, click **IBM System x and BladeCenter Tools Center**, then click **Tool reference** for the available tools.

5. Restart the server.

---

## Appendix A. Getting help and technical assistance

If you need help, service, or technical assistance or just want more information about IBM products, you will find a wide variety of sources available from IBM to assist you. This section contains information about where to go for additional information about IBM and IBM products, what to do if you experience a problem with your system, and whom to call for service, if it is necessary.

---

### Before you call

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

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

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

---

### Using the documentation

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

---

### Getting help and information from the World Wide Web

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



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

---

## Software service and support

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

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

---

## Hardware service and support

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

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

---

## IBM Taiwan product service

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

IBM Taiwan product service contact information:

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



---

## Appendix B. Notices

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

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

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

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

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

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

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

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

---

## Trademarks

IBM, the IBM logo, and [ibm.com](http://www.ibm.com) are trademarks of International Business Machines Corp., registered in many jurisdictions worldwide. Other product and service names might be trademarks of IBM or other companies. A current list of IBM trademarks is available on the web at "Copyright and trademark information" at <http://www.ibm.com/legal/copytrade.shtml>.

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

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

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

Java and all Java-based trademarks and logos are trademarks or registered trademarks of Oracle and/or its affiliates.

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

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

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

---

## Important notes

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

CD or DVD drive speed is the variable read rate. Actual speeds vary and are often less than the possible maximum.

When referring to processor storage, real and virtual storage, or channel volume, KB stands for 1024 bytes, MB stands for 1,048,576 bytes, and GB stands for 1,073,741,824 bytes.

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

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

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

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

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

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

---

## Particulate contamination

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

Table 15. Limits for particulates and gases

Contaminant	Limits
Particulate	<ul style="list-style-type: none"><li>• The room air must be continuously filtered with 40% atmospheric dust spot efficiency (MERV 9) according to ASHRAE Standard 52.2<sup>1</sup>.</li><li>• Air that enters a data center must be filtered to 99.97% efficiency or greater, using high-efficiency particulate air (HEPA) filters that meet MIL-STD-282.</li><li>• The deliquescent relative humidity of the particulate contamination must be more than 60%<sup>2</sup>.</li><li>• The room must be free of conductive contamination such as zinc whiskers.</li></ul>
Gaseous	<ul style="list-style-type: none"><li>• Copper: Class G1 as per ANSI/ISA 71.04-1985<sup>3</sup></li><li>• Silver: Corrosion rate of less than 300 Å in 30 days</li></ul>

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

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

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

---

## Documentation format

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

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

U.S.A.

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

When you send information to IBM, you grant IBM a nonexclusive right to use or distribute the information in any way it believes appropriate without incurring any obligation to you.

---

## Telecommunication regulatory statement

This product is not intended to be connected directly or indirectly by any means whatsoever to interfaces of public telecommunications networks, nor is it intended to be used in a public services network.

---

## Electronic emission notices

**Note:** When attaching a monitor to the equipment, you must use the designated monitor cable and any interference suppression devices supplied with the monitor.

## Federal Communications Commission (FCC) statement

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

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

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

## Industry Canada Class A emission compliance statement

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

## Avis de conformité à la réglementation d'Industrie Canada

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

## Australia and New Zealand Class A statement

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

## European Union EMC Directive conformance statement

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

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

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

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

## Germany Electromagnetic Compatibility Directive

### Deutschsprachiger EU Hinweis:

#### Hinweis für Geräte der Klasse A EU-Richtlinie zur Elektromagnetischen Verträglichkeit

Dieses Produkt entspricht den Schutzanforderungen der EU-Richtlinie 2004/108/EG zur Angleichung der Rechtsvorschriften über die elektromagnetische Verträglichkeit in den EU-Mitgliedsstaaten und hält die Grenzwerte der EN 55022 Klasse A ein.

Um dieses sicherzustellen, sind die Geräte wie in den Handbüchern beschrieben zu installieren und zu betreiben. Des Weiteren dürfen auch nur von der IBM empfohlene Kabel angeschlossen werden. IBM übernimmt keine Verantwortung für die Einhaltung der Schutzanforderungen, wenn das Produkt ohne Zustimmung der IBM verändert bzw. wenn Erweiterungskomponenten von Fremdherstellern ohne Empfehlung der IBM gesteckt/eingebaut werden.

EN 55022 Klasse A Geräte müssen mit folgendem Warnhinweis versehen werden: "Warnung: Dieses ist eine Einrichtung der Klasse A. Diese Einrichtung kann im Wohnbereich Funk-Störungen verursachen; in diesem Fall kann vom Betreiber verlangt werden, angemessene Maßnahmen zu ergreifen und dafür aufzukommen."

#### Deutschland: Einhaltung des Gesetzes über die elektromagnetische Verträglichkeit von Geräten

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

**Zulassungsbescheinigung laut dem Deutschen Gesetz über die elektromagnetische Verträglichkeit von Geräten (EMVG) (bzw. der EMC EG Richtlinie 2004/108/EG) für Geräte der Klasse A**

Dieses Gerät ist berechtigt, in Übereinstimmung mit dem Deutschen EMVG das EG-Konformitätszeichen - CE - zu führen. Verantwortlich für die Konformitätserklärung des EMVG ist die IBM Deutschland GmbH, 70548 Stuttgart.

**Generelle Informationen:**

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

**VCCI Class A statement**

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

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

**Japan Electronics and Information Technology Industries Association (JEITA) statement**

高調波ガイドライン適合品

Japanese Electronics and Information Technology Industries Association (JEITA)  
Confirmed Harmonics Guideline (products less than or equal to 20 A per phase)

**Korea Communications Commission (KCC) statement**

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

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

**Russia Electromagnetic Interference (EMI) Class A statement**

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

## People's Republic of China Class A electronic emission statement

### 声 明

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

## Taiwan Class A compliance statement

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





---

# Index

## Numerics

- 2.5-inch hard disk drive backplate
  - installing 236
- 2.5-inch hot-swap hard disk drive backplate
  - removing 234
- 3.5-inch hard disk drive backplate
  - removing 239

## A

- ABR, automatic boot failure recovery 148
- accessible documentation 299
- acoustical noise emissions 8, 9
- adapter
  - installing 187
  - removing 186
  - requirements 187
  - scanning order 188
  - specifications 8
- administrator password 281
- administrator password, clear 280
- administrator password, set 280
- Advanced Settings Utility 288
- air baffle
  - installing 180
  - removing 179
- assertion event, system-event log 27
- assistance, getting 295
- attention notices 6
- automatic boot failure recovery (ABR) 148

## B

- battery
  - installing 219
  - removing 218
  - safety 219
- Battery failure LED 87
- battery, replacing 219
- bezel media door, opening and closing 178
- blue-screen capture feature
  - overview 284
- Boot Manager program 274, 281
- Broadcom Gigabit Ethernet Utility program
  - enabling 285

## C

- cable routing, internal 164
- caution statements 6
- CD drive
  - problems 73
- checkout procedure 71, 72
- Class A electronic emission notice 300
- clear, administrator password 280
- clear, power-on password 280

- clearing
  - the event logs 29
- closing
  - power-supply cage 260
- code updates 2
- collecting data 1
- components
  - on the server 154
- components, installing 161
- components, removing 161
- components, replacing 161
- configuration
  - minimum 151
  - Nx boot failure 148
  - ServerGuide Setup and Installation CD 273, 275
  - Setup utility 273
  - using the Setup utility 277
- configuration programs
  - LSI Configuration Utility 274
- configuring
  - with ServerGuide 276
- configuring the server 273
- configuring your server 273
- connector
  - Ethernet 16
  - power cord 15
  - serial 1 15
  - video 15
- connector, systems-management Ethernet 16
- connectors
  - on the rear of the server 14
- connectors, USB
  - front 13
  - rear 16
- consumable parts 157
- contamination, particulate and gaseous 299
- control-panel assembly
  - installing 257
  - removing 255
- controls, LEDs, and connectors
  - front 10
  - rear 14
- cooling 8
- cover, side
  - installing 173
  - removing 173
- CPU error LEDs 87
- CPU mismatch LED 87
- creating
  - a RAID array 288
- CRUs, installing
  - power-supply cage 258, 260
- CRUs, removing
  - power-supply cage 258, 260
- customer replaceable units (CRUs) 153

## D

- danger statements 6
- data collection 1
- deassertion event, system-event log 27
- diagnosing a problem 1
- diagnostic
  - error codes 93
  - LEDs, error 85
  - test log, viewing 92
  - text message format 92
  - tools, overview 25
- DIMM installation sequence
  - for memory mirroring 213
- DIMM LEDs 87
- DIMMs
  - installing 211
  - order of installation for independent mode 212
  - removing 208
- Director, Systems
  - updating 288
- diskette drive
  - problems 74
- display problems 78
- documentation format 299
- drive bays, internal 190
- drive, installing 2.5-inch hot-swap 203
- drives
  - bay 1, 2, or 3
    - installing 194
    - removing 192
  - bay 4, 5, 6, or 7
    - hot-swap, installing 205
    - hot-swap, removing 204
    - simple-swap, installing 208
    - simple-swap, removing 206
  - installing 190
  - removing 190
  - specifications 8
- DSA diagnostic
  - programs, overview 91
- DSA log 27
- dual inline memory module (DIMM)
  - retaining clips 215
- DVD
  - cable routing 171
- DVD drive
  - activity LED 13
  - eject button 13
  - installing 194
  - problems 73
  - removing 192

## E

- eject button
  - DVD 13
- electrical input 8, 9
- electronic emission Class A notice 300
- enabling
  - Broadcom Gigabit Ethernet Utility 285

- enclosure manager heartbeat LED 88
- environment 8, 9
- error codes and messages
  - diagnostic 93
  - IMM 41
  - messages, diagnostic 91
  - POST 30
  - SCSI (SAS) 149
- error symptoms
  - CD-ROM drive 73
  - DVD-ROM drive 73
  - general 75
  - hard disk drive 75
  - intermittent 76
  - keyboard 76
  - memory 77
  - microprocessor 78
  - monitor 78
  - mouse 76
  - optional devices 80
  - pointing device 76
  - power 81
  - serial port 82
  - ServerGuide 83
  - software 83
  - USB port 84
  - video 78
- errors
  - format, diagnostic code 92
- Ethernet
  - activity LED 16
  - controller, configuring 286
  - high performance modes 286
  - link status LED 16
  - modes 286
  - utility, enabling 285
- Ethernet connector 16
- Ethernet controller configuration 274
- Ethernet controller, troubleshooting 150
- event log, POST 27
- event log, system 27
- event log, viewing through the web interface 27
- event logs 27
  - clearing 29
  - viewing 27
- event logs, methods for viewing 29
- expansion slots 9
- extender card, PCI
  - installing 271
  - removing 270
- external connectors 19
- external connectors, rear of server 14

## F

- fan
  - rear
    - installing 222
    - removing 221
- fan sink
  - installing 250

- fan sink *(continued)*
  - removing 246
- FCC Class A notice 300
- features
  - ServerGuide 275
- features and specifications 8
- features, server 8
- field replaceable units (FRUs) 153
- firmware, server
  - starting the backup 281
- firmware, server, recovering 145
- firmware, updating 273
- formatting
  - a hard disk drive 287
- front USB connector assembly
  - installing 226
  - removing 224

## G

- gaseous contamination 299
- getting help 295
- grease, thermal 254
- guidelines
  - installation 161
  - system reliability 162

## H

- handling static-sensitive devices 163
- hard disk drive
  - activity LED 12
  - formatting 287
  - problems 75
- hard disk drives
  - hot-swap SAS or SATA, installing 205
  - hot-swap SAS or SATA, removing 204
  - simple-swap SATA, installing 208
  - simple-swap SATA, removing 206
- hardware service and support 296
- hardware, configuring 273
- heat output 8, 9
- heat sink
  - applying thermal grease 250
- heat-sink retention module
  - installing 263
  - removing 261
- help, getting 295
- hot-swap drive
  - specifications 8
- hot-swap drives
  - SAS backplate LEDs 13
  - SAS/SATA backplate LEDs 13
- hot-swap drives, SAS or SATA
  - installing 205
  - removing 204
- hot-swap fan
  - installing 222

- IBM Advanced Settings Utility program
  - overview 288
- IBM Support Line 296
- IBM Systems Director
  - updating 288
- IMM 274, 282
  - error messages 41
- IMM heartbeat LED 88
- important notices 6
- in-band method
  - of recovering the server firmware 146
- indicators 10
- installation guidelines 161
- installation order
  - memory modules 212
- installing
  - 2.5-inch hard disk drive backplate 236
  - 2.5-inch hot-swap drive 203
  - a microprocessor retention module 265
  - a PCI extender card 271
  - a voltage regulator module (VRM) 245
  - an adapter 187
  - battery 219
  - control-panel assembly 257
  - DIMMs 211
  - drives 190
  - drives, bay 1, 2, or 3 194
  - DVD drive 194
  - fan
    - rear 222
  - fan sink 250
  - front USB connector assembly 226
  - heat-sink retention module 263
  - hot-swap drives 205
  - hot-swap fan 222
  - hot-swap SAS or SATA drives 205
  - left-side cover 173
  - memory modules 211
  - microprocessor 249, 250
  - power supply
    - non-hot-swap 184
  - redundant power and cooling option 185
  - SAS backplate 241
  - simple-swap backplate 233
  - simple-swap drives 208
  - simple-swap SATA drives 208
  - system board 269
  - tape drive 194
  - the air baffle 180
  - the virtual media key 217
- installing components 161
- integrated baseboard management controller 17
- integrated functions 8
- integrated management module
  - error messages 41
  - using 282
- Integrated Management Module programs 274
- intermittent problems 76
- internal cable routing 164
- internal connectors 18

IP address  
    obtaining for the IMM 284  
IPMI, overview 28  
IPMITool 28

## J

jumper  
    UEFI boot recovery 146  
jumpers  
    on the system board 22  
jumpers on the system board 22

## K

keyboard problems 76

## L

LED,  
    Battery failure 87  
    enclosure manager heartbeat 88  
    IMM heartbeat 88  
    System-board error 87  
    VRM failure 87  
LEDs  
    DVD drive activity 13  
    Ethernet link status 16  
    Ethernet transmit/receive activity 16  
    hard disk drive activity 12  
    hot-swap hard disk drive activity 13  
    hot-swap hard disk drive status 13  
    on the system board 85  
    power-on 12  
    power-supply 88  
    system board 21  
    system-error 12  
LEDs,  
    CPU error 87  
    CPU mismatch 87  
    DIMM 87  
    PCI slot error 88  
LEDs, on the rear of the server 14  
Licenses and Attributions Documents 6  
light path diagnostics  
    cable routing 172  
Linux license agreement 6  
locking and unlocking, the bezel media door 178  
log  
    IMM system event 27  
    system event 27  
log, DSA 27  
log, event, viewing through the web interface 27  
logs  
    system event message 41  
LSI Configuration Utility program  
    starting 287  
    using 286

## M

memory  
    installing 211  
    specifications 8  
memory installation sequence  
    for independent mode 212  
memory mirroring  
    description 212  
    DIMM population sequence 213  
memory module  
    order of installation 212  
    specifications 8  
memory modules  
    installing 211  
    removing 208  
memory problems 77  
menu choices  
    for the Setup utility 277  
messages  
    diagnostic 91  
messages, error  
    POST 30  
methods, for viewing event logs 29  
microprocessor  
    applying thermal grease 250  
    heat sink 252  
    installing 249, 250  
    problems 78  
    removing 246  
    specifications 8  
microprocessor retention module  
    installing 265  
    removing 264  
minimum configuration 151  
mirroring mode 212  
modes, Ethernet 286  
monitor problems 78  
mouse problems 76

## N

normal (independent) mode, DIMM installation 212  
NOS installation  
    with ServerGuide 276  
    without ServerGuide 276  
notes 6  
notes, important 298  
notices 297  
    electronic emission 300  
    FCC, Class A 300  
notices and statements 6  
Nx boot failure 148

## O

obtaining  
    the IP address for IMM 284  
online publications 6, 146  
online service request 4

- opening
  - power-supply cage 258
- opening the bezel media door 178
- operator information panel
  - cable routing 172
- optical drive power cable routing 164
- option
  - connectors 20
- optional device
  - problems 80
- options
  - adapters 188
  - connectors, rear of server 14
  - memory modules 211
- order of installation
  - memory modules 212
- out-of-band method
  - of recovering the server firmware 147

## P

- particulate contamination 299
- parts listing 153
- parts, consumable 157
- password 280
  - administrator 280
  - power-on 280
- password, administrator 281
  - clear 280
  - set 280
- password, power-on 281
  - clear 280
  - set 280
- passwords, setting 280
- PCI extender card
  - installing 271
  - removing 270
- PCI slot error LEDs 88
- pointing-device problems 76
- ports
  - Ethernet 16
  - serial 1 15
  - USB, front 13
  - USB, rear 16
  - video 15
- POST 26
  - error codes 30
  - event log 27
- POST event log 27
- power control-button 12
- power cords 158
- power problems 81, 149
- power supply
  - cage, closing 260
  - cage, opening 258
  - non-hot-swap
    - installing 184
    - specifications 8
- power supply cage assembly
  - non-hot-swap
    - removing 181
- power supply LEDs 88
- power switch 12
- power-cord connector 15
- power-on LED 12, 16
- power-on password, clear 280
- power-on password, set 280
- power-on self-test (POST) 26
- power-on, password 281
- problem isolation tables 73
- problem, diagnosing 1
- problems
  - CD-ROM, DVD-ROM drive 73
  - diskette drive 74
  - Ethernet controller 150
  - hard disk drive 75
  - IMM 41
  - intermittent 76
  - keyboard 76
  - memory 77
  - microprocessor 78
  - monitor 78
  - mouse 76
  - optional devices 80
  - pointing device 76
  - POST 30
  - power 81, 149
  - serial port 82
  - ServerGuide 83
  - software 83
  - undetermined 151
  - USB port 84
  - video 78
- public services network, use in 300
- public telecommunications network, connection to 300
- publications 5

## R

- RAID array
  - creating 288
- recovering the server firmware 145
- recovering, UEFI update failure 145
- recovering the server firmware
  - in-band method 146
  - out-of-band method 147
- redundant 185
- remote presence feature
  - using 283
- Remote presence support 274
- remove
  - a voltage regulator module (VRM) 244
  - microprocessor retention module 264
  - the air baffle 179
- removing
  - 2.5-inch hot-swap hard disk drive backplate 234
  - 3.5-inch hard disk drive backplate 239
  - 3.5-inch hot-swap drives 204
  - a PCI extender card 270
  - adapter 186
  - control-panel assembly 255
  - DIMMs 208

- removing (*continued*)
  - drives 190
  - drives, bay 1, 2, or 3 192
  - DVD drive 192
  - fan
    - rear 221
  - fan sink 246
  - front USB connector assembly 224
  - heat-sink retention module 261
  - hot-swap SAS or SATA drives 204
  - left-side cover 173
  - memory modules 208
  - microprocessor 246
  - power supply cage assembly
    - non-hot-swap 181
  - simple-swap backplate 230
  - simple-swap drives 206
  - simple-swap SATA drives 206
  - system board 267
  - tape drive 192
  - the battery 218
  - the virtual media key 216
- removing components 161
- replacement parts 153
- replacing
  - the battery 218
- replacing components 161
- retaining clips, dual inline memory module (DIMM) 215
- running
  - the diagnostic programs 92

## S

- safety information
  - Statement 13 xvi
  - Statement 15 xvi
- SAS backplate
  - installing 241
- LEDs
  - hot-swap drive status 13
- SAS or SATA hot-swap drives
  - installing 205
  - removing 204
- SAS/SATA backplate
  - LEDs
    - hot-swap drive activity 13
- SATA backplate
  - activity LEDs for hot-swap drives 13
- SATA simple-swap drives
  - installing 208
  - removing 206
- scanning order for adapters 188
- SCSI (SAS) error messages 149
- serial 1 connector 15
- serial port problems 82
- server
  - power features 16
  - specifications 8
  - turning it off 17
- server components 154
- server configuration 273

- server controls and indicator
  - on the front 10
- server firmware, recovering 145
- server replaceable units 153
- server shutdown 17
- server, backup firmware
  - starting 281
- ServeRAID-BR10i cable connectors 165
- ServeRAID-MR10i cable connector 165
- ServerGuide
  - features 275
  - NOS installation 276
  - problems 83
  - setup 276
  - Setup and Installation CD 273, 275
- service bulletins 3
- service request, online 4
- service, calling for 152
- set, administrator password 280
- set, power-on password 280
- setting, passwords 280
- Setup utility 273, 274
  - menu choices 277
  - starting 277
  - using 277
- shutting down the server 17
- simple-swap backplate
  - installing 233
  - removing 230
- simple-swap drives
  - installing 208
  - removing 206
- size 8
- software problems 83
- software service and support 296
- specifications, server 8
- start here
  - troubleshooting procedures 1
- starting
  - the LSI Configuration Utility program 287
  - the server firmware 281
  - the Setup utility 277
- statements and notices 6
- static-sensitive devices, handling 163
- status LEDs 10
- support, web site 295
- switch block 6 switches 24
- switches
  - on the system board 22
- switches on the system board 23
- system board
  - error LEDs 85
  - external connectors 19
  - installing 269
  - internal connectors 18
  - LEDs 21
  - option connectors 20
  - removing 267
  - switches and jumpers 22
- system board jumpers 22
- system board switches 23

- system event log 41
- system event log, IMM 27
- system event logs 27
- system reliability 162
- system specifications 8
- System-board error LED 87
- system-error LED 12
- system-event log 27
- system-event log, assertion event 27
- system-event log, deassertion event 27
- Systems Director, updating 288
- systems-management Ethernet connector 16

## T

- tape drive
  - cable routing 164
  - installing 194
  - removing 192
- telephone numbers 296
- temperature 8
- test log, viewing 92
- thermal grease 254
- thermal material, heat sink 252
- TOE 8
- tools, diagnostic 25
- trademarks 297
- troubleshooting procedures 4
  - start here 1
- turning off the server 17
  - integrated baseboard management controller 17

## U

- UEFI
  - boot recovery jumper 146
- UEFI update failure
  - recovery 145
- undetermined problems 151
- undocumented problems 4
- United States electronic emission Class A notice 300
- United States FCC Class A notice 300
- Universal Serial Bus (USB) problems 84
- UpdateXpress 2
- updating
  - IBM Systems Director 288
  - Systems Director, IBM 288
- updating firmware 273
- USB connectors
  - front 13
  - rear 16
- USB, front connector assembly
  - installing 226
  - removing 224
- using
  - IMM 282
  - the integrated management module 282
  - the LSI Configuration Utility program 286
  - the remote presence feature 283
- utility
  - Setup 277

- Utility program
  - IBM Advanced Settings 288
- utility, Setup 274

## V

- video
  - connector 15
  - specifications 8
- video problems 78
- viewing event logs
  - without restarting the server 28
- virtual media key
  - installing 217
  - removing 216
- voltage regulator module (VMR)
  - installing 245
  - removing 244
- VRM
  - installing 245
  - removing 244
- VRM failure LED 87

## W

- Wake on LAN feature 16
- web site
  - publication ordering 295
  - support 295
  - support line, telephone numbers 296
- Web site
  - compatible options 211
  - ServerProven list 211
- website
  - UEFI flash diskette 145
- weight 8









Part Number: 00D3188

Printed in USA

(1P) P/N: 00D3188

