



IBM System x3250 M2 Types 4190, 4191 and 4194
Problem Determination and Service Guide





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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 205 and the *Warranty and Support Information* document on the IBM *System x Documentation* CD.

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Contents

Safety	vii
Guidelines for trained service technicians	viii
Inspecting for unsafe conditions	viii
Guidelines for servicing electrical equipment	viii
Safety statements	x
 Chapter 1. Introduction	1
Related documentation	1
Notices and statements in this document	2
Features and specifications	3
Server controls, LEDs, and connectors	5
Front view	5
Rear view	6
Internal LEDs, connectors, and jumpers	6
System-board internal connectors	7
System-board switches and jumpers	8
System-board external connectors	9
System-board LEDs	10
System-board optional device connectors	11
 Chapter 2. Configuration information and instructions	13
Updating the firmware	13
Configuring the server	13
Using the ServerGuide Setup and Installation CD	14
Using the Configuration/Setup Utility program	16
Using the WebBIOS Configuration Utility	23
Using the LSI Logic Configuration Utility program	23
Using the baseboard management controller	24
Configuring the Gigabit Ethernet controllers	27
Updating IBM Director	28
Updating the DMI/SMBIOS data	28
 Chapter 3. Parts listing, Types 4190, 4191 and 4194 server	31
Types 4190, 4191 and 4194 (models 15x, 1Bx, 22x, 42x, 52x, 62x, 64x, 72x, 82x, B2x, BDx, C2x, CDx, D2x, D4x and E2x)	32
Types 4190, 4191 and 4194 (models 66x, 74x, 84x and D6x)	37
Product recovery CDs	41
Power cords	44
 Chapter 4. Removing and replacing server components	47
Installation guidelines	47
System reliability guidelines	48
Working inside the server with the power on	48
Handling static-sensitive devices	49
Returning a device or component	49
Removing and replacing consumable parts and Tier 1 CRUs	50
Removing the cover	50
Installing the cover	51
Removing an adapter	52
Installing an adapter	53
Removing a Remote Supervisor Adapter II SlimLine	56
Installing a Remote Supervisor Adapter II SlimLine	57
Hard disk drive	59

Removing a CD or CD/DVD combination drive	63
Installing a CD or CD/DVD combination drive.	63
Removing a memory module (DIMM).	64
Installing a memory module (DIMM)	65
Removing a fan	66
Installing a fan	66
Removing the air baffle	68
Installing the air baffle	68
Removing and replacing Tier 2 CRUs	69
Removing the battery	69
Installing the battery	69
Removing the operator information panel assembly	72
Installing the operator information panel assembly	72
Removing the CD/DVD interface card	73
Installing the CD/DVD interface card	74
Removing the power supply	75
Installing the power supply	76
Removing the riser-card assembly.	78
Installing the riser-card assembly	79
Removing the PCI-X riser-card power cable	80
Installing the PCI-X riser-card power cable.	80
Removing the backplane or back plate (3.5-inch drives)	81
Installing the backplane or back plate (3.5-inch drives)	82
Removing the SAS backplane (2.5-inch drives)	84
Installing the SAS backplane (2.5-inch drives)	84
Removing the SAS/SATA controller (hot-swap models)	85
Installing the SAS/SATA controller (hot-swap models).	86
Removing a drive cage	87
Installing a drive cage	87
Removing and replacing FRUs	88
Microprocessor	88
Removing the system board	94
Installing the system board	95
Chapter 5. Diagnostics	97
Diagnostic tools	97
POST	97
POST beep codes	98
Error logs	102
POST error codes	103
Checkout procedure	112
About the checkout procedure	113
Performing the checkout procedure	113
Troubleshooting tables.	115
CD or DVD drive problems	115
General problems	116
Hard disk drive problems.	116
Intermittent problems	117
USB keyboard, mouse, or pointing-device problems	117
Memory problems	119
Microprocessor problems.	119
Monitor problems	120
Optional-device problems	122
Power problems	123
Serial-device problems	124
ServerGuide problems.	124

Software problems	125
Universal Serial Bus (USB) device problems	126
Video problems	126
System-board LEDs	126
Diagnostic programs and messages	128
Diagnostic text messages	129
Viewing the test log.	130
Diagnostic messages	130
Updating (flash-update) the BIOS code on the server	188
Recovering the server firmware	189
System event/error log messages	191
Solving power problems	198
Solving Ethernet controller problems	198
Solving undetermined problems	199
Problem determination tips	200
Appendix A. Getting help and technical assistance	203
Before you call	203
Using the documentation.	203
Getting help and information from the World Wide Web	203
Software service and support	204
Hardware service and support.	204
IBM Taiwan product service.	204
Appendix B. Notices	205
Trademarks.	205
Important notes	206
Product recycling and disposal	207
Battery return program	208
German Ordinance for Work gloss statement	210
Electronic emission notices	210
Federal Communications Commission (FCC) statement	210
Industry Canada Class A emission compliance statement.	210
Avis de conformité à la réglementation d'Industrie Canada	210
Australia and New Zealand Class A statement	210
United Kingdom telecommunications safety requirement	210
European Union EMC Directive conformance statement	211
Taiwanese Class A warning statement	211
Chinese Class A warning statement	211
Japanese Voluntary Control Council for Interference (VCCI) statement	211
Korean Class A warning statement	212
Index	213

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 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 44.
 - Make sure that the insulation is not frayed or worn.
4. Remove the cover.
5. Check for any obvious non-IBM alterations. Use good judgment as to the safety of any non-IBM alterations.
6. Check inside the server for any obvious unsafe conditions, such as metal filings, contamination, water or other liquid, or signs of fire or smoke damage.
7. Check for worn, frayed, or pinched cables.
8. Make sure that the power-supply cover fasteners (screws or rivets) have not been removed or tampered with.

Guidelines for servicing electrical equipment

Observe the following guidelines when you service electrical equipment:

- Check the area for electrical hazards such as moist floors, nongrounded power extension cords, and missing safety grounds.
- Use only approved tools and test equipment. Some hand tools have handles that are covered with a soft material that does not provide insulation from live electrical 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 you use a tester, set the controls correctly and use the approved probe leads and accessories for that tester.
 - Stand on a suitable rubber mat to insulate you from grounds such as metal floor strips and equipment frames.
- Use extreme care when you measure high voltages.
- To ensure proper grounding of components such as power supplies, pumps, blowers, fans, and motor generators, do not service these components outside of their normal operating locations.
- If an electrical accident occurs, use caution, turn off the power, and send another person to get medical aid.

Safety statements

Important:

Each caution and danger statement in this document is labeled with a number. This number is used to cross reference an English-language caution or danger statement with translated versions of the caution or danger statement in the *Safety Information* document.

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

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

Statement 1:



DANGER

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

To avoid a shock hazard:

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

To Connect:

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

To Disconnect:

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

Statement 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.



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

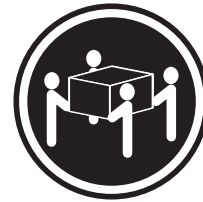
Statement 4:



≥ 18 kg (39.7 lb)



≥ 32 kg (70.5 lb)



≥ 55 kg (121.2 lb)

CAUTION:

Use safe practices when lifting.

Statement 5:



CAUTION:

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



Statement 8:



CAUTION:

Never remove the cover on a power supply or any part that has the following label attached.



Hazardous voltage, current, and energy levels are present inside any component that has this label attached. There are no serviceable parts inside these components. If you suspect a problem with one of these parts, contact a service technician.

Statement 26:



CAUTION:

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



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. Introduction

This *Problem Determination and Service Guide* contains information to help you solve problems that might occur in the IBM® System x3250 M2 Type 4190, 4191 or 4194 server. It describes the diagnostic tools that come with the server, error codes and suggested actions, and instructions for replacing failing components.

Replaceable components are of four types:

- **Consumable parts:** Purchase and replacement of consumable parts (components, such as batteries and printer cartridges, that have depletable life) is your responsibility. If IBM acquires or installs a consumable part 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.

Related documentation

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

- *Installation Guide*

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

- *User's Guide*

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

- *Rack Installation Instructions*

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

- *Safety Information*

This document is in PDF on the IBM *System x Documentation* CD. It contains translated caution and danger statements. Each caution and danger statement that appears in the documentation has a number that you can use to locate the corresponding statement in your language in the *Safety Information* document.

- *Warranty and Support Information*

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

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

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

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

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

1. Go to <http://www.ibm.com/systems/support/>.
2. Under **Product support**, click **System x**.
3. Under **Popular links**, click **Publications lookup**.
4. From the **Product family** menu, select **System x3250 M2** and click **Continue**.

Notices and statements in this document

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

The following notices and statements are used in this document:

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

Features and specifications

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

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

Table 1. Features and specifications

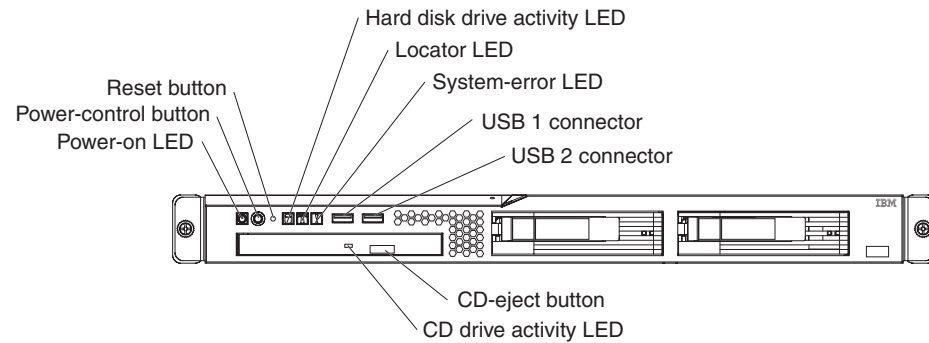
<p>Microprocessor: One Intel LGA 775 single core, dual core, or quad core, depending on the server model:</p> <ul style="list-style-type: none"> • Single core: Celeron 440 or later • Dual core: Core 2 Duo E4600 or Xeon E3110, or later • Quad core: Xeon 3300 series <p>See http://www.ibm.com/servers/eserver/serverproven/compat/us/ for a list of supported microprocessors.</p> <p>Notes:</p> <ol style="list-style-type: none"> 1. Use the Configuration/Setup Utility program to determine the size of the L2 cache, type and speed of the microprocessor, and speed of the front-side bus. 2. Intel Virtualization Technology (VT) is not available on the Celeron 440 or the Core 2 Duo E4600; however, these microprocessors can run paravirtualization. <p>Memory:</p> <ul style="list-style-type: none"> • Minimum: Two 512 MB DIMMs • Maximum: 8 GB • Type: PC2-5300, 667 MHz, ECC, DDR II unbuffered SDRAM DIMMs • Slots: Four dual inline • Supports 512 MB, 1 GB, and 2 GB DIMMs <p>Drives: Ultrabay Enhanced: CD or CD/DVD</p> <p>Expansion bays: One of the following configurations:</p> <ul style="list-style-type: none"> • Two 3.5-inch slim-high bays for hard disk drives. <ul style="list-style-type: none"> – Hot-swap models: Supports maximum of two serial-attached SCSI (SAS) drives or two serial ATA (SATA) drives. – Simple-swap models: Supports maximum of two SATA drives • Four 2.5-inch small form-factor (SFF) hot-swap bays for hard disk drives. Supports a maximum of four 2.5-inch SAS drives. 	<p>Expansion slots: Two PCI Express x8 slots, one low-profile and one 3/4-length full height. Low-profile slot supports x4 electrical.</p> <p>Video controller:</p> <ul style="list-style-type: none"> • ATI ES1000 video on system board • 16 MB DDR II video memory <p>Power supply: 351 watt (110 or 220 V ac auto-sensing)</p> <p>Size:</p> <ul style="list-style-type: none"> • Height: 43 mm (1.75 inches, 1U) • Depth: 559 mm (22 inches) • Width: 440 mm (17.32 inches) • Maximum weight: 12.7 kg (28 lb) depending on your configuration <p>Integrated functions:</p> <ul style="list-style-type: none"> • Two Broadcom NetXtreme™ GB Ethernet controllers on the system board with Wake on LAN support • Serial port • Four USB ports (two on front and two on rear of server) • Systems-management port if an optional Remote Supervisor Adapter II SlimLine is installed <p>Hard disk controllers:</p> <ul style="list-style-type: none"> • Serial ATA (SATA) controller (simple-swap SATA models) • Serial-attached SCSI (SAS) controller with integrated RAID (hot-swap SAS/SATA models) that supports RAID levels 0, 1, 1E <p>Environment:</p> <ul style="list-style-type: none"> • Air temperature: <ul style="list-style-type: none"> – Server on: 10° to 35°C (50.0° to 95.0°F); altitude: 0 to 914.4 m (3000 ft) – Server on: 10° to 32°C (50.0° to 89.6°F); altitude: 914.4 m (3000 ft) to 2133.6 m (7000 ft) – Server off: 10° to 43°C (50.0° to 109.4°F); maximum altitude: 2133.6 m (7000 ft) – Shipping: -40° to 60°C (-40° to 140°F); maximum altitude: 2133.6 m (7000 ft) • Humidity: <ul style="list-style-type: none"> – Server on: 8% to 80% – Server off: 8% to 80% 	<p>Acoustical noise emissions:</p> <ul style="list-style-type: none"> • Sound power, idling: 6.5 bel maximum • Sound power, operating: 6.5 bel maximum <p>Heat output: Approximate heat output in British thermal units (Btu) per hour:</p> <ul style="list-style-type: none"> • Minimum configuration: 341 Btu per hour (100 watts) • Maximum configuration: 1024 Btu per hour (300 watts) <p>Electrical input:</p> <ul style="list-style-type: none"> • Sine-wave input (50 - 60 Hz) required • Input voltage low range: <ul style="list-style-type: none"> – Minimum: 100 V ac – Maximum: 127 V ac • Input voltage high range: <ul style="list-style-type: none"> – Minimum: 200 V ac – Maximum: 240 V ac • Approximate input kilovolt-amperes (kVA): <ul style="list-style-type: none"> – Minimum: 0.102 kVA – Maximum: 0.55 kVA <p>Notes:</p> <ol style="list-style-type: none"> 1. Power consumption and heat output vary depending on the number and type of optional features that are installed and the power-management optional features that are in use. 2. These levels were measured in controlled acoustical environments according to the procedures that are specified by the American National Standards Institute (ANSI) S12.10 and ISO 7779 and are reported in accordance with ISO 9296. Actual sound-pressure levels in a given location might exceed the average stated values because of room reflections and other nearby noise sources. The declared sound-power levels indicate an upper limit, below which a large number of computers will operate. 3. There is no keyboard connector or mouse connector on the server. You can connect a USB keyboard and USB mouse to the server by using the USB connectors.
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Server controls, LEDs, and connectors

This section describes the controls, light-emitting diodes (LEDs), and connectors on the front and rear of the server.

Front view

The following illustration shows the controls, light-emitting diodes (LEDs), and connectors on the front of the server.



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

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

Power-control button: Press this button to turn the server on and off manually. A power-control-button shield comes installed around the button to prevent the server from being turned off accidentally. You can remove this disk-shaped shield if you prefer.

Reset button: Press this button to reset the server and run the power-on self-test (POST). You might have to use a pen or the end of a straightened paper clip to press the button.

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

Locator LED: This LED can be lit remotely by the system administrator to aid in visually locating the server. You can use IBM Director to light this LED remotely.

System-error LED: When this 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 5, "Diagnostics," on page 97 for additional information.

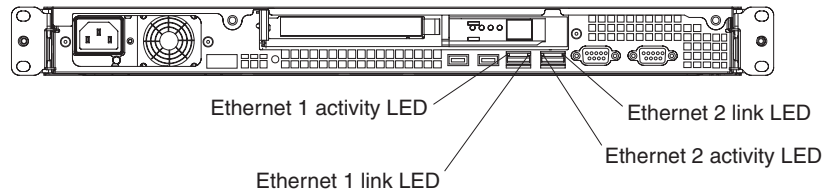
USB connectors: Connect a USB device to either of these connectors.

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

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

Rear view

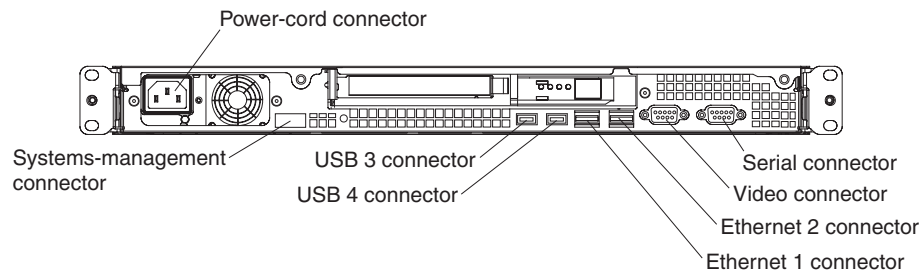
The following illustration shows the LEDs on the rear of the server.



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

Ethernet link LED: This LED is on each Ethernet connector. When this LED is lit, it indicates that the Ethernet controller is connected to the network.

The following illustration shows the connectors on the rear of the server.



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

Serial connector: Connect a 9-pin serial device to this connector.

Video connector: Connect a monitor to this connector.

Ethernet connector: Use either of these connectors to connect the server to a network. Ethernet connector 1 supports Serial over LAN (SOL).

USB connector: Connect a USB device to either of these connectors.

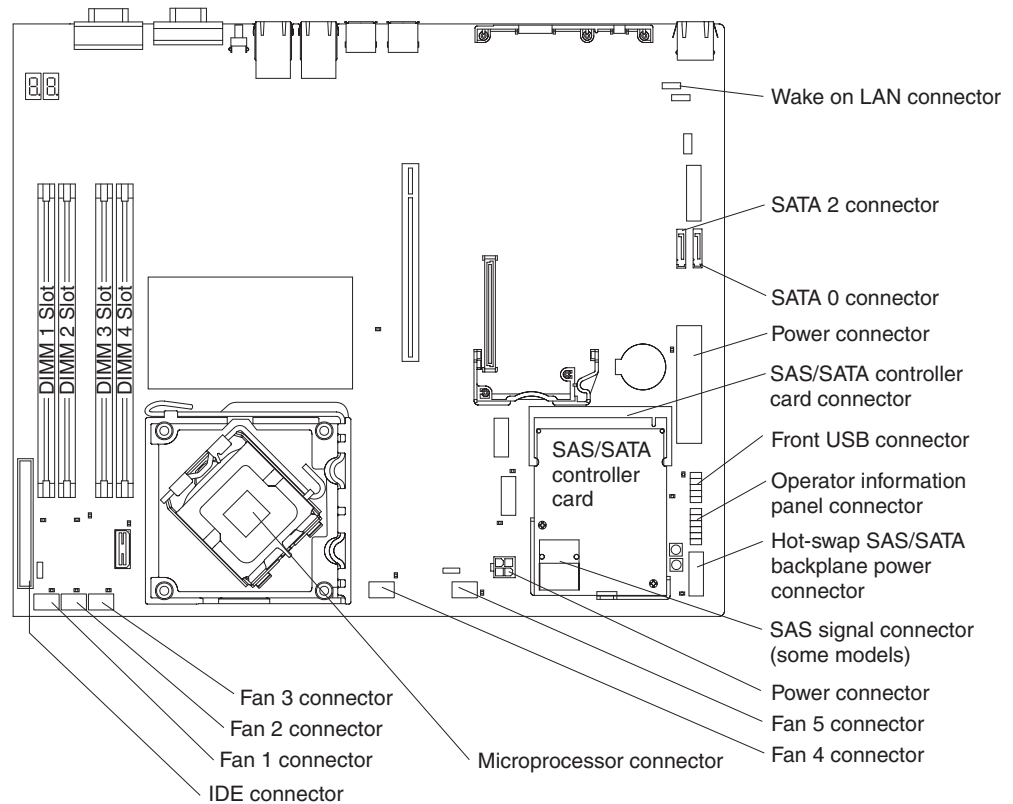
Systems-management connector: Connect the server to a network for systems-management information control. This connector is active only if you have installed a Remote Supervisor Adapter II SlimLine, and it is used only by the Remote Supervisor Adapter II SlimLine.

Internal LEDs, connectors, and jumpers

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

System-board internal connectors

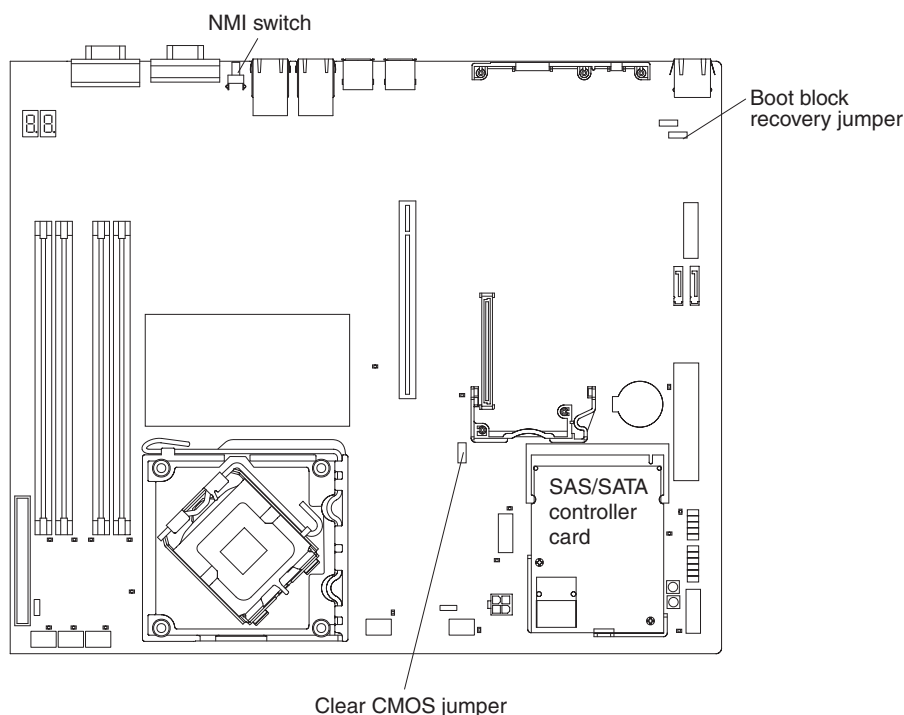
The following illustration shows the internal connectors on the system board.



Important: Use only a supported IBM SAS/SATA controller in the SAS/SATA controller card connector. For a list of supported optional devices for the server, see <http://www.ibm.com/servers/eserver/serverproven/compat/us/>.

System-board switches and jumpers

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



The following illustration identifies the pins on a jumper and shows the location of pin 1.

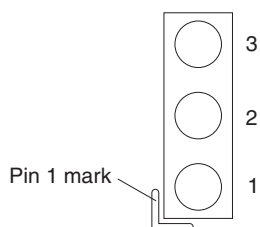
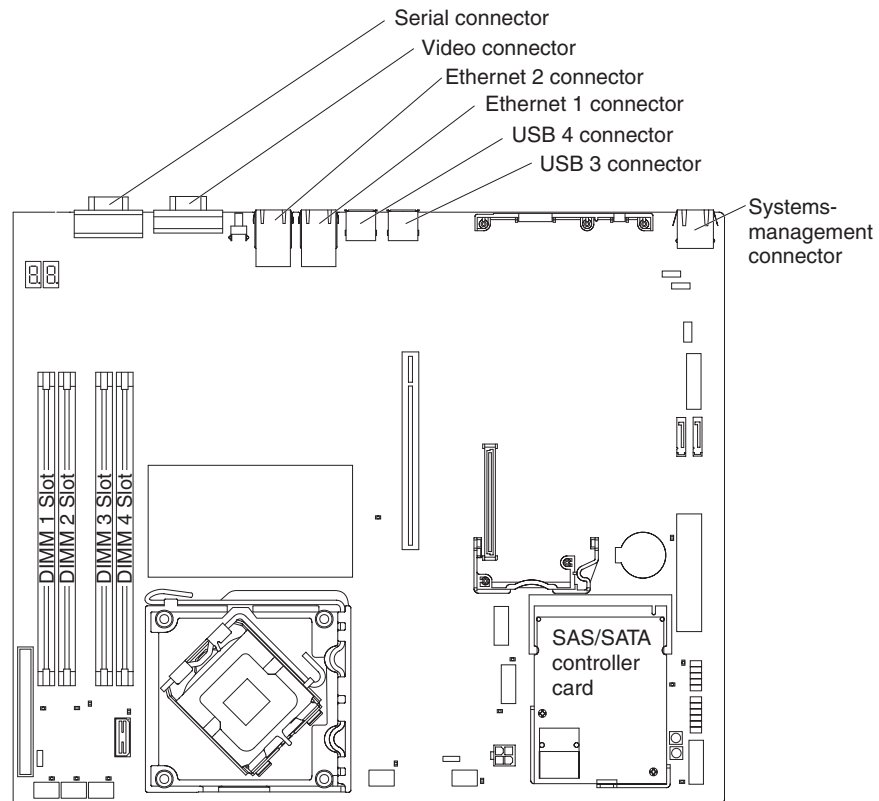


Table 2. Switch and jumper settings

Component	Settings
Clear CMOS jumper (JP3)	<ul style="list-style-type: none"> Pins 1 and 2: Keep CMOS data (default) Pins 2 and 3: Clear the CMOS data, which clears the power-on password and administrator password
Boot block jumper (JP4)	<ul style="list-style-type: none"> Pins 1 and 2: Normal (default) Pins 2 and 3: Recover boot block
NMI (non-maskable interrupt) switch (SW1)	<ul style="list-style-type: none"> Normal (default): No NMI issued The NMI button that is on the rear of server, connected to this switch, has been pressed: NMI issued

System-board external connectors

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



System-board LEDs

The following illustration shows the light-emitting diodes (LEDs) on the system board.

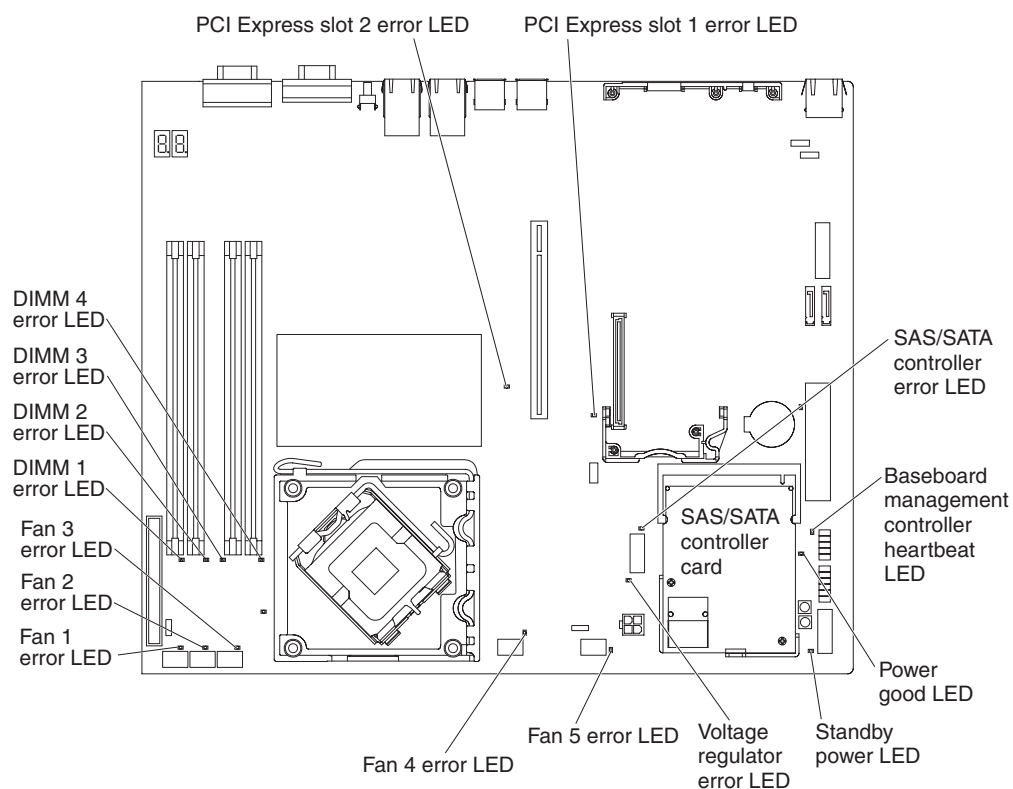
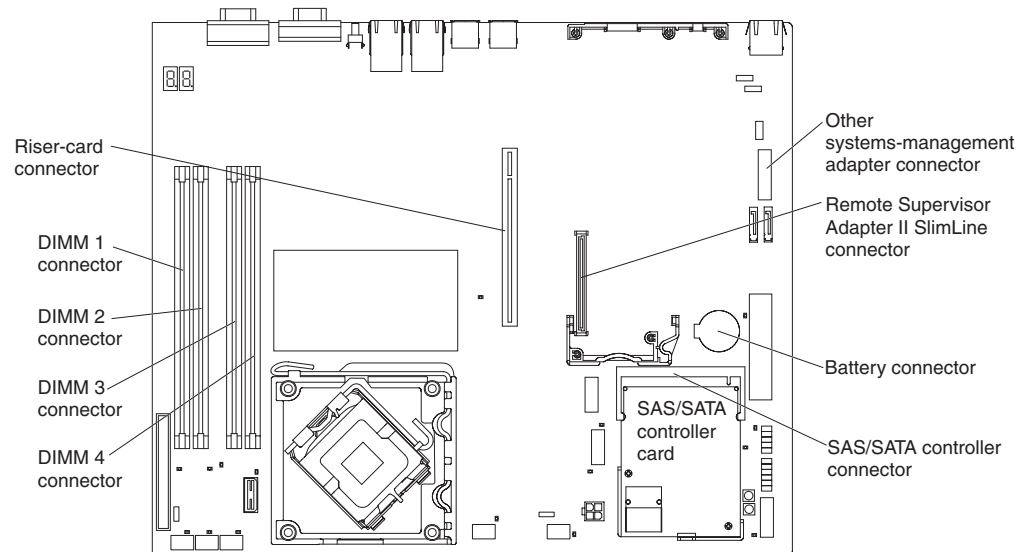


Table 3. System-board LEDs

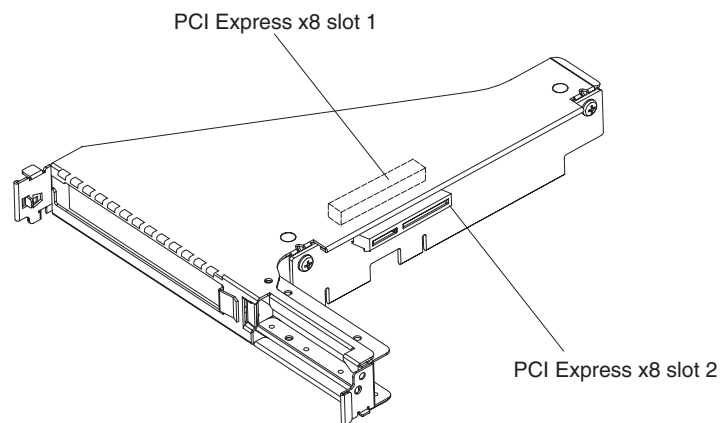
LED	Description
Error LEDs	When one of these LEDs is lit, it indicates that the associated component has failed.
Baseboard management controller heartbeat LED	This LED flashes to indicate that the mini-BMC is functioning normally.
Standby power LED	When this LED is lit, it indicates that the server is connected to ac power.

System-board optional device connectors

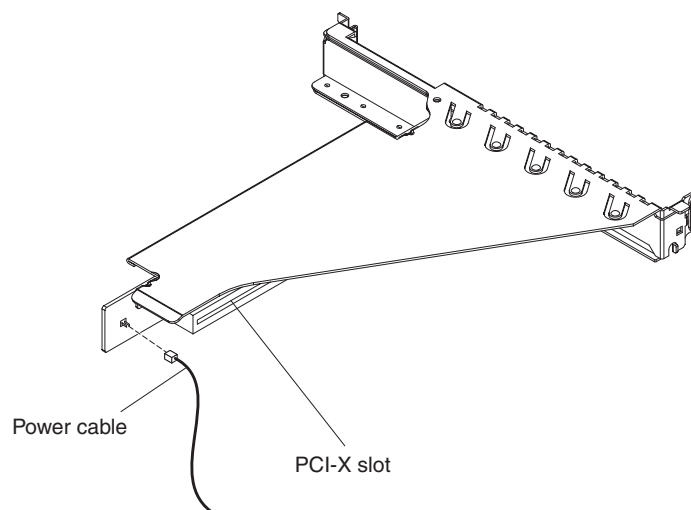
The following illustration shows the connectors for user-installable optional devices.



The following illustration shows the locations of the PCI Express slots on the riser-card assembly.



The following illustration shows the location of the PCI-X slot on the optional PCI-X riser-card assembly.



Chapter 2. Configuration information and instructions

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

Updating the firmware

The firmware for the server is periodically updated and is available for download on the Web. Go to <http://www.ibm.com/systems/support/> to check for the latest level of firmware, such as BIOS code, vital product data (VPD) code, device drivers, and service processor firmware. Download the latest firmware for the server; then, install the firmware, using the instructions that are included with the downloaded file.

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

- BIOS code is stored in ROM on the system board.
- BMC firmware is stored in ROM on the mini-baseboard management controller on the system board.
- Ethernet firmware is stored in ROM on the Ethernet controller.
- ServeRAID firmware is stored in ROM on the ServeRAID adapter.
- SATA firmware (simple-swap models) is stored in ROM on the integrated SATA controller.
- SAS/SATA firmware (hot-swap models) is stored in ROM on the SAS/SATA controller on the system board.

Configuring the server

The following configuration programs come with the server:

- **IBM ServerGuide Setup and Installation CD**

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 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 14.

- **Configuration/Setup Utility program**

The Configuration/Setup Utility program is part of the basic input/output system (BIOS). Use it to configure serial port assignments, change interrupt request (IRQ) settings, change the startup-device sequence, set the date and time, and set passwords. For information about using this program, see “Using the Configuration/Setup Utility program” on page 16.

- **LSI Logic Configuration Utility program**

Use the LSI Logic Configuration Utility program to configure devices that are attached to the SAS/SATA controller. For information about using this program, see “Using the LSI Logic Configuration Utility program” on page 23.

Important: If the server is a simple-swap SATA model that contains a SATA RAID back plate, you can use the LSI Logic Configuration Utility program to configure the simple-swap SATA hard disk drives.

The following table lists the different server configurations and the applications that are available for configuring and managing RAID arrays.

Table 4. Configuration and management applications for RAID arrays

Server configuration	RAID array configuration (before operating system is installed)	RAID array management (after operating system is installed)
Integrated SATA and no SAS controller card installed	None	None
SAS/SATA controller card (LSI 1064) installed	LSI Logic Configuration Utility (Ctrl+C during server startup), ServerGuide	MegaRAID Storage Manager
ServeRAID-MR10i adapter installed (2.5-inch drive models only)	WebBIOS Configuration Utility (Ctrl+H during server startup), BIOS Configuration/Setup Utility program (Ctrl+A during server startup), ServerGuide	WebBIOS Configuration Utility (Ctrl+H during server startup), MegaCLI (command-line interface)

- **Baseboard management controller utility programs**

Use these programs to configure the baseboard management controller, 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 baseboard management controller” on page 24.

- **Ethernet controller configuration**

For information about configuring the Ethernet controllers, see “Configuring the Gigabit Ethernet controllers” on page 27.

- **IBM Director**

IBM Director is a workgroup-hardware-management tool that you can use to centrally manage System x servers. If you plan to use IBM Director to manage the server, you must check for the latest applicable IBM Director updates and interim fixes. For information about updating IBM Director, see “Updating IBM Director” on page 28. For more information about IBM Director, see the IBM Director documentation on the *IBM Director* CD that comes with the server.

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.

If a later version of the ServerGuide program is available, 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
- Device drivers that are provided for the 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 SAS RAID adapter, controller, or integrated SAS/SATA controller with RAID capabilities and runs the SAS 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 optional hardware devices 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 SAS/SATA controller with RAID capabilities, you can run the LSI Logic Configuration Utility 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 x3250 M2**.
6. From the **Operating system** menu, select your operating system, and then click **Search** to display the available installation documents.

Using the Configuration/Setup Utility program

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

- View configuration information
- View and change assignments for devices and I/O ports
- Set the date and time
- Set and change passwords
- View and change the startup characteristics of the server and the order of startup devices (startup-drive sequence)
- View and change settings for advanced hardware features
- View and clear the event and error logs
- Change interrupt request (IRQ) settings
- Resolve configuration conflicts

Starting the Configuration/Setup Utility program

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

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

Configuration/Setup Utility menu choices

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

- **System Summary**

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

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

- **System Information**

Select this choice to view information about the server, such as the machine type and model of the server, the serial number, the system UUID, the system board identifier, and the revision level or issue date of the BIOS code. When you make changes through other choices in the Configuration/Setup Utility program, some of those changes are reflected in the system information; you cannot change settings directly in the system information.

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

- **Devices and I/O Ports**

Select this choice to view or change assignments for devices and input/output (I/O) ports, to configure remote console redirection, to enable or disable integrated Ethernet controllers and all standard ports (such as serial and USB), and to view the system MAC addresses. 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). If you disable the integrated Ethernet controllers and no Ethernet adapter is installed, the server will have no Ethernet capability.

For a SATA model, you can also select this choice to view or change the interface mode for a SATA port. To view or change the mode, select

Programming Interface for a SATA Port.

- **Native** mode: Standard PCI resource steering is used.
- **Combined** mode: Native mode plus legacy mode is used. In legacy mode, standard IDE I/O and IRQ resources (IRQ 14 and 15) are assigned.

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

- **Date and Time**

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

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

- **System Security**

Select this choice to set passwords. For more information about passwords, see “Passwords” on page 21.

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

- **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 Configuration/Setup Utility menu. If an administrator password is set, the full Configuration/Setup Utility menu is available only if you type the administrator password at the password prompt. For more information, see “Administrator password” on page 21.

- **Power-on Password**

Select this choice to set or change a power-on password. For more information, see “Power-on password” on page 21.

- **Startup Options**

Select this choice to view or change the startup options, such as the startup sequence, the keyboard NumLock state, the option ROM execution priorities, whether displayless operation is enabled, whether to restart on POST/BIOS error, and other startup considerations. You can also select this choice to enable or disable hard disk drive self-monitoring, analysis, and reporting technology (SMART). Changes in the startup options take effect when you restart the server.

Select the option ROM execution-priority choices (**Planar PXE/DHCP Priority** and **PCI Device Boot Priority**) to specify the sequence in which channels are checked during startup to load and execute the ROMs for optional devices. This enables you to tailor the ROM load-and-execution sequence for maximum efficiency. **Planar PXE/DHCP Priority** specifies the priority of network-related ROMs relative to local PCI device ROMs; **PCI Device Boot Priority** specifies the priority of ROMs for devices connected to the SAS/SATA controller on the system board and to adapters in expansion slots 1 and 2.

The startup sequence specifies the order in which the server checks devices to find a boot record. The server starts from the first boot record that it finds. For example, you can define a startup sequence that checks for a CD or DVD in the CD or DVD drive, then checks the hard disk drive, and then checks for a USB key drive (flash drive). If the server has Wake on LAN hardware and software and the operating system supports Wake on LAN functions, you can specify a startup sequence for the Wake on LAN functions.

If you have not changed the default startup sequence, the server starts the devices in the following order: the CD or DVD drive; then, the USB diskette drive, USB memory key, USB CD drive, or USB hard disk drive, if you have installed any in the server; then, the hard disk drives that are connected to the system board; then, the drives that are connected to the SAS/SATA controller; then, the integrated Ethernet controllers 1 and 2.

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

- **Advanced Setup**

Select this choice to change settings for advanced hardware features.

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

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

- **CPU Options**

Select this choice to enable or disable core multiprocessing, the execute-disable bit capability, and other microprocessor functions.

- **PCI Bus Control**

Select this choice to view the system resources that are used by installed PCI devices.

– **RSA II Settings**

This choice is displayed only when a Remote Supervisor Adapter II SlimLine is installed in the server.

Select this choice to view the IP address, DHCP settings, and gateway settings for the Remote Supervisor Adaptor II SlimLine, and to view or change the DHCP control, static IP address, subnet mask, gateway static IP address, and operating-system USB selections for the Remote Supervisor Adapter II SlimLine.

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

Select this choice to change Intelligent Platform Management Interface (IPMI) settings for the mini-BMC controller.

- **IPMI Specification Version**

This is a nonselectable menu item that displays the IPMI version.

- **BMC Firmware Version**

This is a nonselectable menu item that displays the BMC firmware version.

- **BMC Build Date**

This is a nonselectable menu item that displays the date that the BMC code was created.

- **BMC Build Level**

This is a nonselectable menu item that displays the version of the BMC code.

- **Existing Event Log number**

This is a nonselectable menu item that displays the number of entries in the BMC system-event log.

- **BMC POST Watchdog**

Enable or disable the mini-BMC POST watchdog. **Disable** is the default setting.

- **System-BMC Serial Port Sharing**

Select this choice to specify whether the serial port that the BMC uses is shared with the rest of the system or is dedicated to the BMC. This choice, together with the **BMC Serial Port Access Mode** setting, affects serial-related behavior and remote-management capabilities on this server. For more information, see the help for this choice.

- **BMC Serial Port Access Mode**

Select this choice to specify the access mode for the serial port. This choice, together with the **System-BMC Serial Port Sharing** setting, affects serial-related behavior and remote-management capabilities on this server. For more information, see the help for this choice.

- **Reboot System on NMI**

Select this choice to enable or disable the ability of the server to restart after an NMI interrupt is issued. If the value is **Enabled**, this setting supersedes the automatic server restart (ASR) setting.

- **User Account Settings**

Select this choice to view the settings for each BMC user ID, change the password for a BMC user ID, and set the maximum BMC privilege level.

- **BMC Network Configuration**

Select this choice to view the mini-BMC MAC address, IP address, subnet mask, gateway address, host name, and DHCP control setting.

- **BMC System Event Log**

Select this choice to view the BMC system-event log, which contains all system-error messages that have been generated. Use the arrow keys to move among pages in the log. Run the diagnostic programs to get more

information about error codes that occur. See the *Problem Determination and Service Guide* on the IBM System x Documentation CD for instructions. To clear the BMC system-event log, select **Clear BMC SELs** and confirm the selection.

The BMC system-event log is limited in size. When the log is full, new entries will not overwrite existing entries; therefore, you must periodically clear the BMC system-event log. When you are troubleshooting an error, be sure to clear the BMC system-event log so that you can find current errors more easily.

- **High Precision Event Timer**

Select this choice to enable or disable the high precision event timer (HPET) function.

- **Event/Error Logs**

Select this choice to view or clear error logs.

- **System Event/Error Log**

Select this choice to view the complete log of POST error messages. Use the arrow keys to move among pages in the log.

Run the diagnostic programs to get more information about error codes that occur. See the *Problem Determination and Service Guide* on the IBM System x Documentation CD for instructions.

To clear the system event/error log, select **Clear System Event/Error Log** and confirm the selection.

The system event/error log is limited in size. When the log is full, new entries do not overwrite existing entries; therefore, you must periodically clear the system event/error log.

- **RSA II Event/Error Log**

This choice is displayed only when a Remote Supervisor Adapter II SlimLine is installed in the server.

Select this choice to view the system-error messages from the Remote Supervisor Adapter II SlimLine.

To clear the RSA II event/error log, select **Clear RSA II Logs** and confirm the selection.

The RSA II event/error log is limited in size. When the log is full, new entries will overwrite the oldest entries. When you are troubleshooting an error, be sure to clear the RSA II event/error log so that you can find current errors more easily.

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

Passwords

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

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

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

If you set a power-on password for a user and an administrator password for a system administrator, you can type either password to complete the system startup. A system administrator who types the administrator password has access to the full Configuration/Setup Utility menu; the system administrator can give the user authority to set, change, and delete the power-on password. A user who types the power-on password has access to only the limited Configuration/Setup Utility menu; the user can set, change, and delete the power-on password, if the system administrator has given the user that authority.

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

If you forget the power-on password, you can regain access to the server in any of the following ways:

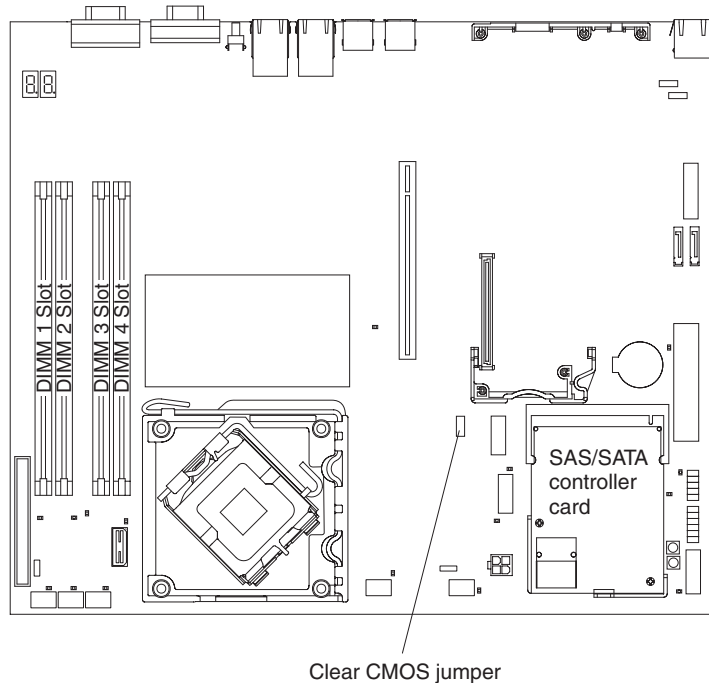
- If an administrator password is set, type the administrator password at the password prompt (see “Administrator password”). Start the Configuration/Setup Utility program and reset the power-on password.
- Remove the battery from the server and then reinstall it. For instructions for removing the battery, see the *Problem Determination and Service Guide* on the IBM System x Documentation CD.
- Change the position of the clear CMOS jumper on the system board to bypass the power-on password check. See “Resetting passwords” on page 22 for additional information.

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

Administrator password: If an administrator password is set, you must type the administrator password for access to the full Configuration/Setup Utility menu. You can use any combination of up to seven characters (A - Z, a - z, and 0 - 9) for the password.

If you forget the administrator password, you can reset it after you change the position of the clear CMOS jumper. See “Resetting passwords” for additional information.

Resetting passwords: If you forget the power-on password or administrator password, you can move the clear-CMOS jumper block on the system board to pins 2 and 3, to clear CMOS memory and bypass the power-on or administrator password check. The jumper location is shown in the following illustration.



To clear CMOS and reset the passwords, complete the following steps.

Note: All configuration settings will be cleared by this action; you might have to configure the settings again.

1. Review the safety information that begins on page vii.
2. Turn off the server and peripheral devices and disconnect all power cords and external cables.
3. Remove the server from the rack and place it on a flat, static-protective surface.
4. Remove the cover. See “Removing the cover” on page 50 for instructions.
5. If necessary, remove the riser-card assembly. See “Removing the riser-card assembly” on page 78 for instructions.
6. Move the clear-CMOS jumper from pins 1 and 2 to pins 2 and 3 and leave it there for at least 5 seconds; then, move the clear-CMOS jumper back to pins 1 and 2.
7. Reinstall the riser-card assembly. See “Installing the riser-card assembly” on page 79 for instructions.
8. Reinstall the cover.
9. Replace the server in the rack and connect the server to a keyboard, monitor, and mouse; then, connect the server to a power source.

10. Turn on the server. You can now start the Configuration/Setup Utility program and either delete the old password or set a new power-on or administrator password.

Using the WebBIOS Configuration Utility

Use the WebBIOS Configuration Utility program to configure hot-swap hard disk drives that are connected to the ServeRAID-MR10i controller.

To start the WebBIOS Configuration Utility program, complete the following steps:

1. Turn on the server.
2. When the prompt Press CTRL-H to start WebBIOS Configuration Utility... is displayed, press Ctrl+H. If you have set an administrator password, you are prompted to type the password.
3. Follow the instructions on the screen.

Using the LSI Logic Configuration Utility program

Use the LSI Logic Configuration Utility program to configure hot-swap hard disk drives that are connected to the SAS/SATA controller.

Important:

- If the server is a simple-swap SATA model that contains a SATA RAID back plate, you can use the LSI Logic Configuration Utility program to configure the simple-swap SATA hard disk drives.
- If you install an optional RAID controller in the server, such as the ServeRAID-MR10i controller, use the configuration software that comes with the adapter to configure the hard disk drives.

Starting the LSI Logic Configuration Utility program

To start the LSI Logic Configuration Utility program, complete the following steps:

1. Turn on the server.
2. When the prompt Press CTRL-C to start LSI Logic Configuration Utility... is displayed, press Ctrl+C. If you have set an administrator password, you are prompted to type the password.
3. Use the arrow keys to select the adapter (SAS controller) for which you want to change settings. Use the Help function to see instructions and available actions for this screen.
4. To change the settings of the selected items, follow the instructions on the screen.
5. Press Enter to save your changes.

Configuring the controller and devices

To configure a SAS controller and attached devices, select the controller from the initial LSI Logic Configuration Utility program screen; then, press Enter. You can view and change settings for the following items for the selected controller:

Boot Support

Specify the type of boot support that will be in effect (disabled, BIOS only, OS only, or both BIOS and OS)

RAID Properties

Create a RAID array from the displayed choices

SAS Topology

View information about the devices that are directly attached to the selected SAS controller and which devices make up RAID arrays. Format and verify an attached device.

Advanced Adapter Properties

View the SAS properties and change the following items for the selected controller:

- Global properties
- Cylinder head sector (CHS) mapping
- Advanced device properties, such as I/O timeouts and LUNs to scan
- Spin-up properties
- PHY properties

Using the baseboard management controller

The mini-baseboard management controller provides basic environmental monitoring for the server. If environmental conditions exceed thresholds or if system components fail, the baseboard management controller lights LEDs to help you diagnose the problem and also records the error in the BMC system-event log.

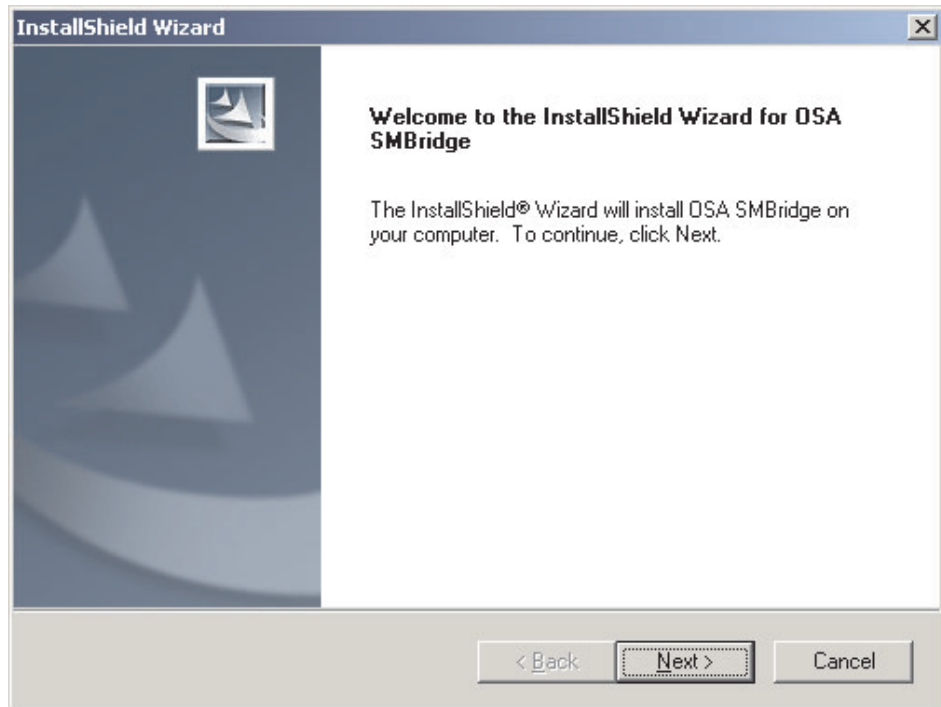
Important: If the system-error LED on the front of the server is lit but there are no other error indications or you have corrected all errors, restart the server. If the LED continues to remain lit after you restart the server, power off the server; then, turn the server on again.

The baseboard management controller also provides the command-line interface (IPMI Shell) remote server management capabilities through the Avocent SMBridge management utility program. 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.

Installing the SMBridge management utility program

To install the SMBridge management utility program on a server running a Windows operating system, complete the following steps:

1. Go to <http://www.ibm.com/systems/support/> , download the utility program, and create the BMC Management Utility CD.
2. Insert the BMC Management Utility CD into the drive. The InstallShield wizard starts, and a window similar to that shown in the following illustration opens.



3. Follow the prompts to complete the installation.

The installation program prompts you for a TCP/IP port number and an IP address. Specify an IP address, if you want to limit the connection requests that will be accepted by the utility program. To accept connections from any server, type `INADDR_ANY` as the IP address. Also specify the port number that the utility program will use. These values will be recorded in the `smbridge.cfg` file for the automatic startup of the utility program.

To install the Avocent SMBridge management utility program on a server running a Linux operating system, complete the following steps. You must be logged in as a root user to perform these procedures.

1. Go to <http://www.ibm.com/systems/support/>, download the management utility program, and create the BMC Management Utility CD.
2. Insert the BMC Management Utility CD into the drive.
3. Type `mount/mnt/cdrom`.
4. Locate the directory where the installation RPM package is located and type `cd/mnt/cdrom`.
5. Type the following command to run the RPM package and start the installation:
`rpm -ivh smbridge-2.0-xx.rpm`

where `xx` is the release level that is being installed.

6. Follow the prompts to complete the installation. When the installation is complete, the utility copies files to the following directories:
`/etc/init.d/SMBridge`
`/etc/smbridge.cfg`
`/usr/sbin/smbridged`
`/var/log/smbridge/LICENSE`

The utility starts automatically when the server is started. You can also locate the /etc/init.d directory to start the utility and use the following commands to manage the utility:

```
smbridge status
smbridge start
smbridge stop
smbridge restart
```

Note: For more information about the SMBridge management utility program, see “Using the SMBridge management utility program” on page 27.

Using the baseboard management controller utility programs

Use the baseboard management controller utility programs to configure the baseboard management controller, download firmware updates and SDR/FRU updates, and remotely manage a network.

Using the baseboard management controller configuration utility program:

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

Go to <http://www.ibm.com/systems/support/> to download the utility program. Run the utility program to create a configuration utility diskette.

Complete the following steps to start the baseboard management controller configuration utility program:

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

Using the baseboard management controller firmware update utility program:

Use the baseboard management controller firmware update utility program to download a baseboard management controller firmware update or a SDR/FRU update. The firmware update utility program updates the baseboard management controller firmware or SDR/FRU data only and does not affect any device drivers.

Important: To ensure proper server operation, be sure to update the server baseboard management controller firmware before you update the BIOS code.

To download the program, 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 x3250 M2** to display the matrix of downloadable files for the server.
5. From the BMC software choice, click the link for the applicable package and download the package.

To update the firmware, run the executable program in the package. Follow the instructions that come with the package.

Using the SMBridge management utility program: Use the SMBridge management utility program to remotely manage and configure a network. The utility program provides the CLI (command-line interface) remote management capabilities.

Use CLI mode to remotely perform power-management and system identification control functions over a LAN interface from a command-line interface. Use CLI mode also to remotely view the BMC system-event log.

Use the following commands in CLI mode:

- **connect**
Connect to the LAN. Type `connect -ip ip_address -u username -p password`.
 - **help**
Display a complete list of supported commands.
 - **identify**
Control the system-locator LED on the front of the server.
 - **power**
View the current power status.
 - **power on | off**
Turn the server on and off remotely.
 - **reboot**
Force the server to restart.
 - **sel**
Perform operations with the BMC system-event log.
 - **sensor**
Display a list of supported sensors and their current status.
- Note:** Depending on the number of sensors supported, this might take some time to gather all the information.
- **sysinfo**
Display general system information that is related to the server and the baseboard management controller.

Configuring the Gigabit Ethernet controllers

The Ethernet controllers are integrated on the system board. They provide an interface for connecting to a 10 Mbps, 100 Mbps, or 1 Gbps network and provide 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 controllers detect the data-transfer rate (10BASE-T, 100BASE-TX, or 1000BASE-T) and duplex mode (full-duplex or half-duplex) of the network and automatically operate at that rate and mode.

Note: The Ethernet controller for Ethernet connector 1 supports Serial over LAN (SOL).

You do not have to set any jumpers or configure the controllers. However, you must install a device driver to enable the operating system to address the controllers. For device drivers and information about configuring the Ethernet controllers, see the

Broadcom NetXtreme II Gigabit Ethernet Software CD that comes with the server. To find updated information about configuring the controllers, 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 x3250 M2** and click **Continue**.

Updating IBM Director

If you plan to use IBM Director to manage the server, you must check for the latest applicable IBM Director updates and interim fixes.

To install the IBM Director updates and any other applicable updates and interim fixes, 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. Check for the latest version of IBM Director:
 - a. Go to <http://www.ibm.com/systems/management/downloads.html>.
 - b. If a newer version of IBM 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 IBM Director.
3. Download and install any applicable updates or interim fixes for the server:
 - 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 **Director downloads** to display the matrix of downloadable files for the server.
 - e. Select any applicable update or interim fix that you want to download.
 - f. Click the file link for the executable file to download the file, and follow the instructions in the readme file to install the update or interim fix.
 - g. Repeat steps 3e and 3f for any additional updates or interim fixes that you want to install.

Updating the DMI/SMBIOS data

You must update the Desktop Management Interface (DMI) when the system board is replaced. To update the DMI, complete the following steps:

1. Copy the DMI/SMBIOS utility (flash2.exe) from the BIOS flash diskette to a DOS bootable diskette (see "Updating the firmware" on page 13 for information about downloading and using firmware).
2. Insert the diskette into a diskette drive that is connected to the server.
3. Restart the server from the diskette.
4. At the `a:\` prompt, type `flash2.exe`, and press Enter.
5. To change the machine type and model number, type `mtm xxxxyyy` where `xxxx` is the model type and `yyy` is the model number; then, press Enter.

6. To change the serial number, type `sn zzzzzzz` where `zzzzzzz` is the serial number; then, press Enter.
7. To change the asset tag, type `asset aaaaaaaaaaaaaaaaaaaaaaaaaaaaaa` where `aaaaaaaaaaaaaaaaaaaaaaaaaaaaa` is the asset tag number; then, press Enter.
8. Restart the server.

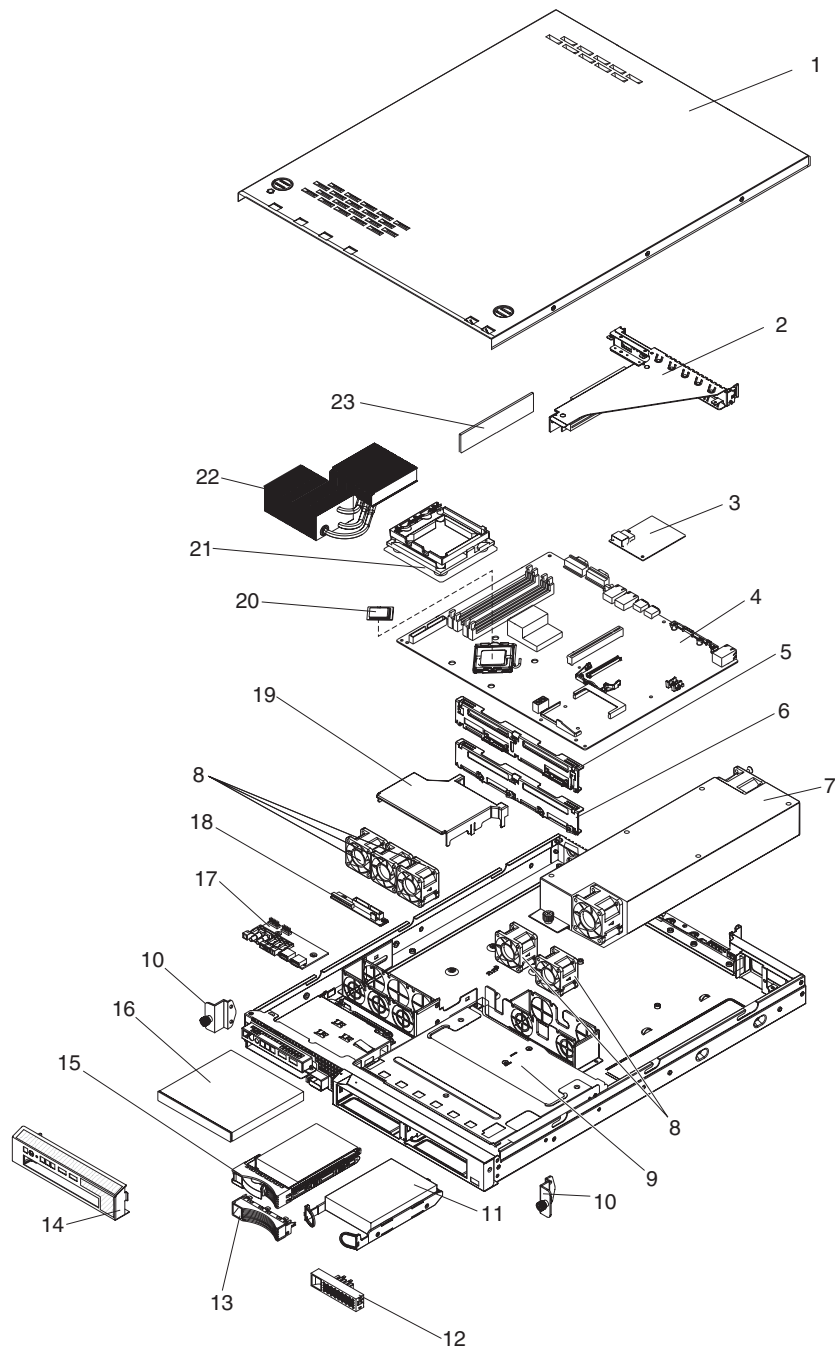
Chapter 3. Parts listing, Types 4190, 4191 and 4194 server

The following replaceable components are available all models of the System x3250 M2 Type 4190, 4191 or 4194 server, except as specified otherwise in Table 5 on page 33 and Table 7 on page 38. 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 this document.

1. Go to <http://www.ibm.com/systems/support/>.
2. Under **Product support**, click **System x**.
3. Under **Popular links**, click **Parts documents lookup**.
4. From the **Product family** menu, select **System x3250 M2**, and click **Continue**.

Types 4190, 4191 and 4194 (models 15x, 1Bx, 22x, 42x, 52x, 62x, 64x, 72x, 82x, B2x, BDx, C2x, CDx, D2x, D4x and E2x)



Replaceable components are of four types:

- **Consumable parts:** Purchase and replacement of consumable parts (components, such as batteries and printer cartridges, that have depletable life) is your responsibility. If IBM acquires or installs a consumable part 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.

Table 5. Parts listing, Type 4190, 4191 and 4194 (models 15x, 1Bx, 22x, 42x, 52x, 62x, 64x, 72x, 82x, B2x, BDx, C2x, CDx, D2x, D4x, E2x)

Index	Description	CRU part number (Tier 1)	CRU part number (Tier 2)	FRU part number
1	Cover	42C1284		
2	Riser card		43W5112	
3	SAS/SATA controller card (hot-swap models) (models 42x, 52x, 64x, 66x, 72x, 82x, D4x, E2x)		43V7415	
4	System-board assembly			43W5103
5	SAS/SATA backplane, 3.5-inch drives (hot-swap models) (models 52x, 64x, 72x)		39M4349	
5	SAS hot-swap backplane, 3.5-inch (models 42x, 52x, 64x, 72x, 82x, D4x, E2x)	46C7919		
6	SATA simple-swap hard disk drive back plate, 3.5-inch drives (models 15x, 1Bx, 22x, 62x, B2x, BDx, C2x, CDx, D2x)		39M4347	
7	Power supply, 351 W	39Y7289		
8	Fan (40 mm)	39M4322		
9	Drive cage, 3.5-inch HS/SS hard disk drives		42C1286	
10	Bracket ear	39M4351		
11	Hard disk drive, 3.5-inch, 160 GB, SS SATA (optional)	39M4507		
11	Hard disk drive, 3.5-inch, 250 GB, SS SATA (optional)	39M4511		
11	Hard disk drive, 3.5-inch, 500 GB, SS SATA (optional)	39M4517		
11	Hard disk drive, 3.5-inch, 750 GB, SS SATA (optional)	43W7575		
12	Simple-swap filler panel (SATA only), 3.5-inch (models 15x, 1Bx, 22x, 62x, C2x, B2x, BDx, CDx, D2x)	39M4343		
13	Hot-swap filler panel (SAS/SATA), 3.5-inch (models 42x, 52x, 64x, 72x, 82x, D4x, E2x)	39M4375		
14	Front bezel	43W5115		
15	Hard disk drive, 3.5-inch, 73 GB, 15K, HS SAS (optional)	39R7348		
15	Hard disk drive, 3.5-inch, 146 GB, 15K, HS SAS (optional)	39R7350		
15	Hard disk drive, 3.5-inch, 300 GB, 15K, HS SAS (optional)	43X0805		
15	Hard disk drive, 3.5-inch, 160 GB, HS SATA (optional)	39M4525		
15	Hard disk drive, 3.5-inch, 250 GB, HS SATA (optional)	39M4529		
15	Hard disk drive, 3.5-inch, 500 GB, HS SATA (optional)	39M4533		
15	Hard disk drive, 3.5-inch, 750 GB, HS SATA (optional)	43W7579		
15	Hard disk drive, 3.5-inch, 160 GB, SATA (optional)	41Y8247		

Table 5. Parts listing, Type 4190, 4191 and 4194 (models 15x, 1Bx, 22x, 42x, 52x, 62x, 64x, 72x, 82x, B2x, BDx, C2x, CDx, D2x, D4x, E2x) (continued)

Index	Description	CRU part number (Tier 1)	CRU part number (Tier 2)	FRU part number
16	CD-RW/DVD drive, (models 15x, 22x, 52x, 62x, 64x, 72x)	43W4603		
16	CD-RW/DVD drive, (models 15x, 22x, 52x, 62x, 64x, 72x)	43W4605		
16	CD-RW/DVD SATA (models 1Bx, 42x, 82x, B2x, BDx, C2x, CDx, D2x, D4x, E2x)	44W3255		
16	DVD Ultra-slim SATA Multi-burner drive (optional)	44W3256		
17	Operator information panel assembly		42C1513	
18	CD/DVD interface board		39M4354	
19	Air baffle	39M6296		
20	Microprocessor, 2.0 GHz 512K single core (model 15x, 1Bx)			43W5096
20	Microprocessor, 2.2 GHz 1M dual core (model B2x)			46C1259
20	Microprocessor, 2.4 GHz 2M dual core (model 22x)			44R5775
20	Microprocessor, 3.0 GHz 6M dual core (model 52x)			44X0204
20	Microprocessor, 2.5 GHz 6M quad core (models 62x, 64x)			44X0205
20	Microprocessor, 2.53 GHz dual core (models C2x, E2x)			46M0338
20	Microprocessor, 2.6 GHz 2M dual core (model BDx)			46C6713
20	Microprocessor, 2.66 GHz 12M quad core (model 72x)			44X0206
20	Microprocessor, 2.66 GHz 6M quad-core (models D2x, D4x)			46M0340
20	Microprocessor, 2.8 GHz 3M dual core (model CDx)			46C6714
20	Microprocessor, 2.83 GHz 12M quad core (model 82x)			44X0207
20	Microprocessor, 3.16 GHz 6M dual-core (model 42x)			46M0339
20	Microprocessor, 3.0 GHz 12M quad-code (optional)			46C6452
21	Heat-sink-assembly retention module			43W5117
	Heat-sink assembly			43W5116
	CD-ROM, SATA adapter (models 1Bx, 42x, 82x, B2x, BDx, C2x, CDx, D2x, D4x, E2x)	46C7838		
	Memory, 512 MB PC2-5300 ECC (models 15x, 22x, 52x, 62x, 64x)	41Y2725		
	Memory, 512 MB DDR2-800 (models 1Bx, 42x, B2x, BDx, C2x, CDx, D2x, D4x, E2x)	46C7442		
	Memory, 1 GB PC2-5300 ECC (model 72x)	41Y2728		
	Memory, 1 GB DDR2-800 (model 82x)	46C7426		
	Memory, 2 GB PC2-5300 ECC (optional)	41Y2854		
	Memory, 2 GB DDR2-800 (optional)	46C7427		
	4 GB PCI-E dual port fiber channel adapter (optional)		39R6528	
	4 GB PCI-E dual port fiber channel adapter (optional)		43W7512	
	4 GB PCI-E single port fiber channel adapter (optional)		39R6526	
	4 GB PCI-E single port fiber channel adapter (optional)		43W7510	

Table 5. Parts listing, Type 4190, 4191 and 4194 (models 15x, 1Bx, 22x, 42x, 52x, 62x, 64x, 72x, 82x, B2x, BDx, C2x, CDx, D2x, D4x, E2x) (continued)

Index	Description	CRU part number (Tier 1)	CRU part number (Tier 2)	FRU part number
	73.4 GB hard drive tray assembly (optional)	43X0839		
	1 TB hard drive tray assembly, HS SATA (optional)	43W7629		
	Alcohol wipe			59P4739
	Cable, 3.5-inch SS SATA RAID (optional)		43V7423	
	Cable, backplane, hot-swap SAS, for 3.5-inch hard disk drives (models 42x, 52x, 64x, 72x, 82x, D4x, E2x)		42C1510	
	Cable, backplane, hot-swap power, for 3.5-inch hard disk drives (models 42x, 52x, 64x, 72x, 82x, D4x, E2x)		42C1509	
	Cable, mini SAS-mini SAS, 1M, x4, male plug, universal keying (2,4,6) 28 AWG (optional)		39R6530	
	Cable, mini SAS-mini SAS, 4M, x4, male plug, universal keying (2,4,6) 28 AWG (optional)		39R6532	
	Cable, SATA (simple-swap models) (models 15x, 1Bx, 22x, 62x, B2x, BDx, C2x, CDx, D2x)		39M6276	
	Cable, SATA 24 inch (models 1Bx, 42x, 82x, B2x, BDx, C2x, CDx, D2x, D4x, E2x)		25R5635	
	Cable, operator information panel		39M6266	
	Cable, IDE, for CD/DVD interface card		39M6267	
	Cable, PCI-X riser power		41Y4165	
	Chassis assembly			43W5119
	Emulex Single Port 4 GB Single Port PCI-Express Fiber Channel Host BUS adapter (optional)		43W7510	
	Emulex Dual Port 4 GB Single Port PCI-Express Fiber Channel Host BUS adapter (optional)		43W7512	
	Keyboard, USB with trackpoint (optional)		40K9400	
	Keyboard, USB full width, black (optional)		42C0060	
	Kit, misc. 1		43W5120	
	Kit, misc. 2		44X0213	
	Kit, rail, 1U, toolless		24P1121	
	Kit, rail, 2-post		42C1069	
	Label, CRU/FRU	46C7837		
	Label, hard disk drive installation	42C1282		
	Label, system service	43W5113		
	Line cord, 2.8m (optional)	39M5377		
	NetXtreme 1000 Express G Ethernet adapter (optional)		39Y6100	
	NetXtreme II 1000 Express Ethernet adapter (optional)		39Y6070	
	NETXTREME II 1000 Express Dual Port Ethernet adapter (optional)		49Y7947	
	PCI-X riser card		44T2007	
	PRO/1000 PF server adapter (optional)		42C1752	

Table 5. Parts listing, Type 4190, 4191 and 4194 (models 15x, 1Bx, 22x, 42x, 52x, 62x, 64x, 72x, 82x, B2x, BDx, C2x, CDx, D2x, D4x, E2x) (continued)

Index	Description	CRU part number (Tier 1)	CRU part number (Tier 2)	FRU part number
	PRO/1000 PT dual port server adapter (optional)		39Y6128	
	PRO/1000 PT quad port server adapter (optional)		39Y6138	
	QLogic iSCSI dual-port PCIe HBA adapter (optional)		42C1772	
	QLogic iSCSI single-port PCIe HBA adapter (optional)		39Y6148	
	QLogic 10Gb CNA adapter (optional)	42C1802		
	QLogic 10Gb SFP+ SR Optical Transceiver (optional)	42C1816		
	Remote Supervisor Adapter II (optional)		46M5966	
	SAS HBA Controller adapter (optional)		25R8071	
	ServeRAID-MR10i adapter (optional)		43W4297	
	SCSI RAID adapter		39R8852	
	SATA/SAS RAID adapter (optional)	43W4341		
	SATA/SAS RAID adapter battery (optional)	43W4342		
	SATA/SAS RAID adapter battery carrier (optional)	43W4343		
	Thermal grease	41Y9292		
	UltraSlim enhanced multi-burner (slim Rambo 6) drive (optional)	43W4607		
	UltraSlim enhanced multi-burner (slim Rambo 6) drive (optional)	43W4609		
	USB optical wheel mouse (optional)		39Y9875	
	USB 3 button optical wheel mouse (optional)		40K9203	

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

Table 6. Consumable parts

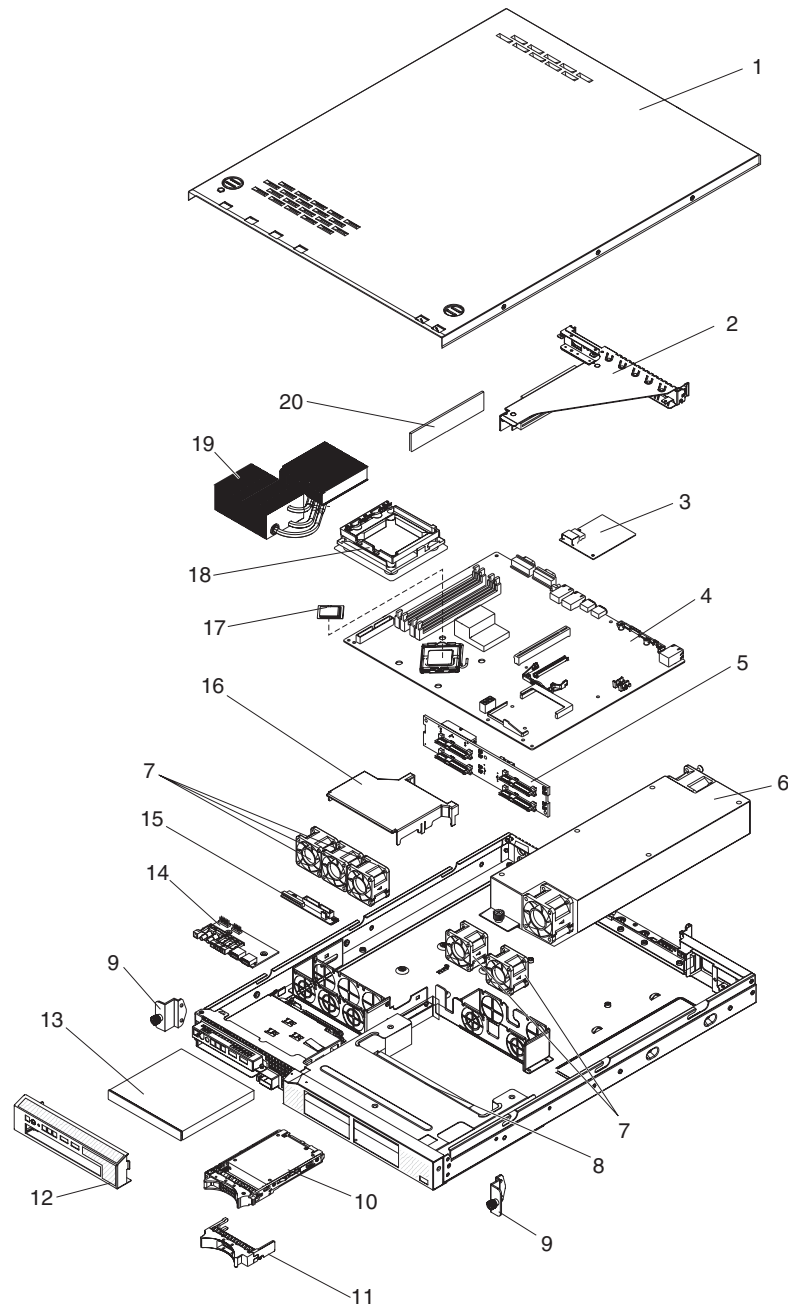
Description	Part number
Battery, 3.0 volt	33F8354
SATA/SAS RAID adapter battery	43W4342
ServeRAID-MR10i adapter battery	43W4301

To order a consumable part, complete the following steps:

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

Types 4190, 4191 and 4194 (models 66x, 74x, 84x and D6x)



Replaceable components are of four types:

- **Consumable parts:** Purchase and replacement of consumable parts (components, such as batteries and printer cartridges, that have depletable life) is your responsibility. If IBM acquires or installs a consumable part 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.

Table 7. Parts listing, Type 4190, 4191 and 4194 (models 66x, 74x, 84x and D6x)

Index	Description	CRU part number (Tier 1)	CRU part number (Tier 2)	FRU part number
1	Cover	42C1284		
2	Riser card		43W5112	
3	SAS/SATA controller card (hot-swap models) (models 74x, 84x, D6x)		43V7415	
4	System-board assembly			43W5103
5	SAS/SATA backplane, 2.5-inch drives (hot-swap models) (models 66x, 74x, 84x, D6x)		44W2728	
6	Power supply, 351 W	39Y7289		
6	Power supply, 351 W	69Y5749		
7	Fan (40 mm)	39M4322		
8	Drive cage, 2.5-inch HS hard disk drives (models 66x, 74x, 84x, D6x)		43W5133	
9	Bracket ear	39M4351		
10	Hard disk drive, 2.5-inch, 73 GB, 10K, HS SAS (optional)	39R7366		
10	Hard disk drive, 2.5-inch, 146 GB, 10K, HS SAS (optional)	43X0825		
11	Hot-swap SAS filler panel, 2.5-inch (models 66x, 74x, 84x, D6x)	26K8680		
12	Front bezel	43W5115		
13	CD-RW/DVD drive (models 66x, 74x)	43W4603		
13	CD-RW/DVD drive (models 66x, 74x)	43W4605		
13	CD-RW/DVD SATA (models 84x, D6x)	44W3255		
13	DVD Ultra-slim SATA Multi-burner drive (optional)	44W3256		
14	Operator information panel assembly		42C1513	
15	CD/DVD interface board		39M4354	
16	Air baffle	39M6296		
17	Microprocessor, 2.5 GHz 6M quad core (model 66x)			44X0205
17	Microprocessor, 2.66 GHz 12M quad core (model 74x)			44X0206
17	Microprocessor, 2.66 GHz 6M quad-core (model D6x)			46M0340
17	Microprocessor, 2.83 GHz/1333 12M quad core (model 84x)			44X0207
27	Microprocessor, 3.0 GHz 12M quad-code (optional)			46C6452
18	Heat-sink-assembly retention module			43W5117
19	Heat-sink assembly			43W5116

Table 7. Parts listing, Type 4190, 4191 and 4194 (models 66x, 74x, 84x and D6x) (continued)

Index	Description	CRU part number (Tier 1)	CRU part number (Tier 2)	FRU part number
20	Memory, 512 MB PC2-5300 ECC (model 66x)	41Y2725		
20	Memory, 512 MB DDR2-800 (model D6x)	46C7442		
20	Memory, 1 GB PC2-5300 ECC (model 74x)	41Y2728		
20	Memory, 1 GB DDR2-800 (model 84x)	46C7426		
20	Memory, 2 GB PC2-5300 ECC (optional)	41Y2854		
20	Memory, 2 GB DDR2-800 (optional)	46C7427		
	CD-ROM, SATA adapter (models 84x, D6x)	46C7838		
	4 GB PCI-E dual port fiber channel adapter (optional)		39R6528	
	4 GB PCI-E dual port fiber channel adapter (optional)		43W7512	
	4 GB PCI-E single port fiber channel adapter (optional)		39R6526	
	4 GB PCI-E single port fiber channel adapter (optional)		43W7510	
	73.4 GB hard drive tray assembly (optional)	43X0839		
	Alcohol wipe			59P4739
	Battery, 3.0 volt		33F8354	
	Cable, backplane, hot-swap SAS, for 2.5-inch hard disk drives (models 66x, 74x, 84x, D6x)		41Y3884	
	Cable, backplane, hot-swap power, for 2.5-inch hard disk drives (models 66x, 74x, 84x, D6x)		43W5135	
	Cable, mini SAS-mini SAS, 1M, x4, male plug, universal keying (2,4,6) 28 AWG (optional)		39R6530	
	Cable, mini SAS-mini SAS, 4M, x4, male plug, universal keying (2,4,6) 28 AWG (optional)		39R6532	
	Cable, SATA 24 inch (models 84x, D6x)		25R5635	
	Cable, operator information panel		39M6266	
	Cable, IDE, for CD/DVD interface card		39M6267	
	Cable, PCI-X riser power		41Y4165	
	Chassis assembly			43W5119
	Emulex Single Port 4 GB Single Port PCI-Express Fiber Channel Host BUS adapter (optional)		43W7510	
	Emulex Dual Port 4 GB Single Port PCI-Express Fiber Channel Host BUS adapter (optional)		43W7512	
	Keyboard, USB with trackpoint (optional)		40K9400	
	Keyboard, USB full width, black (optional)		42C0060	
	Kit, misc. 1		43W5120	
	Kit, misc. 2		44X0213	
	Kit, rail, 1U, toolless		24P1121	
	Kit, rail, 2-post		42C1069	
	Label, CRU/FRU	43W5114		
	Label, hard disk drive installation	42C1282		
	Label, system service	43W5113		

Table 7. Parts listing, Type 4190, 4191 and 4194 (models 66x, 74x, 84x and D6x) (continued)

Index	Description	CRU part number (Tier 1)	CRU part number (Tier 2)	FRU part number
	Line cord, 2.8m (optional)	39M5377		
	NetXtreme 1000 Express G Ethernet adapter (optional)		39Y6100	
	NetXtreme II 1000 Express Ethernet adapter (optional)		39Y6070	
	NetXtreme II 1000 Express Dual Port Ethernet adapter (optional)		49Y4205	
	NetXtreme II 1000 Express Quad Port Ethernet Adapter (optional)		49Y7949	
	PCI-X riser card		44T2007	
	PRO/1000 PF server adapter (optional)		42C1752	
	PRO/1000 PT dual port server adapter (optional)		39Y6128	
	PRO/1000 PT quad port server adapter (optional)		39Y6138	
	QLogic iSCSI dual-port PCIe HBA adapter (optional)		42C1772	
	QLogic iSCSI single-port PCIe HBA adapter (optional)		39Y6148	
	QLogic 10 GB CNA adapter (optional)	42C1802		
	QLogic 10 GB SFP+ SR Optical Transceiver (optional)	42C1816		
	Remote Supervisor Adapter II (optional)		46M5966	
	SAS HBA Controller adapter (optional)		25R8071	
	ServeRAID-MR10i adapter (optional)		43W4297	
	SCSI RAID adapter		39R8852	
	SATA/SAS RAID adapter (optional)	43W4341		
	SATA/SAS RAID adapter battery (optional)	43W4342		
	Thermal grease	41Y9292		
	UltraSlim enhanced multi-burner (slim Rambo 6) drive (optional)	43W4607		
	UltraSlim enhanced multi-burner (slim Rambo 6) drive (optional)	43W4609		
	USB optical wheel mouse (optional)		39Y9875	
	USB 3 button optical wheel mouse (optional)		40K9203	

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

Table 8. Consumable parts

Description	Part number
Battery, 3.0 volt	33F8354
SATA/SAS RAID adapter battery	43W4342
ServeRAID-MR10i adapter battery	43W4301

To order a consumable part, complete the following steps:

1. Go to <http://www.ibm.com>.
2. From **Products** menu, click **Upgrades, accessories & parts**.

3. Click **Obtain maintenance parts**; then, follow the instructions to order the component 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.

Product recovery CDs

Table 9 describes the product recovery CD CRUs.

Table 9. Product recovery CDs

Description	CRU part number
Microsoft Windows 2003 Server Standard 32b Edition R2 w/SP2, 1-4 Processors, English (types 4190, 4191, 4194)	44W4046
Microsoft Windows 2003 Server Standard 32b Edition R2 w/SP2, 1-4 Processors, French (types 4190, 4191, 4194)	44W4047
Microsoft Windows 2003 Server Standard 32b Edition R2 w/SP2, 1-4 Processors, Italian (types 4190, 4191, 4194)	44W4048
Microsoft Windows 2003 Server Standard 32b Edition R2 w/SP2, 1-4 Processors, German (types 4190, 4191, 4194)	44W4049
Microsoft Windows 2003 Server Standard 32b Edition R2 w/SP2, 1-4 Processors, Spanish (types 4190, 4191, 4194)	44W4050
Microsoft Windows 2003 Server Standard 32b Edition R2 w/SP2, 1-4 Processors, Traditional Chinese (types 4190, 4191, 4194)	44W4051
Microsoft Windows 2003 Server Standard 32b Edition R2 w/SP2, 1-4 Processors, Simplified Chinese (types 4190, 4191, 4194)	44W4053
Microsoft Windows 2003 Server Standard 32b Edition R2 w/SP2, 1-4 Processors, Japanese (types 4190, 4191, 4194)	44W4052
Microsoft Windows 2003 Server Standard 32b Edition R2 w/SP2, 1-4 Processors, Korean (types 4190, 4191, 4194)	44W4054
Microsoft Windows 2003 Server Standard 64b Edition R2 w/SP2, 1-4 Processors, English (types 4190, 4191, 4194)	44W4055
Microsoft Windows 2003 Server Standard 64b Edition R2 w/SP2, 1-4 Processors, Japanese (types 4190, 4191, 4194)	44W4056
Microsoft Windows 2003 Server Enterprise 32b Edition R2 w/SP2, 1-2 Processors, English (types 4190, 4191, 4194)	44W4057
Microsoft Windows 2003 Server Enterprise 32b Edition R2 w/SP2, 1-2 Processors, French (types 4190, 4191, 4194)	44W4058
Microsoft Windows 2003 Server Enterprise 32b Edition R2 w/SP2, 1-2 Processors, German (types 4190, 4191, 4194)	44W4059
Microsoft Windows 2003 Server Enterprise 32b Edition R2 w/SP2, 1-2 Processors, Spanish (types 4190, 4191, 4194)	44W4060
Microsoft Windows 2003 Server Enterprise 32b Edition R2 w/SP2, 1-2 Processors, Simplified Chinese (types 4190, 4191, 4194)	44W4061
Microsoft Windows 2003 Server Enterprise 32b Edition R2 w/SP2, 1-2 Processors, Traditional Chinese (types 4190, 4191, 4194)	44W4062

Table 9. Product recovery CDs (continued)

Description	CRU part number
Microsoft Windows 2003 Server Enterprise 32b Edition R2 w/SP2, 1-2 Processors, Japanese (types 4190, 4191, 4194)	44W4063
Microsoft Windows 2003 Server Enterprise 32b Edition R2 w/SP2, 1-2 Processors, Korean (types 4190, 4191, 4194)	44W4064
Microsoft Windows 2003 Server Enterprise 32b Edition R2 w/SP2, 1-2 Processors, Italian (types 4190, 4191, 4194)	44W4078
Microsoft Windows 2003 Server Enterprise 32b Edition R2 w/SP2, 1-8 Processors, English (types 4190, 4191, 4194)	44W4065
Microsoft Windows 2003 Server Enterprise 32b Edition R2 w/SP2, 1-8 Processors, French (types 4190, 4191, 4194)	44W4066
Microsoft Windows 2003 Server Enterprise 32b Edition R2 w/SP2, 1-8 Processors, Italian (types 4190, 4191, 4194)	44W4067
Microsoft Windows 2003 Server Enterprise 32b Edition R2 w/SP2, 1-8 Processors, German (types 4190, 4191, 4194)	44W4068
Microsoft Windows 2003 Server Enterprise 32b Edition R2 w/SP2, 1-8 Processors, Spanish (types 4190, 4191, 4194)	44W4069
Microsoft Windows 2003 Server Enterprise 32b Edition R2 w/SP2, 1-8 Processors, Simplified Chinese (types 4190, 4191, 4194)	44W4070
Microsoft Windows 2003 Server Enterprise 32b Edition R2 w/SP2, 1-8 Processors, Traditional Chinese (types 4190, 4191, 4194)	44W4071
Microsoft Windows 2003 Server Enterprise 32b Edition R2 w/SP2, 1-8 Processors, Japanese (types 4190, 4191, 4194)	44W4072
Microsoft Windows 2003 Server Enterprise 32b Edition R2 w/SP2, 1-8 Processors, Korean (types 4190, 4191, 4194)	44W4073
Microsoft Windows 2003 Server Enterprise 64b Edition R2 w/SP2, 1-2 Processors, English (types 4190, 4191, 4194)	44W4074
Microsoft Windows 2003 Server Enterprise 64b Edition R2 w/SP2, 1-2 Processors, Japanese (types 4190, 4191, 4194)	44W4075
Microsoft Windows 2003 Server Enterprise 64b Edition R2 w/SP2, 1-8 Processors, English (types 4190, 4191, 4194)	44W4076
Microsoft Windows 2003 Server Enterprise 32b Edition R2, 1-8 Processor, English (types 4190, 4191, 4194)	
Microsoft Windows 2003 Server Enterprise 64b Edition R2 w/SP2, 1-8 Processors, Japanese (types 4190, 4191, 4194)	44W4077
Microsoft Windows 2008 Datacenter 32b/64b, Multilingual (types 4190, 4194)	49Y0222
Microsoft Windows 2008 Datacenter 32b/64b, Simplified Chinese (types 4190, 4194)	49Y0223
Microsoft Windows 2008 Datacenter 32b/64b, Traditional Chinese (types 4190, 4194)	49Y0224
Microsoft Windows 2008 Server Standard Edition 32b/64b, 1-4 Processors, Multilingual (types 4190, 4194)	49Y0892
Microsoft Windows 2008 Server Standard Edition 32b/64b, 1-4 Processors, Simplified Chinese (types 4190, 4194)	49Y0893
Microsoft Windows 2008 Server Standard Edition 32b/64b, 1-4 Processors, Traditional Chinese (types 4190, 4194)	49Y0894

Table 9. Product recovery CDs (continued)

Description	CRU part number
Microsoft Windows 2008 Enterprise Edition 32b/64b, 1-8 Processor, Multilingual (types 4190, 4194)	49Y0895
Microsoft Windows 2008 Enterprise Edition 32b/64b, 1-8 Processor, Simplified Chinese (types 4190, 4194)	49Y0896
Microsoft Windows 2008 Enterprise Edition 32b/64b, 1-8 Processor, Traditional Chinese (types 4190, 4194)	49Y0897
Microsoft Windows 2008 Server HPC ROK 1–4 Processor, English (types 4190, 4191)	68Y9455
Microsoft Windows 2008 Server HPC ROK 1–4 Processor, Japanese (types 4190, 4191)	68Y9456
Microsoft Windows 2008 Server HPC ROK 1–4 Processor, Simplified Chinese (types 4190, 4191)	68Y9457

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

IBM power cord part number	Used in these countries and regions
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, Colombia, Costa Rica, 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, Caicos Islands, Canada, Cayman Islands, Colombia, Costa Rica, Cuba, Dominican Republic, Ecuador, El Salvador, Guam, Guatemala, Haiti, Honduras, Jamaica, Mexico, Micronesia (Federal States of), Netherlands Antilles, Nicaragua, Panama, Peru, Philippines, Saudi Arabia, Thailand, Taiwan, United States of America, Venezuela
39M5219	Korea (Democratic People's Republic of), Korea (Republic of)
39M5199	Japan
39M5068	Argentina, Paraguay, Uruguay
39M5226	India
39M5233	Brazil

Chapter 4. Removing and replacing server components

Replaceable components are of four types:

- **Consumable Parts:** Purchase and replacement of consumable parts (components, such as batteries and printer cartridges, that have depletable life) is your responsibility. If IBM acquires or installs a consumable part 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.

See Chapter 3, “Parts listing, Types 4190, 4191 and 4194 server,” on page 31 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 “Handling static-sensitive devices” on page 49. This information will help you work safely.
- Before you install optional hardware devices, make sure that the server is working correctly. Start the server, and make sure that the operating system starts, if an operating system is installed, or that a I9990305 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 5, “Diagnostics,” on page 97 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 available.

- You do not have to turn off the server to install or replace hot-plug Universal Serial Bus (USB) devices.
- 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:

- Each of the drive bays has a drive or a filler panel and electromagnetic compatibility (EMC) shield installed in it.
- There is adequate space around the server to allow the server cooling system to work properly. Leave approximately 50 mm (2 in.) of open space around the front and rear of the server. Do not place objects in front of the fans. For proper cooling and airflow, replace the server cover before you turn on the server. Operating the server for extended periods of time (more than 30 minutes) with the server cover removed might damage server components.
- You have followed the cabling instructions that come with optional adapters.
- You have replaced a failed fan as soon as possible.
- You have replaced a hot-swap drive within 2 minutes of removal.

Working inside the server with the power on

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

You might be instructed to turn on the server while the cover is off, to look at system-board LEDs. 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 you handle devices during cold weather. Heating reduces indoor humidity and increases static electricity.

Returning a device or component

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

Removing and replacing consumable parts and Tier 1 CRUs

Replacement of consumable parts and Tier 1 CRUs is your responsibility. If IBM installs a consumable part or Tier 1 CRU at your request, you will be charged for the installation.

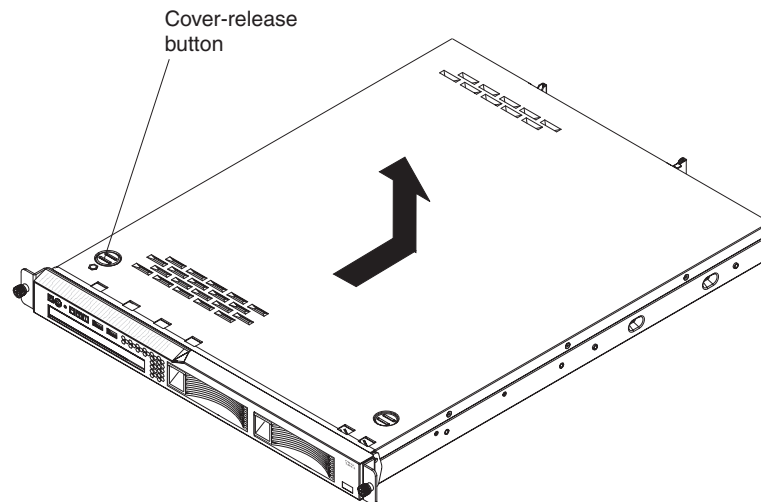
The illustrations in this document might differ slightly from your hardware.

Removing the cover

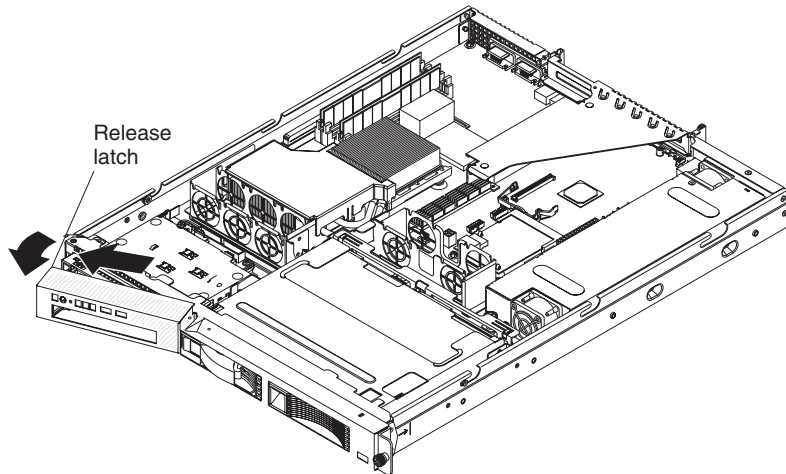
Attention: Operating the server for more than 30 minutes with the cover removed might damage server components. For proper cooling and airflow, replace the cover before you turn on the server.

To remove the cover, complete the following steps:

1. Read the safety information that begins on page vii and “Installation guidelines” on page 47.
2. Turn off the server and all peripheral devices, and disconnect the power cords and all external cables.
3. Slide the server out of the rack and place it on a flat, static-protective surface.

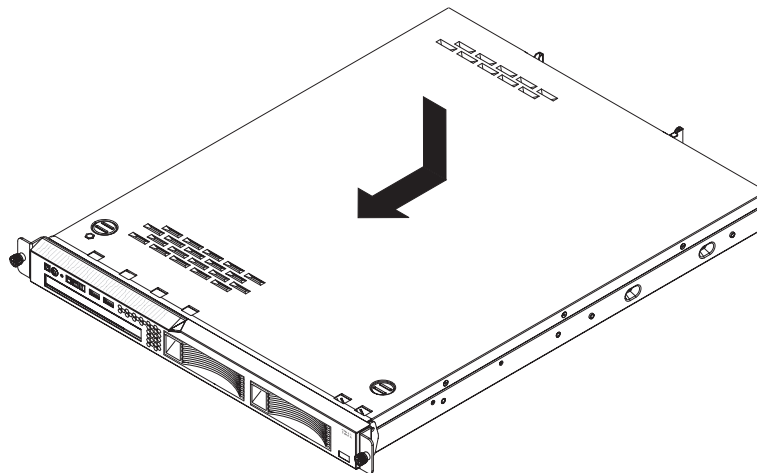


4. Press the cover-release button.
5. Slide the cover back approximately 1.27 cm (0.5 inches); then, lift it off the server.
6. If you are instructed to remove the bezel, complete the following steps.

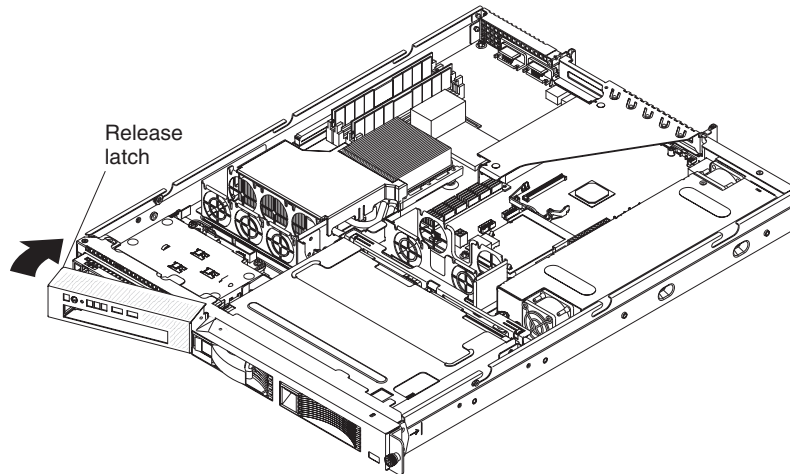


- a. From inside the server, press the bezel release latch toward the left side of the server.
 - b. Pivot the bezel forward and pull it away from the server.
7. If you are instructed to return the cover and bezel, follow all packaging instructions, and use any packaging materials for shipping that are supplied to you.

Installing the cover



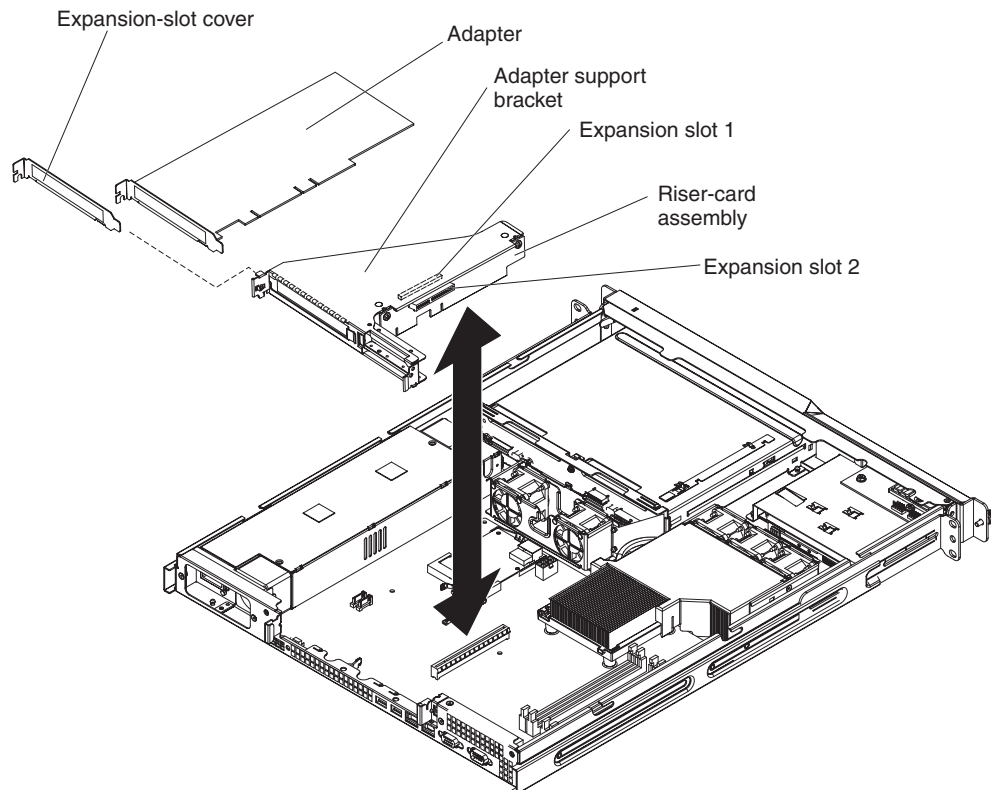
To install the cover and bezel, complete the following steps.



1. To install the left bezel, if you removed it, insert the tab at the right end of the bezel into the front of the chassis and pivot the bezel until it snaps into place.
2. Make sure that all internal cables are correctly routed.
3. Set the cover on top of the server so that approximately 13 mm (0.5 inch) extends from the rear.
4. Slide the cover forward and into position.
5. Slide the server into the rack.

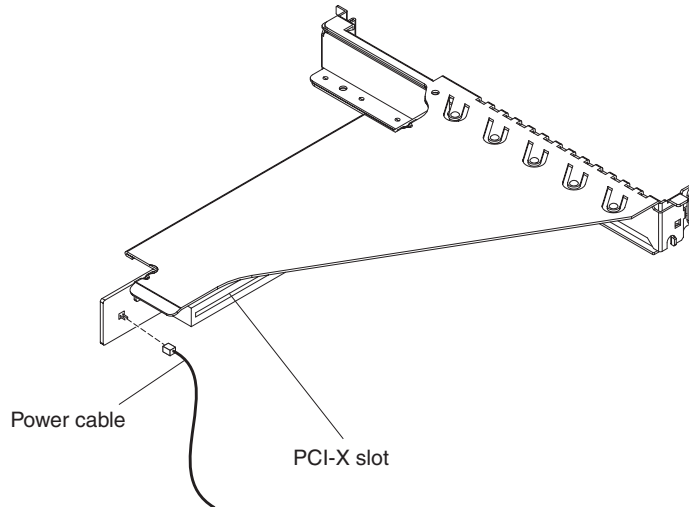
Removing an adapter

To remove an adapter, complete the following steps.

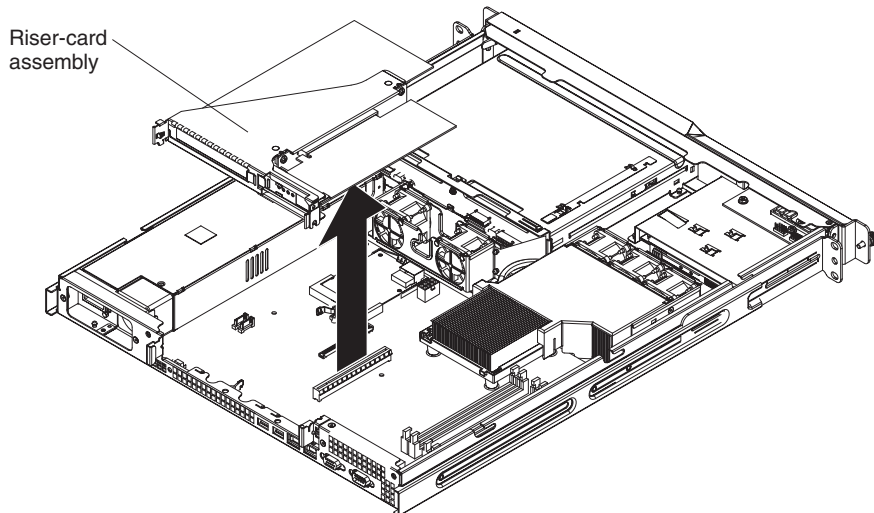


1. Read the safety information that begins on page vii and “Installation guidelines” on page 47.

2. Turn off the server and peripheral devices, and disconnect the power cords and all external cables.
3. Remove the server from the rack; then, remove the cover (see “Removing the cover” on page 50).
4. Disconnect any cables from the adapter.



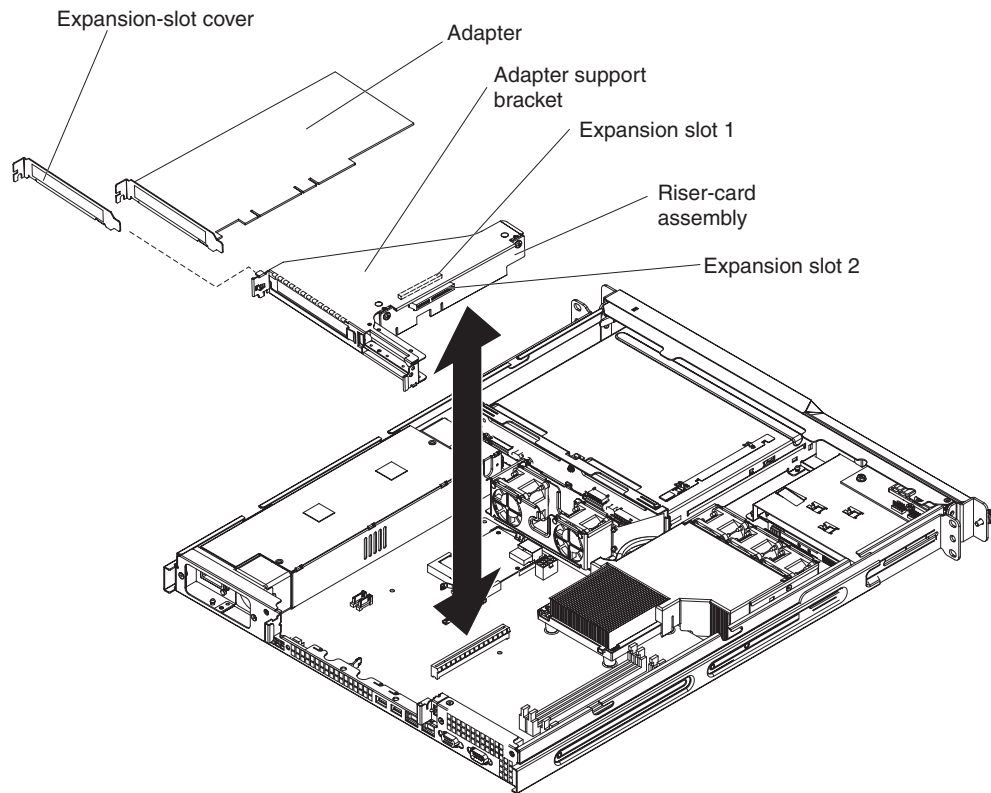
5. If the riser-card assembly is an optional PCI-X riser-card assembly, disconnect the riser-card power cable from the riser-card assembly.
6. Grasp the riser-card assembly at the front and rear edges and lift to remove it from the server.



7. Place the riser-card assembly on a flat, static-protective surface.
8. Carefully grasp the adapter by its top edge or upper corners, and pull the adapter from the riser-card assembly.
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.

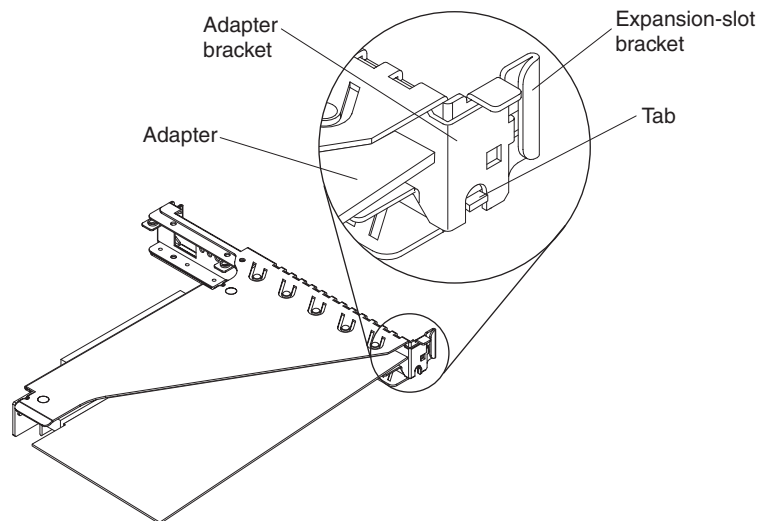
Installing an adapter

Note: When the optional Remote Supervisor Adapter II SlimLine is installed in the server, you can install only a half-length adapter in expansion slot 1.



To install a replacement adapter, complete the following steps:

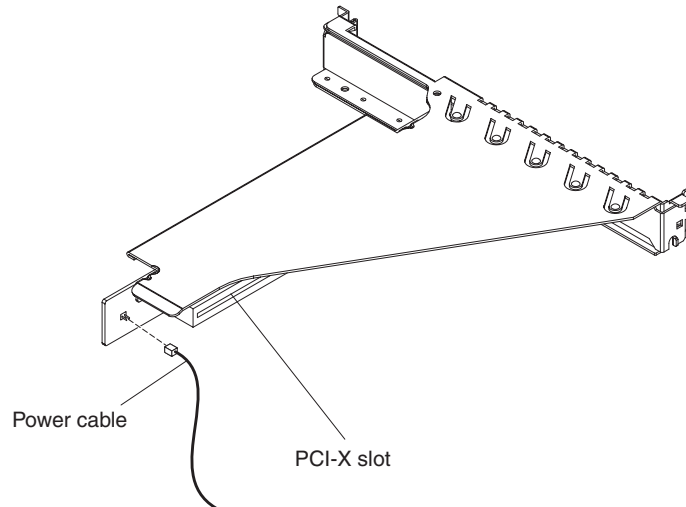
1. See the documentation that comes with the adapter for instructions for setting jumpers or switches and for cabling.
2. Touch the static-protective package that contains the adapter to any unpainted metal surface on the server. Then, remove the adapter from the static-protective package. Avoid touching the components and gold-edge connectors on the adapter.
3. Place the adapter, component side up, on a flat, static-protective surface and set any jumpers or switches as described by the adapter manufacturer, if necessary.



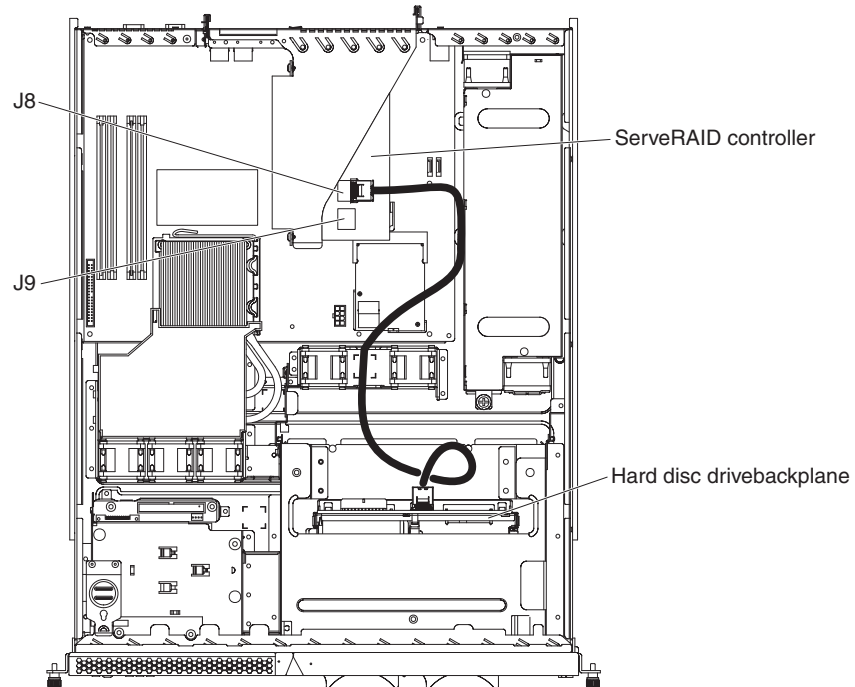
4. Carefully grasp the adapter by its top edge or upper corners and align it with the expansion slot in the riser-card assembly; then, press the adapter *firmly* into the expansion slot.

Important: Make sure that the U-shaped opening in the metal adapter bracket engages the tab on the expansion-slot bracket.

5. Follow the cabling instructions, if any, that come with the adapter.
6. Carefully align the riser-card assembly with the guides on the rear of the server and with the riser-card connectors on the system board; then, press down on the assembly. Make sure that the riser-card assembly is fully seated in the riser-card connector on the system board.



7. If the riser-card assembly is an optional PCI-X riser-card assembly, reconnect the riser-card power cable to the riser-card assembly.
8. If you are installing a ServeRAID-MR10i controller (2.5-inch drive models only), complete the following steps:
 - a. Disconnect the existing SAS/SATA controller signal cable from the hard disk drive backplane and from the controller; then, remove the cable from the server.
 - b. Route the ServeRAID-MR10i signal cable as shown in the following illustration and connect it to the hard disk drive backplane.

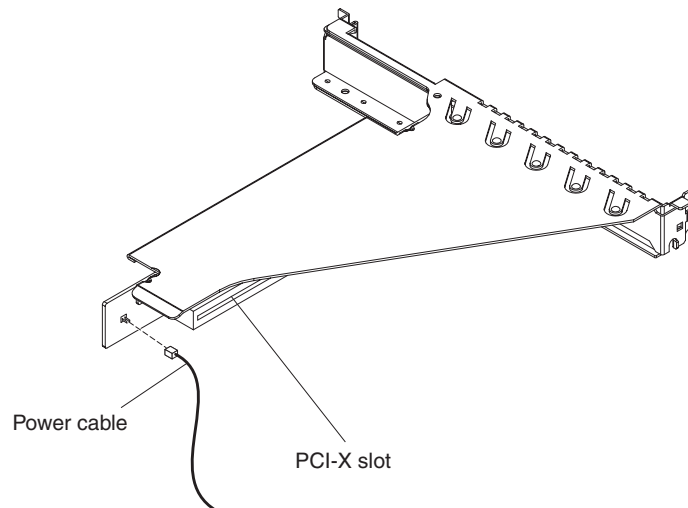


9. Install the cover (see “Installing the cover” on page 51).
10. Slide the server into the rack.
11. Connect the cables and power cords.
12. Turn on all attached devices and the server.

Removing a Remote Supervisor Adapter II SlimLine

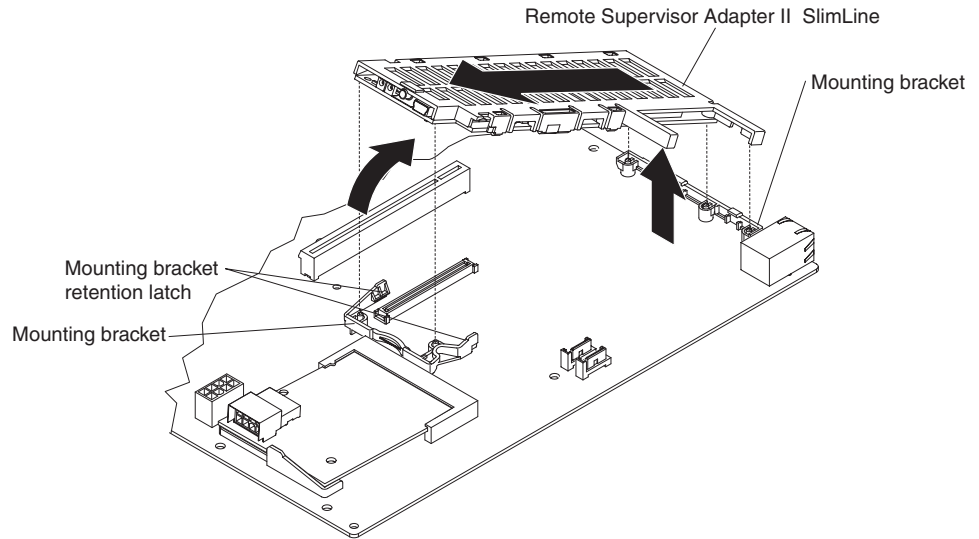
To remove a Remote Supervisor Adapter II SlimLine from the server, complete the following steps:

1. Read the safety information that begins on page vii and “Installation guidelines” on page 47.
2. Turn off the server and peripheral devices and disconnect all power cords and external cables; then, remove the cover.



3. If the riser-card assembly is an optional PCI-X riser-card assembly, disconnect the riser-card power cable from the riser-card assembly.

4. Grasp the riser-card assembly at the front and rear edges and lift to remove it from the server. Set the riser-card assembly aside on a flat, static-protective surface.



5. Spread the mounting bracket retention latches as you lift the Remote Supervisor Adapter II SlimLine, to disconnect it from the system board; then, lift it out of the server.

Note: You can press the middle of the mounting bracket toward the back of the server to spread the retention latches.

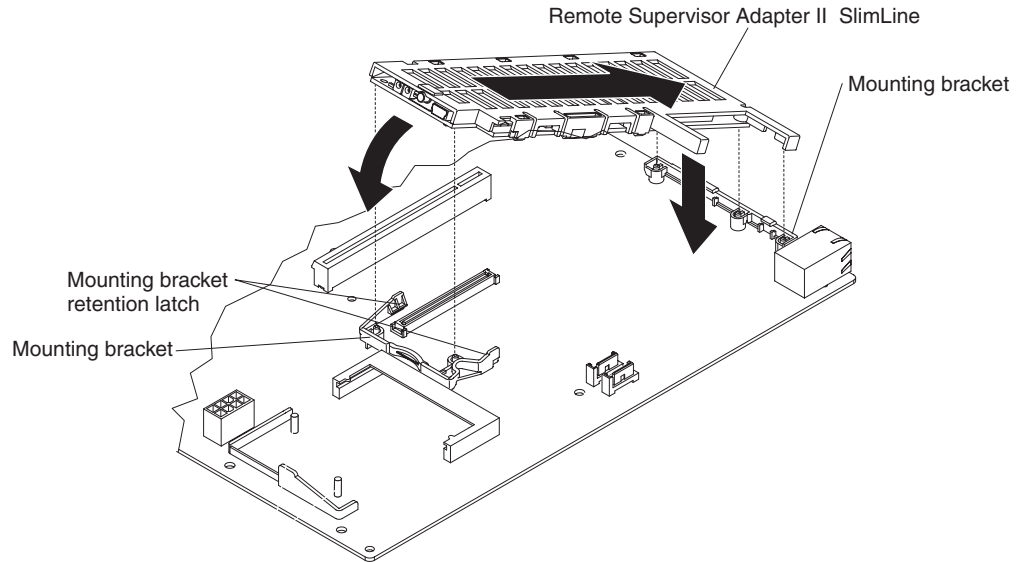
Installing a Remote Supervisor Adapter II SlimLine

See the illustration in “System-board optional device connectors” on page 11 for the location of the dedicated connector for the Remote Supervisor Adapter II SlimLine. After the Remote Supervisor Adapter II SlimLine is installed, the systems-management port on the rear of the server is active.

Notes:

1. When you start the server for the first time after you install a Remote Supervisor Adapter II SlimLine, the startup process will take several minutes longer than a typical startup.
2. Earlier versions of the Remote Supervisor Adapter II SlimLine might not work in this server. See <http://www.ibm.com/servers/eserver/serverproven/compat/us/> for the supported Remote Supervisor Adapter II SlimLine versions.

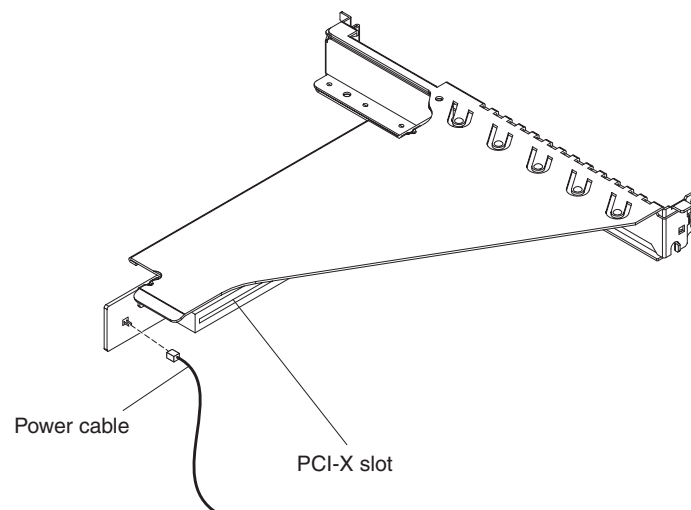
To install a Remote Supervisor Adapter II SlimLine, complete the following steps.



1. Put the protective plastic cover on the Remote Supervisor Adapter II SlimLine.
2. Turn the Remote Supervisor Adapter II SlimLine so that the keys on the connector align correctly with the connector on the system board.
3. At a downward angle, insert the free end of the adapter under the tab on the mounting bracket, aligning the holes in the adapter with the posts on the mounting bracket. Rotate the front end of the adapter into the front mounting bracket, aligning the holes in the adapter with the posts on the front mounting bracket.
4. Press the Remote Supervisor Adapter II SlimLine firmly into the connector and make sure that all tabs on both mounting brackets secure the adapter in place.

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

5. Carefully align the riser-card assembly with the guides on the rear of the server and with the riser-card connectors on the system board; then, press down on the assembly. Make sure that the riser-card assembly is fully seated in the riser-card connectors on the system board.



6. If the riser-card assembly is an optional PCI-X riser-card assembly, reconnect the riser-card power cable to the riser-card assembly.

7. Install the cover (see “Installing the cover” on page 51).
8. Slide the server into the rack.
9. Connect the cables and power cords.
10. Turn on all attached devices and the server.
11. See the documentation that comes with the Remote Supervisor Adapter II SlimLine for information about installing the firmware and configuring the adapter. If you have a backup copy of the configuration, restore the configuration.

Hard disk drive

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

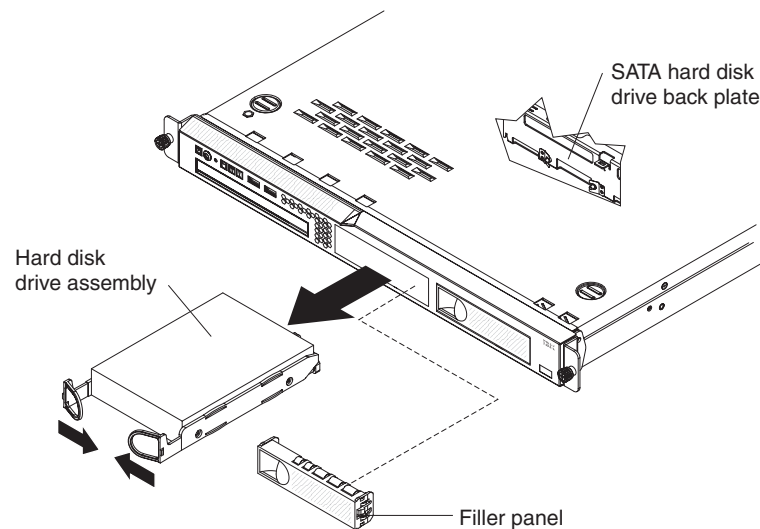
Attention: To avoid damage to the hard disk drive connectors, make sure that the server cover is in place and fully closed whenever you install or remove a hard disk drive.

Note: If a RAID controller or adapter is installed, you might have to reconfigure the disk arrays after you install or remove hard disk drives. See the documentation that comes with the adapter for more information.

Removing a simple-swap Serial ATA hard disk drive

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

To remove a simple-swap SATA drive from the bay, complete the following steps.



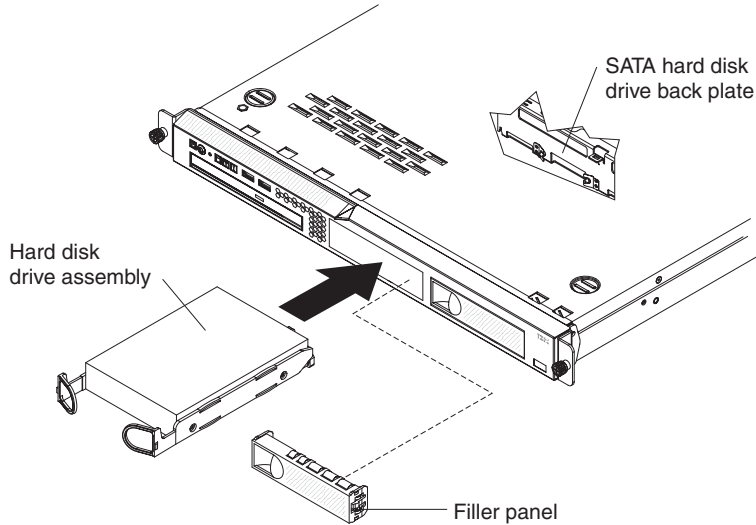
1. Read the safety information that begins on page vii and “Installation guidelines” on page 47.
2. Make sure that the server cover is in place and fully closed.
3. Turn off the server and peripheral devices, and disconnect the power cord and all external cables.
4. Remove the filler panel from the bay.
5. Pull the loops of the drive tray toward each other and pull the tray out of the bay.

Installing a simple-swap Serial ATA hard disk drive

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

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

Note: If you have only one hard disk drive, install it in the left drive bay.

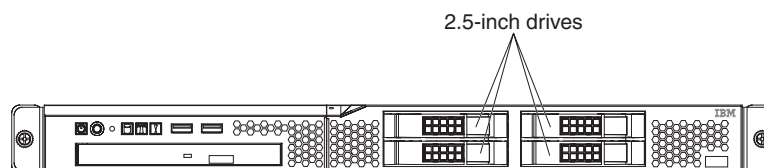


Attention: To avoid damage to the hard disk drive connectors, make sure that the server cover is in place and fully closed whenever you install or remove a hard disk drive.

1. Read the safety information that begins on page vii and "Installation guidelines" on page 47.
2. Make sure that the server cover is in place and fully closed.
3. Turn off the server and peripheral devices, and disconnect the power cord and all external cables.
4. Remove the filler panel from the bay.
5. Pull the loops of the drive tray toward each other, and slide the drive into the server until the drive connects to the back plate.
6. Release the loops of the drive tray.
7. Insert the filler panel into the bay to cover the drive.
8. Slide the server into the rack.
9. Connect the cables and power cords.
10. Turn on all attached devices and the server.

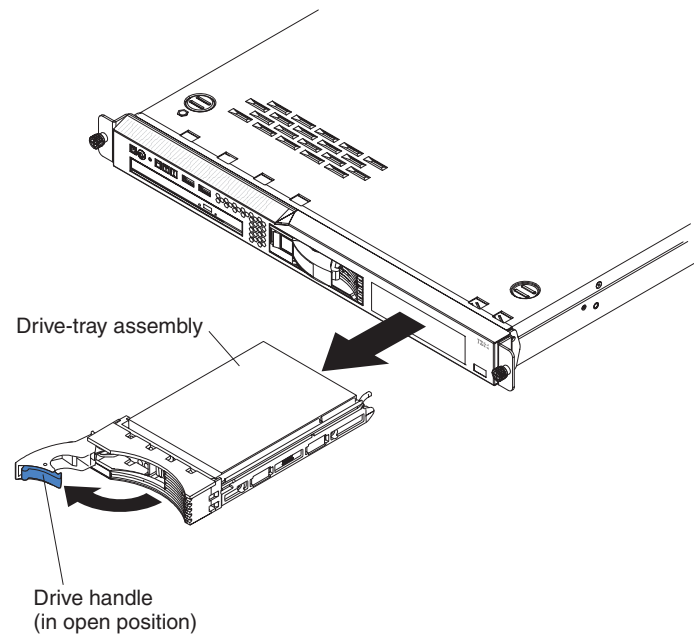
Removing a hot-swap hard disk drive

The 3.5-inch drive hot-swap server models support either two SAS 3.5-inch hard disk drives or two SATA 3.5-inch hard disk drives. The 2.5-inch drive hot-swap server models support four 2.5-inch SAS hard disk drives.



The removal and installation procedures are the same for any of these drives. The illustrations in this procedure show 3.5-inch SAS drives.

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



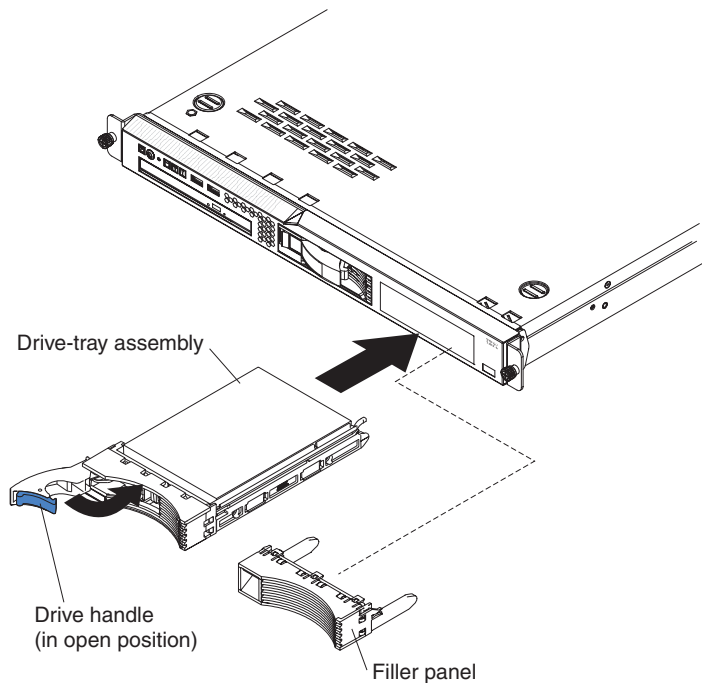
Attention: To avoid damage to the hard disk drive connectors, make sure that the server cover is in place and fully closed whenever you install or remove a hard disk drive.

1. Move the handle on the drive to the open position (perpendicular to the drive).
2. Pull the hot-swap drive assembly from the bay

Installing a hot-swap hard disk drive

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

Note: If you have only one hard disk drive, install it in the left or upper-left drive bay.



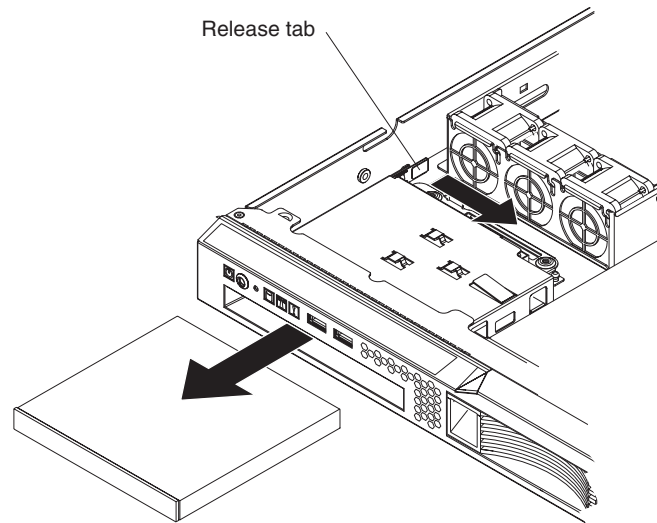
Attention: To avoid damage to the hard disk drive connectors, make sure that the server cover is in place and fully closed whenever you install or remove a hard disk drive.

1. Read the safety information that begins on page vii and “Installation guidelines” on page 47.
 2. Make sure that the server cover is in place and fully closed.
- Attention:** To maintain proper system cooling, do not operate the server for more than 10 minutes without either a drive or filler panel installed in each bay.

3. Install the hard disk drive in the hot-swap bay:
 - a. Make sure that the tray handle is open (that is, perpendicular to the front of the drive).
 - b. Align the drive assembly with the guide rails in the bay.
 - c. Gently push the drive assembly into the bay until the drive stops.
 - d. Push the tray handle to the closed (locked) position.
 - e. Check the hard disk drive status LED to make sure that the hard disk drive is operating correctly. If the amber hard disk drive status LED for a drive is lit continuously, that drive is faulty and must be replaced. If the green hard disk drive activity LED is flashing, the drive is being accessed.

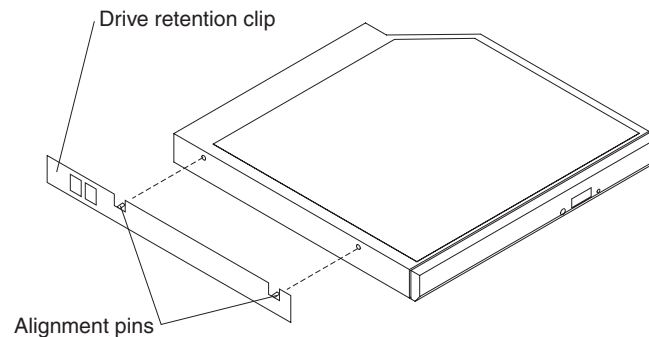
Removing a CD or CD/DVD combination drive

To remove the CD or CD/DVD combination drive, complete the following steps.



1. Read the safety information that begins on page vii and “Installation guidelines” on page 47.
2. Turn off the server and peripheral devices, and disconnect the power cords and all external cables. Remove the cover (see “Removing the cover” on page 50).
3. Pull the release tab (the rear of the drive-retention clip) toward the right side of the server to release the clip; then, while you pull the tab, pull the drive out of the bay.

Note: You might have to push the right-rear corner of the drive toward the front of the server to move the drive initially.



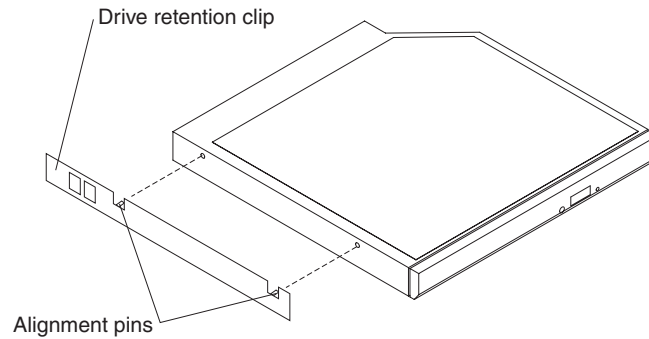
4. Remove the retention clip from the drive and save for future use.
5. If you are instructed to return the CD or CD/DVD drive, follow all packaging instructions, and use any packaging materials for shipping that are supplied to you.

Installing a CD or CD/DVD combination drive

To install the replacement CD or CD/DVD combination drive, complete the following steps:

1. Read the safety information that begins on page vii and “Installation guidelines” on page 47.
2. Turn off the server and peripheral devices, and disconnect the power cords and all external cables. Remove the cover (see “Removing the cover” on page 50).

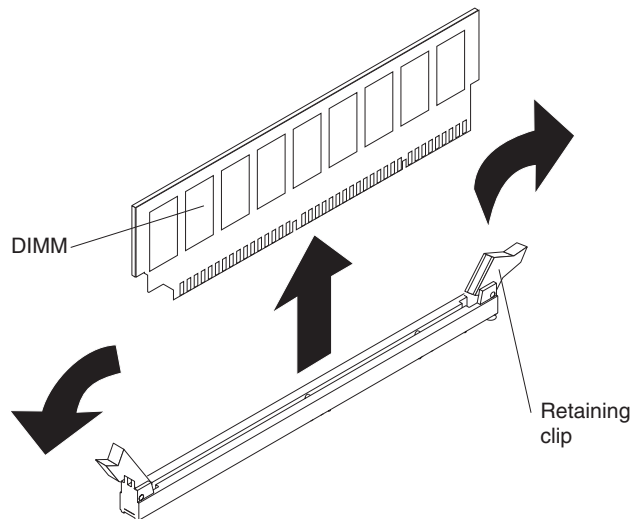
3. Follow the instructions that come with the drive to set any jumpers or switches.



4. Attach the drive-retention clip that you removed in “Removing a CD or CD/DVD combination drive” on page 63 to the side of the drive.
5. Slide the drive into the CD/DVD drive bay until the drive clicks into place.
6. Replace the cover (see “Installing the cover” on page 51).
7. Slide the server into the rack.
8. Connect the cables and power cords.
9. Turn on all attached devices and the server.

Removing a memory module (DIMM)

To remove a DIMM, complete the following steps.



1. Read the safety information that begins on page vii and “Installation guidelines” on page 47.
2. Turn off the server and peripheral devices, and disconnect the power cord and all external cables.
3. Remove the cover (see “Removing the cover” on page 50).
Attention: To ensure proper cooling and airflow, do not operate the server for more than 30 minutes with the cover removed.
4. Open the retaining clip on each end of the DIMM connector and remove the DIMM from the connector.
5. 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 (DIMM)

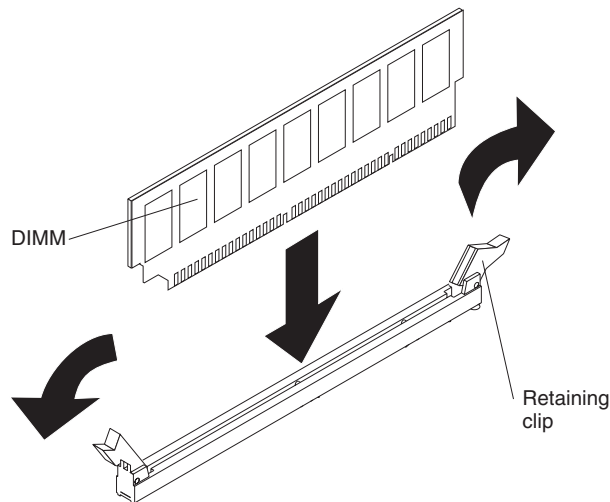
The following notes describe information that you must consider when you install DIMMs:

- The server comes with one 512 MB or 1 GB DIMM installed in DIMM connector 1 and an identical DIMM (the same size, speed, type, and technology) installed in DIMM connector 3.
- If you install a pair of DIMMs in DIMM connectors 2 and 4, the size, speed, type, and technology of the DIMMs that you install in DIMM connectors 2 and 4 must match each other. However, they do not have to be the same size, speed, type, and technology as the DIMMs that are installed in DIMM connectors 1 and 3.
- You can use compatible DIMMs from various manufacturers in the same pair.
- If you install a pair of 2 GB DIMMs and a pair of other-size DIMMs, the 2 GB DIMMs must be installed as the first pair (in DIMM connectors 1 and 3).

To install the replacement DIMM, complete the following steps.

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

1. Open the retaining clip on each end of the DIMM connector.
2. Touch the static-protective package that contains the DIMM to any unpainted metal surface on the server. Then, remove the DIMM from the package.
3. Turn the DIMM so that the DIMM keys align correctly with the connector.



4. 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 seated in the connector. If there is a gap between the DIMM and the retaining clips, the DIMM has not been correctly inserted; open the retaining clips, remove the DIMM, and then reinsert it.
5. Install the cover (see "Installing the cover" on page 51).
6. Slide the server into the rack.
7. If you disconnected any cables or power cords to replace the DIMM, connect the cables and power cords.
8. Turn on all attached devices and the server.

Removing a fan

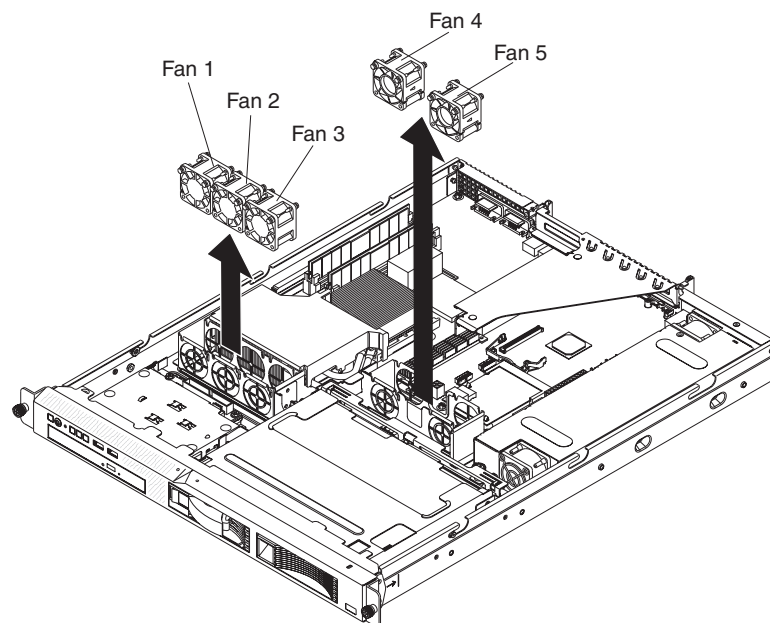
The server comes with five replaceable fans.

To remove any of the five replaceable fans, complete the following steps:

1. Read the safety information that begins on page vii and “Installation guidelines” on page 47.
2. Turn off the server and all peripheral devices, and disconnect the power cords and all external cables.
3. Remove the server from the rack and remove the cover (see “Removing the cover” on page 50).
4. Reconnect the power cord; then, turn on the server.

Attention: Operating the server for extended periods of time (more than 30 minutes) with the cover removed might damage server components.

5. Determine which fan to replace by checking the LEDs on the system board (see “System-board LEDs” on page 10); a lit LED indicates the fan to replace.
6. Turn off the server; then, disconnect the power cord again.
7. Remove the failed fan from the server:
 - a. Disconnect the fan cable from the system board (see “System-board internal connectors” on page 7 for the location of the fan cable connectors on the system board). Note the routing of the fan cable to the connector; you will have to route the fan cable the same way when you install the fan.
 - b. Grasp the top of the fan with your index finger and thumb and lift the fan out of the server.



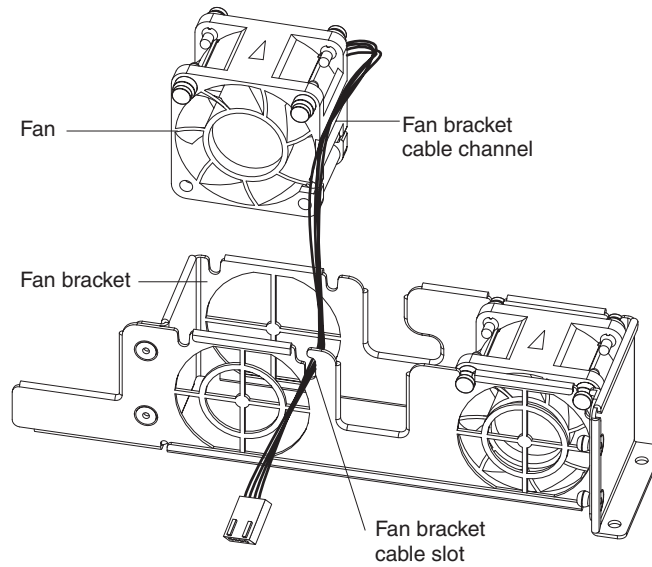
8. If you are instructed to return the fan, follow all packaging instructions, and use any packaging materials for shipping that are supplied to you.

Installing a fan

To install the replacement fan, complete the following steps:

1. Position the replacement fan so that the airflow arrow on the side of the fan points toward the rear of the server.

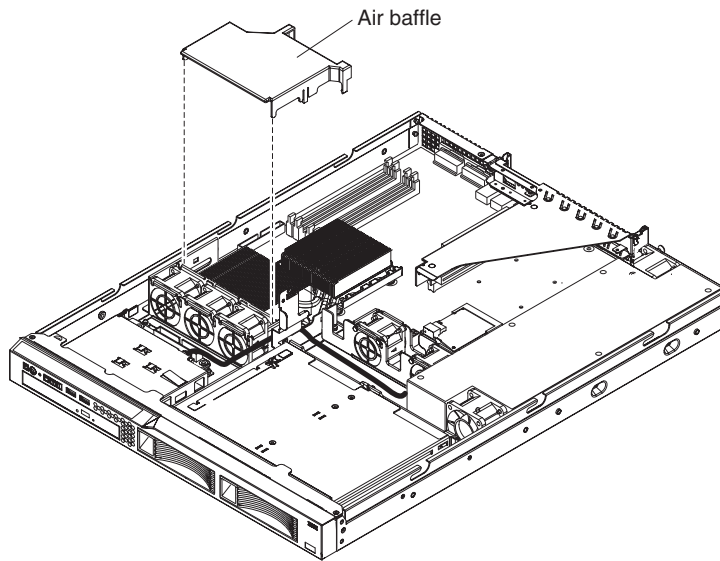
Note: Correct airflow is from the front to the rear of the server.



2. Install the replacement fan in the bracket:
 - a. Make sure that the fan cable sits in the channel on the side of the fan.
 - b. In the location from which you removed the failed fan, route the fan cable into its slot in the fan bracket top.
 - c. Insert the fan into the bracket.
 - d. Make sure that each of the blue soft tabs on the fan is fully seated in its slot in the fan bracket.
3. Connect the replacement fan cable to the system board (see “System-board internal connectors” on page 7 for the locations of the fan cable connectors on the system board).
4. Install the cover (see “Installing the cover” on page 51).
5. Slide the server into the rack.
6. Reconnect all external cables and the power cord.
7. Turn on all attached devices and the server.

Removing the air baffle

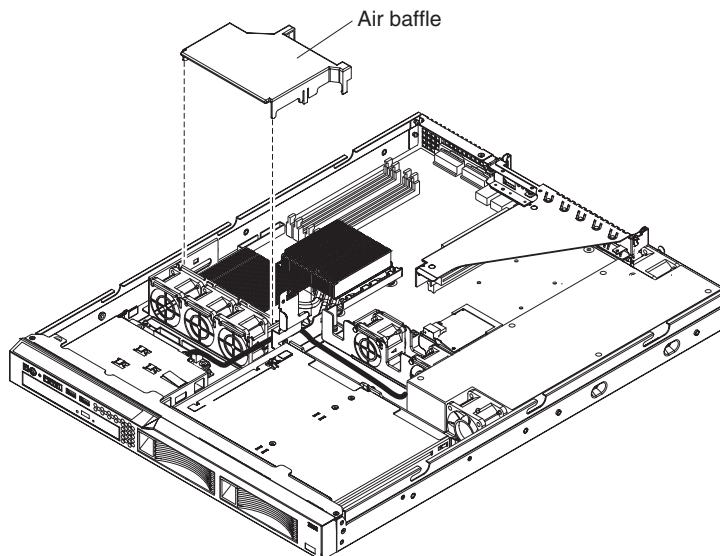
To remove the air baffle, complete the following steps.



1. Read the safety information that begins on page vii and “Installation guidelines” on page 47.
2. Turn off the server and all peripheral devices, and disconnect the power cords and all external cables.
3. Remove the server from the rack and remove the cover (see “Removing the cover” on page 50).
4. Grasp the air baffle by the leftmost and rightmost rear corners and lift it up out of the server.

Installing the air baffle

To install the air baffle, complete the following steps.



1. Align the air baffle as shown in the illustration.
2. Press the air baffle into position until it clicks into place.
3. Install the cover (see “Installing the cover” on page 51).

4. Slide the server into the rack.
5. Reconnect all external cables and the power cord.
6. Turn on all attached devices and the server.

Removing and replacing Tier 2 CRUs

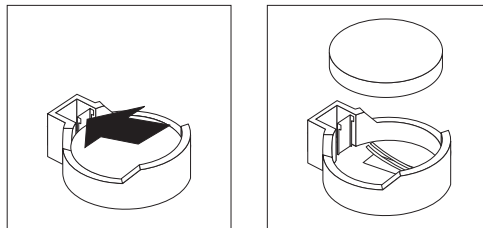
You may install a Tier 2 CRU yourself or request IBM to install it, at no additional charge, under the type of warranty service that is designated for your server.

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

Removing the battery

To remove the battery, complete the following steps:

1. Read the safety information that begins on page vii and “Installation guidelines” on page 47.
2. Turn off the server and peripheral devices, and disconnect the power cords and all external cables.
3. Remove the cover (see “Removing the cover” on page 50).
4. If necessary, lift the riser-card assembly out of the way (see “Removing the riser-card assembly” on page 78).
5. Remove the battery:
 - a. Use a fingernail to press the top of the battery clip away from the battery. The battery pops up when released.
 - b. Use your thumb and index finger to lift the battery from the socket.



6. Dispose of the battery as required by local ordinances or regulations. See “Battery return program” on page 208 for more information.

Installing the battery

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

- 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 IBM marketing representative or authorized reseller.
- After you replace the battery, you must reconfigure the server and reset the system date and time.
- To avoid possible danger, read and follow the following safety statement.

Statement 2:



CAUTION:

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

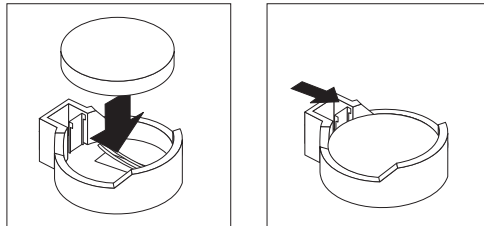
Do not:

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

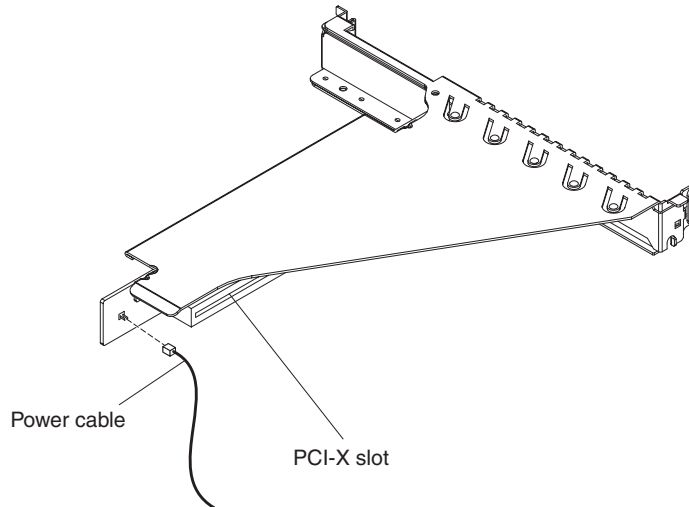
Dispose of the battery as required by local ordinances or regulations.

To install the replacement battery, complete the following steps:

1. Follow any special handling and installation instructions that come with the replacement battery.
2. Insert the new battery:
 - a. Orient the battery so that the positive side faces up.
 - b. Tilt the battery so that you can insert it into the socket on the side opposite the battery clip.
 - c. Press the battery down into the socket until it clicks into place. Make sure that the battery clip holds the battery securely.



3. Make sure that the riser-card assembly is fully seated in the connectors on the system board.



4. If the riser-card assembly is an optional PCI-X riser-card assembly, make sure that the riser-card power cable is connected to the riser-card assembly.
5. Install the cover (see “Installing the cover” on page 51).
6. Slide the server into the rack.
7. Reconnect the external cables; then, reconnect the power cords and turn on the peripheral devices and the server.

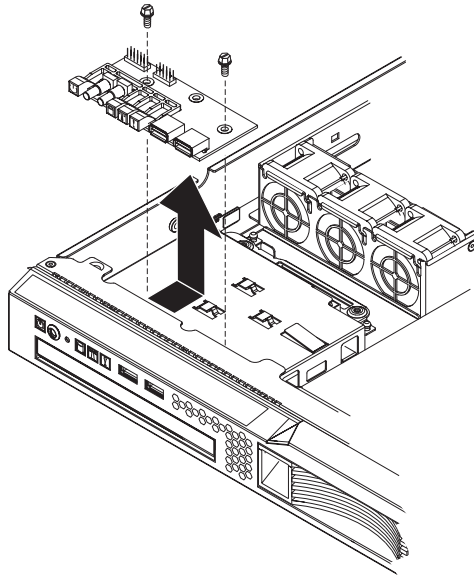
Note: You must wait approximately 20 seconds after you connect the power cord of the server to an electrical outlet before the power-control button becomes active.

8. Start the Configuration/Setup Utility program and reset the configuration.
 - Set the system date and time.
 - Set the power-on password.
 - Reconfigure the server.

See “Using the Configuration/Setup Utility program” on page 16 for details.

Removing the operator information panel assembly

To remove the operator information panel assembly, complete the following steps.



1. Read the safety information that begins on page vii and “Installation guidelines” on page 47.
2. Turn off the server and peripheral devices, and disconnect the power cords and all external cables.
3. Remove the server from the rack and remove the cover (see “Removing the cover” on page 50).
4. Remove the screws that secure the operator information panel assembly to the CD/DVD bay housing.
5. Lift the operator information panel assembly out of the server.
6. Disconnect both cables from the operator information panel board.
7. If you are instructed to return the operator information panel assembly, follow all packaging instructions, and use any packaging materials for shipping that are supplied to you.

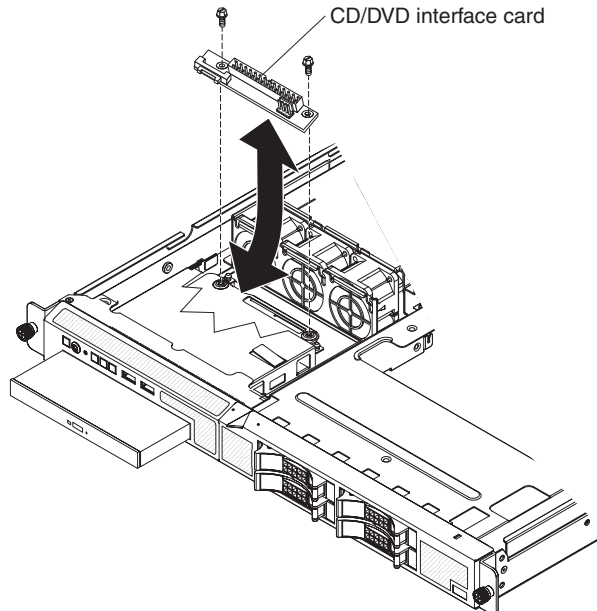
Installing the operator information panel assembly

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

1. Guide the operator information panel assembly into position on top of the CD/DVD bay housing. Make sure that the LEDs and the USB connectors are aligned with the openings in the bezel and that the holes in the board align with the screw holes in the top of the bay housing.
2. Use the screws that you removed in step 4 of “Removing the operator information panel assembly” to secure the operator information panel assembly onto the top of the CD/DVD bay housing.
3. Connect the light panel cable and front USB cable to the operator information panel board.
4. Install the cover (see “Installing the cover” on page 51).
5. Slide the server into the rack.
6. Connect the cables and power cords.
7. Turn on all attached devices and the server.

Removing the CD/DVD interface card

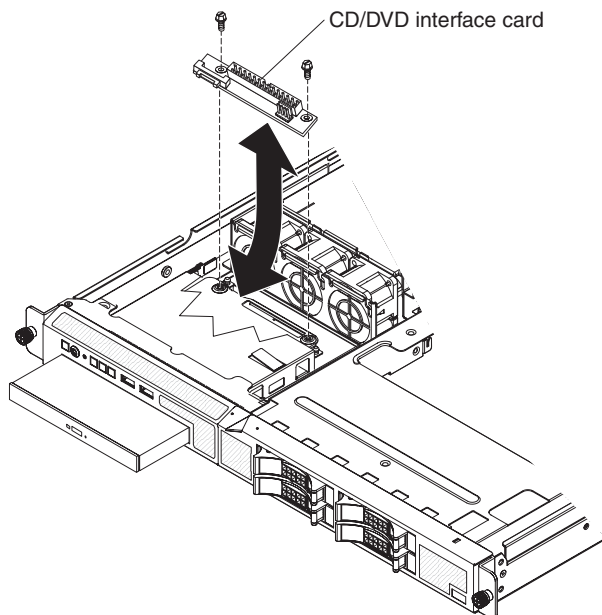
To remove the CD/DVD interface card, complete the following steps.



1. Read the safety information that begins on page vii and “Installation guidelines” on page 47.
2. Turn off the server and all peripheral devices, and disconnect the power cords and all external cables.
3. Remove the server from the rack and remove the cover (see “Removing the cover” on page 50).
4. Release the CD or CD/DVD combination drive and pull it out of the bay slightly (see “Removing a CD or CD/DVD combination drive” on page 63).
5. Note the routing of the cables that are connected to the CD/DVD interface card; you will have to restore the cable routing exactly when you replace the card.
6. Disconnect the CD/DVD signal cable from the CD/DVD interface card:
 - a. Squeeze the sides of the cable connector to release the connector from the CD/DVD interface card.
 - b. Lift the connector off the card.
7. Disconnect the power cable from the CD/DVD interface card:
 - a. Grasp the sides of the cable connector and pull up to release the connector from the card.
 - b. Lift the connector off the card.
8. Remove the two screws that secure the CD/DVD interface card to the chassis.
9. Tilt the rear edge of the CD/DVD interface card up slightly and lift the card out of the server.
10. If you are instructed to return the CD/DVD interface card, follow all packaging instructions, and use any packaging materials for shipping that are supplied to you.

Installing the CD/DVD interface card

To install the replacement CD/DVD interface card, complete the following steps.



1. Tilt the front edge of the CD/DVD interface card down and guide the card into position at the rear of the CD/DVD bay. Make sure that the holes in the card align with the screw holes in the chassis.
2. Install the two screws that secure the CD/DVD interface card to the chassis.
3. Reconnect the CD/DVD power and signal cables to the two connectors on the CD/DVD interface card.
4. Make sure that all the cables are correctly routed (see step 5 of "Removing the CD/DVD interface card" on page 73).
5. Slide the CD or CD/DVD combination drive into the bay until it clicks (see "Installing a CD or CD/DVD combination drive" on page 63).
6. Install the cover (see "Installing the cover" on page 51).
7. Slide the server into the rack.
8. Connect the cables and power cords.
9. Turn on all attached devices and the server.

Removing the power supply

When you remove or install the power supply, observe the following precautions.

Statement 8:



CAUTION:

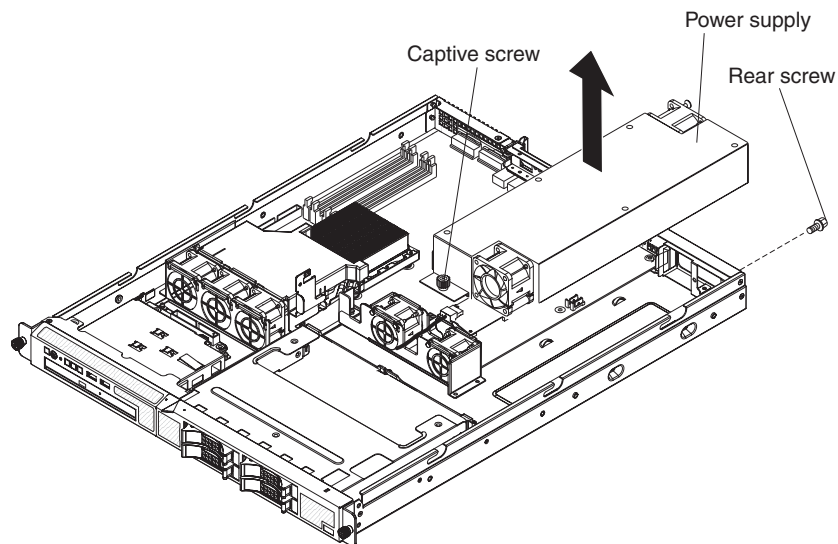
Never remove the cover on a power supply or any part that has the following label attached.



Hazardous voltage, current, and energy levels are present inside any component that has this label attached. There are no serviceable parts inside these components. If you suspect a problem with one of these parts, contact a service technician.

To remove the power supply, complete the following steps.

Note: The air deflector also functions as the backplane or back plate latch (3.5-inch drives). In this procedure, you must lift the air deflector to access some of the cables.



1. Read the safety information that begins on page vii and “Installation guidelines” on page 47.
2. Disconnect the ac power cord from the connector on the power supply. Disconnect all external cables from the server.
3. Remove the server from the rack and remove the cover (see “Removing the cover” on page 50).

Attention: To ensure proper cooling and airflow, do not operate the server for more than 30 minutes with the cover removed.

4. Rotate (lift) the air deflector out of the way.
5. If the server is a 3.5-inch drive model, remove the hard disk drive back plate or backplane (see “Removing the backplane or back plate (3.5-inch drives)” on page 81).

Note: Note the routing of all power-supply cables; you will route the power-supply cables the same way when you install the power supply.

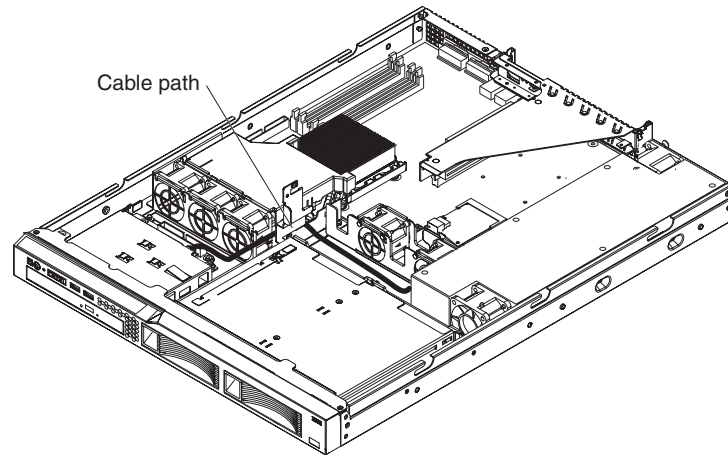
6. Disconnect the power-supply cables from the connector on the system board and from all devices; then, disengage the cables from any retention-clips that secure them to the chassis.
7. Remove the screw that holds the power supply to the rear of the chassis (see the illustration on page 75).
8. Loosen the captive thumbscrew that secures the rear of the power supply to the chassis bottom.
9. Lift the power supply out of the bay.
10. 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 the power supply

Note: The air deflector also functions as the backplane or back plate latch (3.5-inch drives), and covers some of the cables. In this procedure, you must close the air deflector after you route some of the cables.

To install the replacement power supply, complete the following steps:

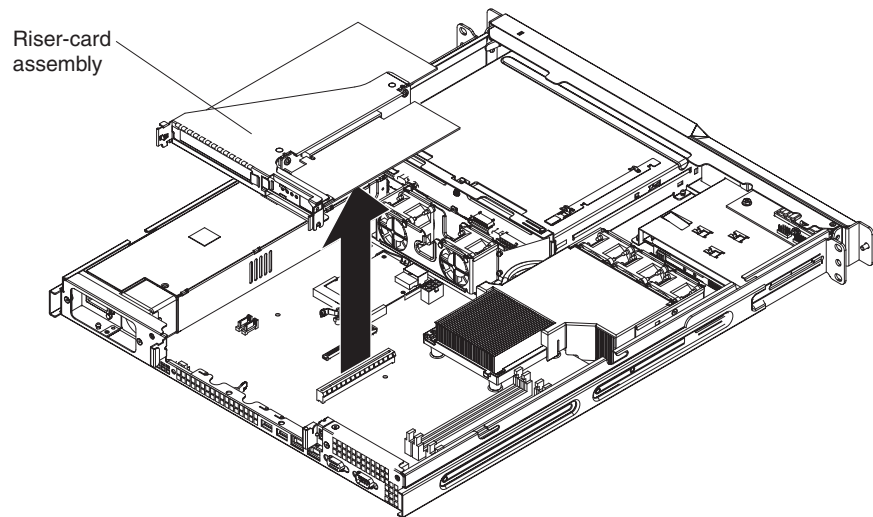
1. Read the safety information in “Working inside the server with the power on” on page 48.
2. Place the new power supply into the bay.
3. Tighten the captive thumbscrew that secures the rear of the power supply to the chassis bottom.
4. Replace the screw that holds the power supply to the rear of the chassis (see the illustration on page 75).
5. Make sure that the air deflector is in the open position.
6. Connect the internal power-supply cable from the power supply to the power connector (CN20) on the system board (see “System-board internal connectors” on page 7).
7. Route the other internal power-supply cable, securing it under the retention-clips on the chassis; then, reconnect the cable to the CD/DVD interface card.



8. If the server is a 3.5-inch drive model, replace the hard disk drive back plate or backplane and reconnect all cables (see “Installing the backplane or back plate (3.5-inch drives)” on page 82).
9. Rotate the air deflector into place, making sure that no cables are pinched beneath it, and press it down firmly.
10. Test the power supply:
 - a. Connect one end of the ac power cord for the new power supply into the connector on the back of the power supply, and connect the other end of the power cord into a properly grounded electrical outlet.
 - b. Make sure that the standby power LED on the system board is lit (see “System-board LEDs” on page 10); if the standby power LED is not lit, discontinue this procedure and obtain a new power supply.
 - c. Press the power-control button. Make sure that the power-on LED on the front of the server is lit.

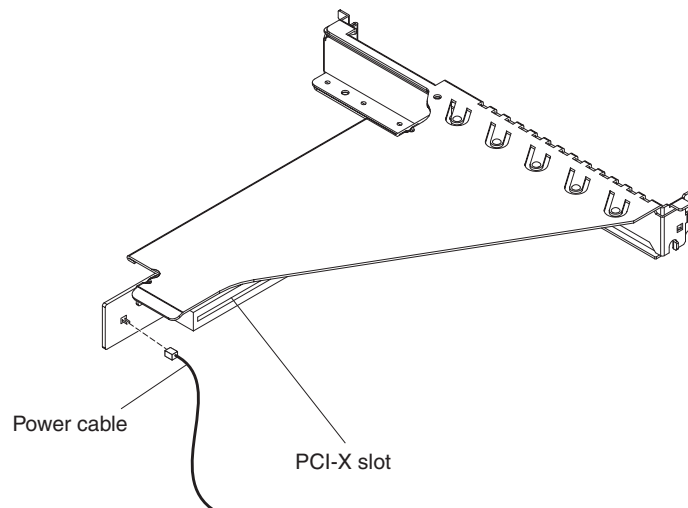
If the server starts, proceed to step 11. If the server does not start, disconnect the ac power cord and call for service.
11. Turn off the server and disconnect the ac power cord.
12. Install the cover (see “Installing the cover” on page 51).
13. Slide the server into the rack.
14. Reconnect the ac power cord into the connector on the back of the power supply.
15. Connect all external cables that you disconnected in step 2 on page 75.
16. Connect the other end of the ac power cord into a properly grounded electrical outlet.
17. Press the power-control button.
18. Make sure that the power-on LED on the front of the server is lit.

Removing the riser-card assembly



To remove the riser-card assembly, complete the following steps:

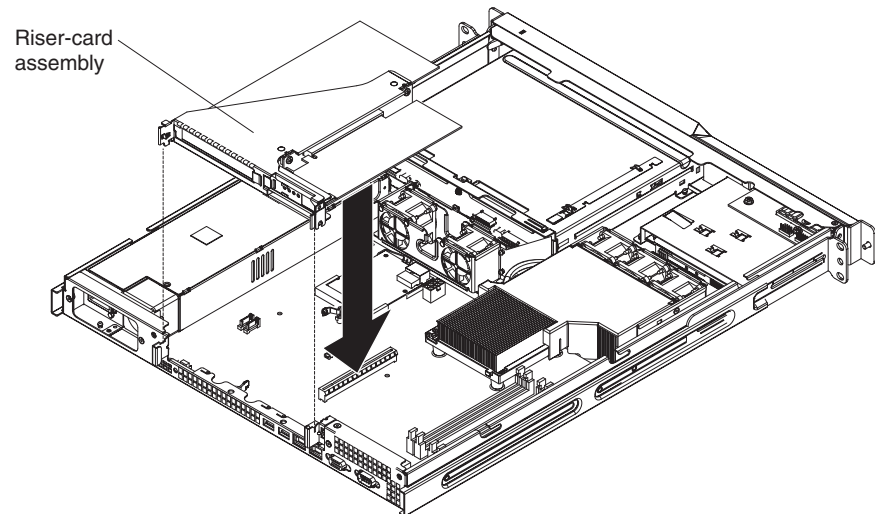
1. Read the safety information that begins on page vii and “Installation guidelines” on page 47.
2. Turn off the server and peripheral devices, and disconnect the power cord and all external cables.
3. Remove the server from the rack and place it on a flat, static-protective surface.
4. Remove the cover (see “Removing the cover” on page 50).
5. Disconnect any cables from the adapters in the riser-card assembly.



6. If the riser-card assembly is an optional PCI-X riser-card assembly, disconnect the riser-card power cable from the riser-card assembly.
7. Grasp the riser-card assembly at the front and rear edges and lift to remove it from the server. Place the riser-card assembly on a flat, static-protective surface.
8. If you are instructed to return the riser-card assembly, follow all packaging instructions, and use any packaging materials for shipping that are supplied to you.

Installing the riser-card assembly

The server comes with one riser-card assembly that contains two PCI Express connectors.

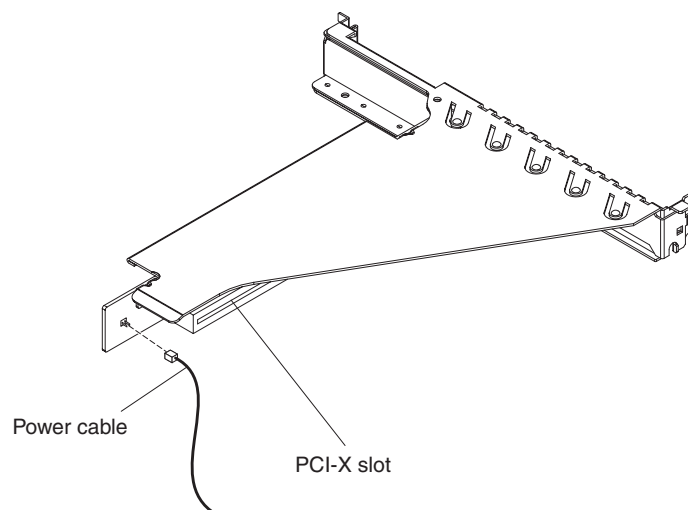


To install the riser-card assembly, complete the following steps:

1. Install the adapters in the riser-card assembly.

Note: If you have installed a Remote Supervisor Adapter II SlimLine in the server, you can install only a half-length adapter in expansion slot 1.

2. Reconnect any adapter cables that you disconnected when you removed the riser-card assembly.
3. Carefully align the riser-card assembly with the guides on the rear of the server and with the riser-card connectors on the system board; then, press down on the assembly. Make sure that the riser-card assembly is fully seated in the riser-card connectors on the system board.



4. If the riser-card assembly is an optional PCI-X riser-card assembly, reconnect the riser-card power cable to the riser-card assembly.
5. Install the cover (see "Installing the cover" on page 51).

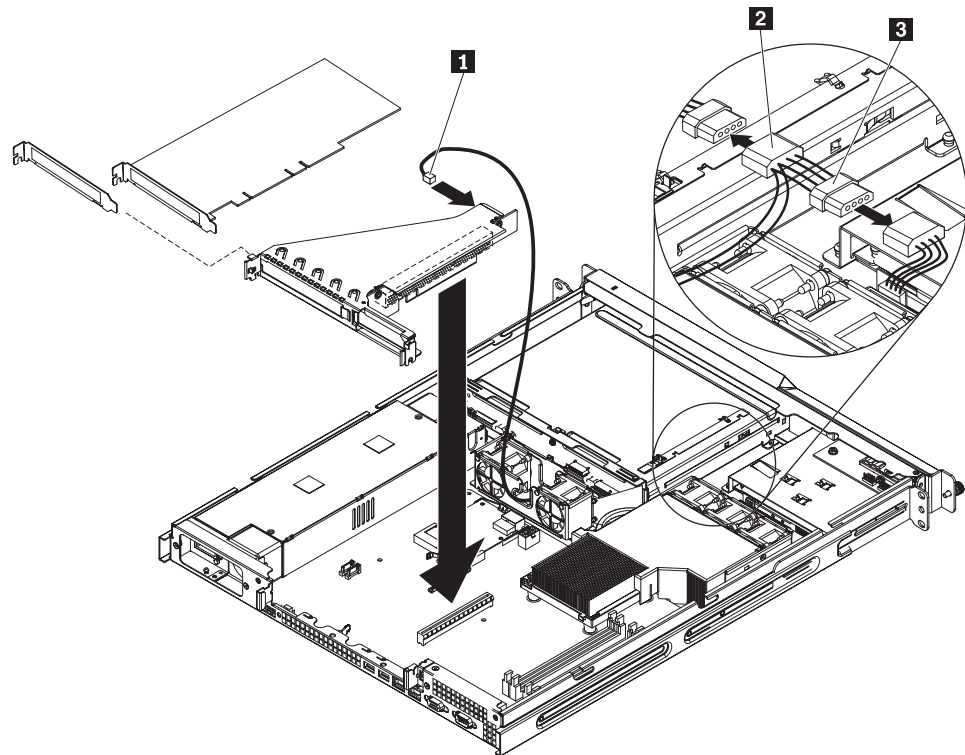
6. Slide the server into the rack.
7. Connect the cables and power cords.
8. Turn on all attached devices and the server.

Removing the PCI-X riser-card power cable

If an optional PCI-X riser-card assembly is installed in the server, an internal power cable for the assembly is also installed.

To remove the PCI-X riser-card power cable, complete the following steps:

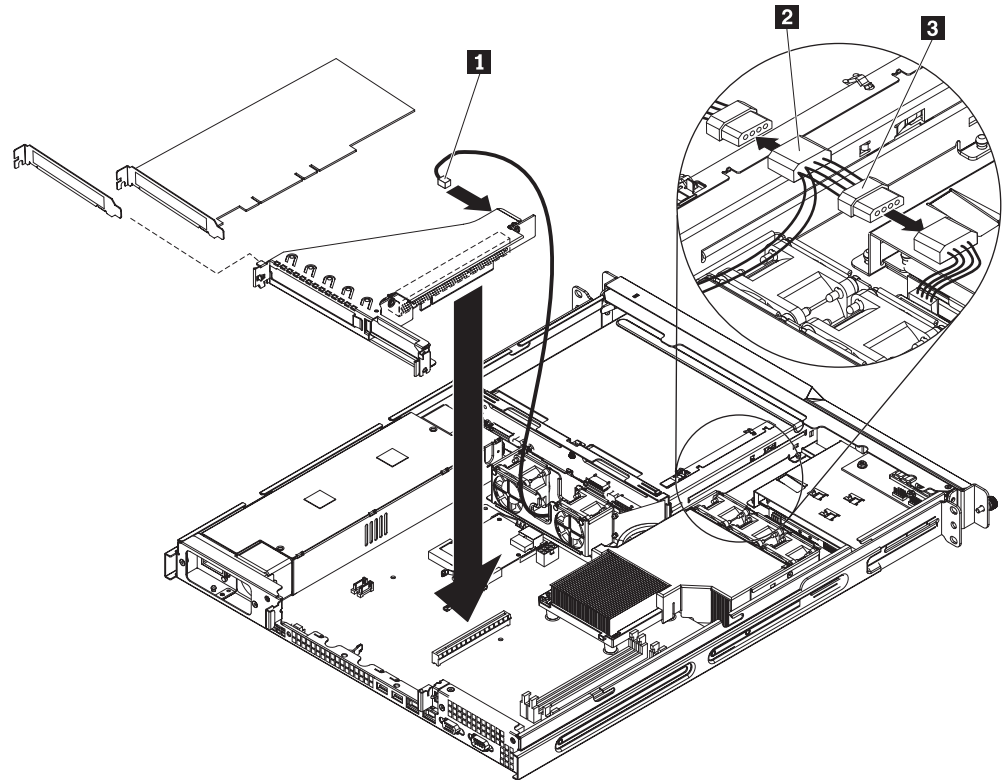
1. Read the safety information that begins on page vii and “Installation guidelines” on page 47.
2. Turn off the server and peripheral devices, and disconnect the power cord and all external cables.
3. Remove the server from the rack and place it on a flat, static-protective surface.
4. Remove the cover (see “Removing the cover” on page 50).



5. Disconnect the riser-card power cable **1** from the PCI-X riser card.
6. Disconnect connectors **2** and **3** from the two halves of the P4 connector. The P4 connector is on the cable that connects the CD/DVD drive to the power supply.
7. If you are instructed to return the PCI-X riser-card power cable, follow all packaging instructions, and use any packaging materials for shipping that are supplied to you.

Installing the PCI-X riser-card power cable

To install the replacement PCI-X riser-card power cable, complete the following steps.

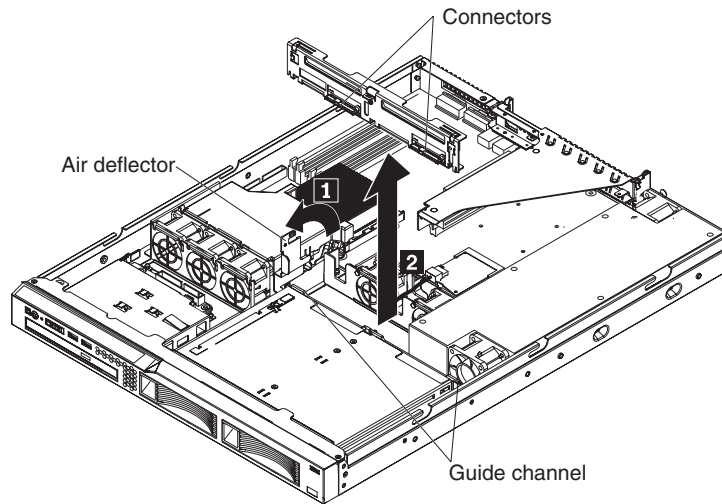


1. Connect the short 4-wire length of the riser-card power cable (**2** to **3**) to the two halves of the P4 connector, as shown in the illustration. The P4 connector is on the cable that connects the CD/DVD drive to the power supply.
2. Make sure that the long 2-wire section (**2** to **1**) reaches the riser-card assembly. Route the cable between fans 4 and 5 to reach the assembly.
3. Connect the riser-card power cable to the PCI-X riser-card assembly.
4. Install the cover (see “Installing the cover” on page 51).
5. Slide the server into the rack.
6. Connect the cables and power cords.
7. Turn on all attached devices and the server.

Removing the backplane or back plate (3.5-inch drives)

To remove the Serial Attached SCSI (SAS) backplane, which is also referred to as the hot-swap SAS/SATA backplane, or to remove the simple-swap SATA back plate, complete the following steps.

Note: The following illustration shows removing the hot-swap SAS/SATA backplane.



1. Read the safety information that begins on page vii and “Installation guidelines” on page 47.
2. Turn off the server and peripheral devices, and disconnect the power cords and all external cables.
3. Remove the server from the rack and place it on a flat, static-protective surface.
4. Pull the hard disk drives out of the server slightly to disengage them from the backplane or back plate.
5. Remove the cover (see “Removing the cover” on page 50).
6. Disconnect the backplane or back plate cables:
 - If the server is a hot-swap model, disconnect the SAS/SATA controller signal cable from the backplane.

Note: You might want to disconnect the cable from the SAS/SATA controller first, or remove the SAS/SATA controller from its connector, to make it easier to disconnect the cable from the backplane or back plate.

- If the server is a simple-swap mode that contains a standard SATA back plate, disconnect the SATA cables from the system board.
 - If the server is a simple-swap model that contains a SATA RAID back plate, disconnect the SAS signal cable from the SAS/SATA controller.
7. Rotate (lift) the air deflector out of the way.

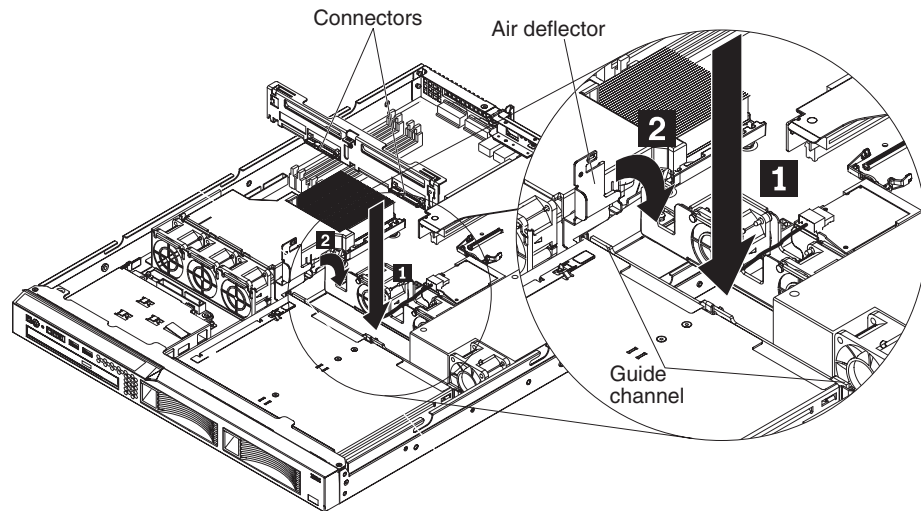
Note: The air deflector also functions as the backplane or back plate latch (3.5-inch drives).

8. Lift the backplane or back plate out of the server slightly; then, disconnect the power cable and remove the backplane or back plate.
9. If you are instructed to return the backplane or back plate, follow all packaging instructions, and use any packaging materials for shipping that are supplied to you.

Installing the backplane or back plate (3.5-inch drives)

To install the replacement 3.5-inch hot-swap drives backplane or simple-swap SATA drives back plate, complete the following steps.

Note: The following illustration shows installing the hot-swap SAS/SATA backplane.



1. Make sure that the air deflector is in the open position.

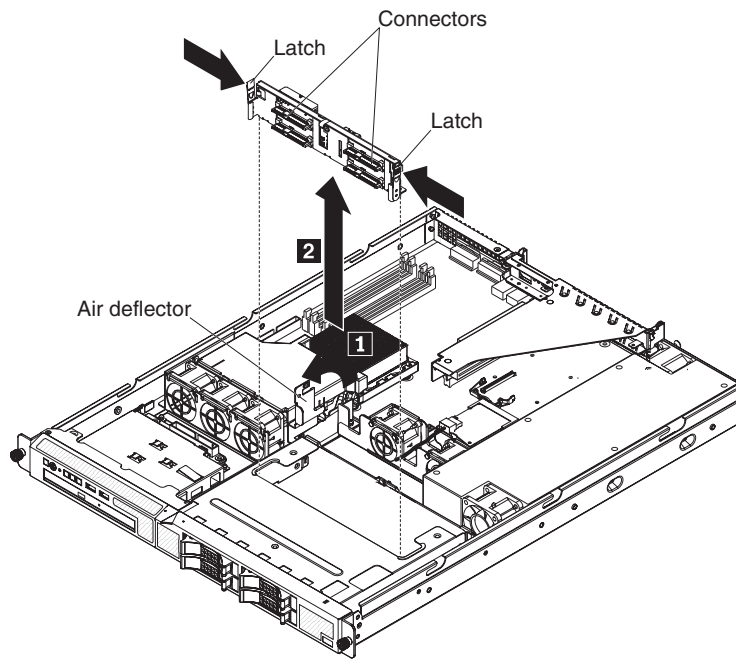
Note: The air deflector also functions as the backplane or back plate latch (3.5-inch drives).

2. Connect the power cable to the replacement backplane or back plate.
3. Slide the backplane or back plate into the card guides, making sure that any nearby wires or cables are not trapped or pinched.
4. Press firmly until the backplane or back plate is fully seated.
5. Rotate the air deflector into place, making sure that no cables are pinched beneath it, and press it down firmly.
6. Reconnect the backplane or back plate cables:
 - If the server is a hot-swap model, reconnect the SAS/SATA controller signal cable to the backplane.
 - If the server is a simple-swap model that contains a standard SATA back plate, reconnect the SATA cables to the system board. See “System-board internal connectors” on page 7 for the location of the SATA connectors on the system board.

Note: Make sure that the cable drive number on the back plate matches the connector number on the system board.

- If the server is a simple-swap model that contains a SATA RAID back plate, reconnect the SAS signal cable to the SAS/SATA controller.
7. Install the cover (see “Installing the cover” on page 51).
 8. Replace the hard disk drives.
 9. Slide the server into the rack.
 10. Connect the cables and power cords.
 11. Turn on all attached devices and the server.

Removing the SAS backplane (2.5-inch drives)

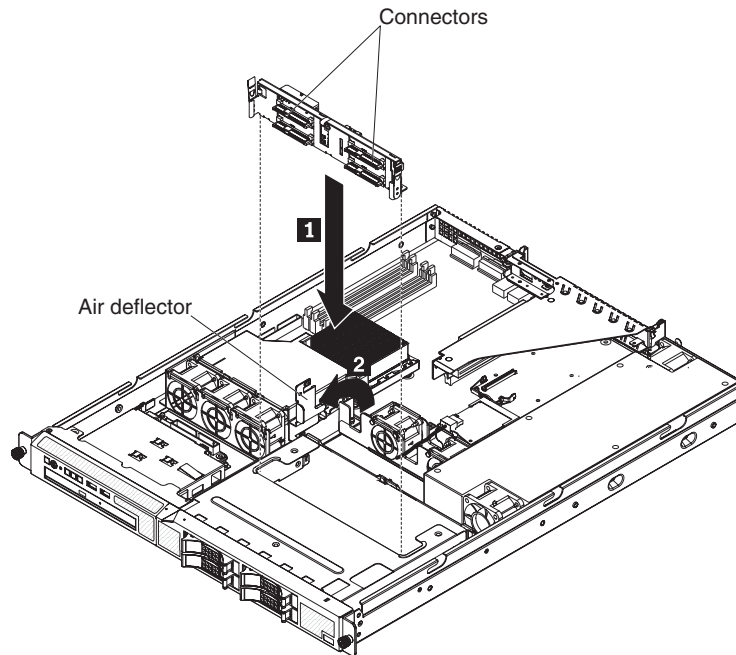


To remove the 2.5-inch drives backplane, complete the following steps:

1. Read the safety information that begins on page vii and “Installation guidelines” on page 47.
2. Turn off the server and peripheral devices, and disconnect the power cords and all external cables.
3. Remove the server from the rack and place it on a flat, static-protective surface.
4. Pull the hard disk drives out of the server slightly to disengage them from the backplane.
5. Remove the cover (see “Removing the cover” on page 50).
6. Disconnect the backplane cables:
 - Disconnect the SAS/SATA controller cable from the backplane.
 - Disconnect the power cable from the backplane.
7. Press the backplane latches toward each other; then, while you press the latches, lift the backplane out of the server.
8. If you are instructed to return the backplane or back plate, follow all packaging instructions, and use any packaging materials for shipping that are supplied to you.

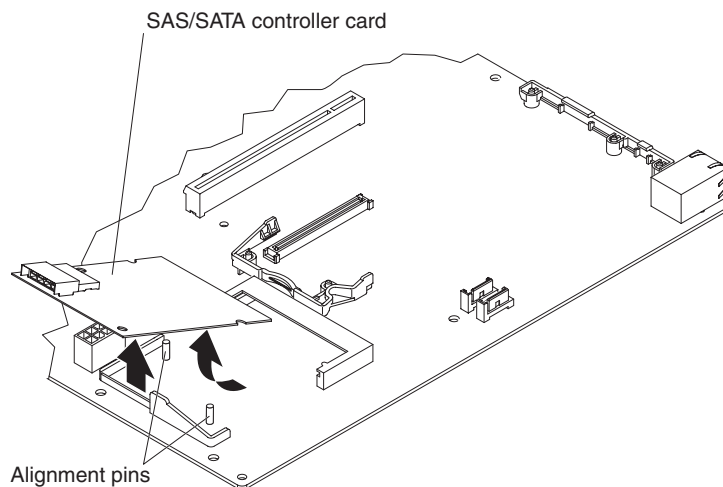
Installing the SAS backplane (2.5-inch drives)

To install the replacement 2.5-inch hot-swap drives backplane, complete the following steps.



1. Connect the power cable to the replacement backplane.
2. Slide the backplane into the card guides, making sure that any nearby wires or cables are not trapped or pinched.
3. Press firmly until the backplane is fully seated and clicks into place.
4. Reconnect the backplane cables.
5. Install the cover (see “Installing the cover” on page 51).
6. Replace the hard disk drives.
7. Slide the server into the rack.
8. Connect the cables and power cords.
9. Turn on all attached devices and the server.

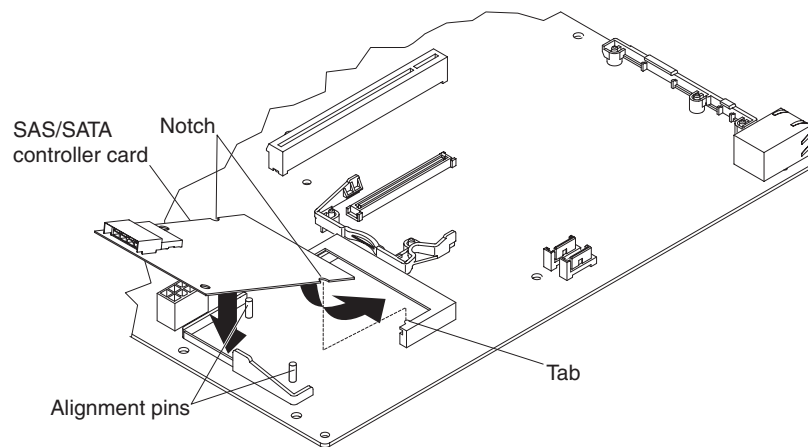
Removing the SAS/SATA controller (hot-swap models)



To remove the SAS/SATA controller from the system board, complete the following steps:

1. Read the safety information that begins on page vii and “Installation guidelines” on page 47.
2. Turn off the server and peripheral devices, and disconnect the power cords and all external cables.
3. Remove the server from the rack; then, remove the cover (see “Removing the cover” on page 50).
4. Disconnect the cable from the SAS/SATA controller.
5. Grasp the edges of the SAS/SATA controller.
6. Pinch the top of each of the two plastic alignment pins while you gently lift the controller, until the alignment pins release the controller.
7. Gently pull the controller toward the front of the server slightly; then, lift the controller off the system board.
8. If you are instructed to return the SAS/SATA controller, follow all packaging instructions, and use any packaging materials for shipping that are supplied to you.

Installing the SAS/SATA controller (hot-swap models)



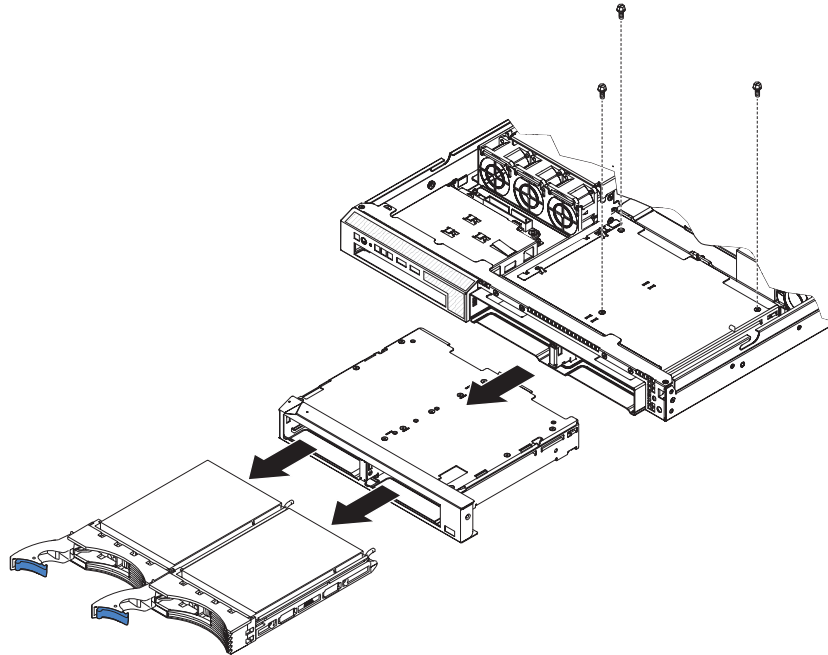
To replace the SAS/SATA controller on the system board, complete the following steps:

1. Grasp the edges of the SAS/SATA controller.
2. Gently insert the controller card into the SAS/SATA controller card connector on the system board (see the illustration on page 7 for the location of the connector) while you align the holes in the card with the two plastic alignment pins on the system board.
3. Press the controller card firmly onto the alignment pins until the card clicks into place. Make sure that the top of each alignment pin has expanded to hold the controller card securely in place.
4. Push the controller card toward the rear of the server, fully into the connector, until the side tabs on the connector rest in the side notches of the controller card.
5. Connect the cable from the hard disk drive backplane to the SAS/SATA controller.
6. Install the riser-card assembly (see “Installing the riser-card assembly” on page 79).
7. Install the cover (see “Installing the cover” on page 51).
8. Slide the server into the rack.

9. Connect the cables and power cords.
10. Turn on all attached devices and the server.

Removing a drive cage

To remove a drive cage, complete the following steps.

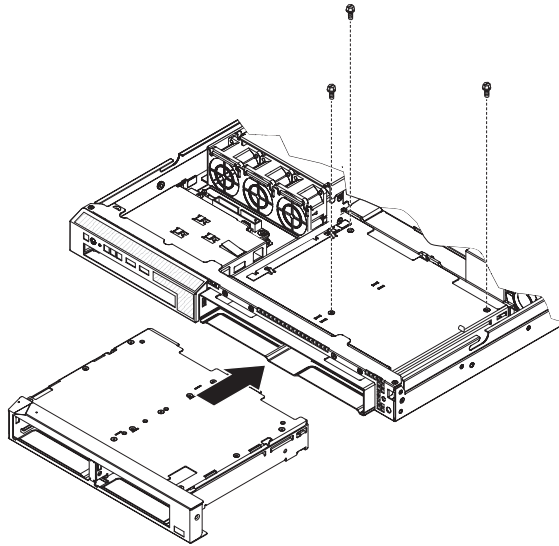


1. Read the safety information that begins on page vii and “Installation guidelines” on page 47.
 2. Turn off the server and peripheral devices, and disconnect the power cord and all external cables.
 3. Remove the hard disk drives from the cage.
 4. Remove the cover (see “Removing the cover” on page 50).
- Attention:** To ensure proper cooling and airflow, do not operate the server for more than 30 minutes with the cover removed.
5. Remove the hard disk drive backplane or back plate:
 - **2.5-inch drive models:** Remove the hard disk drive backplane from the cage. See “Removing the SAS backplane (2.5-inch drives)” on page 84 for instructions.
 - **3.5-inch drive models:** Remove the hard disk drive backplane or back plate from the cage. See “Removing the backplane or back plate (3.5-inch drives)” on page 81 for instructions.
 6. Remove the screws that hold the drive cage in place.
 7. Slide the drive cage forward and remove it from the server.
 8. If you are instructed to return the drive cage, follow all packaging instructions, and use any packaging materials for shipping that are supplied to you.

Installing a drive cage

To install a drive cage, complete the following steps.

Note: The following illustration shows installing a 3.5-inch drive cage.



1. Make sure that the backplane or back plate is removed from the drive cage. (See “Removing the backplane or back plate (3.5-inch drives)” on page 81 or “Removing the SAS backplane (2.5-inch drives)” on page 84 for instructions, as applicable.)
2. Line up the drive cage with the drive bays on the front of the server.
3. Push the drive cage into the server until it stops.
4. Align the holes in the top of the drive cage with the holes in the top of the chassis; then, insert the screws that secure the drive cage to the chassis.
5. Install the backplane or back plate. (See “Installing the backplane or back plate (3.5-inch drives)” on page 82 or “Installing the SAS backplane (2.5-inch drives)” on page 84 for instructions, as applicable.)
6. Install the cover (see “Installing the cover” on page 51).
7. Install the hard disk drives.
8. Install the server in the rack.
9. Connect the cables and power cords.
10. Turn on all attached devices and the server.

Removing and replacing FRUs

FRUs must be installed only by trained service technicians.

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

Microprocessor

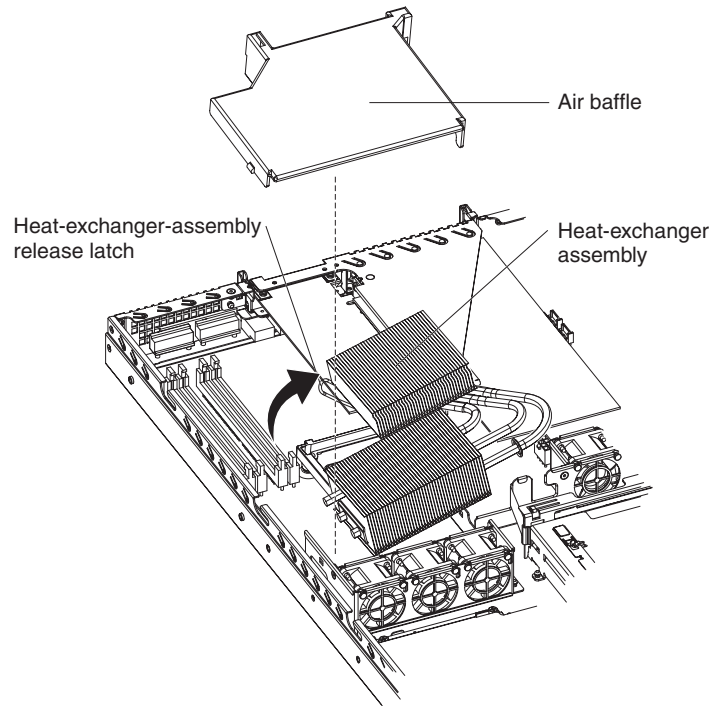
The following notes describe the type of microprocessor that the server supports and other information that you must consider when you install a microprocessor:

- The server supports one Intel land grid array (LGA) 775-land dual-core microprocessor. The type, speed, and L2 cache of the microprocessor depends on the server model.
- Read the documentation that comes with the microprocessor to determine whether you have to update the BIOS code. To download the most current level of BIOS code, go to <http://www.ibm.com/systems/support/>.
- The microprocessor uses an integrated voltage regulator on the system board.

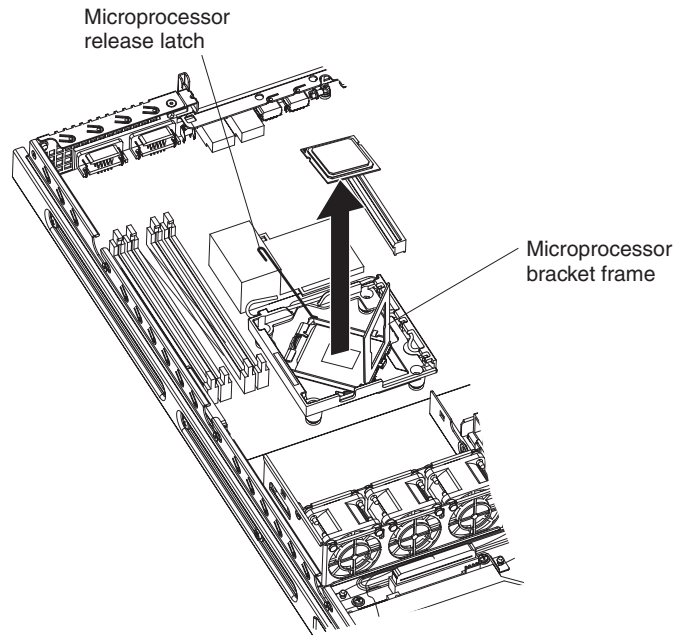
Removing the microprocessor

To remove the microprocessor, complete the following steps.

1. Read the safety information that begins on page vii and “Installation guidelines” on page 47.
2. Turn off the server and peripheral devices, and disconnect the power cords and all external cables.
3. Remove the server from the rack; then, remove the cover (see “Removing the cover” on page 50).



4. Remove the air baffle (see “Removing the air baffle” on page 68).
5. Open the heat-exchanger-assembly release latch to the fully open position.
6. Lift the side of the heat-exchanger assembly that is closer to the middle of the server, slide it toward the middle of the server slightly, and lift the entire assembly out of the server.



7. Open the microprocessor release latch to the fully open position.
8. Open the microprocessor bracket frame.

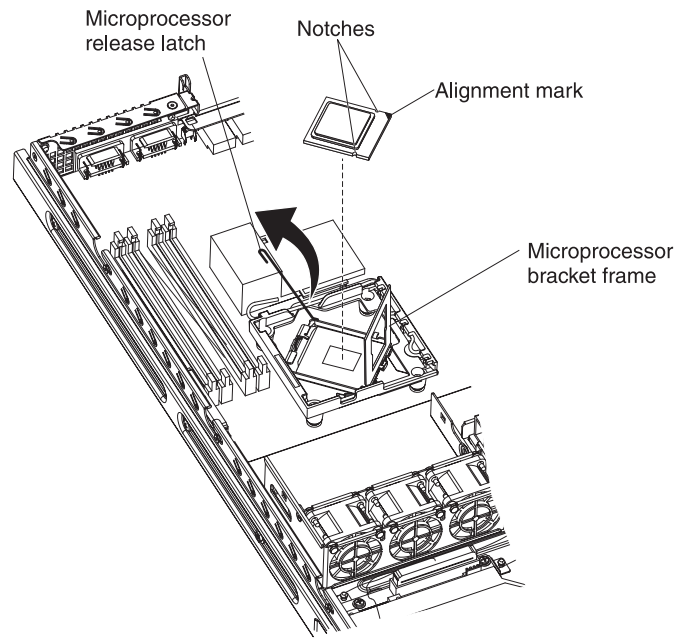
Attention: Handle the microprocessor carefully. Dropping the microprocessor during removal can damage the contacts. Also, contaminants on the microprocessor contacts, such as oil from your skin, can cause connection failures between the contacts and the socket.

9. Remove the microprocessor:
 - a. Carefully lift the microprocessor straight up and out of the socket, without touching the microprocessor contacts.
 - b. Place the microprocessor on a static-protective surface
10. If you are instructed to return the microprocessor, follow all packaging instructions, and use any packaging materials for shipping that are supplied to you.

Installing the microprocessor

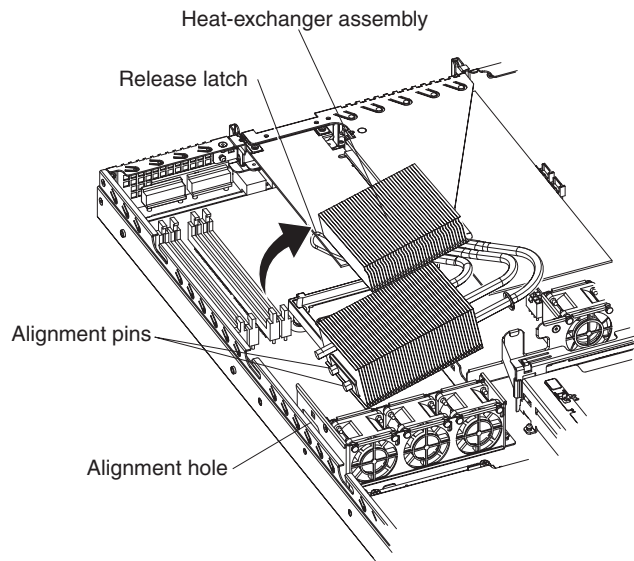
To install the replacement microprocessor, complete the following steps:

1. Make sure that the microprocessor bracket frame and release latch are both fully open.



Attention:

- The microprocessor contacts are fragile; handle the microprocessor very carefully. Do not touch the microprocessor contacts with your skin.
 - The microprocessor fits only one way on the socket.
2. 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, and close the microprocessor release latch.
 3. If you are installing a new heat-exchanger assembly, peel off the protective backing from the thermal material that is on the underside of the new heat exchanger. If you are reinstalling a heat-exchanger assembly that was previously removed, see “Thermal grease” on page 92 for instructions for replacing the contaminated or missing thermal grease; then, continue with step 4 of this procedure.
 4. Make sure that the heat-exchanger assembly release latch is fully opened.



5. With the heat-exchanger assembly at an angle as shown in the illustration, carefully align the heat-exchanger assembly with the microprocessor and the heat exchanger retention module (socket) on the system board. Make sure that the alignment pins (the two heat-exchanger nibs that are closer to the microprocessor) protrude through the alignment hole (the opening in the side of the heat-exchanger bracket) and that the flange of the heat sink rests under the lip of the heat-exchanger socket.
6. Gently press the assembly into place.
7. Close the heat-exchanger-assembly release latch, catching it under the hook on the socket.
8. Replace the air baffle (see "Installing the air baffle" on page 68).
9. Install the cover (see "Installing the cover" on page 51).
10. Slide the server into the rack.
11. Connect the cables and power cords.
12. Turn on all attached devices and the server.

Thermal grease

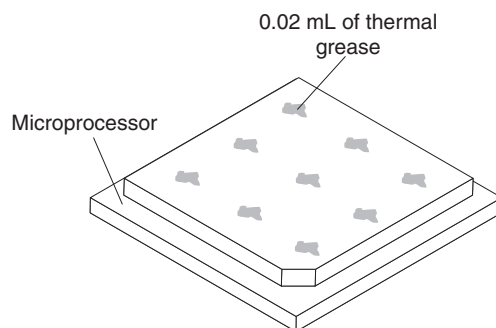
The thermal grease must be replaced whenever the heat exchanger has been removed from the top of the microprocessor and is going to be reused or when debris is found in the grease.

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

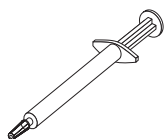
1. Place the heat-exchanger assembly on a clean work surface.
2. Remove the cleaning pad from its package and unfold it completely.
3. Use the cleaning pad to wipe the thermal grease from the bottom of the heat exchanger.

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.



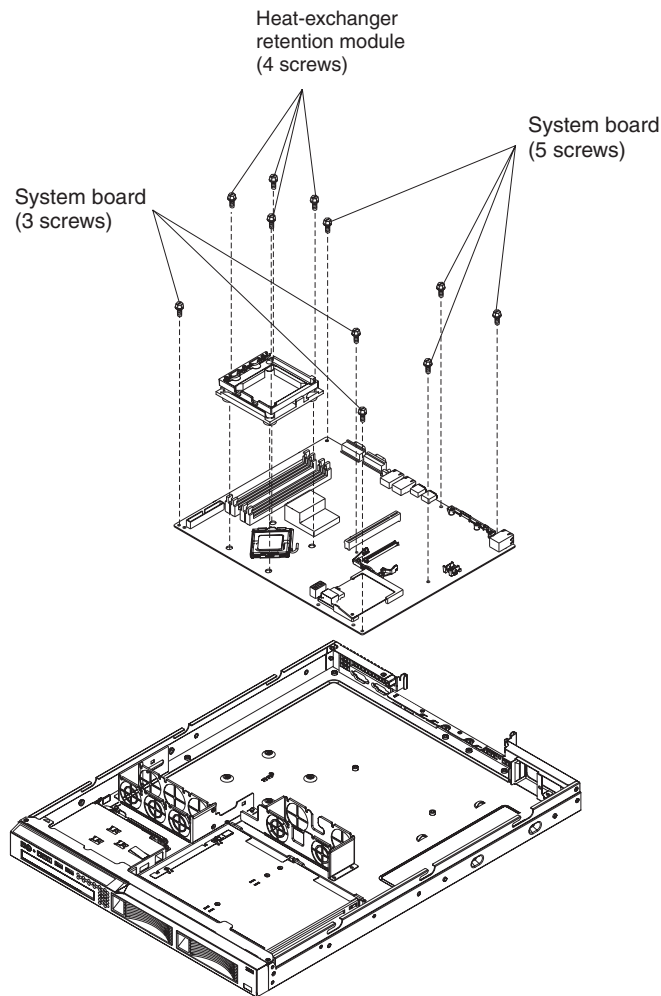
5. Use the thermal-grease syringe to place 9 uniformly spaced dots of 0.02 mL each on the top of the microprocessor. Make sure that the outermost dots are within 5 mm of the edge, to ensure even distribution.



Note: 0.01mL is one tick mark on the syringe. If the grease is properly applied, approximately half (0.22 mL) of the grease will remain in the syringe.

6. Install the heat exchanger onto the microprocessor as described in “Installing the microprocessor” on page 90.

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 47.
2. Turn off the server, and disconnect all power cords and external cables; then, remove the server cover (see “Removing the cover” on page 50).
3. Remove the riser-card assembly with adapters, and place them on a static-protective surface for reinstallation (see “Removing the riser-card assembly” on page 78).
4. Remove the SAS/SATA controller if one is installed (see “Removing the SAS/SATA controller (hot-swap models)” on page 85) and place it on a static-protective surface for reinstallation.
5. Remove all DIMMs, and place them on a static-protective surface for reinstallation (see “Removing a memory module (DIMM)” on page 64).
6. Disconnect all cables from the system board.
7. Remove the air baffle (see “Removing the air baffle” on page 68).
8. Remove the microprocessor heat-exchanger assembly and microprocessor; then, place them on a static-protective surface for reinstallation (see “Removing the microprocessor” on page 89).
9. Note the orientation of the microprocessor retention module.

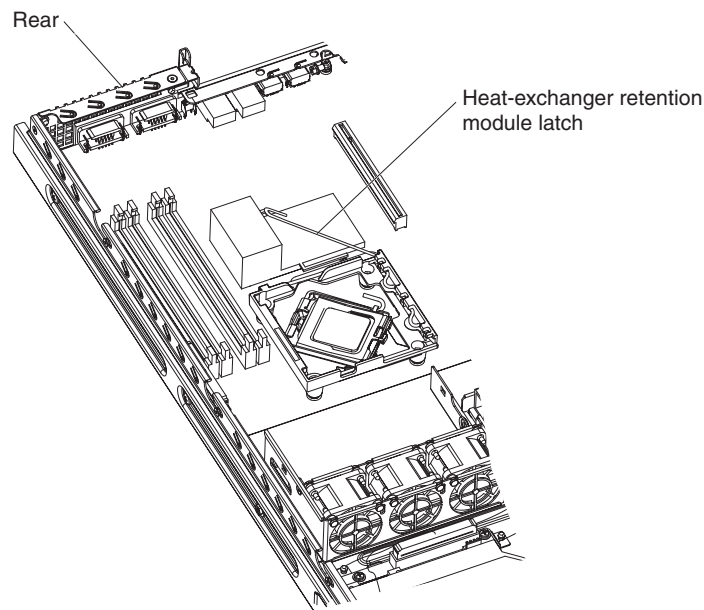
10. Remove the four screws that hold the microprocessor retention module to the system board; then, lift the retention module out of the server.
11. Remove the remaining eight screws that secure the system board to the chassis, and put the screws in a safe place.
12. Lift the system board out of the server.

Installing the system board

Note: When you reassemble the components in the server, be sure to route all cables carefully so that they are not exposed to excessive pressure.

To reinstall the system board, complete the following steps:

1. Align the system board with the chassis, and replace the eight screws that you removed in step 11 of “Removing the system board” on page 94.



2. Orient the microprocessor retention module as shown in the illustration.

Attention: In the following step, do not overtighten the screws or touch the system board with the screwdriver. Tighten the screws only until they are snug, and then tighten them an additional quarter turn.

3. Replace the microprocessor retention module. Gently secure it with the four screws that you removed in step 10 of “Removing the system board” on page 94.
4. Replace the microprocessor and microprocessor heat-exchanger assembly (see “Installing the microprocessor” on page 90).
5. Replace the air baffle, if you have not already done so (see “Installing the air baffle” on page 68).
6. Reconnect to the system board the cables that you disconnected in step 6 of “Removing the system board” on page 94.
7. Replace the SAS/SATA controller if you removed it (see “Installing the SAS/SATA controller (hot-swap models)” on page 86).
8. Replace the DIMMs (see “Installing a memory module (DIMM)” on page 65).

9. Replace the riser-card assembly and adapters (see “Installing the riser-card assembly” on page 79).
10. Replace the server cover (see “Installing the cover” on page 51).
11. Slide the server into the rack.
12. Connect all external cables and the power cord; then, turn on the server.

Important: Perform the following updates:

- Either update the server with the latest SAS/SATA or SATA firmware or restore the pre-existing firmware from a diskette or CD image.
- Update the DMI/SMBIOS code (see “Updating the DMI/SMBIOS data” on page 28).

Chapter 5. Diagnostics

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

If you cannot diagnose and correct a problem by using the information in this chapter, see Appendix A, “Getting help and technical assistance,” on page 203 for more information.

Diagnostic tools

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

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

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

- **Troubleshooting tables**

These tables list problem symptoms and actions to correct the problems. See “Troubleshooting tables” on page 115.

- **System-board LEDs**

Use the system-board LEDs to diagnose system errors quickly. See “System-board LEDs” on page 126 for more information.

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

The DSA Preboot diagnostic programs are provided on the *Dynamic System Analysis Preboot* CD. These programs test the major components of the server and collect and analyze the following information about the server:

- System configuration
- Network interfaces and settings
- Installed hardware
- Service processor status and configuration
- Vital product data, firmware, and BIOS configuration
- Hard disk drive health
- RAID controller configuration
- Event logs for ServeRAID controllers and service processors

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 the IBM Support Center. 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 “Diagnostic programs and messages” on page 128 for more information.

POST

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

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

The power-on self-test beep codes indicate the detection of a problem.

- One beep indicates successful completion of POST, with no errors.
- More than one beep indicates that POST detected a problem. Error messages also are displayed during startup if POST detects a hardware-configuration problem. See “POST beep codes” and “POST error codes” on page 103 for more information.

POST beep codes

A beep code is a combination of short or long beeps or series of short beeps that are separated by pauses. For example, a “1-2-3” beep code is one short beep, a pause, two short beeps, and pause, and three short beeps. A beep code indicates that POST has detected a problem.

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

Exception: If multiple error codes or diagnostics LEDs indicate a microprocessor error, the error might be in the microprocessor or in the microprocessor socket. See “Microprocessor problems” on page 119 for information about diagnosing microprocessor problems.

- Follow the suggested actions in the order in which they are listed in the Action column until the problem is solved.
- See Chapter 3, “Parts listing, Types 4190, 4191 and 4194 server,” on page 31 to determine which components are customer replaceable units (CRU) and which components are field replaceable units (FRU).
- If an action step is preceded by “(Trained service technician only),” that step must be performed only by a trained service technician.

Beep code	Description	Action
1-1-3	CMOS write/read test failed.	<ol style="list-style-type: none"> 1. Reseat the battery. 2. Clear CMOS. See “System-board switches and jumpers” on page 8 for information about how to clear CMOS. 3. Replace the following components one at a time, in the order shown, restarting the server each time: <ol style="list-style-type: none"> a. Battery b. (Trained service technician only) System board
1-1-4	BIOS EEPROM checksum failed.	(Trained service technician only) Replace the system board.
1-2-1	Programmable interval timer failed.	(Trained service technician only) Replace the system board.
1-2-2	DMA initialization failed.	(Trained service technician only) Replace the system board.
1-2-3	DMA page register write/read failed.	(Trained service technician only) Replace the system board.

- Follow the suggested actions in the order in which they are listed in the Action column until the problem is solved.
- See Chapter 3, “Parts listing, Types 4190, 4191 and 4194 server,” on page 31 to determine which components are customer replaceable units (CRU) and which components are field replaceable units (FRU).
- If an action step is preceded by “(Trained service technician only),” that step must be performed only by a trained service technician.

Beep code	Description	Action
1-2-4	RAM refresh verification failed.	<ol style="list-style-type: none"> 1. Reseat the DIMMs. 2. Replace the following components, one at a time, in the order shown: <ol style="list-style-type: none"> a. DIMMs b. (Trained service technician only) System board
1-3-1	First 64K RAM test failed.	<ol style="list-style-type: none"> 1. Reseat the DIMMs. 2. Replace the lowest-numbered pair of DIMMs with an identical known good pair of DIMMs; then, restart the server. If the beep code error remains, go to 3b. Return one DIMM at a time from the failed pair to its connector, restarting the server after each DIMM, to identify the failed DIMM. 3. Replace the following components, one at a time, in the order shown, restarting the server each time: <ol style="list-style-type: none"> a. DIMMs b. (Trained service technician only) System board
2-1-1	Primary DMA register failed.	(Trained service technician only) Replace the system board.
2-1-2	Secondary DMA register failed.	(Trained service technician only) Replace the system board.
2-1-3	Primary interrupt mask register failed.	(Trained service technician only) Replace the system board.
2-1-4	Secondary interrupt mask register failed.	(Trained service technician only) Replace the system board.

- Follow the suggested actions in the order in which they are listed in the Action column until the problem is solved.
- See Chapter 3, “Parts listing, Types 4190, 4191 and 4194 server,” on page 31 to determine which components are customer replaceable units (CRU) and which components are field replaceable units (FRU).
- If an action step is preceded by “(Trained service technician only),” that step must be performed only by a trained service technician.

Beep code	Description	Action
3-3-2	Critical SMBUS error occurred.	<ol style="list-style-type: none"> 1. Disconnect the power cord, wait 30 seconds, and retry. 2. Reseat the following components: <ol style="list-style-type: none"> a. (Trained service technician only) Microprocessor b. DIMMs c. Hard disk drives d. Hard disk drive backplane or back plate e. Power cable to the hard disk drive backplane or back plate f. Signal cable to the hard disk drive backplane (SAS drives only) 3. Replace the following components one at a time, in the order shown, restarting the server each time: <ol style="list-style-type: none"> a. DIMMs b. Riser-card assembly c. PCI Express adapters (if installed) d. Hard disk drives e. Hard disk drive backplane or back plate f. Power cable to the hard disk drive backplane or back plate g. Signal cable to the hard disk drive backplane (SAS drives only) h. (Trained service technician only) Microprocessor i. (Trained service technician only) System board

- Follow the suggested actions in the order in which they are listed in the Action column until the problem is solved.
- See Chapter 3, “Parts listing, Types 4190, 4191 and 4194 server,” on page 31 to determine which components are customer replaceable units (CRU) and which components are field replaceable units (FRU).
- If an action step is preceded by “(Trained service technician only),” that step must be performed only by a trained service technician.

Beep code	Description	Action
3-3-3	No operational memory in system.	<ol style="list-style-type: none"> 1. Make sure that the server contains the correct number of DIMMs, in the correct order; install or reseat DIMMs; then, restart the server. Important: In some memory configurations, the 3-3-3 beep code might sound during POST, followed by a blank monitor screen. If this occurs and the Boot Fail Count option in the Start Options of the Configuration/Setup Utility program is enabled, you must restart the server three times to reset the configuration settings to the default configuration (the memory connector or bank of connectors enabled). 2. Replace the following components one at a time, in the order shown, restarting the server each time: <ol style="list-style-type: none"> a. DIMMs b. (Trained service technician only) System board

Error logs

The server generates up to three error logs:

- The system event/error log contains all messages that were generated during POST.
- The BMC system-event log contains messages that were generated by the mini-BMC for monitored events, such as a threshold that is reached or a device that fails.
- If an optional Remote Supervisor Adapter II SlimLine is installed, the RSA II event/error log contains system error messages from the Remote Supervisor Adapter II SlimLine.

The system event/error log, the BMC system-event log, and the RSA II event/error log are limited in size. When the RSA II event/error log is full, new entries overwrite older entries. When the BMC system-event log or the system event/error log is full, new entries will not overwrite existing entries; therefore, you must periodically clear the log through the Configuration/Setup Utility program (see “Configuration/Setup Utility menu choices” on page 17). When you are troubleshooting an error, be sure to clear the logs so that you can find current errors more easily.

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

Each log entry is displayed on its own page. To move from one entry to the next, use the Up Arrow and Down Arrow keys.

You can view the contents of the system event/error log, BMC system-event log, and the RSA II event/error log from the Configuration/Setup Utility program.

When you are troubleshooting PCI Express slots, note that the error logs report the PCI Express buses numerically. The numerical assignments vary depending on the configuration. You can check the assignments by running the Configuration/Setup Utility program (see the *User's Guide* for more information).

Viewing error logs from the Configuration/Setup Utility program

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

To view the error logs, complete the following steps:

1. Turn on the server.
2. When the prompt Press F1 for Configuration/Setup is displayed, press F1. If you have set both a power-on password and an administrator password, you must type the administrator password to view the error logs.
3. Use one of the following procedures:
 - To view the system event/error log, select **Event/Error Logs**, and then select **System Event/Error Log**.
 - To view the BMC system-event log, select **Advanced Setup**, select **Basement Management Controller (BMC) Settings**, and then select **BMC System Event Log**.
 - To view the RSA II event/error log, select **Event/Error Logs**, and then select **RSA II Event/Error Log**.

Clearing the error logs

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

To clear the error logs, complete the following steps:

1. Turn on the server.
2. When the prompt Press F1 for Configuration/Setup is displayed, press F1. If you have set both a power-on password and an administrator password, you must type the administrator password to view the error logs.
3. Use one of the following procedures:
 - To clear the BMC system-event log, select **Advanced Setup**, select **Baseboard Management Controller (BMC) Settings**, and then select **BMC System Event Log**. Use the Down Arrow key to select **Clear BMC SELs**; then, press Enter. Press Enter to confirm clearing the log, and then press Esc.
 - To clear the system event/error log, select **Event/Error logs**, and then select **System Event/Error Log**. Use the Down Arrow key to select **Clear System Event/Error Log**; then, press Enter. Press Enter to confirm clearing the log, and then press Esc.
 - To clear the RSA II event/error log, select **Event/Error logs**, and then select **RSA II Event/Error Log**. Use the Down Arrow key to select **Clear RSA II logs**; then, press Enter. Press Enter to confirm clearing the log, and then press Esc.

POST error codes

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

<ul style="list-style-type: none">• Follow the suggested actions in the order in which they are listed in the Action column until the problem is solved.• See Chapter 3, “Parts listing, Types 4190, 4191 and 4194 server,” on page 31 to determine which components are customer replaceable units (CRU) and which components are field replaceable units (FRU).• If an action step is preceded by “(Trained service technician only),” that step must be performed only by a trained service technician.		
Error code	Description	Action
062	Three consecutive boot failures using the default configuration.	<ol style="list-style-type: none">1. Update the system firmware to the latest level (see “Updating the firmware” on page 13).2. (Trained service technician only) Replace the system board.
101, 102	System board failure.	(Trained service technician only) Replace the system board

- Follow the suggested actions in the order in which they are listed in the Action column until the problem is solved.
- See Chapter 3, “Parts listing, Types 4190, 4191 and 4194 server,” on page 31 to determine which components are customer replaceable units (CRU) and which components are field replaceable units (FRU).
- If an action step is preceded by “(Trained service technician only),” that step must be performed only by a trained service technician.

Error code	Description	Action
151	Real-time clock error.	<ol style="list-style-type: none"> 1. Reseat the battery. 2. Clear CMOS. See “System-board switches and jumpers” on page 8 for information about how to clear CMOS. 3. Replace the following components one at a time, in the order shown, restarting the server each time: <ol style="list-style-type: none"> a. Battery b. (Trained service technician only) System board
162	Invalid configuration information or CMOS random-access memory (RAM) checksum failure.	<ol style="list-style-type: none"> 1. Run the Configuration/Setup Utility program, select Load Default Settings, and save the settings. 2. Reseat the following components, one at a time, in the order shown, restarting the server each time: <ol style="list-style-type: none"> a. Battery b. Failing device (if the device is a FRU, the device must be reseated by a trained service technician only) 3. Replace the following components one at a time, in the order shown, restarting the server each time: <ol style="list-style-type: none"> a. Battery b. Failing device (if the device is a FRU, the device must be replaced by a trained service technician only) c. (Trained service technician only) System board
163	Real-time clock error. (time of day not set)	<ol style="list-style-type: none"> 1. Run the Configuration/Setup Utility program, select Load Default Settings, make sure that the date and time are correct, and save the settings. 2. Reseat the battery. 3. Clear CMOS. See “System-board switches and jumpers” on page 8 for information about how to clear CMOS. 4. Replace the following components one at a time, in the order shown, restarting the server each time: <ol style="list-style-type: none"> a. Battery b. (Trained service technician only) System board

- Follow the suggested actions in the order in which they are listed in the Action column until the problem is solved.
- See Chapter 3, “Parts listing, Types 4190, 4191 and 4194 server,” on page 31 to determine which components are customer replaceable units (CRU) and which components are field replaceable units (FRU).
- If an action step is preceded by “(Trained service technician only),” that step must be performed only by a trained service technician.

Error code	Description	Action
164	Memory size has changed.	<ol style="list-style-type: none"> 1. Run the Configuration/Setup Utility program; then, exit, saving the configuration settings. 2. Reseat the DIMMs.
175	Service processor code on optional service processor adapter damaged or not loaded. Note: In this case, the service processor is the optional Remote Supervisor Adapter II SlimLine.	<ol style="list-style-type: none"> 1. Update the firmware on the optional Remote Supervisor Adapter II SlimLine (see “Updating the firmware” on page 13). 2. Replace the optional Remote Supervisor Adapter II SlimLine.
178	System VPD not available.	<ol style="list-style-type: none"> 1. Reseat the Remote Supervisor Adapter II SlimLine. 2. Restart the server. 3. Update the Remote Supervisor Adapter II SlimLine firmware. 4. Update the BIOS code. 5. Update the BMC firmware. 6. (Trained service technician only) Replace the system board.
184	Power-on password damaged.	<ol style="list-style-type: none"> 1. Restart the server and enter the administrator password; then, run the Configuration/Setup Utility program, select Load Default Settings, and save the settings. 2. Reseat the battery. 3. Clear CMOS. See “System-board switches and jumpers” on page 8 for information about how to clear CMOS. 4. Replace the following components one at a time, in the order shown, restarting the server each time: <ol style="list-style-type: none"> a. Battery b. (Trained service technician only) System board
187	VPD serial number not set.	<ol style="list-style-type: none"> 1. Reseat the optional Remote Supervisor Adapter II SlimLine. 2. (Trained service technician only) Replace the system board.

- Follow the suggested actions in the order in which they are listed in the Action column until the problem is solved.
- See Chapter 3, “Parts listing, Types 4190, 4191 and 4194 server,” on page 31 to determine which components are customer replaceable units (CRU) and which components are field replaceable units (FRU).
- If an action step is preceded by “(Trained service technician only),” that step must be performed only by a trained service technician.

Error code	Description	Action
188	Remote Supervisor Adapter II SlimLine EEPROM CRC #2 bad	<ol style="list-style-type: none"> 1. Restart the server. 2. Update the BMC firmware. 3. Update the Remote Supervisor Adapter II SlimLine firmware. 4. Replace the Remote Supervisor Adapter II SlimLine. 5. (Trained service technician only) Replace the system board.
189	Three attempts were made to access the server with an incorrect password.	Restart the server and enter the administrator password; then, run the Configuration/Setup Utility program and change the power-on password.
289	A DIMM has been disabled by the system.	<ol style="list-style-type: none"> 1. Make sure that the DIMM is installed correctly (see “Installing a memory module (DIMM)” on page 65). 2. Reseat the DIMM. 3. Replace the DIMM.
602	Invalid diskette boot record	<ol style="list-style-type: none"> 1. Replace the diskette. 2. Reseat the diskette drive cables. 3. Replace the diskette drive.
1162	Serial port error The I/O address of an added device conflicts with the base addresses of the serial port.	<ol style="list-style-type: none"> 1. Run the Configuration/Setup Utility program and make sure that the serial port settings are correct. 2. Run the Configuration/Setup Utility program and change the I/O address of the added device so that it does not conflict with the serial port address. 3. (Trained service technician only) Replace the system board.
1600	The baseboard management controller failed BIST (built-in self-test).	<ol style="list-style-type: none"> 1. Restart the server. 2. (Trained service technician only) Replace the system board.
1601	The BMC is not responding. Systems-management adapter communication error.	<ol style="list-style-type: none"> 1. Turn off the server and disconnect AC power from the server; then, reconnect AC power. 2. Restart the server. 3. Make sure that the BMC heartbeat LED is flashing. 4. Update the BMC firmware. 5. Update the BIOS code. 6. (Trained service technician only) Replace the system board.

- Follow the suggested actions in the order in which they are listed in the Action column until the problem is solved.
- See Chapter 3, “Parts listing, Types 4190, 4191 and 4194 server,” on page 31 to determine which components are customer replaceable units (CRU) and which components are field replaceable units (FRU).
- If an action step is preceded by “(Trained service technician only),” that step must be performed only by a trained service technician.

Error code	Description	Action
1603	Service processor is not functioning The Remote Supervisor Adapter II SlimLine is not responding.	<ol style="list-style-type: none"> 1. Make sure that the Remote Supervisor Adapter II SlimLine is installed correctly. 2. Update the Remote Supervisor Adapter II SlimLine firmware.
1762	Hard disk drive configuration changed An expected SATA hard disk drive was not detected.	<ol style="list-style-type: none"> 1. Run the hard disk drive diagnostic tests on the drive. 2. Reseat the following components: <ul style="list-style-type: none"> • Hard disk drive • Cables to the hard disk drive backplane or back plate 3. Run the Configuration/Setup Utility program, select Load Default Settings, and then save the settings. 4. Replace the following components one at a time, in the order shown, restarting the server each time: <ol style="list-style-type: none"> a. Hard disk drive b. Hard disk drive backplane or back plane c. (Trained service technician only) System board
178x	Fixed disk error. Note: x is the drive that has the error	<ol style="list-style-type: none"> 1. Run the hard disk drive diagnostic tests on drive x (see “Diagnostic programs and messages” on page 128). 2. Reseat the following components, depending on the server model: <ul style="list-style-type: none"> • Hot-swap models: Hard disk drive • Simple-swap models: <ol style="list-style-type: none"> a. Hard disk drive x b. Hard disk drive x cable 3. Replace the following components one at a time, depending on the server model, in the order shown, restarting the server each time: <ul style="list-style-type: none"> • Hot-swap models: <ol style="list-style-type: none"> a. Hard disk drive x b. Hard disk drive backplane c. (Trained service technician only) System board • Simple-swap models: <ol style="list-style-type: none"> a. Hard disk drive x b. Hard disk drive x cable c. (Trained service technician only) System board

- Follow the suggested actions in the order in which they are listed in the Action column until the problem is solved.
- See Chapter 3, “Parts listing, Types 4190, 4191 and 4194 server,” on page 31 to determine which components are customer replaceable units (CRU) and which components are field replaceable units (FRU).
- If an action step is preceded by “(Trained service technician only),” that step must be performed only by a trained service technician.

Error code	Description	Action
1800	Unavailable PCI hardware interrupt.	<ol style="list-style-type: none"> 1. Run the Configuration/Setup Utility program and adjust the adapter settings. 2. Remove each adapter one at a time, restarting the server each time, until the problem is isolated.
1801	An adapter has requested memory resources that are not available	<ol style="list-style-type: none"> 1. Run the Configuration/Setup Utility program and make sure that sufficient memory is installed in the server. 2. Run the Configuration/Setup Utility program and disable some other resources to make more space available. 3. If possible, change the order of the adapters in the PCI Express slots so that the device that requires the most memory resources is positioned early in the scan order (see the <i>User's Guide</i> for information about the scan order). 4. Remove the adapter or disable BIOS on the adapter to remove the request for memory resources. See the documentation that comes with the adapter for information about disabling the adapter BIOS. 5. (Trained service technician only) Replace the system board.
1802	No more I/O space is available for a PCI device	<ol style="list-style-type: none"> 1. Run the Configuration/Setup Utility program and make sure that interrupt resource settings are correct. 2. If the error code indicates a particular PCI Express slot or device, remove that device. 3. If the error continues, reseal each adapter. 4. (Trained service technician only) Replace the system board.
1803	No more memory available (above 1 MB)	<ol style="list-style-type: none"> 1. If the error code indicates a particular PCI Express slot or device, remove that device. 2. If the error continues, reseal each adapter. 3. (Trained service technician only) Replace the system board.
1804	No more memory available (below 1 MB)	<ol style="list-style-type: none"> 1. If the error code indicates a particular PCI Express slot or device, remove that device. 2. If the error continues, reseal each adapter. 3. (Trained service technician only) Replace the system board.

- Follow the suggested actions in the order in which they are listed in the Action column until the problem is solved.
- See Chapter 3, “Parts listing, Types 4190, 4191 and 4194 server,” on page 31 to determine which components are customer replaceable units (CRU) and which components are field replaceable units (FRU).
- If an action step is preceded by “(Trained service technician only),” that step must be performed only by a trained service technician.

Error code	Description	Action
1805	PCI option ROM checksum error	<ol style="list-style-type: none"> 1. Remove the failing adapter. 2. Reseat each adapter. 3. Reseat the riser-card assembly. 4. Replace the following components one at a time, in the order shown, restarting the server each time: <ol style="list-style-type: none"> a. Each adapter b. Riser-card assembly c. (Trained service technician only) System board
1806	PCI device failed built-in self-test (BIST)	<ol style="list-style-type: none"> 1. If the error code indicates a particular PCI Express slot or device, remove that device. 2. Reseat the following components: <ol style="list-style-type: none"> a. Each adapter b. Riser-card assembly 3. Replace the following components one at a time, in the order shown above, restarting the server each time. <ol style="list-style-type: none"> a. Each adapter b. Riser-card assembly c. (Trained service technician only) System board
1807	PCI device not found on system board	<ol style="list-style-type: none"> 1. Make sure that no devices have been disabled in the Configuration/Setup Utility program. 2. Reseat the following components: <ol style="list-style-type: none"> a. Failing adapter (indicated by a lit LED), or each adapter one at a time, restarting the server each time, to isolate the failing adapter b. Riser-card assembly 3. Remove both adapters from the riser-card assembly. 4. Replace the following components one at a time, in the order shown, restarting the server each time: <ol style="list-style-type: none"> a. Riser-card assembly b. (Trained service technician only) System board

- Follow the suggested actions in the order in which they are listed in the Action column until the problem is solved.
- See Chapter 3, “Parts listing, Types 4190, 4191 and 4194 server,” on page 31 to determine which components are customer replaceable units (CRU) and which components are field replaceable units (FRU).
- If an action step is preceded by “(Trained service technician only),” that step must be performed only by a trained service technician.

Error code	Description	Action
1962	A hard disk drive does not contain a valid boot sector.	<ol style="list-style-type: none"> 1. Make sure that a startable operating system is installed. 2. Run the hard disk drive diagnostic tests. 3. Reseat the following components: <ol style="list-style-type: none"> a. Hard disk drive b. Hard disk drive backplane cable or back plate cables 4. Replace the following components one at a time, in the order shown, restarting the server each time: <ol style="list-style-type: none"> a. (Hot-swap models) Hard disk drive cable b. Hard disk drive c. Hard disk drive backplane or back plate d. (Trained service technician only) System board
2462	Video configuration error. Note: This error code appears through the console redirection remote video interface only. The server VGA function has failed.	<ol style="list-style-type: none"> 1. Make sure that a working monitor is connected correctly to the server. 2. Run the Configuration/Setup Utility program and load the default settings (see “Using the Configuration/Setup Utility program” on page 16). 3. (Trained service technician only) Replace the system board assembly.
3001	SMART failure predicted on hard disk drive.	Replace the hard disk drive.
3003	SMART command execution failure on hard disk drive.	Replace the hard disk drive.
3005	Current hard disk configuration does not support SMART function.	Replace the hard disk drive.
5962	Internal CD/DVD drive configuration changed. An expected CD or DVD drive was not detected.	<ol style="list-style-type: none"> 1. Run the Configuration/Setup Utility program and load the default settings (see “Using the Configuration/Setup Utility program” on page 16). 2. Reseat the following components: <ol style="list-style-type: none"> a. CD or DVD drive cable b. CD or DVD drive 3. Replace the following components one at a time, in the order shown, restarting the server each time: <ol style="list-style-type: none"> a. CD or DVD drive cable b. CD or DVD drive c. (Trained service technician only) System board

- Follow the suggested actions in the order in which they are listed in the Action column until the problem is solved.
- See Chapter 3, “Parts listing, Types 4190, 4191 and 4194 server,” on page 31 to determine which components are customer replaceable units (CRU) and which components are field replaceable units (FRU).
- If an action step is preceded by “(Trained service technician only),” that step must be performed only by a trained service technician.

Error code	Description	Action
00012000	Processor machine check error.	<ol style="list-style-type: none"> 1. (Trained service technician only) Reseat the microprocessor. 2. Replace the following components one at a time, in the order shown, restarting the server each time: <ol style="list-style-type: none"> a. (Trained service technician only) Microprocessor b. (Trained service technician only) System board
00019701	Processor failed BIST.	<ol style="list-style-type: none"> 1. (Trained service technician only) Reseat the microprocessor. 2. Replace the following components one at a time, in the order shown, restarting the server each time: <ol style="list-style-type: none"> a. (Trained service technician only) Microprocessor b. (Trained service technician only) System board
01298001	No update data for processor.	<ol style="list-style-type: none"> 1. Update the BIOS code again. 2. (Trained service technician only) Reseat the microprocessor. 3. (Trained service technician only) Replace the microprocessor.
01298101	Bad update data for processor.	<ol style="list-style-type: none"> 1. Update the BIOS code again. 2. (Trained service technician only) Reseat the microprocessor. 3. (Trained service technician only) Replace the microprocessor.

- Follow the suggested actions in the order in which they are listed in the Action column until the problem is solved.
- See Chapter 3, “Parts listing, Types 4190, 4191 and 4194 server,” on page 31 to determine which components are customer replaceable units (CRU) and which components are field replaceable units (FRU).
- If an action step is preceded by “(Trained service technician only),” that step must be performed only by a trained service technician.

Error code	Description	Action
I9990301	Hard disk drive boot sector error.	<ol style="list-style-type: none"> 1. Reseat the following components, depending on the server model: <ul style="list-style-type: none"> • Hot-swap models: <ol style="list-style-type: none"> a. Hard disk drive b. SAS/SATA controller • Simple-swap models: <ol style="list-style-type: none"> a. Hard disk drive b. Hard disk drive cable 2. Replace the following components one at a time, depending on the server model, in the order shown, restarting the server each time: <ul style="list-style-type: none"> • Hot-swap models: <ol style="list-style-type: none"> a. Hard disk drive b. Hard disk drive backplane c. SAS/SATA controller d. (Trained service technician only) System board • Simple-swap models: <ol style="list-style-type: none"> a. Hard disk drive b. Hard disk drive cable c. (Trained service technician only) System board
I9990305	An operating system was not found.	<ol style="list-style-type: none"> 1. Make sure that a bootable operating system is installed. 2. Run the hard disk drive diagnostic tests. 3. Reseat the following components: <ol style="list-style-type: none"> a. Hard disk drive b. CD or DVD drive and cables c. (Trained service technician only) System board 4. Replace the components listed in step 3 one at a time, in the order shown, restarting the server each time.
I9990650	AC power has been restored.	<ol style="list-style-type: none"> 1. Check the power cables. 2. Check for interruption of the power supply.

Checkout procedure

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

About the checkout procedure

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

- Read the safety information that begins on page vii.
- The diagnostic programs provide the primary methods of testing the major components of the server, such as the system 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 LEDs indicate a microprocessor error, the error might be in the microprocessor or in the microprocessor socket. See “Microprocessor problems” on page 119 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 sharing external storage devices).
 - One or more external storage units are attached to the failing server and at least one of the attached storage units is also attached to another server or unidentifiable device.
 - One or more servers are located near the failing server.

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

- If the server is halted and a POST error code is displayed, see “Error logs” on page 102. If the server is halted and no error message is displayed, see “Troubleshooting tables” on page 115 and “Solving undetermined problems” on page 199.
- For information about power-supply problems, see “Solving power problems” on page 198.
- For intermittent problems, check the error log; see “Error logs” on page 102 and “Diagnostic programs and messages” on page 128.

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 internal and external devices for compatibility at <http://www.ibm.com/servers/eserver/serverproven/compat/us/>.
 - c. Check all cables and power cords.
 - d. Set all display controls to the middle positions.
 - e. Turn on all external devices.
 - f. Turn on the server. If the server does not start, see “Troubleshooting tables” on page 115.
 - g. Check the system-error LED on the operator information panel. If it is flashing, check the LEDs on the system board (see “System-board LEDs” on page 126).
 - h. Check for the following results:
 - Successful completion of POST (see “POST” on page 97 for more information)
 - Successful completion of startup
3. Did one or more beeps sound?
- **No:** Find the failure symptom in “Troubleshooting tables” on page 115; if necessary, run the diagnostic programs (see “Diagnostic programs and messages” on page 128).
 - If you receive an error, follow the instructions on the screen.
 - If the diagnostic programs were completed successfully and you still suspect a problem, see “Solving undetermined problems” on page 199.
 - **Yes:** Find the beep code in “POST beep codes” on page 98; if necessary, see “Solving undetermined problems” on page 199.

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 “Diagnostic programs and messages” on page 128 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 system-error LED on the operator information panel; if it is lit, check the LEDs on the system board (see “System-board LEDs” on page 126).
2. Remove the software or device that you just added.
3. Run the diagnostic tests to determine whether the server is running correctly.
4. Reinstall the new software or new device.

CD or DVD drive problems

- Follow the suggested actions in the order in which they are listed in the Action column until the problem is solved.
- See Chapter 3, “Parts listing, Types 4190, 4191 and 4194 server,” on page 31 to determine which components are customer replaceable units (CRU) and which components are field replaceable units (FRU).
- If an action step is preceded by “(Trained service technician only),” that step must be performed only by a trained service technician.

Symptom	Action
The CD or DVD drive is not recognized.	<ol style="list-style-type: none">1. Make sure that:<ul style="list-style-type: none">• All cables and jumpers are installed correctly.• The signal cable and connector are not damaged and the connector pins are not bent.• All damaged parts are repaired or replaced.• The correct device driver is installed for the CD or DVD drive.2. Run the CD, CD-RW, or DVD drive diagnostic programs.3. Reseat the following components:<ol style="list-style-type: none">a. CD or DVD driveb. CD or DVD interface board cable4. Replace the following components one at a time, in the order shown, restarting the server each time:<ol style="list-style-type: none">a. CD or DVD driveb. CD or DVD drive interface board cablec. CD or DVD interface boardd. (Trained service technician only) System board
A CD or DVD is not working correctly.	<ol style="list-style-type: none">1. Clean the CD or DVD.2. Run the CD or DVD drive diagnostic programs.3. Check the connector and signal cable for bent pins or damage.4. Replace any damaged parts.5. Reseat the CD or DVD drive.6. Replace the CD or DVD drive.

<ul style="list-style-type: none"> • Follow the suggested actions in the order in which they are listed in the Action column until the problem is solved. • See Chapter 3, “Parts listing, Types 4190, 4191 and 4194 server,” on page 31 to determine which components are customer replaceable units (CRU) and which components are field replaceable units (FRU). • If an action step is preceded by “(Trained service technician only),” that step must be performed only by a trained service technician. 	
Symptom	Action
The CD or DVD drive tray is not working.	<ol style="list-style-type: none"> 1. Make sure that the server is turned on. 2. Insert the end of a straightened paper clip into the manual tray-release opening. 3. Reseat the CD or DVD drive. 4. Replace the CD or DVD drive.

General problems

<ul style="list-style-type: none"> • Follow the suggested actions in the order in which they are listed in the Action column until the problem is solved. • See Chapter 3, “Parts listing, Types 4190, 4191 and 4194 server,” on page 31 to determine which components are customer replaceable units (CRU) and which components are field replaceable units (FRU). • If an action step is preceded by “(Trained service technician only),” that step must be performed only by a trained service technician. 	
Symptom	Action
A cover lock is broken, an LED is not working, or a similar problem has occurred.	If the part is a CRU, replace it. If the part is a FRU, the part must be replaced by a trained service technician.

Hard disk drive problems

<ul style="list-style-type: none"> • Follow the suggested actions in the order in which they are listed in the Action column until the problem is solved. • See Chapter 3, “Parts listing, Types 4190, 4191 and 4194 server,” on page 31 to determine which components are customer replaceable units (CRU) and which components are field replaceable units (FRU). • If an action step is preceded by “(Trained service technician only),” that step must be performed only by a trained service technician. 	
Symptom	Action
Not all drives are recognized by the hard disk drive diagnostic test.	Remove the drive indicated on the diagnostic tests; then, run the hard disk drive diagnostic test again. If the remaining drives are recognized, replace the drive that you removed with a new one.
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 test, but the problem remains.	See “Solving undetermined problems” on page 199.

Intermittent problems

- Follow the suggested actions in the order in which they are listed in the Action column until the problem is solved.
- See Chapter 3, “Parts listing, Types 4190, 4191 and 4194 server,” on page 31 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">1. Make sure that:<ul style="list-style-type: none">• All cables and cords are connected securely to the rear of the server and attached devices.• When the server is turned on, air is flowing from the fan grille. If there is no airflow, the fan is not working. This can cause the server to overheat and shut down.2. Check the system event/error log or BMC system-event log (see “Error logs” on page 102).3. See “Solving undetermined problems” on page 199.

USB keyboard, mouse, or pointing-device problems

- Follow the suggested actions in the order in which they are listed in the Action column until the problem is solved.
- See Chapter 3, “Parts listing, Types 4190, 4191 and 4194 server,” on page 31 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">1. See http://www.ibm.com/servers/eserver/serverproven/compat/us/ for keyboard compatibility.2. Make sure that:<ul style="list-style-type: none">• The keyboard cable is securely connected.• The server and the monitor are turned on.3. Move the keyboard cable to a different USB connector.4. Replace the following components one at a time, in the order shown, restarting the server each time:<ol style="list-style-type: none">a. Keyboardb. (Only if the problem occurred with a front USB connector) Internal cables to the operation information panelc. (Only if the problem occurred with a front USB connector) Operator information paneld. (Trained service technician only) System board

- Follow the suggested actions in the order in which they are listed in the Action column until the problem is solved.
- See Chapter 3, “Parts listing, Types 4190, 4191 and 4194 server,” on page 31 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 USB mouse or USB pointing device does not work.	<ol style="list-style-type: none"> 1. Make sure that: <ul style="list-style-type: none"> • The mouse is compatible with the server. See http://www.ibm.com/servers/eserver/serverproven/compat/us/. • The mouse or pointing-device USB cable is securely connected to the server, and the device drivers are installed correctly. • The server and the monitor are turned on. 2. If a USB hub is in use, disconnect the USB device from the hub and connect it directly to the server. 3. Move the mouse or pointing device cable to another USB connector. 4. Replace the following components one at a time, in the order shown, restarting the server each time: <ol style="list-style-type: none"> a. Mouse or pointing device b. (Only if the problem occurred with a front USB connector) Internal cables to the operation information panel c. (Only if the problem occurred with a front USB connector) Operator information panel d. (Trained service technician only) System board

Memory problems

- Follow the suggested actions in the order in which they are listed in the Action column until the problem is solved.
- See Chapter 3, “Parts listing, Types 4190, 4191 and 4194 server,” on page 31 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">1. Make sure that:<ul style="list-style-type: none">• No error LEDs are lit on the operator information panel.• The memory modules are seated correctly.• You have installed the correct type of memory.• All banks of memory are enabled. The server might have automatically disabled a memory bank when it detected a problem.2. Check the system event/error log for error message 289; if a DIMM was disabled by a systems-management interrupt (SMI), replace the DIMM.3. Run memory diagnostics (see “Diagnostic programs and messages” on page 128).4. Add one pair of DIMMs at a time, making sure that the DIMMs in each pair match.5. Reseat the DIMMs.6. Replace the following components one at a time, in the order shown, restarting the server each time:<ol style="list-style-type: none">a. DIMMsb. (Trained service technician only) System board

Microprocessor problems

- Follow the suggested actions in the order in which they are listed in the Action column until the problem is solved.
- See Chapter 3, “Parts listing, Types 4190, 4191 and 4194 server,” on page 31 to determine which components are customer replaceable units (CRU) and which components are field replaceable units (FRU).
- If an action step is preceded by “(Trained service technician only),” that step must be performed only by a trained service technician.

Symptom	Action
The server emits a continuous beep during POST, indicating that the microprocessor is not working correctly.	<ol style="list-style-type: none">1. Correct any errors that are indicated by the LEDs (see “System-board LEDs” on page 126).2. Make sure that the server supports the microprocessor.3. (Trained service technician only) Make sure that the microprocessor is seated correctly.4. (Trained service technician only) Replace the microprocessor.5. (Trained service technician only) Replace the system board.

Monitor problems

Some IBM monitors have their own self-tests. If you suspect a problem with your monitor, see the documentation that comes with the monitor for instructions for testing and adjusting the monitor.

- Follow the suggested actions in the order in which they are listed in the Action column until the problem is solved.
- See Chapter 3, “Parts listing, Types 4190, 4191 and 4194 server,” on page 31 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">1. Make sure that the monitor cables are firmly connected.2. Try using a different monitor on the server, or try testing the monitor on a different server.3. Run the diagnostic programs. If the monitor passes the diagnostic programs, the problem might be a video device driver.4. (Trained service technician only) Replace the system board.
The screen is blank.	<ol style="list-style-type: none">1. If the server is attached to a KVM switch, bypass the KVM switch to eliminate it as a possible cause of the problem: connect the monitor cable directly to the correct connector on the rear of the server.2. Make sure that:<ul style="list-style-type: none">• The server is turned on. If there is no power to the server, see “Power problems” on page 123.• The monitor cables are connected correctly.• The monitor is turned on and the brightness and contrast controls are adjusted correctly.• Only a single beep sounds when the server is turned on. <p>Important: In some memory configurations, the 3-3-3 beep code might sound during POST, followed by a blank monitor screen. If this occurs and the Boot Fail Count option in the Start Options of the Configuration/Setup Utility program is enabled, you must restart the server three times to reset the configuration settings to the default configuration (the memory connector or bank of connectors enabled).</p> <ol style="list-style-type: none">3. Make sure that the correct server is controlling the monitor, if applicable.4. Make sure that damaged BIOS code is not affecting the video; see “Recovering the server firmware” on page 189.5. See “Solving undetermined problems” on page 199.
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">1. Make sure that:<ul style="list-style-type: none">• The application program is not setting a display mode that is higher than the capability of the monitor.• You installed the necessary device drivers for the application.2. Run video diagnostics (see “Diagnostic programs and messages” on page 128).<ul style="list-style-type: none">• If the server passes the video diagnostics, the video is good; see “Solving undetermined problems” on page 199.• (Trained service technician only) If the server fails the video diagnostics, replace the system board.

- Follow the suggested actions in the order in which they are listed in the Action column until the problem is solved.
- See Chapter 3, “Parts listing, Types 4190, 4191 and 4194 server,” on page 31 to determine which components are customer replaceable units (CRU) and which components are field replaceable units (FRU).
- If an action step is preceded by “(Trained service technician only),” that step must be performed only by a trained service technician.

Symptom	Action
The monitor has screen jitter, or the screen image is wavy, unreadable, rolling, or distorted.	<ol style="list-style-type: none"> 1. If the monitor self-tests show that the monitor is working correctly, consider the location of the monitor. Magnetic fields around other devices (such as transformers, appliances, fluorescent lights, and other monitors) can cause screen jitter or wavy, unreadable, rolling, or distorted screen images. If this happens, turn off the monitor. Attention: Moving a color monitor while it is turned on might cause screen discoloration. Move the device and the monitor at least 305 mm (12 in.) apart, and turn on the monitor. Notes: <ol style="list-style-type: none"> a. To prevent diskette drive read/write errors, make sure that the distance between the monitor and any external diskette drive is at least 76 mm (3 in.). b. Non-IBM monitor cables might cause unpredictable problems. 2. Reseat the following components: <ul style="list-style-type: none"> • Monitor cable • Remote Supervisor Adapter II SlimLine (if one is installed) 3. Replace the following components one at a time, in the order shown, restarting the server each time: <ol style="list-style-type: none"> a. Monitor cable b. Monitor c. Remote Supervisor Adapter II SlimLine (if one is installed) d. (Trained service technician only) System board
Wrong characters appear on the screen.	<ol style="list-style-type: none"> 1. If the wrong language is displayed, update the BIOS code (see “Updating the firmware” on page 13) with the correct language. 2. Reseat the monitor cable. 3. Replace the following components one at a time, in the order shown, restarting the server each time: <ol style="list-style-type: none"> a. Monitor b. (Trained service technician only) System board

Optional-device problems

- Follow the suggested actions in the order in which they are listed in the Action column until the problem is solved.
- See Chapter 3, “Parts listing, Types 4190, 4191 and 4194 server,” on page 31 to determine which components are customer replaceable units (CRU) and which components are field replaceable units (FRU).
- If an action step is preceded by “(Trained service technician only),” that step must be performed only by a trained service technician.

Symptom	Action
An IBM optional device that was just installed does not work.	<ol style="list-style-type: none">1. Make sure that:<ul style="list-style-type: none">• The device is designed for the server (see http://www.ibm.com/servers/eserver/serverproven/compat/us/).• You followed the installation instructions that came with the device and the device is installed correctly.• You have not loosened any other installed devices or cables.• You updated the configuration information in the Configuration/Setup Utility program. Whenever a device is changed, you must update the configuration.2. Reseat the device that you just installed.3. Replace the device that you just installed.
An IBM optional device that used to work does not work now.	<ol style="list-style-type: none">1. Make sure that all of the cable connections for the device are secure.2. If the device comes with test instructions, use those instructions to test the device.3. Reseat the failing device.4. Replace the failing device.

Power problems

- Follow the suggested actions in the order in which they are listed in the Action column until the problem is solved.
- See Chapter 3, “Parts listing, Types 4190, 4191 and 4194 server,” on page 31 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, and the reset button does work (the server does not start).</p> <p>Note: The power-control button will not function until 20 seconds after the server has been connected to ac power.</p>	<ol style="list-style-type: none"> 1. Make sure that the power-control button is working correctly: <ol style="list-style-type: none"> a. Disconnect the server power cords. b. Reconnect the power cords. c. Press the power-control button. d. If the server does not start, disconnect the server power cords and reseal the operator information panel cables; then, repeat steps 1b through 1c. If the problem remains, replace the operator information panel. 2. Make sure that: <ul style="list-style-type: none"> • The ac power cord is correctly connected to the server and to a working electrical outlet. • The server contains the correct type of DIMMs. • The DIMMs are correctly seated. • (Trained service technician only) The microprocessor is correctly installed. 3. 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. 4. Reseat the following components: <ol style="list-style-type: none"> a. DIMMs b. (Trained service technician only) Power-supply cables to all internal components c. (Trained service technician only) Power connector on the system board 5. Replace the following components one at a time, in the order shown, restarting the server each time: <ol style="list-style-type: none"> a. DIMMs b. Power supply c. (Trained service technician only) System board 6. See “Solving undetermined problems” on page 199.
The server does not turn off.	<ol style="list-style-type: none"> 1. Determine whether you are using an Advanced Configuration and Power Interface (ACPI) or non-ACPI operating system. If you are using a non-ACPI operating system, complete the following steps: <ol style="list-style-type: none"> a. Press Ctrl+Alt+Delete. b. Turn off the server by pressing the power-control button for 5 seconds. c. Restart the server. d. If the server fails POST and the power-control button does not work, disconnect the ac power cord for 20 seconds; then, reconnect the ac power cord and restart the server. 2. If the problem remains or if you are using an ACPI-aware operating system, suspect the system board.
The server unexpectedly shuts down, and the LEDs on the operator information panel are not lit.	See “Solving undetermined problems” on page 199.

Serial-device problems

- Follow the suggested actions in the order in which they are listed in the Action column until the problem is solved.
- See Chapter 3, “Parts listing, Types 4190, 4191 and 4194 server,” on page 31 to determine which components are customer replaceable units (CRU) and which components are field replaceable units (FRU).
- If an action step is preceded by “(Trained service technician only),” that step must be performed only by a trained service technician.

Symptom	Action
The number of serial ports that are identified by the operating system is less than the number of installed serial ports.	<ol style="list-style-type: none"> 1. Make sure that: <ul style="list-style-type: none"> • Each port is assigned a unique address in the Configuration/Setup Utility program and none of the serial ports is disabled. • The serial-port adapter (if one is installed) is seated correctly. 2. Reseat the serial port adapter. 3. Replace the serial port adapter.
A serial device does not work.	<ol style="list-style-type: none"> 1. Make sure that: <ul style="list-style-type: none"> • The device is compatible with the server. • The serial port is enabled and is assigned a unique address. • The device is connected to the correct connector (see “Server controls, LEDs, and connectors” on page 5). 2. Reseat the following components: <ol style="list-style-type: none"> a. Failing serial device b. Serial cable 3. Replace the following components one at a time, in the order shown, restarting the server each time: <ol style="list-style-type: none"> a. Failing serial device b. Serial cable c. (Trained service technician only) System board

ServerGuide problems

- Follow the suggested actions in the order in which they are listed in the Action column until the problem is solved.
- See Chapter 3, “Parts listing, Types 4190, 4191 and 4194 server,” on page 31 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 <i>ServerGuide Setup and Installation</i> CD will not start.	<ol style="list-style-type: none"> 1. Make sure that the server supports the ServerGuide program and has a startable (bootable) CD or DVD drive. 2. If the startup (boot) sequence settings have been changed, make sure that the CD or DVD drive is first in the startup sequence. 3. 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.

<ul style="list-style-type: none"> • Follow the suggested actions in the order in which they are listed in the Action column until the problem is solved. • See Chapter 3, “Parts listing, Types 4190, 4191 and 4194 server,” on page 31 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 WebBIOS program cannot view all installed drives, or the operating system cannot be installed.	<ol style="list-style-type: none"> 1. Make sure that there are no duplicate IRQ assignments. 2. Make sure that the hard disk drive is connected correctly. 3. Make sure that the hard disk drive cables are securely connected.
The operating-system installation program continuously loops.	Make more space available on the hard disk.
The ServerGuide program will not start the operating-system CD.	Make sure that the operating-system CD is supported by the ServerGuide program. See the <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 server supports the operating system. If it does, no logical drive is defined (RAID servers). Run the WebBIOS Configuration Utility program and make sure that setup is complete.

Software problems

<ul style="list-style-type: none"> • Follow the suggested actions in the order in which they are listed in the Action column until the problem is solved. • See Chapter 3, “Parts listing, Types 4190, 4191 and 4194 server,” on page 31 to determine which components are customer replaceable units (CRU) and which components are field replaceable units (FRU). • If an action step is preceded by “(Trained service technician only),” that step must be performed only by a trained service technician. 	
Symptom	Action
You suspect a software problem.	<ol style="list-style-type: none"> 1. To determine whether the problem is caused by the software, make sure that: <ul style="list-style-type: none"> • The server has the minimum memory that is needed to use the software. For memory requirements, see the information that comes with the software. If you have just installed an adapter or memory, the server might have a memory-address conflict. • The software is designed to operate on the server. • Other software works on the server. • The software works on another server. 2. If you received 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. 3. Contact your place of purchase of the software.

Universal Serial Bus (USB) device problems

- Follow the suggested actions in the order in which they are listed in the Action column until the problem is solved.
- See Chapter 3, “Parts listing, Types 4190, 4191 and 4194 server,” on page 31 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">1. Make sure that:<ul style="list-style-type: none">• The correct USB device driver is installed.• The operating system supports USB devices.2. Make sure that the USB configuration options are set correctly in the Configuration/Setup Utility program menu (see the <i>User's Guide</i> for more information).3. If you are using a USB hub, disconnect the USB device from the hub and connect the device directly to the server.

Video problems

See “Monitor problems” on page 120.

System-board LEDs

The system board has error LEDs for the fans, voltage regulator, and memory that help to locate the source of an error. When an error LED is lit, run the diagnostic programs (see “Diagnostic programs and messages” on page 128) to find the cause of the error.

Many errors are first indicated by a lit information LED or system-error LED on the operator information panel on the front of the server. If one or both of these LEDs are lit, one or more LEDs on the system board might also be lit and can direct you to the source of the error.

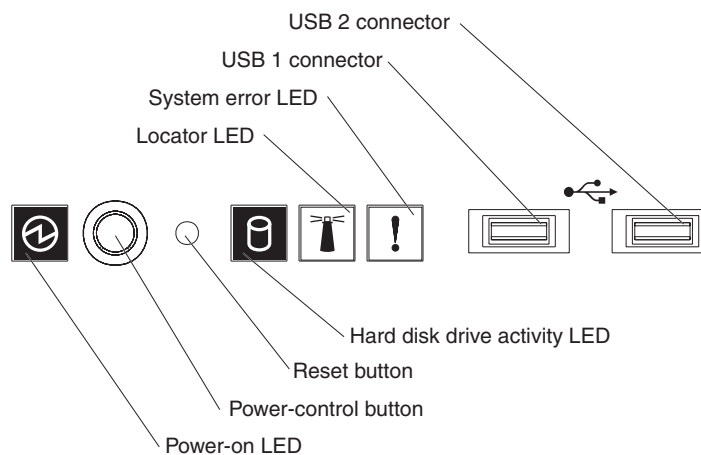
See the illustration in step 7 on page 127 for the locations of the LEDs on the system board.

Before you look inside the server to view error LEDs or status LEDs, read the safety information that begins on page vii and “Handling static-sensitive devices” on page 49.

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

1. Check the operator information panel on the front of the server. If the system-error LED is lit, it indicates that an error has occurred; go to step 2 on page 127.

The following illustration shows the operator information panel.



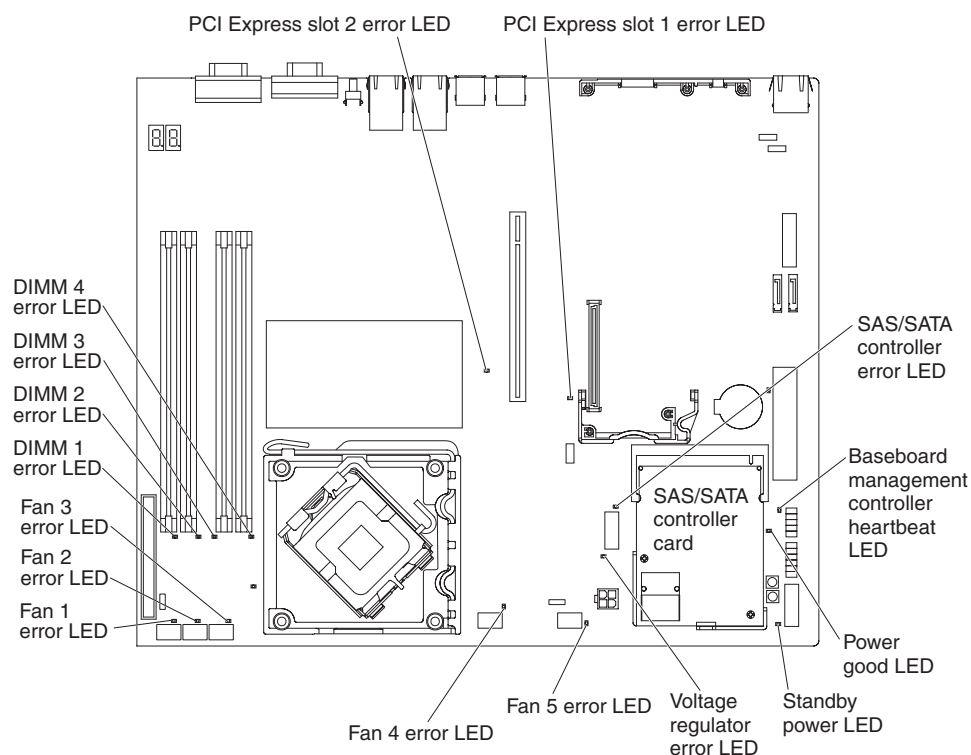
2. Read the safety information that begins on page vii and “Installation guidelines” on page 47.
3. Turn off the server and peripheral devices, and disconnect the power cord and all external cables.
4. Remove the server from the rack and place on a flat, static-protective surface.
5. Remove the cover (see “Removing the cover” on page 50).
6. Reconnect all external cables and the power cord; then, turn on the server.

Attention: Operating the server for extended periods of time (more than 30 minutes) with the cover removed might damage server components.

Certain components inside the server have LEDs that are lit to indicate the location of a problem. For example, a DIMM error lights the LED next to the failing DIMM on the system board.

7. Look at the system service label on the underside of the server cover, which gives an overview of internal components. This information can often provide enough information to correct the error.

The following illustration shows the LEDs on the system board.



The baseboard management controller heartbeat LED flashes to indicate that the mini-BMC is functioning correctly.

The standby power LED is lit whenever the server is connected to ac power.

Diagnostic programs and messages

The DSA Preboot 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. A diagnostic text message or error code indicates that a problem has been detected; to determine what action you should take as a result of a message or error code, see the table in “Diagnostic messages” on page 130.

The diagnostic programs are on the *Dynamic System Analysis Preboot* CD that comes with the server. Have the CD handy, or download the latest version of the diagnostics programs from the IBM Web site and create a new CD.

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 x3250 M2** to display the matrix of downloadable files for the server.
5. Click the link for the diagnostics file package; then, on the next page, click the link for each file to download it.

6. Create a diagnostics CD from the downloaded image file.

The DSA diagnostic programs do not support USB CD-ROM drives. If you run the DSA diagnostic programs while any USB CD-ROM drives are attached to the server, ignore any optical drive test results that are returned for USB CD-ROM drives. To get accurate optical drive test results, you can remove USB CD-ROM drives before you run the DSA diagnostic programs. To remove a remotely-mounted USB CD-ROM drive, you might have to unmount the remote disk through the Remote Supervisor Adapter II Web interface.

To run the diagnostic programs, complete the following steps:

1. If the server is running, turn off the server and all attached devices.
2. Turn on all attached devices; then, turn on the server.
3. When the prompt *Press F1 For Configuration/Setup* is displayed, press F1.
4. From the Configuration/Setup Utility menu, select **Start Options**.
5. From the **Start Options** menu, select **Startup Sequence**.
6. Note the device that is selected as the first startup device. Later, you must restore this setting.
7. Select **CD-ROM** as the first startup device.
8. Press Esc two times to return to the Configuration/Setup Utility menu.
9. Insert the *Dynamic System Analysis Preboot* CD into the CD or DVD drive.
10. Select **Save & Exit Setup** and follow the prompts. The diagnostic programs start.
11. From the diagnostic programs screen, select the test that you want to run, and follow the instructions on the screen.

Important: Do not eject the *Dynamic System Analysis Preboot* CD until after you exit from the diagnostic programs.

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 messages or LEDs indicate a microprocessor error, the error might be in a microprocessor or in a microprocessor socket. See “Microprocessor problems” on page 119 for information about diagnosing microprocessor problems.

If the server stops during testing and you cannot continue, restart the server and try running 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.

Additional information concerning test failures is available in the extended diagnostic results for each test.

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

Viewing the test log

You can use one of the following methods to access the test log when the tests are completed:

- From the DSA command line, issue the DSA CLI **view** command or select **Diagnostic Event Log** from the DSA graphical user interface (GUI).
- From the DSA interactive menu, select **getextendedresults** .
- From the DSA interactive menu, select **view** to view all of the collected results and error log data.
- In the DSA GUI, select **DSA Error Log** from the System Information page.

You can send the DSA error log file to IBM service and support to aid in diagnosing the server problems or you can use the DSA CLI **copy** command to copy the log to an external USB device.

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 10. DSA diagnostic messages

<ul style="list-style-type: none"> • Follow the suggested actions in the order in which they are listed in the Action column until the problem is solved. • See Chapter 3, “Parts listing, Types 4190, 4191 and 4194 server,” on page 31 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 number	Component	Test	State	Description	Action
089-801-xxx	CPU	CPU Stress Test	Aborted	Internal program error.	<ol style="list-style-type: none"> 1. Turn off and restart the system. 2. Make sure that the DSA code is at the latest level. For the latest level of DSA code, go to http://www.ibm.com/support/docview.wss?uid=psg1SERV-DSA. 3. Run the test again. 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 http://www.ibm.com/support/docview.wss?uid=psg1MIGR-4JTS2T and select your system to display a matrix of available firmware. 5. Run the test again. 6. If the system has stopped responding, turn off and restart the system. 7. Run the test again. 8. If the problem remains, collect the data from the DSA event log and send it to IBM Service. For information about contacting and sending data to IBM Service, see http://www.ibm.com/support/docview.wss?uid=psg1SERV-CALL.

Table 10. DSA diagnostic messages (continued)

<ul style="list-style-type: none"> • Follow the suggested actions in the order in which they are listed in the Action column until the problem is solved. • See Chapter 3, “Parts listing, Types 4190, 4191 and 4194 server,” on page 31 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 number	Component	Test	State	Description	Action
089-802-xxx	CPU	CPU Stress Test	Aborted	System resource availability error.	<ol style="list-style-type: none"> 1. Turn off and restart the system. 2. Make sure that the DSA code is at the latest level. For the latest level of DSA code, go to http://www.ibm.com/support/docview.wss?uid=psg1SERV-DSA. 3. Run the test again. 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 http://www.ibm.com/support/docview.wss?uid=psg1MIGR-4JTS2T and select your system to display a matrix of available firmware. 5. Run the test again. 6. If the system has stopped responding, turn off and restart the system. 7. Run the test again. 8. If the problem remains, collect the data from the DSA event log and send it to IBM Service. For information about contacting and sending data to IBM Service, see http://www.ibm.com/support/docview.wss?uid=psg1SERV-CALL.

Table 10. DSA diagnostic messages (continued)

<ul style="list-style-type: none"> • Follow the suggested actions in the order in which they are listed in the Action column until the problem is solved. • See Chapter 3, “Parts listing, Types 4190, 4191 and 4194 server,” on page 31 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 number	Component	Test	State	Description	Action
089-803-xxx	CPU	CPU Stress Test	Aborted	Memory size in insufficient to run the test. At least 1 GB is required.	<ol style="list-style-type: none"> 1. Turn off and restart the system. 2. Make sure that the DSA code is at the latest level. For the latest level of DSA code, go to http://www.ibm.com/support/docview.wss?uid=psg1SERV-DSA. 3. Run the test again. 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 http://www.ibm.com/support/docview.wss?uid=psg1MIGR-4JTS2T and select your system to display a matrix of available firmware. 5. Run the test again. 6. If the system has stopped responding, turn off and restart the system. 7. Run the test again. 8. If the problem remains, collect the data from the DSA event log and send it to IBM Service. For information about contacting and sending data to IBM Service, see http://www.ibm.com/support/docview.wss?uid=psg1SERV-CALL.

Table 10. DSA diagnostic messages (continued)

<ul style="list-style-type: none"> • Follow the suggested actions in the order in which they are listed in the Action column until the problem is solved. • See Chapter 3, “Parts listing, Types 4190, 4191 and 4194 server,” on page 31 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 number	Component	Test	State	Description	Action
089-901-xxx	CPU	CPU Stress Test	Failed	Test failure.	<ol style="list-style-type: none"> 1. If the system has stopped responding, turn off and restart the system and then run the test again. 2. Make sure that the DSA code is at the latest level. For the latest level of DSA code, go to http://www.ibm.com/support/docview.wss?uid=psg1SERV-DSA. 3. Run the test again. 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 http://www.ibm.com/support/docview.wss?uid=psg1MIGR-4JTS2T and select your system to display a matrix of available firmware. 5. Run the test again. 6. If the system has stopped responding, turn off and restart the system. 7. Run the test again. 8. If the problem remains, collect the data from the DSA event log and send it to IBM Service. For information about contacting and sending data to IBM Service, see http://www.ibm.com/support/docview.wss?uid=psg1SERV-CALL.

Table 10. DSA diagnostic messages (continued)

<ul style="list-style-type: none"> • Follow the suggested actions in the order in which they are listed in the Action column until the problem is solved. • See Chapter 3, “Parts listing, Types 4190, 4191 and 4194 server,” on page 31 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 number	Component	Test	State	Description	Action
165-801-xxx	Remote Supervisor Adapter	RSA Restart Test	Aborted	Remote Supervisor Adapter restart test failure with reason: no service processor was found.	<ol style="list-style-type: none"> 1. Make sure that Linux is selected in Advanced Setup → RSA II Settings → OS USB Selection in the Configuration/Setup Utility program (press F1 at system startup). 2. Make sure that the Remote Supervisor Adapter II SlimLine 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 http://www.ibm.com/support/docview.wss?uid=psg1MIGR-4JTS2T and select your system to display a matrix of available firmware. 3. Make sure that the DSA code is at the latest level. For the latest level of DSA code, go to http://www.ibm.com/support/docview.wss?uid=psg1SERV-DSA. 4. Run the test again. 5. Turn off the system and disconnect it from the power source. 6. Reseat the Remote Supervisor Adapter II SlimLine. 7. Reconnect the system to the power source and turn on the system. 8. Run the test again. 9. If the problem remains, collect the data from the DSA event log and send it to IBM Service. For information about contacting and sending data to IBM Service, see http://www.ibm.com/support/docview.wss?uid=psg1SERV-CALL.

Table 10. DSA diagnostic messages (continued)

<ul style="list-style-type: none"> • Follow the suggested actions in the order in which they are listed in the Action column until the problem is solved. • See Chapter 3, “Parts listing, Types 4190, 4191 and 4194 server,” on page 31 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 number	Component	Test	State	Description	Action
165-902-xxx	Remote Supervisor Adapter	RSA Restart Test	Failed	Remote Supervisor Adapter restart test failure with reason: the Remote Supervisor Adapter restart command was not sent successfully.	<ol style="list-style-type: none"> 1. Make sure that Linux is selected in Advanced Setup → RSA II Settings → OS USB Selection in the Configuration/Setup Utility program (press F1 at system startup). 2. Make sure that the Remote Supervisor Adapter II SlimLine 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 http://www.ibm.com/support/docview.wss?uid=psg1MIGR-4JTS2T and select your system to display a matrix of available firmware. 3. Make sure that the DSA code is at the latest level. For the latest level of DSA code, go to http://www.ibm.com/support/docview.wss?uid=psg1SERV-DSA. 4. Run the test again. 5. Turn off the system and disconnect it from the power source. 6. Reseat the Remote Supervisor Adapter II SlimLine. 7. Reconnect the system to the power source and turn on the system. 8. Run the test again. 9. If the problem remains, collect the data from the DSA event log and send it to IBM Service. For information about contacting and sending data to IBM Service, see http://www.ibm.com/support/docview.wss?uid=psg1SERV-CALL.

Table 10. DSA diagnostic messages (continued)

<ul style="list-style-type: none"> • Follow the suggested actions in the order in which they are listed in the Action column until the problem is solved. • See Chapter 3, “Parts listing, Types 4190, 4191 and 4194 server,” on page 31 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 number	Component	Test	State	Description	Action
165-903-xxx	Remote Supervisor Adapter	RSA Restart Test	Failed	Remote Supervisor Adapter restart test failure with reason: the Remote Supervisor Adapter did not restart.	<ol style="list-style-type: none"> 1. Make sure that Linux is selected in Advanced Setup → RSA II Settings → OS USB Selection in the Configuration/Setup Utility program (press F1 at system startup). 2. Make sure that the Remote Supervisor Adapter II SlimLine 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 http://www.ibm.com/support/docview.wss?uid=psg1MIGR-4JTS2T and select your system to display a matrix of available firmware. 3. Make sure that the DSA code is at the latest level. For the latest level of DSA code, go to http://www.ibm.com/support/docview.wss?uid=psg1SERV-DSA. 4. Run the test again. 5. Turn off the system and disconnect it from the power source. 6. Reseat the Remote Supervisor Adapter II SlimLine. 7. Reconnect the system to the power source and turn on the system. 8. Run the test again. 9. If the problem remains, collect the data from the DSA event log and send it to IBM Service. For information about contacting and sending data to IBM Service, see http://www.ibm.com/support/docview.wss?uid=psg1SERV-CALL.

Table 10. DSA diagnostic messages (continued)

<ul style="list-style-type: none"> • Follow the suggested actions in the order in which they are listed in the Action column until the problem is solved. • See Chapter 3, “Parts listing, Types 4190, 4191 and 4194 server,” on page 31 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 number	Component	Test	State	Description	Action
165-904-xxx	Remote Supervisor Adapter	RSA Restart Test	Failed	Remote Supervisor Adapter restart test failure with reason: the Remote Supervisor Adapter cannot wake up from the restart process.	<ol style="list-style-type: none"> 1. Make sure that Linux is selected in Advanced Setup → RSA II Settings → OS USB Selection in the Configuration/Setup Utility program (press F1 at system startup). 2. Make sure that the Remote Supervisor Adapter II SlimLine 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 http://www.ibm.com/support/docview.wss?uid=psg1MIGR-4JTS2T and select your system to display a matrix of available firmware. 3. Make sure that the DSA code is at the latest level. For the latest level of DSA code, go to http://www.ibm.com/support/docview.wss?uid=psg1SERV-DSA. 4. Run the test again. 5. Turn off the system and disconnect it from the power source. 6. Reseat the Remote Supervisor Adapter II SlimLine. 7. Reconnect the system to the power source and turn on the system. 8. Run the test again. 9. If the problem remains, collect the data from the DSA event log and send it to IBM Service. For information about contacting and sending data to IBM Service, see http://www.ibm.com/support/docview.wss?uid=psg1SERV-CALL.

Table 10. DSA diagnostic messages (continued)

<ul style="list-style-type: none"> • Follow the suggested actions in the order in which they are listed in the Action column until the problem is solved. • See Chapter 3, “Parts listing, Types 4190, 4191 and 4194 server,” on page 31 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 number	Component	Test	State	Description	Action
165-905-xxx	Remote Supervisor Adapter	RSA Restart Test	Failed	Remote Supervisor Adapter restart test failure with reason: cannot restart the Remote Supervisor Adapter because of no communication with the service processor.	<ol style="list-style-type: none"> 1. Make sure that Linux is selected in Advanced Setup → RSA II Settings → OS USB Selection in the Configuration/Setup Utility program (press F1 at system startup). 2. Make sure that the Remote Supervisor Adapter II SlimLine 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 http://www.ibm.com/support/docview.wss?uid=psg1MIGR-4JTS2T and select your system to display a matrix of available firmware. 3. Make sure that the DSA code is at the latest level. For the latest level of DSA code, go to http://www.ibm.com/support/docview.wss?uid=psg1SERV-DSA. 4. Run the test again. 5. Turn off the system and disconnect it from the power source. 6. Reseat the Remote Supervisor Adapter II SlimLine. 7. Reconnect the system to the power source and turn on the system. 8. Run the test again. 9. If the problem remains, collect the data from the DSA event log and send it to IBM Service. For information about contacting and sending data to IBM Service, see http://www.ibm.com/support/docview.wss?uid=psg1SERV-CALL.

Table 10. DSA diagnostic messages (continued)

<ul style="list-style-type: none"> • Follow the suggested actions in the order in which they are listed in the Action column until the problem is solved. • See Chapter 3, “Parts listing, Types 4190, 4191 and 4194 server,” on page 31 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 number	Component	Test	State	Description	Action
166-801-xxx	BMC	BMC I2C Test	Aborted	BMC I2C test canceled: the BMC returned an incorrect response length.	<ol style="list-style-type: none"> 1. Turn off the system and disconnect it from the power source. You must disconnect the system from ac power to reset the BMC. 2. After 45 seconds, reconnect the system to the power source and turn on the system. 3. Run the test again. 4. Make sure that the DSA code is at the latest level. For the latest level of DSA code, go to http://www.ibm.com/support/docview.wss?uid=psg1SERV-DSA. 5. Make sure that the BMC 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 http://www.ibm.com/support/docview.wss?uid=psg1MIGR-4JTS2T and select your system to display a matrix of available firmware. 6. Run the test again. 7. If the problem remains, collect the data from the DSA event log and send it to IBM Service. For information about contacting and sending data to IBM Service, see http://www.ibm.com/support/docview.wss?uid=psg1SERV-CALL.

Table 10. DSA diagnostic messages (continued)

<ul style="list-style-type: none"> • Follow the suggested actions in the order in which they are listed in the Action column until the problem is solved. • See Chapter 3, “Parts listing, Types 4190, 4191 and 4194 server,” on page 31 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 number	Component	Test	State	Description	Action
166-802-xxx	BMC	BMC I2C Test	Aborted	BMC I2C test canceled: the test cannot be completed for an unknown reason.	<ol style="list-style-type: none"> 1. Turn off the system and disconnect it from the power source. You must disconnect the system from ac power to reset the BMC. 2. After 45 seconds, reconnect the system to the power source and turn on the system. 3. Run the test again. 4. Make sure that the DSA code is at the latest level. For the latest level of DSA code, go to http://www.ibm.com/support/docview.wss?uid=psg1SERV-DSA. 5. Make sure that the BMC 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 http://www.ibm.com/support/docview.wss?uid=psg1MIGR-4JTS2T and select your system to display a matrix of available firmware. 6. Run the test again. 7. If the problem remains, collect the data from the DSA event log and send it to IBM Service. For information about contacting and sending data to IBM Service, see http://www.ibm.com/support/docview.wss?uid=psg1SERV-CALL.

Table 10. DSA diagnostic messages (continued)

<ul style="list-style-type: none"> • Follow the suggested actions in the order in which they are listed in the Action column until the problem is solved. • See Chapter 3, “Parts listing, Types 4190, 4191 and 4194 server,” on page 31 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 number	Component	Test	State	Description	Action
166-803-xxx	BMC	BMC I2C Test	Aborted	BMC I2C test canceled: the node is busy; try later.	<ol style="list-style-type: none"> 1. Turn off the system and disconnect it from the power source. You must disconnect the system from ac power to reset the BMC. 2. After 45 seconds, reconnect the system to the power source and turn on the system. 3. Run the test again. 4. Make sure that the DSA code is at the latest level. For the latest level of DSA code, go to http://www.ibm.com/support/docview.wss?uid=psg1SERV-DSA. 5. Make sure that the BMC 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 http://www.ibm.com/support/docview.wss?uid=psg1MIGR-4JTS2T and select your system to display a matrix of available firmware. 6. Run the test again. 7. If the problem remains, collect the data from the DSA event log and send it to IBM Service. For information about contacting and sending data to IBM Service, see http://www.ibm.com/support/docview.wss?uid=psg1SERV-CALL.

Table 10. DSA diagnostic messages (continued)

<ul style="list-style-type: none"> • Follow the suggested actions in the order in which they are listed in the Action column until the problem is solved. • See Chapter 3, “Parts listing, Types 4190, 4191 and 4194 server,” on page 31 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 number	Component	Test	State	Description	Action
166-804-xxx	BMC	BMC I2C Test	Aborted	BMC I2C test canceled: invalid command.	<ol style="list-style-type: none"> 1. Turn off the system and disconnect it from the power source. You must disconnect the system from ac power to reset the BMC. 2. After 45 seconds, reconnect the system to the power source and turn on the system. 3. Run the test again. 4. Make sure that the DSA code is at the latest level. For the latest level of DSA code, go to http://www.ibm.com/support/docview.wss?uid=psg1SERV-DSA. 5. Make sure that the BMC 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 http://www.ibm.com/support/docview.wss?uid=psg1MIGR-4JTS2T and select your system to display a matrix of available firmware. 6. Run the test again. 7. If the problem remains, collect the data from the DSA event log and send it to IBM Service. For information about contacting and sending data to IBM Service, see http://www.ibm.com/support/docview.wss?uid=psg1SERV-CALL.

Table 10. DSA diagnostic messages (continued)

<ul style="list-style-type: none"> • Follow the suggested actions in the order in which they are listed in the Action column until the problem is solved. • See Chapter 3, “Parts listing, Types 4190, 4191 and 4194 server,” on page 31 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 number	Component	Test	State	Description	Action
166-805-xxx	BMC	BMC I2C Test	Aborted	BMC I2C test canceled: invalid command for the given LUN.	<ol style="list-style-type: none"> 1. Turn off the system and disconnect it from the power source. You must disconnect the system from ac power to reset the BMC. 2. After 45 seconds, reconnect the system to the power source and turn on the system. 3. Run the test again. 4. Make sure that the DSA code is at the latest level. For the latest level of DSA code, go to http://www.ibm.com/support/docview.wss?uid=psg1SERV-DSA. 5. Make sure that the BMC 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 http://www.ibm.com/support/docview.wss?uid=psg1MIGR-4JTS2T and select your system to display a matrix of available firmware. 6. Run the test again. 7. If the problem remains, collect the data from the DSA event log and send it to IBM Service. For information about contacting and sending data to IBM Service, see http://www.ibm.com/support/docview.wss?uid=psg1SERV-CALL.

Table 10. DSA diagnostic messages (continued)

<ul style="list-style-type: none"> • Follow the suggested actions in the order in which they are listed in the Action column until the problem is solved. • See Chapter 3, “Parts listing, Types 4190, 4191 and 4194 server,” on page 31 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 number	Component	Test	State	Description	Action
166-806-xxx	BMC	BMC I2C Test	Aborted	BMC I2C test canceled: timeout while processing the command.	<ol style="list-style-type: none"> 1. Turn off the system and disconnect it from the power source. You must disconnect the system from ac power to reset the BMC. 2. After 45 seconds, reconnect the system to the power source and turn on the system. 3. Run the test again. 4. Make sure that the DSA code is at the latest level. For the latest level of DSA code, go to http://www.ibm.com/support/docview.wss?uid=psg1SERV-DSA. 5. Make sure that the BMC 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 http://www.ibm.com/support/docview.wss?uid=psg1MIGR-4JTS2T and select your system to display a matrix of available firmware. 6. Run the test again. 7. If the problem remains, collect the data from the DSA event log and send it to IBM Service. For information about contacting and sending data to IBM Service, see http://www.ibm.com/support/docview.wss?uid=psg1SERV-CALL.

Table 10. DSA diagnostic messages (continued)

<ul style="list-style-type: none"> • Follow the suggested actions in the order in which they are listed in the Action column until the problem is solved. • See Chapter 3, “Parts listing, Types 4190, 4191 and 4194 server,” on page 31 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 number	Component	Test	State	Description	Action
166-807-xxx	BMC	BMC I2C Test	Aborted	BMC I2C test canceled: out of space.	<ol style="list-style-type: none"> 1. Turn off the system and disconnect it from the power source. You must disconnect the system from ac power to reset the BMC. 2. After 45 seconds, reconnect the system to the power source and turn on the system. 3. Run the test again. 4. Make sure that the DSA code is at the latest level. For the latest level of DSA code, go to http://www.ibm.com/support/docview.wss?uid=psg1SERV-DSA. 5. Make sure that the BMC 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 http://www.ibm.com/support/docview.wss?uid=psg1MIGR-4JTS2T and select your system to display a matrix of available firmware. 6. Run the test again. 7. If the problem remains, collect the data from the DSA event log and send it to IBM Service. For information about contacting and sending data to IBM Service, see http://www.ibm.com/support/docview.wss?uid=psg1SERV-CALL.

Table 10. DSA diagnostic messages (continued)

<ul style="list-style-type: none"> • Follow the suggested actions in the order in which they are listed in the Action column until the problem is solved. • See Chapter 3, “Parts listing, Types 4190, 4191 and 4194 server,” on page 31 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 number	Component	Test	State	Description	Action
166-808-xxx	BMC	BMC I2C Test	Aborted	BMC I2C test canceled: reservation canceled or invalid reservation ID.	<ol style="list-style-type: none"> 1. Turn off the system and disconnect it from the power source. You must disconnect the system from ac power to reset the BMC. 2. After 45 seconds, reconnect the system to the power source and turn on the system. 3. Run the test again. 4. Make sure that the DSA code is at the latest level. For the latest level of DSA code, go to http://www.ibm.com/support/docview.wss?uid=psg1SERV-DSA. 5. Make sure that the BMC 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 http://www.ibm.com/support/docview.wss?uid=psg1MIGR-4JTS2T and select your system to display a matrix of available firmware. 6. Run the test again. 7. If the problem remains, collect the data from the DSA event log and send it to IBM Service. For information about contacting and sending data to IBM Service, see http://www.ibm.com/support/docview.wss?uid=psg1SERV-CALL.

Table 10. DSA diagnostic messages (continued)

<ul style="list-style-type: none"> • Follow the suggested actions in the order in which they are listed in the Action column until the problem is solved. • See Chapter 3, “Parts listing, Types 4190, 4191 and 4194 server,” on page 31 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 number	Component	Test	State	Description	Action
166-809-xxx	BMC	BMC I2C Test	Aborted	BMC I2C test canceled: request data was truncated.	<ol style="list-style-type: none"> 1. Turn off the system and disconnect it from the power source. You must disconnect the system from ac power to reset the BMC. 2. After 45 seconds, reconnect the system to the power source and turn on the system. 3. Run the test again. 4. Make sure that the DSA code is at the latest level. For the latest level of DSA code, go to http://www.ibm.com/support/docview.wss?uid=psg1SERV-DSA. 5. Make sure that the BMC 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 http://www.ibm.com/support/docview.wss?uid=psg1MIGR-4JTS2T and select your system to display a matrix of available firmware. 6. Run the test again. 7. If the problem remains, collect the data from the DSA event log and send it to IBM Service. For information about contacting and sending data to IBM Service, see http://www.ibm.com/support/docview.wss?uid=psg1SERV-CALL.

Table 10. DSA diagnostic messages (continued)

<ul style="list-style-type: none"> • Follow the suggested actions in the order in which they are listed in the Action column until the problem is solved. • See Chapter 3, “Parts listing, Types 4190, 4191 and 4194 server,” on page 31 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 number	Component	Test	State	Description	Action
166-810-xxx	BMC	BMC I2C Test	Aborted	BMC I2C test canceled: request data length is invalid.	<ol style="list-style-type: none"> 1. Turn off the system and disconnect it from the power source. You must disconnect the system from ac power to reset the BMC. 2. After 45 seconds, reconnect the system to the power source and turn on the system. 3. Run the test again. 4. Make sure that the DSA code is at the latest level. For the latest level of DSA code, go to http://www.ibm.com/support/docview.wss?uid=psg1SERV-DSA. 5. Make sure that the BMC 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 http://www.ibm.com/support/docview.wss?uid=psg1MIGR-4JTS2T and select your system to display a matrix of available firmware. 6. Run the test again. 7. If the problem remains, collect the data from the DSA event log and send it to IBM Service. For information about contacting and sending data to IBM Service, see http://www.ibm.com/support/docview.wss?uid=psg1SERV-CALL.

Table 10. DSA diagnostic messages (continued)

<ul style="list-style-type: none"> • Follow the suggested actions in the order in which they are listed in the Action column until the problem is solved. • See Chapter 3, “Parts listing, Types 4190, 4191 and 4194 server,” on page 31 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 number	Component	Test	State	Description	Action
166-811-xxx	BMC	BMC I2C Test	Aborted	BMC I2C test canceled: request data field length limit is exceeded.	<ol style="list-style-type: none"> 1. Turn off the system and disconnect it from the power source. You must disconnect the system from ac power to reset the BMC. 2. After 45 seconds, reconnect the system to the power source and turn on the system. 3. Run the test again. 4. Make sure that the DSA code is at the latest level. For the latest level of DSA code, go to http://www.ibm.com/support/docview.wss?uid=psg1SERV-DSA. 5. Make sure that the BMC 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 http://www.ibm.com/support/docview.wss?uid=psg1MIGR-4JTS2T and select your system to display a matrix of available firmware. 6. Run the test again. 7. If the problem remains, collect the data from the DSA event log and send it to IBM Service. For information about contacting and sending data to IBM Service, see http://www.ibm.com/support/docview.wss?uid=psg1SERV-CALL.

Table 10. DSA diagnostic messages (continued)

<ul style="list-style-type: none"> • Follow the suggested actions in the order in which they are listed in the Action column until the problem is solved. • See Chapter 3, “Parts listing, Types 4190, 4191 and 4194 server,” on page 31 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 number	Component	Test	State	Description	Action
166-812-xxx	BMC	BMC I2C Test	Aborted	BMC I2C Test canceled a parameter is out of range.	<ol style="list-style-type: none"> 1. Turn off the system and disconnect it from the power source. You must disconnect the system from ac power to reset the BMC. 2. After 45 seconds, reconnect the system to the power source and turn on the system. 3. Run the test again. 4. Make sure that the DSA code is at the latest level. For the latest level of DSA code, go to http://www.ibm.com/support/docview.wss?uid=psg1SERV-DSA. 5. Make sure that the BMC 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 http://www.ibm.com/support/docview.wss?uid=psg1MIGR-4JTS2T and select your system to display a matrix of available firmware. 6. Run the test again. 7. If the problem remains, collect the data from the DSA event log and send it to IBM Service. For information about contacting and sending data to IBM Service, see http://www.ibm.com/support/docview.wss?uid=psg1SERV-CALL.

Table 10. DSA diagnostic messages (continued)

<ul style="list-style-type: none"> • Follow the suggested actions in the order in which they are listed in the Action column until the problem is solved. • See Chapter 3, “Parts listing, Types 4190, 4191 and 4194 server,” on page 31 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 number	Component	Test	State	Description	Action
166-813-xxx	BMC	BMC I2C Test	Aborted	BMC I2C test canceled: cannot return the number of requested data bytes.	<ol style="list-style-type: none"> 1. Turn off the system and disconnect it from the power source. You must disconnect the system from ac power to reset the BMC. 2. After 45 seconds, reconnect the system to the power source and turn on the system. 3. Run the test again. 4. Make sure that the DSA code is at the latest level. For the latest level of DSA code, go to http://www.ibm.com/support/docview.wss?uid=psg1SERV-DSA. 5. Make sure that the BMC 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 http://www.ibm.com/support/docview.wss?uid=psg1MIGR-4JTS2T and select your system to display a matrix of available firmware. 6. Run the test again. 7. If the problem remains, collect the data from the DSA event log and send it to IBM Service. For information about contacting and sending data to IBM Service, see http://www.ibm.com/support/docview.wss?uid=psg1SERV-CALL.

Table 10. DSA diagnostic messages (continued)

<ul style="list-style-type: none"> • Follow the suggested actions in the order in which they are listed in the Action column until the problem is solved. • See Chapter 3, “Parts listing, Types 4190, 4191 and 4194 server,” on page 31 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 number	Component	Test	State	Description	Action
166-814-xxx	BMC	BMC I2C Test	Aborted	BMC I2C test canceled: requested sensor, data, or record is not present.	<ol style="list-style-type: none"> 1. Turn off the system and disconnect it from the power source. You must disconnect the system from ac power to reset the BMC. 2. After 45 seconds, reconnect the system to the power source and turn on the system. 3. Run the test again. 4. Make sure that the DSA code is at the latest level. For the latest level of DSA code, go to http://www.ibm.com/support/docview.wss?uid=psg1SERV-DSA. 5. Make sure that the BMC 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 http://www.ibm.com/support/docview.wss?uid=psg1MIGR-4JTS2T and select your system to display a matrix of available firmware. 6. Run the test again. 7. If the problem remains, collect the data from the DSA event log and send it to IBM Service. For information about contacting and sending data to IBM Service, see http://www.ibm.com/support/docview.wss?uid=psg1SERV-CALL.

Table 10. DSA diagnostic messages (continued)

<ul style="list-style-type: none"> • Follow the suggested actions in the order in which they are listed in the Action column until the problem is solved. • See Chapter 3, “Parts listing, Types 4190, 4191 and 4194 server,” on page 31 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 number	Component	Test	State	Description	Action
166-815-xxx	BMC	BMC I2C Test	Aborted	BMC I2C test canceled: invalid data field in the request.	<ol style="list-style-type: none"> 1. Turn off the system and disconnect it from the power source. You must disconnect the system from ac power to reset the BMC. 2. After 45 seconds, reconnect the system to the power source and turn on the system. 3. Run the test again. 4. Make sure that the DSA code is at the latest level. For the latest level of DSA code, go to http://www.ibm.com/support/docview.wss?uid=psg1SERV-DSA. 5. Make sure that the BMC 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 http://www.ibm.com/support/docview.wss?uid=psg1MIGR-4JTS2T and select your system to display a matrix of available firmware. 6. Run the test again. 7. If the problem remains, collect the data from the DSA event log and send it to IBM Service. For information about contacting and sending data to IBM Service, see http://www.ibm.com/support/docview.wss?uid=psg1SERV-CALL.

Table 10. DSA diagnostic messages (continued)

<ul style="list-style-type: none"> • Follow the suggested actions in the order in which they are listed in the Action column until the problem is solved. • See Chapter 3, “Parts listing, Types 4190, 4191 and 4194 server,” on page 31 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 number	Component	Test	State	Description	Action
166-816-xxx	BMC	BMC I2C Test	Aborted	BMC I2C test canceled: the command is illegal for the specified sensor or record type.	<ol style="list-style-type: none"> 1. Turn off the system and disconnect it from the power source. You must disconnect the system from ac power to reset the BMC. 2. After 45 seconds, reconnect the system to the power source and turn on the system. 3. Run the test again. 4. Make sure that the DSA code is at the latest level. For the latest level of DSA code, go to http://www.ibm.com/support/docview.wss?uid=psg1SERV-DSA. 5. Make sure that the BMC 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 http://www.ibm.com/support/docview.wss?uid=psg1MIGR-4JTS2T and select your system to display a matrix of available firmware. 6. Run the test again. 7. If the problem remains, collect the data from the DSA event log and send it to IBM Service. For information about contacting and sending data to IBM Service, see http://www.ibm.com/support/docview.wss?uid=psg1SERV-CALL.

Table 10. DSA diagnostic messages (continued)

<ul style="list-style-type: none"> • Follow the suggested actions in the order in which they are listed in the Action column until the problem is solved. • See Chapter 3, “Parts listing, Types 4190, 4191 and 4194 server,” on page 31 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 number	Component	Test	State	Description	Action
166-817-xxx	BMC	BMC I2C Test	Aborted	BMC I2C test canceled: a command response could not be provided.	<ol style="list-style-type: none"> 1. Turn off the system and disconnect it from the power source. You must disconnect the system from ac power to reset the BMC. 2. After 45 seconds, reconnect the system to the power source and turn on the system. 3. Run the test again. 4. Make sure that the DSA code is at the latest level. For the latest level of DSA code, go to http://www.ibm.com/support/docview.wss?uid=psg1SERV-DSA. 5. Make sure that the BMC 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 http://www.ibm.com/support/docview.wss?uid=psg1MIGR-4JTS2T and select your system to display a matrix of available firmware. 6. Run the test again. 7. If the problem remains, collect the data from the DSA event log and send it to IBM Service. For information about contacting and sending data to IBM Service, see http://www.ibm.com/support/docview.wss?uid=psg1SERV-CALL.

Table 10. DSA diagnostic messages (continued)

<ul style="list-style-type: none"> • Follow the suggested actions in the order in which they are listed in the Action column until the problem is solved. • See Chapter 3, “Parts listing, Types 4190, 4191 and 4194 server,” on page 31 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 number	Component	Test	State	Description	Action
166-818-xxx	BMC	BMC I2C Test	Aborted	BMC I2C test canceled: cannot execute a duplicated request.	<ol style="list-style-type: none"> 1. Turn off the system and disconnect it from the power source. You must disconnect the system from ac power to reset the BMC. 2. After 45 seconds, reconnect the system to the power source and turn on the system. 3. Run the test again. 4. Make sure that the DSA code is at the latest level. For the latest level of DSA code, go to http://www.ibm.com/support/docview.wss?uid=psg1SERV-DSA. 5. Make sure that the BMC 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 http://www.ibm.com/support/docview.wss?uid=psg1MIGR-4JTS2T and select your system to display a matrix of available firmware. 6. Run the test again. 7. If the problem remains, collect the data from the DSA event log and send it to IBM Service. For information about contacting and sending data to IBM Service, see http://www.ibm.com/support/docview.wss?uid=psg1SERV-CALL.

Table 10. DSA diagnostic messages (continued)

<ul style="list-style-type: none"> • Follow the suggested actions in the order in which they are listed in the Action column until the problem is solved. • See Chapter 3, “Parts listing, Types 4190, 4191 and 4194 server,” on page 31 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 number	Component	Test	State	Description	Action
166-819-xxx	BMC	BMC I2C Test	Aborted	BMC I2C test canceled: a command response could not be provided; the SDR repository is in update mode.	<ol style="list-style-type: none"> 1. Turn off the system and disconnect it from the power source. You must disconnect the system from ac power to reset the BMC. 2. After 45 seconds, reconnect the system to the power source and turn on the system. 3. Run the test again. 4. Make sure that the DSA code is at the latest level. For the latest level of DSA code, go to http://www.ibm.com/support/docview.wss?uid=psg1SERV-DSA. 5. Make sure that the BMC 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 http://www.ibm.com/support/docview.wss?uid=psg1MIGR-4JTS2T and select your system to display a matrix of available firmware. 6. Run the test again. 7. If the problem remains, collect the data from the DSA event log and send it to IBM Service. For information about contacting and sending data to IBM Service, see http://www.ibm.com/support/docview.wss?uid=psg1SERV-CALL.

Table 10. DSA diagnostic messages (continued)

<ul style="list-style-type: none"> • Follow the suggested actions in the order in which they are listed in the Action column until the problem is solved. • See Chapter 3, “Parts listing, Types 4190, 4191 and 4194 server,” on page 31 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 number	Component	Test	State	Description	Action
166-820-xxx	BMC	BMC I2C Test	Aborted	BMC I2C test canceled: a command response could not be provided; the device is in firmware update mode.	<ol style="list-style-type: none"> 1. Turn off the system and disconnect it from the power source. You must disconnect the system from ac power to reset the BMC. 2. After 45 seconds, reconnect the system to the power source and turn on the system. 3. Run the test again. 4. Make sure that the DSA code is at the latest level. For the latest level of DSA code, go to http://www.ibm.com/support/docview.wss?uid=psg1SERV-DSA. 5. Make sure that the BMC 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 http://www.ibm.com/support/docview.wss?uid=psg1MIGR-4JTS2T and select your system to display a matrix of available firmware. 6. Run the test again. 7. If the problem remains, collect the data from the DSA event log and send it to IBM Service. For information about contacting and sending data to IBM Service, see http://www.ibm.com/support/docview.wss?uid=psg1SERV-CALL.

Table 10. DSA diagnostic messages (continued)

<ul style="list-style-type: none"> • Follow the suggested actions in the order in which they are listed in the Action column until the problem is solved. • See Chapter 3, “Parts listing, Types 4190, 4191 and 4194 server,” on page 31 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 number	Component	Test	State	Description	Action
166-821-xxx	BMC	BMC I2C Test	Aborted	BMC I2C test canceled: a command response could not be provided; BMC initialization is in progress.	<ol style="list-style-type: none"> 1. Turn off the system and disconnect it from the power source. You must disconnect the system from ac power to reset the BMC. 2. After 45 seconds, reconnect the system to the power source and turn on the system. 3. Run the test again. 4. Make sure that the DSA code is at the latest level. For the latest level of DSA code, go to http://www.ibm.com/support/docview.wss?uid=psg1SERV-DSA. 5. Make sure that the BMC 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 http://www.ibm.com/support/docview.wss?uid=psg1MIGR-4JTS2T and select your system to display a matrix of available firmware. 6. Run the test again. 7. If the problem remains, collect the data from the DSA event log and send it to IBM Service. For information about contacting and sending data to IBM Service, see http://www.ibm.com/support/docview.wss?uid=psg1SERV-CALL.

Table 10. DSA diagnostic messages (continued)

<ul style="list-style-type: none"> • Follow the suggested actions in the order in which they are listed in the Action column until the problem is solved. • See Chapter 3, “Parts listing, Types 4190, 4191 and 4194 server,” on page 31 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 number	Component	Test	State	Description	Action
166-822-xxx	BMC	BMC I2C Test	Aborted	BMC I2C test canceled: the destination is unavailable.	<ol style="list-style-type: none"> 1. Turn off the system and disconnect it from the power source. You must disconnect the system from ac power to reset the BMC. 2. After 45 seconds, reconnect the system to the power source and turn on the system. 3. Run the test again. 4. Make sure that the DSA code is at the latest level. For the latest level of DSA code, go to http://www.ibm.com/support/docview.wss?uid=psg1SERV-DSA. 5. Make sure that the BMC 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 http://www.ibm.com/support/docview.wss?uid=psg1MIGR-4JTS2T and select your system to display a matrix of available firmware. 6. Run the test again. 7. If the problem remains, collect the data from the DSA event log and send it to IBM Service. For information about contacting and sending data to IBM Service, see http://www.ibm.com/support/docview.wss?uid=psg1SERV-CALL.

Table 10. DSA diagnostic messages (continued)

<ul style="list-style-type: none"> • Follow the suggested actions in the order in which they are listed in the Action column until the problem is solved. • See Chapter 3, “Parts listing, Types 4190, 4191 and 4194 server,” on page 31 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 number	Component	Test	State	Description	Action
166-823-xxx	BMC	BMC I2C Test	Aborted	BMC I2C test canceled: cannot execute the command; insufficient privilege level.	<ol style="list-style-type: none"> 1. Turn off the system and disconnect it from the power source. You must disconnect the system from ac power to reset the BMC. 2. After 45 seconds, reconnect the system to the power source and turn on the system. 3. Run the test again. 4. Make sure that the DSA code is at the latest level. For the latest level of DSA code, go to http://www.ibm.com/support/docview.wss?uid=psg1SERV-DSA. 5. Make sure that the BMC 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 http://www.ibm.com/support/docview.wss?uid=psg1MIGR-4JTS2T and select your system to display a matrix of available firmware. 6. Run the test again. 7. If the problem remains, collect the data from the DSA event log and send it to IBM Service. For information about contacting and sending data to IBM Service, see http://www.ibm.com/support/docview.wss?uid=psg1SERV-CALL.

Table 10. DSA diagnostic messages (continued)

<ul style="list-style-type: none"> • Follow the suggested actions in the order in which they are listed in the Action column until the problem is solved. • See Chapter 3, “Parts listing, Types 4190, 4191 and 4194 server,” on page 31 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 number	Component	Test	State	Description	Action
166-824-xxx	BMC	BMC I2C Test	Aborted	BMC I2C test canceled: cannot execute the command.	<ol style="list-style-type: none"> 1. Turn off the system and disconnect it from the power source. You must disconnect the system from ac power to reset the BMC. 2. After 45 seconds, reconnect the system to the power source and turn on the system. 3. Run the test again. 4. Make sure that the DSA code is at the latest level. For the latest level of DSA code, go to http://www.ibm.com/support/docview.wss?uid=psg1SERV-DSA. 5. Make sure that the BMC 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 http://www.ibm.com/support/docview.wss?uid=psg1MIGR-4JTS2T and select your system to display a matrix of available firmware. 6. Run the test again. 7. If the problem remains, collect the data from the DSA event log and send it to IBM Service. For information about contacting and sending data to IBM Service, see http://www.ibm.com/support/docview.wss?uid=psg1SERV-CALL.

Table 10. DSA diagnostic messages (continued)

<ul style="list-style-type: none"> • Follow the suggested actions in the order in which they are listed in the Action column until the problem is solved. • See Chapter 3, “Parts listing, Types 4190, 4191 and 4194 server,” on page 31 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 number	Component	Test	State	Description	Action
166-901-xxx	BMC	BMC I2C Test	Failed	BMC indicates a failure in the IPMB bus	<ol style="list-style-type: none"> 1. Turn off the system and disconnect it from the power source. You must disconnect the system from ac power to reset the BMC. 2. After 45 seconds, reconnect the system to the power source and turn on the system. 3. Run the test again. 4. Make sure that the DSA code is at the latest level. For the latest level of DSA code, go to http://www.ibm.com/support/docview.wss?uid=psg1SERV-DSA. 5. Make sure that the BMC 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 http://www.ibm.com/support/docview.wss?uid=psg1MIGR-4JTS2T and select your system to display a matrix of available firmware. 6. Run the test again. 7. Remove power from the system. 8. (Trained service technician only) Reseat the system board. 9. Reconnect the system to power and turn on the system. 10. Run the test again. 11. If the problem remains, collect the data from the DSA event log and send it to IBM Service. For information about contacting and sending data to IBM Service, see http://www.ibm.com/support/docview.wss?uid=psg1SERV-CALL.

Table 10. DSA diagnostic messages (continued)

<ul style="list-style-type: none"> • Follow the suggested actions in the order in which they are listed in the Action column until the problem is solved. • See Chapter 3, “Parts listing, Types 4190, 4191 and 4194 server,” on page 31 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 number	Component	Test	State	Description	Action
166-902-xxx	BMC	BMC I2C Test	Failed	BMC indicates a failure in the sensor bus	<ol style="list-style-type: none"> 1. Turn off the system and disconnect it from the power source. You must disconnect the system from ac power to reset the BMC. 2. After 45 seconds, reconnect the system to the power source and turn on the system. 3. Run the test again. 4. Make sure that the DSA code is at the latest level. For the latest level of DSA code, go to http://www.ibm.com/support/docview.wss?uid=psg1SERV-DSA. 5. Make sure that the BMC 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 http://www.ibm.com/support/docview.wss?uid=psg1MIGR-4JTS2T and select your system to display a matrix of available firmware. 6. Run the test again. 7. Remove power from the system. 8. (Trained service technician only) Reseat the system board. 9. Reconnect the system to power and turn on the system. 10. Run the test again. 11. If the problem remains, collect the data from the DSA event log and send it to IBM Service. For information about contacting and sending data to IBM Service, see http://www.ibm.com/support/docview.wss?uid=psg1SERV-CALL.

Table 10. DSA diagnostic messages (continued)

<ul style="list-style-type: none"> • Follow the suggested actions in the order in which they are listed in the Action column until the problem is solved. • See Chapter 3, “Parts listing, Types 4190, 4191 and 4194 server,” on page 31 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 number	Component	Test	State	Description	Action
166-903-xxx	BMC	BMC I2C Test	Failed	BMC indicates a failure in the Ethernet sideband bus.	<ol style="list-style-type: none"> 1. Turn off the system and disconnect it from the power source. You must disconnect the system from ac power to reset the BMC. 2. After 45 seconds, reconnect the system to the power source and turn on the system. 3. Run the test again. 4. Make sure that the DSA code is at the latest level. For the latest level of DSA code, go to http://www.ibm.com/support/docview.wss?uid=psg1SERV-DSA. 5. Make sure that the BMC 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 http://www.ibm.com/support/docview.wss?uid=psg1MIGR-4JTS2T and select your system to display a matrix of available firmware. 6. Make sure that the Ethernet device 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 http://www.ibm.com/support/docview.wss?uid=psg1MIGR-4JTS2T and select your system to display a matrix of available firmware. 7. Run the test again. 8. Remove power from the system. 9. (Trained service technician only) Reseat the system board. 10. Reconnect the system to power and turn on the system. 11. Run the test again. 12. If the problem remains, collect the data from the DSA event log and send it to IBM Service. For information about contacting and sending data to IBM Service, see http://www.ibm.com/support/docview.wss?uid=psg1SERV-CALL.

Table 10. DSA diagnostic messages (continued)

<ul style="list-style-type: none"> • Follow the suggested actions in the order in which they are listed in the Action column until the problem is solved. • See Chapter 3, “Parts listing, Types 4190, 4191 and 4194 server,” on page 31 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 number	Component	Test	State	Description	Action
166-904-xxx	BMC	BMC I2C Test	Failed	BMC indicates a failure in the power backplane bus.	<ol style="list-style-type: none"> 1. Turn off the system and disconnect it from the power source. You must disconnect the system from ac power to reset the BMC. 2. After 45 seconds, reconnect the system to the power source and turn on the system. 3. Run the test again. 4. Make sure that the DSA code is at the latest level. For the latest level of DSA code, go to http://www.ibm.com/support/docview.wss?uid=psg1SERV-DSA. 5. Make sure that the BMC 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 http://www.ibm.com/support/docview.wss?uid=psg1MIGR-4JTS2T and select your system to display a matrix of available firmware. 6. Run the test again. 7. Remove power from the system. 8. Reseat the power backplane. 9. (Trained service technician only) Reseat the system board. 10. Reconnect the system to power and turn on the system. 11. Run the test again. 12. If the problem remains, collect the data from the DSA event log and send it to IBM Service. For information about contacting and sending data to IBM Service, see http://www.ibm.com/support/docview.wss?uid=psg1SERV-CALL.

Table 10. DSA diagnostic messages (continued)

<ul style="list-style-type: none"> • Follow the suggested actions in the order in which they are listed in the Action column until the problem is solved. • See Chapter 3, “Parts listing, Types 4190, 4191 and 4194 server,” on page 31 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 number	Component	Test	State	Description	Action
166-905-xxx	BMC	BMC I2C Test	Failed	BMC indicates a failure in the hard disk drive (DASD) bus.	<p>Ignore this error if the hard disk drive backplane is not installed. Otherwise, complete the following steps:</p> <ol style="list-style-type: none"> 1. Turn off the system and disconnect it from the power source. You must disconnect the system from ac power to reset the BMC. 2. After 45 seconds, reconnect the system to the power source and turn on the system. 3. Run the test again. 4. Make sure that the DSA code is at the latest level. For the latest level of DSA code, go to http://www.ibm.com/support/docview.wss?uid=psg1SERV-DISA. 5. Make sure that the BMC 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 http://www.ibm.com/support/docview.wss?uid=psg1MIGR-4JTS2T and select your system to display a matrix of available firmware. 6. Run the test again. 7. Remove power from the system. 8. Reseat all connections in the hard disk subsystem, which can include hard disk drives, SCSI or SAS cables, a hard disk backplane, and a hard disk drive or RAID controller. 9. (Trained service technician only) Reseat the system board. 10. Reconnect the system to power and turn on the system. 11. Run the test again. 12. If the problem remains, collect the data from the DSA event log and send it to IBM Service. For information about contacting and sending data to IBM Service, see http://www.ibm.com/support/docview.wss?uid=psg1SERV-CALL.

Table 10. DSA diagnostic messages (continued)

<ul style="list-style-type: none"> • Follow the suggested actions in the order in which they are listed in the Action column until the problem is solved. • See Chapter 3, “Parts listing, Types 4190, 4191 and 4194 server,” on page 31 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 number	Component	Test	State	Description	Action
166-906-xxx	BMC	BMC I2C Test	Failed	BMC indicates a failure in the private bus.	<ol style="list-style-type: none"> 1. Turn off the system and disconnect it from the power source. You must disconnect the system from ac power to reset the BMC. 2. After 45 seconds, reconnect the system to the power source and turn on the system. 3. Run the test again. 4. Make sure that the DSA code is at the latest level. For the latest level of DSA code, go to http://www.ibm.com/support/docview.wss?uid=psg1SERV-DSA. 5. Make sure that the BMC 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 http://www.ibm.com/support/docview.wss?uid=psg1MIGR-4JTS2T and select your system to display a matrix of available firmware. 6. Run the test again. 7. Remove power from the system. 8. (Trained service technician only) Reseat the system board. 9. Reconnect the system to power and turn on the system. 10. Run the test again. 11. If the problem remains, collect the data from the DSA event log and send it to IBM Service. For information about contacting and sending data to IBM Service, see http://www.ibm.com/support/docview.wss?uid=psg1SERV-CALL.

Table 10. DSA diagnostic messages (continued)

<ul style="list-style-type: none"> • Follow the suggested actions in the order in which they are listed in the Action column until the problem is solved. • See Chapter 3, “Parts listing, Types 4190, 4191 and 4194 server,” on page 31 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 number	Component	Test	State	Description	Action
201-801-xxx	Memory	Memory Test	Aborted	Test canceled: the system BIOS programmed the memory controller with an invalid CBAR address	<ol style="list-style-type: none"> 1. Turn off and restart the system. 2. Run the test again. 3. Make sure that the BIOS code 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 http://www.ibm.com/support/docview.wss?uid=psg1MIGR-4JTS2T and select your system to display a matrix of available firmware. 4. Run the test again. 5. If the problem remains, collect the data from the DSA event log and send it to IBM Service. For information about contacting and sending data to IBM Service, see http://www.ibm.com/support/docview.wss?uid=psg1SERV-CALL.
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"> 1. Turn off and restart the system. 2. Run the test again. 3. Make sure that all DIMMs are enabled in the Configuration/Setup Utility program (press F1 at system startup). 4. Make sure that the BIOS code 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 http://www.ibm.com/support/docview.wss?uid=psg1MIGR-4JTS2T and select your system to display a matrix of available firmware. 5. Run the test again. 6. If the problem remains, collect the data from the DSA event log and send it to IBM Service. For information about contacting and sending data to IBM Service, see http://www.ibm.com/support/docview.wss?uid=psg1SERV-CALL.

Table 10. DSA diagnostic messages (continued)

<ul style="list-style-type: none"> • Follow the suggested actions in the order in which they are listed in the Action column until the problem is solved. • See Chapter 3, “Parts listing, Types 4190, 4191 and 4194 server,” on page 31 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 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"> 1. Turn off and restart the system. 2. Run the test again. 3. Make sure that the BIOS code 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 http://www.ibm.com/support/docview.wss?uid=psg1MIGR-4JTS2T and select your system to display a matrix of available firmware. 4. Run the test again. 5. If the problem remains, collect the data from the DSA event log and send it to IBM Service. For information about contacting and sending data to IBM Service, see http://www.ibm.com/support/docview.wss?uid=psg1SERV-CALL.
201-804-xxx	Memory	Memory Test	Aborted	Test canceled: the memory controller buffer request failed.	<ol style="list-style-type: none"> 1. Turn off and restart the system. 2. Run the test again. 3. Make sure that the BIOS code 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 http://www.ibm.com/support/docview.wss?uid=psg1MIGR-4JTS2T and select your system to display a matrix of available firmware. 4. Run the test again. 5. If the problem remains, collect the data from the DSA event log and send it to IBM Service. For information about contacting and sending data to IBM Service, see http://www.ibm.com/support/docview.wss?uid=psg1SERV-CALL.

Table 10. DSA diagnostic messages (continued)

<ul style="list-style-type: none"> • Follow the suggested actions in the order in which they are listed in the Action column until the problem is solved. • See Chapter 3, “Parts listing, Types 4190, 4191 and 4194 server,” on page 31 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 number	Component	Test	State	Description	Action
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"> 1. Turn off and restart the system. 2. Run the test again. 3. Make sure that the BIOS code 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 http://www.ibm.com/support/docview.wss?uid=psg1MIGR-4JTS2T and select your system to display a matrix of available firmware. 4. Run the test again. 5. If the problem remains, collect the data from the DSA event log and send it to IBM Service. For information about contacting and sending data to IBM Service, see http://www.ibm.com/support/docview.wss?uid=psg1SERV-CALL.
201-806-xxx	Memory	Memory Test	Aborted	Test canceled: the memory controller fast scrub operation was not completed.	<ol style="list-style-type: none"> 1. Turn off and restart the system. 2. Run the test again. 3. Make sure that the BIOS code 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 http://www.ibm.com/support/docview.wss?uid=psg1MIGR-4JTS2T and select your system to display a matrix of available firmware. 4. Run the test again. 5. If the problem remains, collect the data from the DSA event log and send it to IBM Service. For information about contacting and sending data to IBM Service, see http://www.ibm.com/support/docview.wss?uid=psg1SERV-CALL.

Table 10. DSA diagnostic messages (continued)

<ul style="list-style-type: none"> • Follow the suggested actions in the order in which they are listed in the Action column until the problem is solved. • See Chapter 3, “Parts listing, Types 4190, 4191 and 4194 server,” on page 31 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 number	Component	Test	State	Description	Action
201-807-xxx	Memory	Memory Test	Aborted	Test canceled: the memory controller buffer free request failed.	<ol style="list-style-type: none"> 1. Turn off and restart the system. 2. Run the test again. 3. Make sure that the BIOS code 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 http://www.ibm.com/support/docview.wss?uid=psg1MIGR-4JTS2T and select your system to display a matrix of available firmware. 4. Run the test again. 5. If the problem remains, collect the data from the DSA event log and send it to IBM Service. For information about contacting and sending data to IBM Service, see http://www.ibm.com/support/docview.wss?uid=psg1SERV-CALL.
201-808-xxx	Memory	Memory Test	Aborted	Test canceled: memory controller display/alter buffer execute error.	<ol style="list-style-type: none"> 1. Turn off and restart the system. 2. Run the test again. 3. Make sure that the BIOS code 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 http://www.ibm.com/support/docview.wss?uid=psg1MIGR-4JTS2T and select your system to display a matrix of available firmware. 4. Run the test again. 5. If the problem remains, collect the data from the DSA event log and send it to IBM Service. For information about contacting and sending data to IBM Service, see http://www.ibm.com/support/docview.wss?uid=psg1SERV-CALL.

Table 10. DSA diagnostic messages (continued)

<ul style="list-style-type: none"> • Follow the suggested actions in the order in which they are listed in the Action column until the problem is solved. • See Chapter 3, “Parts listing, Types 4190, 4191 and 4194 server,” on page 31 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 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"> 1. Turn off and restart the system. 2. Run the test again. 3. Make sure that the DSA code is at the latest level. For the latest level of DSA code, go to http://www.ibm.com/support/docview.wss?uid=psg1SERV-DSA. 4. Make sure that the BIOS code 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 http://www.ibm.com/support/docview.wss?uid=psg1MIGR-4JTS2T and select your system to display a matrix of available firmware. 5. Run the test again. 6. If the problem remains, collect the data from the DSA event log and send it to IBM Service. For information about contacting and sending data to IBM Service, see http://www.ibm.com/support/docview.wss?uid=psg1SERV-CALL.
201-810-xxx	Memory	Memory Test	Aborted	Test canceled: unknown error code xxx received in COMMONEXIT procedure.	<ol style="list-style-type: none"> 1. Turn off and restart the system. 2. Run the test again. 3. Make sure that the DSA code is at the latest level. For the latest level of DSA code, go to http://www.ibm.com/support/docview.wss?uid=psg1SERV-DSA. 4. Make sure that the BIOS code 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 http://www.ibm.com/support/docview.wss?uid=psg1MIGR-4JTS2T and select your system to display a matrix of available firmware. 5. Run the test again. 6. If the problem remains, collect the data from the DSA event log and send it to IBM Service. For information about contacting and sending data to IBM Service, see http://www.ibm.com/support/docview.wss?uid=psg1SERV-CALL.

Table 10. DSA diagnostic messages (continued)

<ul style="list-style-type: none"> • Follow the suggested actions in the order in which they are listed in the Action column until the problem is solved. • See Chapter 3, “Parts listing, Types 4190, 4191 and 4194 server,” on page 31 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 number	Component	Test	State	Description	Action
201-901-xxx	Memory	Memory Test	Failed	Test failure: single-bit error, failing bank x, failing DIMM z.	<ol style="list-style-type: none"> 1. Turn off the system and disconnect it from the power source. 2. Reseat DIMM z. 3. Reconnect the system to the power source and turn on the system. 4. Make sure that the DSA code is at the latest level. For the latest level of DSA code, go to http://www.ibm.com/support/docview.wss?uid=psg1SERV-DSA. 5. Make sure that the BIOS code 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 http://www.ibm.com/support/docview.wss?uid=psg1MIGR-4JTS2T and select your system to display a matrix of available firmware. 6. Run the test again. 7. Replace the failing DIMMs. 8. Re-enable all memory in the Configuration/Setup Utility program (press F1 at system startup). 9. Run the test again. 10. Replace the failing DIMM. 11. Re-enable all memory in the Configuration/Setup Utility program (press F1 at system startup). 12. Run the test again. 13. If the problem remains, collect the data from the DSA event log and send it to IBM Service. For information about contacting and sending data to IBM Service, see http://www.ibm.com/support/docview.wss?uid=psg1SERV-CALL.

Table 10. DSA diagnostic messages (continued)

<ul style="list-style-type: none"> • Follow the suggested actions in the order in which they are listed in the Action column until the problem is solved. • See Chapter 3, “Parts listing, Types 4190, 4191 and 4194 server,” on page 31 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 number	Component	Test	State	Description	Action
201-902-xxx	Memory	Memory Test	Failed	Test failure: single-bit and multi-bit error, failing bank x, failing DIMM z	<ol style="list-style-type: none"> 1. Turn off the system and disconnect it from the power source. 2. Reseat DIMM z. 3. Reconnect the system to the power source and turn on the system. 4. Make sure that the DSA code is at the latest level. For the latest level of DSA code, go to http://www.ibm.com/support/docview.wss?uid=psg1SERV-DSA. 5. Make sure that the BIOS code 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 http://www.ibm.com/support/docview.wss?uid=psg1MIGR-4JTS2T and select your system to display a matrix of available firmware. 6. Run the test again. 7. Replace the failing DIMMs. 8. Re-enable all memory in the Configuration/Setup Utility program (press F1 at system startup). 9. Run the test again. 10. Replace the failing DIMMs. 11. Re-enable all memory in the Configuration/Setup Utility program (press F1 at system startup). 12. Run the test again. 13. If the problem remains, collect the data from the DSA event log and send it to IBM Service. For information about contacting and sending data to IBM Service, see http://www.ibm.com/support/docview.wss?uid=psg1SERV-CALL.

Table 10. DSA diagnostic messages (continued)

<ul style="list-style-type: none"> • Follow the suggested actions in the order in which they are listed in the Action column until the problem is solved. • See Chapter 3, “Parts listing, Types 4190, 4191 and 4194 server,” on page 31 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 number	Component	Test	State	Description	Action
202-801-xxx	Memory	Memory Stress Test	Aborted	Internal program error.	<ol style="list-style-type: none"> 1. Turn off and restart the system. 2. Make sure that the DSA code is at the latest level. For the latest level of DSA code, go to http://www.ibm.com/support/docview.wss?uid=psg1SERV-DSA. 3. Make sure that the BIOS code 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 http://www.ibm.com/support/docview.wss?uid=psg1MIGR-4JTS2T and select your system to display a matrix of available firmware. 4. Run the test again. 5. Turn off and restart the system if necessary to recover from a hung state. 6. Run the memory diagnostics to identify the specific failing DIMM. 7. If the problem remains, collect the data from the DSA event log and send it to IBM Service. For information about contacting and sending data to IBM Service, see http://www.ibm.com/support/docview.wss?uid=psg1SERV-CALL.

Table 10. DSA diagnostic messages (continued)

<ul style="list-style-type: none"> • Follow the suggested actions in the order in which they are listed in the Action column until the problem is solved. • See Chapter 3, “Parts listing, Types 4190, 4191 and 4194 server,” on page 31 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 number	Component	Test	State	Description	Action
202-802-xxx	Memory	Memory Stress Test	Aborted	Memory size is insufficient to run the test. At least 1 GB is required.	<ol style="list-style-type: none"> 1. Turn off and restart the system. 2. 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 Configuration/Setup Utility program (press F1 at system startup). 3. Make sure that the DSA code is at the latest level. For the latest level of DSA code, go to http://www.ibm.com/support/docview.wss?uid=psg1SERV-DSA. 4. Make sure that the BIOS code 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 http://www.ibm.com/support/docview.wss?uid=psg1MIGR-4JTS2T and select your system to display a matrix of available firmware. 5. Run the test again. 6. Turn off and restart the system if necessary to recover from a hung state. 7. Run the memory diagnostics to identify the specific failing DIMM. 8. If the problem remains, collect the data from the DSA event log and send it to IBM Service. For information about contacting and sending data to IBM Service, see http://www.ibm.com/support/docview.wss?uid=psg1SERV-CALL.

Table 10. DSA diagnostic messages (continued)

<ul style="list-style-type: none"> • Follow the suggested actions in the order in which they are listed in the Action column until the problem is solved. • See Chapter 3, “Parts listing, Types 4190, 4191 and 4194 server,” on page 31 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 number	Component	Test	State	Description	Action
202-901-xxx	Memory	Memory Stress Test	Failed	Test failure.	<ol style="list-style-type: none"> 1. Run the standard DSA memory diagnostic to validate all memory. 2. Make sure that the DSA code is at the latest level. For the latest level of DSA code, go to http://www.ibm.com/support/docview.wss?uid=psg1SERV-DSA. 3. Turn off the system and disconnect it from power. 4. Reseat the DIMMs. 5. Reconnect the system to power and turn on the system. 6. Run the test again. 7. Run the standard DSA memory diagnostic to validate all memory. 8. If the problem remains, collect the data from the DSA event log and send it to IBM Service. For information about contacting and sending data to IBM Service, see http://www.ibm.com/support/docview.wss?uid=psg1SERV-CALL.
202-902-xxx	Memory	Memory Stress Test	Failed	General error: memory size is insufficient to run the test.	<ol style="list-style-type: none"> 1. Turn off and restart the system. 2. 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 Configuration/Setup Utility program (press F1 at system startup). 3. Make sure that the DSA code is at the latest level. For the latest level of DSA code, go to http://www.ibm.com/support/docview.wss?uid=psg1SERV-DSA. 4. Run the test again. 5. Turn off and restart the system if necessary to recover from a hung state. 6. Run the standard DSA memory diagnostic to validate all memory. 7. If the problem remains, collect the data from the DSA event log and send it to IBM Service. For information about contacting and sending data to IBM Service, see http://www.ibm.com/support/docview.wss?uid=psg1SERV-CALL.

Table 10. DSA diagnostic messages (continued)

<ul style="list-style-type: none"> • Follow the suggested actions in the order in which they are listed in the Action column until the problem is solved. • See Chapter 3, “Parts listing, Types 4190, 4191 and 4194 server,” on page 31 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 number	Component	Test	State	Description	Action
215-801-xxx	Optical drive	Self-Test	Aborted	Unable to communicate with the device driver.	<ol style="list-style-type: none"> 1. Make sure that the DSA code is at the latest level. For the latest level of DSA code, go to http://www.ibm.com/support/docview.wss?uid=psg1SERV-DSA. 2. Run the test again. 3. Check the drive cabling for loose or broken connections at both ends or damage to the cable. Replace the cable if it is damaged. 4. Run the test again. 5. For additional troubleshooting information, see the “Troubleshooting CD and DVD drive issues” site at http://www.ibm.com/support/docview.wss?uid=psg1MIGR-41559. 6. Run the test again. 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 the latest level of firmware, go to http://www.ibm.com/support/docview.wss?uid=psg1MIGR-4JTS2T and select your system to display a matrix of available firmware. 8. Run the test again. 9. If the problem remains, collect the data from the DSA event log and send it to IBM Service. For information about contacting and sending data to IBM Service, see http://www.ibm.com/support/docview.wss?uid=psg1SERV-CALL.

Table 10. DSA diagnostic messages (continued)

<ul style="list-style-type: none"> • Follow the suggested actions in the order in which they are listed in the Action column until the problem is solved. • See Chapter 3, “Parts listing, Types 4190, 4191 and 4194 server,” on page 31 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 number	Component	Test	State	Description	Action
215-802-xxx	Optical drive	Self-Test	Aborted	The media tray is open.	<ol style="list-style-type: none"> 1. Close the media tray and wait 15 seconds for the media to be recognized.. 2. Run the test again. 3. Insert a new CD or DVD into the drive, and wait for 15 seconds for the media to be recognized. 4. Run the test again. 5. Check the drive cabling for loose or broken connections at both ends or damage to the cable. Replace the cable if it is damaged. 6. Run the test again. 7. Make sure that the DSA code is at the latest level. For the latest level of DSA code, go to http://www.ibm.com/support/docview.wss?uid=psg1SERV-DSA. 8. Run the test again. 9. For additional troubleshooting information, see the “Troubleshooting CD and DVD drive issues” site at http://www.ibm.com/support/docview.wss?uid=psg1MIGR-41559. 10. Run the test again. 11. Replace the optical drive. 12. Run the test again. 13. If the problem remains, collect the data from the DSA event log and send it to IBM Service. For information about contacting and sending data to IBM Service, see http://www.ibm.com/support/docview.wss?uid=psg1SERV-CALL.
215-803-xxx	Optical drive	Self-Test	Failed	The disc might be in use by the system.	<ol style="list-style-type: none"> 1. Wait for the system activity to stop. 2. Run the test again. 3. Turn off and restart the system. 4. Run the test again. 5. If the problem remains, collect the data from the DSA event log and send it to IBM Service. For information about contacting and sending data to IBM Service, see http://www.ibm.com/support/docview.wss?uid=psg1SERV-CALL.

Table 10. DSA diagnostic messages (continued)

<ul style="list-style-type: none"> • Follow the suggested actions in the order in which they are listed in the Action column until the problem is solved. • See Chapter 3, “Parts listing, Types 4190, 4191 and 4194 server,” on page 31 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 number	Component	Test	State	Description	Action
215-901-xxx	Optical drive	Self-Test	Aborted	Drive media is not detected.	<ol style="list-style-type: none"> 1. Insert a new CD or DVD into the drive and wait for 15 seconds for the media to be recognized. 2. Run the test again. 3. Check the drive cabling for loose or broken connections at both ends or damage to the cable. Replace the cable if it is damaged. 4. Run the test again. 5. For additional troubleshooting information, see the “Troubleshooting CD and DVD drive issues” site at http://www.ibm.com/support/docview.wss?uid=psg1MIGR-41559. 6. Run the test again. 7. Replace the optical drive. 8. Run the test again. 9. If the problem remains, collect the data from the DSA event log and send it to IBM Service. For information about contacting and sending data to IBM Service, see http://www.ibm.com/support/docview.wss?uid=psg1SERV-CALL.
215-902-xxx	Optical drive	Self-Test	Failed	Read miscompare.	<ol style="list-style-type: none"> 1. Insert a new CD or DVD into the drive and wait for 15 seconds for the media to be recognized. 2. Run the test again. 3. Check the drive cabling for loose or broken connections at both ends or damage to the cable. Replace the cable if it is damaged. 4. Run the test again. 5. For additional troubleshooting information, see the “Troubleshooting CD and DVD drive issues” site at http://www.ibm.com/support/docview.wss?uid=psg1MIGR-41559. 6. Run the test again. 7. Replace the optical drive. 8. Run the test again. 9. If the problem remains, collect the data from the DSA event log and send it to IBM Service. For information about contacting and sending data to IBM Service, see http://www.ibm.com/support/docview.wss?uid=psg1SERV-CALL.

Table 10. DSA diagnostic messages (continued)

<ul style="list-style-type: none"> • Follow the suggested actions in the order in which they are listed in the Action column until the problem is solved. • See Chapter 3, “Parts listing, Types 4190, 4191 and 4194 server,” on page 31 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 number	Component	Test	State	Description	Action
215-903-xxx	Optical drive	Self-Test	Aborted	Could not access the drive.	<ol style="list-style-type: none"> 1. Insert a new CD or DVD into the drive and wait for 15 seconds for the media to be recognized. 2. Run the test again. 3. Check the drive cabling for loose or broken connections at both ends or damage to the cable. Replace the cable if it is damaged. 4. Run the test again. 5. Make sure that the DSA code is at the latest level. For the latest level of DSA code, go to http://www.ibm.com/support/docview.wss?uid=psg1SERV-DSA. 6. Run the test again. 7. For additional troubleshooting information, see the “Troubleshooting CD and DVD drive issues” site at http://www.ibm.com/support/docview.wss?uid=psg1MIGR-41559. 8. Run the test again. 9. Replace the optical drive. 10. Run the test again. 11. If the problem remains, collect the data from the DSA event log and send it to IBM Service. For information about contacting and sending data to IBM Service, see http://www.ibm.com/support/docview.wss?uid=psg1SERV-CALL.

Table 10. DSA diagnostic messages (continued)

<ul style="list-style-type: none"> • Follow the suggested actions in the order in which they are listed in the Action column until the problem is solved. • See Chapter 3, “Parts listing, Types 4190, 4191 and 4194 server,” on page 31 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 number	Component	Test	State	Description	Action
215-904-xxx	Optical drive	Self-Test	Failed	A read error occurred.	<ol style="list-style-type: none"> 1. Insert a new CD or DVD into the drive and wait for 15 seconds for the media to be recognized. 2. Run the test again. 3. Check the drive cabling for loose or broken connections at both ends or damage to the cable. Replace the cable if it is damaged. 4. Run the test again. 5. For additional troubleshooting information, see the “Troubleshooting CD and DVD drive issues” site at http://www.ibm.com/support/docview.wss?uid=psg1MIGR-41559. 6. Run the test again. 7. Replace the optical drive. 8. Run the test again. 9. If the problem remains, collect the data from the DSA event log and send it to IBM Service. For information about contacting and sending data to IBM Service, see http://www.ibm.com/support/docview.wss?uid=psg1SERV-CALL.
405-901-xxx	Broadcom Ethernet device	TestControlRegisters	Failed		<ol style="list-style-type: none"> 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 the latest level of firmware, go to http://www.ibm.com/support/docview.wss?uid=psg1MIGR-4JTS2T and select your system to display a matrix of available firmware. 2. Run the test again. 3. (Trained service technician only) Replace the system board. 4. Run the test again. 5. If the problem remains, collect the data from the DSA event log and send it to IBM Service. For information about contacting and sending data to IBM Service, see http://www.ibm.com/support/docview.wss?uid=psg1SERV-CALL.

Table 10. DSA diagnostic messages (continued)

<ul style="list-style-type: none"> • Follow the suggested actions in the order in which they are listed in the Action column until the problem is solved. • See Chapter 3, “Parts listing, Types 4190, 4191 and 4194 server,” on page 31 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 number	Component	Test	State	Description	Action
405-902-xxx	Broadcom Ethernet device	TestMIIRegisters	Failed		<ol style="list-style-type: none"> 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 the latest level of firmware, go to http://www.ibm.com/support/docview.wss?uid=psg1MIGR-4JTS2T and select your system to display a matrix of available firmware. 2. Run the test again. 3. (Trained service technician only) Replace the system board. 4. Run the test again. 5. If the problem remains, collect the data from the DSA event log and send it to IBM Service. For information about contacting and sending data to IBM Service, see http://www.ibm.com/support/docview.wss?uid=psg1SERV-CALL.
405-903-xxx	Broadcom Ethernet device	TestEEPROM	Failed		<ol style="list-style-type: none"> 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 the latest level of firmware, go to http://www.ibm.com/support/docview.wss?uid=psg1MIGR-4JTS2T and select your system to display a matrix of available firmware. 2. Run the test again. 3. (Trained service technician only) Replace the system board. 4. Run the test again. 5. If the problem remains, collect the data from the DSA event log and send it to IBM Service. For information about contacting and sending data to IBM Service, see http://www.ibm.com/support/docview.wss?uid=psg1SERV-CALL.

Table 10. DSA diagnostic messages (continued)

<ul style="list-style-type: none"> • Follow the suggested actions in the order in which they are listed in the Action column until the problem is solved. • See Chapter 3, “Parts listing, Types 4190, 4191 and 4194 server,” on page 31 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 number	Component	Test	State	Description	Action
405-904-xxx	Broadcom Ethernet device	TestInternalMemory	Failed		<ol style="list-style-type: none"> 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 the latest level of firmware, go to http://www.ibm.com/support/docview.wss?uid=psg1MIGR-4JTS2T and select your system to display a matrix of available firmware. 2. Run the test again. 3. (Trained service technician only) Replace the system board. 4. Run the test again. 5. If the problem remains, collect the data from the DSA event log and send it to IBM Service. For information about contacting and sending data to IBM Service, see http://www.ibm.com/support/docview.wss?uid=psg1SERV-CALL.
405-905-xxx	Broadcom Ethernet device	TestInterrupt	Failed		<ol style="list-style-type: none"> 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 the latest level of firmware, go to http://www.ibm.com/support/docview.wss?uid=psg1MIGR-4JTS2T and select your system to display a matrix of available firmware. 2. Run the test again. 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 Configuration/Setup Utility program (press F1 at system startup) to assign a unique interrupt to the device. 4. Run the test again. 5. (Trained service technician only) Replace the system board. 6. Run the test again. 7. If the problem remains, collect the data from the DSA event log and send it to IBM Service. For information about contacting and sending data to IBM Service, see http://www.ibm.com/support/docview.wss?uid=psg1SERV-CALL.

Table 10. DSA diagnostic messages (continued)

<ul style="list-style-type: none"> • Follow the suggested actions in the order in which they are listed in the Action column until the problem is solved. • See Chapter 3, “Parts listing, Types 4190, 4191 and 4194 server,” on page 31 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 number	Component	Test	State	Description	Action
405-906-xxx	Broadcom Ethernet device	TestLoopbackAtMAC-Layer	Failed		<ol style="list-style-type: none"> 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 the latest level of firmware, go to http://www.ibm.com/support/docview.wss?uid=psg1MIGR-4JTS2T and select your system to display a matrix of available firmware. 2. Run the test again. 3. (Trained service technician only) Replace the system board. 4. Run the test again. 5. If the problem remains, collect the data from the DSA event log and send it to IBM Service. For information about contacting and sending data to IBM Service, see http://www.ibm.com/support/docview.wss?uid=psg1SERV-CALL.
405-907-xxx	Broadcom Ethernet device	TestLoopbackAtPhysicalLayer	Failed		<ol style="list-style-type: none"> 1. Check the Ethernet cable for damage and make sure that the cable type and connection are correct. 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 the latest level of firmware, go to http://www.ibm.com/support/docview.wss?uid=psg1MIGR-4JTS2T and select your system to display a matrix of available firmware. 3. Run the test again. 4. (Trained service technician only) Replace the system board. 5. Run the test again. 6. If the problem remains, collect the data from the DSA event log and send it to IBM Service. For information about contacting and sending data to IBM Service, see http://www.ibm.com/support/docview.wss?uid=psg1SERV-CALL.

Table 10. DSA diagnostic messages (continued)

<ul style="list-style-type: none"> • Follow the suggested actions in the order in which they are listed in the Action column until the problem is solved. • See Chapter 3, “Parts listing, Types 4190, 4191 and 4194 server,” on page 31 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 number	Component	Test	State	Description	Action
405-908-xxx	Broadcom Ethernet device	TestLEDs	Failed		<ol style="list-style-type: none"> 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 the latest level of firmware, go to http://www.ibm.com/support/docview.wss?uid=psg1MIGR-4JTS2T and select your system to display a matrix of available firmware. 2. Run the test again. 3. (Trained service technician only) Replace the system board. 4. Run the test again. 5. If the problem remains, collect the data from the DSA event log and send it to IBM Service. For information about contacting and sending data to IBM Service, see http://www.ibm.com/support/docview.wss?uid=psg1SERV-CALL.

Updating (flash-update) the BIOS code on the server

Periodically, IBM makes new levels of BIOS code available on the Web. Always check <http://www.ibm.com/systems/support/> for the latest level of BIOS code, device drivers, documentation, and hints and tips. You can use one of the following methods to update (flash-update) the BIOS code on the server:

- Download the BIOS code update file directly to the hard disk drive.
- Download the BIOS code update file to a diskette (you must attach an optional external USB portable diskette drive to the server); then, update the BIOS code on the server.
- Download the BIOS code update file to a CD or DVD, using a writable optional device; then, start the server with the CD or DVD in the CD or DVD drive to update the BIOS code on the server.

One file type is available for each of these methods. The description next to each file indicates the type of medium to which you can download the file. A readme file is also available with instructions for installing the BIOS code update.

To download the BIOS (flash) update files, 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 x3200 M2** to display the matrix of downloadable files for the server.
5. Select the applicable file for your operating system and the file type for the medium you want to use; then, download the flash BIOS update.
6. Update the BIOS code. Follow the readme instructions that come with the update file that you downloaded.

Note: Always reset the Configuration/Setup Utility program to the default values after you update the BIOS code.

7. Restart 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>

Recovering the server firmware

You can update the BIOS code by using an external USB diskette drive or by using a Linux or Windows update package (if available). See “Updating the firmware” on page 13 for information about downloading the files for updating.

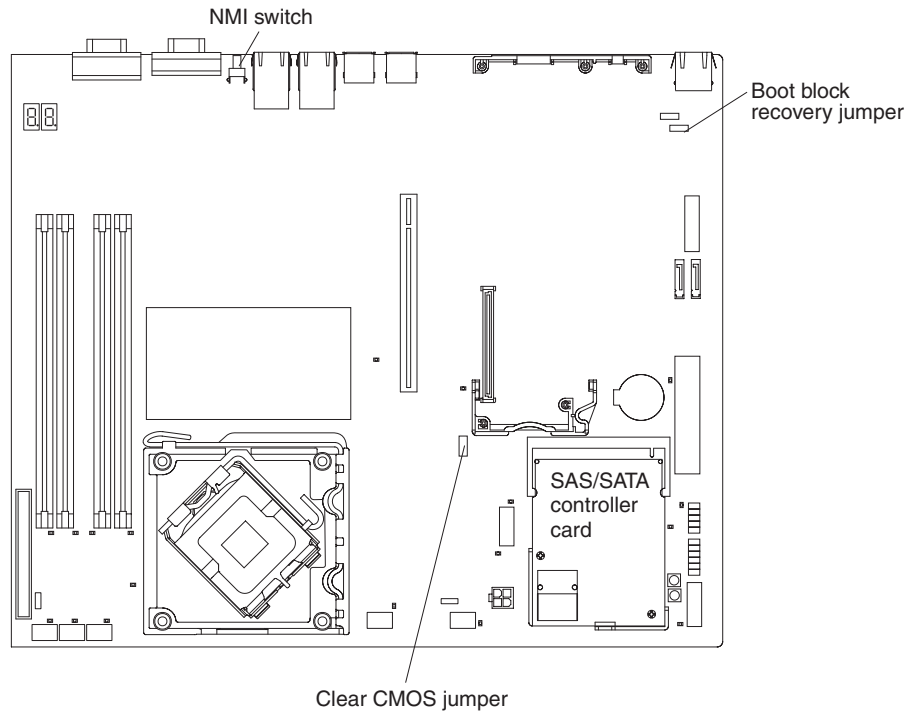
If power to the server is interrupted while the BIOS code is being updated (flash update), or if the primary BIOS page in protected memory otherwise becomes damaged, the server might not restart correctly or might not display video (no video). If this happens, use the following procedure to recover:

To complete the procedures in this section, you must first make the following preparations:

- Download the BIOS code image to create the POST/BIOS recovery diskette, CD, or DVD from <http://www.ibm.com/systems/support/>.
- To create and use a diskette, you must attach an optional external USB diskette drive to the server. To enable the USB diskette drive, complete the following.
 1. Enable the USB Support option in the Devices and I/O Ports menu in the Configuration/Setup Utility program
 2. Set your removable media device as the first startup device.
 3. Select the removable media device that you want to boot from and move it to the top of the list

To recover the BIOS code, complete the following steps.

1. Read the safety information that begins on page vii and “Handling static-sensitive devices” on page 49.
2. Turn off the server and peripheral devices and disconnect all external cables and power cords; remove the server from the rack and place it on a flat, static-protective surface.
3. Unlock and remove the cover (see “Removing the cover” on page 50) for more information.
4. Locate the boot block recovery jumper (JP4) on the system board, see the following illustration.



5. Remove any adapters that impede access to the boot block recovery jumper (JP4) (see “Removing an adapter” on page 52).
6. Move the boot block recovery jumper (JP4) from pins 1 and 2 to pins 2 and 3 to enable recovery mode
7. Reinstall any adapters that you removed (see “Installing an adapter” on page 53 “Installing an adapter” on page 53).
8. Reinstall the cover (see “Installing the cover” on page 51).
9. Insert the BIOS update (flash) diskette, CD, or DVD into the diskette, CD, or DVD drive.
10. Turn on the server and monitor and allow it to boot to inserted media. Monitor the firmware update to completion.
11. After the update session is completed, remove the diskette, CD, or DVD from the drive.
12. Turn off the server and disconnect all power cords and external cables; then remove the server cover (see “Removing the cover” on page 50).
13. Remove any adapters that impede access to the boot block recovery jumper (JP4) (see “Removing an adapter” on page 52).
14. Restart the server. The system begins the power-on self-test (POST). If this does not recover the primary bank, continue with the following steps.
15. Remove the cover (see “Removing the cover” on page 50).
16. Reset the CMOS by removing the battery (see “Removing the battery” on page 69).
17. Leave the battery out of the server for approximately 5 to 15 minutes.
18. Reinstall the battery (see “Installing the battery” on page 69).
19. Reinstall the server cover (see “Installing the cover” on page 51) and reconnect all power cables.
20. Restart the server. The system begins the power-on self-test (POST).
21. If these recovery efforts fail, contact IBM support.

22. If these recovery efforts fail, contact your IBM service support representative.

See “System-board switches and jumpers” on page 8 for a description of the jumpers and switches.

System event/error log messages

The system event/error log contains POST messages. The system event/error log can contain messages of three types:

Information	Information messages do not require action; they record significant system-level events, such as when the server is started.
Warning	Warning messages do not require immediate action; they indicate possible problems, such as when the recommended maximum ambient temperature is exceeded.
Error	Error messages might require action; they indicate system errors, such as when a fan is not detected.

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

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

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

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

These actions in the following table have the following meanings:

Reseat the power supply

Complete the following steps:

1. Remove the power supply from the server (see “Removing the power supply” on page 75).
2. Check the power supply for damage and for crimped or damaged cables.
3. Install the power supply in the server (see “Installing the power supply” on page 76).

- Follow the suggested actions in the order in which they are listed in the Action column until the problem is solved.
- See Chapter 3, “Parts listing, Types 4190, 4191 and 4194 server,” on page 31 to determine which components are customer replaceable units (CRU) and which components are field replaceable units (FRU).
- If an action step is preceded by “(Trained service technician only),” that step must be performed only by a trained service technician.

system event/error log message	Action
A system NMI was detected.	Make sure that the system software is operating correctly and does not conflict with other software; the system software has created a software NMI, or your pressing the NMI button has created a service NMI.
Alert accepted by remote system x; type: y, ID: z	Information only.
Alert accepted from system x; type: y, sender's ID: z	Information only.
Alert ID x will be retried by sender; when accepted by a remote system, it will have a different ID.	Information only.
Alert not accepted from system x; type: y, sender's ID: z	Information only.
Alert not accepted by remote system x; type: y, ID: z	Information only.
ASM reset -- reason unknown	Information only.
ASM reset due to watchdog timeout	Information only.
ASM reset due to x, instruction fault: y	Information only.
ASM reset was caused by restoring default values	Information only.
ASM reset was initiated by the user	Information only.
Configuration error recovery on the interconnect network	Information only.
CPU over temperature.	<ol style="list-style-type: none"> 1. Make sure that the fans have good airflow and are not obstructed. 2. (Trained service technician only) Reseat the microprocessor heat-exchanger assembly.
DASD controller removal	<ol style="list-style-type: none"> 1. Check the following cables for damage. Make sure that the cables are not broken, crimped, or caught by any components. <ul style="list-style-type: none"> • (Hot-swap models only) The cable from the SAS/SATA controller to the hard disk drive backplane. If this cable is damaged, replace the cable. • (Simple-swap models only) The cables from the hard disk drive back plate to the SATA connectors on the system board. If either of these cables is damaged, replace the back plate. • The power cable or cables to the hard disk drive backplane or back plate. If this cable is damaged, replace the power supply. 2. Reseat the cables listed in step 1, restarting the server after you have reseated all cables.

- Follow the suggested actions in the order in which they are listed in the Action column until the problem is solved.
- See Chapter 3, “Parts listing, Types 4190, 4191 and 4194 server,” on page 31 to determine which components are customer replaceable units (CRU) and which components are field replaceable units (FRU).
- If an action step is preceded by “(Trained service technician only),” that step must be performed only by a trained service technician.

system event/error log message	Action
DHCP failure, no IP@ assigned-RETRYING!, rc=xxx, count=yyy	Information only.
Dialback failed for userid x. Could not connect at phone number yyy yyy yyyy	Information only.
ENET[eee] DHCP-HstNme=a, DN=b, IP@=ccc.ccc.ccc.ccc GW@=ddd.ddd.ddd.ddd, NMsK=fff.fff.fff.fff, DNS1@=ggg.ggg.ggg.ggg, DNS2@=hhh.hhh.hhh.hhh	Information only.
ENET[eee] IP-Cfg: HstName=x, IP@=ccc.ccc.ccc.ccc, GW@=ddd.ddd.ddd.ddd, NetMsk=fff.fff.fff.fff	Information only.
Failure reading an I2C device, possible bus failure.	<ol style="list-style-type: none"> 1. Reseat the following components: <ol style="list-style-type: none"> a. AC power cord b. Power supply 2. (Trained service technician only) Replace the system board.
Fan x Outside Recommended Speed.	<ol style="list-style-type: none"> 1. Make sure that fan x is not obstructed. 2. Reseat the following components: <ol style="list-style-type: none"> a. Fan x b. Fan x cable 3. Replace fan x.
Fan x Failure	<ol style="list-style-type: none"> 1. Make sure that fan x is not obstructed. 2. Reseat the following components: <ol style="list-style-type: none"> a. Fan x b. Fan x cable 3. Replace fan x.
Flash of x via y failed for user z...z	Information only.
Flash of x by y via z was successful..w	Information only.
Flash succeeded for x (address : y)	Information only.
Hard drive x removal detected.	Reseat hard disk drive x and restart the server.
Hard drive x fault	<ol style="list-style-type: none"> 1. Run the diagnostic programs. 2. Replace hard disk drive x. 3. Replace the hard disk drive backplane or back plate.
Internal error CPU fault	<p>Information only. If the message remains:</p> <ol style="list-style-type: none"> 1. (Trained service technician only) Reseat the microprocessor. 2. (Trained service technician only) Replace the microprocessor.
Invalid userid or password received. Userid is x	Information only.
LAN: Command mode tamper triggered. Possible break-in attempt	Information only.
LAN: Ethernet interface is no longer active	Information only.

- Follow the suggested actions in the order in which they are listed in the Action column until the problem is solved.
- See Chapter 3, “Parts listing, Types 4190, 4191 and 4194 server,” on page 31 to determine which components are customer replaceable units (CRU) and which components are field replaceable units (FRU).
- If an action step is preceded by “(Trained service technician only),” that step must be performed only by a trained service technician.

system event/error log message	Action
LAN: Ethernet interface is now active	Information only.
LAN: Telnet tamper triggered. Possible break-in attempt	Information only.
LAN: Web Server tamper delay triggered. Possible break-in attempt	Information only.
No ISMP gateway defined for the interconnect network. RSA x is assuming the gateway	Information only.
OS Watchdog response enabled by x	Information only.
OS Watchdog response disabled by x	Information only.
PFA Alert, see preceding error in system error log.	Information only. See the preceding entry in the system-error log.
Possible ASM reset occurred --- reason unknown	Information only.
Power off	Information only.
Power on	Information only.
PPP_1: Client connected at <i>nnnn</i> bps	Information only.
PPP_1: User requested to abort PPP interface	Information only.
PPP[xxx] PPP-Cfg, Local-IP@= <i>aaa.aaa.aaa.aaa</i> , Remote-IP@= <i>bbb.bbb.bbb.bbb</i> NetMsk= <i>ccc.ccc.ccc.ccc</i> , Auth= <i>ddd</i>	Information only.
Received alert from system x; type: y, sender's ID: z	Information only.
Remote access attempt failed	Information only.
Remote access attempt failed. Invalid userid or password received. Userid is 'x' from TELNET client at IP@= <i>yyy.yyy.yyy.yyy</i>	Information only.
Remote access attempt failed. Invalid userid or password received. Userid is 'x' from CMD mode client at IP@= <i>yyy.yyy.yyy.yyy</i>	Information only.
Remote access attempt failed. Invalid userid or password received. Userid is 'x' from WEB browser at IP@= <i>xxx.xxx.xxx.xxx</i>	Information only.
Remote login successful. Login ID: 'x' from CMD mode client at IP@= <i>yyy.yyy.yyy.yyy</i>	Information only.
Retry count exceeded. Incorrect password entered too many times for userid x	Information only.
RSA x became the ISMP gateway	Information only.
RS485 broadcast from x ignored; more than y devices present on the RS485 network	Information only.
RS485 connection to system x has ended	Information only.

<ul style="list-style-type: none"> • Follow the suggested actions in the order in which they are listed in the Action column until the problem is solved. • See Chapter 3, “Parts listing, Types 4190, 4191 and 4194 server,” on page 31 to determine which components are customer replaceable units (CRU) and which components are field replaceable units (FRU). • If an action step is preceded by “(Trained service technician only),” that step must be performed only by a trained service technician. 	
system event/error log message	Action
RS485 network overload has cleared; y or fewer devices are present on the RS485 network	Information only.
Retried alert accepted from system x; type: y, sender's ID: z	Information only.
Running the backup ASM main application	Information only.
Secondary device event [00 x UNKNOWN-y]	Information only.
Sending alert to remote system x; type: y, ID: z	Information only.
Serial tamper delay triggered. Possible serial port break-in attempt	Information only.
System board is over recommended temperature.	<ol style="list-style-type: none"> 1. Make sure that the fans have good airflow and are not obstructed. 2. (Trained service technician only) Replace the system board.
System board is under recommended temperature.	<ol style="list-style-type: none"> 1. Make sure that the fans have good airflow and are not obstructed. 2. (Trained service technician only) Replace the system board.
System complex powered down	Information only.
System error log full	Clear the current logs.
System is over recommended voltage on VRM 1.	<ol style="list-style-type: none"> 1. (Trained service technician only) Reseat the microprocessor. 2. Replace the following components one at a time, in the order shown, restarting the server each time: <ol style="list-style-type: none"> a. (Trained service technician only) Microprocessor b. (Trained service technician only) System board
System is over recommended voltage for +1.5V CPU	<ol style="list-style-type: none"> 1. Reseat the following components: <ol style="list-style-type: none"> a. (Trained service technician only) Microprocessor b. Power supply 2. Replace the following components one at a time, in the order shown, restarting the server each time: <ol style="list-style-type: none"> a. (Trained service technician only) System board b. (Trained service technician only) Microprocessor
System is over recommended voltage on +3.3V	<ol style="list-style-type: none"> 1. Reseat the power supply. 2. (Trained service technician only) Replace the system board.
System is under recommended voltage on VRM 1.	<ol style="list-style-type: none"> 1. (Trained service technician only) Reseat the microprocessor. 2. Replace the following components one at a time, in the order shown, restarting the server each time: <ol style="list-style-type: none"> a. (Trained service technician only) Microprocessor b. (Trained service technician only) System board

- Follow the suggested actions in the order in which they are listed in the Action column until the problem is solved.
- See Chapter 3, “Parts listing, Types 4190, 4191 and 4194 server,” on page 31 to determine which components are customer replaceable units (CRU) and which components are field replaceable units (FRU).
- If an action step is preceded by “(Trained service technician only),” that step must be performed only by a trained service technician.

system event/error log message	Action
System is under recommended voltage for +1.5V CPU	<ol style="list-style-type: none"> 1. Reseat the following components: <ol style="list-style-type: none"> a. (Trained service technician only) Microprocessor b. Power supply 2. Replace the following components one at a time, in the order shown, restarting the server each time: <ol style="list-style-type: none"> a. (Trained service technician only) System board b. (Trained service technician only) Microprocessor
System is under recommended voltage on +3.3V	<ol style="list-style-type: none"> 1. Reseat the power supply. 2. (Trained service technician only) Replace the system board.
System log 75% full	Clear the system event/error log.
System log cleared	Information only.
System memory error	<ol style="list-style-type: none"> 1. Reseat the DIMMs. 2. Replace the DIMMs.
System over recommended voltage for +12v.	<ol style="list-style-type: none"> 1. Reseat the power supply. 2. (Trained service technician only) Replace the system board.
System over recommended voltage on +2.5v.	<ol style="list-style-type: none"> 1. Reseat the power supply. 2. (Trained service technician only) Replace the system board.
System over recommended voltage on continuous +5v.	<ol style="list-style-type: none"> 1. Reseat the power supply. 2. (Trained service technician only) Replace the system board.
System shutoff due to +1.5V CPU over voltage	<ol style="list-style-type: none"> 1. Reseat the following components: <ol style="list-style-type: none"> a. (Trained service technician only) Microprocessor b. Power supply 2. Replace the following components one at a time, in the order shown, restarting the server each time: <ol style="list-style-type: none"> a. (Trained service technician only) System board b. (Trained service technician only) Microprocessor
System shutoff due to +1.5V CPU under voltage	<ol style="list-style-type: none"> 1. Reseat the following components: <ol style="list-style-type: none"> a. (Trained service technician only) Microprocessor b. Power supply 2. Replace the following components one at a time, in the order shown, restarting the server each time: <ol style="list-style-type: none"> a. (Trained service technician only) System board b. (Trained service technician only) Microprocessor
System shutoff due to +2.5v over voltage.	<ol style="list-style-type: none"> 1. Reseat the power supply. 2. (Trained service technician only) Replace the system board.
System shutoff due to +3.3V over voltage	<ol style="list-style-type: none"> 1. Reseat the power supply. 2. (Trained service technician only) Replace the system board.

- Follow the suggested actions in the order in which they are listed in the Action column until the problem is solved.
- See Chapter 3, “Parts listing, Types 4190, 4191 and 4194 server,” on page 31 to determine which components are customer replaceable units (CRU) and which components are field replaceable units (FRU).
- If an action step is preceded by “(Trained service technician only),” that step must be performed only by a trained service technician.

system event/error log message	Action
System shutoff due to +3.3V under voltage	<ol style="list-style-type: none"> 1. Reseat the power supply. 2. (Trained service technician only) Replace the system board.
System shutoff due to +12v over voltage.	<ol style="list-style-type: none"> 1. Reseat the power supply. 2. (Trained service technician only) Replace the system board.
System shutoff due to +12v under voltage.	<ol style="list-style-type: none"> 1. Reseat the power supply. 2. (Trained service technician only) Replace the system board.
System shutoff due to continuous +5v over voltage.	<ol style="list-style-type: none"> 1. Reseat the power supply. 2. (Trained service technician only) Replace the system board.
System shutoff due to continuous +5v under voltage.	<ol style="list-style-type: none"> 1. Reseat the power supply. 2. (Trained service technician only) Replace the system board.
System shutoff due to VRM 1 over voltage.	<ol style="list-style-type: none"> 1. (Trained service technician only) Reseat the microprocessor. 2. Replace the following components one at a time, in the order shown, restarting the server each time: <ol style="list-style-type: none"> a. (Trained service technician only) Microprocessor b. (Trained service technician only) System board
System shutoff due to VRM 1 under voltage.	<ol style="list-style-type: none"> 1. (Trained service technician only) Reseat the microprocessor. 2. Replace the following components one at a time, in the order shown, restarting the server each time: <ol style="list-style-type: none"> a. (Trained service technician only) Microprocessor b. (Trained service technician only) System board
System shutoff due to +2.5v under voltage.	<ol style="list-style-type: none"> 1. Reseat the power supply. 2. (Trained service technician only) Replace the system board.
System shutoff due to CPU over temperature.	<ol style="list-style-type: none"> 1. Make sure that the fans have good airflow and are not obstructed. 2. (Trained service technician only) Reseat the microprocessor heat-exchanger assembly.
System shutoff due to board over temperature.	<ol style="list-style-type: none"> 1. Make sure that the fans have good airflow and are not obstructed. 2. (Trained service technician only) Replace the system board.
System under recommended voltage on continuous +5v.	<ol style="list-style-type: none"> 1. Reseat the power supply. 2. (Trained service technician only) Replace the system board.
System under recommended voltage for +12v.	<ol style="list-style-type: none"> 1. Reseat the power supply. 2. (Trained service technician only) Replace the system board.
System under recommended voltage on +2.5v.	<ol style="list-style-type: none"> 1. Reseat the power supply. 2. (Trained service technician only) Replace the system board.

<ul style="list-style-type: none"> • Follow the suggested actions in the order in which they are listed in the Action column until the problem is solved. • See Chapter 3, “Parts listing, Types 4190, 4191 and 4194 server,” on page 31 to determine which components are customer replaceable units (CRU) and which components are field replaceable units (FRU). • If an action step is preceded by “(Trained service technician only),” that step must be performed only by a trained service technician. 	
system event/error log message	Action
System shut off due to system board under temperature.	<ol style="list-style-type: none"> 1. Make sure that the fans have good airflow and are not obstructed. 2. (Trained service technician only) Replace the system board.
System x started a RS485 connection with us	Information only.
We started a RS485 connection with remote system x	Information only.
We will retry sending alert ID x; when accepted by a remote system, it will have a different ID	Information only.
Windows blue screen has been captured	Information only.

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 199 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 the Ethernet controller is set 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 activity LED is lit when the Ethernet controller sends or receives data over the Ethernet network. If the Ethernet 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 125.

Damaged data in CMOS memory or damaged BIOS code can cause undetermined problems. To reset the CMOS data, use the clear-CMOS jumper to clear the CMOS memory and override the power-on password; see “System-board switches and jumpers” on page 8. If you suspect that the BIOS code is damaged, see “Recovering the server firmware” on page 189.

If 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 512 MB (one 512 MB DIMM in DIMM connector 1).

The following minimum configuration is required for the server to turn on:

- One microprocessor
 - One 512 MB DIMM on the system board
 - One power supply
 - Power cord
 - System board
4. Turn on the server. If the problem remains, suspect the following components in the following order:
 - a. System board
 - b. Memory module (DIMM)
 - c. Microprocessor
 - d. PCI-X expansion card

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 riser card.

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

Due to the variety of hardware and software combinations that can be encountered, use the following information to assist you in problem determination. If possible, have this information available when requesting assistance from Service Support and Engineering functions.

- Machine type and model
- Microprocessor or hard disk upgrades
- Failure symptom
 - Do diagnostics fail?
 - What, when, where, single, or multiple systems?
 - Is the failure repeatable?
 - Has this configuration ever worked?
 - If it has been working, what changes were made prior to it failing?
 - Is this the original reported failure?
- Diagnostics version
 - Type and version level
- Hardware configuration
 - Print (print screen) configuration currently in use
 - BIOS level
- Operating system software
 - Type and version level

Note: To eliminate confusion, identical systems are considered identical only if they:

1. Are the exact machine type and models
2. Have the same BIOS level
3. Have the same adapters/attachments in the same locations
4. Have the same address jumpers/terminators/cabling
5. Have the same software versions and levels
6. Have the same diagnostics code (version)
7. Have the same configuration options set in the system
8. Have the same setup for the operation system control files

Comparing the configuration and software setup between “working” and “non-working” systems will often lead to problem resolution.

Appendix A. Getting help and technical assistance

If you need help, service, or technical assistance or just want more information about IBM products, you will find a wide variety of sources available from IBM to assist you. This section contains information about where to go for additional information about IBM and IBM products, what to do if you experience a problem with your system, and whom to call for service, if it is necessary.

Before you call

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

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

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

Using the documentation

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

Getting help and information from the World Wide Web

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

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

Software service and support

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

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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

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Important notes

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

CD or DVD drive speed is the variable read rate. Actual speeds vary and are often less than the possible maximum.

When referring to processor storage, real and virtual storage, or channel volume, KB stands for 1024 bytes, MB stands for 1 048 576 bytes, and GB stands for 1 073 741 824 bytes.

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

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

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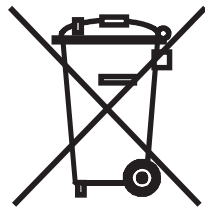
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This appliance is labeled in accordance with European Directive 2002/96/EC concerning waste electrical and electronic equipment (WEEE). The Directive determines the framework for the return and recycling of used appliances as applicable throughout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

注意: このマークは EU 諸国およびノルウェーにおいてのみ適用されます。

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

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

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

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

Battery return program

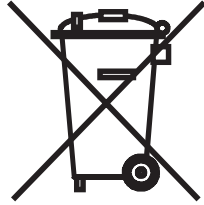
This product may contain a sealed lead acid, nickel cadmium, nickel metal hydride, lithium, or lithium ion battery. Consult your user manual or service manual for specific battery information. The battery must be recycled or disposed of properly. Recycling facilities may not be available in your area.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

In the United States, IBM has established a return process for reuse, recycling, or proper disposal of used IBM sealed lead acid, nickel cadmium, nickel metal hydride, and battery packs from IBM equipment. For information on proper disposal of these batteries, contact IBM at 1-800-426-4333. Have the IBM part number listed on the battery available prior to your call.

For Taiwan: Please recycle batteries.



For the European Union:



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

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

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In accordance with the European Directive 2006/66/EC, batteries and accumulators are labeled to indicate that they are to be collected separately and recycled at end of life. The label on the battery may also include a chemical symbol for the metal concerned in the battery (Pb for lead, Hg for mercury, and Cd for cadmium). Users of batteries and accumulators must not dispose of batteries and accumulators as unsorted municipal waste, but use the collection framework available to customers for the return, recycling, and treatment of batteries and accumulators. Customer participation is important to minimize any potential effects of batteries and accumulators on the environment and human health due to the potential presence of hazardous substances. For proper collection and treatment, contact your local IBM representative.

For California:

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

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

German Ordinance for Work gloss statement

The product is not suitable for use with visual display work place devices according to clause 2 of the German Ordinance for Work with Visual Display Units.

Das Produkt ist nicht für den Einsatz an Bildschirmarbeitsplätzen im Sinne § 2 der Bildschirmarbeitsverordnung geeignet.

Electronic emission notices

Federal Communications Commission (FCC) statement

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

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

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

Industry Canada Class A emission compliance statement

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

Avis de conformité à la réglementation d'Industrie Canada

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

Australia and New Zealand Class A statement

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

United Kingdom telecommunications safety requirement

Notice to Customers

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

European Union EMC Directive conformance statement

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

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

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

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

Taiwanese Class A warning statement

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

Chinese Class A warning statement

中华人民共和国“A类”警告声明

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

Japanese Voluntary Control Council for Interference (VCCI) 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

Korean Class A warning statement

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Index

A

- adapter
 - installing 54
 - PCI Express bus 52
 - replacing 52
- administrator password 18, 21
- air baffle
 - installing 68
 - removing 68
- air deflector
 - important note 75
 - location 75
- assistance, getting 203
- attention notices 2

B

- baseboard management controller utility programs 26
- battery return program 208
- battery, replacing 69
- bays 4
- beep codes 98
- bezel, DVD
 - removing 50, 52
- BIOS code flash-update 188
- BIOS update failure, recovering from 189
- bypassing an unknown password 21, 22

C

- caution statements 2
- CD drive
 - problems 115
 - replacing 63
- CD-eject button 5
- CD/DVD drive
 - activity LED 5
 - replacing 63
 - specification 4
- checkout procedure 113
- Class A electronic emission notice 210
- command-line interface
 - commands
 - connect 27
 - help 27
 - identify 27
 - power 27
 - power off 27
 - power on 27
 - reboot 27
 - sel 27
 - sensor 27
 - sysinfo 27
 - using 27
- configuration
 - Configuration/Setup Utility 13, 16
 - minimum 200

- configuration (*continued*)
 - RAID 13, 15, 23
 - ServerGuide Setup and Installation CD 13
 - with ServerGuide 15
- Configuration/Setup Utility program 13, 16
- configuring
 - hot-swap SAS or SATA devices 23
 - SAS/SATA controller 23
- configuring your server 13
- connectors 6
 - external 9
 - internal 7
 - optional device, on system board 11
- controller
 - Ethernet
 - configuring 27
 - type 4
 - hard disk drive 4
 - SAS 4
 - SATA 4
 - video 4
- cover
 - installing 51
 - removing 50
- CRUs, replacing
 - adapter 52
 - battery 69
 - CD or CD/DVD drive 63
 - cover 51
 - DIMMs 64
 - fan 66
 - hard disk drive 59
 - memory 64
 - riser-card assembly 78
- customer replaceable units (CRUs) 32, 37

D

- danger statements 2
- diagnostic
 - error codes 130, 191
 - programs, overview 128
 - programs, starting 129
 - test log, viewing 130
 - text message format 129
 - tools, overview 97
- DIMMs
 - installing 65
 - removing 64
 - supported 4
- display problems 120
- drives 4
- DVD drive
 - problems 115
 - replacing 63

E

- electrical input 4
- electronic emission Class A notice 210
- environment 4
- error codes and messages
 - diagnostic 130, 191
 - POST/BIOS 103
 - system error 191
- error logs 102
 - BMC system-event 102
 - clearing 103
 - RSA II event/error 102
 - system 102
 - system event/error 102
 - viewing 102
- error symptoms
 - CD-ROM drive, DVD-ROM drive 115
 - general 116
 - hard disk drive 116
 - intermittent 117
 - keyboard, USB 117
 - memory 119
 - microprocessor 119
 - monitor 120
 - mouse, USB 117
 - optional devices 122
 - pointing device, USB 117
 - power 123
 - serial port 124
 - ServerGuide 124
 - software 125
 - USB port 126
- errors
 - format, diagnostic code 129
 - messages, diagnostic 128
- Ethernet
 - activity LED 6
 - connector 6
 - controller 4
 - troubleshooting 198
 - link LED 6
- expansion bays 4
- expansion slots 4

F

- fans
 - connector locations 7
 - determine error 66
 - error LEDs 10
 - installing 66
 - removing 66
- FCC Class A notice 210
- features 3
 - ServerGuide 15
- field replaceable units (FRUs) 32, 37
- firmware code, updating 26
- firmware, updating 13
- flash-update the BIOS code 188
- forgotten password, bypassing 21, 22

FRUs, replacing

- microprocessor 88
- operator information panel assembly 72
- power supply 75
- SAS/SATA backplane 81
- SATA back plate 81
- system board 94

G

- getting help 203
- gloss statement (Germany) 210
- grease, thermal 92

H

- hard disk drive
 - activity LED 5
 - hot-swap SATA 60
 - installing 59, 60
 - problems 116
 - removing 59
 - SAS 60
 - SCSI
 - See SAS
 - simple-swap SATA 60
- hardware service and support 204
- heat output 4
- heat-exchanger assembly
 - installing 91
 - removing 89
- heat-exchanger, applying thermal grease 91
- help, getting 203
- humidity 4

I

- IBM Director 28
- IBM Support Line 204
- important notices 2
- installation order, memory modules 65
- installing
 - adapter 54
 - air baffle 68
 - battery 69
 - bezel 52
 - CD or CD/DVD drive 63
 - cover 51
 - DIMMs 65
 - fan 67
 - hard disk drive 59
 - microprocessor 90
 - operator-information panel 72
 - power supply 76
 - riser-card assembly 79
 - SAS/SATA backplane 82
 - SAS/SATA controller 86
 - SATA back plate 82
 - system board 95
- integrated
 - controllers 4

integrated (*continued*)

functions 4

intermittent problems 117

internal connectors 6, 7

J

jumper, clear CMOS (password override) 21, 22

jumpers 8

L

LED

cd drive activity 5

Ethernet activity 6

Ethernet link 6

hard disk drive activity 5

locator 5

power-on 5

system error 5

LEDs

front 5

operator information panel 126

rear 6

system board 126

locator LED 5

M

memory

installing 65

order of installation 65

removing 64

specifications 4

memory problems 119

messages

diagnostic 128

service processor 191

microprocessor

applying thermal grease 91

problems 119

replacing 88

type 4

minimum configuration 200

monitor problems 120

mouse problems 118

N

noise emissions 4

NOS installation

with ServerGuide 15

without ServerGuide 16

notes 2

notes, important 206

notices 205

electronic emission 210

FCC, Class A 210

notices and statements 2

O

online publications 2

operator information panel assembly, replacing 72

optional device problems 122

order of installation, memory modules 65

P

parts listing 32, 37

password

administrator 21

clear CMOS jumper 21, 22

override 21, 22

power-on 21

resetting 22

pointing device problems 118

POST

beep codes 97, 98

error codes 103

errors logged 102

power

requirement 4

supply 4

power cords 44

power problems 123, 198

power supply

replacing 75

reseating 191

power-control

button 5

button shield 5

power-cord connector 6

power-on LED 5

power-on password 18

problem isolation tables 115

problems

CD-ROM, DVD-ROM drive 115

Ethernet controller 198

hard disk drive 116

intermittent 117

keyboard 117

memory 119

microprocessor 119

monitor 120

optional devices 122

POST/BIOS 103

power 123, 198

serial port 124

software 125

undetermined 199

USB port 126

video 126

product recycling and disposal 207

publications 1

R

recovering from BIOS update failure 189

recovery CDs 41

recycling and disposal, product 207

- removing
 - adapter 52
 - air baffle 68
 - battery 69
 - bezel 50
 - CD or CD/DVD drive 63
 - cover 50
 - DIMM 64
 - fan 66
 - hard disk drive 59
 - operator information panel assembly 72
 - power supply 75
 - riser-card assembly 78
 - SAS/SATA backplane 81
 - SAS/SATA controller 85
 - SATA back plate 81
 - system board 94
- replacement parts 32, 37
- replacing
 - battery 69
 - bezel 52
 - CD or CD/DVD drive 63
 - fan 66
 - microprocessor 88
 - operator information panel assembly 72
 - power supply 75
 - SAS/SATA backplane 81
 - SATA back plate 81
- reseat
 - power supply, definition 191
- reset button 5
- resetting passwords 22
- riser card
 - connector location 7
 - installing 79
 - replacing 79
 - slots 11
- riser-card assembly
 - installing 79
 - location 53
 - removing 78
- RSA II event/error log
 - size limitations 20

S

- SAS
 - hot-swap drives 4
 - hot-swap models 4
- SAS/SATA
 - backplane, replacing 81
- SATA
 - hot-swap 4
 - simple-swap 4
- serial connector 6
- serial port problems 124
- server replaceable units 32, 37
- ServerGuide
 - features 15
 - NOS installation 15
 - setup 15

- ServerGuide *(continued)*
 - Setup and Installation CD 13
 - using 14
 - service processor messages 191
 - setting clear CMOS (password override) jumper 21, 22
 - simple-swap Serial ATA hard disk drive 59, 60
 - size 4
 - slot locations
 - PCI-X 12
 - slot locations, PCI Express 11
 - slots 4
 - SMBridge management utility program 24
 - installing 24
 - software problems 125
 - software service and support 204
 - specifications 3
 - standby 10
 - statements and notices 2
 - supervisor password
 - See administrator password
 - support, web site 203
 - switches and jumpers 8
 - system board
 - internal connectors 7
 - jumper blocks 8
 - switches and jumpers 8
 - system event/error log
 - size limitations 20
 - system-error LED 5, 24
 - system-error log 191
 - system-event log
 - about 19
 - clearing 20
 - size limitations 20
 - systems-management connector 6

T

- telephone numbers 204
- temperature 4
- test log, viewing 130
- thermal grease 92
- tools, diagnostic 97
- trademarks 205
- TÜV gloss statement 210

U

- undetermined problems 199
- United States electronic emission Class A notice 210
- United States FCC Class A notice 210
- Universal Serial Bus (USB) problems 126
- unknown password, bypassing 21, 22
- updating firmware 13
- updating the firmware code 26
- USB connector 5, 6
- user password 21
 - See power-on password
- using
 - baseboard management controller utility programs 26

- using *(continued)*
 - command-line interface 27
- utility program
 - baseboard management 24
 - Configuration/Setup 16
 - LSI Logic Configuration Utility program 23
 - SAS configuration 23
 - SMBridge management 24

V

- video connector 6
- video controller 4

W

- web site
 - publication ordering 203
 - support 203
 - support line, telephone numbers 204
- Web site
 - ServerGuide 14
- weight 4



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