

IBM System x3250 M4 Type 2583



Problem Determination and Service Guide

IBM System x3250 M4 Type 2583



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 235 and the *IBM Safety Information*, *IBM Environmental Notices and User's Guide* on the *IBM System x Documentation* CD, and the *Warranty Information* document that comes with the server.

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

Fifth Edition (February 2012)

© Copyright IBM Corporation 2012.

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

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. Start here.	1
Diagnosing a problem	1
Undocumented problems	3
 Chapter 2. Introduction.	5
Related documentation	5
Notices and statements in this document	6
Features and specifications	7
Server controls, LEDs, and power	9
Front view	9
Rear view	10
Server power features	11
Internal LEDs, connectors, and jumpers	14
System-board internal connectors	14
System-board external connectors	15
System-board jumpers	16
System-board LEDs	18
PCI riser-card assembly connectors	19
 Chapter 3. Diagnostics	21
Diagnostic tools	21
Event logs	22
Viewing event logs through the Setup utility	22
Viewing event logs without restarting the server	22
Clearing the event logs	24
POST	24
POST error codes	24
System-event log	38
Integrated management module II (IMM2) error messages	38
Checkout procedure	78
About the checkout procedure	78
Performing the checkout procedure	79
Troubleshooting tables	80
General problems	80
Hard disk drive problems	80
Intermittent problems	82
Keyboard, mouse, or pointing-device problems	83
Memory problems	85
Microprocessor problems	86
Monitor or video problems	87
Optional-device problems	89
Optional DVD drive problems	90
Power problems	91
Serial-device problems	92
ServerGuide problems	93
Software problems	94
Universal Serial Bus (USB) port problems	95

Video problems	95
Error LEDs	95
Power-supply LEDs	97
System pulse LEDs	99
IBM Dynamic System Analysis.	100
Running DSA Preboot	101
DSA messages	101
Recovering the server firmware	133
Automated boot recovery (ABR)	135
Three boot failure	136
Solving power problems	136
Solving Ethernet controller problems	136
Solving undetermined problems	137
Problem determination tips	138
 Chapter 4. Parts listing, System x3250 M4 Type 2583	 141
Replaceable server components	141
Power cords	147
 Chapter 5. Removing and replacing server components	 149
Installation guidelines	149
System reliability guidelines.	150
Working inside the server with the power on	151
Handling static-sensitive devices	151
Returning a device or component	152
Removing and replacing Tier 1 CRUs	153
Removing the server top cover	153
Installing the server top cover	153
Removing the bezel	154
Installing the bezel	155
Removing the air baffle	155
Installing the air baffle	156
Removing the PCI riser-card assembly	157
Installing the PCI riser-card assembly	157
Removing an adapter	158
Installing an adapter	159
Removing a ServeRAID adapter	160
Installing a ServeRAID adapter	161
Removing a simple-swap hard disk drive	163
Installing a simple-swap hard disk drive	164
Removing a hot-swap hard disk drive	167
Installing a hot-swap hard disk drive	167
Removing the optional DVD drive	168
Installing the optional DVD drive	170
Removing a memory module	173
Installing a memory module.	173
Removing a fan	177
Installing a fan	178
Removing the system battery	179
Installing the system battery	181
Removing a hot-swap power supply.	182
Installing a hot-swap power supply	183
Removing and replacing Tier 2 CRUs	184
Removing the DVD cable	184
Installing the DVD cable	185
Removing the operator information panel assembly	186

Installing the operator information panel assembly	187
Removing the simple-swap hard disk drive backplate	187
Installing the simple-swap hard disk drive backplate	188
Removing the hot-swap hard disk drive backplane	189
Installing the hot-swap hard disk drive backplane	190
Removing and replacing FRUs	190
Removing the power supply.	190
Installing the power supply	192
Removing the 240 VA safety cover	193
Installing the 240 VA safety cover	194
Removing the power paddle card.	196
Installing the power paddle card	197
Microprocessor	199
Removing the system board	204
Installing the system board	205
Chapter 6. Configuration information and instructions	207
Updating the firmware	207
Configuring the server.	207
Using the ServerGuide Setup and Installation CD.	208
Using the Setup utility	210
Using the Boot Manager program	215
Starting the backup server firmware.	216
Using the integrated management module II (IMM2).	216
Using IPMItool	216
Managing tools and utilities with IMM2 and IBM System x Server Firmware	217
Resetting the IMM2 with the Setup utility	217
LAN over USB	218
Enabling the Intel Gigabit Ethernet Utility program	221
Configuring the Gigabit Ethernet controller	221
Enabling and configuring Serial over LAN (SOL)	221
Using the LSI Configuration Utility program	222
IBM Advanced Settings Utility program.	225
Updating IBM Systems Director	225
Updating the Universal Unique Identifier (UUID)	226
Updating the DMI/SMBIOS data	229
Appendix A. Getting help and technical assistance	233
Before you call	233
Using the documentation.	233
Getting help and information from the World Wide Web	233
Software service and support	234
Hardware service and support.	234
IBM Taiwan product service.	234
Appendix B. Notices	235
Trademarks.	235
Important notes	236
Particulate contamination.	237
Documentation format.	237
Telecommunication regulatory statement	238
Electronic emission notices	238
Federal Communications Commission (FCC) statement	238
Industry Canada Class A emission compliance statement.	238
Avis de conformité à la réglementation d'Industrie Canada	238
Australia and New Zealand Class A statement	238

European Union EMC Directive conformance statement	239
Germany Class A statement	239
VCCI Class A statement	240
Japan Electronics and Information Technology Industries Association (JEITA) statement	240
Korean Class A warning statement	240
Russia Electromagnetic Interference (EMI) Class A statement	241
People's Republic of China Class A electronic emission statement	241
Taiwan Class A compliance statement	241
Index	243

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 options 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 147.
 - Make sure that the insulation is not frayed or worn.
4. Remove the server top 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 servicing electrical equipment:

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

- Do not touch the reflective surface of a dental mirror to a live electrical circuit. The surface is conductive and can cause personal injury or equipment damage if it touches a live electrical circuit.
- Some rubber floor mats contain small conductive fibers to decrease electrostatic discharge. Do not use this type of mat to protect yourself from electrical shock.
- Do not work alone under hazardous conditions or near equipment that has hazardous voltages.
- Locate the emergency power-off (EPO) switch, disconnecting switch, or electrical outlet so that you can turn off the power quickly in the event of an electrical accident.
- Disconnect all power before you perform a mechanical inspection, work near power supplies, or remove or install main units.
- Before you work on the equipment, disconnect the power cord. If you cannot disconnect the power cord, have the customer power-off the wall box that supplies power to the equipment and lock the wall box in the off position.
- Never assume that power has been disconnected from a circuit. Check it to make sure that it has been disconnected.
- If you have to work on equipment that has exposed electrical circuits, observe the following precautions:
 - Make sure that another person who is familiar with the power-off controls is near you and is available to turn off the power if necessary.
 - When you are working with powered-on electrical equipment, use only one hand. Keep the other hand in your pocket or behind your back to avoid creating a complete circuit that could cause an electrical shock.
 - When 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.

Attention: Use No. 26 AWG or larger UL-listed or CSA certified telecommunication line cord.

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

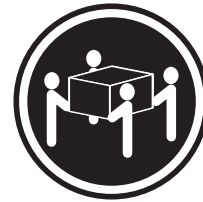
Statement 4:



≥ 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 13:



DANGER

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

Statement 26:



CAUTION:

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



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

Statement 27:



CAUTION:
Hazardous moving parts are nearby.



Chapter 1. Start here

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

Diagnosing a problem

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

1. **Return the server to the condition it was in before the problem occurred.**

If any hardware, software, or firmware was changed before the problem occurred, if possible, reverse those changes. This might include any of the following items:

- Hardware components
- Device drivers and firmware
- System software
- UEFI firmware
- System input power or network connections

2. **View the light path diagnostics LEDs and event logs.**

The server is designed for ease of diagnosis of hardware and software problems.

- **System-board LEDs:** See “System-board LEDs” on page 18 for information about using system-board LEDs.
- **Event logs:** See “Event logs” on page 22 for information about notification events and diagnosis.
- **Software or operating-system error codes:** See the documentation for the software or operating system for information about a specific error code. See the manufacturer's website for documentation.

3. **Run IBM Dynamic System Analysis (DSA) and collect system data.**

Run Dynamic System Analysis (DSA) to collect information about the hardware, firmware, software, and operating system. Have this information available when you contact IBM or an approved warranty service provider. For instructions for running DSA, see the *Dynamic System Analysis Installation and User's Guide*.

To download the latest version of DSA code and the *Dynamic System Analysis Installation and User's Guide*, go to <http://www.ibm.com/support/entry/portal/docdisplay?brand=5000008&Indocid=SERV-DSA>.

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

Fixes or workarounds for many problems might be available in updated UEFI firmware, device firmware, or device drivers.

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

- a. **Install UpdateXpress system updates.**

You can install code updates that are packaged as an UpdateXpress System Pack or UpdateXpress CD image. An UpdateXpress System Pack contains an integration-tested bundle of online firmware and device-driver updates for your server. In addition, you can use IBM ToolsCenter Bootable Media Creator to create bootable media that is suitable for applying firmware updates and running preboot diagnostics. For more information about UpdateXpress System Packs, see <http://www.ibm.com/support/entry/portal/docdisplay?brand=5000008&Indocid=SERV-XPRESS> and “Updating the firmware” on page 207. For more information about the Bootable Media Creator, see <http://www.ibm.com/support/entry/portal/docdisplay?brand=5000008&Indocid=TOOL-BOMC>.

Be sure to separately install any listed critical updates that have release dates that are later than the release date of the UpdateXpress System Pack or UpdateXpress image (see step 4b).

b. Install manual system updates.

1) Determine the existing code levels.

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

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

To display a list of available updates for the blade server, go to <http://www.ibm.com/support/fixcentral/>.

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

5. Check for and correct an incorrect configuration.

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

a. Make sure that all installed hardware and software are supported.

See <http://www.ibm.com/systems/info/x86servers/serverproven/compat/us/> to verify that the server supports the installed operating system, optional devices, and software levels. If any hardware or software component is not supported, uninstall it to determine whether it is causing the problem. You must remove nonsupported hardware before you contact IBM or an approved warranty service provider for support.

b. Make sure that the server, operating system, and software are installed and configured correctly.

Many configuration problems are caused by loose power or signal cables or incorrectly seated adapters. You might be able to solve the problem by turning off the server, reconnecting cables, reseating adapters, and turning the server back on. For information about performing the checkout procedure, see “Checkout procedure” on page 78. For information about configuring the server, see “Configuring the server” on page 207.

6. See controller and management software documentation.

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

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

For problems with operating systems or IBM software or devices, go to <http://www.ibm.com/supportportal/>.

7. **Check for troubleshooting procedures and RETAIN tips.**

Troubleshooting procedures and RETAIN tips document known problems and suggested solutions. To search for troubleshooting procedures and RETAIN tips, go to <http://www.ibm.com/supportportal/>.

8. **Use the troubleshooting tables.**

See “Troubleshooting tables” on page 80 to find a solution to a problem that has identifiable symptoms.

A single problem might cause multiple symptoms. Follow the troubleshooting procedure for the most obvious symptom. If that procedure does not diagnose the problem, use the procedure for another symptom, if possible.

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

Undocumented problems

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

Chapter 2. Introduction

This *Problem Determination and Service Guide* contains information to help you solve problems that might occur in your IBM® System x3250 M4 Type 2583 server. It describes the diagnostic tools that come with the server, error codes and suggested actions, and instructions for replacing failing components.

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

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 a list of replaceable components for the server, see “Replaceable server components” on page 141.

For information about the terms of the warranty and getting service and assistance, see the *Warranty Information* document that comes with the server.

Related documentation

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

- *Environmental Notices and User Guide*
This document is in PDF format on the IBM *System x Documentation* CD. It contains translated environmental notices.
- *IBM License Agreement for Machine Code*
This document is in PDF. It contains translated versions of the IBM License Agreement for Machine code for your server.
- *IBM Warranty Information*
This printed document contains the warranty terms and a pointer to the IBM Statement of Limited Warranty on the IBM website.
- *Installation and User's Guide*
This document is in Portable Document Format (PDF) on the IBM *System x Documentation* CD. It provides general information about setting up and cabling the server, including information about features, and how to configure the server. It also contains detailed instructions for installing, removing, and connecting some optional devices that the server supports.
- *Licenses and Attributions Documents*
This document is in PDF. It contains information about the open-source notices.

- *Rack Installation Instructions*

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

- *Safety Information*

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

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

The System x and BladeCenter 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 BladeCenter Tools Center is at <http://publib.boulder.ibm.com/infocenter/toolctr/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 website. To check for updated documentation and technical updates, go to <http://www.ibm.com/supportportal/>.

Notices and statements in this document

The caution and danger statements that appear in this document are also in the multilingual *Safety Information* document, which is on the IBM *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.

Table 1. Features and specifications

Microprocessor: <ul style="list-style-type: none">• Supports one Intel quad-core (Xeon E3-1200 series) or dual-core (Pentium G850, or Core i3 series) processor• Multi-chip Package processor architecture• Designed for LGA 1155 socket• Scalable up to four cores• 32 KB instruction L1 cache, 32 KB data L1 cache, 256 KB instruction/data L2 cache, and up to 8 MB L3 cache that is shared among the cores• Support for Intel Extended Memory 64 Technology (EM64T) Note: <ul style="list-style-type: none">• Use the Setup utility to determine the type and speed of the microprocessor.• For a list of supported microprocessors, see http://www.ibm.com/servers/eserver/serverproven/compat/us/. Memory: <ul style="list-style-type: none">• Minimum: 1 GB• Maximum: 32 GB• Types: PC3-10600 (single-rank or dual-rank), 1333 MHz, ECC, DDR3 unbuffered SDRAM DIMMs only• Connectors: Four dual inline memory module (DIMM) connectors, two-way interleaved• Sizes: 1 GB (single-rank), 2 GB (single-rank), 4 GB (dual-rank), and 8 GB (dual-rank)	SATA optical drives (optional): <ul style="list-style-type: none">• UltraSlim DVD-ROM combo• Multi-burner Hard disk drive expansion bays (depending on the model): <p>One of the following configurations:</p> <ul style="list-style-type: none">• Four 2.5-inch simple-swap SAS hard disk drive bays• Four 2.5-inch hot-swap SAS hard disk drive bays• Two 3.5-inch simple-swap SATA hard disk drive bays Note: 3TB hard disk drives are not supported in OS 4690.	Integrated functions: <ul style="list-style-type: none">• integrated management module II (IMM2), which consolidates multiple management functions in a single chip• Intel 82574L Gb Ethernet controller with TCP/IP Offload Engine (TOE) and Wake on LAN support• Six Universal Serial Bus (USB) 2.0 ports (two front and four rear)• Two Ethernet ports• Six-port integrated SATA controller• One serial port• One VGA port
--	---	--

Table 1. Features and specifications (continued)

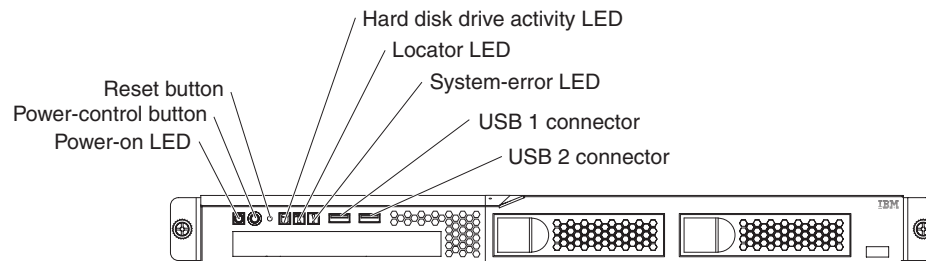
<p>RAID controllers (depending on the model):</p> <ul style="list-style-type: none"> • Software RAID capabilities that support RAID levels 0, 1, and 10 • ServeRAID-BR10il v2 SAS/SATA adapter that provides RAID levels 0, 1, and 10 <p>Acoustical noise emissions:</p> <ul style="list-style-type: none"> • Sound power, idling: 6.5 bels maximum • Sound power, operating: 6.5 bels maximum <p>Environment:</p> <ul style="list-style-type: none"> • Air temperature: <ul style="list-style-type: none"> – Server on: 10°C to 35°C (50.0°F to 95.0°F); altitude: 0 to 914.4 m (3000 ft) – Server on: 10°C to 32°C (50.0°F to 89.6°F); altitude: 914.4 m (3000 ft) to 2133.6 m (7000 ft) – Server on: 10°C to 28°C (50.0°F to 83°F); altitude: 2133.6 m (7000 ft) to 3050 m (10000 ft) – Server off: 10°C to 43°C (50°F to 109.4°F); maximum altitude: 2133.6 m (7000.0 ft) – Shipping: -40°C to 60°C (-104°F to 140°F) • Humidity: <ul style="list-style-type: none"> – Server on: 8% to 80% – Server off: 8% to 80% • Particulate contamination: <p>Attention: Airborne particulates and reactive gases acting alone or in combination with other environmental factors such as humidity or temperature might pose a risk to the server. For information about the limits for particulates and gases, see “Particulate contamination” on page 237.</p> 	<p>Video controller (integrated into IMM2):</p> <ul style="list-style-type: none"> • Matrox G200 • SVGA compatible video controller • Avocent Digital Video Compression • Video memory is not expandable <p>Note: Maximum video resolution is 1600 x 1200 at 75 Hz.</p> <p>Size:</p> <ul style="list-style-type: none"> • 1U • Height: 43 mm (1.69 inches) • Depth: 575.8 mm (22.67 inches) • Width: <ul style="list-style-type: none"> – 439 mm (17.28 inches) (without rack brackets) – 478 mm (18.82 inches) (with rack brackets) • Maximum weight: 10.67 kg (23.53 lb) depending on your configuration <p>Heat output:</p> <p>Approximate heat output:</p> <ul style="list-style-type: none"> • Minimum configuration: 150 BTU per hour (44 watts) • Maximum configuration: 1421 BTU per hour (416 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 • Input kilovolt-amperes (kVA), approximately: <ul style="list-style-type: none"> – Minimum: 0.044 kVA – Maximum: 0.416 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 installed and the power-management optional features in use. 2. The sound levels were measured in controlled acoustical environments according to the procedures specified by the American National Standards Institute (ANSI) S12.10 and ISO 7779 and are reported in accordance with ISO 9296. Actual sound-pressure levels in a given location might exceed the average values stated because of room reflections and other nearby noise sources. The noise emission level stated in the declared (upper limit) sound-power level, in bels, for a random sample of system. 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.
---	--	--

Server controls, LEDs, and power

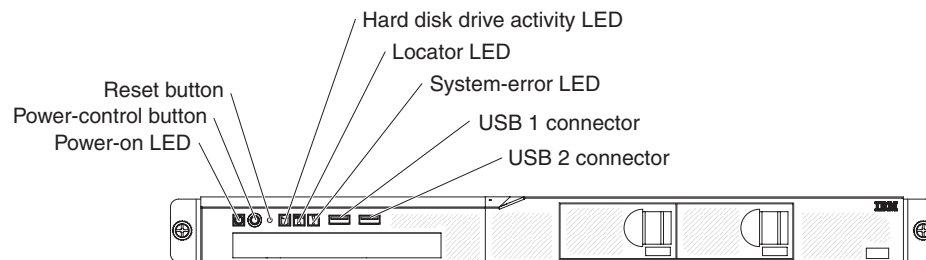
This section describes the controls and light-emitting diodes (LEDs) and how to turn the server on and off. For the location of the LEDs on the system board, see “System-board LEDs” on page 18.

Front view

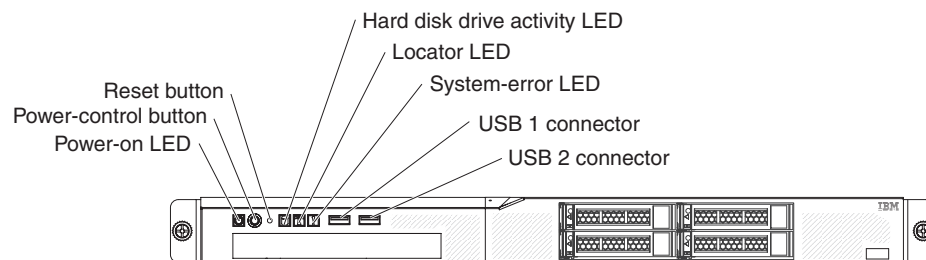
Note: The illustrations in this document might differ slightly from your hardware. The following illustration shows the controls, LEDs, and connectors on the front of the two 3.5-inch simple-swap hard disk drive model.



The following illustration shows the controls, LEDs, and connectors on the front of the four 2.5-inch simple-swap hard disk drive model.



The following illustration shows the controls, LEDs, and connectors on the front of the four 2.5-inch hot-swap hard disk drive model.



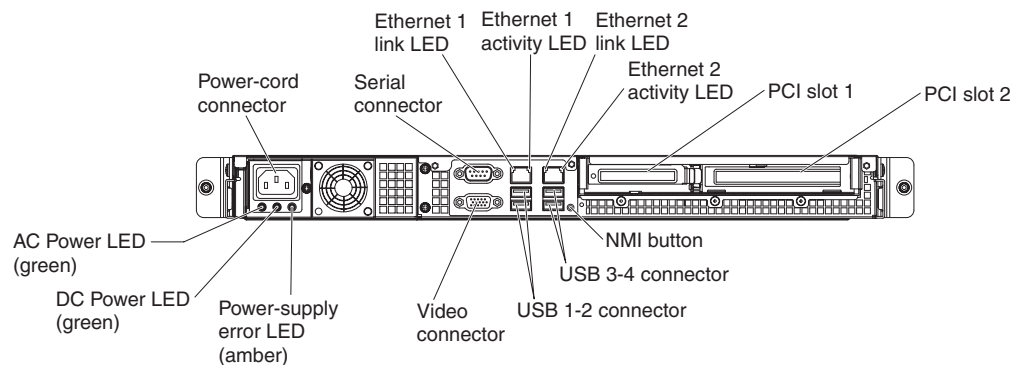
- **Power-on LED:** The states of the power-on LED are as follows:
 - Off:** AC power is not present, or the power supply or the LED itself has failed.
 - Flashing rapidly (4 times per second):** The server is turned off and is not ready to be turned on. The power-control button is disabled. This will last approximately 1 to 3 minutes.
 - Flashing slowly (once per second):** The server is turned off and is ready to be turned on. You can press the power-control button to turn on the server.
 - Lit:** The server is turned on.
 - Fading on and off:** The server is in a reduced-power state. To wake the server, press the power-control button.

- **Power-control button:** Press this button to turn the server on and off manually or to wake the server from a reduced-power state.
- **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 LEDs:** When this LED is flashing, it indicates that the associated hard disk drive is in use.
- **Locator LED:** Use this blue LED to visually locate the server among other servers. This LED is also used as a presence detection button. You can use IBM Systems Director to light this LED remotely. This LED is controlled by the IMM2.
- **System-error LED:** When this amber LED is lit, it indicates that a system error has occurred.
- **USB connectors:** Connect a USB device, such as a USB mouse, keyboard, or other device to any of these connectors.
- **Optional DVD eject button:** Press this button to release a DVD or CD from the optional DVD drive.
- **Optional DVD drive activity LED:** When this LED is lit, it indicates that the optional DVD drive is in use.
- **Hot-swap hard disk drive activity LEDs (some models):** This LED is used on SAS or SATA hard disk drives. Each hot-swap hard disk drive has an activity LED, and when this LED is flashing, it indicates that the drive is in use.
- **Hot-swap hard disk drive status LEDs (some models):** This LED is used on SAS or SATA hard disk drives. When this LED is lit, it indicates that the drive has failed. If an optional IBM ServerRAID controller is installed in the server, when this LED is flashing slowly (one flash per second), it indicates that the drive is being rebuilt. When the LED is flashing rapidly (three flashes per second), it indicates that the controller is identifying the drive.

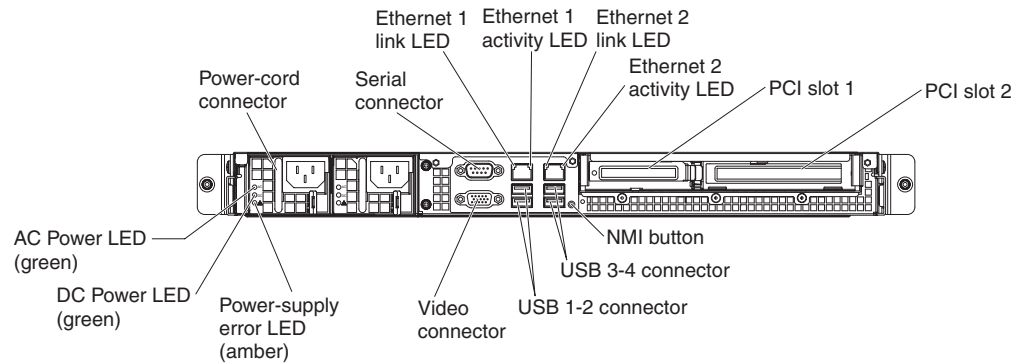
Rear view

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

The following illustration shows the LEDs and connectors on the rear of the fixed power-supply model.



The following illustration shows the LEDs and connectors on the rear of the redundant power-supply model.



- **Ethernet link LEDs:** When these LEDs are lit, they indicate that there is an active link connection on the 10BASE-T, 100BASE-TX, or 1000BASE-TX interface for the Ethernet port.
- **Ethernet activity LEDs:** When these LEDs are lit, they indicate that there is activity between the server and the network.
- **AC power LED:** This green LED provides status information about the power supply. During typical operation, both the ac and dc power LEDs are lit. For any other combination of LEDs, see “Power-supply LEDs” on page 97.
- **DC power LED:** This green LED provides status information about the power supply. During typical operation, both the ac and dc power LEDs are lit. For any other combination of LEDs, see “Power-supply LEDs” on page 97.
- **Power-supply error (!) LED:** When this amber LED is lit, it indicates that the power supply has failed.
- **Power cord connector:** Connect the power cord to this connector.
- **Video connector:** Connect a monitor to this connector.
- **Serial connector:** Connect a 9-pin serial device to this connector. The serial port is shared with the integrated management module II (IMM2). The IMM2 can take control of the shared serial port to redirect serial traffic, using Serial over LAN (SOL).
- **USB connectors:** Connect a USB device, such as a USB mouse, keyboard, or other device to any of these connectors.
- **Ethernet connectors:** Use either of these connectors to connect the server to a network. When you use the Ethernet 1 connector, the network can be shared with the IMM2 through a single network cable.
- **NMI button:** Press this button to force a nonmaskable interrupt to the microprocessor. You might have to use a pen or the end of a straightened paper clip to press the button. It allows you to blue screen the server and take a memory dump (use this button only when directed by the IBM service support).

Server power features

When the server is connected to an ac power source but is not turned on, the operating system does not run, and all core logic except for the integrated management module II (IMM2) is shutdown; however, the server can respond to requests from IMM2, such as a remote request to turn on the server. The power-on LED flashes to indicate that the server is connected to ac power but is not turned on.

Turning on the server

Approximately 5 seconds after the server is connected to ac power, one or more fans might start running to provide cooling while the server is connected to power

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

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

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

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

Turning off the server

When you turn off the server and leave it connected to ac power, the server can respond to requests from IMM2, such as a remote request to turn on the server. While the server remains connected to ac power, one or more fans might continue to run. To remove all power from the server, you must disconnect it from the power source.

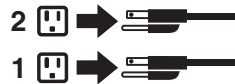
Some operating systems require an orderly shutdown before you turn off the server. See your operating-system documentation for information about shutting down the operating system.

Statement 5:



CAUTION:

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



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

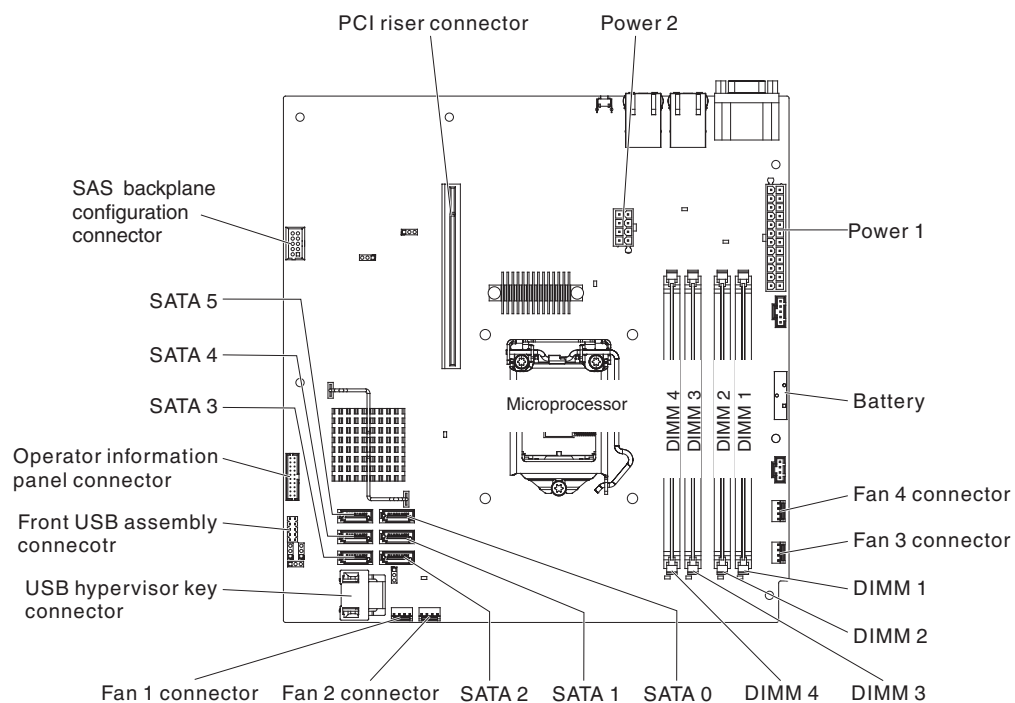
- You can turn off the server from the operating system, if your operating system supports this feature. After an orderly shutdown of the operating system, the server will turn off automatically.
- You can press the power-control button to start an orderly shutdown of the operating system and turn off the server, if your operating system supports this feature.
- If the operating system stops functioning, you can press and hold the power-control button for more than 4 seconds to turn off the server.
- The server can be turned off by Wake on LAN feature.
- The integrated management module II (IMM2) can turn off the server as an automatic response to a critical system failure.

Internal LEDs, connectors, and jumpers

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

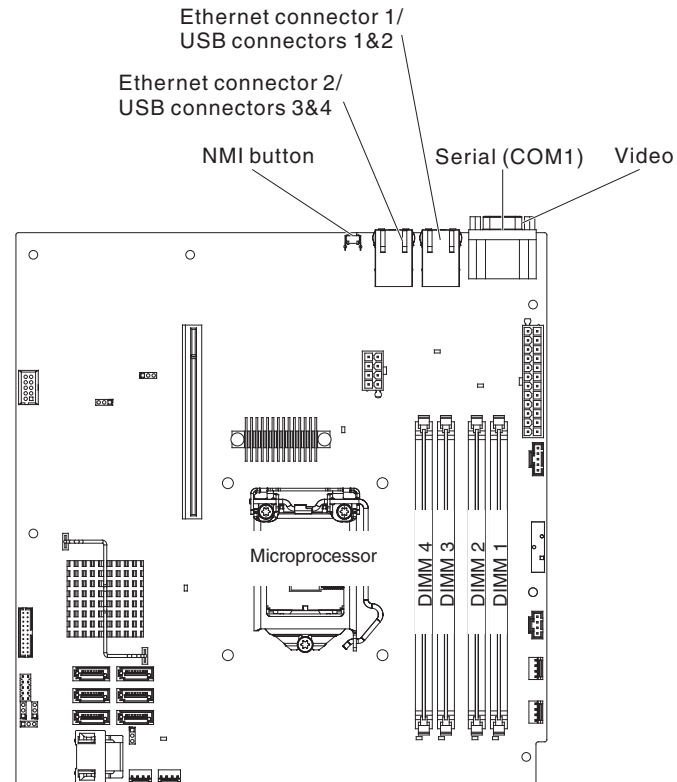
System-board internal connectors

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



System-board external connectors

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



System-board jumpers

The following illustration shows the jumpers on the system board.

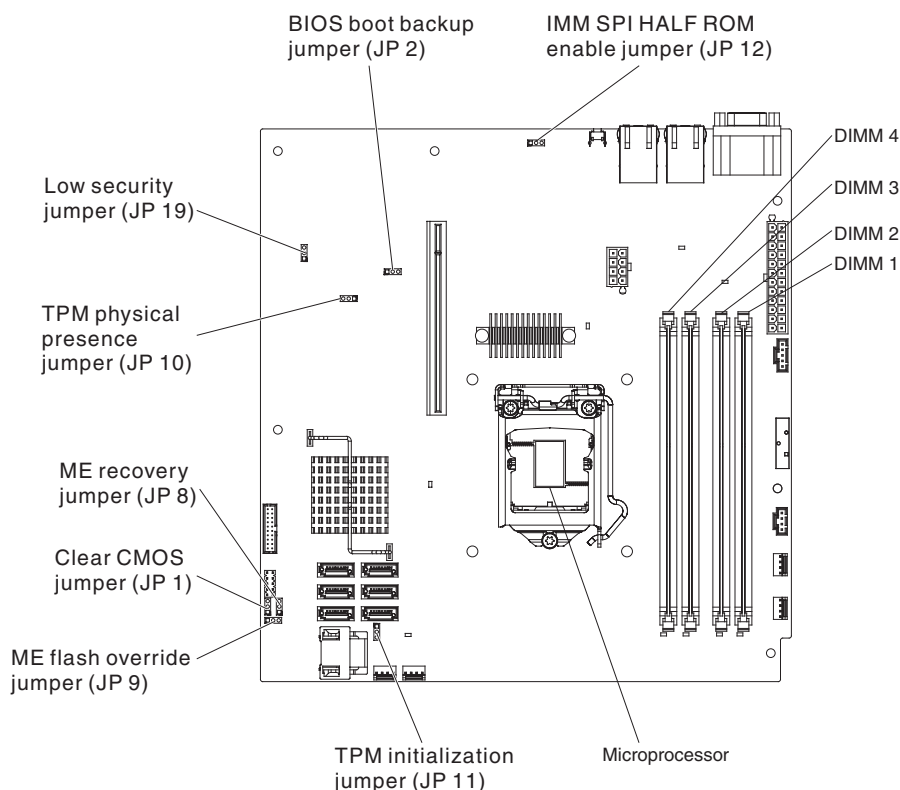


Table 2. System board jumpers

Jumper number	Jumper name	Jumper setting
JP1	Clear CMOS jumper	<ul style="list-style-type: none"> Pins 1 and 2: Keep CMOS data (default) Pins 2 and 3: Clear CMOS data
JP2	BIOS block backup jumper	<ul style="list-style-type: none"> Pins 1 and 2: Boot from primary BIOS page (default) Pins 2 and 3: Boot from backup BIOS page
JP8	ME recovery jumper	<ul style="list-style-type: none"> Pins 1 and 2: Normal (default). Pins 2 and 3: Activate ME recovery.
JP9	ME flash override jumper	<ul style="list-style-type: none"> Pins 1 and 2: Normal (default). Pins 2 and 3: Override ME flash.
JP10	Trusted Platform Module (TPM) physical presence jumper	<p>Pins 1 and 2: Enable TPM physical presence (default)</p> <p>Pins 2 and 3: Disable TPM physical presence</p>

Table 2. System board jumpers (continued)

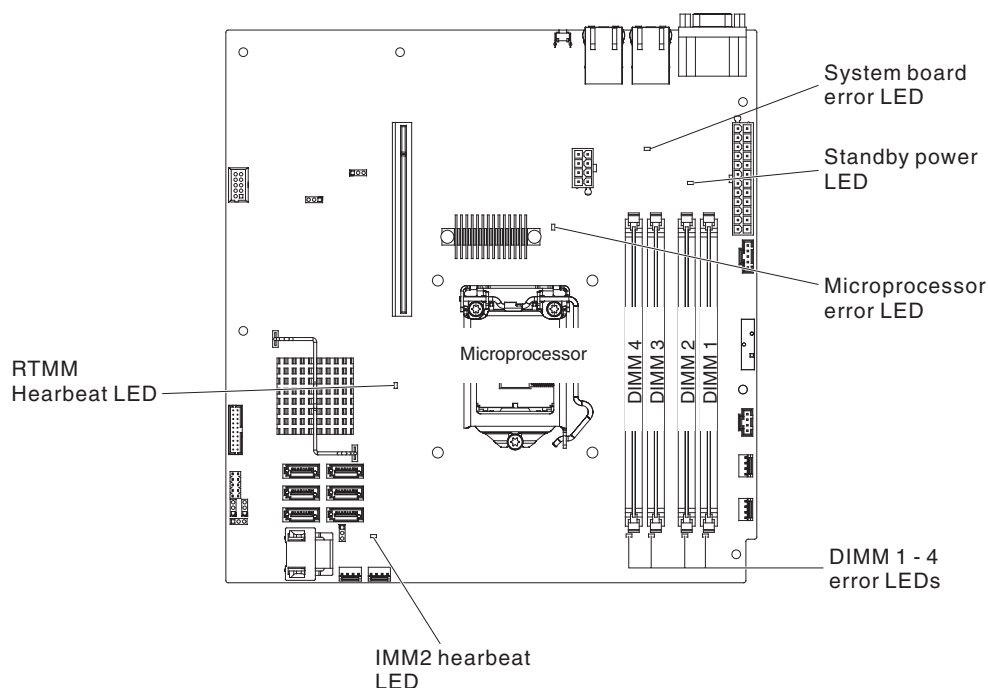
Jumper number	Jumper name	Jumper setting
JP11	TPM initialization jumper	<ul style="list-style-type: none"> Pins 1 and 2: Normal (default). Pins 2 and 3: Initiate TPM.
JP12	IMM SPI half ROM enable	<ul style="list-style-type: none"> Pins 1 and 2: Disabled. Pins 2 and 3: Enable IMM SPI half ROM (default).
JP19	Low security_N jumper	<ul style="list-style-type: none"> Pins 1 and 2: Normal (default). Pins 2 and 3: Activate low security.
Notes: <ol style="list-style-type: none"> If no jumper is present, the server responds as default. Changing the position of the boot block jumper from pins 1 and 2 to pins 2 and 3 for 5 seconds before the server is turned on alters which flash ROM page is loaded. Do not change the jumper pin position after the server is turned on. This can cause an unpredictable problem. 		

Important:

- Before you change any switch settings or move any jumpers, turn off the server; then, disconnect all power cords and external cables. Review the information in vii, “Installation guidelines” on page 149, “Handling static-sensitive devices” on page 151, and “Turning off the server” on page 12.
- Any system-board switch or jumper blocks that are not shown in the illustrations in this document are reserved.

System-board LEDs

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



Note: When you disconnect the power source from the server, you lose the ability to view the LEDs because the LEDs are not lit when the power source is removed. Before you disconnect the power source, make a note of which LEDs are lit, including the LEDs that are lit on the operation information panel and LEDs inside the server on the system board.

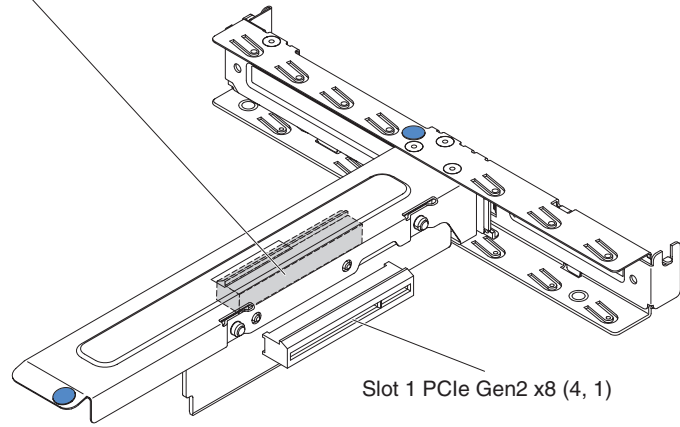
Table 3. System-board LEDs

LED	Description
Standby power LED	When this LED is lit, it indicates that the server is connected to ac power.
DIMM error LEDs	A memory DIMM has failed or is incorrectly installed.
Microprocessor error LED	Microprocessor has failed, is missing, or has been incorrectly installed.
System-board error LED	System-board CPU VRD and/or power voltage regulators have failed.
IMM2 heartbeat LED	Indicates the status of the boot process of the IMM2. When the server is connected to power this LED flashes quickly to indicate that the IMM2 code is loading. When the loading is complete, the LED stops flashing briefly and then flashes slowly to indicate that the IMM2 is fully operational and you can press the power-control button to start the server.
RTMM heartbeat LED	power-on and power-off sequencing.

PCI riser-card assembly connectors

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

Slot 2 PCIe Gen2 x8 (8, 4, 1)



Slot 1 PCIe Gen2 x8 (4, 1)

Chapter 3. Diagnostics

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

If you cannot locate and correct a problem by using the information in this chapter, see Appendix A, “Getting help and technical assistance,” on page 233 for more information.

Diagnostic tools

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

- **POST error messages and error logs**

The power-on self-test (POST) generates messages to indicate successful test completion or the detection of a problem. See “POST” on page 24, “Event logs” on page 22, and “POST error codes” on page 24 for more information.

- **Troubleshooting tables**

These tables list problem symptoms and actions to correct the problems. See “Troubleshooting tables” on page 80 for more information.

- **Dynamic System Analysis (DSA)**

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

- System configuration
- Network interfaces and settings
- Installed hardware
- integrated management module II (IMM2) status and configuration
- Vital product data, firmware, and UEFI configuration
- Hard disk drive health
- Controller and IMM2 event logs, including the following information:
 - System error logs
 - Temperature, voltage, and fan speed information
 - Self-monitoring Analysis, and Reporting Technology (SMART) data
 - Machine check registers
 - USB information
 - Monitor configuration information
 - PCI slot information

The diagnostic programs create a merged log that includes events from all collected logs. The information is collected into an XML file that you can send to IBM service and support. Additionally, you can view the server information locally through a generated text report file. You can also copy the outputs (xml.gz,txt,html) to removable media and view the html from a Web browser. See “IBM Dynamic System Analysis” on page 100 for more information.

- **Server LEDs**

Use the LEDs on the server to diagnose system errors quickly. See “System-board LEDs” on page 18 for more information.

- **IBM Electronic Service Agent**

IBM Electronic Service Agent is a software tool that monitors the server for hardware error events and automatically submits electronic service requests to

IBM service and support. In addition, it can collect and transmit system configuration information on a scheduled basis so that the information is available to you and your support representative. It uses minimal system resources, and is available free of charge. For more information and to download IBM Electronic Service Agent, go to http://www.ibm.com/support/entry/portal/Open_service_request/

Event logs

Error codes and messages are displayed in the following types of event logs:

- **POST event log:** This log contains the three most recent error codes and messages that were generated during POST. You can view the POST event log through the Setup utility.
- **System-event log:** This log contains messages that were generated during POST and all system status messages from IMM2. You can view the contents of the system-event log from the Setup utility for more information.

The system-event log is limited in size. When it is full, new entries will not overwrite existing entries; therefore, you must periodically clear the system-event log through the Setup utility. When you are troubleshooting, you might have to clear the system-event log to make the most recent events available for analysis.

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

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

- **integrated management module II (IMM2) event log:** This log contains a filtered subset of all IMM2, POST, and system management interrupt (SMI) events. You can view the IMM2 event log through the Dynamic System Analysis (DSA) program (as the ASM event log).
- **DSA log:** This log is generated by the Dynamic System Analysis (DSA) program, and it is a chronologically ordered merge of the system-event log (as the IPMI event log), the IMM2 chassis-event log (as the ASM event log), and the operating-system event logs. You can view the DSA log through the DSA program.

Viewing event logs through the Setup utility

To view the POST event log or system-event log, complete the following steps:

1. Turn on the server.
2. When the prompt <F1> Setup is displayed, press F1. If you have set both a power-on password and an administrator password, you must type the administrator password to view the event logs.
3. Select **System Event Logs** and use one of the following procedures:
 - To view the POST event log, select **POST Event Viewer**.
 - To view the IMM2 event log, select **System Event Log**.

Viewing event logs without restarting the server

When the server is not hung and the IMM2 is connected to a network, methods are available for you to view one or more event logs without having to restart the server.

If you have installed Portable Dynamic System Analysis (DSA), you can use it to view the system-event log (as the IPMI event log), the IMM2 event log (as the ASM event log), the operating-system event logs, or the merged DSA log. You can also use DSA Preboot to view these logs, although you must restart the server to use DSA Preboot. To install Portable DSA, DSA Preboot, or to download a DSA Preboot CD image, go to <http://www.ibm.com/systems/support/supportsite.wss/docdisplay?Indocid=SERV-DSA&brandind=5000008>.

If IPMItool is installed in the server, you can use it to view the system-event log. Most recent versions of the Linux operating system come with a current version of IPMItool. For information about IPMItool, see <http://www.ibm.com/developerworks/linux/blueprints/or> complete the following steps.

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

1. Go to <http://publib.boulder.ibm.com/infocenter/toolsctr/v1r0/index.jsp>.
2. In the navigation pane, click **IBM System x and BladeCenter Tools Center**.
3. Expand **Tools reference**, expand **Configuration tools**, expand **IPMI tools**, and click **IPMItool**.

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

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

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

Table 4. Methods for viewing event logs

Condition	Action
The server is not hung and is connected to a network.	Use any of the following methods: <ul style="list-style-type: none"> • Run Portable DSA to view the event logs or create an output file that you can send to IBM service and support. • Alternatively, you can use IPMItool to view the system-event log.
The server is not hung and is not connected to a network.	Use IPMItool locally to view the system-event log.

Table 4. Methods for viewing event logs (continued)

Condition	Action
The server is hung.	<ul style="list-style-type: none"> • If DSA Preboot is installed, restart the server and press F2 to start DSA Preboot and view the event logs. • If DSA Preboot is not installed, insert the DSA Preboot CD and restart the server to start DSA Preboot and view the event logs. • Alternatively, you can restart the server and press F1 to start the Setup utility and view the POST event log or system-event log. For more information, see “Viewing event logs without restarting the server” on page 22.

Clearing the event logs

To clear the event logs, complete the following steps.

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

1. Turn on the server.
2. When the prompt <F1> Setup is displayed, press F1. If you have set both a power-on password and an administrator password, you must type the administrator password to view the error logs.
3. Use one of the following procedures:
 - To clear the IMM2 event log, select **System Event Logs --> System Event Log**. Select **Clear System Event Log**; then, press **Enter** twice.

POST

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

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

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

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

POST error codes

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

- Follow the suggested actions in the order in which they are listed in the Action column until the problem is solved.
- See Chapter 4, “Parts listing, System x3250 M4 Type 2583,” on page 141 to determine which components are customer replaceable units (CRU) and which components are field replaceable units (FRU).
- If an action step is preceded by “(Trained service technician only),” that step must be performed only by a trained service technician.
- Go to the IBM support website at <http://www.ibm.com/supportportal/> to check for technical information, hints, tips, and new device drivers or to submit a request for information.

Error code	Description	Action
0011000	Invalid microprocessor type.	<ol style="list-style-type: none"> 1. Make sure that the microprocessor is on the ServerProven website at http://www.ibm.com/servers/eserver/serverproven/compat/us/. 2. Check the IBM support website for a firmware update and update the server firmware to the latest level (see “Updating the firmware” on page 207). 3. (Trained service technician only) Remove and replace the affected microprocessor (error LED is lit) with a supported type (see “Installing the microprocessor” on page 201).
0011002	Microprocessor mismatch.	<ol style="list-style-type: none"> 1. Make sure that the microprocessor is on the ServerProven website at http://www.ibm.com/servers/eserver/serverproven/compat/us/. 2. Check the IBM support website for a firmware update and update the server firmware to the latest level (see “Updating the firmware” on page 207). 3. (Trained service technician only) Remove and replace the affected microprocessor (error LED is lit) with a supported type (see “Installing the microprocessor” on page 201).
0018005	Microprocessors with mismatched number of cores.	<ol style="list-style-type: none"> 1. Make sure that the microprocessor is on the ServerProven website at http://www.ibm.com/servers/eserver/serverproven/compat/us/. 2. Check the IBM support website for a firmware update and update the server firmware to the latest level (see “Updating the firmware” on page 207). 3. (Trained service technician only) Remove and replace the affected microprocessor (error LED is lit) with a supported type (see “Installing the microprocessor” on page 201).
0018006	Microprocessors with mismatched QPI speed.	<ol style="list-style-type: none"> 1. Make sure that the microprocessor is on the ServerProven website at http://www.ibm.com/servers/eserver/serverproven/compat/us/. 2. Check the IBM support website for a firmware update and update the server firmware to the latest level (see “Updating the firmware” on page 207). 3. (Trained service technician only) Remove and replace the affected microprocessor (error LED is lit) with a supported type (see “Installing the microprocessor” on page 201).

- Follow the suggested actions in the order in which they are listed in the Action column until the problem is solved.
- See Chapter 4, “Parts listing, System x3250 M4 Type 2583,” on page 141 to determine which components are customer replaceable units (CRU) and which components are field replaceable units (FRU).
- If an action step is preceded by “(Trained service technician only),” that step must be performed only by a trained service technician.
- Go to the IBM support website at <http://www.ibm.com/supportportal/> to check for technical information, hints, tips, and new device drivers or to submit a request for information.

Error code	Description	Action
0018007	Microprocessors with mismatched power segments.	<ol style="list-style-type: none"> 1. Make sure that the microprocessor is on the ServerProven website at http://www.ibm.com/servers/eserver/serverproven/compat/us/. 2. Check the IBM support website for a firmware update and update the server firmware to the latest level (see “Updating the firmware” on page 207). 3. (Trained service technician only) Remove and replace the affected microprocessor (error LED is lit) with a supported type (see “Installing the microprocessor” on page 201).
0018008	Microprocessors with mismatched internal DDR3 frequency.	<ol style="list-style-type: none"> 1. Make sure that the microprocessor is on the ServerProven website at http://www.ibm.com/servers/eserver/serverproven/compat/us/. 2. Check the IBM support website for a firmware update and update the server firmware to the latest level (see “Updating the firmware” on page 207). 3. (Trained service technician only) Remove and replace the affected microprocessor (error LED is lit) with a supported type (see “Installing the microprocessor” on page 201).
0018009	Microprocessors with mismatched core speed.	<ol style="list-style-type: none"> 1. Make sure that the microprocessor is on the ServerProven website at http://www.ibm.com/servers/eserver/serverproven/compat/us/. 2. Check the IBM support website for a firmware update and update the server firmware to the latest level (see “Updating the firmware” on page 207). 3. (Trained service technician only) Remove and replace the affected microprocessor (error LED is lit) with a supported type (see “Installing the microprocessor” on page 201).
001800A	Microprocessors with mismatched bus speed.	<ol style="list-style-type: none"> 1. Make sure that the microprocessor is on the ServerProven website at http://www.ibm.com/servers/eserver/serverproven/compat/us/. 2. Check the IBM support website for a firmware update and update the server firmware to the latest level (see “Updating the firmware” on page 207). 3. (Trained service technician only) Remove and replace the affected microprocessor (error LED is lit) with a supported type (see “Installing the microprocessor” on page 201).

- Follow the suggested actions in the order in which they are listed in the Action column until the problem is solved.
- See Chapter 4, “Parts listing, System x3250 M4 Type 2583,” on page 141 to determine which components are customer replaceable units (CRU) and which components are field replaceable units (FRU).
- If an action step is preceded by “(Trained service technician only),” that step must be performed only by a trained service technician.
- Go to the IBM support website at <http://www.ibm.com/supportportal/> to check for technical information, hints, tips, and new device drivers or to submit a request for information.

Error code	Description	Action
001800B	Microprocessors with mismatched cache size.	<ol style="list-style-type: none"> 1. Make sure that the microprocessor is on the ServerProven website at http://www.ibm.com/servers/eserver/serverproven/compat/us/. 2. Check the IBM support website for a firmware update and update the server firmware to the latest level (see “Updating the firmware” on page 207). 3. (Trained service technician only) Remove and replace the affected microprocessor (error LED is lit) with a supported type (see “Installing the microprocessor” on page 201).
001800C	Microprocessors with mismatched cache type.	<ol style="list-style-type: none"> 1. Make sure that the microprocessor is on the ServerProven website at http://www.ibm.com/servers/eserver/serverproven/compat/us/. 2. Check the IBM support website for a firmware update and update the server firmware to the latest level (see “Updating the firmware” on page 207). 3. (Trained service technician only) Remove and replace the affected microprocessor (error LED is lit) with a supported type (see “Installing the microprocessor” on page 201).
001800D	Microprocessors with mismatched cache associativity.	<ol style="list-style-type: none"> 1. Make sure that the microprocessor is on the ServerProven website at http://www.ibm.com/servers/eserver/serverproven/compat/us/. 2. Check the IBM support website for a firmware update and update the server firmware to the latest level (see “Updating the firmware” on page 207). 3. (Trained service technician only) Remove and replace the affected microprocessor (error LED is lit) with a supported type (see “Installing the microprocessor” on page 201).
001800E	Microprocessors with mismatched model.	<ol style="list-style-type: none"> 1. Make sure that the microprocessor is on the ServerProven website at http://www.ibm.com/servers/eserver/serverproven/compat/us/. 2. Check the IBM support website for a firmware update and update the server firmware to the latest level (see “Updating the firmware” on page 207). 3. (Trained service technician only) Remove and replace the affected microprocessor (error LED is lit) with a supported type (see “Installing the microprocessor” on page 201).

- Follow the suggested actions in the order in which they are listed in the Action column until the problem is solved.
- See Chapter 4, “Parts listing, System x3250 M4 Type 2583,” on page 141 to determine which components are customer replaceable units (CRU) and which components are field replaceable units (FRU).
- If an action step is preceded by “(Trained service technician only),” that step must be performed only by a trained service technician.
- Go to the IBM support website at <http://www.ibm.com/supportportal/> to check for technical information, hints, tips, and new device drivers or to submit a request for information.

Error code	Description	Action
001800F	Microprocessors with mismatched family.	<ol style="list-style-type: none"> 1. Make sure that the microprocessor is on the ServerProven website at http://www.ibm.com/servers/eserver/serverproven/compat/us/. 2. Check the IBM support website for a firmware update and update the server firmware to the latest level (see “Updating the firmware” on page 207). 3. (Trained service technician only) Remove and replace the affected microprocessor (error LED is lit) with a supported type (see “Installing the microprocessor” on page 201).
0018010	Microprocessors with mismatched stepping.	<ol style="list-style-type: none"> 1. Make sure that the microprocessor is on the ServerProven website at http://www.ibm.com/servers/eserver/serverproven/compat/us/. 2. Check the IBM support website for a firmware update and update the server firmware to the latest level (see “Updating the firmware” on page 207). 3. (Trained service technician only) Remove and replace the affected microprocessor (error LED is lit) with a supported type (see “Installing the microprocessor” on page 201).
0050001	DIMM disabled.	<p>Note: Each time you install or remove a DIMM, you must disconnect the server from the power source; then, wait 10 seconds before restarting the server.</p> <ol style="list-style-type: none"> 1. Make sure the DIMM is installed correctly (see “Installing a memory module” on page 173). 2. If the DIMM was disabled because of a memory fault, follow the suggested actions for that error event. 3. Check the IBM support website for an applicable retain tip or firmware update that applies to this memory event. If no memory fault is recorded in the logs and no DIMM connector error LED is lit, you can re-enable the DIMM through the Setup utility or the Advanced Settings Utility (ASU).

- Follow the suggested actions in the order in which they are listed in the Action column until the problem is solved.
- See Chapter 4, “Parts listing, System x3250 M4 Type 2583,” on page 141 to determine which components are customer replaceable units (CRU) and which components are field replaceable units (FRU).
- If an action step is preceded by “(Trained service technician only),” that step must be performed only by a trained service technician.
- Go to the IBM support website at <http://www.ibm.com/supportportal/> to check for technical information, hints, tips, and new device drivers or to submit a request for information.

Error code	Description	Action
0051003	Uncorrectable DIMM error	<p>Note: Each time you install or remove a DIMM, you must disconnect the server from the power source; then, wait 10 seconds before restarting the server.</p> <ol style="list-style-type: none"> 1. Check the IBM support website for an applicable retain tip or firmware update that applies to this memory error. 2. Manually re-enable all affected DIMMs if the server firmware version is older than UEFI v1.10. If the server firmware version is UEFI v1.10 or newer, disconnect and reconnect the server to the power source and restart the server. 3. If the problem is related to a DIMM, replace the failing DIMM (see “Removing a memory module” on page 173 and “Installing a memory module” on page 173). 4. (Trained service technician only) If the problem occurs on the same DIMM connector, check the DIMM connector. If the connector contains any foreign material or is damaged, replace the system board (see “Removing the system board” on page 204 and “Installing the system board” on page 205). 5. (Trained service technician only) Remove the affected microprocessor and check the microprocessor socket pins for any damaged pins. If a damage is found, replace the system board (see “Removing the system board” on page 204 and “Installing the system board” on page 205). 6. (Trained Service technician only) Replace the affected microprocessor (see “Removing the microprocessor” on page 199 and “Installing the microprocessor” on page 201).
0051006	DIMM mismatch detected.	<p>Note: Each time you install or remove a DIMM, you must disconnect the server from the power source; then, wait 10 seconds before restarting the server. Make sure that the DIMMs have been installed in the correct sequence (see “Installing a memory module” on page 173).</p>

- Follow the suggested actions in the order in which they are listed in the Action column until the problem is solved.
- See Chapter 4, “Parts listing, System x3250 M4 Type 2583,” on page 141 to determine which components are customer replaceable units (CRU) and which components are field replaceable units (FRU).
- If an action step is preceded by “(Trained service technician only),” that step must be performed only by a trained service technician.
- Go to the IBM support website at <http://www.ibm.com/supportportal/> to check for technical information, hints, tips, and new device drivers or to submit a request for information.

Error code	Description	Action
0051009	No memory detected.	<p>Note: Each time you install or remove a DIMM, you must disconnect the server from the power source; then, wait 10 seconds before restarting the server.</p> <ol style="list-style-type: none"> 1. Make sure one or more DIMMs are installed in the server. 2. Reseat the DIMMs and restart the server (see “Removing a memory module” on page 173 and “Installing a memory module” on page 173). 3. Make sure that the DIMMs are installed in the correct sequence (see “Installing a memory module” on page 173). 4. (Trained service technician only) Replace the microprocessor that controls the failing DIMMs (see “Removing a memory module” on page 173 and “Installing a memory module” on page 173). 5. (Trained service technician only) Replace the system board (see “Removing the system board” on page 204 and “Installing the system board” on page 205).
005100A	No usable memory detected.	<p>Note: Each time you install or remove a DIMM, you must disconnect the server from the power source; then, wait 10 seconds before restarting the server.</p> <ol style="list-style-type: none"> 1. Make sure one or more DIMMs are installed in the server. 2. Reseat the DIMMs and restart the server (see “Removing a memory module” on page 173 and “Installing a memory module” on page 173). 3. Make sure that the DIMMs are installed in the correct sequence (see “Installing a memory module” on page 173). 4. Clear CMOS memory to ensure that all DIMM connectors are enabled (see “Removing the system battery” on page 179 and “Installing the system battery” on page 181). Note that all firmware settings will be reset to the default settings.

- Follow the suggested actions in the order in which they are listed in the Action column until the problem is solved.
- See Chapter 4, “Parts listing, System x3250 M4 Type 2583,” on page 141 to determine which components are customer replaceable units (CRU) and which components are field replaceable units (FRU).
- If an action step is preceded by “(Trained service technician only),” that step must be performed only by a trained service technician.
- Go to the IBM support website at <http://www.ibm.com/supportportal/> to check for technical information, hints, tips, and new device drivers or to submit a request for information.

Error code	Description	Action
0058001	PFA threshold exceeded.	<p>Note: Each time you install or remove a DIMM, you must disconnect the server from the power source; then, wait 10 seconds before restarting the server.</p> <ol style="list-style-type: none"> 1. Check the IBM support website for an applicable retain tip or firmware update that applies to this memory error. 2. Swap the affected DIMMs (as indicated by the error LEDs on the system board or the event logs) to a different memory channel or microprocessor (see “Installing a memory module” on page 173 for memory population). 3. If the error still occurs on the same DIMM, replace the affected DIMM (see “Removing a memory module” on page 173 and “Installing a memory module” on page 173). 4. (Trained service technician only) If the problem occurs on the same DIMM connector, check the DIMM connector. If the connector contains any foreign material or is damaged, replace the system board (see “Removing the system board” on page 204 and “Installing the system board” on page 205). 5. (Trained service technician only) Remove the affected microprocessor and check the microprocessor socket pins for any damaged pins. If a damage is found, replace the system board (see “Removing the system board” on page 204 and “Installing the system board” on page 205). 6. (Trained Service technician only) Replace the affected microprocessor (see “Removing the microprocessor” on page 199 and “Installing the microprocessor” on page 201).
0058007	Unsupported DIMM population.	<p>Note: Each time you install or remove a DIMM, you must disconnect the server from the power source; then, wait 10 seconds before restarting the server.</p> <ol style="list-style-type: none"> 1. Reseat the DIMMs and restart the server (see “Removing a memory module” on page 173 and “Installing a memory module” on page 173). 2. Make sure that the DIMMs are installed in the correct sequence (see “Installing a memory module” on page 173).

- Follow the suggested actions in the order in which they are listed in the Action column until the problem is solved.
- See Chapter 4, “Parts listing, System x3250 M4 Type 2583,” on page 141 to determine which components are customer replaceable units (CRU) and which components are field replaceable units (FRU).
- If an action step is preceded by “(Trained service technician only),” that step must be performed only by a trained service technician.
- Go to the IBM support website at <http://www.ibm.com/supportportal/> to check for technical information, hints, tips, and new device drivers or to submit a request for information.

Error code	Description	Action
0058008	DIMM failed memory test.	<p>Note: Each time you install or remove a DIMM, you must disconnect the server from the power source; then, wait 10 seconds before restarting the server.</p> <ol style="list-style-type: none"> 1. Check the IBM support website for an applicable retain tip or firmware update that applies to this memory error. 2. Manually re-enable all affected DIMMs if the server firmware version is older than UEFI v1.10. If the server firmware version is UEFI v1.10 or newer, disconnect and reconnect the server to the power source and restart the server. 3. Swap the affected DIMMs (as indicated by the error LEDs on the system board or the event logs) to a different memory channel or microprocessor (see “Installing a memory module” on page 173). 4. If the problem is related to a DIMM, replace the failing DIMM (see “Removing a memory module” on page 173 and “Installing a memory module” on page 173). 5. (Trained service technician only) If the problem occurs on the same DIMM connector, check the DIMM connector. If the connector contains any foreign material or is damaged, replace the system board (see “Removing the system board” on page 204 and “Installing the system board” on page 205). 6. (Trained service technician only) Remove the affected microprocessor and check the microprocessor socket pins for any damaged pins. If a damage is found, replace the system board (see “Removing the system board” on page 204 and “Installing the system board” on page 205). 7. (Trained service technician only) If the problem is related to microprocessor socket pins, replace the system board (see “Removing the system board” on page 204 and “Installing the system board” on page 205). 8. (Trained Service technician only) Replace the affected microprocessor (see “Removing the microprocessor” on page 199 and “Installing the microprocessor” on page 201).
00580A1	Invalid DIMM population for mirroring mode	<ol style="list-style-type: none"> 1. If a fault LED is lit, resolve the failure. 2. Make sure that the DIMMs are installed in the correct sequence (see “Installing a memory module” on page 173).

<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 4, “Parts listing, System x3250 M4 Type 2583,” on page 141 to determine which components are customer replaceable units (CRU) and which components are field replaceable units (FRU). If an action step is preceded by “(Trained service technician only),” that step must be performed only by a trained service technician. Go to the IBM support website at http://www.ibm.com/supportportal/ to check for technical information, hints, tips, and new device drivers or to submit a request for information. 		
Error code	Description	Action
00580A4	Memory population changed.	Information only. Memory has been added, moved, or changed.
00580A6	Spare failover detected.	Information only. Memory redundancy or spare rank has been lost. Check the event log for uncorrected DIMM failure events (see “Event logs” on page 22).
0068002	CMOS battery cleared.	<ol style="list-style-type: none"> Check the IBM support website for an applicable retain tip or firmware update that applies to this memory error. Replace the CMOS battery (see “Removing the system battery” on page 179 and “Installing the system battery” on page 181). (Trained service technician only) Replace the system board (see “Removing the system board” on page 204 and “Installing the system board” on page 205).
0068005	IOH or IIO has reported an error.	<ol style="list-style-type: none"> Check the IBM support website for an applicable retain tip or firmware update that applies to this memory error. Replace the following components one at a time in the order shown, restarting the server each time: <ul style="list-style-type: none"> PCI Express adapter (see “Removing an adapter” on page 158 and “Installing a ServeRAID adapter” on page 161). (Trained service technician only) System board (see “Removing the system board” on page 204 and “Installing the system board” on page 205).
2011000	PCI PERR.	<ol style="list-style-type: none"> Check the riser-card LEDs. Reseat all affected adapters and riser cards. Update the PCI adapter firmware. Replace the affected adapters and riser cards (see “Removing an adapter” on page 158 and “Installing a ServeRAID adapter” on page 161). (Trained service technician only) Replace the system board (see “Removing the system board” on page 204 and “Installing the system board” on page 205).

- Follow the suggested actions in the order in which they are listed in the Action column until the problem is solved.
- See Chapter 4, “Parts listing, System x3250 M4 Type 2583,” on page 141 to determine which components are customer replaceable units (CRU) and which components are field replaceable units (FRU).
- If an action step is preceded by “(Trained service technician only),” that step must be performed only by a trained service technician.
- Go to the IBM support website at <http://www.ibm.com/supportportal/> to check for technical information, hints, tips, and new device drivers or to submit a request for information.

Error code	Description	Action
2011001	PCI SERR.	<ol style="list-style-type: none"> 1. Check the riser-card LEDs. 2. Reseat all affected adapters and riser cards. 3. Update the PCI adapter firmware. 4. Replace the affected adapters and riser cards (see “Removing an adapter” on page 158 and “Installing a ServeRAID adapter” on page 161). 5. (Trained service technician only) Replace the system board (see “Removing the system board” on page 204 and “Installing the system board” on page 205).
2018001	PCI Express uncorrected or uncorrected error.	<ol style="list-style-type: none"> 1. Check the riser-card LEDs. 2. Reseat all affected adapters and riser cards. 3. Update the PCI adapter firmware. 4. Replace the affected adapters and riser cards (see “Removing an adapter” on page 158 and “Installing a ServeRAID adapter” on page 161). 5. (Trained service technician only) Replace the system board (see “Removing the system board” on page 204 and “Installing the system board” on page 205).
2018002	Option ROM resource allocation failure.	<ol style="list-style-type: none"> 1. Run the Setup utility (see “Using the Setup utility” on page 210). Select Startup Options from the menu and modify the boot sequence to change the load order of the optional-device ROM code. 2. Informational message that some devices might not be initialized.
2018003	Option Rom checksum bad.	
3048005	Booted secondary (backup) UEFI image.	Information only. Set the JP2 jumper in the backup position (pins 2 and 3) to allow the server to boot from the backup UEFI (see “Internal LEDs, connectors, and jumpers” on page 14).
3048006	Booted secondary (backup) UEFI image because of ABR.	<ol style="list-style-type: none"> 1. Run the Setup utility (see “Using the Setup utility” on page 210), select Load Default Settings, and save the settings. 2. Recover the server firmware (see “Recovering the server firmware” on page 133).

- Follow the suggested actions in the order in which they are listed in the Action column until the problem is solved.
- See Chapter 4, “Parts listing, System x3250 M4 Type 2583,” on page 141 to determine which components are customer replaceable units (CRU) and which components are field replaceable units (FRU).
- If an action step is preceded by “(Trained service technician only),” that step must be performed only by a trained service technician.
- Go to the IBM support website at <http://www.ibm.com/supportportal/> to check for technical information, hints, tips, and new device drivers or to submit a request for information.

Error code	Description	Action
305000A	Date, time, or both are incorrect.	<ol style="list-style-type: none"> 1. Run the Setup utility (see “Using the Setup utility” on page 210), select Load Default Settings, and save the settings. 2. Replace the CMOS battery (see “Removing the system battery” on page 179 and “Installing the system battery” on page 181). 3. Replace the battery.
3058004	Three boot failure	<ol style="list-style-type: none"> 1. Undo any recent system changes, such as new settings or newly installed devices. 2. Make sure that the server is attached to a reliable power source. 3. Remove all hardware that is not listed on the ServerProven web site at http://www.ibm.com/servers/eserver/serverproven/compat/us/. 4. Update the firmware to the latest level (see “Updating the firmware” on page 207 for more information). 5. Make sure that the operating system is not corrupted. 6. Run the Setup utility, save the configuration, and then restart the server. 7. (Trained service technician only) If the problem remains, replace the system board (see “Removing the system board” on page 204 and “Installing the system board” on page 205).
3808000	IMM2 communication failure	<ol style="list-style-type: none"> 1. Shut down the system and remove the power cords from the server for 30 seconds; then, reconnect the server to power and restart it. 2. Update the IMM2 firmware to the latest level (see “Updating the firmware” on page 207). 3. (Trained service technician only) Replace the system board (see “Removing the system board” on page 204 and “Installing the system board” on page 205).
3808002	Configuration update to IMM2 failed.	<ol style="list-style-type: none"> 1. Run the Setup utility, select Save Settings, and restart the server (see “Using the Setup utility” on page 210). 2. Update the IMM2 firmware to the latest level (see “Updating the firmware” on page 207).

- Follow the suggested actions in the order in which they are listed in the Action column until the problem is solved.
- See Chapter 4, “Parts listing, System x3250 M4 Type 2583,” on page 141 to determine which components are customer replaceable units (CRU) and which components are field replaceable units (FRU).
- If an action step is preceded by “(Trained service technician only),” that step must be performed only by a trained service technician.
- Go to the IBM support website at <http://www.ibm.com/supportportal/> to check for technical information, hints, tips, and new device drivers or to submit a request for information.

Error code	Description	Action
3808003	Configuration retrieval from IMM2 failed.	<ol style="list-style-type: none"> 1. Run the Setup utility, select Save Settings, and restart the server (see “Using the Setup utility” on page 210). 2. Update the IMM2 firmware to the latest level (see “Updating the firmware” on page 207).
3808004	IMM2 system event log full.	Run the Setup utility to clear IMM2 logs and restart the server (see “Using the Setup utility” on page 210).
3818001	Core Root of Trust Measurement (CRTM) update failed.	<ol style="list-style-type: none"> 1. Run the Setup utility, select Load Default Settings, and save the settings. 2. Recover the server firmware (see “Recovering the server firmware” on page 133).
3818002	CRTM update aborted.	<ol style="list-style-type: none"> 1. Run the Setup utility, select Load Default Settings, and save the settings. 2. Recover the server firmware (see “Recovering the server firmware” on page 133).
3818003	CRTM flash lock failed.	<ol style="list-style-type: none"> 1. Run the Setup utility, select Load Default Settings, and save the settings. 2. Recover the server firmware (see “Recovering the server firmware” on page 133).
3818004	CRTM system error	<ol style="list-style-type: none"> 1. Run the Setup utility, select Load Default Settings, and save the settings. 2. Recover the server firmware (see “Recovering the server firmware” on page 133).
3818005	Current Bank CRTM capsule signature invalid.	<ol style="list-style-type: none"> 1. Run the Setup utility, select Load Default Settings, and save the settings. 2. Recover the server firmware (see “Recovering the server firmware” on page 133).
3818006	Opposite bank CRTM capsule signature invalid.	<ol style="list-style-type: none"> 1. Switch the server firmware bank to the backup bank (see “Starting the backup server firmware” on page 216). 2. Run the Setup utility, select Load Default Settings, and save the settings. 3. Switch the bank back to the primary bank.
3818007	CRTM update capsule signature invalid.	<ol style="list-style-type: none"> 1. Run the Setup utility, select Load Default Settings, and save the settings. 2. Recover the server firmware (see “Recovering the server firmware” on page 133).

- Follow the suggested actions in the order in which they are listed in the Action column until the problem is solved.
- See Chapter 4, “Parts listing, System x3250 M4 Type 2583,” on page 141 to determine which components are customer replaceable units (CRU) and which components are field replaceable units (FRU).
- If an action step is preceded by “(Trained service technician only),” that step must be performed only by a trained service technician.
- Go to the IBM support website at <http://www.ibm.com/supportportal/> to check for technical information, hints, tips, and new device drivers or to submit a request for information.

Error code	Description	Action
3xx0007	Firmware fault detected, system halted.	<ol style="list-style-type: none"> 1. Run the Setup utility, select Load Default Settings, and save the settings. 2. Recover the server firmware (see “Recovering the server firmware” on page 133).

System-event log

The system-event log contains messages of three types:

Information

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

Warning

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

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

Each message contains date and time information, and it indicates the source of the message (POST or the IMM2).

Integrated management module II (IMM2) error messages

The following table describes the IMM2 error messages and suggested actions to correct the detected problems.

For more information about IMM2, see the *Integrated Management Module II User's Guide* at <http://www.ibm.com/support/entry/portal/docdisplay?Indocid=MIGR-5086346>.

Table 5. IMM2 error 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 4, “Parts listing, System x3250 M4 Type 2583,” on page 141 to determine which components are customer replaceable units (CRU) and which components are field replaceable units (FRU).• If an action step is preceded by “(Trained service technician only),” that step must be performed only by a trained service technician.			
Message	Severity	Description	Action
Numeric sensor Ambient Temp going high (upper non-critical) has asserted.	Error	An upper non-critical sensor going high has asserted.	<ol style="list-style-type: none">1. Reduce the ambient temperature.2. Check the server airflow. Make sure that nothing is blocking the air from coming into or preventing the air from exiting the server.
Numeric sensor Ambient Temp going high (upper critical) has asserted.	Error	An upper critical sensor going high has asserted.	<ol style="list-style-type: none">1. Reduce the ambient temperature.2. Check the server airflow. Make sure that nothing is blocking the air from coming into or preventing the air from exiting the server.
Numeric sensor Ambient Temp going high (upper non-recoverable) has asserted.	Error	An upper non-recoverable sensor going high has asserted.	Check the server airflow. Make sure that nothing is blocking the air from coming into or preventing the air from exiting the server.
The Processor CPU <i>n</i> Status has Failed with IERR. (<i>n</i> = microprocessor number)	Error	A processor failed - IERR condition has occurred.	

Table 5. IMM2 error 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 4, “Parts listing, System x3250 M4 Type 2583,” on page 141 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. 			
The Processor CPU <i>n</i> Status has a Thermal Trip. (<i>n</i> = microprocessor number)	Error	A processor thermal trip has occurred.	<ol style="list-style-type: none"> 1. Make sure that the latest levels of firmware and device drivers are installed for all adapters and standard devices, such as Ethernet, SCSI, and SAS. Important: Some cluster solutions require specific code levels or coordinated code updates. If the device is part of a cluster solution, verify that the latest level of code is supported for the cluster solution before you update the code. 2. Update the firmware (UEFI and IMM2) to the latest level “Updating the firmware” on page 207). 3. Run the DSA program. 4. Reseat the adapter (see “Removing an adapter” on page 158 and “Installing a ServeRAID adapter” on page 161). 5. Replace the adapter. 6. (Trained service technician only) Replace microprocessor <i>n</i> (see “Removing the microprocessor” on page 199 and “Installing the microprocessor” on page 201). 7. (Trained service technician only) Replace the system board (see “Removing the system board” on page 204 and “Installing the system board” on page 205) <p>(<i>n</i> = microprocessor number)</p>
The Processor CPU <i>n</i> Status has Failed with BIST. (<i>n</i> = microprocessor number)	Error	A processor failed - BIST condition has occurred.	<ol style="list-style-type: none"> 1. Make sure that the fans are operating. There are no obstructions to the airflow (front and rear of the server), the air baffles are in place and correctly installed, and the server cover is installed and completely closed. 2. Make sure that the heat sink for microprocessor <i>n</i> is installed correctly. 3. (Trained service technician only) Replace microprocessor <i>n</i> (see “Removing the microprocessor” on page 199 and “Installing the microprocessor” on page 201). <p>(<i>n</i> = microprocessor number)</p>

Table 5. IMM2 error 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 4, “Parts listing, System x3250 M4 Type 2583,” on page 141 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. 			
The Processor CPU <i>n</i> Status has a Configuration Error. (<i>n</i> = microprocessor number)	Error	A processor configuration error has occurred.	<ol style="list-style-type: none"> 1. Check the CPU LED. 2. Check for a server firmware update. Important: Some cluster solutions require specific code levels or coordinated code updates. If the device is part of a cluster solution, verify that the latest level of code is supported for the cluster solution before you update the code. 3. Make sure that the installed microprocessors are compatible with each other (see “Installing the microprocessor” on page 201 for information about microprocessor requirements). 4. (Trained service technician only) Reseat microprocessor <i>n</i> (see “Removing the microprocessor” on page 199 and “Installing the microprocessor” on page 201). 5. (Trained service technician only) Replace microprocessor <i>n</i>. (<i>n</i> = microprocessor number)
The Processor CPU <i>n</i> Status has an Uncorrectable Error. (<i>n</i> = microprocessor number)	Error	A processor uncorrectable error has occurred.	<ol style="list-style-type: none"> 1. Make sure that the installed microprocessors are compatible with each other (see “Installing the microprocessor” on page 201 for information about microprocessor requirements). 2. Update the server firmware to the latest level (see “Updating the firmware” on page 207). 3. (Trained service technician only) Replace the incompatible microprocessor (see “Removing the microprocessor” on page 199 and “Installing the microprocessor” on page 201).
The Processor CPU <i>n</i> Presence has been detected. (<i>n</i> = microprocessor number)	Error	A processor presence has been detected.	
The Processor CPU <i>n</i> has been disabled. (<i>n</i> = microprocessor number)	Error	A processor has been disabled.	
The Processor for One of the CPUs has been disabled.	Error	A processor has been disabled.	

Table 5. IMM2 error 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 4, “Parts listing, System x3250 M4 Type 2583,” on page 141 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. 			
The Processor for All CPUs has been disabled.	Error	A processor has been disabled.	
The Processor CPU <i>n</i> is operating in a Degraded State. (<i>n</i> = microprocessor number)	Warning	Throttling has occurred for microprocessor <i>n</i> . (<i>n</i> = microprocessor number)	
Sensor CPU <i>n</i> OverTemp has transitioned to acceptable state. (<i>n</i> = microprocessor number)	Error	A sensor has changed to acceptable state.	<ol style="list-style-type: none"> 1. Make sure that the fans are operating, that there are no obstructions to the airflow (front and rear of the server), that the air baffles are in place and correctly installed, and that the server cover is installed and completely closed. 2. Check the ambient temperature. You must be operating within the specifications (see “Features and specifications” on page 7 for more information). 3. Make sure that the heat sink for microprocessor <i>n</i> is installed correctly. 4. (Trained service technician only) Replace microprocessor <i>n</i> (see “Removing the microprocessor” on page 199 and “Installing the microprocessor” on page 201). (<i>n</i> = microprocessor number)
Sensor CPU <i>n</i> OverTemp has transitioned to critical from a less severe state. (<i>n</i> = microprocessor number)	Error	A sensor has changed to critical state from a less severe state.	

Table 5. IMM2 error 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 4, “Parts listing, System x3250 M4 Type 2583,” on page 141 to determine which components are customer replaceable units (CRU) and which components are field replaceable units (FRU). • If an action step is preceded by “(Trained service technician only),” that step must be performed only by a trained service technician. 			
Sensor CPU <i>n</i> OverTemp has transitioned to non-recoverable from a less severe state. (<i>n</i> = microprocessor number)	Error	A sensor has changed to non-recoverable state from a less severe state.	<ol style="list-style-type: none"> 1. Make sure that the fans are operating, that there are no obstructions to the airflow (front and rear of the server), that the air baffles are in place and correctly installed, and that the server cover is installed and completely closed. 2. Check the ambient temperature. You must be operating within the specifications (see “Features and specifications” on page 7 for more information). 3. Make sure that the heat sink for microprocessor <i>n</i> is installed correctly (see “Installing the microprocessor” on page 201 for more information). 4. (Trained service technician only) Replace microprocessor <i>n</i> (see “Removing the microprocessor” on page 199 and “Installing the microprocessor” on page 201). (<i>n</i> = microprocessor number)
Sensor CPU Fault Reboot has asserted.	Error	An undetermined system hardware failure has occurred.	<ol style="list-style-type: none"> 1. Make sure that the fans are operating, that there are no obstructions to the airflow (front and rear of the server), that the air baffles are in place and correctly installed, and that the server cover is installed and completely closed. 2. Make sure that the heat sink for microprocessor <i>n</i> is installed correctly (see “Installing the microprocessor” on page 201 for more information). 3. (Trained service technician only) Replace microprocessor <i>n</i> (see “Removing the microprocessor” on page 199 and “Installing the microprocessor” on page 201). (<i>n</i> = microprocessor number)

Table 5. IMM2 error 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 4, “Parts listing, System x3250 M4 Type 2583,” on page 141 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. 			
An Uncorrectable Bus Error has occurred on system %1. (%1 = CIM_ComputerSystem.ElementName)	Error	A bus uncorrectable error has occurred. (Sensor = Critical Int CPU)	<ol style="list-style-type: none"> 1. Check the system-event log. 2. (Trained service technician only) Remove the failing microprocessor from the system board (see “Removing the microprocessor” on page 199). 3. Check for a server firmware update. Important: Some cluster solutions require specific code levels or coordinated code updates. If the device is part of a cluster solution, verify that the latest level of code is supported for the cluster solution before you update the code. 4. Make sure that the two microprocessors are matching. 5. (Trained service technician only) Replace the system board (see “Removing the system board” on page 204 and “Installing the system board” on page 205).

Table 5. IMM2 error 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 4, “Parts listing, System x3250 M4 Type 2583,” on page 141 to determine which components are customer replaceable units (CRU) and which components are field replaceable units (FRU). • If an action step is preceded by “(Trained service technician only),” that step must be performed only by a trained service technician. 			
Memory uncorrectable error detected for Memory DIMM <i>n</i> Status. (<i>n</i> = DIMM number)	Error	A memory uncorrectable error has occurred.	<ol style="list-style-type: none"> 1. Check the IBM support website for an applicable retain tip or firmware update that applies to this memory error. 2. Manually re-enable all affected DIMMs if the server firmware version is older than UEFI v1.10. If the server firmware version is UEFI v1.10 or newer, disconnect and reconnect the server to the power source and restart the server. 3. Swap the affected DIMMs (as indicated by the error LEDs on the system board or the event logs) to a different memory channel or microprocessor (see “Installing a memory module” on page 173 for memory population). 4. If the problem is related to a DIMM, replace the failing DIMM (see “Removing a memory module” on page 173 and “Installing a memory module” on page 173). 5. (Trained service technician only) If the problem occurs on the same DIMM connector, check the DIMM connector. If the connector contains any foreign material or is damaged, replace the system board (see “Removing the system board” on page 204 and “Installing the system board” on page 205). 6. (Trained service technician only) Remove the affected microprocessor and check the microprocessor socket pins for any damaged pins. If a damage is found, replace the system board (see “Removing the system board” on page 204 and “Installing the system board” on page 205). 7. (Trained Service technician only) Replace the affected microprocessor (see “Removing the microprocessor” on page 199 and “Installing the microprocessor” on page 201).

Table 5. IMM2 error 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 4, “Parts listing, System x3250 M4 Type 2583,” on page 141 to determine which components are customer replaceable units (CRU) and which components are field replaceable units (FRU). • If an action step is preceded by “(Trained service technician only),” that step must be performed only by a trained service technician. 			
Memory uncorrectable error detected for DIMM <i>n</i> Status on Memory Subsystem DIMM <i>n</i> Status. (<i>n</i> = DIMM number)	Error	A memory uncorrectable error has occurred.	<ol style="list-style-type: none"> 1. Check the IBM support website for an applicable retain tip or firmware update that applies to this memory error. 2. Manually re-enable all affected DIMMs if the server firmware version is older than UEFI v1.10. If the server firmware version is UEFI v1.10 or newer, disconnect and reconnect the server to the power source and restart the server. 3. Swap the affected DIMMs (as indicated by the error LEDs on the system board or the event logs) to a different memory channel or microprocessor (see “Installing a memory module” on page 173 for memory population). 4. If the problem is related to a DIMM, replace the failing DIMM (see “Removing a memory module” on page 173 and “Installing a memory module” on page 173). 5. (Trained service technician only) If the problem occurs on the same DIMM connector, check the DIMM connector. If the connector contains any foreign material or is damaged, replace the system board (see “Removing the system board” on page 204 and “Installing the system board” on page 205). 6. (Trained service technician only) Remove the affected microprocessor and check the microprocessor socket pins for any damaged pins. If a damage is found, replace the system board (see “Removing the system board” on page 204 and “Installing the system board” on page 205). 7. (Trained Service technician only) Replace the affected microprocessor (see “Removing the microprocessor” on page 199 and “Installing the microprocessor” on page 201).

Table 5. IMM2 error 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 4, “Parts listing, System x3250 M4 Type 2583,” on page 141 to determine which components are customer replaceable units (CRU) and which components are field replaceable units (FRU). • If an action step is preceded by “(Trained service technician only),” that step must be performed only by a trained service technician. 			
Memory uncorrectable error detected for One of the DIMMs.	Error	A memory uncorrectable error has occurred.	<ol style="list-style-type: none"> 1. Check the IBM support website for an applicable retain tip or firmware update that applies to this memory error. 2. Manually re-enable all affected DIMMs if the server firmware version is older than UEFI v1.10. If the server firmware version is UEFI v1.10 or newer, disconnect and reconnect the server to the power source and restart the server. 3. Swap the affected DIMMs (as indicated by the error LEDs on the system board or the event logs) to a different memory channel or microprocessor (see “Installing a memory module” on page 173 for memory population). 4. If the problem is related to a DIMM, replace the failing DIMM (see “Removing a memory module” on page 173 and “Installing a memory module” on page 173). 5. (Trained service technician only) If the problem occurs on the same DIMM connector, check the DIMM connector. If the connector contains any foreign material or is damaged, replace the system board (see “Removing the system board” on page 204 and “Installing the system board” on page 205). 6. (Trained service technician only) Remove the affected microprocessor and check the microprocessor socket pins for any damaged pins. If a damage is found, replace the system board (see “Removing the system board” on page 204 and “Installing the system board” on page 205). 7. (Trained Service technician only) Replace the affected microprocessor (see “Removing the microprocessor” on page 199 and “Installing the microprocessor” on page 201).

Table 5. IMM2 error 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 4, “Parts listing, System x3250 M4 Type 2583,” on page 141 to determine which components are customer replaceable units (CRU) and which components are field replaceable units (FRU). • If an action step is preceded by “(Trained service technician only),” that step must be performed only by a trained service technician. 			
Memory uncorrectable error detected for All DIMMs.	Error	A memory uncorrectable error has occurred.	<ol style="list-style-type: none"> 1. Check the IBM support website for an applicable retain tip or firmware update that applies to this memory error. 2. Manually re-enable all affected DIMMs if the server firmware version is older than UEFI v1.10. If the server firmware version is UEFI v1.10 or newer, disconnect and reconnect the server to the power source and restart the server. 3. Swap the affected DIMMs (as indicated by the error LEDs on the system board or the event logs) to a different memory channel or microprocessor (see “Installing a memory module” on page 173 for memory population). 4. If the problem is related to a DIMM, replace the failing DIMM (see “Removing a memory module” on page 173 and “Installing a memory module” on page 173). 5. (Trained service technician only) If the problem occurs on the same DIMM connector, check the DIMM connector. If the connector contains any foreign material or is damaged, replace the system board (see “Removing the system board” on page 204 and “Installing the system board” on page 205). 6. (Trained service technician only) Remove the affected microprocessor and check the microprocessor socket pins for any damaged pins. If a damage is found, replace the system board (see “Removing the system board” on page 204 and “Installing the system board” on page 205). 7. (Trained Service technician only) Replace the affected microprocessor (see “Removing the microprocessor” on page 199 and “Installing the microprocessor” on page 201).

Table 5. IMM2 error 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 4, “Parts listing, System x3250 M4 Type 2583,” on page 141 to determine which components are customer replaceable units (CRU) and which components are field replaceable units (FRU). • If an action step is preceded by “(Trained service technician only),” that step must be performed only by a trained service technician. 			
Memory DIMM disabled for DIMM <i>n</i> Status. (<i>n</i> = DIMM number)	Error	DIMM disabled.	<ol style="list-style-type: none"> 1. Make sure the DIMM is installed correctly (see “Installing a memory module” on page 173). 2. If the DIMM was disabled because of a memory fault (memory uncorrectable error or memory logging limit reached), follow the suggested actions for that error event and restart the server. 3. Check the IBM support website for an applicable retain tip or firmware update that applies to this memory event. If no memory fault is recorded in the logs and no DIMM connector error LED is lit, you can re-enable the DIMM through the Setup utility or the Advanced Settings Utility (ASU).
Memory DIMM disabled for DIMM <i>n</i> Status on Memory Subsystem DIMM <i>n</i> Status. (<i>n</i> = DIMM number)	Info	DIMM disabled	<ol style="list-style-type: none"> 1. Make sure the DIMM is installed correctly (see “Installing a memory module” on page 173). 2. If the DIMM was disabled because of a memory fault (memory uncorrectable error or memory logging limit reached), follow the suggested actions for that error event and restart the server. 3. Check the IBM support website for an applicable retain tip or firmware update that applies to this memory event. If no memory fault is recorded in the logs and no DIMM connector error LED is lit, you can re-enable the DIMM through the Setup utility or the Advanced Settings Utility (ASU).
Memory DIMM disabled for One of the DIMMs.	Error	DIMM disabled.	<ol style="list-style-type: none"> 1. Make sure the DIMM is installed correctly (see “Installing a memory module” on page 173). 2. If the DIMM was disabled because of a memory fault (memory uncorrectable error or memory logging limit reached), follow the suggested actions for that error event and restart the server. 3. Check the IBM support website for an applicable retain tip or firmware update that applies to this memory event. If no memory fault is recorded in the logs and no DIMM connector error LED is lit, you can re-enable the DIMM through the Setup utility or the Advanced Settings Utility (ASU).

Table 5. IMM2 error 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 4, “Parts listing, System x3250 M4 Type 2583,” on page 141 to determine which components are customer replaceable units (CRU) and which components are field replaceable units (FRU). • If an action step is preceded by “(Trained service technician only),” that step must be performed only by a trained service technician. 			
Memory DIMM disabled for One of the DIMMs on Memory Subsystem One of the DIMMs	Info	DIMM disabled	<ol style="list-style-type: none"> 1. Make sure the DIMM is installed correctly (see “Installing a memory module” on page 173). 2. If the DIMM was disabled because of a memory fault (memory uncorrectable error or memory logging limit reached), follow the suggested actions for that error event and restart the server. 3. Check the IBM support website for an applicable retain tip or firmware update that applies to this memory event. If no memory fault is recorded in the logs and no DIMM connector error LED is lit, you can re-enable the DIMM through the Setup utility or the Advanced Settings Utility (ASU).
Memory DIMM disabled for All DIMMs.	Error	DIMM disabled.	<ol style="list-style-type: none"> 1. Make sure the DIMM is installed correctly (see “Installing a memory module” on page 173). 2. If the DIMM was disabled because of a memory fault (memory uncorrectable error or memory logging limit reached), follow the suggested actions for that error event and restart the server. 3. Check the IBM support website for an applicable retain tip or firmware update that applies to this memory event. If no memory fault is recorded in the logs and no DIMM connector error LED is lit, you can re-enable the DIMM through the Setup utility or the Advanced Settings Utility (ASU).

Table 5. IMM2 error 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 4, “Parts listing, System x3250 M4 Type 2583,” on page 141 to determine which components are customer replaceable units (CRU) and which components are field replaceable units (FRU). • If an action step is preceded by “(Trained service technician only),” that step must be performed only by a trained service technician. 			
Memory Logging Limit Reached for DIMM One of the DIMMs on Memory Subsystem One of the DIMMs	Error	The memory logging limit has been reached.	<ol style="list-style-type: none"> 1. Check the IBM support website for an applicable retain tip or firmware update that applies to this memory error. 2. Swap the affected DIMMs (as indicated by the error LEDs on the system board or the event logs) to a different memory channel or microprocessor (see “Installing a memory module” on page 173 for memory population). 3. If the error still occurs on the same DIMM, replace the affected DIMM. (see “Removing a memory module” on page 173 and “Installing a memory module” on page 173). 4. (Trained service technician only) If the problem occurs on the same DIMM connector, check the DIMM connector. If the connector contains any foreign material or is damaged, replace the system board (see “Removing the system board” on page 204 and “Installing the system board” on page 205). 5. (Trained service technician only) Remove the affected microprocessor and check the microprocessor socket pins for any damaged pins. If a damage is found, replace the system board (see “Removing the system board” on page 204 and “Installing the system board” on page 205). 6. (Trained Service technician only) Replace the affected microprocessor (see “Installing the microprocessor” on page 201).

Table 5. IMM2 error 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 4, “Parts listing, System x3250 M4 Type 2583,” on page 141 to determine which components are customer replaceable units (CRU) and which components are field replaceable units (FRU). • If an action step is preceded by “(Trained service technician only),” that step must be performed only by a trained service technician. 			
Memory Logging Limit Reached for DIMM <i>n</i> Status. (<i>n</i> = DIMM number)	Error	The memory logging limit has been reached.	<ol style="list-style-type: none"> 1. Check the IBM support website for an applicable retain tip or firmware update that applies to this memory error. 2. Swap the affected DIMMs (as indicated by the error LEDs on the system board or the event logs) to a different memory channel or microprocessor (see “Installing a memory module” on page 173 for memory population). 3. If the error still occurs on the same DIMM, replace the affected DIMM. 4. (Trained service technician only) If the problem occurs on the same DIMM connector, check the DIMM connector. If the connector contains any foreign material or is damaged, replace the system board (see “Removing the system board” on page 204 and “Installing the system board” on page 205). 5. (Trained service technician only) Remove the affected microprocessor and check the microprocessor socket pins for any damaged pins. If a damage is found, replace the system board (see “Removing the system board” on page 204 and “Installing the system board” on page 205). 6. (Trained Service technician only) Replace the affected microprocessor (see “Removing the microprocessor” on page 199 and “Installing the microprocessor” on page 201).

Table 5. IMM2 error 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 4, “Parts listing, System x3250 M4 Type 2583,” on page 141 to determine which components are customer replaceable units (CRU) and which components are field replaceable units (FRU). • If an action step is preceded by “(Trained service technician only),” that step must be performed only by a trained service technician. 			
Memory Logging Limit Reached for DIMM <i>n</i> Status on Memory Subsystem DIMM <i>n</i> Status. (<i>n</i> = DIMM number)	Error	The memory logging limit has been reached.	<ol style="list-style-type: none"> 1. Check the IBM support website for an applicable retain tip or firmware update that applies to this memory error. 2. Swap the affected DIMMs (as indicated by the error LEDs on the system board or the event logs) to a different memory channel or microprocessor (see “Installing a memory module” on page 173 for memory population). 3. If the error still occurs on the same DIMM, replace the affected DIMM. 4. (Trained service technician only) If the problem occurs on the same DIMM connector, check the DIMM connector. If the connector contains any foreign material or is damaged, replace the system board (see “Removing the system board” on page 204 and “Installing the system board” on page 205). 5. (Trained service technician only) Remove the affected microprocessor and check the microprocessor socket pins for any damaged pins. If a damage is found, replace the system board (see “Removing the system board” on page 204 and “Installing the system board” on page 205). 6. (Trained Service technician only) Replace the affected microprocessor (see “Removing the microprocessor” on page 199 and “Installing the microprocessor” on page 201).

Table 5. IMM2 error 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 4, “Parts listing, System x3250 M4 Type 2583,” on page 141 to determine which components are customer replaceable units (CRU) and which components are field replaceable units (FRU). • If an action step is preceded by “(Trained service technician only),” that step must be performed only by a trained service technician. 			
Memory Logging Limit Reached for One of the DIMMs.	Error	The memory logging limit has been reached.	<ol style="list-style-type: none"> 1. Check the IBM support website for an applicable retain tip or firmware update that applies to this memory error. 2. Swap the affected DIMMs (as indicated by the error LEDs on the system board or the event logs) to a different memory channel or microprocessor (see “Installing a memory module” on page 173 for memory population). 3. If the error still occurs on the same DIMM, replace the affected DIMM. 4. (Trained service technician only) If the problem occurs on the same DIMM connector, check the DIMM connector. If the connector contains any foreign material or is damaged, replace the system board (see “Removing the system board” on page 204 and “Installing the system board” on page 205). 5. (Trained service technician only) Remove the affected microprocessor and check the microprocessor socket pins for any damaged pins. If a damage is found, replace the system board (see “Removing the system board” on page 204 and “Installing the system board” on page 205). 6. (Trained Service technician only) Replace the affected microprocessor (see “Removing the microprocessor” on page 199 and “Installing the microprocessor” on page 201).

Table 5. IMM2 error 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 4, “Parts listing, System x3250 M4 Type 2583,” on page 141 to determine which components are customer replaceable units (CRU) and which components are field replaceable units (FRU). • If an action step is preceded by “(Trained service technician only),” that step must be performed only by a trained service technician. 			
Memory Logging Limit Reached for All DIMMs.	Error	The memory logging limit has been reached.	<ol style="list-style-type: none"> 1. Check the IBM support website for an applicable retain tip or firmware update that applies to this memory error. 2. Swap the affected DIMMs (as indicated by the error LEDs on the system board or the event logs) to a different memory channel or microprocessor (see “Installing a memory module” on page 173 for memory population). 3. If the error still occurs on the same DIMM, replace the affected DIMM. 4. (Trained service technician only) If the problem occurs on the same DIMM connector, check the DIMM connector. If the connector contains any foreign material or is damaged, replace the system board (see “Removing the system board” on page 204 and “Installing the system board” on page 205). 5. (Trained service technician only) Remove the affected microprocessor and check the microprocessor socket pins for any damaged pins. If a damage is found, replace the system board (see “Removing the system board” on page 204 and “Installing the system board” on page 205). 6. (Trained Service technician only) Replace the affected microprocessor (see “Removing the microprocessor” on page 199 and “Installing the microprocessor” on page 201).
A Memory DIMM presence for DIMM <i>n</i> Status has asserted. (<i>n</i> = DIMM number)	Error	A memory DIMM presence has occurred.	
Memory DIMM Configuration Error for DIMM <i>n</i> Status. (<i>n</i> = DIMM number)	Error	A memory DIMM configuration error has occurred.	Make sure that DIMMs are installed in the correct sequence and have the same size, type, speed, and technology.
Memory DIMM Configuration Error for One of the DIMMs.	Error	A memory DIMM configuration error has occurred.	Make sure that DIMMs are installed in the correct sequence and have the same size, type, speed, and technology.
Memory DIMM Configuration Error for All DIMMs.	Error	A memory DIMM configuration error has occurred.	Make sure that DIMMs are installed in the correct sequence and have the same size, type, speed, and technology.

Table 5. IMM2 error 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 4, “Parts listing, System x3250 M4 Type 2583,” on page 141 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. 			
An Over-Temperature condition has been detected on the DIMM <i>n</i> Status. (<i>n</i> = DIMM number)	Error	An over-temperature condition has occurred for DIMM <i>n</i> . (<i>n</i> = DIMM number)	<ol style="list-style-type: none"> 1. Make sure that the fans are operating, that there are no obstructions to the airflow, that the air baffles are in place and correctly installed, and that the server cover is installed and completely closed. 2. Make sure that ambient temperature is within the specifications. 3. If a fan has failed, complete the action for a fan failure. 4. Replace DIMM <i>n</i>. (<i>n</i> = DIMM number)
An Uncorrectable Bus Error has occurred on system %1. (%1 = CIM_ComputerSystem.ElementName)	Error	A bus uncorrectable error has occurred. (Sensor = Critical Int DIMM)	<ol style="list-style-type: none"> 1. Check the system-event log. 2. Check the DIMM error LEDs. 3. Remove the failing DIMM from the system board (see “Removing a memory module” on page 173). 4. Check for a server firmware update. Important: Some cluster solutions require specific code levels or coordinated code updates. If the device is part of a cluster solution, verify that the latest level of code is supported for the cluster solution before you update the code. 5. Make sure that the installed DIMMs are supported and configured correctly (see “Unbuffered DIMMs (UDIMMs)” on page 174 for more information). 6. (Trained service technician only) Replace the system board (see “Removing the system board” on page 204 and “Installing the system board” on page 205).
The Drive <i>n</i> Status has been removed from unit Drive 0 Status. (<i>n</i> = hard disk drive number)	Error	A drive has been removed.	<ol style="list-style-type: none"> 1. Reseat hard disk drive <i>n</i>. (<i>n</i> = hard disk drive number). Wait 1 minute or more before reinstalling the drive. 2. Replace the hard disk drive. 3. Make sure that the disk firmware and RAID controller firmware is at the latest level. 4. Check the SAS cable.

Table 5. IMM2 error 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 4, “Parts listing, System x3250 M4 Type 2583,” on page 141 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. 			
The Drive <i>n</i> Status has been disabled due to a detected fault. (<i>n</i> = hard disk drive number)	Error	A drive has been disabled because of a fault.	<ol style="list-style-type: none"> Run the hard disk drive diagnostic test on drive <i>n</i>. Reseat the following components: <ol style="list-style-type: none"> Hard disk drive (wait 1 minute or more before reinstalling the drive). Cable from the system board to the backplane Replace the following components one at a time, in the order shown, restarting the server each time: <ol style="list-style-type: none"> Hard disk drive Cable from the system board to the backplane Hard disk drive backplane (<i>n</i> = hard disk drive number)
The Drive <i>n</i> Status has a predictive failure. (<i>n</i> = hard disk drive number)	Error	A predictive failure has been detected for drive <i>n</i> . (<i>n</i> = hard disk drive number)	
Array %1 is in critical condition. (%1 = CIM_ComputerSystem.ElementName)	Error	An array is in a critical state. (Sensor = Drive <i>n</i> Status) (<i>n</i> = hard disk drive number)	<ol style="list-style-type: none"> Make sure that the RAID adapter firmware and hard disk drive firmware is at the latest level. Make sure that the SAS cable is connected correctly. Replace the SAS cable. Replace the RAID adapter. Replace the hard disk drive that is indicated by a lit status LED.
Array %1 has failed. (%1 = CIM_ComputerSystem.ElementName)	Error	An array is in a failed state. (Sensor = Drive <i>n</i> Status) (<i>n</i> = hard disk drive number)	<ol style="list-style-type: none"> Make sure that the RAID adapter firmware and hard disk drive firmware is at the latest level. Make sure that the SAS cable is connected correctly. Replace the SAS cable. Replace the RAID adapter. Replace the hard disk drive that is indicated by a lit status LED.

Table 5. IMM2 error 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 4, “Parts listing, System x3250 M4 Type 2583,” on page 141 to determine which components are customer replaceable units (CRU) and which components are field replaceable units (FRU). • If an action step is preceded by “(Trained service technician only),” that step must be performed only by a trained service technician. 			
Memory uncorrectable error detected for DIMM All DIMMs on Memory Subsystem All DIMMs	Error	A memory uncorrectable error has occurred.	<ol style="list-style-type: none"> 1. Check the IBM support website for an applicable retain tip or firmware update that applies to this memory error. 2. Manually re-enable all affected DIMMs if the server firmware version is older than UEFI v1.10. If the server firmware version is UEFI v1.10 or newer, disconnect and reconnect the server to the power source and restart the server. 3. Swap the affected DIMMs (as indicated by the error LEDs on the system board or the event logs) to a different memory channel or microprocessor (see “Installing a memory module” on page 173 for memory population). 4. If the problem follows the DIMM, replace the failing DIMM (see “Removing a memory module” on page 173 and “Installing a memory module” on page 173). 5. (Trained service technician only) If the problem occurs on the same DIMM connector, check the DIMM connector. If the connector contains any foreign material or is damaged, replace the system board (see “Removing the system board” on page 204 and “Installing the system board” on page 205). 6. (Trained service technician only) Remove the affected microprocessor and check the microprocessor socket pins for any damaged pins. If a damage is found, replace the system board (see “Removing the system board” on page 204 and “Installing the system board” on page 205). 7. (Trained Service technician only) Replace the affected microprocessor (see “Installing the microprocessor” on page 201).

Table 5. IMM2 error 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 4, “Parts listing, System x3250 M4 Type 2583,” on page 141 to determine which components are customer replaceable units (CRU) and which components are field replaceable units (FRU). • If an action step is preceded by “(Trained service technician only),” that step must be performed only by a trained service technician. 			
Memory Logging Limit Reached for DIMM All DIMMs on Memory Subsystem All DIMMs	Error	The memory logging limit has been reached.	<ol style="list-style-type: none"> 1. Check the IBM support website for an applicable retain tip or firmware update that applies to this memory error. 2. Swap the affected DIMMs (as indicated by the error LEDs on the system board or the event logs) to a different memory channel or microprocessor (see “Installing a memory module” on page 173 for memory population). 3. If the error still occurs on the same DIMM, replace the affected DIMM (see “Removing a memory module” on page 173 and “Installing a memory module” on page 173). 4. (Trained service technician only) If the problem occurs on the same DIMM connector, check the DIMM connector. If the connector contains any foreign material or is damaged, replace the system board (see “Removing the system board” on page 204 and “Installing the system board” on page 205). 5. (Trained service technician only) Remove the affected microprocessor and check the microprocessor socket pins for any damaged pins. If a damage is found, replace the system board (see “Removing the system board” on page 204 and “Installing the system board” on page 205). 6. (Trained Service technician only) Replace the affected microprocessor (see “Installing the microprocessor” on page 201).

Table 5. IMM2 error 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 4, “Parts listing, System x3250 M4 Type 2583,” on page 141 to determine which components are customer replaceable units (CRU) and which components are field replaceable units (FRU). • If an action step is preceded by “(Trained service technician only),” that step must be performed only by a trained service technician. 			
Memory DIMM disabled for All DIMMs on Memory Subsystem All DIMMs.	Info	DIMM disabled.	<ol style="list-style-type: none"> 1. Make sure the DIMM is installed correctly (see “Installing a memory module” on page 173). 2. If the DIMM was disabled because of a memory fault (memory uncorrectable error or memory logging limit reached), follow the suggested actions for that error event and restart the server. 3. Check the IBM support website for an applicable retain tip or firmware update that applies to this memory event. If no memory fault is recorded in the logs and no DIMM connector error LED is lit, you can re-enable the DIMM through the Setup utility or the Advanced Settings Utility (ASU).

Table 5. IMM2 error 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 4, “Parts listing, System x3250 M4 Type 2583,” on page 141 to determine which components are customer replaceable units (CRU) and which components are field replaceable units (FRU). • If an action step is preceded by “(Trained service technician only),” that step must be performed only by a trained service technician. 			
Memory uncorrectable error detected for DIMM One of the DIMMs on Memory Subsystem One of the DIMMs	Error	A memory uncorrectable error has occurred.	<ol style="list-style-type: none"> 1. Check the IBM support website for an applicable retain tip or firmware update that applies to this memory error. 2. Manually re-enable all affected DIMMs if the server firmware version is older than UEFI v1.10. If the server firmware version is UEFI v1.10 or newer, disconnect and reconnect the server to the power source and restart the server. 3. Swap the affected DIMMs (as indicated by the error LEDs on the system board or the event logs) to a different memory channel or microprocessor (see “Installing a memory module” on page 173 for memory population). 4. If the problem follows the DIMM, replace the failing DIMM (see “Removing a memory module” on page 173 and “Installing a memory module” on page 173). 5. (Trained service technician only) If the problem occurs on the same DIMM connector, check the DIMM connector. If the connector contains any foreign material or is damaged, replace the system board (see “Removing the system board” on page 204 and “Installing the system board” on page 205). 6. (Trained service technician only) Remove the affected microprocessor and check the microprocessor socket pins for any damaged pins. If a damage is found, replace the system board (see “Removing the system board” on page 204 and “Installing the system board” on page 205). 7. (Trained Service technician only) Replace the affected microprocessor (see “Installing the microprocessor” on page 201).
The Drive <i>n</i> Status rebuilt has been in progress. (<i>n</i> = hard disk drive number)	Error	The Drive <i>n</i> has rebuilt in progress. (<i>n</i> = hard disk drive number)	
Numeric sensor Fan <i>n</i> A Tach going low (lower critical) has asserted. (<i>n</i> = fan number)	Error	A lower critical sensor going low has asserted.	<ol style="list-style-type: none"> 1. Reseat the failing fan <i>n</i>, which is indicated by a lit LED near the fan connector on the system board. 2. Replace the failing fan (see “Removing a fan” on page 177) and “Installing a fan” on page 178). (<i>n</i> = fan number)

Table 5. IMM2 error 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 4, “Parts listing, System x3250 M4 Type 2583,” on page 141 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. 			
Numeric sensor Fan <i>n</i> B Tach going low (lower critical) has asserted. (<i>n</i> = fan number)	Error	A lower critical sensor going low has asserted.	<ol style="list-style-type: none"> 1. Reseat the failing fan <i>n</i>, which is indicated by a lit LED near the fan connector on the system board. 2. Replace the failing fan (see “Removing a fan” on page 177) and “Installing a fan” on page 178). (<i>n</i> = fan number)
Fan Zone <i>n</i> has been fully redundant. (<i>n</i> = fan number)	Error	A fan zone has been fully redundant.	
PCI fault has been detected for PCI <i>n</i> . (<i>n</i> = PCI slot number)	Error	A PCI fault has been detected.	<ol style="list-style-type: none"> 1. Check the PCI LED. 2. Reseat the affected adapters and riser card. 3. Update the server firmware (UEFI and IMM2) and adapter firmware. Important: Some cluster solutions require specific code levels or coordinated code updates. If the device is part of a cluster solution, verify that the latest level of code is supported for the cluster solution before you update the code. 4. Remove both adapters. 5. Replace the riser cards. 6. (Trained service technicians only) Replace the system board (see “Removing the system board” on page 204 and “Installing the system board” on page 205).
PCI fault has been detected for One of PCI Error.	Error	A PCI fault has been detected.	<ol style="list-style-type: none"> 1. Check the PCI LED. 2. Reseat the affected adapters and riser cards. 3. Update the server firmware (UEFI and IMM2) and adapter firmware. Important: Some cluster solutions require specific code levels or coordinated code updates. If the device is part of a cluster solution, verify that the latest level of code is supported for the cluster solution before you update the code. 4. Remove both adapters. 5. Replace the riser cards. 6. (Trained service technicians only) Replace the system board (see “Removing the system board” on page 204 and “Installing the system board” on page 205).

Table 5. IMM2 error 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 4, “Parts listing, System x3250 M4 Type 2583,” on page 141 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. 			
PCI fault has been detected for All PCI Error.	Error	A PCI fault has been detected.	<ol style="list-style-type: none"> 1. Check the PCI LED. 2. Reseat the affected adapters and riser cards. 3. Update the server firmware (UEFI and IMM2) and adapter firmware. Important: Some cluster solutions require specific code levels or coordinated code updates. If the device is part of a cluster solution, verify that the latest level of code is supported for the cluster solution before you update the code. 4. Replace the adapters. 5. Replace the riser cards. 6. (Trained service technicians only) Replace the system board (see “Removing the system board” on page 204 and “Installing the system board” on page 205).
A PCI PERR has occurred on system %1. (%1 = CIM_ComputerSystem.ElementName)	Error	A PCI PERR has occurred. (Sensor = PCIs)	<ol style="list-style-type: none"> 1. Check the PCI LED. 2. Reseat the affected adapters and riser cards. 3. Update the server firmware (UEFI and IMM2) and adapter firmware. Important: Some cluster solutions require specific code levels or coordinated code updates. If the device is part of a cluster solution, verify that the latest level of code is supported for the cluster solution before you update the code. 4. Replace the adapters. 5. Replace the riser cards.

Table 5. IMM2 error 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 4, “Parts listing, System x3250 M4 Type 2583,” on page 141 to determine which components are customer replaceable units (CRU) and which components are field replaceable units (FRU). • If an action step is preceded by “(Trained service technician only),” that step must be performed only by a trained service technician. 			
A PCI SERR has occurred on system %1. (%1 = CIM_ComputerSystem.ElementName)	Error	A PCI SERR has occurred. (Sensor = PCIs)	<ol style="list-style-type: none"> 1. Check the PCI LED. 2. Reseat the affected adapters and riser card. 3. Update the server firmware (UEFI and IMM2) and adapter firmware. Important: Some cluster solutions require specific code levels or coordinated code updates. If the device is part of a cluster solution, verify that the latest level of code is supported for the cluster solution before you update the code. 4. Make sure that the adapter is supported. For a list of supported optional devices, see http://www.ibm.com/servers/eserver/serverproven/compat/us/. 5. Replace the adapters. 6. Replace the riser cards.
An Uncorrectable Bus Error has occurred on system %1. (%1 = CIM_ComputerSystem.ElementName)	Error	A bus uncorrectable error has occurred. (Sensor = Critical Int PCI)	<ol style="list-style-type: none"> 1. Check the system-event log. 2. Check the PCI LED. 3. Remove the adapter from the indicated PCI slot. 4. Check for a server firmware update. Important: Some cluster solutions require specific code levels or coordinated code updates. If the device is part of a cluster solution, verify that the latest level of code is supported for the cluster solution before you update the code. 5. (Trained service technician only) Replace the system board (see “Removing the system board” on page 204 and “Installing the system board” on page 205).
The entity of PCI riser has been detected present for PCI <i>n</i> . (<i>n</i> = PCI slot number)	Error	The entity of PCI riser <i>n</i> has been detected present. (<i>n</i> = PCI slot number)	
The entity of PCI riser has been detected absent for PCI <i>n</i> . (<i>n</i> = PCI slot number)	Error	The entity of PCI riser <i>n</i> has been detected absent. (<i>n</i> = PCI slot number)	
Sensor PCI riser <i>n</i> Temp going high (upper non-critical) has asserted. (<i>n</i> = PCI slot number)	Error	An upper non-critical sensor going high has asserted.	<ol style="list-style-type: none"> 1. Reduce the ambient temperature. 2. Check the server airflow. Make sure that nothing is blocking the air from coming into or preventing the air from exiting the server.

Table 5. IMM2 error 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 4, “Parts listing, System x3250 M4 Type 2583,” on page 141 to determine which components are customer replaceable units (CRU) and which components are field replaceable units (FRU). • If an action step is preceded by “(Trained service technician only),” that step must be performed only by a trained service technician. 			
Sensor PCI riser <i>n</i> Temp going high (upper critical) has asserted. (<i>n</i> = PCI slot number)	Error	An upper critical sensor going high has asserted.	<ol style="list-style-type: none"> 1. Reduce the ambient temperature. 2. Check the server airflow. Make sure that nothing is blocking the air from coming into or preventing the air from exiting the server.
Sensor PCI riser <i>n</i> Temp going high (upper non-recoverable) has asserted. (<i>n</i> = PCI slot number)	Error	An upper non-recoverable sensor going high has asserted.	Check the server airflow. Make sure that nothing is blocking the air from coming into or preventing the air from exiting the server.
Numeric sensor Planar 3.3V going high (upper critical) has asserted.	Error	An upper critical sensor going high has asserted.	(Trained service technician only) Replace the system board (see “Removing the system board” on page 204 and “Installing the system board” on page 205).
Numeric sensor Planar 3.3V going low (lower critical) has asserted.	Error	A lower critical sensor going low has asserted.	(Trained service technician only) Replace the system board (see “Removing the system board” on page 204 and “Installing the system board” on page 205).
Numeric sensor Planar 5V going high (upper critical) has asserted.	Error	An upper critical sensor going high has asserted.	(Trained service technician only) Replace the system board (see “Removing the system board” on page 204 and “Installing the system board” on page 205).
Numeric sensor Planar 5V going low (lower critical) has asserted.	Error	A lower critical sensor going low has asserted.	(Trained service technician only) Replace the system board (see “Removing the system board” on page 204 and “Installing the system board” on page 205).
Numeric sensor Planar 12V going high (upper critical) has asserted.	Error	An upper critical sensor going high has asserted.	Check the PCI LED error has been recorded in the IMM2 event log.
Numeric sensor Planar 12V going low (lower critical) has asserted.	Error	A lower critical sensor going low has asserted.	Check the OVER SPEC LED error has been recorded in the IMM2 event log.
Sensor Planar Fault has transitioned to an acceptable state.	Error	A sensor has changed to acceptable state.	

Table 5. IMM2 error 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 4, “Parts listing, System x3250 M4 Type 2583,” on page 141 to determine which components are customer replaceable units (CRU) and which components are field replaceable units (FRU). • If an action step is preceded by “(Trained service technician only),” that step must be performed only by a trained service technician. 			
Sensor Planar Fault has transitioned to critical from a less severe state.	Error	A sensor has changed to Critical state from a less severe state.	<ol style="list-style-type: none"> 1. Check the system-event log. 2. Check for an error LED on the system board. 3. Replace any failing device. 4. Check for a server firmware update. Important: Some cluster solutions require specific code levels or coordinated code updates. If the device is part of a cluster solution, verify that the latest level of code is supported for the cluster solution before you update the code. 5. (Trained service technician only) Replace the system board (see “Removing the system board” on page 204 and “Installing the system board” on page 205).
Numeric sensor Planar VBAT going low (lower non-critical) has asserted.	Error	A lower critical sensor going low has asserted.	
Numeric sensor Planar VBAT going low (lower critical) has asserted.	Error	A lower critical sensor going low has asserted.	Replace the CMOS battery (see “Removing the system battery” on page 179 and “Installing the system battery” on page 181).
The Front USB cable has been connected.		An interconnect has been connected.	
The Front USB connector System board has encountered a configuration error.	Error	An interconnect configuration error has occurred.	Reseat the front USB cable on the system board.
The Front Video connector System board has encountered a configuration error.	Error	An interconnect configuration error has occurred.	Reseat the front video cable on the system board.
DASD Backplane <i>n</i> entity has been Present. (<i>n</i> = backplane number)		DASD Backplane <i>n</i> entity has been detected present. (<i>n</i> = backplane number)	
DASD Backplane <i>n</i> entity has been Absent. (<i>n</i> = backplane number)		DASD Backplane <i>n</i> entity has been detected absent. (<i>n</i> = backplane number)	
Front panel entity has been Present.		A front panel entity has been detected present.	
Front panel entity has been Absent.		A front panel entity has been detected absent.	

Table 5. IMM2 error 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 4, “Parts listing, System x3250 M4 Type 2583,” on page 141 to determine which components are customer replaceable units (CRU) and which components are field replaceable units (FRU). • If an action step is preceded by “(Trained service technician only),” that step must be performed only by a trained service technician. 			
A front panel NMI has occurred on system %1. (%1 = CIM_ComputerSystem.ElementName)	Error	A front panel NMI has occurred.	
A software NMI has occurred on system %1. (%1 = CIM_ComputerSystem.ElementName)	Error	A software NMI has occurred.	<ol style="list-style-type: none"> 1. Check the device driver. 2. Reinstall the device driver. 3. Update all device drives to the latest level. 4. Update the firmware (UEFI and IMM2) (see “Updating the firmware” on page 207).
The System %1 encountered a POST Error. (%1 = CIM_ComputerSystem.ElementName)	Error	A POST error has occurred. (Sensor = ABR Status)	<ol style="list-style-type: none"> 1. Make sure the server meets the minimum configuration to start (see “Features and specifications” on page 7). 2. Recover the server firmware from the backup page: <ol style="list-style-type: none"> a. Restart the server. b. At the prompt, press F3 to recover the firmware. 3. Update the server firmware to the latest level (see “Updating the firmware” on page 207). Important: Some cluster solutions require specific code levels or coordinated code updates. If the device is part of a cluster solution, verify that the latest level of code is supported for the cluster solution before you update the code. 4. Remove components one at a time, restarting the server each time, to see if the problem goes away. 5. If the problem remains, (trained service technician) replace the system board.

Table 5. IMM2 error 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 4, “Parts listing, System x3250 M4 Type 2583,” on page 141 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. 			
The System %1 encountered a POST Error. (%1 = CIM_ComputerSystem.ElementName)	Error	A POST error has occurred. (Sensor = Firmware Error)	<ol style="list-style-type: none"> 1. Make sure the server meets the minimum configuration to start (see “Features and specifications” on page 7). 2. Update the server firmware on the primary page. Important: Some cluster solutions require specific code levels or coordinated code updates. If the device is part of a cluster solution, verify that the latest level of code is supported for the cluster solution before you update the code. 3. (Trained service technician only) Replace the system board.
The System %1 encountered a POST Hang. (%1 = CIM_ComputerSystem.ElementName)	Error	A POST has not responded. (Sensor = Firmware Error)	<ol style="list-style-type: none"> 1. Make sure the server meets the minimum configuration to start (see “Features and specifications” on page 7). 2. Update the server firmware on the primary page. Important: Some cluster solutions require specific code levels or coordinated code updates. If the device is part of a cluster solution, verify that the latest level of code is supported for the cluster solution before you update the code. 3. (Trained service technician only) Replace the system board.
OS RealTime Mod state has not been asserted.		OS RealTime Mod state has not been asserted.	
Sensor Sys Board Fault has transitioned to critical.	Error	A sensor has changed to Critical state.	<ol style="list-style-type: none"> 1. Check the system-event log. 2. Check for an error LED on the system board. 3. Replace any failing device. 4. Check for a server firmware update. Important: Some cluster solutions require specific code levels or coordinated code updates. If the device is part of a cluster solution, verify that the latest level of code is supported for the cluster solution before you update the code. 5. (Trained service technician only) Replace the system board.

Table 5. IMM2 error 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 4, “Parts listing, System x3250 M4 Type 2583,” on page 141 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. 			
The Power Supply (Power Supply <i>n</i>) presence has been detected. (<i>n</i> = power supply number)	Error	Power supply <i>n</i> presence has been detected. (<i>n</i> = power supply number)	
The Power Supply (Power Supply <i>n</i>) has Failed. (<i>n</i> = power supply number)	Error	Power supply <i>n</i> has failed. (<i>n</i> = power supply number)	<ol style="list-style-type: none"> 1. Reseat power supply <i>n</i>. 2. If the power-on LED is not lit and the power-supply error LED is lit, replace power supply <i>n</i>. 3. If both the power-on LED and the power-supply error LED are not lit, see “Power problems” on page 91 for more information. (<i>n</i> = power supply number)
The Power Supply (Power Supply <i>n</i>) AC has Lost. (<i>n</i> = power supply number)	Error	Power supply <i>n</i> AC has lost. (<i>n</i> = power supply number)	<ol style="list-style-type: none"> 1. Check power supply <i>n</i> LED. 2. See “Features and specifications” on page 7 for more information. (<i>n</i> = power supply number)
Sensor PS <i>n</i> Fan Fault has transitioned to acceptable state. (<i>n</i> = power supply number)	Error	A sensor has changed to acceptable state.	
Sensor PS <i>n</i> Fan Fault has transitioned to critical from a less severe state. (<i>n</i> = power supply number)	Error	A sensor has changed to Critical state from a less severe state.	<ol style="list-style-type: none"> 1. Make sure that there are no obstructions, such as bundled cables, to the airflow from the power-supply fan. 2. Replace power supply <i>n</i>. (<i>n</i> = power supply number)
Sensor PS <i>n</i> Therm Fault has transitioned to acceptable severe state. (<i>n</i> = power supply number)	Error	A sensor has changed to acceptable state.	
Sensor PS <i>n</i> Therm Fault has transitioned to critical from a less severe state. (<i>n</i> = power supply number)	Error	A sensor has changed to Critical state from a less severe state.	<ol style="list-style-type: none"> 1. Make sure that there are no obstructions, such as bundled cables, to the airflow from the power-supply fan. 2. Replace power supply <i>n</i>. (<i>n</i> = power supply number)
Sensor PS <i>n</i> 12V AUX Fault has transitioned to acceptable severe state. (<i>n</i> = power supply number)	Error	A sensor has changed to acceptable state.	

Table 5. IMM2 error 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 4, “Parts listing, System x3250 M4 Type 2583,” on page 141 to determine which components are customer replaceable units (CRU) and which components are field replaceable units (FRU). • If an action step is preceded by “(Trained service technician only),” that step must be performed only by a trained service technician. 			
Sensor PS <i>n</i> 12V AUX Fault has transitioned to critical from a less severe state. (<i>n</i> = power supply number)	Error	A sensor has changed to Critical state from a less severe state.	1. Check power supply <i>n</i> LED. 2. Replace power supply <i>n</i> . (<i>n</i> = power supply number)
Sensor PS <i>n</i> 12V OC Fault has transitioned to acceptable severe state. (<i>n</i> = power supply number)	Error	A sensor has changed to acceptable state.	
Sensor PS <i>n</i> 12V OC Fault has transitioned to critical from a less severe state. (<i>n</i> = power supply number)	Error	A sensor has changed to Critical state from a less severe state.	Check the OVER SPEC LED error has been recorded in the IMM2 event log (see “Power problems” on page 91 for more information).
Sensor PS <i>n</i> 12V OV Fault has transitioned to acceptable severe state. (<i>n</i> = power supply number)	Error	A sensor has changed to acceptable state.	
Sensor PS <i>n</i> 12V OV Fault has transitioned to critical from a less severe state. (<i>n</i> = power supply number)	Error	A sensor has changed to Critical state from a less severe state.	1. Check power supply <i>n</i> LED. 2. Remove the failing power supply. 3. (Trained service technician only) Replace the system board. (<i>n</i> = power supply number)
Sensor PS <i>n</i> 12V UV Fault has transitioned to acceptable severe state. (<i>n</i> = power supply number)	Error	A sensor has changed to acceptable state.	
Sensor PS <i>n</i> 12V UV Fault has transitioned to critical from a less severe state. (<i>n</i> = power supply number)	Error	A sensor has changed to Critical state from a less severe state.	1. Check power supply <i>n</i> LED. 2. Remove the failing power supply. 3. (Trained service technician only) Replace the system board. (<i>n</i> = power supply number)
Power Unit has been fully redundant.	Error	Power unit has been fully redundant.	
Power Unit redundancy has been reduced.	Error	Redundancy has been lost and is insufficient to continue operation.	1. Check the LEDs for both power supplies. 2. Follow the actions in “Features and specifications” on page 7.

Table 5. IMM2 error 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 4, “Parts listing, System x3250 M4 Type 2583,” on page 141 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. 			
The System %1 encountered a POST Progress. (%1 = CIM_ComputerSystem.ElementName)	Error	A POST progress has been detected. (Sensor = Progress)	
Power supply PS Configuration error.	Error	A power supply configuration error has occurred.	
Power supply PS Configuration rating mismatch.	Error	A power supply rating mismatch occurred.	Insert power supplies with the same rating.
Mezz Error has been detected.	Error	A dual-port network adapter fault has been detected.	
IMM2 FW Failover has been detected.	Error	Fru failure has been detected. .	<ol style="list-style-type: none"> 1. Make sure the server meets the minimum configuration to start (see “Features and specifications” on page 7). 2. Recover the server firmware from the backup page: <ol style="list-style-type: none"> a. Restart the server. b. At the prompt, press F3 to recover the firmware. 3. Update the server firmware to the latest level (see “Updating the firmware” on page 207). Important: Some cluster solutions require specific code levels or coordinated code updates. If the device is part of a cluster solution, verify that the latest level of code is supported for the cluster solution before you update the code. 4. Remove components one at a time, restarting the server each time, to see if the problem goes away. 5. If the problem remains, (trained service technician) replace the system board.

Table 5. IMM2 error 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 4, “Parts listing, System x3250 M4 Type 2583,” on page 141 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. 			
Certificate Authority %1 has detected a %2 Certificate Error. (%1 = IBM_CertificateAuthority.CADistinguishedName; %2 = CIM_PublicKeyCertificate.ElementName)	Error	A problem has occurred with the SSL Server, SSL Client, or SSL Trusted CA certificate that has been imported into the IMM2. The imported certificate must contain a public key that corresponds to the key pair that was previously generated by the Generate a New Key and Certificate Signing Request link.	<ol style="list-style-type: none"> 1. Make sure that the certificate that you are importing is correct. 2. Try importing the certificate again.
Ethernet Data Rate modified from %1 to %2 by user %3. (%1 = CIM_EthernetPort.Speed; %2 = CIM_EthernetPort.Speed; %3 = user ID)	Info	A user has modified the Ethernet port data rate.	No action; information only.
Ethernet Duplex setting modified from %1 to %2 by user %3. (%1 = CIM_EthernetPort.FullDuplex; %2 = CIM_EthernetPort.FullDuplex; %3 = user ID)	Info	A user has modified the Ethernet port duplex setting.	No action; information only.
Ethernet MTU setting modified from %1 to %2 by user %3. (%1 = CIM_EthernetPort.ActiveMaximumTransmissionUnit; %2 = CIM_EthernetPort.ActiveMaximumTransmissionUnit; %3 = user ID)	Info	A user has modified the Ethernet port MTU setting.	No action; information only.
Ethernet Duplex setting modified from %1 to %2 by user %3. (%1 = CIM_EthernetPort.NetworkAddresses; %2 = CIM_EthernetPort.NetworkAddresses; %3 = user ID)	Info	A user has modified the Ethernet port MAC address setting.	No action; information only.

Table 5. IMM2 error 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 4, “Parts listing, System x3250 M4 Type 2583,” on page 141 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. 			
Ethernet interface %1 by user %2. (%1 = CIM_EthernetPort.EnabledState; %2 = user ID)	Info	A user has enabled or disabled the Ethernet interface.	No action; information only.
Hostname set to %1 by user %2. (%1 = CIM_DNSProtocolEndpoint.Hostname; %2 = user ID)	Info	A user has modified the host name of the IMM2.	No action; information only.
IP address of network interface modified from %1 to %2 by user %3. (%1 = CIM_IPProtocolEndpoint.IPv4Address; %2 = CIM_StaticIPAssignmentSettingData.IPAddress; %3 = user ID)	Info	A user has modified the IP address of the IMM2.	No action; information only.
IP subnet mask of network interface modified from %1 to %2 by user %3s. (%1 = CIM_IPProtocolEndpoint.SubnetMask; %2 = CIM_StaticIPAssignmentSettingData.SubnetMask; %3 = user ID)	Info	A user has modified the IP subnet mask of the IMM2.	No action; information only.
IP address of default gateway modified from %1 to %2 by user %3s. (%1 = CIM_IPProtocolEndpoint.GatewayIPv4Address; %2 = CIM_StaticIPAssignmentSettingData.DefaultGatewayAddress; %3 = user ID)	Info	A user has modified the default gateway IP address of the IMM2.	No action; information only.
OS Watchdog response %1 by %2. (%1 = Enabled or Disabled; %2 = user ID)	Info	A user has enabled or disabled an OS Watchdog.	No action; information only.

Table 5. IMM2 error 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 4, “Parts listing, System x3250 M4 Type 2583,” on page 141 to determine which components are customer replaceable units (CRU) and which components are field replaceable units (FRU). If an action step is preceded by “(Trained service technician only),” that step must be performed only by a trained service technician. 			
DHCP[%1] failure, no IP address assigned. (%1 = IP address, xxx.xxx.xxx.xxx)	Info	A DHCP server has failed to assign an IP address to the IMM2.	<ol style="list-style-type: none"> Make sure that the network cable is connected. Make sure that there is a DHCP server on the network that can assign an IP address to the IMM2.
Remote Login Successful. Login ID: %1 from %2 at IP address %3. (%1 = user ID; %2 = ValueMap(CIM_Protocol Endpoint. ProtocolIFType; %3 = IP address, xxx.xxx.xxx.xxx)	Info	A user has successfully logged in to the IMM2.	No action; information only.
Attempting to %1 server %2 by user %3. (%1 = Power Up, Power Down, Power Cycle, or Reset; %2 = IBM_ComputerSystem.ElementName; %3 = user ID)	Info	A user has used the IMM2 to perform a power function on the server.	No action; information only.
Security: Userid: '%1' had %2 login failures from WEB client at IP address %3. (%1 = user ID; %2 = MaximumSuccessive LoginFailures (currently set to 5 in the firmware); %3 = IP address, xxx.xxx.xxx.xxx)	Error	A user has exceeded the maximum number of unsuccessful login attempts from a web browser and has been prevented from logging in for the lockout period.	<ol style="list-style-type: none"> Make sure that the correct login ID and password are being used. Have the system administrator reset the login ID or password.
Security: Login ID: '%1' had %2 login failures from CLI at %3. (%1 = user ID; %2 = MaximumSuccessive LoginFailures (currently set to 5 in the firmware); %3 = IP address, xxx.xxx.xxx.xxx)	Error	A user has exceeded the maximum number of unsuccessful login attempts from the command-line interface and has been prevented from logging in for the lockout period.	<ol style="list-style-type: none"> Make sure that the correct login ID and password are being used. Have the system administrator reset the login ID or password.
Remote access attempt failed. Invalid userid or password received. Userid is '%1' from WEB browser at IP address %2. (%1 = user ID; %2 = IP address, xxx.xxx.xxx.xxx)	Error	A user has attempted to log in from a web browser by using an invalid login ID or password.	<ol style="list-style-type: none"> Make sure that the correct login ID and password are being used. Have the system administrator reset the login ID or password.

Table 5. IMM2 error 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 4, “Parts listing, System x3250 M4 Type 2583,” on page 141 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. 			
Remote access attempt failed. Invalid userid or password received. Userid is '%1' from TELNET client at IP address %2. (%1 = user ID; %2 = IP address, xxx.xxx.xxx.xxx)	Error	A user has attempted to log in from a Telnet session by using an invalid login ID or password.	<ol style="list-style-type: none"> 1. Make sure that the correct login ID and password are being used. 2. Have the system administrator reset the login ID or password.
The Chassis Event Log (CEL) on system %1 cleared by user %2. (%1 = CIM_ComputerSystem.ElementName; %2 = user ID)	Info	A user has cleared the IMM2 event log.	No action; information only.
IMM2 reset was initiated by user %1. (%1 = user ID)	Info	A user has initiated a reset of the IMM2.	No action; information only.
ENET[0] DHCP-HSTN=%1, DN=%2, IP@=%3, SN=%4, GW@=%5, DNS1@=%6. (%1 = CIM_DNSProtocolEndpoint.Hostname; %2 = CIM_DNSProtocolEndpoint.DomainName; %3 = CIM_IPProtocolEndpoint.IPv4Address; %4 = CIM_IPProtocolEndpoint.SubnetMask; %5 = IP address, xxx.xxx.xxx.xxx; %6 = IP address, xxx.xxx.xxx.xxx)	Info	The DHCP server has assigned an IMM2 IP address and configuration.	No action; information only.
ENET[0] IP-Cfg:HstName=%1, IP@ %2, NetMsk=%3, GW@=%4. (%1 = CIM_DNSProtocolEndpoint.Hostname; %2 = CIM_StaticIPSettingData.IPv4Address; %3 = CIM_StaticIPSettingData.SubnetMask; %4 = CIM_StaticIPSettingData.DefaultGatewayAddress)	Info	An IMM2 IP address and configuration have been assigned using client data.	No action; information only.

Table 5. IMM2 error 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 4, “Parts listing, System x3250 M4 Type 2583,” on page 141 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. 			
LAN: Ethernet[0] interface is no longer active.	Info	The IMM2 Ethernet interface has been disabled.	No action; information only.
LAN: Ethernet[0] interface is now active.	Info	The IMM2 Ethernet interface has been enabled.	No action; information only.
DHCP setting changed to by user %1. (%1 = user ID)	Info	A user has changed the DHCP mode.	No action; information only.
IMM2: Configuration %1 restored from a configuration file by user %2. (%1 = CIM_ConfigurationData.ConfigurationName; %2 = user ID)	Info	A user has restored the IMM2 configuration by importing a configuration file.	No action; information only.
Watchdog %1 Screen Capture Occurred. (%1 = OS Watchdog or Loader Watchdog)	Error	An operating-system error has occurred, and the screen capture was successful.	<ol style="list-style-type: none"> 1. Reconfigure the watchdog timer to a higher value. 2. Make sure that the IMM2 Ethernet over USB interface is enabled. 3. Reinstall the RNDIS or cdc_ether device driver for the operating system. 4. Disable the watchdog. 5. Check the integrity of the installed operating system.
Watchdog %1 Failed to Capture Screen. (%1 = OS Watchdog or Loader Watchdog)	Error	An operating-system error has occurred, and the screen capture failed.	<ol style="list-style-type: none"> 1. Reconfigure the watchdog timer to a higher value. 2. Make sure that the IMM2 Ethernet over USB interface is enabled. 3. Reinstall the RNDIS or cdc_ether device driver for the operating system. 4. Disable the watchdog. 5. Check the integrity of the installed operating system. 6. Update the IMM2 firmware. Important: Some cluster solutions require specific code levels or coordinated code updates. If the device is part of a cluster solution, verify that the latest level of code is supported for the cluster solution before you update the code.

Table 5. IMM2 error 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 4, “Parts listing, System x3250 M4 Type 2583,” on page 141 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. 			
Running the backup IMM2 main application.	Error	The IMM2 has resorted to running the backup main application.	Update the IMM2 firmware. Important: Some cluster solutions require specific code levels or coordinated code updates. If the device is part of a cluster solution, verify that the latest level of code is supported for the cluster solution before you update the code.
Please ensure that the IMM2 is flashed with the correct firmware. The IMM2 is unable to match its firmware to the server.	Error	The server does not support the installed IMM2 firmware version.	Update the IMM2 firmware to a version that the server supports. Important: Some cluster solutions require specific code levels or coordinated code updates. If the device is part of a cluster solution, verify that the latest level of code is supported for the cluster solution before you update the code.
IMM2 reset was caused by restoring default values.	Info	The IMM2 has been reset because a user has restored the configuration to its default settings.	No action; information only.
IMM2 clock has been set from NTP server %1. (%1 = IBM_NTPTService.ElementName)	Info	The IMM2 clock has been set to the date and time that is provided by the Network Time Protocol server.	No action; information only.
SSL data in the IMM2 configuration data is invalid. Clearing configuration data region and disabling SSL+H25.	Error	There is a problem with the certificate that has been imported into the IMM2. The imported certificate must contain a public key that corresponds to the key pair that was previously generated through the Generate a New Key and Certificate Signing Request link.	<ol style="list-style-type: none"> 1. Make sure that the certificate that you are importing is correct. 2. Try to import the certificate again.

Table 5. IMM2 error 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 4, “Parts listing, System x3250 M4 Type 2583,” on page 141 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. 			
Flash of %1 from %2 succeeded for user %3. (%1 = CIM_ManagedElement.ElementName; %2 = Web or LegacyCLI; %3 = user ID)	Info	A user has successfully updated one of the following firmware components: <ul style="list-style-type: none"> • IMM2 main application • IMM2 boot ROM • Server firmware (UEFI) • Diagnostics • System power backplane • Remote expansion enclosure power backplane • Integrated service processor • Remote expansion enclosure processor 	No action; information only.
Flash of %1 from %2 failed for user %3. (%1 = CIM_ManagedElement.ElementName; %2 = Web or LegacyCLI; %3 = user ID)	Info	An attempt to update a firmware component from the interface and IP address has failed.	Try to update the firmware again.
The Chassis Event Log (CEL) on system %1 is 75% full. (%1 = CIM_ComputerSystem.ElementName)	Info	The IMM2 event log is 75% full. When the log is full, older log entries are replaced by newer ones.	To avoid losing older log entries, save the log as a text file and clear the log.
The Chassis Event Log (CEL) on system %1 is 100% full. (%1 = CIM_ComputerSystem.ElementName)	Info	The IMM2 event log is full. When the log is full, older log entries are replaced by newer ones.	To avoid losing older log entries, save the log as a text file and clear the log.

Table 5. IMM2 error 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 4, “Parts listing, System x3250 M4 Type 2583,” on page 141 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. 			
%1 Platform Watchdog Timer expired for %2. (%1 = OS Watchdog or Loader Watchdog; %2 = OS Watchdog or Loader Watchdog)	Error	A Platform Watchdog Timer Expired event has occurred.	<ol style="list-style-type: none"> 1. Reconfigure the watchdog timer to a higher value. 2. Make sure that the IMM2 Ethernet over USB interface is enabled. 3. Reinstall the RNDIS or cdc_ether device driver for the operating system. 4. Disable the watchdog. 5. Check the integrity of the installed operating system.
IMM2 Test Alert Generated by %1. (%1 = user ID)	Info	A user has generated a test alert from the IMM2.	No action; information only.
Security: Userid: '%1' had %2 login failures from an SSH client at IP address %3. (%1 = user ID; %2 = MaximumSuccessive LoginFailures (currently set to 5 in the firmware); %3 = IP address, xxx.xxx.xxx.xxx)	Error	A user has exceeded the maximum number of unsuccessful login attempts from SSH and has been prevented from logging in for the lockout period.	<ol style="list-style-type: none"> 1. Make sure that the correct login ID and password are being used. 2. Have the system administrator reset the login ID or password.

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 system-board LEDs indicate a microprocessor error, the error might be in the microprocessor or in the

microprocessor socket. See “Microprocessor problems” on page 86 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 sharing 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 “Event logs” on page 22. If the server is halted and no error message is displayed, see “Troubleshooting tables” on page 80 and “Solving undetermined problems” on page 137.
- For information about power-supply problems, see “Solving power problems” on page 136.
- For intermittent problems, check the error log; see “Event logs” on page 22 and “IBM Dynamic System Analysis” on page 100.

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. Check the power supply LEDs (see “Power-supply LEDs” on page 97).
 - b. Turn off the server and all external devices.
 - c. Check all internal and external devices for compatibility at <http://www.ibm.com/servers/eserver/serverproven/compat/us/>.
 - d. Check all cables and power cords.
 - e. Set all display controls to the middle positions.
 - f. Turn on all external devices.
 - g. Turn on the server. If the server does not start, see “Troubleshooting tables” on page 80.
 - h. 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 18).
 - i. Check for the following results:
 - Successful completion of POST (see “POST” on page 24 for more information)
 - Successful completion of startup

Troubleshooting tables

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

If you cannot find a problem in these tables, see “IBM Dynamic System Analysis” on page 100 for information about testing the server.

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

1. Check the system-error LED on the operator information panel; if it is lit, check the system-board LEDs (see “System-board LEDs” on page 18).
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.

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 4, “Parts listing, System x3250 M4 Type 2583,” on page 141 to determine which components are customer replaceable units (CRU) and which components are field replaceable units (FRU).• If an action step is preceded by “(Trained service technician only),” that step must be performed only by a Trained service technician.• Go to the IBM support website at http://www.ibm.com/supportportal/ to check for technical information, hints, tips, and new device drivers or to submit a request for information.	
Symptom	Action
A cover latch 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 4, “Parts listing, System x3250 M4 Type 2583,” on page 141 to determine which components are customer replaceable units (CRU) and which components are field replaceable units (FRU).• If an action step is preceded by “(Trained service technician only),” that step must be performed only by a Trained service technician.• Go to the IBM support website at http://www.ibm.com/supportportal/ to check for technical information, hints, tips, and new device drivers or to submit a request for information.	
Symptom	Action
A hard disk drive has failed, and the associated amber hard disk drive status LED is lit. (Hot-swap hard disk drives)	<ol style="list-style-type: none">1. Re-configure the integrated SAS/SATA controller with RAID capabilities and the devices that are attached to it. For information, see “Using the LSI Configuration Utility program” on page 222.2. Run the DSA disk drive test (see “IBM Dynamic System Analysis” on page 100).3. If the drive fails the test, replace the drive.

- Follow the suggested actions in the order in which they are listed in the Action column until the problem is solved.
- See Chapter 4, “Parts listing, System x3250 M4 Type 2583,” on page 141 to determine which components are customer replaceable units (CRU) and which components are field replaceable units (FRU).
- If an action step is preceded by “(Trained service technician only),” that step must be performed only by a Trained service technician.
- Go to the IBM support website at <http://www.ibm.com/supportportal/> to check for technical information, hints, tips, and new device drivers or to submit a request for information.

Symptom	Action
A newly installed hard disk drive is not recognized.	<ol style="list-style-type: none"> 1. Observe the associated amber hard disk drive status LED. If the LED is lit, it indicates a drive fault. 2. If the LED is lit, remove the drive from the bay, wait 45 seconds, and reinsert the drive, making sure that the drive assembly connects to the hard disk drive backplane. 3. Observe the associated green hard disk drive activity LED and the amber status LED: <ul style="list-style-type: none"> • If the green activity LED is flashing and the amber status LED is not lit, the drive is recognized by the controller and is working correctly. Run the DSA hard disk drive test to determine whether the drive is detected. • If the green activity LED is flashing and the amber status LED is flashing slowly, the drive is recognized by the controller and is rebuilding. • If neither LED is lit or flashing, check the hard disk drive backplane (go to step 4). • If the green activity LED is flashing and the amber status LED is lit, replace the drive. If the activity of the LEDs remains the same, go to step 4. If the activity of the LEDs changes, return to step 1. 4. Make sure that the hard disk drive backplane is correctly seated. When it is correctly seated, the drive assemblies correctly connect to the backplane without bowing or causing movement of the backplane. 5. Reseat the backplane power cable and repeat steps 1 through 3. 6. Reseat the backplane signal cable and repeat steps 1 through 3. 7. Reseat the backplane configuration cable and repeat steps 1 through 3. 8. Suspect the backplane signal cable or the backplane: <ul style="list-style-type: none"> • Replace the affected backplane signal cable. • Replace the affected backplane. 9. Run the DSA tests for the SAS/SATA adapter and hard disk drives (see “IBM Dynamic System Analysis” on page 100). <ul style="list-style-type: none"> • If the adapter passes the test but the drives are not recognized, replace the backplane signal cable and run the tests again. • Replace the backplane. • If the adapter fails the test, disconnect the backplane signal cable from the adapter and run the tests again. • If the adapter fails the test, replace the adapter. 10. See “Problem determination tips” on page 138.
Multiple hard disk drives fail.	<p>Make sure that the hard disk drive, SAS/SATA RAID adapter, and server device drivers and firmware are at the latest level.</p> <p>Important: Some cluster solutions require specific code levels or coordinated code updates. If the device is part of a cluster solution, verify that the latest level of code is supported for the cluster solution before you update the code.</p>

<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 4, “Parts listing, System x3250 M4 Type 2583,” on page 141 to determine which components are customer replaceable units (CRU) and which components are field replaceable units (FRU). If an action step is preceded by “(Trained service technician only),” that step must be performed only by a Trained service technician. Go to the IBM support website at http://www.ibm.com/supportportal/ to check for technical information, hints, tips, and new device drivers or to submit a request for information. 	
Symptom	Action
Multiple hard disk drives are offline.	<ol style="list-style-type: none"> Review the storage subsystem logs for indications of problems within the storage subsystem, such as backplane or cable problems. See “Problem determination tips” on page 138.
A replacement hard disk drive does not rebuild.	<ol style="list-style-type: none"> Make sure that the hard disk drive is recognized by the adapter (the green hard disk drive activity LED is flashing). Review the SAS/SATA RAID adapter documentation to determine the correct configuration parameters and settings.
A green hard disk drive activity LED does not accurately represent the actual state of the associated drive. (Hot-swap hard disk drives)	<ol style="list-style-type: none"> If the green hard disk drive activity LED does not flash when the drive is in use, run the DSA disk drive test (see “IBM Dynamic System Analysis” on page 100). Use one of the following procedures: <ul style="list-style-type: none"> If the drive passes the test, replace the backplane. If the drive fails the test, replace the drive.
An amber hard disk drive status LED does not accurately represent the actual state of the associated drive. (Hot-swap hard disk drives)	<ol style="list-style-type: none"> If the amber hard disk drive LED and the RAID adapter software do not indicate the same status for the drive, complete the following steps: <ol style="list-style-type: none"> Turn off the server. Reseat the SAS/SATA adapter. Reseat the backplane configuration cable, signal cable, and backplane power cable. Reseat the hard disk drive. Turn on the server and observe the activity of the hard disk drive LEDs. See “Problem determination tips” on page 138.

Intermittent 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 4, “Parts listing, System x3250 M4 Type 2583,” on page 141 to determine which components are customer replaceable units (CRU) and which components are field replaceable units (FRU). If an action step is preceded by “(Trained service technician only),” that step must be performed only by a Trained service technician. Go to the IBM support website at http://www.ibm.com/supportportal/ to check for technical information, hints, tips, and new device drivers or to submit a request for information. 	
Symptom	Action
A problem occurs only occasionally and is difficult to diagnose.	<ol style="list-style-type: none"> 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. Check the system-error log or IMM2 event log (see “Event logs” on page 22).

<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 4, “Parts listing, System x3250 M4 Type 2583,” on page 141 to determine which components are customer replaceable units (CRU) and which components are field replaceable units (FRU). If an action step is preceded by “(Trained service technician only),” that step must be performed only by a Trained service technician. Go to the IBM support website at http://www.ibm.com/supportportal/ to check for technical information, hints, tips, and new device drivers or to submit a request for information. 	
Symptom	Action
The server resets (restarts) occasionally.	<ol style="list-style-type: none"> If the reset occurs during POST and the POST watchdog timer is enabled (click System Settings → Integrated Management Module → POST Watchdog Timer in the Setup utility to see the POST watchdog setting), make sure that sufficient time is allowed in the watchdog timeout value (POST Watchdog Timer). If the server continues to reset during POST, see “POST” on page 24 and “IBM Dynamic System Analysis” on page 100. If the reset occurs after the operating system starts, disable any automatic server restart (ASR) utilities, such as the IBM Automatic Server Restart IPMI Application for Windows, or any ASR devices that are be installed. Note: ASR utilities operate as operating-system utilities and are related to the IPMI device driver. If the reset continues to occur after the operating system starts, the operating system might have a problem; see “Software problems” on page 94. If neither condition applies, check the system-event log or IMM2 event log (see “Event logs” on page 22).

Keyboard, mouse, or pointing-device 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 4, “Parts listing, System x3250 M4 Type 2583,” on page 141 to determine which components are customer replaceable units (CRU) and which components are field replaceable units (FRU). If an action step is preceded by “(Trained service technician only),” that step must be performed only by a Trained service technician. Go to the IBM support website at http://www.ibm.com/supportportal/ to check for technical information, hints, tips, and new device drivers or to submit a request for information. 	
Symptom	Action
All or some keys on the keyboard do not work.	<ol style="list-style-type: none"> Make sure that the keyboard cable is securely connected. If you are using a USB keyboard and it is connected to a USB hub, disconnect the keyboard from the hub and connect it directly to the server. Replace the following components one at a time, in the order shown, restarting the server each time: <ol style="list-style-type: none"> Keyboard (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 4, “Parts listing, System x3250 M4 Type 2583,” on page 141 to determine which components are customer replaceable units (CRU) and which components are field replaceable units (FRU).
- If an action step is preceded by “(Trained service technician only),” that step must be performed only by a Trained service technician.
- Go to the IBM support website at <http://www.ibm.com/supportportal/> to check for technical information, hints, tips, and new device drivers or to submit a request for information.

Symptom	Action
The mouse or pointing device does not work.	<ol style="list-style-type: none"> 1. Make sure that: <ul style="list-style-type: none"> • The mouse or pointing-device cable is securely connected to the server. • The mouse or pointing-device device drivers are installed correctly. • The server and the monitor are turned on. • The mouse option is enabled in the Setup utility. 2. If you are using a USB mouse or pointing device and it is connected to a USB hub, disconnect the mouse or pointing device from the hub and connect it directly to the server. 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. (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 4, “Parts listing, System x3250 M4 Type 2583,” on page 141 to determine which components are customer replaceable units (CRU) and which components are field replaceable units (FRU).
- If an action step is preceded by “(Trained service technician only),” that step must be performed only by a Trained service technician.
- Go to the IBM support website at <http://www.ibm.com/supportportal/> to check for technical information, hints, tips, and new device drivers or to submit a request for information.

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 POST error log: <ul style="list-style-type: none"> • If a DIMM was disabled by a systems-management interrupt (SMI), replace the DIMM. 3. Run memory diagnostics (see “IBM Dynamic System Analysis” on page 100). 4. Make sure that there is no memory mismatch when the server is at the minimum memory configuration. 5. Add one pair of DIMMs at a time, making sure that the DIMMs in each pair match. 6. Reseat the DIMM. 7. 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) Replace the system board
Multiple rows of DIMMs in a branch are identified as failing.	<ol style="list-style-type: none"> 1. Reseat the DIMMs; then, restart the server. 2. Replace the failing DIMM. 3. (Trained service technician only) Replace the 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 4, “Parts listing, System x3250 M4 Type 2583,” on page 141 to determine which components are customer replaceable units (CRU) and which components are field replaceable units (FRU).
- If an action step is preceded by “(Trained service technician only),” that step must be performed only by a Trained service technician.
- Go to the IBM support website at <http://www.ibm.com/supportportal/> to check for technical information, hints, tips, and new device drivers or to submit a request for information.

Symptom	Action
A microprocessor LED is lit during POST, indicating that the microprocessor is not working correctly.	<ol style="list-style-type: none">1. Make sure that the server supports the microprocessor.2. (Trained service technician only) Make sure that the microprocessor is seated correctly.3. (Trained the service technician only) Reseat the microprocessor.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. (Trained service technician only) Microprocessorb. (Trained service technician only) System board

Monitor or video problems

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

Note: SLES 11 SP1 supports only Matrox G200eR with VESA driver. Go to Video configuration interface for other resolutions if needed.

<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 4, “Parts listing, System x3250 M4 Type 2583,” on page 141 to determine which components are customer replaceable units (CRU) and which components are field replaceable units (FRU).• If an action step is preceded by “(Trained service technician only),” that step must be performed only by a Trained service technician.• Go to the IBM support website at http://www.ibm.com/supportportal/ to check for technical information, hints, tips, and new device drivers or to submit a request for information.	
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 using the monitor that is being tested on a different server.3. Run the diagnostic programs. If the monitor passes the diagnostic programs, the problem might be a video device driver.4. (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 91.• The monitor cables are connected correctly.• The monitor is turned on and the brightness and contrast controls are adjusted correctly.3. Make sure that the correct server is controlling the monitor, if applicable.4. Make sure that damaged server firmware is not affecting the video; see “Updating the firmware” on page 207.5. Observe the checkpoint LEDs on the system board; if the codes are changing, go to step 6.6. Replace the following components one at a time, in the order shown, restarting the server each time:<ol style="list-style-type: none">a. Monitorb. Video adapter (if one is installed)c. (Trained service technician only) System board7. See “Solving undetermined problems” on page 137.

- Follow the suggested actions in the order in which they are listed in the Action column until the problem is solved.
- See Chapter 4, “Parts listing, System x3250 M4 Type 2583,” on page 141 to determine which components are customer replaceable units (CRU) and which components are field replaceable units (FRU).
- If an action step is preceded by “(Trained service technician only),” that step must be performed only by a Trained service technician.
- Go to the IBM support website at <http://www.ibm.com/supportportal/> to check for technical information, hints, tips, and new device drivers or to submit a request for information.

Symptom	Action
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 “IBM Dynamic System Analysis” on page 100). <ul style="list-style-type: none"> • If the server passes the video diagnostics, the video is good; see “Solving undetermined problems” on page 137. • (Trained service technician only) If the server fails the video diagnostics, replace the system board.
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, fluorescents, 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 monitor cable. 3. Replace the components listed in step 2 one at a time, in the order shown, restarting the server each time: <ol style="list-style-type: none"> a. Monitor cable b. Video adapter (if one is installed) c. Monitor 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 server firmware to the latest level (see “Updating the firmware” on page 207) with the correct language. 2. Reseat the monitor cable. 3. Replace the components listed in step 2 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 4, “Parts listing, System x3250 M4 Type 2583,” on page 141 to determine which components are customer replaceable units (CRU) and which components are field replaceable units (FRU).
- If an action step is preceded by “(Trained service technician only),” that step must be performed only by a Trained service technician.
- Go to the IBM support website at <http://www.ibm.com/supportportal/> to check for technical information, hints, tips, and new device drivers or to submit a request for information.

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 Setup utility. Whenever memory or any other device is changed, you must update the configuration.2. Reseat the device that you just installed.3. Replace the device that you just installed.
An IBM optional device that worked previously 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.

Optional 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 4, “Parts listing, System x3250 M4 Type 2583,” on page 141 to determine which components are customer replaceable units (CRU) and which components are field replaceable units (FRU).
- If an action step is preceded by “(Trained service technician only),” that step must be performed only by a Trained service technician.
- Go to the IBM support website at <http://www.ibm.com/supportportal/> to check for technical information, hints, tips, and new device drivers or to submit a request for information.

Symptom	Action
The optional DVD-ROM drive is not recognized.	<ol style="list-style-type: none"> 1. Make sure that: <ul style="list-style-type: none"> • The SATA connector to which the DVD drive is attached (primary or secondary) is enabled in the Setup utility. • All cables and jumpers are installed correctly. • The correct device driver is installed for the DVD drive. 2. Run the DVD drive diagnostic programs. 3. Reseat the following components: <ol style="list-style-type: none"> a. DVD drive b. DVD drive cable 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. DVD drive b. DVD drive interface board cable c. DVD interface board d. (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 DVD drive diagnostic programs. 3. Check the connector and signal cable for bent pins or damage. 4. Reseat the following components: <ol style="list-style-type: none"> a. DVD drive b. DVD drive cable 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. DVD drive b. DVD drive cable
The 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 DVD drive. 4. Replace the DVD drive.

Power problems

- Follow the suggested actions in the order in which they are listed in the Action column until the problem is solved.
- See Chapter 4, “Parts listing, System x3250 M4 Type 2583,” on page 141 to determine which components are customer replaceable units (CRU) and which components are field replaceable units (FRU).
- If an action step is preceded by “(Trained service technician only),” that step must be performed only by a Trained service technician.
- Go to the IBM support website at <http://www.ibm.com/supportportal/> to check for technical information, hints, tips, and new device drivers or to submit a request for information.

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 approximately 1 to 3 minutes 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 cord. b. Reconnect the power cord. c. (Trained service technician only) Reseat the operator information panel cables, and then repeat steps 1a and 1b. <ul style="list-style-type: none"> • (Trained service technician only) If the server starts, reseat the operator information panel. If the problem remains, replace the operator information panel. 2. Make sure that the reset button is working correctly: <ol style="list-style-type: none"> a. Disconnect the server power cord. b. Reconnect the power cord. 3. Make sure that: <ul style="list-style-type: none"> • The power cords are correctly connected to the server and to a working electrical outlet. • The type of memory that is installed is correct. • The DIMMs are fully seated. • The LEDs on the power supply with the Active Energy Manager (AEM) feature do not indicate a problem (see “Power-supply LEDs” on page 97). • (Trained service technician only) The microprocessor is correctly installed. 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 switch connector 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. 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. 7. See “Power-supply LEDs” on page 97. 8. See “Solving undetermined problems” on page 137.

<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 4, “Parts listing, System x3250 M4 Type 2583,” on page 141 to determine which components are customer replaceable units (CRU) and which components are field replaceable units (FRU). • If an action step is preceded by “(Trained service technician only),” that step must be performed only by a Trained service technician. • Go to the IBM support website at http://www.ibm.com/supportportal/ to check for technical information, hints, tips, and new device drivers or to submit a request for information. 	
Symptom	Action
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 a 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 and hold it down 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 137.

Serial-device 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 4, “Parts listing, System x3250 M4 Type 2583,” on page 141 to determine which components are customer replaceable units (CRU) and which components are field replaceable units (FRU). • If an action step is preceded by “(Trained service technician only),” that step must be performed only by a Trained service technician. • Go to the IBM support website at http://www.ibm.com/supportportal/ to check for technical information, hints, tips, and new device drivers or to submit a request for information. 	
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 Setup utility and none of the serial ports is disabled. • The serial-port adapter (if one is present) is seated correctly. 2. Reseat the serial port adapter. 3. Replace the serial port adapter.

<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 4, “Parts listing, System x3250 M4 Type 2583,” on page 141 to determine which components are customer replaceable units (CRU) and which components are field replaceable units (FRU). • If an action step is preceded by “(Trained service technician only),” that step must be performed only by a Trained service technician. • Go to the IBM support website at http://www.ibm.com/supportportal/ to check for technical information, hints, tips, and new device drivers or to submit a request for information. 	
Symptom	Action
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 “Internal LEDs, connectors, and jumpers” on page 14). 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

<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 4, “Parts listing, System x3250 M4 Type 2583,” on page 141 to determine which components are customer replaceable units (CRU) and which components are field replaceable units (FRU). • If an action step is preceded by “(Trained service technician only),” that step must be performed only by a Trained service technician. • Go to the IBM support website at http://www.ibm.com/supportportal/ to check for technical information, hints, tips, and new device drivers or to submit a request for information. 	
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.
The MegaRAID Storage Manager program cannot view all installed drives, or the operating system cannot be installed.	<ol style="list-style-type: none"> 1. Make sure that the hard disk drive is connected correctly. 2. Make sure that the SAS/SATA hard disk drive cables are securely connected.
The operating-system installation program continuously loops.	Make more space available on the hard disk.

<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 4, “Parts listing, System x3250 M4 Type 2583,” on page 141 to determine which components are customer replaceable units (CRU) and which components are field replaceable units (FRU). • If an action step is preceded by “(Trained service technician only),” that step must be performed only by a Trained service technician. • Go to the IBM support website at http://www.ibm.com/supportportal/ to check for technical information, hints, tips, and new device drivers or to submit a request for information. 	
Symptom	Action
The ServerGuide program will not start the operating-system CD.	Make sure that the operating-system CD is supported by the ServerGuide program. For a list of supported operating-system versions, go to http://www.ibm.com/systems/management/serverguide/sub.html , click IBM Service and Support Site , click the link for your ServerGuide version, and scroll down to the list of supported Microsoft Windows operating systems.
The operating system cannot be installed; the option is not available.	Make sure that the server supports the operating system. If it does, either no logical drive is defined (SCSI RAID servers), or the ServerGuide System Partition is not present. Run the ServerGuide 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 4, “Parts listing, System x3250 M4 Type 2583,” on page 141 to determine which components are customer replaceable units (CRU) and which components are field replaceable units (FRU). • If an action step is preceded by “(Trained service technician only),” that step must be performed only by a Trained service technician. • Go to the IBM support website at http://www.ibm.com/supportportal/ to check for technical information, hints, tips, and new device drivers or to submit a request for information. 	
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 the software vendor.

Universal Serial Bus (USB) port problems

- Follow the suggested actions in the order in which they are listed in the Action column until the problem is solved.
- See Chapter 4, “Parts listing, System x3250 M4 Type 2583,” on page 141 to determine which components are customer replaceable units (CRU) and which components are field replaceable units (FRU).
- If an action step is preceded by “(Trained service technician only),” that step must be performed only by a Trained service technician.
- Go to the IBM support website at <http://www.ibm.com/supportportal/> to check for technical information, hints, tips, and new device drivers or to submit a request for information.

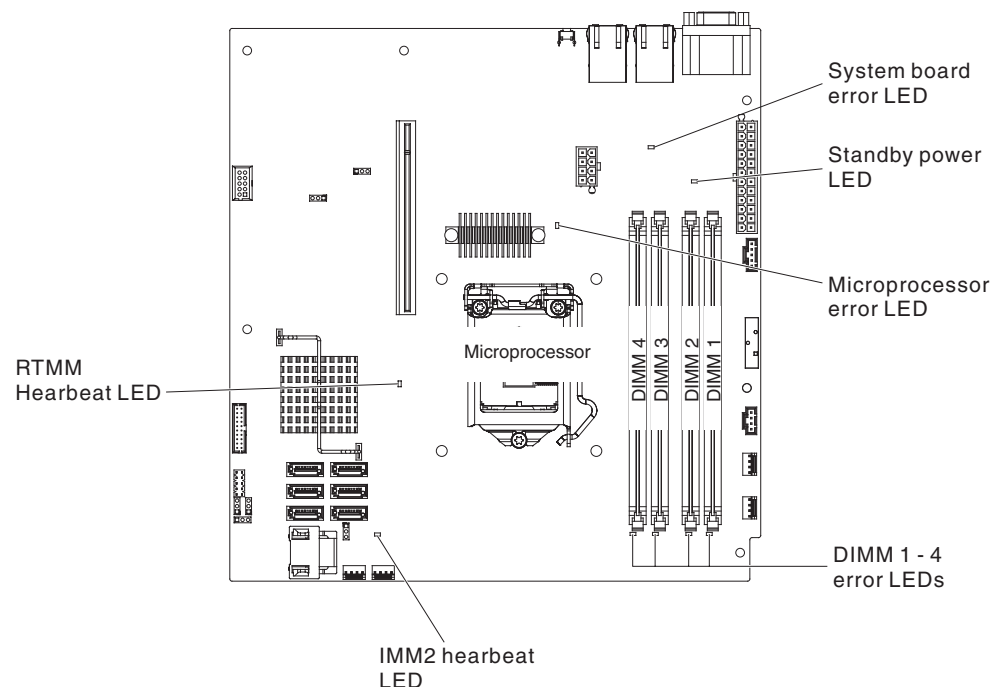
Symptom	Action
A USB device does not work.	<ol style="list-style-type: none">1. Make sure that:<ul style="list-style-type: none">• The correct USB device driver is installed.• The operating system supports USB devices.2. Make sure that the USB configuration options are set correctly in the Setup utility (see “Using the Setup utility” on page 210 for more information).3. If you are using a USB hub, disconnect the USB device from the hub and connect it directly to the server.

Video problems

See “Monitor or video problems” on page 87.

Error LEDs

The illustration shows the system-board LEDs. The system board has error LEDs that will help to locate the source of the error. Run the diagnostic programs to find out the cause of the error (see “IBM Dynamic System Analysis” on page 100).



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

Note: When you disconnect the power source from the server, you lose the ability to view the LEDs because the LEDs are not lit when the power source is removed. Before you disconnect the power source, make a note of which LEDs are lit, including the LEDs that are lit on the operation information panel and LEDs inside the server on the system board.

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

Before you work inside the server to view the LEDs, read the safety information that begins on page vii and “Handling static-sensitive devices” on page 151.

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

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

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

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

<ul style="list-style-type: none"> • Follow the suggested actions in the order in which they are listed in the Action column until the problem is solved. • See Chapter 4, “Parts listing, System x3250 M4 Type 2583,” on page 141 to determine which components are customer replaceable units (CRU) and which components are field replaceable units (FRU). • If an action step is preceded by “(Trained service technician only),” that step must be performed only by a trained service technician. 		
Component LED	Description	Action
DIMM error LEDs	A memory DIMM has failed or is incorrectly installed.	<ol style="list-style-type: none"> 1. Remove the DIMM that has the lit error LED. 2. Reseat the 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. DIMM b. (Trained service technician only) System board

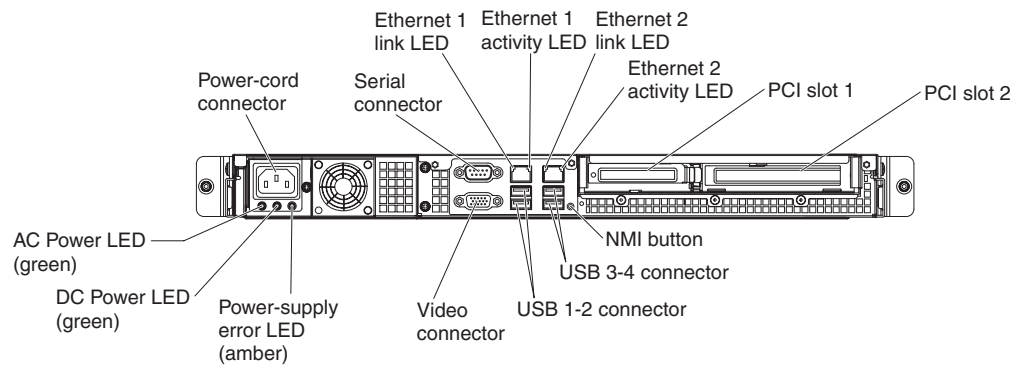
<ul style="list-style-type: none"> Follow the suggested actions in the order in which they are listed in the Action column until the problem is solved. See Chapter 4, “Parts listing, System x3250 M4 Type 2583,” on page 141 to determine which components are customer replaceable units (CRU) and which components are field replaceable units (FRU). If an action step is preceded by “(Trained service technician only),” that step must be performed only by a trained service technician. 		
Component LED	Description	Action
Microprocessor error LED	Microprocessor has failed, is missing, or has been incorrectly installed. Note: (Trained service technician only) Make sure that the microprocessor is installed correctly; see “Installing the microprocessor” on page 201.	<ol style="list-style-type: none"> Check the system-event log to determine the reason for the lit LED. (Trained service technician) Reseat the failing microprocessor Replace the following components one at a time, in the order shown, restarting the server each time: <ol style="list-style-type: none"> (Trained service technician only) Failing microprocessor (Trained service technician only) System board
System-board error LED	System-board CPU VRD and/or power voltage regulators have failed.	(Trained service technician only) Replace the system board.
IMM2 heartbeat LED	Indicates the status of the boot process of the IMM2. When the server is connected to power this LED flashes quickly to indicate that the IMM2 code is loading. When the loading is complete, the LED stops flashing briefly and then flashes slowly to indicate that the IMM2 is fully operational and you can press the power-control button to start the server.	<p>If the LED does not begin flashing within 30 seconds of when the server is connected to power, complete the following steps:</p> <ol style="list-style-type: none"> (Trained service technician only) Recover the firmware (see “Recovering the server firmware” on page 133). (Trained service technician only) Replace the system board.
RTMM heartbeat LED	power-on and power-off sequencing.	<ol style="list-style-type: none"> If the LED flashes at 1Hz, it is functioning properly and no action is necessary. If the LED is not flashing, (trained service technician only) replace the system board.

Power-supply LEDs

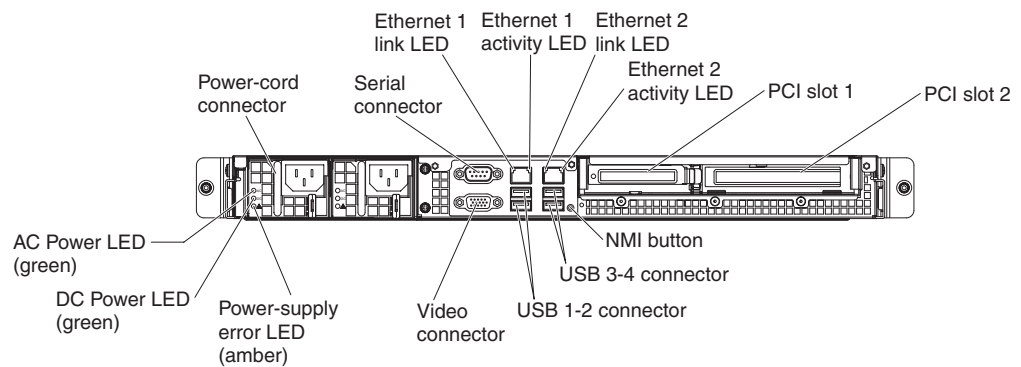
The following minimum configuration is required for the server to start:

- One microprocessor
- One 1 GB DIMM
- Power supply
- Power cord
- ServeRAID SAS/SATA adapter
- Four cooling fans

The following illustration shows the LEDs and connectors on the rear of the fixed power-supply model.



The following illustration shows the LEDs and connectors on the rear of the redundant power-supply model.



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

Table 6. Power-supply LEDs

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

System pulse LEDs

The following LEDs are on the system board and indicates the system power-on and power-off sequencing and boot progress (see “System-board LEDs” on page 18 for the location of these LEDs).

Table 7. System pulse LEDs

LED	Description	Action
RTMM heartbeat	power-on and power-off sequencing.	<ol style="list-style-type: none"> 1. If the LED flashes at 1Hz, it is functioning properly and no action is necessary. 2. If the LED is not flashing, (trained service technician only) replace the system board.

Table 7. System pulse LEDs (continued)

LED	Description	Action
IMM2 heartbeat	IMM2 heartbeat boot process.	<p>The following steps describe the different stages of the IMM2 heartbeat sequencing process.</p> <ol style="list-style-type: none"> 1. When this LED is flashing fast, the IMM2 code is in the loading process. 2. When this LED goes off momentarily, this indicates that the IMM2 code has loaded completely. 3. When this LED goes off momentarily and then starts flashing slowing (approximately 1Hz), the IMM2 is fully operational. You can now press the power-control button to power-on the server. 4. (Trained service technician only) If this LED does not flash within 30 seconds of connecting a power source to the server, replace the system board.

IBM Dynamic System Analysis

IBM Dynamic System Analysis (DSA) collects and analyzes system information to aid in diagnosing server problems. DSA collects the following information about the server:

- Drive health information
- Event logs for ServeRAID controllers and service processors
- Hardware inventory, including PCI and USB information
- Installed applications and hot fixes
- Kernel modules
- Light path diagnostics status
- Network interfaces and settings
- Performance data and details about processes that are running
- RAID and controller configuration
- integrated management module II (IMM2) status and configuration
- System configuration
- Vital product data and firmware information

For system-specific information about the action that you should take as a result of a message that DSA generates, see the table in “DSA messages” on page 101.

If you cannot find a problem by using DSA, see “Solving undetermined problems” on page 137 for information about testing the server.

Notes:

1. In a multi-node environment, each server has a unique DSA interface. You can view server-specific information, such as event logs, from these unique DSA interfaces.
2. DSA Preboot might appear to be unresponsive when you start the program. This is normal operation while the program loads.

To obtain DSA code and the *Dynamic System Analysis Installation and User's Guide*, go to <http://www.ibm.com/systems/support/supportsite.wss/docdisplay?brandind=5000008&Indocid=SERV-DSA> or complete the following steps.

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

1. Go to <http://www.ibm.com/supportportal/>.
2. Under **Product support**, click **System x**.
3. Under **Popular links**, click **Software and device drivers**.
4. Under **Related downloads**, click **Dynamic System Analysis (DSA)** (or go to <http://www.ibm.com/support/fixcentral/> directly).

Running DSA Preboot

The server supports DSA Preboot which runs outside of the operating system; you must restart the server to run it. It is packaged as an ISO image that you download from the IBM website, or it is provided in flash memory on the server. DSA Preboot includes diagnostic routines that would be disruptive to run within the operating-system environment (such as resetting devices and causing loss of network connectivity). It has a graphical user interface that you can use to specify which diagnostics to run and to view the diagnostic and data collection results.

To run the DSA Preboot diagnostic programs, complete the following steps:

1. Press F1 to boot the uEFI setup menu and disable software RAID (see "Disable a software RAID array of hard disk drives" on page 225 for more information).
2. Select **IDE mode**.
3. Save the setting and press F2 to run DSA Preboot diagnostic programs.

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

4. Reboot the system after the DSA is completed.
5. Press F1 to boot the uEFI setup menu and enable software RAID.
6. Save the setting and reboot the system.
7. The system will boot back to NOS.

DSA messages

The following table describes the messages that DSA might generate and suggested actions to correct the detected problems.

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

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

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

- 197** This is a warning error, but it does not indicate a hardware failure; do not replace a CRU or FRU. Take the action that is indicated in the Action column, but *do not replace a CRU or FRU*.

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

Table 8. DSA Preboot 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 4, “Parts listing, System x3250 M4 Type 2583,” on page 141 to determine which components are customer replaceable units (CRU) and which components are field replaceable units (FRU). If an action step is preceded by “(Trained service technician only),” that step must be performed only by a Trained service technician. Go to the IBM support website at http://www.ibm.com/supportportal/ to check for technical information, hints, tips, and new device drivers or to submit a request for information. 					
Message number	Component	Test	State	Description	Action
089-801-xxx	CPU	CPU Stress Test	Aborted	Internal program error.	<ol style="list-style-type: none"> Turn off and restart the system. Make sure that the DSA code is at the latest level. For more information and to download the utilities, go to http://www.ibm.com/systems/support/supportsite.wss/docdisplay?brandind=5000008&Indocid=SERV-DISA. Run the test again. Make sure that the system firmware is at the latest level. The installed firmware level is shown in the DSA event log in the Firmware/VPD section for this component. For more information, see “Updating the firmware” on page 207. Run the test again. Turn off and restart the system if necessary to recover from a hung state. Run the test again. Replace the following components one at a time, in the order shown, and run this test again to determine whether the problem has been solved: <ol style="list-style-type: none"> (Trained service technician only) Microprocessor board (Trained service technician only) Microprocessor If the failure remains, go to the IBM website for more troubleshooting information at http://www.ibm.com/systems/support/supportsite.wss/docdisplay?brandind=5000008&Indocid=SERV-CALL.

Table 8. DSA Preboot 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 4, “Parts listing, System x3250 M4 Type 2583,” on page 141 to determine which components are customer replaceable units (CRU) and which components are field replaceable units (FRU). • If an action step is preceded by “(Trained service technician only),” that step must be performed only by a Trained service technician. • Go to the IBM support website at http://www.ibm.com/supportportal/ to check for technical information, hints, tips, and new device drivers or to submit a request for information. 					
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 more information and to download the utilities, go to http://www.ibm.com/systems/support/supportsite.wss/docdisplay?brandind=5000008&Indocid=SERV-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=psg1_MIGR-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 test again. 8. Make sure that the system firmware is at the latest level. The installed firmware level is shown in the DSA event log in the Firmware/VPD section for this component. For more information, see “Updating the firmware” on page 207. 9. Run the test again.

Table 8. DSA Preboot 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 4, “Parts listing, System x3250 M4 Type 2583,” on page 141 to determine which components are customer replaceable units (CRU) and which components are field replaceable units (FRU). If an action step is preceded by “(Trained service technician only),” that step must be performed only by a Trained service technician. Go to the IBM support website at http://www.ibm.com/supportportal/ to check for technical information, hints, tips, and new device drivers or to submit a request for information. 					
Message number	Component	Test	State	Description	Action
089-901-xxx	CPU	CPU Stress Test	Failed	Test failure.	<ol style="list-style-type: none"> Turn off and restart the system if necessary to recover from a hung state. Make sure that the DSA code is at the latest level. For more information and to download the utilities, go to http://www.ibm.com/systems/support/supportsite.wss/docdisplay?brandind=5000008&Indocid=SERV-DSA. Run the test again. Make sure that the system firmware is at the latest level. The installed firmware level is shown in the DSA event log in the Firmware/VPD section for this component. For more information, see “Updating the firmware” on page 207. Run the test again. Turn off and restart the system if necessary to recover from a hung state. Run the test again. Replace the following components one at a time, in the order shown, and run this test again to determine whether the problem has been solved: <ol style="list-style-type: none"> (Trained service technician only) Microprocessor board (Trained service technician only) Microprocessor If the failure remains, go to the IBM website for more troubleshooting information at http://www.ibm.com/systems/support/supportsite.wss/docdisplay?brandind=5000008&Indocid=SERV-CALL.

Table 8. DSA Preboot 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 4, “Parts listing, System x3250 M4 Type 2583,” on page 141 to determine which components are customer replaceable units (CRU) and which components are field replaceable units (FRU). If an action step is preceded by “(Trained service technician only),” that step must be performed only by a Trained service technician. Go to the IBM support website at http://www.ibm.com/supportportal/ to check for technical information, hints, tips, and new device drivers or to submit a request for information. 					
Message number	Component	Test	State	Description	Action
166-801-xxx	IMM2	IMM2 I2C Test	Aborted	IMM2 I2C test stopped: the IMM2 returned an incorrect response length.	<ol style="list-style-type: none"> Turn off the system and disconnect it from the power source. You must disconnect the system from ac power to reset the IMM2. After 45 seconds, reconnect the system to the power source and turn on the system. Run the test again. Make sure that the DSA code is at the latest level. For more information and to download the utilities, go to http://www.ibm.com/systems/support/supportsite.wss/docdisplay?brandind=5000008&Indocid=SERV-DSA. Make sure that the IMM2 firmware is at the latest level. The installed firmware level is shown in the DSA event log in the Firmware/VPD section for this component. For more information, see “Updating the firmware” on page 207. Run the test again. If the failure remains, go to the IBM website for more troubleshooting information at http://www.ibm.com/systems/support/supportsite.wss/docdisplay?brandind=5000008&Indocid=SERV-CALL.
166-802-xxx	IMM2	IMM2 I2C Test	Aborted	IMM2 I2C test stopped: the test cannot be completed for an unknown reason.	<ol style="list-style-type: none"> Turn off the system and disconnect it from the power source. You must disconnect the system from ac power to reset the IMM2. After 45 seconds, reconnect the system to the power source and turn on the system. Run the test again. Make sure that the DSA code is at the latest level. For more information and to download the utilities, go to http://www.ibm.com/systems/support/supportsite.wss/docdisplay?brandind=5000008&Indocid=SERV-DSA. Make sure that the IMM2 firmware is at the latest level. The installed firmware level is shown in the DSA event log in the Firmware/VPD section for this component. For more information, see “Updating the firmware” on page 207. Run the test again. If the failure remains, go to the IBM website for more troubleshooting information at http://www.ibm.com/systems/support/supportsite.wss/docdisplay?brandind=5000008&Indocid=SERV-CALL.

Table 8. DSA Preboot 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 4, “Parts listing, System x3250 M4 Type 2583,” on page 141 to determine which components are customer replaceable units (CRU) and which components are field replaceable units (FRU). If an action step is preceded by “(Trained service technician only),” that step must be performed only by a Trained service technician. Go to the IBM support website at http://www.ibm.com/supportportal/ to check for technical information, hints, tips, and new device drivers or to submit a request for information. 					
Message number	Component	Test	State	Description	Action
166-803-xxx	IMM2	IMM2 I2C Test	Aborted	IMM2 I2C test stopped: the node is busy; try later.	<ol style="list-style-type: none"> Turn off the system and disconnect it from the power source. You must disconnect the system from ac power to reset the IMM2. After 45 seconds, reconnect the system to the power source and turn on the system. Run the test again. Make sure that the DSA code is at the latest level. For more information and to download the utilities, go to http://www.ibm.com/systems/support/supportsite.wss/docdisplay?brandind=5000008&Indocid=SERV-DSA. Make sure that the IMM2 firmware is at the latest level. The installed firmware level is shown in the DSA event log in the Firmware/VPD section for this component. For more information, see “Updating the firmware” on page 207. Run the test again. If the failure remains, go to the IBM website for more troubleshooting information at http://www.ibm.com/systems/support/supportsite.wss/docdisplay?brandind=5000008&Indocid=SERV-CALL.
166-804-xxx	IMM2	IMM2 I2C Test	Aborted	IMM2 I2C test stopped: invalid command.	<ol style="list-style-type: none"> Turn off the system and disconnect it from the power source. You must disconnect the system from ac power to reset the IMM2. After 45 seconds, reconnect the system to the power source and turn on the system. Run the test again. Make sure that the DSA code is at the latest level. For more information and to download the utilities, go to http://www.ibm.com/systems/support/supportsite.wss/docdisplay?brandind=5000008&Indocid=SERV-DSA. Make sure that the IMM2 firmware is at the latest level. The installed firmware level is shown in the DSA event log in the Firmware/VPD section for this component. For more information, see “Updating the firmware” on page 207. Run the test again. If the failure remains, go to the IBM website for more troubleshooting information at http://www.ibm.com/systems/support/supportsite.wss/docdisplay?brandind=5000008&Indocid=SERV-CALL.

Table 8. DSA Preboot 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 4, “Parts listing, System x3250 M4 Type 2583,” on page 141 to determine which components are customer replaceable units (CRU) and which components are field replaceable units (FRU). • If an action step is preceded by “(Trained service technician only),” that step must be performed only by a Trained service technician. • Go to the IBM support website at http://www.ibm.com/supportportal/ to check for technical information, hints, tips, and new device drivers or to submit a request for information. 					
Message number	Component	Test	State	Description	Action
166-805-xxx	IMM2	IMM2 I2C Test	Aborted	IMM2 I2C test stopped: 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 IMM2. 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 more information and to download the utilities, go to http://www.ibm.com/systems/support/supportsite.wss/docdisplay?brandind=5000008&Indocid=SERV-DSA. 5. Make sure that the IMM2 firmware is at the latest level. The installed firmware level is shown in the DSA event log in the Firmware/VPD section for this component. For more information, see “Updating the firmware” on page 207. 6. Run the test again. 7. If the failure remains, go to the IBM website for more troubleshooting information at http://www.ibm.com/systems/support/supportsite.wss/docdisplay?brandind=5000008&Indocid=SERV-CALL.
166-806-xxx	IMM2	IMM2 I2C Test	Aborted	IMM2 I2C test stopped: 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 IMM2. 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 more information and to download the utilities, go to http://www.ibm.com/systems/support/supportsite.wss/docdisplay?brandind=5000008&Indocid=SERV-DSA. 5. Make sure that the IMM2 firmware is at the latest level. The installed firmware level is shown in the DSA event log in the Firmware/VPD section for this component. For more information, see “Updating the firmware” on page 207. 6. Run the test again. 7. If the failure remains, go to the IBM website for more troubleshooting information at http://www.ibm.com/systems/support/supportsite.wss/docdisplay?brandind=5000008&Indocid=SERV-CALL.

Table 8. DSA Preboot 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 4, “Parts listing, System x3250 M4 Type 2583,” on page 141 to determine which components are customer replaceable units (CRU) and which components are field replaceable units (FRU). If an action step is preceded by “(Trained service technician only),” that step must be performed only by a Trained service technician. Go to the IBM support website at http://www.ibm.com/supportportal/ to check for technical information, hints, tips, and new device drivers or to submit a request for information. 					
Message number	Component	Test	State	Description	Action
166-807-xxx	IMM2	IMM2 I2C Test	Aborted	IMM2 I2C test stopped: out of space.	<ol style="list-style-type: none"> Turn off the system and disconnect it from the power source. You must disconnect the system from ac power to reset the IMM2. After 45 seconds, reconnect the system to the power source and turn on the system. Run the test again. Make sure that the DSA code is at the latest level. For more information and to download the utilities, go to http://www.ibm.com/systems/support/supportsite.wss/docdisplay?brandind=5000008&Indocid=SERV-DSA. Make sure that the IMM2 firmware is at the latest level. The installed firmware level is shown in the DSA event log in the Firmware/VPD section for this component. For more information, see “Updating the firmware” on page 207. Run the test again. If the failure remains, go to the IBM website for more troubleshooting information at http://www.ibm.com/systems/support/supportsite.wss/docdisplay?brandind=5000008&Indocid=SERV-CALL.
166-808-xxx	IMM2	IMM2 I2C Test	Aborted	IMM2 I2C test stopped: reservation canceled or invalid reservation ID.	<ol style="list-style-type: none"> Turn off the system and disconnect it from the power source. You must disconnect the system from ac power to reset the IMM2. After 45 seconds, reconnect the system to the power source and turn on the system. Run the test again. Make sure that the DSA code is at the latest level. For more information and to download the utilities, go to http://www.ibm.com/systems/support/supportsite.wss/docdisplay?brandind=5000008&Indocid=SERV-DSA. Make sure that the IMM2 firmware is at the latest level. The installed firmware level is shown in the DSA event log in the Firmware/VPD section for this component. For more information, see “Updating the firmware” on page 207. Run the test again. If the failure remains, go to the IBM website for more troubleshooting information at http://www.ibm.com/systems/support/supportsite.wss/docdisplay?brandind=5000008&Indocid=SERV-CALL.

Table 8. DSA Preboot 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 4, “Parts listing, System x3250 M4 Type 2583,” on page 141 to determine which components are customer replaceable units (CRU) and which components are field replaceable units (FRU). If an action step is preceded by “(Trained service technician only),” that step must be performed only by a Trained service technician. Go to the IBM support website at http://www.ibm.com/supportportal/ to check for technical information, hints, tips, and new device drivers or to submit a request for information. 					
Message number	Component	Test	State	Description	Action
166-809-xxx	IMM2	IMM2 I2C Test	Aborted	IMM2 I2C test stopped: request data was truncated.	<ol style="list-style-type: none"> Turn off the system and disconnect it from the power source. You must disconnect the system from ac power to reset the IMM2. After 45 seconds, reconnect the system to the power source and turn on the system. Run the test again. Make sure that the DSA code is at the latest level. For more information and to download the utilities, go to http://www.ibm.com/systems/support/supportsite.wss/docdisplay?brandind=5000008&Indocid=SERV-DSA. Make sure that the IMM2 firmware is at the latest level. The installed firmware level is shown in the DSA event log in the Firmware/VPD section for this component. For more information, see “Updating the firmware” on page 207. Run the test again. If the failure remains, go to the IBM website for more troubleshooting information at http://www.ibm.com/systems/support/supportsite.wss/docdisplay?brandind=5000008&Indocid=SERV-CALL.
166-810-xxx	IMM2	IMM2 I2C Test	Aborted	IMM2 I2C test stopped: request data length is invalid.	<ol style="list-style-type: none"> Turn off the system and disconnect it from the power source. You must disconnect the system from ac power to reset the IMM2. After 45 seconds, reconnect the system to the power source and turn on the system. Run the test again. Make sure that the DSA code is at the latest level. For more information and to download the utilities, go to http://www.ibm.com/systems/support/supportsite.wss/docdisplay?brandind=5000008&Indocid=SERV-DSA. Make sure that the IMM2 firmware is at the latest level. The installed firmware level is shown in the DSA event log in the Firmware/VPD section for this component. For more information, see “Updating the firmware” on page 207. Run the test again. If the failure remains, go to the IBM website for more troubleshooting information at http://www.ibm.com/systems/support/supportsite.wss/docdisplay?brandind=5000008&Indocid=SERV-CALL.

Table 8. DSA Preboot 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 4, “Parts listing, System x3250 M4 Type 2583,” on page 141 to determine which components are customer replaceable units (CRU) and which components are field replaceable units (FRU). If an action step is preceded by “(Trained service technician only),” that step must be performed only by a Trained service technician. Go to the IBM support website at http://www.ibm.com/supportportal/ to check for technical information, hints, tips, and new device drivers or to submit a request for information. 					
Message number	Component	Test	State	Description	Action
166-811-xxx	IMM2	IMM2 I2C Test	Aborted	IMM2 I2C test stopped: request data field length limit is exceeded.	<ol style="list-style-type: none"> Turn off the system and disconnect it from the power source. You must disconnect the system from ac power to reset the IMM2. After 45 seconds, reconnect the system to the power source and turn on the system. Run the test again. Make sure that the DSA code is at the latest level. For more information and to download the utilities, go to http://www.ibm.com/systems/support/supportsite.wss/docdisplay?brandind=5000008&Indocid=SERV-DSA. Make sure that the IMM2 firmware is at the latest level. The installed firmware level is shown in the DSA event log in the Firmware/VPD section for this component. For more information, see “Updating the firmware” on page 207. Run the test again. If the failure remains, go to the IBM website for more troubleshooting information at http://www.ibm.com/systems/support/supportsite.wss/docdisplay?brandind=5000008&Indocid=SERV-CALL.
166-812-xxx	IMM2	IMM2 I2C Test	Aborted	IMM2 I2C Test stopped: a parameter is out of range.	<ol style="list-style-type: none"> Turn off the system and disconnect it from the power source. You must disconnect the system from ac power to reset the IMM2. After 45 seconds, reconnect the system to the power source and turn on the system. Run the test again. Make sure that the DSA code is at the latest level. For more information and to download the utilities, go to http://www.ibm.com/systems/support/supportsite.wss/docdisplay?brandind=5000008&Indocid=SERV-DSA. Make sure that the IMM2 firmware is at the latest level. The installed firmware level is shown in the DSA event log in the Firmware/VPD section for this component. For more information, see “Updating the firmware” on page 207. Run the test again. If the failure remains, go to the IBM website for more troubleshooting information at http://www.ibm.com/systems/support/supportsite.wss/docdisplay?brandind=5000008&Indocid=SERV-CALL.

Table 8. DSA Preboot 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 4, “Parts listing, System x3250 M4 Type 2583,” on page 141 to determine which components are customer replaceable units (CRU) and which components are field replaceable units (FRU). If an action step is preceded by “(Trained service technician only),” that step must be performed only by a Trained service technician. Go to the IBM support website at http://www.ibm.com/supportportal/ to check for technical information, hints, tips, and new device drivers or to submit a request for information. 					
Message number	Component	Test	State	Description	Action
166-813-xxx	IMM2	IMM2 I2C Test	Aborted	IMM2 I2C test stopped: cannot return the number of requested data bytes.	<ol style="list-style-type: none"> Turn off the system and disconnect it from the power source. You must disconnect the system from ac power to reset the IMM2. After 45 seconds, reconnect the system to the power source and turn on the system. Run the test again. Make sure that the DSA code is at the latest level. For more information and to download the utilities, go to http://www.ibm.com/systems/support/supportsite.wss/docdisplay?brandind=5000008&Indocid=SERV-DSA. Make sure that the IMM2 firmware is at the latest level. The installed firmware level is shown in the DSA event log in the Firmware/VPD section for this component. For more information, see “Updating the firmware” on page 207. Run the test again. If the failure remains, go to the IBM website for more troubleshooting information at http://www.ibm.com/systems/support/supportsite.wss/docdisplay?brandind=5000008&Indocid=SERV-CALL.
166-814-xxx	IMM2	IMM2 I2C Test	Aborted	IMM2 I2C test stopped: requested sensor, data, or record is not present.	<ol style="list-style-type: none"> Turn off the system and disconnect it from the power source. You must disconnect the system from ac power to reset the IMM2. After 45 seconds, reconnect the system to the power source and turn on the system. Run the test again. Make sure that the DSA code is at the latest level. For more information and to download the utilities, go to http://www.ibm.com/systems/support/supportsite.wss/docdisplay?brandind=5000008&Indocid=SERV-DSA. Make sure that the IMM2 firmware is at the latest level. The installed firmware level is shown in the DSA event log in the Firmware/VPD section for this component. For more information, see “Updating the firmware” on page 207. Run the test again. If the failure remains, go to the IBM website for more troubleshooting information at http://www.ibm.com/systems/support/supportsite.wss/docdisplay?brandind=5000008&Indocid=SERV-CALL.

Table 8. DSA Preboot 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 4, “Parts listing, System x3250 M4 Type 2583,” on page 141 to determine which components are customer replaceable units (CRU) and which components are field replaceable units (FRU). If an action step is preceded by “(Trained service technician only),” that step must be performed only by a Trained service technician. Go to the IBM support website at http://www.ibm.com/supportportal/ to check for technical information, hints, tips, and new device drivers or to submit a request for information. 					
Message number	Component	Test	State	Description	Action
166-815-xxx	IMM2	IMM2 I2C Test	Aborted	IMM2 I2C test stopped: invalid data field in the request.	<ol style="list-style-type: none"> Turn off the system and disconnect it from the power source. You must disconnect the system from ac power to reset the IMM2. After 45 seconds, reconnect the system to the power source and turn on the system. Run the test again. Make sure that the DSA code is at the latest level. For more information and to download the utilities, go to http://www.ibm.com/systems/support/supportsite.wss/docdisplay?brandind=5000008&Indocid=SERV-DSA. Make sure that the IMM2 firmware is at the latest level. The installed firmware level is shown in the DSA event log in the Firmware/VPD section for this component. For more information, see “Updating the firmware” on page 207. Run the test again. If the failure remains, go to the IBM website for more troubleshooting information at http://www.ibm.com/systems/support/supportsite.wss/docdisplay?brandind=5000008&Indocid=SERV-CALL.
166-816-xxx	IMM2	IMM2 I2C Test	Aborted	IMM2 I2C test stopped: the command is illegal for the specified sensor or record type.	<ol style="list-style-type: none"> Turn off the system and disconnect it from the power source. You must disconnect the system from ac power to reset the IMM2. After 45 seconds, reconnect the system to the power source and turn on the system. Run the test again. Make sure that the DSA code is at the latest level. For more information and to download the utilities, go to http://www.ibm.com/systems/support/supportsite.wss/docdisplay?brandind=5000008&Indocid=SERV-DSA. Make sure that the IMM2 firmware is at the latest level. The installed firmware level is shown in the DSA event log in the Firmware/VPD section for this component. For more information, see “Updating the firmware” on page 207. Run the test again. If the failure remains, go to the IBM website for more troubleshooting information at http://www.ibm.com/systems/support/supportsite.wss/docdisplay?brandind=5000008&Indocid=SERV-CALL.

Table 8. DSA Preboot 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 4, “Parts listing, System x3250 M4 Type 2583,” on page 141 to determine which components are customer replaceable units (CRU) and which components are field replaceable units (FRU). • If an action step is preceded by “(Trained service technician only),” that step must be performed only by a Trained service technician. • Go to the IBM support website at http://www.ibm.com/supportportal/ to check for technical information, hints, tips, and new device drivers or to submit a request for information. 					
Message number	Component	Test	State	Description	Action
166-817-xxx	IMM2	IMM2 I2C Test	Aborted	IMM2 I2C test stopped: 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 IMM2. 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 more information and to download the utilities, go to http://www.ibm.com/systems/support/supportsite.wss/docdisplay?brandind=5000008&Indocid=SERV-DSA. 5. Make sure that the IMM2 firmware is at the latest level. The installed firmware level is shown in the DSA event log in the Firmware/VPD section for this component. For more information, see “Updating the firmware” on page 207. 6. Run the test again. 7. If the failure remains, go to the IBM website for more troubleshooting information at http://www.ibm.com/systems/support/supportsite.wss/docdisplay?brandind=5000008&Indocid=SERV-CALL.
166-818-xxx	IMM2	IMM2 I2C Test	Aborted	IMM2 I2C test stopped: 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 IMM2. 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 more information and to download the utilities, go to http://www.ibm.com/systems/support/supportsite.wss/docdisplay?brandind=5000008&Indocid=SERV-DSA. 5. Make sure that the IMM2 firmware is at the latest level. The installed firmware level is shown in the DSA event log in the Firmware/VPD section for this component. For more information, see “Updating the firmware” on page 207. 6. Run the test again. 7. If the failure remains, go to the IBM website for more troubleshooting information at http://www.ibm.com/systems/support/supportsite.wss/docdisplay?brandind=5000008&Indocid=SERV-CALL.

Table 8. DSA Preboot 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 4, “Parts listing, System x3250 M4 Type 2583,” on page 141 to determine which components are customer replaceable units (CRU) and which components are field replaceable units (FRU). • If an action step is preceded by “(Trained service technician only),” that step must be performed only by a Trained service technician. • Go to the IBM support website at http://www.ibm.com/supportportal/ to check for technical information, hints, tips, and new device drivers or to submit a request for information. 					
Message number	Component	Test	State	Description	Action
166-819-xxx	IMM2	IMM2 I2C Test	Aborted	IMM2 I2C test stopped: 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 IMM2. 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 more information and to download the utilities, go to http://www.ibm.com/systems/support/supportsite.wss/docdisplay?brandind=5000008&Indocid=SERV-DSA. 5. Make sure that the IMM2 firmware is at the latest level. The installed firmware level is shown in the DSA event log in the Firmware/VPD section for this component. For more information, see “Updating the firmware” on page 207. 6. Run the test again. 7. If the failure remains, go to the IBM website for more troubleshooting information at http://www.ibm.com/systems/support/supportsite.wss/docdisplay?brandind=5000008&Indocid=SERV-CALL.
166-820-xxx	IMM2	IMM2 I2C Test	Aborted	IMM2 I2C test stopped: 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 IMM2. 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 and IMM2 firmware are at the latest level. 5. Make sure that the IMM2 firmware is at the latest level. The installed firmware level is shown in the DSA event log in the Firmware/VPD section for this component. For more information, see “Updating the firmware” on page 207. 6. Run the test again. 7. If the failure remains, go to the IBM website for more troubleshooting information at http://www.ibm.com/systems/support/supportsite.wss/docdisplay?brandind=5000008&Indocid=SERV-CALL.

Table 8. DSA Preboot 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 4, “Parts listing, System x3250 M4 Type 2583,” on page 141 to determine which components are customer replaceable units (CRU) and which components are field replaceable units (FRU). • If an action step is preceded by “(Trained service technician only),” that step must be performed only by a Trained service technician. • Go to the IBM support website at http://www.ibm.com/supportportal/ to check for technical information, hints, tips, and new device drivers or to submit a request for information. 					
Message number	Component	Test	State	Description	Action
166-821-xxx	IMM2	IMM2 I2C Test	Aborted	IMM2 I2C test stopped: a command response could not be provided; IMM2 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 IMM2. 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 more information and to download the utilities, go to http://www.ibm.com/systems/support/supportsite.wss/docdisplay?brandind=5000008&Indocid=SERV-DSA. 5. Make sure that the IMM2 firmware is at the latest level. The installed firmware level is shown in the DSA event log in the Firmware/VPD section for this component. For more information, see “Updating the firmware” on page 207. 6. Run the test again. 7. If the failure remains, go to the IBM website for more troubleshooting information at http://www.ibm.com/systems/support/supportsite.wss/docdisplay?brandind=5000008&Indocid=SERV-CALL.
166-822-xxx	IMM2	IMM2 I2C Test	Aborted	IMM2 I2C test stopped: 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 IMM2. 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 more information and to download the utilities, go to http://www.ibm.com/systems/support/supportsite.wss/docdisplay?brandind=5000008&Indocid=SERV-DSA. 5. Make sure that the IMM2 firmware is at the latest level. The installed firmware level is shown in the DSA event log in the Firmware/VPD section for this component. For more information, see “Updating the firmware” on page 207. 6. Run the test again. 7. If the failure remains, go to the IBM website for more troubleshooting information at http://www.ibm.com/systems/support/supportsite.wss/docdisplay?brandind=5000008&Indocid=SERV-CALL.

Table 8. DSA Preboot 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 4, “Parts listing, System x3250 M4 Type 2583,” on page 141 to determine which components are customer replaceable units (CRU) and which components are field replaceable units (FRU). If an action step is preceded by “(Trained service technician only),” that step must be performed only by a Trained service technician. Go to the IBM support website at http://www.ibm.com/supportportal/ to check for technical information, hints, tips, and new device drivers or to submit a request for information. 					
Message number	Component	Test	State	Description	Action
166-823-xxx	IMM2	IMM2 I2C Test	Aborted	IMM2 I2C test stopped: cannot execute the command; insufficient privilege level.	<ol style="list-style-type: none"> Turn off the system and disconnect it from the power source. You must disconnect the system from ac power to reset the IMM2. After 45 seconds, reconnect the system to the power source and turn on the system. Run the test again. Make sure that the DSA code is at the latest level. For more information and to download the utilities, go to http://www.ibm.com/systems/support/supportsite.wss/docdisplay?brandind=5000008&Indocid=SERV-DSA. Make sure that the IMM2 firmware is at the latest level. The installed firmware level is shown in the DSA event log in the Firmware/VPD section for this component. For more information, see “Updating the firmware” on page 207. Run the test again. If the failure remains, go to the IBM website for more troubleshooting information at http://www.ibm.com/systems/support/supportsite.wss/docdisplay?brandind=5000008&Indocid=SERV-CALL.
166-824-xxx	IMM2	IMM2 I2C Test	Aborted	IMM2 I2C test stopped: cannot execute the command.	<ol style="list-style-type: none"> Turn off the system and disconnect it from the power source. You must disconnect the system from ac power to reset the IMM2. After 45 seconds, reconnect the system to the power source and turn on the system. Run the test again. Make sure that the DSA code is at the latest level. For more information and to download the utilities, go to http://www.ibm.com/systems/support/supportsite.wss/docdisplay?brandind=5000008&Indocid=SERV-DSA. Make sure that the IMM2 firmware is at the latest level. The installed firmware level is shown in the DSA event log in the Firmware/VPD section for this component. For more information, see “Updating the firmware” on page 207. Run the test again. If the failure remains, go to the IBM website for more troubleshooting information at http://www.ibm.com/systems/support/supportsite.wss/docdisplay?brandind=5000008&Indocid=SERV-CALL.

Table 8. DSA Preboot 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 4, “Parts listing, System x3250 M4 Type 2583,” on page 141 to determine which components are customer replaceable units (CRU) and which components are field replaceable units (FRU). • If an action step is preceded by “(Trained service technician only),” that step must be performed only by a Trained service technician. • Go to the IBM support website at http://www.ibm.com/supportportal/ to check for technical information, hints, tips, and new device drivers or to submit a request for information. 					
Message number	Component	Test	State	Description	Action
166-901-xxx	IMM2	IMM2 I2C Test	Failed	The IMM2 indicates a failure in private bus (Bus 0)	<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 IMM2. 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 more information and to download the utilities, go to http://www.ibm.com/systems/support/supportsite.wss/docdisplay?brandind=5000008&Indocid=SERV-DSA. 5. Make sure that the IMM2 firmware is at the latest level. The installed firmware level is shown in the DSA event log in the Firmware/VPD section for this component. For more information, see “Updating the firmware” on page 207. 6. Run the test again. 7. Remove power from the system. 8. (Trained service technician only) Replace the system board. 9. Reconnect the system to power and turn on the system. 10. Run the test again. 11. If the failure remains, go to the IBM website for more troubleshooting information at http://www.ibm.com/systems/support/supportsite.wss/docdisplay?brandind=5000008&Indocid=SERV-CALL.

Table 8. DSA Preboot 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 4, “Parts listing, System x3250 M4 Type 2583,” on page 141 to determine which components are customer replaceable units (CRU) and which components are field replaceable units (FRU). • If an action step is preceded by “(Trained service technician only),” that step must be performed only by a Trained service technician. • Go to the IBM support website at http://www.ibm.com/supportportal/ to check for technical information, hints, tips, and new device drivers or to submit a request for information. 					
Message number	Component	Test	State	Description	Action
166-903-xxx	IMM2	IMM2 I2C Test	Failed	The IMM2 indicates a failure in LED bus (Bus 2).	<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 IMM2. 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 more information and to download the utilities, go to http://www.ibm.com/systems/support/supportsite.wss/docdisplay?brandind=5000008&Indocid=SERV-DSA. 5. Make sure that the IMM2 firmware is at the latest level. The installed firmware level is shown in the DSA event log in the Firmware/VPD section for this component. For more information, see “Updating the firmware” on page 207. 6. Turn off the server and disconnect the power cord from the server; then , reconnect power cord. 7. Reconnect the system to the power source and turn on the system, then, run the test again. 8. If the failure remains, go to the IBM website for more troubleshooting information at http://www.ibm.com/systems/support/supportsite.wss/docdisplay?brandind=5000008&Indocid=SERV-CALL.

Table 8. DSA Preboot 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 4, “Parts listing, System x3250 M4 Type 2583,” on page 141 to determine which components are customer replaceable units (CRU) and which components are field replaceable units (FRU). If an action step is preceded by “(Trained service technician only),” that step must be performed only by a Trained service technician. Go to the IBM support website at http://www.ibm.com/supportportal/ to check for technical information, hints, tips, and new device drivers or to submit a request for information. 					
Message number	Component	Test	State	Description	Action
166-907-xxx	IMM2	IMM2 I2C Test	Failed	The IMM2 indicates a failure in the temperature sensor (Bus 6).	<ol style="list-style-type: none"> Turn off the system and disconnect it from the power source. You must disconnect the system from ac power to reset the IMM2. After 45 seconds, reconnect the system to the power source and turn on the system. Run the test again. Make sure that the DSA code is at the latest level. For more information and to download the utilities, go to http://www.ibm.com/systems/support/supportsite.wss/docdisplay?brandind=5000008&Indocid=SERV-DISA. Make sure that the IMM2 firmware is at the latest level. The installed firmware level is shown in the DSA event log in the Firmware/VPD section for this component. For more information, see “Updating the firmware” on page 207. Run the test again. Make sure that the fans are operating, that there are no obstructions to the airflow (front and rear of the server), that the air baffle is in place and correctly installed, and that the server cover are installed and completely closed. Run the test again. Turn off the system and disconnect it from the power source. Trained service technician only) Replace the system board. Reconnect the system to the power source and turn on the system. Run the test again. If the failure remains, go to the IBM website for more troubleshooting information at http://www.ibm.com/systems/support/supportsite.wss/docdisplay?brandind=5000008&Indocid=SERV-CALL.

Table 8. DSA Preboot 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 4, “Parts listing, System x3250 M4 Type 2583,” on page 141 to determine which components are customer replaceable units (CRU) and which components are field replaceable units (FRU). If an action step is preceded by “(Trained service technician only),” that step must be performed only by a Trained service technician. Go to the IBM support website at http://www.ibm.com/supportportal/ to check for technical information, hints, tips, and new device drivers or to submit a request for information. 					
Message number	Component	Test	State	Description	Action
201-801-xxx	Memory	Memory Test	Aborted	Test canceled: the system UEFI programmed the memory controller with an invalid CBAR address	<ol style="list-style-type: none"> Turn off and restart the system. Run the test again. Make sure that the server firmware is at the latest level. The installed firmware level is shown in the DSA event log in the Firmware/VPD section for this component. For more information, see “Updating the firmware” on page 207. Run the test again. If the failure remains, go to the IBM website for more troubleshooting information at http://www.ibm.com/systems/support/supportsite.wss/docdisplay?brandind=5000008&Indocid=SERV-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"> Turn off and restart the system. Run the test again. Make sure that all DIMMs are enabled in the Setup utility. Make sure that the server firmware is at the latest level. The installed firmware level is shown in the DSA event log in the Firmware/VPD section for this component. For more information, see “Updating the firmware” on page 207. Run the test again. If the failure remains, go to the IBM website for more troubleshooting information at http://www.ibm.com/systems/support/supportsite.wss/docdisplay?brandind=5000008&Indocid=SERV-CALL.
201-803-xxx	Memory	Memory Test	Aborted	Test canceled: could not enable the processor cache.	<ol style="list-style-type: none"> Turn off and restart the system. Run the test again. Make sure that the server firmware is at the latest level. The installed firmware level is shown in the DSA event log in the Firmware/VPD section for this component. For more information, see “Updating the firmware” on page 207. Run the test again. If the failure remains, go to the IBM website for more troubleshooting information at http://www.ibm.com/systems/support/supportsite.wss/docdisplay?brandind=5000008&Indocid=SERV-CALL.

Table 8. DSA Preboot 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 4, “Parts listing, System x3250 M4 Type 2583,” on page 141 to determine which components are customer replaceable units (CRU) and which components are field replaceable units (FRU). • If an action step is preceded by “(Trained service technician only),” that step must be performed only by a Trained service technician. • Go to the IBM support website at http://www.ibm.com/supportportal/ to check for technical information, hints, tips, and new device drivers or to submit a request for information. 					
Message number	Component	Test	State	Description	Action
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 server firmware is at the latest level. The installed firmware level is shown in the DSA event log in the Firmware/VPD section for this component. For more information, see “Updating the firmware” on page 207. 4. Run the test again. 5. If the failure remains, go to the IBM website for more troubleshooting information at http://www.ibm.com/systems/support/supportsite.wss/docdisplay?brandind=5000008&Indocid=SERV-CALL.
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 server firmware is at the latest level. The installed firmware level is shown in the DSA event log in the Firmware/VPD section for this component. For more information, see “Updating the firmware” on page 207. 4. Run the test again. 5. If the failure remains, go to the IBM website for more troubleshooting information at http://www.ibm.com/systems/support/supportsite.wss/docdisplay?brandind=5000008&Indocid=SERV-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 server firmware is at the latest level. The installed firmware level is shown in the DSA event log in the Firmware/VPD section for this component. For more information, see “Updating the firmware” on page 207. 4. Run the test again. 5. If the failure remains, go to the IBM website for more troubleshooting information at http://www.ibm.com/systems/support/supportsite.wss/docdisplay?brandind=5000008&Indocid=SERV-CALL.

Table 8. DSA Preboot 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 4, “Parts listing, System x3250 M4 Type 2583,” on page 141 to determine which components are customer replaceable units (CRU) and which components are field replaceable units (FRU). If an action step is preceded by “(Trained service technician only),” that step must be performed only by a Trained service technician. Go to the IBM support website at http://www.ibm.com/supportportal/ to check for technical information, hints, tips, and new device drivers or to submit a request for information. 					
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"> Turn off and restart the system. Run the test again. Make sure that the server firmware is at the latest level. The installed firmware level is shown in the DSA event log in the Firmware/VPD section for this component. For more information, see “Updating the firmware” on page 207. Run the test again. If the failure remains, go to the IBM website for more troubleshooting information at http://www.ibm.com/systems/support/supportsite.wss/docdisplay?brandind=5000008&Indocid=SERV-CALL.
201-808-xxx	Memory	Memory Test	Aborted	Test canceled: memory controller display/alter buffer execute error.	<ol style="list-style-type: none"> Turn off and restart the system. Run the test again. Make sure that the server firmware is at the latest level. The installed firmware level is shown in the DSA event log in the Firmware/VPD section for this component. For more information, see “Updating the firmware” on page 207. Run the test again. If the failure remains, go to the IBM website for more troubleshooting information at http://www.ibm.com/systems/support/supportsite.wss/docdisplay?brandind=5000008&Indocid=SERV-CALL.
201-809-xxx	Memory	Memory Test	Aborted	Test canceled: program error: operation running fast scrub.	<ol style="list-style-type: none"> Turn off and restart the system. Run the test again. Make sure that the DSA code is at the latest level. For more information and to download the utilities, go to http://www.ibm.com/systems/support/supportsite.wss/docdisplay?brandind=5000008&Indocid=SERV-DSA. Make sure that the server firmware is at the latest level. The installed firmware level is shown in the DSA event log in the Firmware/VPD section for this component. For more information, see “Updating the firmware” on page 207. Run the test again. If the failure remains, go to the IBM website for more troubleshooting information at http://www.ibm.com/systems/support/supportsite.wss/docdisplay?brandind=5000008&Indocid=SERV-CALL.

Table 8. DSA Preboot 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 4, “Parts listing, System x3250 M4 Type 2583,” on page 141 to determine which components are customer replaceable units (CRU) and which components are field replaceable units (FRU). If an action step is preceded by “(Trained service technician only),” that step must be performed only by a Trained service technician. Go to the IBM support website at http://www.ibm.com/supportportal/ to check for technical information, hints, tips, and new device drivers or to submit a request for information. 					
Message number	Component	Test	State	Description	Action
201-810-xxx	Memory	Memory Test	Aborted	Test stopped: unknown error code xxx received in COMMONEXIT procedure.	<ol style="list-style-type: none"> Turn off and restart the system. Run the test again. Make sure that the DSA code is at the latest level. For more information and to download the utilities, go to http://www.ibm.com/systems/support/supportsite.wss/docdisplay?brandind=5000008&Indocid=SERV-DSA. Make sure that the server firmware is at the latest level. The installed firmware level is shown in the DSA event log in the Firmware/VPD section for this component. For more information, see “Updating the firmware” on page 207. Run the test again. If the failure remains, go to the IBM website for more troubleshooting information at http://www.ibm.com/systems/support/supportsite.wss/docdisplay?brandind=5000008&Indocid=SERV-CALL.
201-901-xxx	Memory	Memory Test	Failed	Test failure: single-bit error, failing DIMM z.	<ol style="list-style-type: none"> Turn off the system and disconnect it from the power source. Reseat DIMM z. Reconnect the system to power and turn on the system. Make sure that the DSA code is at the latest level. For more information and to download the utilities, go to http://www.ibm.com/systems/support/supportsite.wss/docdisplay?brandind=5000008&Indocid=SERV-DSA. Make sure that the server firmware is at the latest level. The installed firmware level is shown in the DSA event log in the Firmware/VPD section for this component. For more information, see “Updating the firmware” on page 207. Run the test again. Replace the failing DIMMs. Re-enable all memory in the Setup utility (see “Using the Setup utility” on page 210). Run the test again. Replace the failing DIMM. If the failure remains, go to the IBM website for more troubleshooting information at http://www.ibm.com/systems/support/supportsite.wss/docdisplay?brandind=5000008&Indocid=SERV-CALL.

Table 8. DSA Preboot 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 4, “Parts listing, System x3250 M4 Type 2583,” on page 141 to determine which components are customer replaceable units (CRU) and which components are field replaceable units (FRU). • If an action step is preceded by “(Trained service technician only),” that step must be performed only by a Trained service technician. • Go to the IBM support website at http://www.ibm.com/supportportal/ to check for technical information, hints, tips, and new device drivers or to submit a request for information. 					
Message number	Component	Test	State	Description	Action
201-902-xxx	Memory	Memory Test	Failed	Test failure: single-bit and multi-bit error, failing DIMM z	<ol style="list-style-type: none"> 1. Turn off the system and disconnect it from the power source. 2. Reseat DIMM z. 3. Reconnect the system to power and turn on the system. 4. Make sure that the DSA code is at the latest level. For more information and to download the utilities, go to http://www.ibm.com/systems/support/supportsite.wss/docdisplay?brandind=5000008&Indocid=SERV-DSA. 5. Make sure that the server firmware is at the latest level. The installed firmware level is shown in the DSA event log in the Firmware/VPD section for this component. For more information, see “Updating the firmware” on page 207. 6. Run the test again. 7. Replace the failing DIMMs. 8. Re-enable all memory in the Setup utility see “Using the Setup utility” on page 210). 9. Run the test again. 10. If the failure remains, go to the IBM website for more troubleshooting information at http://www.ibm.com/systems/support/supportsite.wss/docdisplay?brandind=5000008&Indocid=SERV-CALL.

Table 8. DSA Preboot 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 4, “Parts listing, System x3250 M4 Type 2583,” on page 141 to determine which components are customer replaceable units (CRU) and which components are field replaceable units (FRU). • If an action step is preceded by “(Trained service technician only),” that step must be performed only by a Trained service technician. • Go to the IBM support website at http://www.ibm.com/supportportal/ to check for technical information, hints, tips, and new device drivers or to submit a request for information. 					
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 more information and to download the utilities, go to http://www.ibm.com/systems/support/supportsite.wss/docdisplay?brandind=5000008&Indocid=SERV-DSA. 3. Make sure that the server firmware is at the latest level. The installed firmware level is shown in the DSA event log in the Firmware/VPD section for this component. For more information, see “Updating the firmware” on page 207. 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 failure remains, go to the IBM website for more troubleshooting information at http://www.ibm.com/systems/support/supportsite.wss/docdisplay?brandind=5000008&Indocid=SERV-CALL.
202-802-xxx	Memory	Memory Stress Test	Aborted	General error: memory size is insufficient to run the test.	<ol style="list-style-type: none"> 1. Make sure that all memory is enabled by checking the Available System Memory in the Resource Utilization section of the DSA event log. If necessary, enable all memory in the Setup utility (see “Using the Setup utility” on page 210). 2. Make sure that the DSA code is at the latest level. For more information and to download the utilities, go to http://www.ibm.com/systems/support/supportsite.wss/docdisplay?brandind=5000008&Indocid=SERV-DSA. 3. Run the test again. 4. Run the standard memory test to validate all memory. 5. If the failure remains, go to the IBM website for more troubleshooting information at http://www.ibm.com/systems/support/supportsite.wss/docdisplay?brandind=5000008&Indocid=SERV-CALL.

Table 8. DSA Preboot 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 4, “Parts listing, System x3250 M4 Type 2583,” on page 141 to determine which components are customer replaceable units (CRU) and which components are field replaceable units (FRU). If an action step is preceded by “(Trained service technician only),” that step must be performed only by a Trained service technician. Go to the IBM support website at http://www.ibm.com/supportportal/ to check for technical information, hints, tips, and new device drivers or to submit a request for information. 					
Message number	Component	Test	State	Description	Action
202-901-xxx	Memory	Memory Stress Test	Failed	Test failure.	<ol style="list-style-type: none"> Run the standard memory test to validate all memory. Make sure that the DSA code is at the latest level. For more information and to download the utilities, go to http://www.ibm.com/systems/support/supportsite.wss/docdisplay?brandind=5000008&Indocid=SERV-DSA. Turn off the system and disconnect it from power. Reseat the DIMMs. Reconnect the system to power and turn on the system. Run the test again. If the failure remains, go to the IBM website for more troubleshooting information at http://www.ibm.com/systems/support/supportsite.wss/docdisplay?brandind=5000008&Indocid=SERV-CALL.
215-801-xxx	Optical Drive	<ul style="list-style-type: none"> Verify Media Installed Read/Write Test Self-Test <p>Messages and actions apply to all three tests.</p>	Aborted	Unable to communicate with the device driver.	<ol style="list-style-type: none"> Make sure that the DSA code is at the latest level. For more information and to download the utilities, go to http://www.ibm.com/systems/support/supportsite.wss/docdisplay?brandind=5000008&Indocid=SERV-DSA. Run the test again. Check the drive cabling at both ends for loose or broken connections or damage to the cable. Replace the cable if it is damaged. Run the test again. For additional troubleshooting information, go to http://www.ibm.com/support/docview.wss?uid=psg1MIGR-41559. Run the test again. Make sure that the system firmware is at the latest level. The installed firmware level is shown in the DSA event log in the Firmware/VPD section for this component. For more information, see “Updating the firmware” on page 207. Run the test again. Replace the CD/DVD drive. If the failure remains, go to the IBM website for more troubleshooting information at http://www.ibm.com/systems/support/supportsite.wss/docdisplay?brandind=5000008&Indocid=SERV-CALL.

Table 8. DSA Preboot 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 4, “Parts listing, System x3250 M4 Type 2583,” on page 141 to determine which components are customer replaceable units (CRU) and which components are field replaceable units (FRU). If an action step is preceded by “(Trained service technician only),” that step must be performed only by a Trained service technician. Go to the IBM support website at http://www.ibm.com/supportportal/ to check for technical information, hints, tips, and new device drivers or to submit a request for information. 					
Message number	Component	Test	State	Description	Action
215-802-xxx	Optical Drive	<ul style="list-style-type: none"> Verify Media Installed Read/Write Test Self-Test <p>Messages and actions apply to all three tests.</p>	Aborted	A read error was encountered.	<ol style="list-style-type: none"> Close the media tray and wait 15 seconds. Run the test again. Insert a new CD/DVD into the drive and wait for 15 seconds for the media to be recognized. Run the test again. Check the drive cabling at both ends for loose or broken connections or damage to the cable. Replace the cable if it is damaged. Run the test again. Make sure that the DSA code is at the latest level. For more information and to download the utilities, go to http://www.ibm.com/systems/support/supportsite.wss/docdisplay?brandind=5000008&Indocid=SERV-DSA. Run the test again. For additional troubleshooting information, go to http://www.ibm.com/support/docview.wss?uid=psg1MIGR-41559. Run the test again. Replace the CD/DVD drive. If the failure remains, go to the IBM website for more troubleshooting information at http://www.ibm.com/systems/support/supportsite.wss/docdisplay?brandind=5000008&Indocid=SERV-CALL.
215-803-xxx	Optical Drive	<ul style="list-style-type: none"> Verify Media Installed Read/Write Test Self-Test <p>Messages and actions apply to all three tests.</p>	Failed	The disc might be in use by the system.	<ol style="list-style-type: none"> Wait for the system activity to stop. Run the test again Turn off and restart the system. Run the test again. Replace the CD/DVD drive. If the failure remains, go to the IBM website for more troubleshooting information at http://www.ibm.com/systems/support/supportsite.wss/docdisplay?brandind=5000008&Indocid=SERV-CALL.

Table 8. DSA Preboot 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 4, “Parts listing, System x3250 M4 Type 2583,” on page 141 to determine which components are customer replaceable units (CRU) and which components are field replaceable units (FRU). • If an action step is preceded by “(Trained service technician only),” that step must be performed only by a Trained service technician. • Go to the IBM support website at http://www.ibm.com/supportportal/ to check for technical information, hints, tips, and new device drivers or to submit a request for information. 					
Message number	Component	Test	State	Description	Action
215-901-xxx	Optical Drive	<ul style="list-style-type: none"> • Verify Media Installed • Read/Write Test • Self-Test <p>Messages and actions apply to all three tests.</p>	Aborted	Drive media is not detected.	<ol style="list-style-type: none"> 1. Insert a CD/DVD into the drive or try a new media, and wait for 15 seconds. 2. Run the test again. 3. Check the drive cabling at both ends for loose or broken connections or damage to the cable. Replace the cable if it is damaged. 4. Run the test again. 5. For additional troubleshooting information, go to http://www.ibm.com/support/docview.wss?uid=psg1MIGR-41559. 6. Run the test again. 7. Replace the CD/DVD drive. 8. If the failure remains, go to the IBM website for more troubleshooting information at http://www.ibm.com/systems/support/supportsite.wss/docdisplay?brandind=5000008&Indocid=SERV-CALL.
215-902-xxx	Optical Drive	<ul style="list-style-type: none"> • Verify Media Installed • Read/Write Test • Self-Test <p>Messages and actions apply to all three tests.</p>	Failed	Read miscompare.	<ol style="list-style-type: none"> 1. Insert a CD/DVD into the drive or try a new media, and wait for 15 seconds. 2. Run the test again. 3. Check the drive cabling at both ends for loose or broken connections or damage to the cable. Replace the cable if it is damaged. 4. Run the test again. 5. For additional troubleshooting information, go to http://www.ibm.com/support/docview.wss?uid=psg1MIGR-41559. 6. Run the test again. 7. Replace the CD/DVD drive. 8. If the failure remains, go to the IBM website for more troubleshooting information at http://www.ibm.com/systems/support/supportsite.wss/docdisplay?brandind=5000008&Indocid=SERV-CALL.

Table 8. DSA Preboot 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 4, “Parts listing, System x3250 M4 Type 2583,” on page 141 to determine which components are customer replaceable units (CRU) and which components are field replaceable units (FRU). If an action step is preceded by “(Trained service technician only),” that step must be performed only by a Trained service technician. Go to the IBM support website at http://www.ibm.com/supportportal/ to check for technical information, hints, tips, and new device drivers or to submit a request for information. 					
Message number	Component	Test	State	Description	Action
215-903-xxx	Optical Drive	<ul style="list-style-type: none"> Verify Media Installed Read/Write Test Self-Test <p>Messages and actions apply to all three tests.</p>	Aborted	Could not access the drive.	<ol style="list-style-type: none"> Insert a CD/DVD into the drive or try a new media, and wait for 15 seconds. Run the test again. Check the drive cabling at both ends for loose or broken connections or damage to the cable. Replace the cable if it is damaged. Run the test again. Make sure that the DSA code is at the latest level. For more information and to download the utilities, go to http://www.ibm.com/systems/support/supportsite.wss/docdisplay?brandind=5000008&Indocid=SERV-DSA. Run the test again. For additional troubleshooting information, go to http://www.ibm.com/support/docview.wss?uid=psg1MIGR-41559. Run the test again. Replace the CD/DVD drive. If the failure remains, go to the IBM website for more troubleshooting information at http://www.ibm.com/systems/support/supportsite.wss/docdisplay?brandind=5000008&Indocid=SERV-CALL.
217-000-000	SAS/SATA Hard Drive	Disk Drive Test	Pass	The test passed.	No action; information only.
217-800-000	SAS/SATA Hard Drive	Disk Drive Test	Aborted	The test was cancelled.	<ol style="list-style-type: none"> Reseat all hard disk drive backplane connections at both ends. Reseat all drives. Run the test again. Make sure that the firmware is at the latest level. If the failure remains, go to the IBM website for more troubleshooting information at http://www.ibm.com/systems/support/supportsite.wss/docdisplay?brandind=5000008&Indocid=SERV-CALL.

Table 8. DSA Preboot 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 4, “Parts listing, System x3250 M4 Type 2583,” on page 141 to determine which components are customer replaceable units (CRU) and which components are field replaceable units (FRU). If an action step is preceded by “(Trained service technician only),” that step must be performed only by a Trained service technician. Go to the IBM support website at http://www.ibm.com/supportportal/ to check for technical information, hints, tips, and new device drivers or to submit a request for information. 					
Message number	Component	Test	State	Description	Action
217-900-xxx	SAS/SATA Hard Drive	Disk Drive Test	Failed	The test detected a failure.	<ol style="list-style-type: none"> Reseat all hard disk drive backplane connections at both ends. Reseat all drives. Run the test again. Make sure that the firmware is at the latest level. Run the test again. If the failure remains, go to the IBM website for more troubleshooting information at http://www.ibm.com/systems/support/supportsite.wss/docdisplay?brandind=5000008&Indocid=SERV-CALL.
405-901-xxx	Intel Ethernet Device	Test controls registers	Failed	A failure was detected while testing internal MAC registers.	<ol style="list-style-type: none"> Make sure that the component firmware is at the latest level. The installed firmware level is shown in the DSA event log in the Firmware/VPD section for this component. For more information, see “Updating the firmware” on page 207. Run the test again. Replace the component that is causing the error. If the error is caused by an adapter, replace the adapter. Check the PCI Information and Network Settings information in the DSA event log to determine the physical location of the failing component. If the failure remains, go to the IBM website for more troubleshooting information at http://www.ibm.com/systems/support/supportsite.wss/docdisplay?brandind=5000008&Indocid=SERV-CALL.
405-902-xxx	Intel Ethernet Device	Test EEPROM	Failed	A failure was detected while testing non-volatile RAM.	<ol style="list-style-type: none"> Make sure that the component firmware is at the latest level. The installed firmware level is shown in the DSA event log in the Firmware/VPD section for this component. For more information, see “Updating the firmware” on page 207. Run the test again. Replace the component that is causing the error. If the error is caused by an adapter, replace the adapter. Check the PCI Information and Network Settings information in the DSA event log to determine the physical location of the failing component. If the failure remains, go to the IBM website for more troubleshooting information at http://www.ibm.com/systems/support/supportsite.wss/docdisplay?brandind=5000008&Indocid=SERV-CALL.

Table 8. DSA Preboot 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 4, “Parts listing, System x3250 M4 Type 2583,” on page 141 to determine which components are customer replaceable units (CRU) and which components are field replaceable units (FRU). • If an action step is preceded by “(Trained service technician only),” that step must be performed only by a Trained service technician. • Go to the IBM support website at http://www.ibm.com/supportportal/ to check for technical information, hints, tips, and new device drivers or to submit a request for information. 					
Message number	Component	Test	State	Description	Action
405-903-xxx	Intel Ethernet Device	Test Internal Memory	Failed	A failure was detected while testing internal memory.	<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 more information, see “Updating the firmware” on page 207. 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 Setup utility see “Using the Setup utility” on page 210) to assign a unique interrupt to the device. 4. Replace the component that is causing the error. If the error is caused by an adapter, replace the adapter. Check the PCI Information and Network Settings information in the DSA event log to determine the physical location of the failing component. 5. If the failure remains, go to the IBM website for more troubleshooting information at http://www.ibm.com/systems/support/supportsite.wss/docdisplay?brandind=5000008&Indocid=SERV-CALL.
405-904-xxx	Intel Ethernet Device	Test Interrupt	Failed	A failure was detected while testing interrupts.	<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 more information, see “Updating the firmware” on page 207. 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 Setup utility see “Using the Setup utility” on page 210) to assign a unique interrupt to the device. 4. Replace the component that is causing the error. If the error is caused by an adapter, replace the adapter. Check the PCI Information and Network Settings information in the DSA event log to determine the physical location of the failing component. 5. If the failure remains, go to the IBM website for more troubleshooting information at http://www.ibm.com/systems/support/supportsite.wss/docdisplay?brandind=5000008&Indocid=SERV-CALL.

Table 8. DSA Preboot 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 4, “Parts listing, System x3250 M4 Type 2583,” on page 141 to determine which components are customer replaceable units (CRU) and which components are field replaceable units (FRU). • If an action step is preceded by “(Trained service technician only),” that step must be performed only by a Trained service technician. • Go to the IBM support website at http://www.ibm.com/supportportal/ to check for technical information, hints, tips, and new device drivers or to submit a request for information. 					
Message number	Component	Test	State	Description	Action
405-905-xxx	Intel Ethernet Device	Test Loop back at MAC-Layer	Failed	A failure was detected during the loopback test at the MAC layer.	<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 more information, see “Updating the firmware” on page 207. 2. Run the test again. 3. Replace the component that is causing the error. If the error is caused by an adapter, replace the adapter. Check the PCI Information and Network Settings information in the DSA event log to determine the physical location of the failing component. 4. If the failure remains, go to the IBM website for more troubleshooting information at http://www.ibm.com/systems/support/supportsite.wss/docdisplay?brandind=5000008&Indocid=SERV-CALL.
405-906-xxx	Intel Ethernet Device	Test Loop back at Physical Layer	Failed	A failure was detected during the loopback test at the physical layer.	<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 more information, see “Updating the firmware” on page 207. 3. Run the test again. 4. Replace the component that is causing the error. If the error is caused by an adapter, replace the adapter. Check the PCI Information and Network Settings information in the DSA event log to determine the physical location of the failing component. 5. If the failure remains, go to the IBM website for more troubleshooting information at http://www.ibm.com/systems/support/supportsite.wss/docdisplay?brandind=5000008&Indocid=SERV-CALL.

Table 8. DSA Preboot 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 4, “Parts listing, System x3250 M4 Type 2583,” on page 141 to determine which components are customer replaceable units (CRU) and which components are field replaceable units (FRU). • If an action step is preceded by “(Trained service technician only),” that step must be performed only by a Trained service technician. • Go to the IBM support website at http://www.ibm.com/supportportal/ to check for technical information, hints, tips, and new device drivers or to submit a request for information. 					
Message number	Component	Test	State	Description	Action
405-907-xxx	Intel Ethernet Device	Test LEDs	Failed	A failure was detected while verifying operation of the status LEDs.	<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 more information, see “Updating the firmware” on page 207. 2. Run the test again. 3. Replace the component that is causing the error. If the error is caused by an adapter, replace the adapter. Check the PCI Information and Network Settings information in the DSA event log to determine the physical location of the failing component. 4. If the failure remains, go to the IBM website for more troubleshooting information at http://www.ibm.com/systems/support/supportsite.wss/docdisplay?brandind=5000008&Indocid=SERV-CALL.

Recovering the server firmware

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

If the server firmware has become corrupted, such as from a power failure during an update, you can recover the server firmware in the following way:

- **In-band method:** Recover server firmware, using either the boot block jumper (Automated Boot Recovery) and a server Firmware Update Package Service Pack.

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

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

To download the server firmware update package from the World Wide Web, complete the following steps:

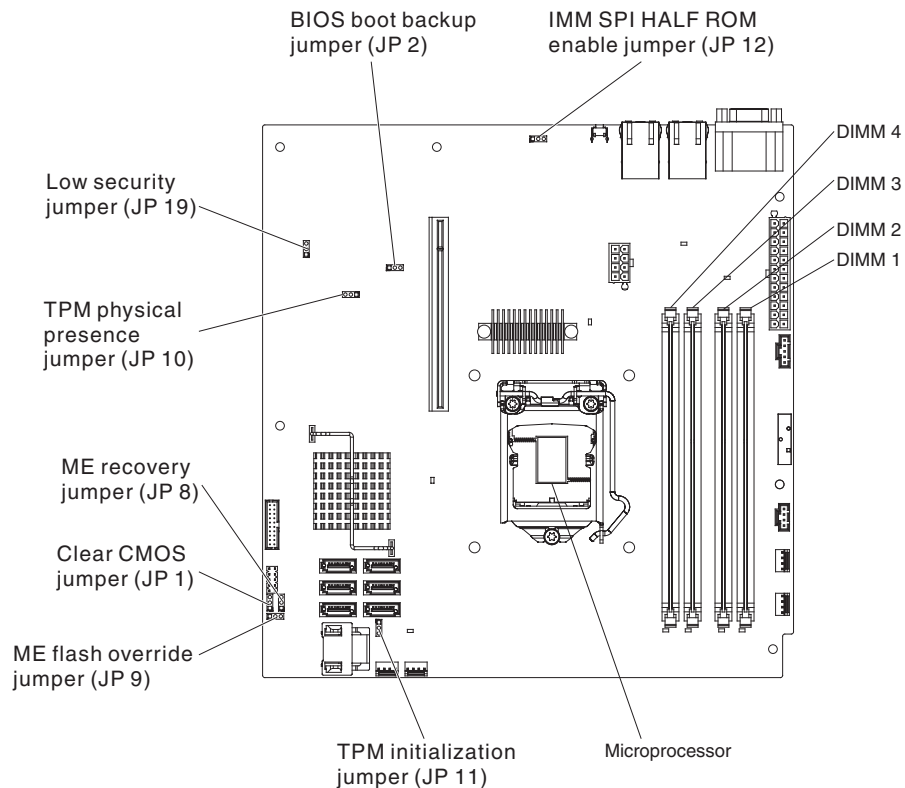
1. Go to <http://www.ibm.com/systems/support/>.
2. Under **Product support**, click **System x**.
3. Under **Popular links**, select **Software and device drivers**.
4. From the **Product family** menu, select **System x3250 M4** to display the matrix of downloadable files for the server.
5. Download the latest server firmware update and the update tool UXSPI.

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

In-band manual recovery method

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

1. Read the safety information that begins on page vii and “Handling static-sensitive devices” on page 151.
2. Turn off the server, and disconnect all power cords and external cables.
3. Remove the server top cover (see “Removing the server top cover” on page 153).
4. Locate the BIOS boot backup jumper (JP2) on the system board.



5. Remove any adapter that impede access to the boot block recovery jumper (JP2) (see “Removing an adapter” on page 158).
6. Move the BIOS boot backup jumper (JP2) from pins 1 and 2 to pins 2 and 3 to enable the UEFI recovery mode.
7. Reinstall any adapter that you removed before (see “Installing an adapter” on page 159).
8. Reinstall the server top cover (see “Installing the server top cover” on page 153).
9. Reconnect the power cord and any cables that you removed.
10. Restart the server. The system begins the power-on self-test (POST).
11. Boot the server to an operating system that is supported by the firmware update package that you downloaded.

12. Perform firmware update following the instructions in the firmware update package readme file.
13. Turn off the server and disconnect all power cords and external cables, and then remove the server top cover (see “Removing the server top cover” on page 153).
14. Remove any adapter that impede access to the boot block recovery jumper (JP2) (see “Removing an adapter” on page 158).
15. Move the BIOS boot backup jumper (JP2) from pins 2 and 3 back to the primary position (pins 1 and 2).
16. Reinstall any adapter that you removed before (see “Installing an adapter” on page 159).
17. Reinstall the server top cover (see “Installing the server top cover” on page 153).
18. Reconnect the power cord and any cables that you removed.
19. Restart the server. The system begins the power-on self-test (POST). If this does not recover the primary back, continue with the following steps.
20. Remove the server top cover (see “Removing the server top cover” on page 153).
21. Reset the CMOS by removing the system battery (see “Removing the system battery” on page 179).
22. Leave the system battery out of the server for approximately 5 to 15 minutes.
23. Reinstall the system battery (see “Installing the system battery” on page 181).
24. Reinstall the server top cover (see “Installing the server top cover” on page 153).
25. Reconnect the power cord and any cables that you removed.
26. Restart the server. The system begins the power-on self-test (POST).
27. If these recovery efforts fail, contact your IBM service support representative for support.

In-band automated boot recovery method

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

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

Automated boot recovery (ABR)

If the server is booting up and the IMM2 detect problems with the server firmware in the primary bank, it will automatically switch to the backup firmware bank and give you the opportunity to recover the primary bank. To recover to the server firmware primary bank, complete the following steps.

1. Restart the server.
2. When the prompt press F3 to restore to primary is displayed, press F3 to recover the primary bank. Pressing F3 will restart the server.

Three boot failure

Configuration changes, such as added devices or adapter firmware updates can cause the server to fail POST (power-on self-test). If this occurs on three consecutive boot attempts, the server will temporarily use the default configuration values and automatically goes to F1 Setup. To solve the problem, complete the following steps:

1. Undo any configuration changes that you made recently and restart the server.
2. Remove any devices that you added recently and restart the server.
3. If the problem remains, go to Setup and select **Load Default Settings**, and then click **Save** to restore the server factory settings.

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. Check the LEDs on the power supply at the rear of the server (see “Power-supply LEDs” on page 97).
2. Turn off the server and disconnect all ac power cords.
3. Check the power-fault LEDs on the system board (see “Power problems” on page 91).
4. 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.
5. 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 137 for the minimum configuration).
6. Reconnect all ac power cords and turn on the server. If the server starts successfully, reseat the adapters and devices one at a time until the problem is isolated.

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

Solving Ethernet controller problems

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

Try the following procedures:

- Make sure that the correct device drivers, which come with the server are installed and that they are at the latest level.
- Make sure that the Ethernet cable is installed correctly.
 - The cable must be securely attached at all connections. If the cable is attached but the problem remains, try a different cable.
 - If you set the Ethernet controller to operate at 100 Mbps, you must use Category 5 cabling.
 - If you directly connect two servers (without a hub), or if you are not using a hub with X ports, use a crossover cable. To determine whether a hub has an X port, check the port label. If the label contains an X, the hub has an X port.

- Determine whether the hub supports auto-negotiation. If it does not, try configuring the integrated Ethernet controller manually to match the speed and duplex mode of the hub.
- Check the Ethernet controller LEDs on the rear panel of the server. These LEDs indicate whether there is a problem with the connector, cable, or hub.
 - The Ethernet link status LED is lit when the Ethernet controller receives a link pulse from the hub. If the LED is off, there might be a defective connector or cable or a problem with the hub.
 - The Ethernet transmit/receive activity LED is lit when the Ethernet controller sends or receives data over the Ethernet network. If the Ethernet transmit/receive activity 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 94.

Damaged data in CMOS memory or damaged server firmware can cause undetermined problems. To reset the CMOS data, use the CMOS jumper to clear the CMOS memory and override the power-on password; see “System-board jumpers” on page 16. If you suspect that the server firmware is damaged, see “Recovering the server firmware” on page 133.

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).
 - Printer, mouse, and non-IBM devices.
 - Each adapter.
 - Hard disk drives.
 - Memory modules. The minimum configuration requirement is 1 GB DIMM in slots 3.
4. Turn on the server. If the problem remains, suspect the following components in the following order:
 - Memory module
 - Microprocessor
 - System board

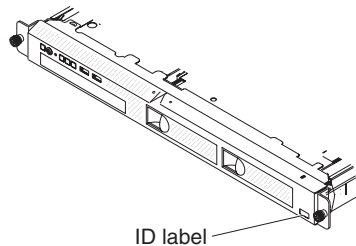
If the problem is solved when you remove an adapter from the server but the problem recurs when you reinstall the same adapter, suspect the adapter; if the problem recurs when you replace the adapter with a different one, suspect the riser card.

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

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

The model number and serial number of the server are located on the front bezel.



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

- Machine type and model
- Microprocessor or hard disk drive upgrades
- Failure symptom
 - Does the server fail the diagnostic tests?
 - What occurs? When? Where?
 - Does the failure occur on a single server or on multiple servers?
 - Is the failure repeatable?
 - Has this configuration ever worked?
 - What changes, if any, were made before the configuration failed?
 - Is this the original reported failure?
- Diagnostic program type and version level
- Hardware configuration (print screen of the system summary)
- IMM2 firmware level
- Operating system software

You can solve some problems by comparing the configuration and software setups between working and nonworking servers. When you compare servers to each other for diagnostic purposes, consider them identical only if all the following factors are exactly the same in all the servers:

- Machine type and model
- IMM2 firmware level
- Adapters and attachments, in the same locations
- Address jumpers, terminators, and cabling
- Software versions and levels

- Diagnostic program type and version level
- Configuration option settings
- Operating-system control-file setup

See Appendix A, “Getting help and technical assistance,” on page 233 for information about calling IBM for service.

Chapter 4. Parts listing, System x3250 M4 Type 2583

The following replaceable components are available for the System x3250 M4 Type 2583 server, except as specified otherwise in “Replaceable server components.” For an updated parts listing on the web, complete the following steps.

Note: Changes are made periodically to the IBM website. 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**, select **Parts documents lookup**.
4. From the **Product family** menu, select **System x3250 M4** and click **Go**.

Replaceable server components

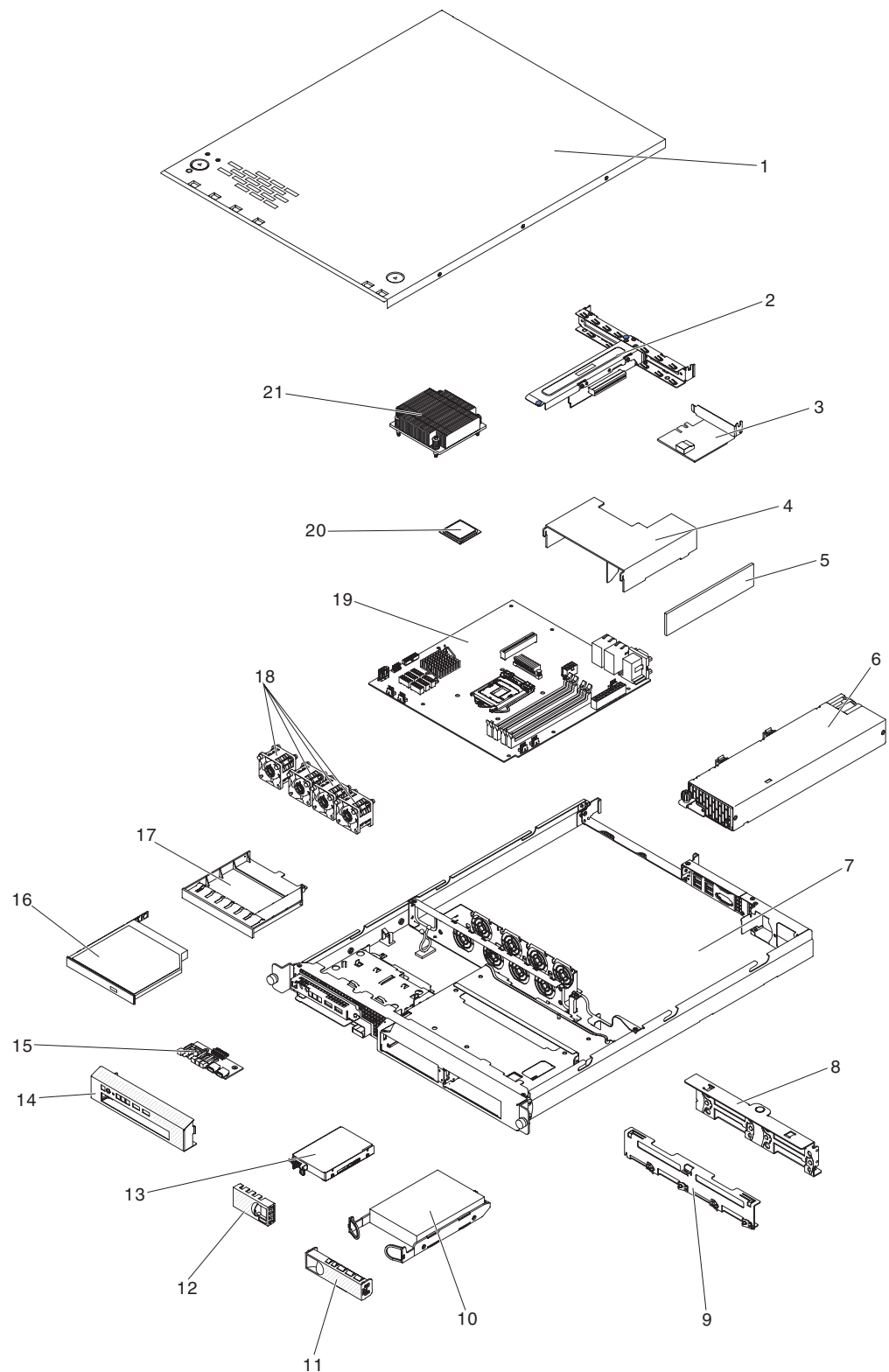
Replaceable components are of four types:

- **Consumable part:** Purchase and replacement of consumable parts (components, such as batteries and printer cartridges, that have depleting 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.

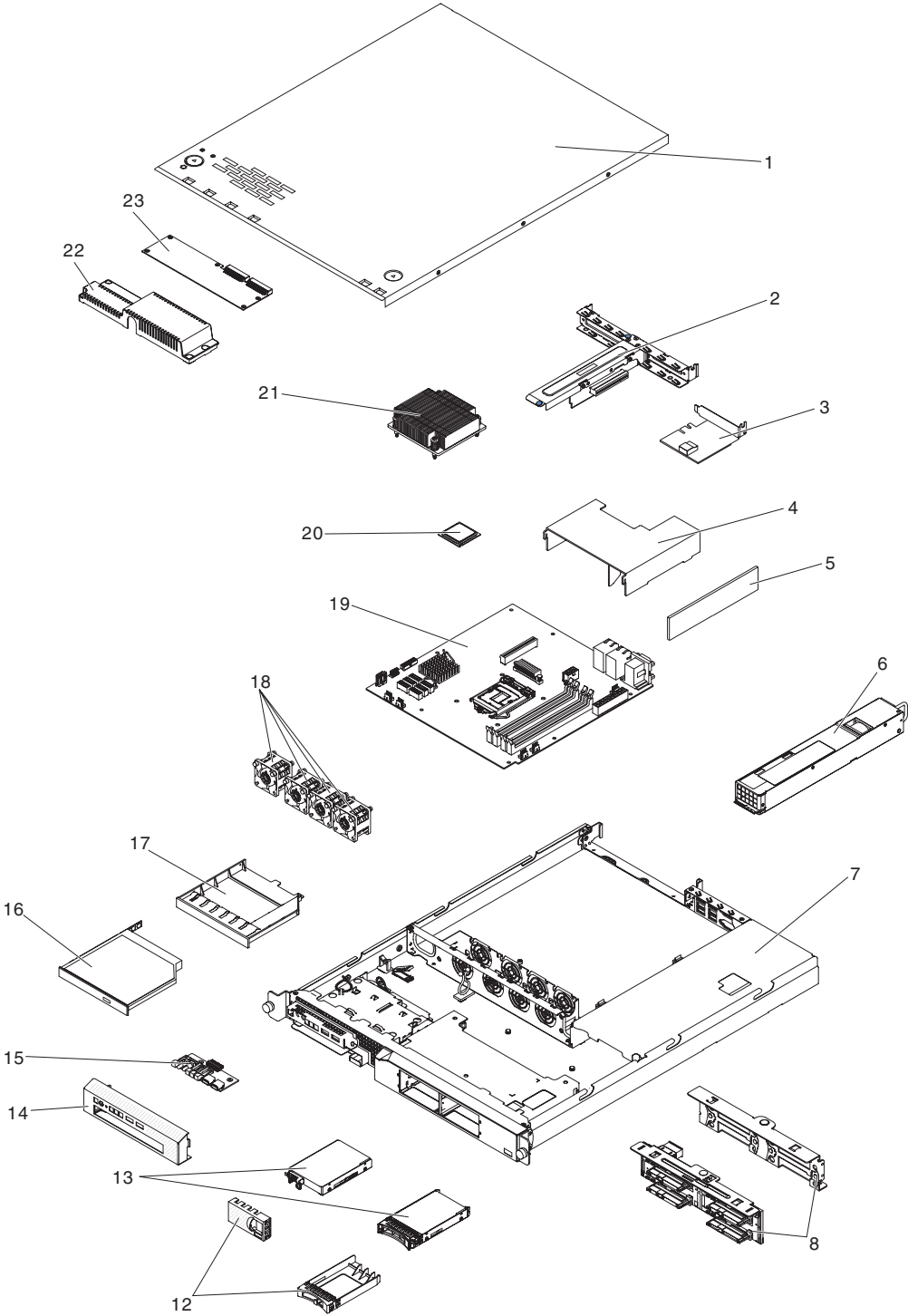
For information about the terms of the warranty and getting service and assistance, see the *Warranty Information* document that comes with the server.

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

Model with fixed power supply:



Model with redundant power supply:



The following table lists the part numbers for the server components.

Table 9. Parts listing, Type 2583

Index	Description	CRU part number (Tier 1)	CRU part number (Tier 2)	FRU part number
1	Top cover	81Y7455		

Table 9. Parts listing, Type 2583 (continued)

Index	Description	CRU part number (Tier 1)	CRU part number (Tier 2)	FRU part number
2	PCI riser-card assembly	81Y7457		
3	ServeRAID-BR10il v2 adapter (with bracket)	49Y4737		
4	Air baffle	81Y7453		
5	Memory, 1 GB single-rank PC3-10600R-999 DDR3 ECC RDIMM	44T1572		
5	Memory, 2 GB single-rank PC3-10600R-999 DDR3 ECC RDIMM	44T1574		
5	Memory, 4 GB dual-rank PC3-10600R-999 DDR3 ECC RDIMM	44T1575		
6	Power supply, 300 Watt, fixed			81Y6301
6	Power supply, 460 Watt, hot-swap (redundant power supply)			39Y7229
7	Chassis (with fixed power supply)			81Y7456
7	Chassis (with redundant power supply)			90Y5958
8	Backplate, simple-swap, 2.5-inch		81Y7466	
8	Backplane, hot-swap, 2.5-inch (with redundant power supply)		46C6757	
9	Backplate, simple-swap, 3.5-inch, SATA (for 1 cable)		81Y7465	
9	Backplate, simple-swap, 3.5-inch, SATA (for 2 cables)		81Y7464	
10	Hard disk drive, simple-swap, 3.5-inch SATA, 2 TB	42D0788		
10	Hard disk drive, simple-swap, 3.5-inch SATA, 1 TB	43W7625		
10	Hard disk drive, simple-swap, 3.5-inch SATA II, 500 GB	39M4517		
10	Hard disk drive, simple-swap, 3.5-inch SATA II, 250 GB	39M4529		
11	Filler panel, 3.5-inch simple-swap hard disk drive	39M4343		
12	Filler panel, 2.5-inch simple-swap hard disk drive	81Y7460		
12	Filler panel, 2.5-inch hot-swap hard disk drive (with redundant power supply)	44T2248		
13	Hard disk drive, simple-swap, 2.5-inch SAS, 600 GB	49Y2028		
13	Hard disk drive, simple-swap, 2.5-inch SAS, 300 GB	49Y1992		
13	Hard disk drive, simple-swap, 2.5-inch SAS, 146 GB	49Y1997		
13	Hard disk drive, hot-swap, 2.5-inch SAS, 146 GB (with redundant power supply)	42D0678		
13	Hard disk drive, hot-swap, 2.5-inch SAS, 300 GB (with redundant power supply)	42D0638		
13	Hard disk drive, hot-swap, 2.5-inch SAS, 500 GB (with redundant power supply)	42D0708		
13	Hard disk drive, hot-swap, 2.5-inch SAS, 600 GB (with redundant power supply)	49Y2004		
14	Front bezel	81Y7458		
15	Operator information panel assembly		90Y5298	
16	CD-RW/DVD-RW drive	44W3256		

Table 9. Parts listing, Type 2583 (continued)

Index	Description	CRU part number (Tier 1)	CRU part number (Tier 2)	FRU part number
16	DVD-ROM drive	44W3254		
17	Filler panel, DVD drive bay	49Y4868		
18	System fan, simple-swap	81Y7454		
19	System board			69Y5154
20	Microprocessor, Ci3-2100, 3.1 GHz, 1333 MHz, 3 MB cache, 2C (65W)			69Y5148
20	Microprocessor, Xeon E3-1270 3.4 GHz, 1333 MHz, 8MB cache, 4C (80W)			69Y5149
20	Microprocessor, Ci3-2120, 3.3 GHz, 1333 MHz, 3 MB cache, 2C (65W)			69Y5151
20	Microprocessor, Xeon E3-1240 3.3 GHz, 1333 MHz, 8MB cache, 4C (80W)			69Y5152
20	Microprocessor, Xeon E3-1280 3.5 GHz, 1333 MHz, 8MB cache, 4C (95W)			81Y6933
20	Microprocessor, Xeon E3-1220 3.1 GHz, 1333 MHz, 8MB cache, 4C (80W)			81Y6945
20	Microprocessor, Xeon E3-1230 3.2 GHz, 1333 MHz, 8MB cache, 4C (80W)			81Y6947
20	Microprocessor, Xeon E3-1260L 2.3 GHz, 1333 MHz, 8MB cache, 4C (45W)			81Y6949
20	Microprocessor, Xeon E3-1220L 2.2GHz 2C 3MB cache			81Y6951
20	Microprocessor, Pentium G850 2.9GHz 2C 3MB cache			81Y7504
21	Heat sink		81Y7495	
22	Cover, safety 240 VA			81Y7526
23	Paddle card, power supply backplane			00D3712
	Battery, 3.0 volt	33F8354		
	PCI riser card	81Y7494		
	ServeRAID-M1015 SAS/SATA adapter	46M0861		
	ServeRAID-M5014 SAS/SATA adapter	46M0918		
	ServeRAID-M1000 series advanced feature key	46M0864		
	Cable, front USB and operator information panel		81Y7463	
	Cable, backplate, 3.5-inch simple-swap, SATA (2 cables)		81Y7464	
	Cable, backplate, 3.5-inch simple-swap, SATA (1 cable)		81Y7465	
	Cable, backplate, 2.5-inch simple-swap, SAS		81Y7466	
	Cable, DVD drive		59Y3229	
	QLogic 10Gb dual-port CNA	42C1802		
	QLogic 10Gb SFP+ SR optical transceiver	42C1816		
	Brocade 10Gb dual-port CNA	42C1822		
	Brocade 10Gb SFP+ SR optical transceiver	42C1819		
	Emulex 8Gb FC single-port HBA	42D0491		
	Emulex 8Gb FC dual-port HBA	42D0500		

Table 9. Parts listing, Type 2583 (continued)

Index	Description	CRU part number (Tier 1)	CRU part number (Tier 2)	FRU part number
	Filler, power supply (with redundant power supply)	49Y4821		
	Hard disk drive cage, 2.5-inch hot-swap (with redundant power supply)	81Y7528		
	Hard disk drive cage, 3.5-inch simple-swap	81Y7461		
	QLogic 8Gb FC single-port HBA	42D0507		
	QLogic 8Gb FC dual-port HBA	42D0516		
	NetXtreme II 1000 Express dual-port Ethernet adapter	49Y7947		
	NetXtreme II 1000 Express quad-port Ethernet adapter	49Y7949		
	Ethernet dual-port server adapter I340-T2	49Y4232		
	Ethernet quad-port server adapter I340-T4	49Y4242		
	Bracket, EAR	39M4351		
	Miscellaneous kit	81Y7459		
	1U tool-less kit	24P1121		
	Service label	81Y7507		

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

Power cords

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

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

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

For units intended to be operated at 230 volts (U.S.): Use 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, 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
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 5. Removing and replacing server components

Replaceable components are of four types:

- **Consumable part:** Purchase and replacement of consumable parts (components, such as batteries and printer cartridges, that have depleting 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 4, “Parts listing, System x3250 M4 Type 2583,” on page 141 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 Information* document that comes with the server.

Installation guidelines

Attention: Static electricity that is released to internal server components when the server is powered-on might cause the system 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 removing or installing a hot-swap device.

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

- Read the safety information that begins on page vii and the guidelines in “Working inside the server with the power on” on page 151 and “Handling static-sensitive devices” on page 151. This information will help you work safely.
- When you install your new server, take the opportunity to download and apply the most recent firmware updates. This step will help to ensure that any known issues are addressed and that your server is ready to function at maximum levels of performance. To download firmware updates for your server, complete the following steps:
 1. Go to <http://www.ibm.com/supportportal/> or <http://www.ibm.com/support/fixcentral/>.
 2. Under **Product support**, click **System x**.
 3. Under **Popular links**, click **Software and device drivers**.
 4. Click **System x3250 M4** to display the matrix of downloadable files for the server.

For more information and to download the utilities, see <http://www.ibm.com/systems/support/supportsite.wss/docdisplay?brandind=5000008&Indocid=SERV-DSA> for DSA web download link.

- 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.
- Before you install optional devices, make sure that the server is working correctly. Start the server, and make sure that the operating system starts, if an operating system is installed, or that a 19990305 error code is displayed, indicating that an operating system was not found but the server is otherwise working correctly. If the server is not working correctly, see Chapter 1, “Start here,” on page 1 and Chapter 3, “Diagnostics,” on page 21 for diagnostic information.
- Observe good housekeeping in the area where you are working. Place removed covers and other parts in a safe place.
- If you must start the server while the cover is removed, make sure that no one is near the server and that no other objects have been left inside the server.
- Do not attempt to lift an object that you think is too heavy for you. If you have to lift a heavy object, observe the following precautions:
 - Make sure that you stand safely without slipping.
 - Distribute the weight of the object equally between your feet.
 - Use a slow lifting force. Never move suddenly or twist when you lift a heavy object.
 - To avoid straining the muscles in your back, lift by standing or by pushing up with your leg muscles
- Make sure that you have an adequate number of properly grounded electrical outlets for the server, monitor, and other devices.
- Back up all important data before you make changes to disk drives.
- Have a small flat-blade screwdriver, a small Phillips screwdriver, and a T8 torx screwdriver available.
- You do not have to turn off the server to install or replace hot-swap drives or hot-plug Universal Serial Bus (USB) devices. However, you must turn off the server before you perform any steps that involve removing or installing adapter cables, and you must disconnect the power source before you perform any steps that involve removing or installing riser cards.
- When you are finished working on the server, reinstall all safety shields, guards, labels, and ground wires.
- For a list of supported optional devices for the server, see <http://www.ibm.com/servers/eserver/serverproven/compat/us/>.

System reliability guidelines

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

- Each of the drive bays has a drive or a filler panel and electromagnetic compatibility (EMC) shield installed in it.
- 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 top cover before you turn on the server.

Operating the server for extended periods of time (more than 30 minutes) with the server top 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.
- You do not operate the server without the air baffle installed. Operating the server without the air baffle might cause the microprocessor to overheat.

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 have to have the server turned on while the cover is off, to look at system-board LEDs or replace hot-swap components. Follow these guidelines when you work inside a server that is turned on:

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

Handling static-sensitive devices

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

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

- Limit your movement. Movement can cause static electricity to build up around you.
- The use of a grounding system is recommended. For example, wear an electrostatic-discharge wrist strap, if one is available. Always use an electrostatic-discharge wrist strap or other grounding system when working inside the server with the power on.
- Handle the device carefully, holding it by its edges or its frame.
- Do not touch solder joints, pins, or exposed circuitry.
- Do not leave the device where others can handle and damage it.
- While the device is still in its static-protective package, touch it to an unpainted metal part on the outside of the server for at least 2 seconds. This drains static electricity from the package and from your body.

- Remove the device from its package and install it directly into the server without setting down the device. If it is necessary to set down the device, put it back into its static-protective package. Do not place the device on the server top cover or on a metal surface.
- Take additional care when handling devices during cold weather. Heating reduces indoor humidity and increases static electricity.

Returning a device or component

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

Removing and replacing Tier 1 CRUs

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

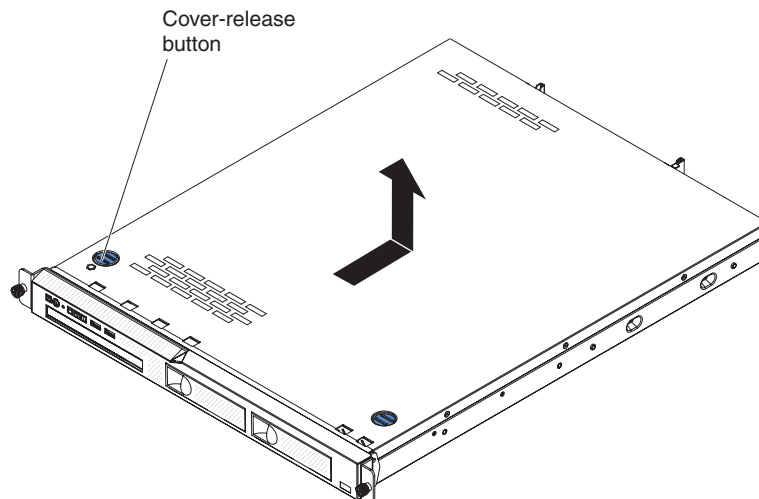
The illustrations in this document might differ slightly from your hardware.

Removing the server top cover

To remove the server top cover, complete the following steps:

1. Read the safety information that begins on page vii and “Installation guidelines” on page 149.
2. Turn off the server and all peripheral devices, and disconnect the power cords and all external cables.

Note: When you disconnect the power source from the server, you lose the ability to view the LEDs because the LEDs are not lit when the power source is removed. Before you disconnect the power source, make a note of which LEDs are lit, including the LEDs that are lit on the operation information panel and LEDs inside the server on the system board.



3. If the server has been installed in a rack, loosen the two thumbscrews on the front of the server and remove the server out of the rack enclosure; then, place it on a flat, static-protective surface.
4. Press the cover-release button.
5. Slide the top cover back approximately 1.27 cm (0.5 inches); then, lift it off the server.
6. Lift the top cover off the server and set it aside.
7. If you are instructed to return the top cover, follow all packaging instructions, and use any packaging materials for shipping that are supplied to you.

Attention: For proper cooling and airflow, replace the top cover before you turn on the server.

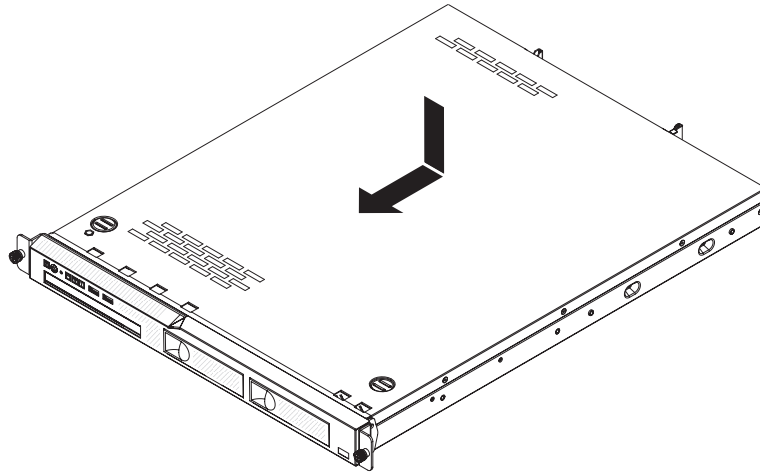
Installing the server top cover

To install the server top cover, complete the following steps:

1. Make sure that all cables, adapters, and other components are installed and seated correctly and that you have not left loose tools or parts inside the server. Also, make sure that all internal cables are correctly routed.

Important: Before you slide the top cover forward, make sure that all the tabs on both the front, rear, and side of the top cover engage the chassis correctly. If all the tabs do not engage the chassis correctly, it will be very difficult to remove the top cover later.

2. Position the top cover on top of the server so that approximately 13 mm (0.5 inch) extends from the rear.

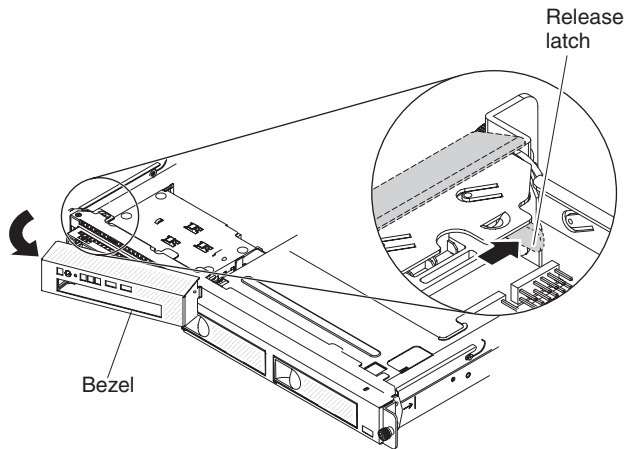


3. Slide the top cover toward the front of the server.
4. Make sure that the top cover correctly engages all the inset tabs on the server.
5. Install the server into the rack enclosure and tighten the two front thumbscrews to secure the server in the rack.
6. Reconnect the external cables and power cords.

Removing the bezel

To remove the bezel, complete the following steps:

1. Read the safety information that begins on page vii and “Installation guidelines” on page 149.
2. Turn off the server and all peripheral devices, and disconnect the power cords and all external cables.
3. Remove the server top cover (see “Removing the server top cover” on page 153).
4. From inside the server, press the bezel release latch toward the left side of the server.
5. Pivot the bezel forward and pull it away from the server.

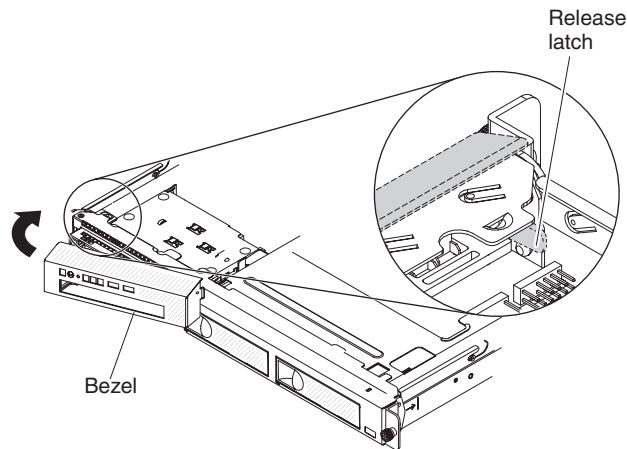


6. If you are instructed to return the bezel, follow all packaging instructions, and use any packaging materials for shipping that are supplied to you.

Attention: For proper cooling and airflow, replace the bezel and server cover before you turn on the server.

Installing the bezel

To install the bezel, 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.

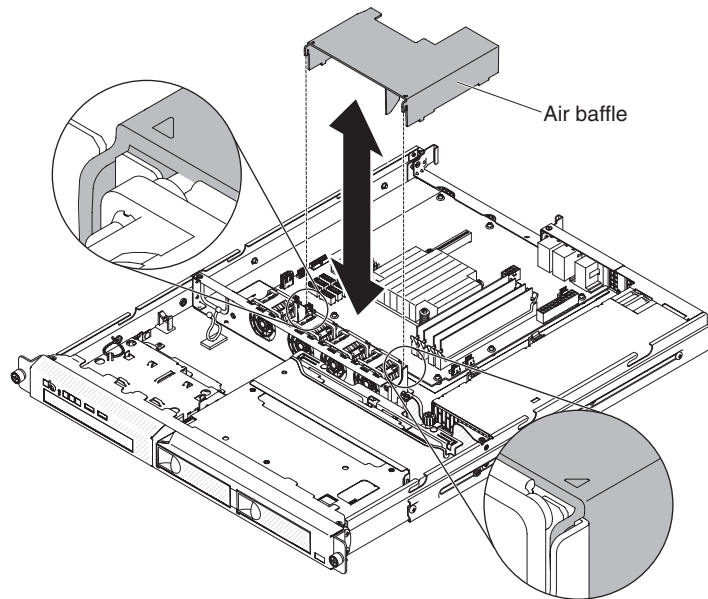


Attention: For proper cooling and airflow, replace the bezel and server top cover before you turn on the server.

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 149.
2. Turn off the server and peripheral devices and disconnect all power cords and external cables.
3. Remove the server top cover (see “Removing the server top cover” on page 153).



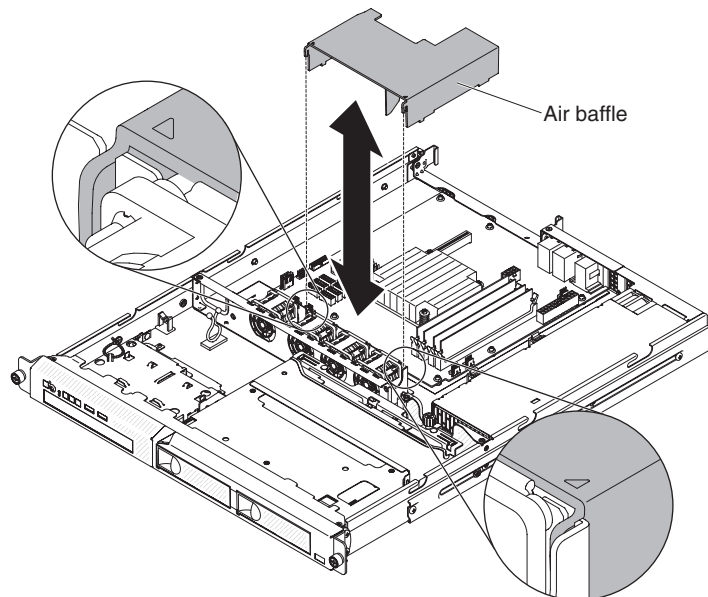
4. Grasp the air baffle; then, lift it up out of the server and set it aside.

Attention: For proper cooling and airflow, replace the air baffle before you turn on the server. Operating the server with an air baffle removed might damage server components.

Installing the air baffle

To install the air baffle, complete the following steps:

1. Make sure that all internal cables are correctly routed.
2. Align the air baffle with the slots on the chassis; then, lower the air baffle into the server.



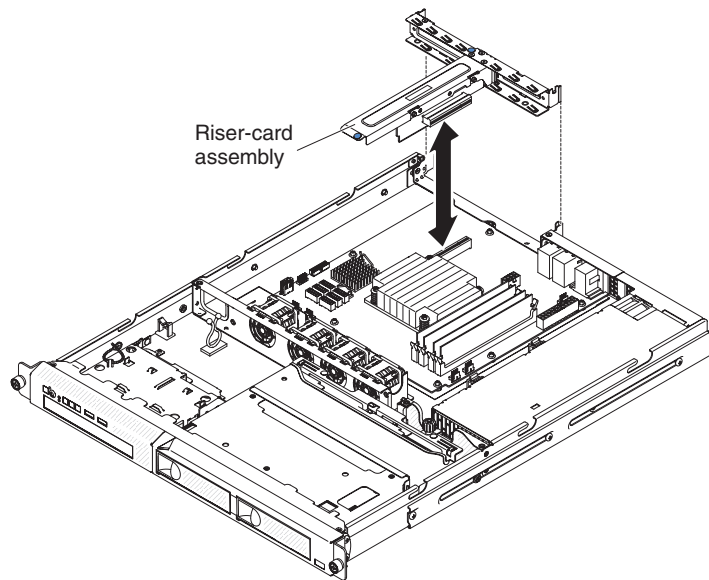
3. Install the server top cover (see “Installing the server top cover” on page 153).
4. Reconnect the power cord and any cables that you removed.
5. Turn on the peripheral devices and the server.

Attention: For proper cooling and airflow, replace the air baffle before turning on the server. Operating the server with an air baffle removed might damage server components.

Removing the PCI riser-card assembly

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

1. Read the safety information that begins on page vii and “Installation guidelines” on page 149.
2. Turn off the server and peripheral devices, and disconnect the power cord and all external cables.
3. Remove the server top cover (see “Removing the server top cover” on page 153).

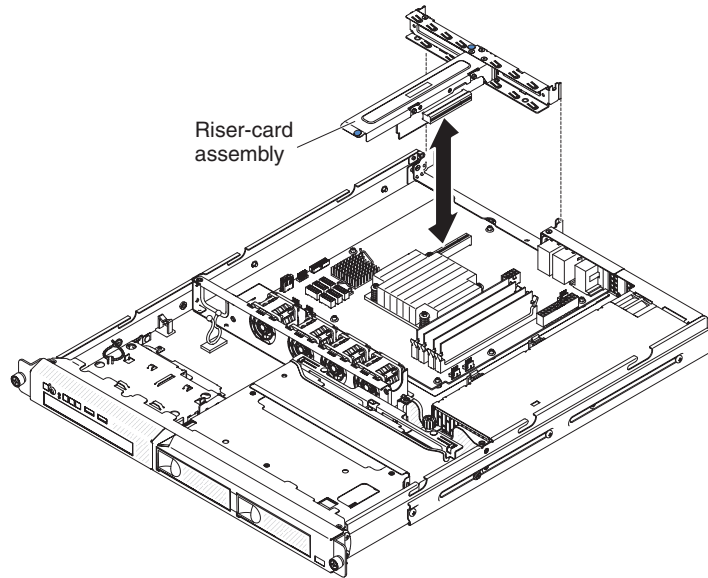


4. Grasp the PCI riser-card assembly at the front and rear edges and lift to remove it from the server.
5. Disconnect any cables from the adapters in the PCI riser-card assembly.
6. Place the PCI riser-card assembly on a flat, static-protective surface. If you are instructed to return the PCI riser-card assembly, follow all packaging instructions, and use any packaging materials for shipping that are supplied to you.

Installing the PCI riser-card assembly

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

1. Read the safety information that begins on page vii and “Installation guidelines” on page 149.
2. Install the adapters in the PCI riser-card assembly (see “Installing a ServeRAID adapter” on page 161).
3. Reconnect any adapter cables that you disconnected when you removed the PCI riser-card assembly.
4. Carefully align the PCI riser-card assembly with the guides on the rear of the server and with the PCI riser-card connector on the system board; then, place your thumbs on locations marked by the blue dots and press down on the PCI riser-card assembly. Make sure that the riser-card assembly is fully seated in the connector on the system board.

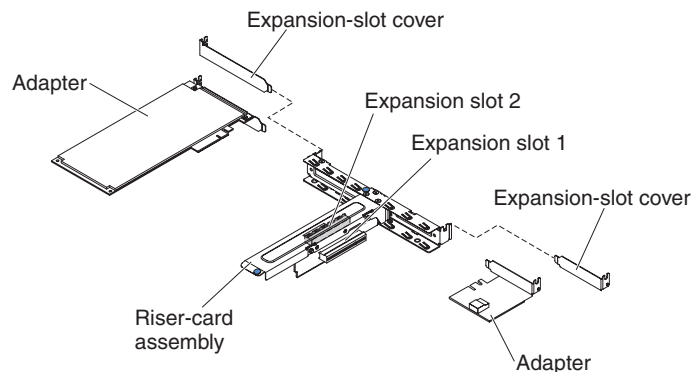


5. Install the server top cover (see “Installing the server top cover” on page 153).
6. Connect the cables and power cords.
7. Turn on all attached devices and the server.

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 149.
2. Turn off the server and peripheral devices and disconnect all power cords.
3. Remove the server from the rack and remove the server top cover (see “Removing the server top cover” on page 153).
4. Remove the PCI riser-card assembly (see “Removing the PCI riser-card assembly” on page 157).
5. Disconnect any cables from the adapter.
6. Grasp the PCI riser-card assembly at the front grip point and rear edges and lift to remove it from the server.
7. Place the PCI 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 PCI riser-card assembly.



9. Install the expansion-slot cover on the PCI riser-card assembly.

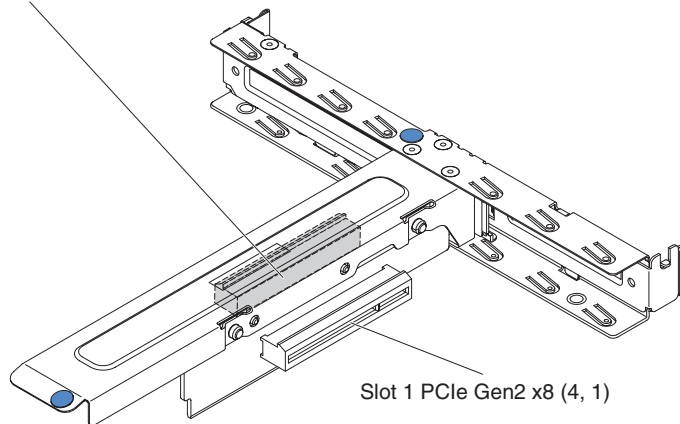
10. If you are instructed to return the adapter, follow all packaging instructions, and use any packaging materials for shipping that are supplied to you.

Installing an adapter

The following notes describe the types of adapters that the server supports and other information that you must consider when you install an adapter:

- Locate the documentation that comes with the adapter and follow those instructions in addition to the instructions in this section. If you have to change switch settings or jumper settings on the adapter, follow the instructions that come with the adapter.
- The adapter slots are on the PCI riser-card assembly. You must first remove the PCI riser-card assembly to access the adapter slots.
- The expansion slots on the PCI riser-card assembly accommodate the various form factors of the non-hot-plug adapters as follows:
 - Expansion slot 1: Low-profile with 2U bracket (this slot is dedicated for ServeRAID-10iL v2 SAS/SATA controller)
 - Expansion slot 2: Full-height, half-length

Slot 2 PCIe Gen2 x8 (8, 4, 1)



- The optional ServeRAID-BR10iL v2 controller must be installed in expansion slot 1 on the PCI riser-card assembly.

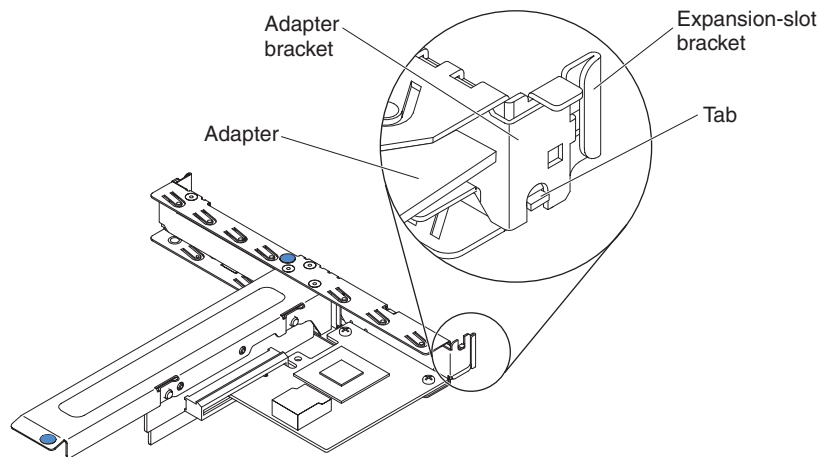
Attention: Some cluster solutions require specific code levels or coordinated code updates. If the device is part of a cluster solution, verify that the latest level of code is supported for the cluster solution before you update the code.

To install an adapter, complete the following steps:

1. Read the safety information that begins on page vii and the “Installation guidelines” on page 149.
2. Turn off the server and peripheral devices and disconnect the power cords and all external cables; then, remove the server top cover (see “Removing the server top cover” on page 153).
3. Remove the PCI riser-card assembly (see “Removing the PCI riser-card assembly” on page 157).
4. 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.

5. 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.
6. Follow the cabling instructions, if any come with the adapter. Route the adapter cables before you install the adapter.
7. Remove the expansion-slot cover from the PCI riser-card assembly and save for future use.
8. Align the connector on the adapter with the connector on the PCI riser-card assembly, then, insert the adapter into the PCI riser-card assembly. Press the edge of the connector *firmly* into the PCI riser-card assembly. Make sure that the adapter is securely installed in the PCI riser-card assembly.

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



9. Install the PCI riser-card assembly (see “Installing the PCI riser-card assembly” on page 157).

Attention: When you install an adapter, make sure that the adapter is correctly seated in the PCI riser-card assembly and that the PCI riser-card assembly is securely seated in the riser-card connector on the system board before you turn on the server. An incorrectly seated adapter might cause damage to the system board, the PCI riser-card assembly, or the adapter.

10. Install the server top cover (see “Installing the server top cover” on page 153).
11. Reconnect the power cord and any cables that you removed.
12. Turn on the peripheral devices and the server.

Note: To support Windows 2011 SBS on Brocade adapters need to use at least 3.0.0.0 driver package or later version.

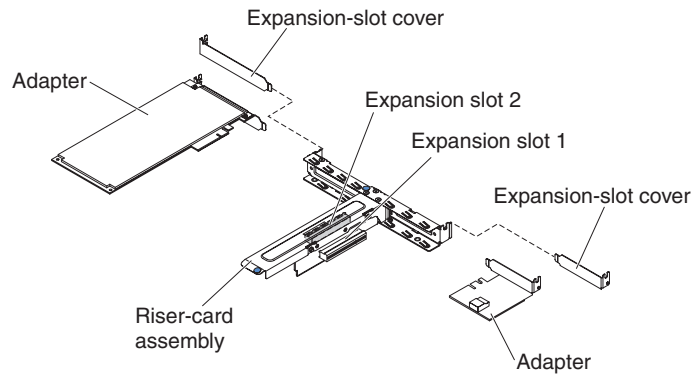
Removing a ServeRAID adapter

To remove an IBM ServeRAID adapter, complete the following steps:

1. Read the safety information that begins on page vii and “Installation guidelines” on page 149.
2. Turn off the server and peripheral devices and disconnect the power cords.

Note: When you disconnect the power source from the server, you lose the ability to view the LEDs because the LEDs are not lit when the power source is removed. Before you disconnect the power source, make a note of which LEDs are lit, including the LEDs inside the server on the system board.

3. Remove the server top cover (see “Removing the server top cover” on page 153).
4. Remove the PCI riser-card assembly (see “Removing the PCI riser-card assembly” on page 157).
5. Disconnect the signal cable from the ServeRAID adapter.
6. Carefully grasp the end of the ServeRAID adapter and pull it out of the connector on the PCI riser-card assembly.



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

Installing a ServeRAID adapter

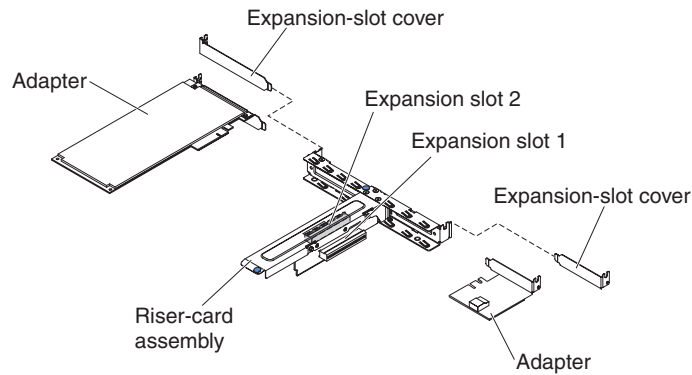
For configuration information, see the ServeRAID documentation at <http://www.ibm.com/supportportal/>.

Important: To ensure that any of your ServeRAID adapters function properly on UEFI-based servers, make sure that the adapter firmware and supporting device drivers are updated to at least 11.x.x-XXX.

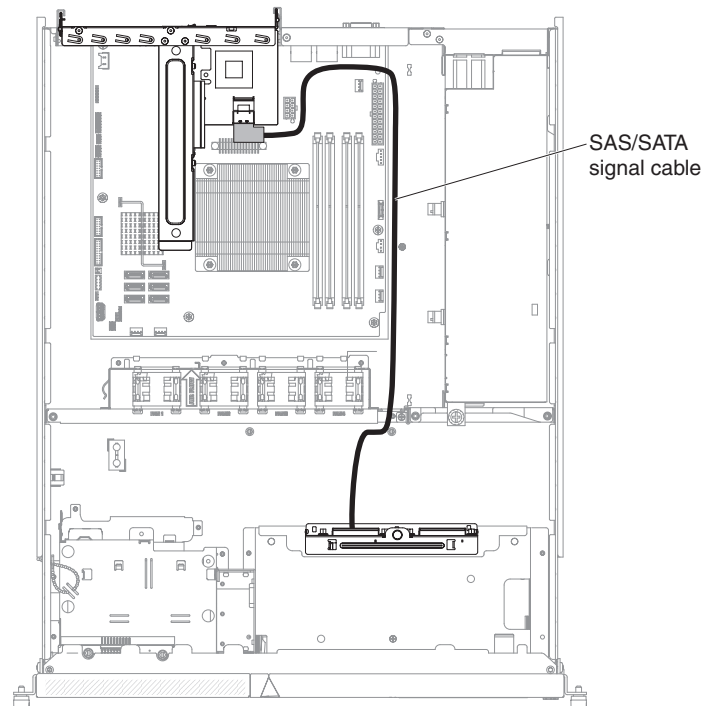
To install an optional ServeRAID adapter, complete the following steps:

1. Read the safety information that begins on page vii and “Installation guidelines” on page 149.
2. Turn off the server and peripheral devices and disconnect the power cords.
3. Remove the server top cover (see “Removing the server top cover” on page 153).
4. Remove the PCI riser-card assembly (see “Removing the PCI riser-card assembly” on page 157).
5. Remove the expansion-slot cover on the slot that you intend to use and save for future use.

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



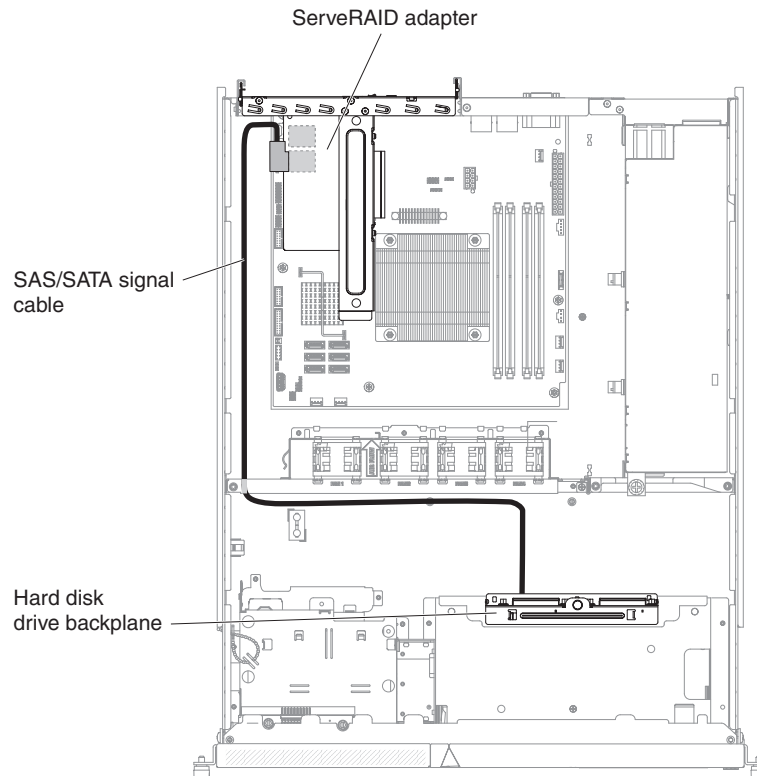
6. Touch the static-protective package that contains the new ServeRAID adapter to any unpainted surface on the outside of the server; then, grasp the adapter by the top edge or upper corners of the adapter and remove it from the package.
7. Take the signal cable that is attached to the drive backplane and connect it to the ServeRAID adapter.
 - If you install a ServeRAID-BR10il v2 adapter in slot 1 on the PCI riser-card assembly, route the signal cable from the drive backplane as shown in the following illustration.



- If you install a ServeRAID-M1050 or ServeRAID-M5014 adapter in slot 2 on the PCI riser-card assembly, route the signal cable from the drive backplane through the fan cage hole on the left of fan 1 as shown in the following illustration. Connect the signal cable to **Port 0** on the ServeRAID adapter.

Notes:

- a. You must connect the signal cable to **Port 0** on a ServeRAID-M1050 or ServeRAID-M5014 adapter.
- b. Secure the cable on the system board with cable tie after routing.



8. Align the ServeRAID adapter so that the keys align correctly with the connector on the PCI riser-card assembly.
9. Insert the ServeRAID adapter into the connector on the PCI riser-card assembly until it is firmly seated.
Attention: Incomplete insertion might cause damage to the server or the adapter.
10. Install the riser-card assembly (see “Installing the PCI riser-card assembly” on page 157).
11. Replace the server top cover (see “Installing the server top cover” on page 153).
12. Reconnect the power cord and any cables that you removed.
13. Turn on the peripheral devices and the server.

Note: When you restart the server, you are prompted to import the existing RAID configuration to the new ServeRAID adapter.

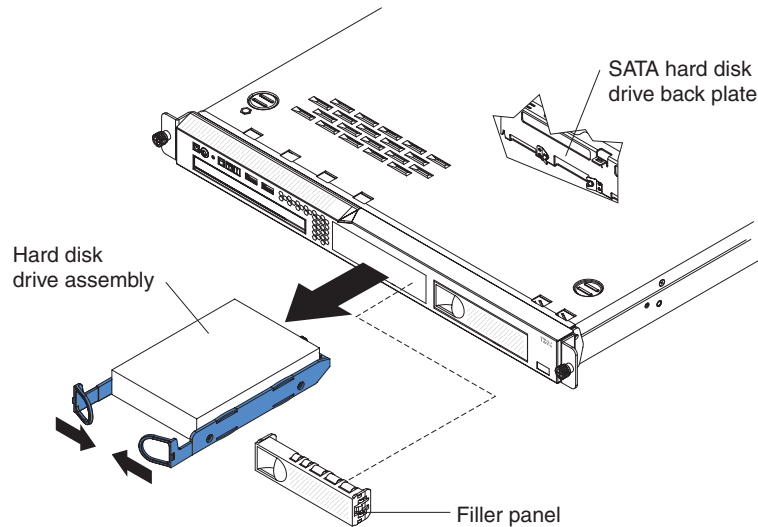
Removing a simple-swap hard disk drive

Important: Before you remove a simple-swap hard disk drive from the server, take the following precautions to save data, firmware, and configuration data:

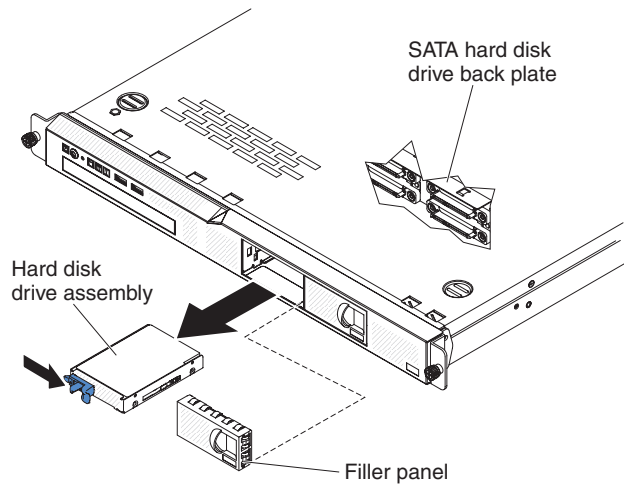
- Before you make changes to disk drives, disk drive controllers (including controllers that are integrated on the system board), disk drive backplates, or disk drive cables, back up all important data that is stored on hard disks.
- Before you remove any component of a RAID array, back up all RAID configuration information.

To remove a simple-swap hard disk drive from the bay, complete the following steps:

1. Read the safety information that begins on page vii and the “Installation guidelines” on page 149.
2. Make sure that the server top 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. Remove the hard disk drive:
 - To remove a 3.5-inch simple-swap hard disk drive, pull the loops of the drive tray toward each other and pull the drive out of the bay.



- To remove a 2.5-inch simple-swap hard disk drive, press the release latch and pull the drive out of the bay.



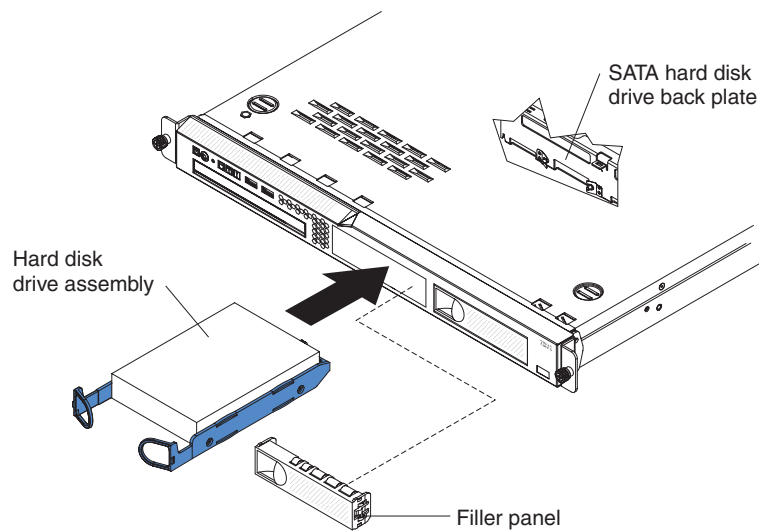
6. If you are instructed to return the hard disk drive, follow all packaging instructions, and use any packaging materials for shipping that are supplied to you.

Installing a simple-swap hard disk drive

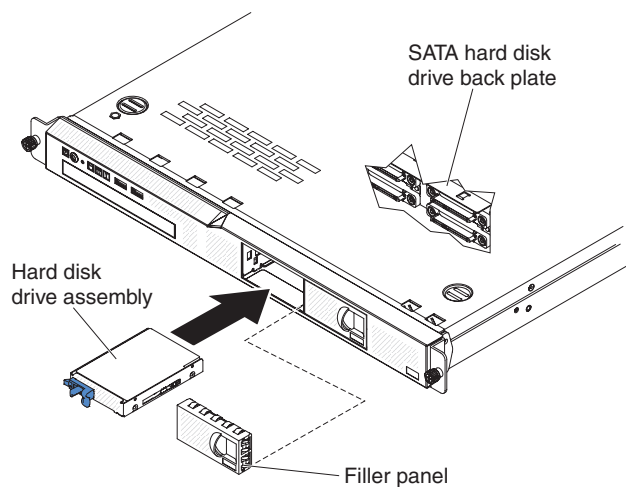
To install a simple-swap hard disk drive, complete the following steps.

Notes:

1. If you have only one hard disk drive, install it in the left or upper-left drive bay.
2. 3TB hard disk drives are not supported in OS 4690.
1. Read the safety information that begins on page vii and the “Installation guidelines” on page 149.
2. Make sure that the server top 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. Install the hard disk drive:
 - To install a 3.5-inch simple-swap hard disk drive, pull the loops of the drive tray toward each other, and slide the drive into the server until the drive connects to the backplate. Release the loops of the drive tray.



- To install a 2.5-inch simple-swap hard disk drive, slide the drive into the server until the drive clicks into the server and connects to the backplate.



6. Insert the filler panel into the bay to cover the drive.
7. Connect the cables and power cords.
8. Turn on all attached devices and the server.

Note: You might have to reconfigure the disk arrays after you install hard disk drives. See the RAID documentation on the IBM *ServeRAID Support* CD for information about RAID controllers.

Table 10. 3TB HDD OS support list

OS	Support limitation	Support status
Windows 2008R2 SP1 64bit uEFI		Support
Windows 2008R2 SP1 64bit legacy	Support with disk partitions less than 2 TB	Support with limitation
Windows 2008 SP2 64bit uEFI		Support
Windows 2008 SP2 64bit legacy	Support with disk partitions less than 2 TB	Support with limitation
Windows 2008 SP2 32bit legacy	Support with disk partitions less than 2 TB	Support with limitation
RHEL 6.1 64bit uEFI		Support
RHEL 6.1 64bit legacy		Support
RHEL 6.1 32bit legacy		Support
RHEL 5.6 64bit legacy RHEL 5.6 32bit legacy	Do not support, partition not allowed	Do not support
RHEL 5.6 64bit legacy RHEL 5.6 32bit legacy	Do not support, partition not allowed	Do not support
SLES11 SP1 64bit uEFI		Support
SLES11 SP1 64bit legacy		Support
SLES11 SP1 32bit legacy		Support
SLES10 SP4 64bit legacy	Support with disk partitions less than 2 TB	Support with limitation
SLES10 SP4 32bit legacy	Support with disk partitions less than 2 TB	Support with limitation

Note: 3TB hard disk drives are not supported in OS 4690.

Table 11. ServeRAID support limitation on 3TB HDD

ServeRAID adapter	Support limitation	Comment
ServeRAID M5014	Support 3TB HDD, Virtual disk supports up to 12TB	Support
ServeRAID M1015	Support 3TB HDD, Virtual disk supports up to 12TB	Support
ServeRAID-BR10il	Virtual disk only supports up to 8TB.	LSI chip limitation. Support with limitaton.
ServeRAID H1110	Support 3TB HDD, Virtual disk supports up to 12TB	Support
ServeRAID C100	Support 3TB HDD, Virtual disk supports up to 12TB	Support

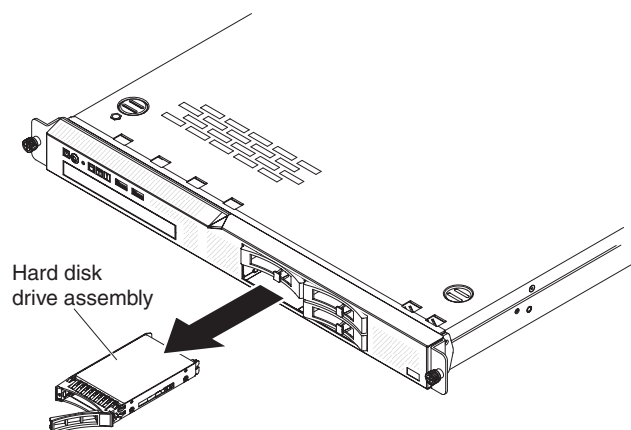
Removing a hot-swap hard disk drive

Important: Before you remove a hot-swap hard disk drive from the server, take the following precautions to save data, firmware, and configuration data:

- Before you make changes to disk drives, disk drive controllers (including controllers that are integrated on the system board), disk drive backplanes, or disk drive cables, back up all important data that is stored on hard disks.
- Before you remove any component of a RAID array, back up all RAID configuration information.

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 top 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. Slide the release latch gently to the left to unlock the drive handle.
3. Grasp the handle and pull the hot-swap drive assembly out of the drive bay.

Installing a hot-swap hard disk drive

The 2.5-inch drive hot-swap server models support four SAS 2.5-inch hard disk drives.

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

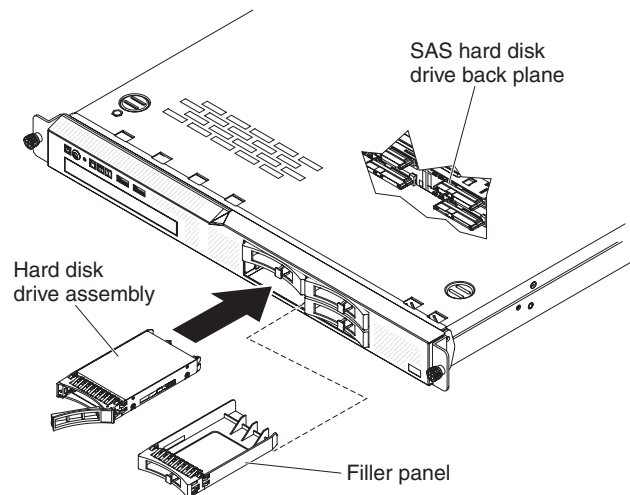
Note: If you have only one hard disk drive, install it in the left drive bay.

Attention: To avoid damage to the hard disk drive connectors, make sure that the server top 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 the “Installation guidelines” on page 149.
2. Make sure that the server top 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 drive tray handle is open.
- b. Remove the filler panel from the bay.
- c. Align the drive assembly with the guide rails in the bay.
- d. Gently push the drive assembly into the bay until the drive stops.
- e. Push the tray handle to the closed (locked) position.
- f. 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.

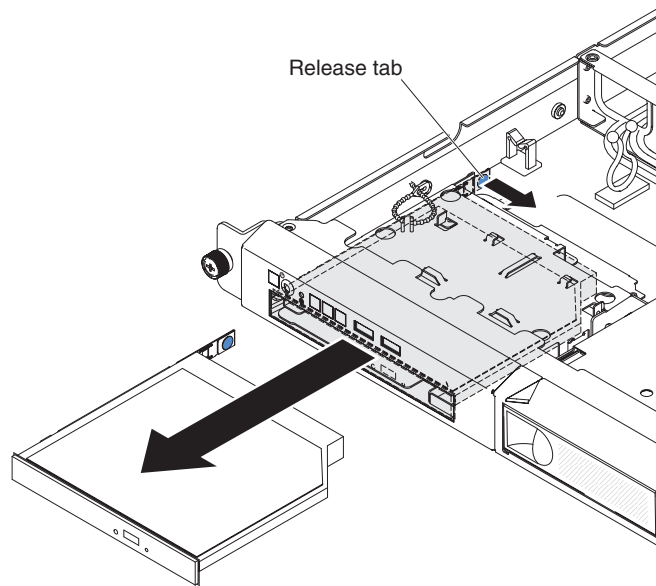
Note: You might have to reconfigure the disk arrays after you install hard disk drives. See the RAID documentation on the IBM *ServeRAID Support* CD for information about RAID controllers.

Removing the optional DVD drive

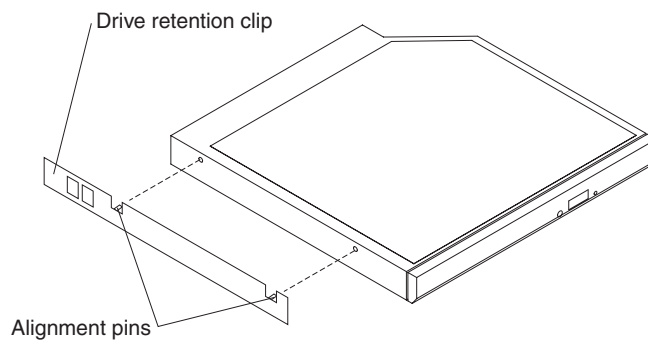
To remove the optional DVD drive, complete the following steps:

1. Read the safety information that begins on page “Safety” on page vii and “Installation guidelines” on page 149.
2. Turn off the server and peripheral devices and disconnect all power cords.
3. Remove the server top cover (see “Removing the server top cover” on page 153).
4. Press the release tab (the rear of the drive-retention clip) toward the right side of the server to release the clip; then, while you press the tab, push the drive out of the bay.

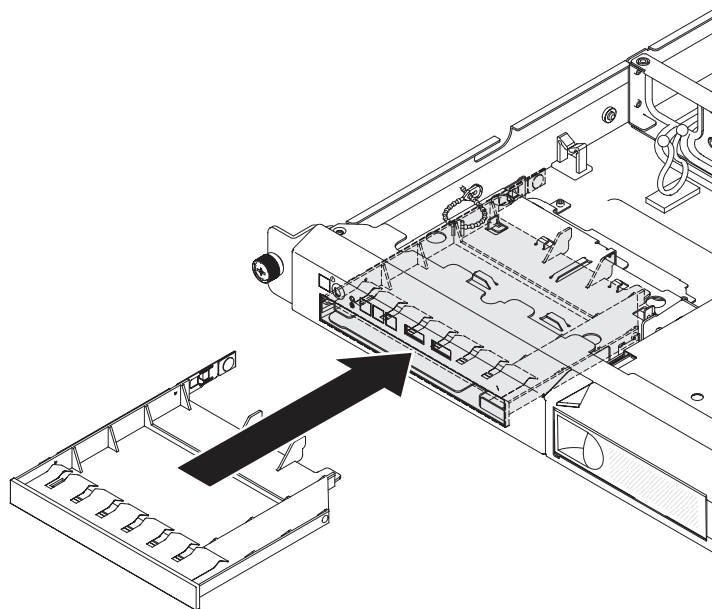
Note: You might have to push the right-rear corner of the drive toward the front of the server to move the drive initially.



5. Remove the retention clip from the drive.



6. If you are not replacing the DVD drive, reinstall the DVD drive filler.
 - a. Attach the drive-retention clip to the side of the DVD drive filler that you removed in 6 on page 170.
 - b. Slide the DVD drive filler into the DVD drive bay until the drive filler clicks into place.



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.

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

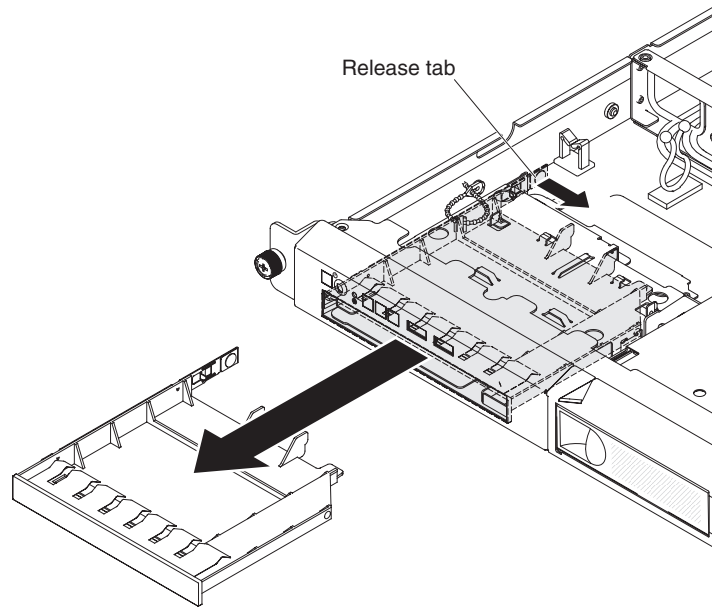
Installing the optional DVD drive

The following notes describe the type of drives that the server supports and other information that you must consider when you install an optional DVD drive. For a list of supported drives, see <http://www.ibm.com/servers/eserver/serverproven/compat/us/>.

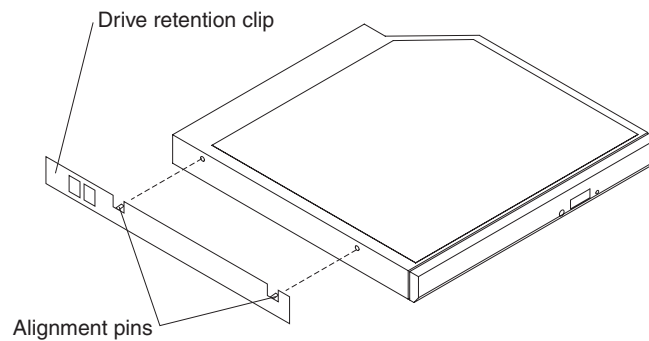
- Locate the documentation that comes with the drive and follow those instructions in addition to the instructions in this chapter.
- Make sure that you have all the cables and other equipment that are specified in the documentation that comes with the drive.
- The server supports one ultra-slim SATA optical drive.

If you need to install an optional DVD drive, complete the following steps:

1. Read the safety information that begins on page vii and “Installation guidelines” on page 149.
2. Turn off the server and peripheral devices and disconnect the power cords and all external cables.
3. Remove the server top cover (see “Removing the server top cover” on page 153).
4. Touch the static-protective package that contains the new DVD drive to any unpainted metal surface on the server; then, remove the drive from the package and place it on a static-protective surface.
5. Follow the instructions that come with the DVD drive to set any jumpers or switches.
6. Remove the DVD drive filler if it is installed. Press the release tab (the rear of the drive-retention clip) toward the right side of the server to release the clip; then, while you press the tab, push the DVD drive filler out of the bay. Save the DVD drive filler for future use.



7. Remove the retention clip from the DVD drive filler.
8. Attach the drive-retention clip that you removed in 7 to the side of the new DVD drive.



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

Statement 3:



CAUTION:

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

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

**DANGER**

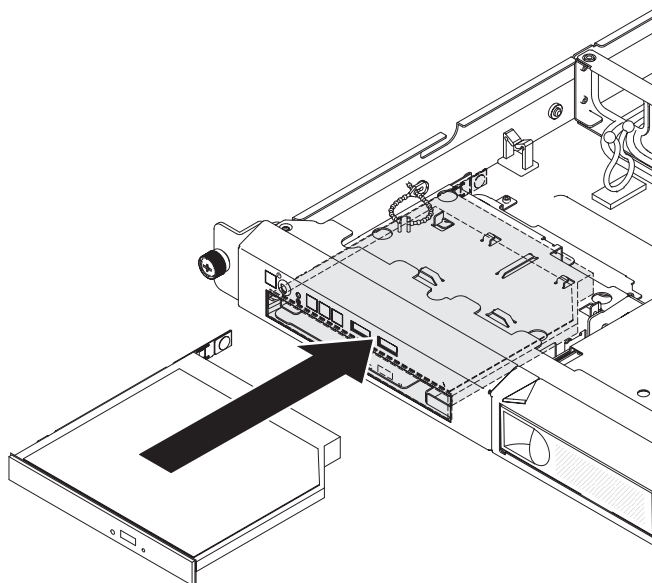
Some laser products contain an embedded Class 3A or Class 3B laser diode. Note the following.

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



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

9. Slide the DVD drive into the bay until the DVD drive clicks into place.



10. Replace the server top cover (see "Installing the server top cover" on page 153).

11. Reconnect the power cord and any cables that you removed.
12. Turn on the peripheral devices and the server.

Removing a memory module

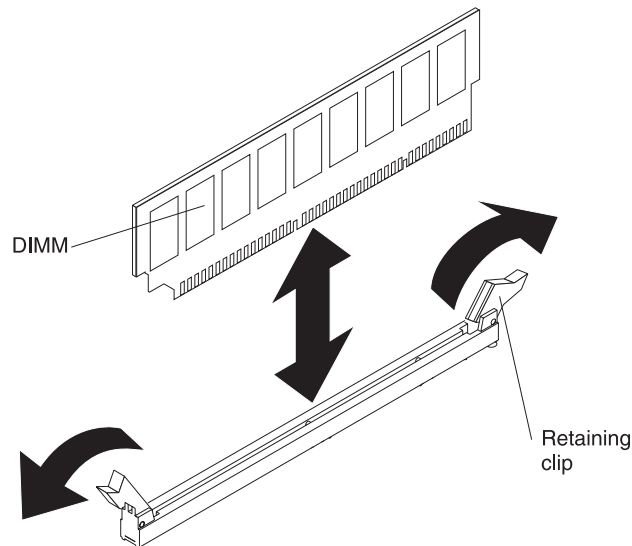
To remove a dual inline memory module (DIMM), complete the following steps:

1. Read the safety information that begins on page vii and “Installation guidelines” on page 149.
2. Turn off the server and peripheral devices and disconnect all power cords.
3. Remove the server top cover (see “Removing the server top cover” on page 153).

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

4. Remove the air baffle (see “Removing the air baffle” on page 155).
5. Carefully open the retaining clips on each end of the DIMM connector and remove the DIMM.

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



6. 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

The following notes describe the types of DIMMs that the server supports and other information that you must consider when you install DIMMs:

- The server supports only industry-standard double-data-rate 3 (DDR3), 1333 MHz, PC3-10600 (single-rank or dual-rank), unbuffered, synchronous dynamic random-access memory (SDRAM) dual inline memory modules (DIMMs) with error correcting code (ECC). See <http://www.ibm.com/servers/eserver/serverproven/compat/us/> for a list of supported memory modules for the server.
- The server supports a maximum of four single-rank or dual-rank unbuffered DIMMs.
- The maximum operating speed of the server is determined by the slowest DIMM in the server.
- If you install a pair of DIMMs in DIMM connectors 1 and 3, the size and speed of the DIMMs that you install in DIMM connectors 1 and 3 must match each other.

However, they do not have to be the same size and speed as the DIMMs that are installed in DIMM connectors 2 and 4.

- You can use compatible DIMMs from various manufacturers in the same pair.
- When you install or remove DIMMs, the server configuration information changes. When you restart the server, the system displays a message that indicates that the memory configuration has changed.
- The specifications of a DDR3 DIMM are on a label on the DIMM, in the following format.

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

where:

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

e is the number of ranks

1 = single-rank

2 = dual-rank

4 = quad-rank

ff is the device organization (bit width)

4 = x4 organization (4 DQ lines per SDRAM)

8 = x8 organization

16 = x16 organization

wwwww is the DIMM bandwidth, in MBps

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

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

m is the DIMM type

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

R = Registered DIMM (RDIMM)

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

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

bb is the JEDEC SPD Revision Encoding and Additions level

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

Notes:

1. To determine the type of a DIMM, see the label on the DIMM. The information on the label is in the format *xxxxx nRxxx PC3-xxxxx-xx-xx-xxx*. The numeral in the sixth numerical position indicates whether the DIMM is single-rank (*n*=1) or dual-rank (*n*=2).
2. The amount of usable memory is reduced, depending on the system configuration. A certain amount of memory must be reserved for system resources. To view the total amount of installed memory and the amount of configured memory, run the Setup utility. For additional information, see "Configuring the server" on page 207.

Unbuffered DIMMs (UDIMMs)

The following notes provide information that you must consider when you install UDIMMs:

- The memory channels run at the lowest common frequency of the DIMMs installed.
- The UDIMM options that are available for the server are 1 GB, 2 GB, 4 GB, and 8 GB (when available) DIMMs.
- The server supports up to two single-rank or dual-rank UDIMMs per channel.

- The following table lists the supported UDIMM population.

Table 12. Supported UDIMM population per channel

DIMM connectors per channel	DIMMs installed in each channel	DIMM type	DIMM speed	Ranks per DIMM (any combination)
2	1	Unbuffered DDR3 ECC	1333	Single-rank, dual-rank
2	2	Unbuffered DDR3 ECC	1333	Single-rank, dual-rank

- The following table lists the maximum DIMM population using ranked UDIMMs.

Table 13. Maximum memory population using ranked UDIMMs (depending on your model)

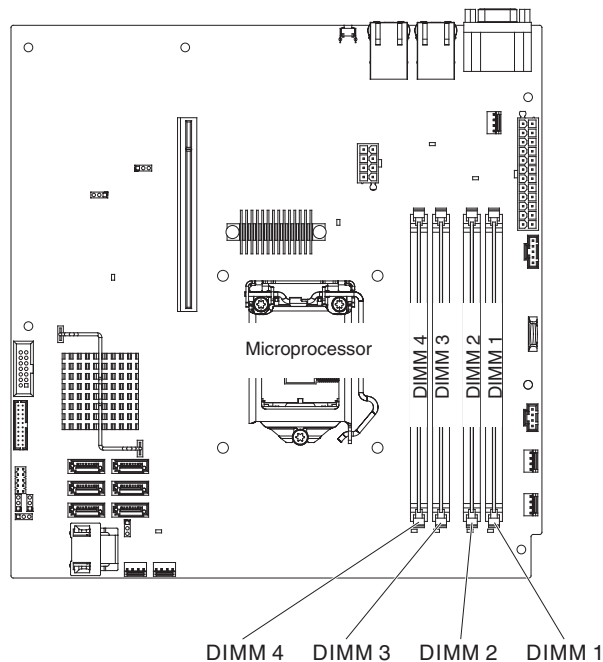
Number of UDIMMs	DIMM type	Size	Total memory
4	Single-rank UDIMMs	1 GB	4 GB
4	Dual-rank UDIMMs	2 GB	8 GB
4	Dual-rank UDIMMs	4 GB	16 GB
4	Dual-rank UDIMMs	8 GB (when available)	32 GB

- The following table shows the UDIMM memory population rule to optimize the system performance.

Table 14. UDIMM population rule

DIMM connector 1	DIMM connector 2	DIMM connector 3	DIMM connector 4
Populated	Empty	Empty	Empty
Populated	Empty	Populated	Empty
Populated	Populated	Populated	Populated

The following illustration shows the location of the DIMMs connectors on the system board.



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.

To install a DIMM, complete the following steps:

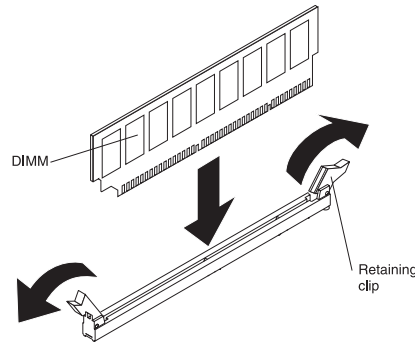
1. Read the safety information that begins on page vii and “Installation guidelines” on page 149.
2. Turn off the server and peripheral devices and disconnect the power cords and all external cables, if necessary.
3. Remove the server top cover (see “Removing the server top cover” on page 153).
4. Remove the air baffle (see “Removing the air baffle” on page 155).
5. Locate the DIMM connectors on the system board. Determine the connectors into which you will install the DIMMs. Install the DIMMs in the sequence shown in the following table.

Table 15. DIMM installation sequence

Number of DIMMs	Installation sequence (connectors)
First pair of DIMMs	1, 3
Second pair of DIMMs	2, 4

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

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



7. Touch the static-protective package that contains the DIMM to any unpainted metal surface on the outside of the server. Then, remove the DIMM from the package.
8. Turn the DIMM so that the DIMM keys align correctly with the connector.
9. Insert the DIMM into the connector by aligning the edges of the DIMM with the slots at the ends of the DIMM connector.
10. Firmly press the DIMM straight down into the connector by applying pressure on both ends of the DIMM simultaneously. The retaining clips snap into the locked position when the DIMM is firmly seated in the connector.

Note: 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.

11. Replace the air baffle (see “Installing the air baffle” on page 156).
12. Reconnect any cables that you removed.
13. Replace the server top cover (see “Installing the server top cover” on page 153).
14. Reconnect the power cord and any external cables that you removed.
15. Turn on the peripheral devices and the server.

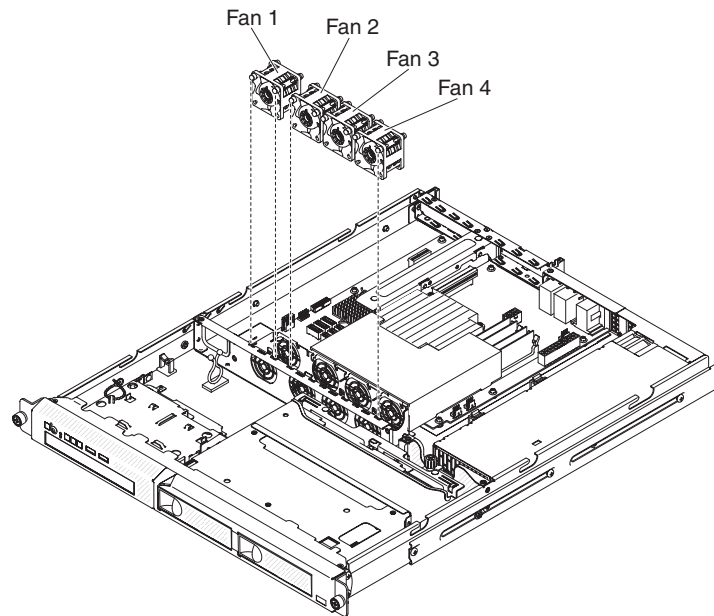
Removing a fan

To remove a fan, complete the following steps:

1. Read the safety information that begins on page vii and “Installation guidelines” on page 149.
2. Turn off the server and all peripheral devices, and disconnect the power cords and all external cables.
3. Remove the server top cover (see “Removing the server top cover” on page 153).
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 top 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 18); a lit LED indicates the fan to replace.
6. Turn off the server; then, disconnect the power cord again.
7. If you are removing fan 2, 3, or 4, remove the air baffle (see “Installing the air baffle” on page 156).
8. Remove the failed fan from the server:
 - a. Disconnect the fan cable from the system board. You may need to disengage the cables from cable retention clips or cable holder. 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.



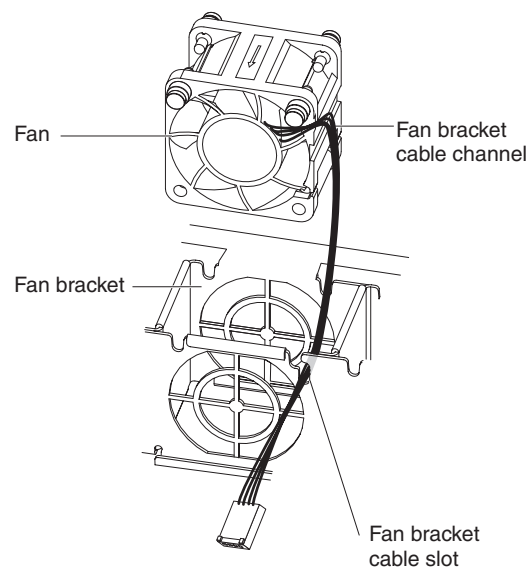
9. If you are instructed to return the fan, follow all packaging instructions, and use any packaging materials for shipping that are supplied to you.

Installing a fan

To install the replacement fan, complete the following steps:

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

Note: The 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 grey 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 14 for the locations of the fan cable connectors on the system board).
4. Install the air baffle if you removed it (see “Installing the air baffle” on page 156).
5. Install the server top cover (see “Installing the server top cover” on page 153).
6. Reconnect all external cables and the power cord.
7. Turn on all attached devices and the server.

Removing the system battery

The following notes describe information that you must consider when you replace the battery:

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

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

- If you replace the original lithium battery with a heavy-metal battery or a battery with heavy-metal components, be aware of the following environmental consideration. Batteries and accumulators that contain heavy metals must not be disposed of with normal domestic waste. They will be taken back free of charge by the manufacturer, distributor, or representative, to be recycled or disposed of in a proper manner.
- To order replacement batteries, call 1-800-IBM-SERV within the United States, and 1-800-465-7999 or 1-800-465-6666 within Canada. Outside the U.S. and Canada, call your support center or business partner.

Notes:

1. After you replace the battery, you must reconfigure the server and reset the system date and time.
2. You need to use IPMI to reset SEL Time, see <http://publib.boulder.ibm.com/infocenter/lnxinfo/v3r0m0/index.jsp?topic=/liaai/ipmi/ipmikick.htm> for more information.

Statement 2:



CAUTION:

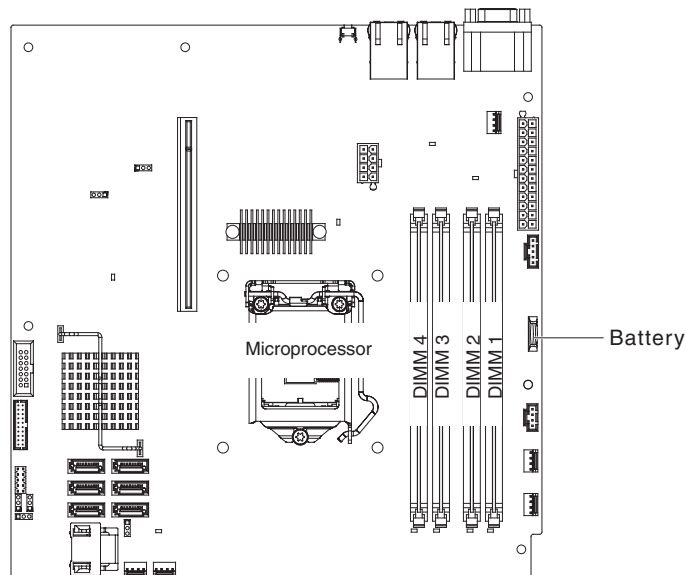
When replacing the lithium battery, use only IBM Part Number 33F8354 or an equivalent type battery recommended by the manufacturer. If your system has a module containing a lithium battery, replace it only with the same module type made by the same manufacturer. The battery contains lithium and can explode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

Do not:

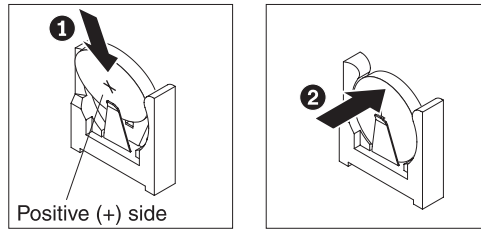
- Throw or immerse into water
- Heat to more than 100°C (212°F)
- Repair or disassemble

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

To remove the battery, complete the following steps.



1. Read the safety information that begins on page vii and the “Installation guidelines” on page 149.
2. Turn off the server and peripheral devices, and disconnect the power cords and all external cables.
3. Remove the server top cover (see “Removing the server top cover” on page 153).
4. If necessary, lift the air baffle out of the way (see “Removing the air baffle” on page 155).
5. Remove the battery:
 - a. Use a fingernail to press the top of the battery clip away from the battery.
 - 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 the *IBM Environmental Notices and User's Guide* on the *IBM System x Documentation CD* for more information.

Installing the system 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:

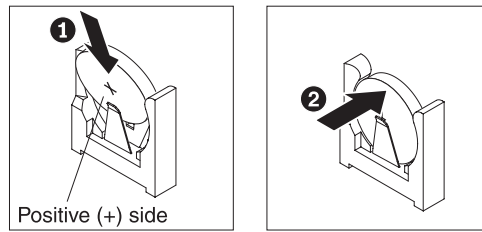
- **Throw or immerse into water**
- **Heat to more than 100°C (212°F)**
- **Repair or disassemble**

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. Locate the battery connector on the system board.
3. Insert the new battery:
 - a. Position the battery so that the positive (+) symbol is facing towards the power supply.

- 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 snaps into place.



4. Install the air baffle if you removed it (see “Installing the air baffle” on page 156).
5. Install the server top cover (see “Installing the server top cover” on page 153).
6. Reconnect the external cables; then, reconnect the power cords and turn on the peripheral devices and the server.

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

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

See “Using the Setup utility” on page 210 for details.

Removing a hot-swap power supply

Notes:

1. If you disconnect an ac power cord, wait for 20 seconds before you reconnect the ac power cord and start the server. Avoid disconnecting and reconnecting the ac power cord repeatedly.
2. In a server with two-microprocessor configuration, two power supplies must be installed in the server for either power supply to be considered hot-swap. If the server comes with four microprocessors, three power supplies must be installed in the server for a power supply to be considered hot-swap.

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

Statement 8:



CAUTION:

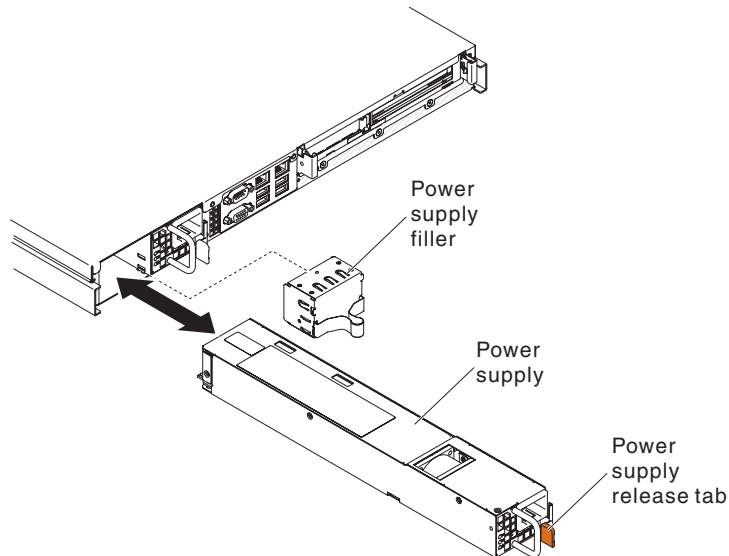
Never remove the cover on a power supply or any part that has the following label attached.



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

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

1. Read the safety information that begins on page vii and the “Installation guidelines” on page 149.
Attention: If your server has only one power supply, you must turn off the server before you remove the power supply.
2. If only one power supply is installed, turn off the server.
3. Disconnect the power cord from the connector on the back of the power supply.
4. Press the orange release latch and hold it in place.



5. Grasp the handle and pull the power supply out of the bay.
6. If you are instructed to return the hot-swap power supply, follow all packaging instructions, and use any packaging materials for shipping that are supplied to you.

Installing a hot-swap power supply

The following notes describe the type of power supply that the server supports and other information that you must consider when you install a hot-swap power supply:

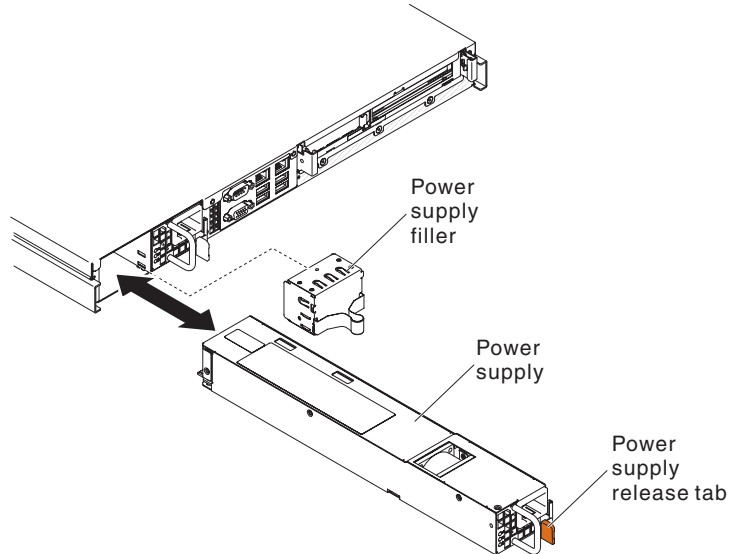
- Depending on your server model, the server comes standard with one 460-watt hot-swap power supply. For redundancy support, you must install an additional hot-swap power supply, if one is not installed in your model.

- To confirm that the server supports the power supply that you are installing, see <http://www.ibm.com/systems/info/x86servers/serverproven/compat/us/>.

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

1. Grasp the side clip and pull to remove the power-supply filler panel from the empty power-supply bay. Save the power-supply filler panel in case you remove the power supply at a later time.

Important: During normal operation, each power-supply bay must contain either a power supply or power-supply filler panel for proper cooling.



2. Slide the hot-swap power supply into the bay until the release latch clicks into place.
3. Connect one end of the power cord for the new power supply into the ac connector on the back of the power supply; then, connect the other end of the power cord into a properly grounded electrical outlet.
4. If the server is turned off, turn on the server.
5. Make sure that the ac power LED on the power supply is lit, indicating that the power supply is operating correctly. If the server is turned on, make sure that the dc power LED on the power supply is lit also.

Removing and replacing Tier 2 CRUs

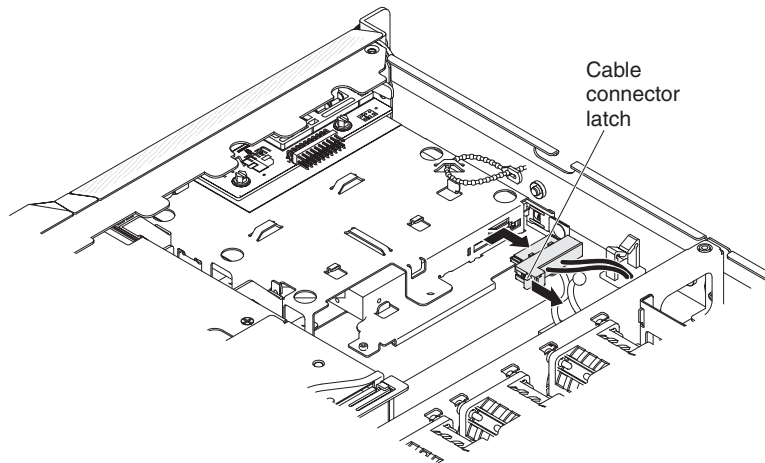
You may install a Tier 2 CRU yourself or request IBM to install it, at no additional charge, under the type of warranty service that is designated for your server.

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

Removing the DVD cable

To remove the DVD cable, complete the following steps:

1. Read the safety information that begins on page vii and “Installation guidelines” on page 149.
2. Turn off the server and peripheral devices and disconnect all power cords.
3. Remove the server top cover (see “Removing the server top cover” on page 153).
4. Pull out the cable from the optical drive cage connector.

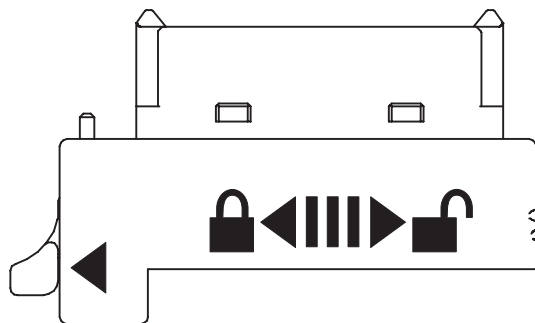


5. Disengage the cable from any cable tie or cable clip.
6. If you are instructed to return the DVD drive cable, follow all packaging instructions, and use any packaging materials for shipping that are supplied to you.

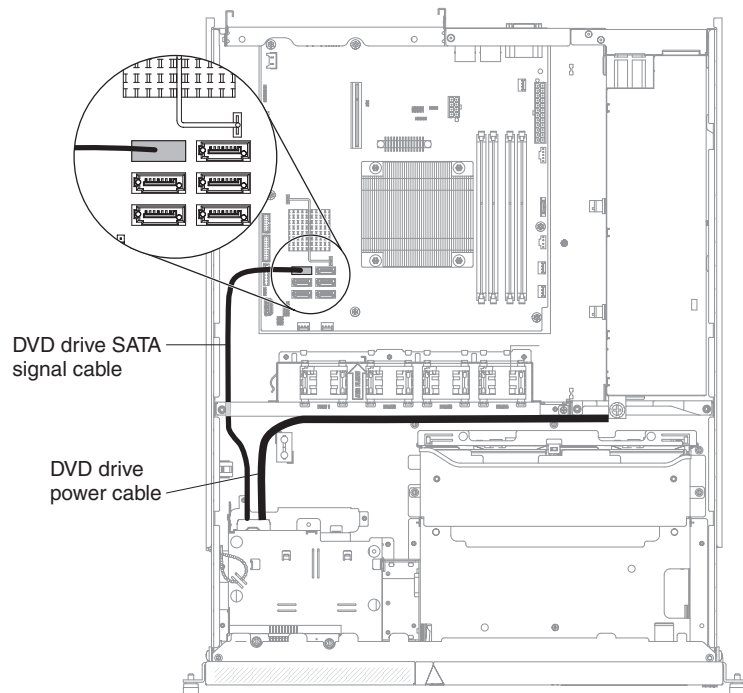
Installing the DVD cable

To install the DVD cable, complete the following cable:

1. Read the safety information that begins on page vii and “Installation guidelines” on page 149.
2. Turn off the server and peripheral devices and disconnect the power cords and all external cables.
3. Align the cable connector with the connector on the rear of the optical drive cage.
4. Pull the cable connector latch up and hold it there while you slide the cable connector to the locked position to lock the cable in place.



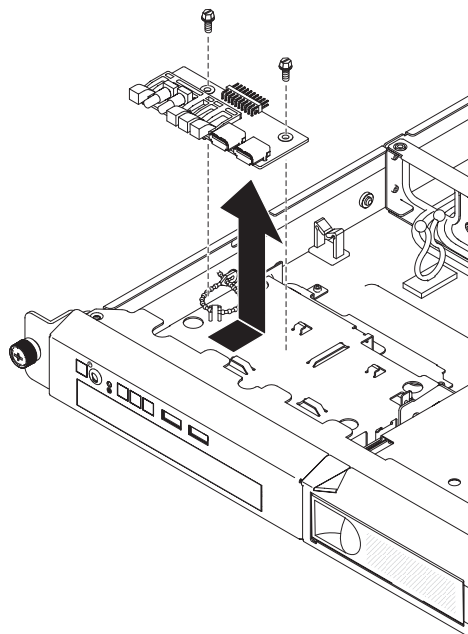
5. Connect the DVD cable into the connector on the rear of the optical drive cage.
6. Route the DVD signal cable through the fan cage hole on the left of fan 1. The following illustration shows the cable routing for the DVD signal cable.



7. Secure the cable in the server using the cable tie and cable clip.
8. Replace the server top cover (see "Installing the server top cover" on page 153).
9. Reconnect the power cord and any cables that you removed.
10. Turn on the peripheral devices and the server.

Removing the operator information panel assembly

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



1. Read the safety information that begins on page vii and the “Installation guidelines” on page 149.
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 server top cover (see “Removing the server top cover” on page 153).
4. Disconnect the signal cable from the operator information panel board.
5. Remove the screws that secure the operator information panel assembly to the DVD drive housing.
6. Lift the operator information panel assembly out of the server.
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

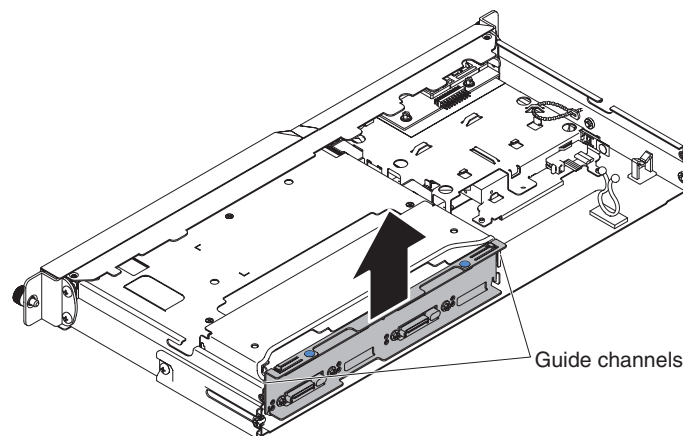
To install the replacement operator information panel assembly, complete the following steps:

1. Guide the operator information panel assembly into position on top of the DVD drive housing. Make sure that the LEDs and the USB connectors are aligned with the openings in the bezel and that the screw holes in the operator information panel align with the screw holes in the top of the DVD bay housing.
2. Use the screws that you removed in step 5 of “Removing the operator information panel assembly” on page 186 to secure the operator information panel assembly on the DVD bay housing.
3. Connect the signal cable to the operator information panel board.
4. Install the server top cover (see “Installing the server top cover” on page 153).
5. Reconnect the power cord and any cables that you removed.
6. Turn on all attached devices and the server.

Removing the simple-swap hard disk drive backplate

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

Note: The following illustration shows removing the 3.5-inch simple-swap hard disk backplate.



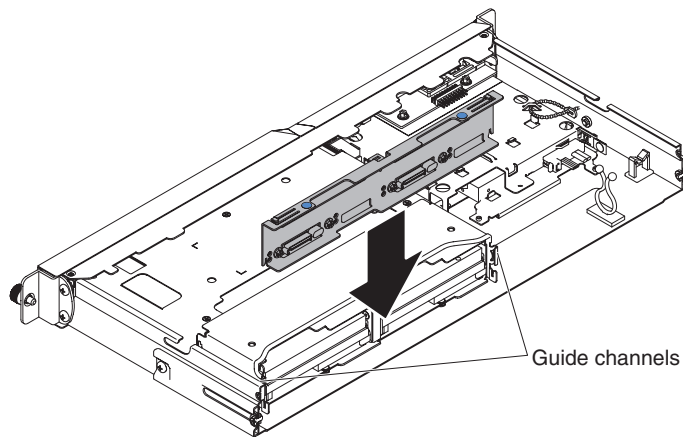
1. Read the safety information that begins on page vii and “Installation guidelines” on page 149.

2. Turn off the server and peripheral devices, and disconnect the power cords and all external cables.
3. Remove the server top cover (see “Removing the server top cover” on page 153).
4. Pull the hard disk drives out of the server slightly to disengage them from the backplate.
5. Lift the backplate out of the server.
6. Make note of where the cables are attached to the backplate; then, disconnect them.
7. If you are instructed to return the backplate, follow all packaging instructions, and use any packaging materials for shipping that are supplied to you.

Installing the simple-swap hard disk drive backplate

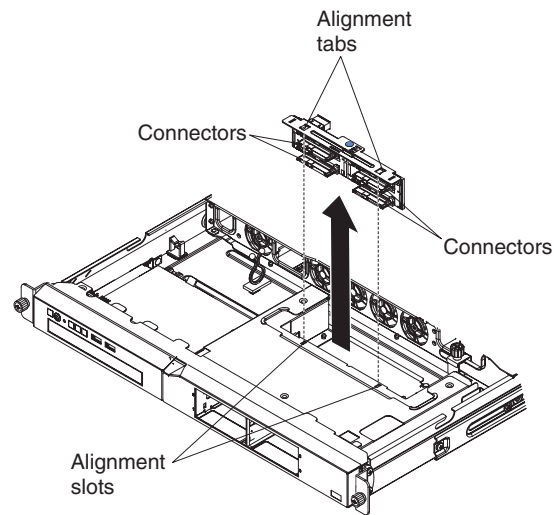
To install the simple-swap backplate, complete the following steps.

Note: The following illustration shows installing the 3.5-inch simple-swap hard disk backplate.



1. Reconnect the cables to the replacement backplate.
2. Slide the backplate into the guide channels, making sure that any nearby wires or cables are not trapped or pinched.
3. Press on the two blue touch points firmly until the backplate is fully seated.
4. Install the server top cover (see “Installing the server top cover” on page 153).
5. Replace the hard disk drives.
6. Reconnect the power cord and any cables that you removed.
7. Turn on all attached devices and the server.

Removing the hot-swap hard disk drive backplane

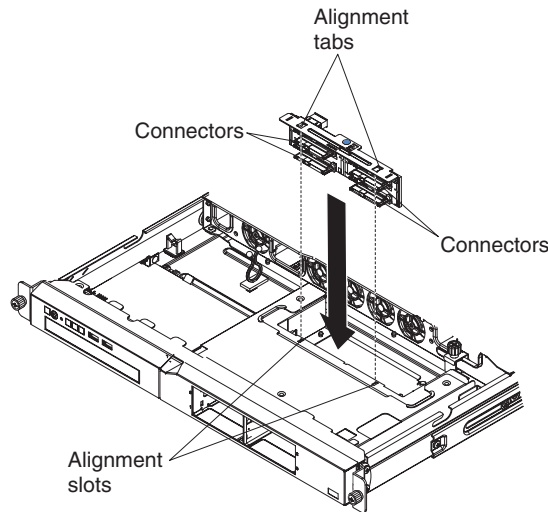


To remove the hot-swap drives backplane, complete the following steps:

1. Read the safety information that begins on page vii and “Installation guidelines” on page 149.
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 server top cover (see “Removing the server top cover” on page 153).
6. Lift the backplane out of the server.
7. Make note of where the cables are attached to the backplane; then, disconnect them.
8. If you are instructed to return the backplane, follow all packaging instructions, and use any packaging materials for shipping that are supplied to you.

Installing the hot-swap hard disk drive backplane

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



1. Connect the cables to the replacement backplane:
 - Connect the SAS/SATA controller signal cable to the backplane.
 - Connect the power cable to the backplane.
 - Connect the configuration cable to the backplane.
2. Slide the backplane into the card guides, making sure that any nearby wires or cables are not trapped or pinched.
3. Press on the blue touch point firmly until the backplane is fully seated and clicks into place.
4. Install the server top cover (see “Installing the server top cover” on page 153).
5. Replace the hard disk drives.
6. Reconnect the power cord and any cables that you removed.
7. Turn on all attached devices and the server.

Removing and replacing FRUs

FRUs must be replaced or installed only by trained service technicians.

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

Removing the power supply

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

Statement 8:



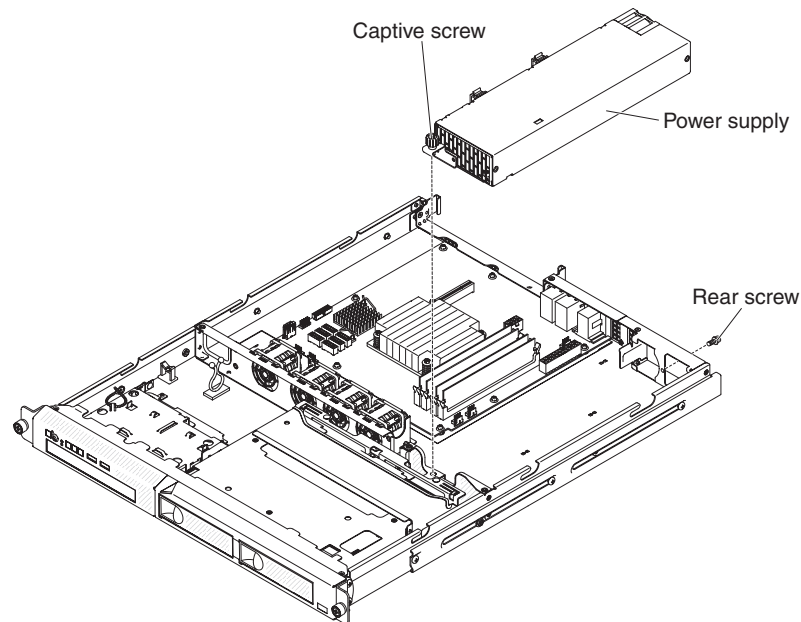
CAUTION:

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.



1. Read the safety information that begins on page vii and “Installation guidelines” on page 149.
2. Disconnect the ac power cord from the connector on the power supply. Disconnect all external cables from the server.
3. Remove the server top cover (see “Removing the server top cover” on page 153).

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

4. Remove the hard disk drive backplate (see “Removing the simple-swap hard disk drive backplate” on page 187).
5. Disconnect the power-supply cables from the connectors on the system board and internal devices; then, disengage the cables from any retention-clips.

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.

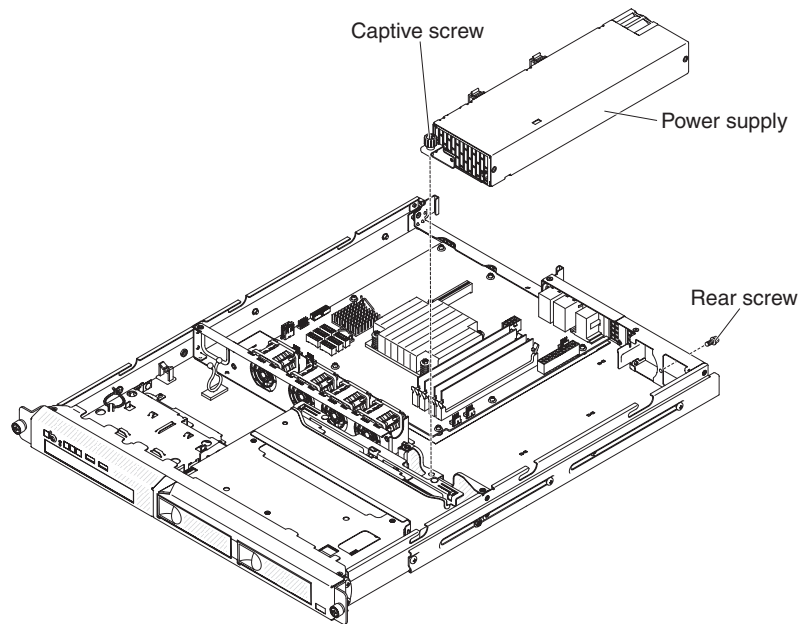
6. Remove the screw that holds the power supply to the rear of the chassis.

7. Loosen the captive thumbscrew that secures the rear of the power supply to the chassis bottom.
8. Lift the power supply out of the bay.
9. 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

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

1. Read the safety information that begins on page vii and “Installation guidelines” on page 149.
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 192).
5. Connect the internal power-supply cable from the power supply to the power connectors on the system board. See “System-board internal connectors” on page 14 for the locations of the power connectors on the system board.
6. Route the internal power-supply cables, securing them with the retention-clips.
7. 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 18); 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.

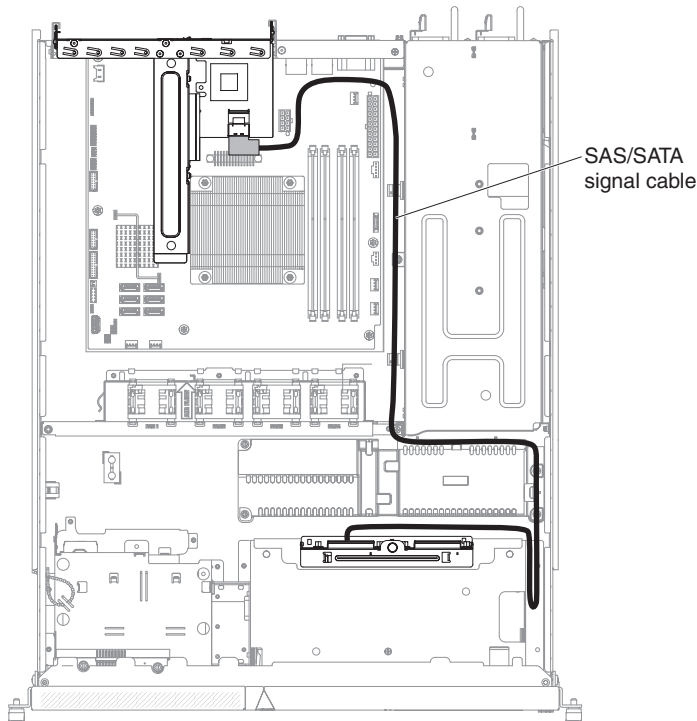
If the server starts, proceed to step 8. If the server does not start, disconnect the ac power cord and call for service.
8. Turn off the server and disconnect the ac power cord.

9. Connect the cables from the power supply to the internal devices.
10. Install the hard disk drive backplate (see “Installing the simple-swap hard disk drive backplate” on page 188).
11. Install the server top cover (see “Installing the server top cover” on page 153).
12. Reconnect the ac power cord into the connector on the back of the power supply.
13. Connect all external cables that you disconnected in step 2 on page 191.
14. Connect the other end of the ac power cord into a properly grounded electrical outlet.
15. Press the power-control button.
16. Make sure that the power-on LED on the front of the server is lit.

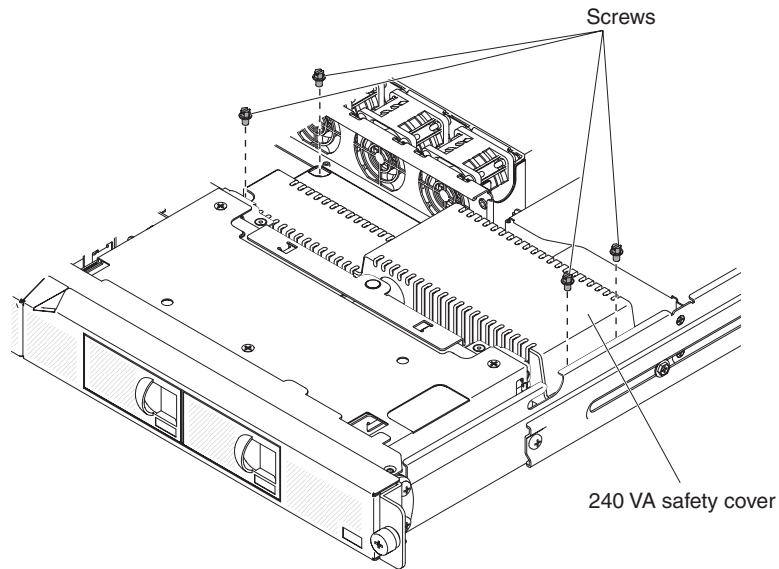
Removing the 240 VA safety cover

To remove the 240 VA safety cover, complete the following steps:

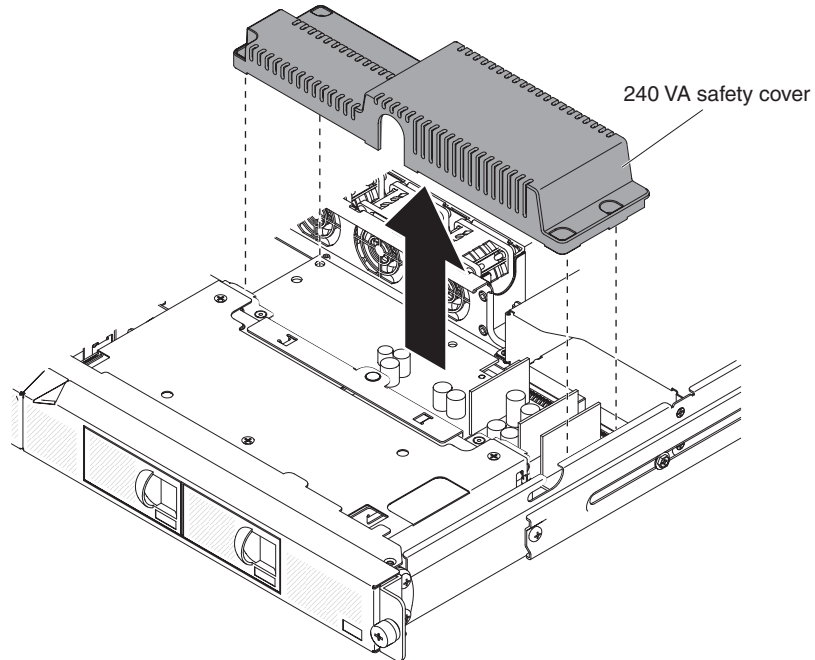
1. Read the safety information that begins on page vii and “Installation guidelines” on page 149.
2. Turn off the server and peripheral devices and disconnect all power cords; then, remove the cover (see “Removing the server top cover” on page 153).
3. Remove the SAS/SATA signal cable and all other cables from the safety cover.



4. Remove the four screws from the safety cover.



5. Lift the safety cover up to remove it from the server.

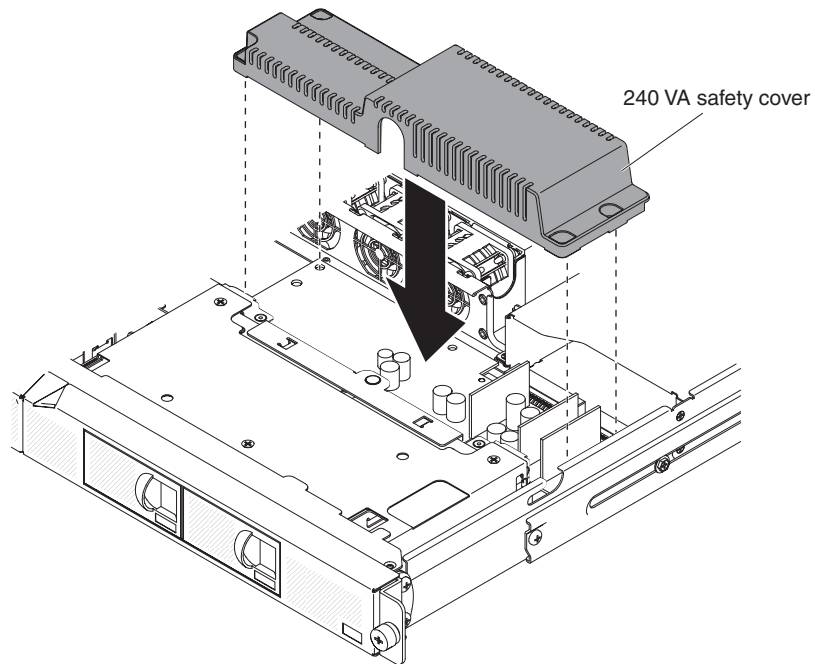


6. If you are instructed to return the safety cover, follow all packaging instructions, and use any packaging materials for shipping that are supplied to you.

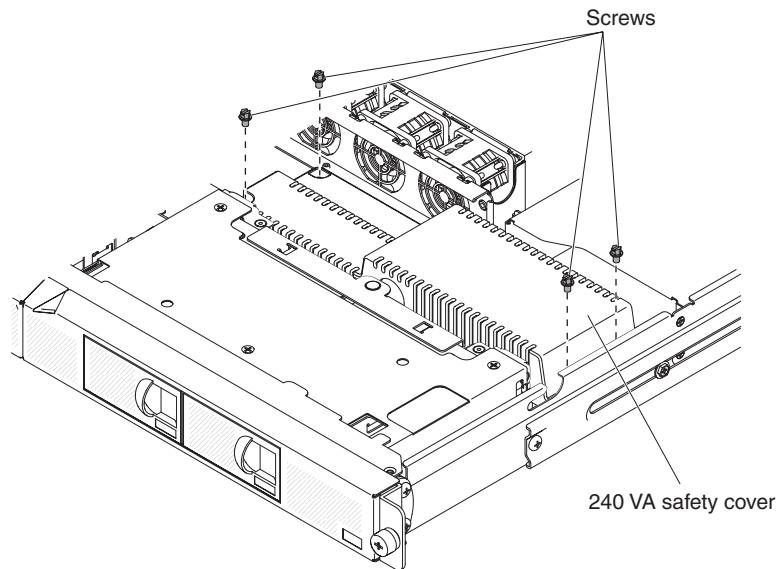
Installing the 240 VA safety cover

To install the 240 VA safety cover, complete the following steps:

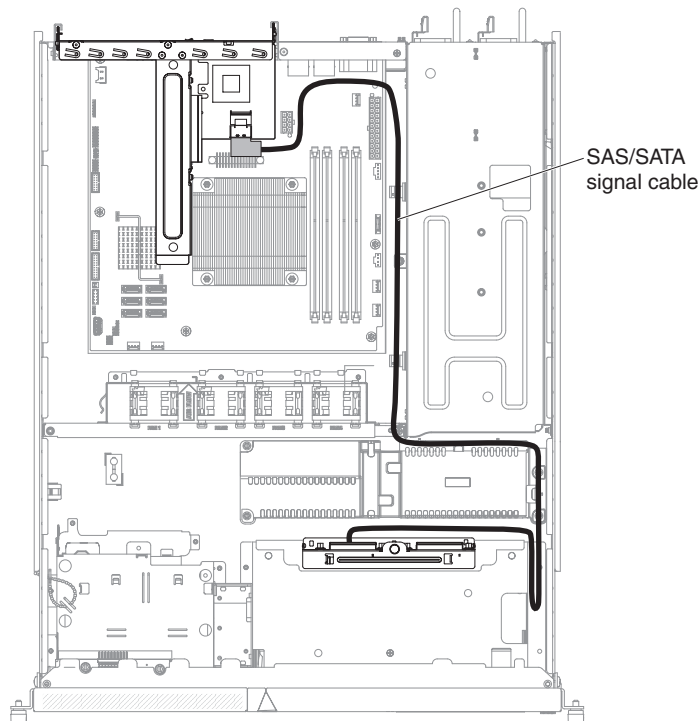
1. Read the safety information that begins on page vii and "Installation guidelines" on page 149.
2. Align the safety cover with the standoffs on the power paddle card and lower the safety cover onto the power paddle card until it is secure.



3. Install the screws to secure the safety cover.



4. Reconnect the SAS/SATA signal cable and all other cables that you have removed previously.

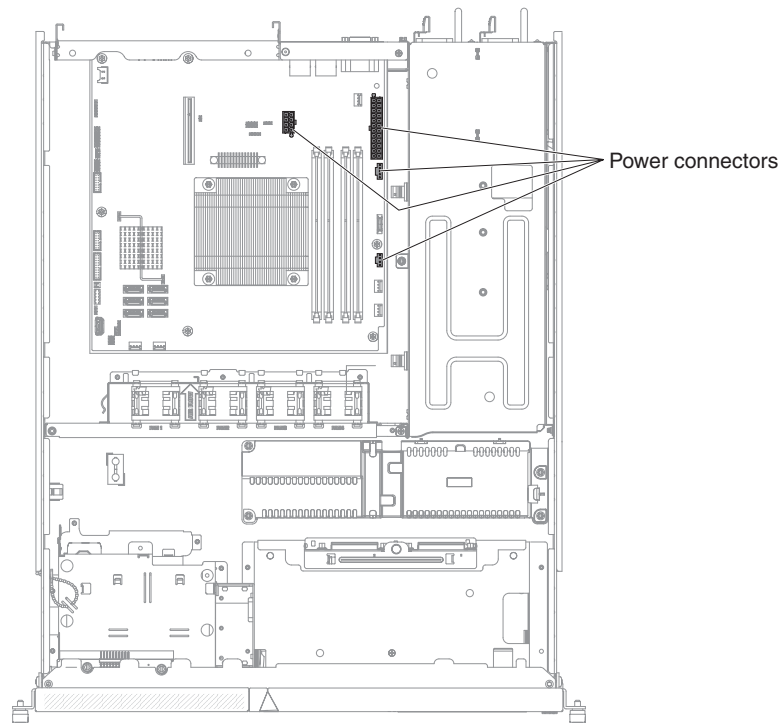


5. Install the cover (see “Installing the server top cover” on page 153).
6. Reconnect the power cords and any cables that you removed.
7. Turn on the peripheral devices and the server.

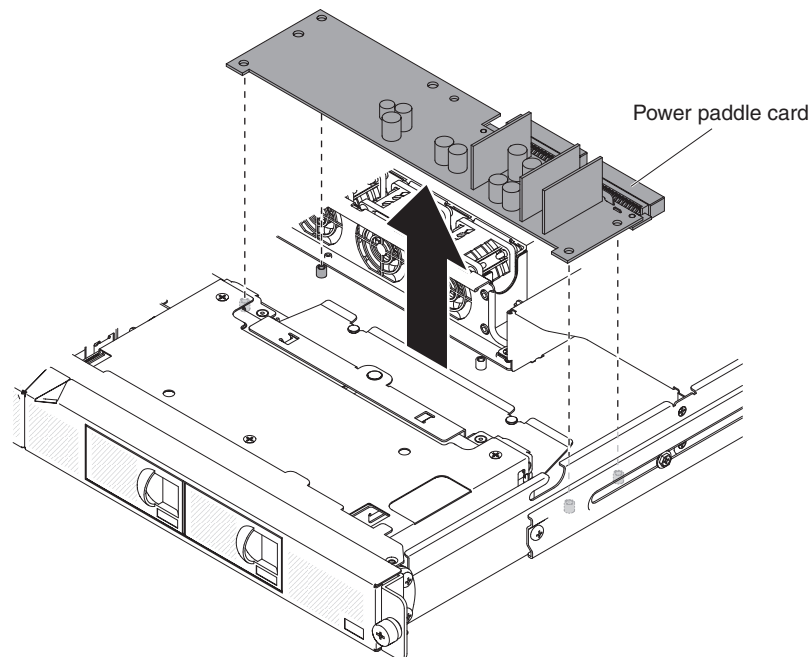
Removing the power paddle card

To remove the power paddle card, complete the following steps:

1. Read the safety information that begins on page vii and “Installation guidelines” on page 149.
2. Turn off the server and peripheral devices and disconnect all power cords; then, remove the cover (see “Removing the server top cover” on page 153).
3. Pull the power supplies out of the rear of the server, just enough to disengage them from the server.
4. Remove the 240 VA safety cover (see “Removing the 240 VA safety cover” on page 193).
5. Remove the air baffle (see “Removing the air baffle” on page 155).
6. Loosen the cables from the cable tie.
7. Disconnect the power cables from the power connectors on the system board.



8. Disconnect the cables from the hard disk drive backplane or the backplane assembly.
9. Disconnect the power cable from the DVD power cable (if available).
10. Lift the power paddle card up to remove it from the server.

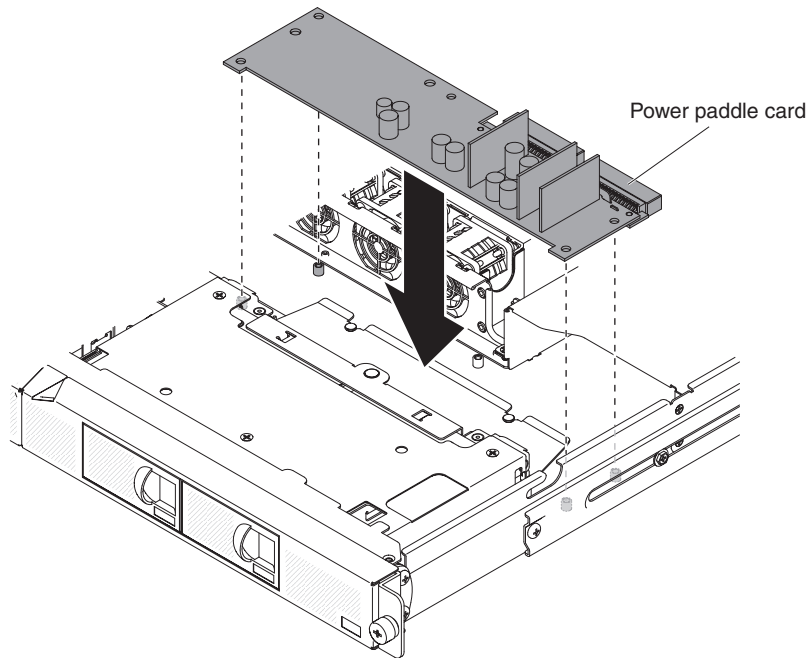


11. If you are instructed to return the safety cover, follow all packaging instructions, and use any packaging materials for shipping that are supplied to you.

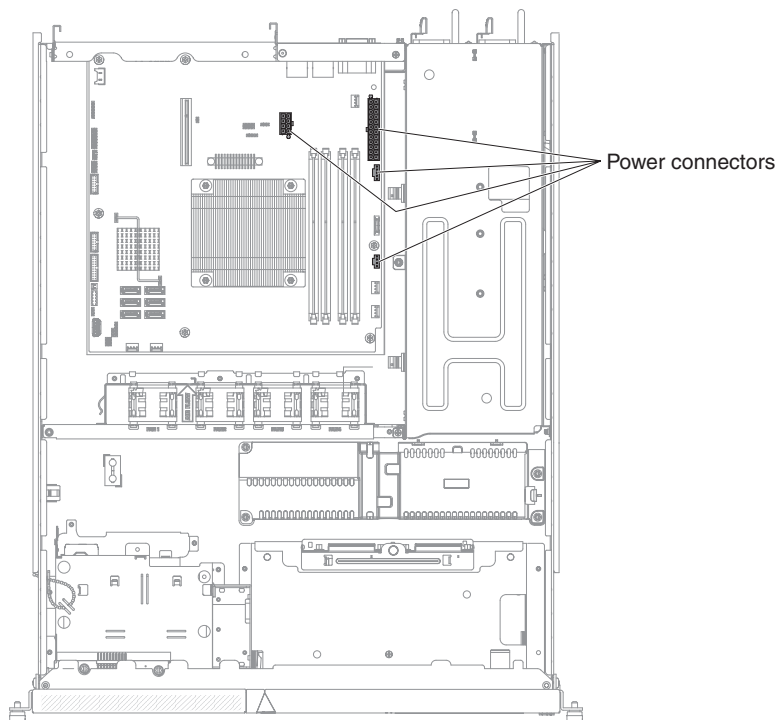
Installing the power paddle card

To install the power paddle card, complete the following steps:

1. Read the safety information that begins on page vii and “Installation guidelines” on page 149.
2. Align the power paddle card with the standoffs on the system board and lower the power paddle card onto the system board until it is secure.



3. Reinstall the safety cover (see “Installing the 240 VA safety cover” on page 194).
4. Reconnect the power cable to the DVD power cable (if available).
5. Reconnect the cables to the hard disk drive backplane or the backplane assembly.
6. Reconnect the power cables to power connectors on the system board.



7. Route the cables through the cable tie if any.
8. Reinstall the air baffle (see “Installing the air baffle” on page 156).
9. Push the power supplies back into the server.
10. Install the cover (see “Installing the server top cover” on page 153).
11. Reconnect the power cords and any cables that you removed.
12. Turn on the peripheral devices and the server.

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) 1156 dual-core or quad-core microprocessor. The type, speed, and L3 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 server firmware. To download the most current level of server firmware, go to <http://www.ibm.com/supportportal/> or <http://www.ibm.com/support/fixcentral/>.
- The microprocessor uses an integrated voltage regulator on the system board.

Removing the microprocessor

Attention:

- Microprocessors are to be removed only by trained service technicians.
- Do not allow the thermal grease on the microprocessor and heat sink to come in contact with anything. Contact with any surface can compromise the thermal grease and the microprocessor socket.
- Dropping the microprocessor during installation or removal can damage the contacts.
- Do not touch the microprocessor contacts; handle the microprocessor by the edges only. Contaminants on the microprocessor contacts, such as oil from your skin, can cause connection failures between the contacts and the socket.
- The pins on the sockets are fragile. Any damage to the pins might require replacing the system board.

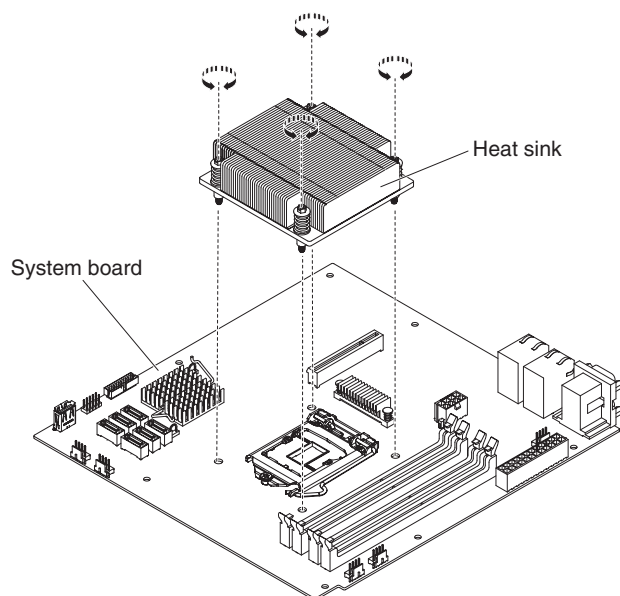
To remove the microprocessor, complete the following steps:

1. Read the safety information that begins on page vii and “Installation guidelines” on page 149.
2. Turn off the server and peripheral devices, and disconnect the power cords and all external cables.
3. Remove the server top cover (see “Removing the server top cover” on page 153).
4. Remove the air baffle (see “Removing the air baffle” on page 155).
5. Remove the heat sink.

CAUTION:

The heat sink may become very hot during normal operation. Allow time for the heat sink to cool down before you touch it.

- a. Loosen the screws and alternate among the screws until they break the seal with the microprocessor.
- b. Press firmly on the captive screws and loosen them with a screwdriver.
- c. Use your fingers to gently pull the heat sink from the microprocessor.

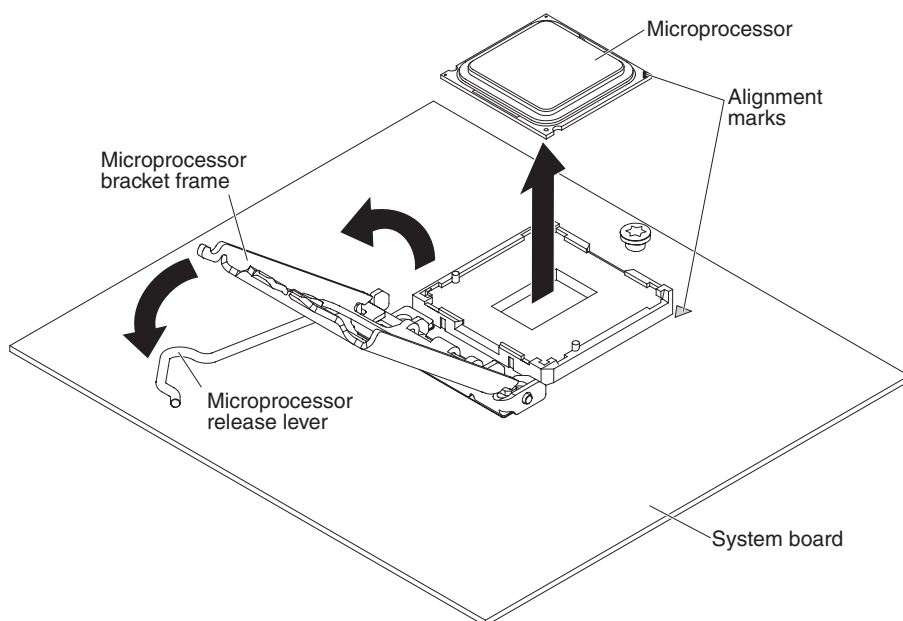


6. Lift the heat sink out of the server. After removal, place the heat sink on its side on a clean, flat surface.

Attention: Do not touch the thermal material on the bottom of the heat sink. Touching the thermal material will contaminate it. If the thermal material on the microprocessor or heat sink becomes contaminated, contact your service technician.

7. Release the microprocessor retention latch by pressing down on the end, moving it to the side, and releasing it to the open (up) position.
8. Open the microprocessor bracket frame by lifting up the tab on the top edge. Keep the bracket frame in the open position.

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

Attention: The pins on the sockets are fragile. Any damage to the pins might require replacing the system board.

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

The following notes describe information that you must consider when you install a microprocessor and heat sink:

- The pins on the sockets are fragile. Any damage to the pins might require replacing the system board.
- If you have to replace a microprocessor, call for service.
- Read the documentation that comes with the microprocessor, so that you can determine whether you have to update the server firmware. To download the latest level of server firmware and other code updates for your server, go to <http://www.ibm.com/supportportal/> or <http://www.ibm.com/support/fixcentral/>.
- The microprocessor speeds are automatically set for this server; therefore, you do not have to set any microprocessor frequency-selection jumpers or switches.
- If the thermal-grease protective cover (for example, a plastic cap or tape liner) is removed from the heat sink, do not touch the thermal grease on the bottom of the heat sink or set down the heat sink. For more information about applying or working with thermal grease, see “Thermal grease” on page 203.

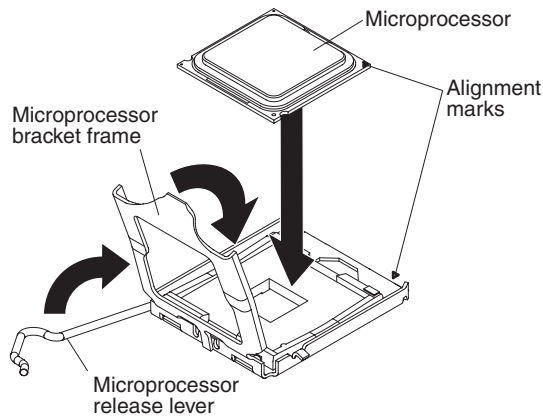
Note: Removing the heat sink from the microprocessor destroys the even distribution of the thermal grease and requires replacing the thermal grease.

To install the replacement microprocessor, complete the following steps:

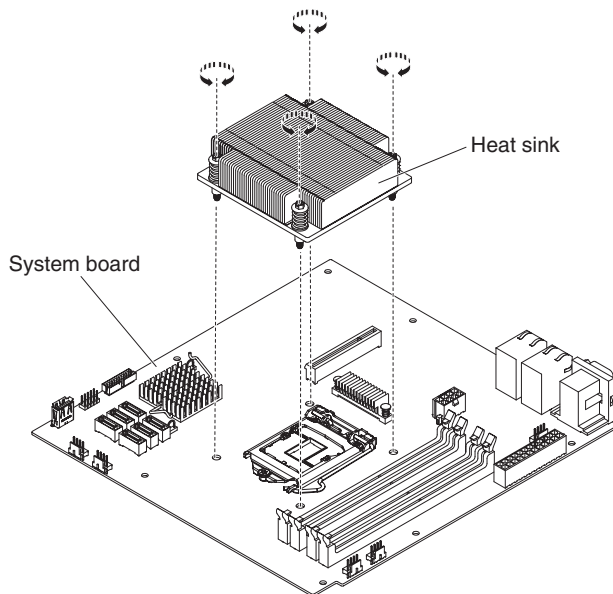
1. Read the safety information that begins on page vii and “Installation guidelines” on page 149
2. Make sure that the microprocessor bracket frame and release latch are both fully open.

Attention:

- When you handle static-sensitive devices, take precautions to avoid damage from static electricity. For details about handling these devices, see “Handling static-sensitive devices” on page 151
 - 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.
3. 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.



4. Gently lower the heat sink on the microprocessor.
5. Align the screw holes on the heat sink with the holes on the system board.



6. Install the heat sink on the microprocessor.

Attention: Do not touch the thermal material on the bottom of the heat sink. Touching the thermal material will contaminate it. If the thermal material on the microprocessor or heat sink becomes contaminated, contact your service technician.

- a. Make sure that the thermal material is still on the bottom of the heat sink; then, align the heat sink so that the arrows on the label point toward the DIMMs and place the heat sink on top of the microprocessor, thermal material side down.
- b. Align the screws on the heat sink with the screw holes on the system board.
- c. Tighten the screws with a screwdriver, alternating among the screws until they are tight. If possible, each screw should be rotated two full rotations at a time. Repeat until the screws are tight. Do not overtighten the screws by using excessive force.

Attention: When the two screws that are closer to the rear of the server are tightened, the screw heads are not level with the surface of the heat sink. Do not overtighten the screws by using excessive force.

7. Replace the air baffle (see “Installing the air baffle” on page 156).
8. Install the server top cover (see “Installing the server top cover” on page 153).
9. Connect the cables and power cords.
10. Turn on all attached devices and the server.

Thermal grease

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

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

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

Note:

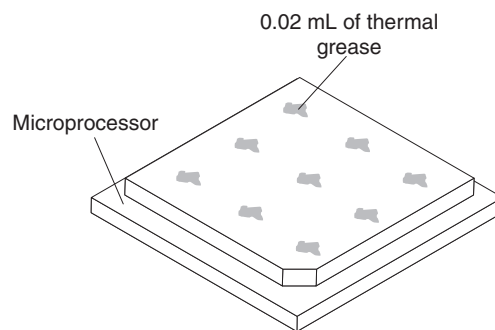
1. Read the safety information that begins on page vii.
2. Read “Installation guidelines” on page 149.
3. Read “Handling static-sensitive devices” on page 151.

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

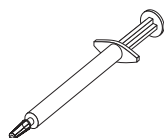
1. Place the heat sink on a clean work surface.
2. Remove the cleaning pad from its package and unfold it completely.
3. Use the cleaning pad to wipe the thermal grease from the bottom of the heat sink.

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

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



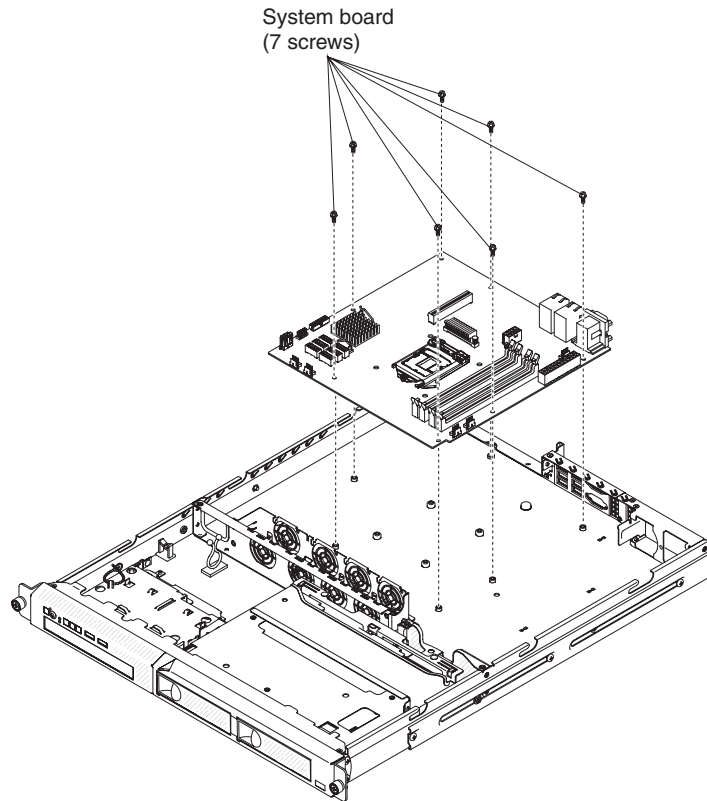
5. Use the thermal-grease syringe to place 9 uniformly spaced dots of 0.02 mL each on the top of the microprocessor. Make sure that the outermost dots are within 5 mm of the edge, to ensure even distribution.



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 sink onto the microprocessor as described in “Installing the microprocessor” on page 201.

Removing the system board



Note: When you replace the system board, you must either update the server with the latest firmware or restore the pre-existing firmware that the customer provides on a diskette or CD image. Make sure that you have the latest firmware or a copy of the pre-existing firmware before you proceed.

To remove the system board, complete the following steps:

1. Read the safety information that begins on page vii and “Installation guidelines” on page 149.
2. Turn off the server and any attached devices.
3. Turn off the peripheral devices and disconnect all power cords; then, remove the server top cover (see “Removing the server top cover” on page 153).

Note: When you replace the system board, you must either update the server with the latest firmware or restore the pre-existing firmware that the customer provides on a diskette or CD image. Make sure that you have the latest firmware or a copy of the pre-existing firmware before you proceed.

4. Remove the PCI riser-card assembly (see “Removing the PCI riser-card assembly” on page 157).
5. Remove the air baffle (see “Removing the air baffle” on page 155).

6. Remove the heat sink and microprocessor, and set them aside on a static-protective surface for reinstallation (see “Removing the microprocessor” on page 199).

Attention: Remove the socket covers from the microprocessor sockets on the new system board and place them on the microprocessor sockets of the system board you are removing.

7. Remove the memory modules and set them aside on a static-protective surface for reinstallation (see “Removing a memory module” on page 173).

Note: Make a note of the location of each DIMM as you remove it, so that you can later reinstall it in the same connector.

8. Remove the system battery (see “Removing the system battery” on page 179).
9. Disconnect all cables from the system board. Make a list of each cable as you disconnect it; you can then use this as a checklist when you install the new system board (see “System-board internal connectors” on page 14 for the locations of the cable connectors on the system board).

Attention: Disengage all latches, release tabs or locks on cable connectors when you disconnect all cables from the system board. Failing to release them before removing the cables will damage the cable sockets on the system board. The cable sockets on the system board are fragile. Any damage to the cable sockets may require replacing the system board.

10. Remove the screws that secure the system board to the chassis, and put the screws in a safe place.
11. Lift up the system board and carefully remove it from the server, being careful not to damage any surrounding components.
12. If you are instructed to return the system board, follow all packaging instructions, and use any packaging materials for shipping that are supplied to you.

Attention: Make sure to place the socket covers for the microprocessor sockets on the system board before returning the system board.

Installing the system board

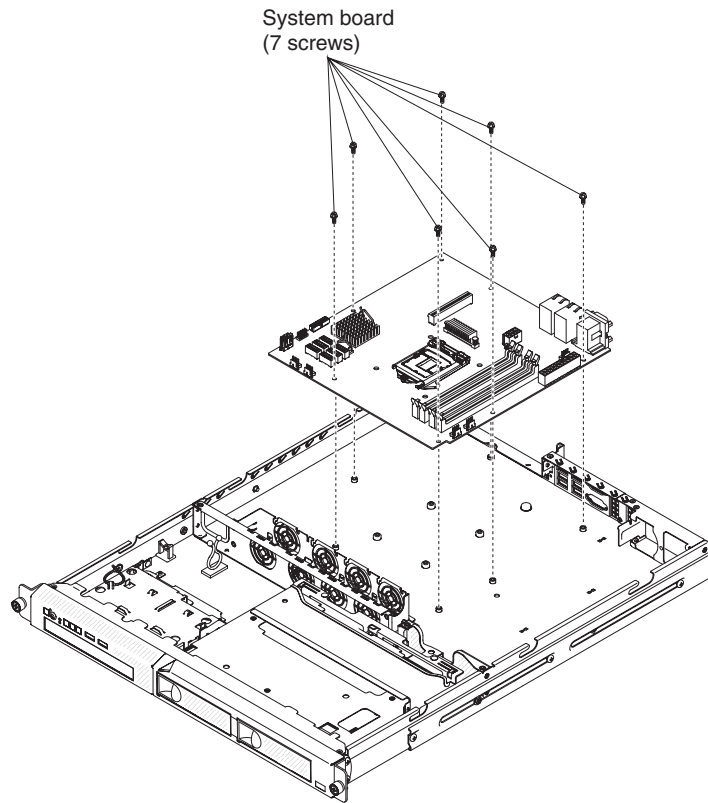
Notes:

1. When you reassemble the components in the server, be sure to route all cables carefully so that they are not exposed to excessive pressure.
2. When you replace the system board, you must either update the server with the latest firmware or restore the pre-existing firmware that the customer provides on a diskette or CD image. Make sure that you have the latest firmware or a copy of the pre-existing firmware before you proceed. See “Updating the firmware” on page 207, “Updating the Universal Unique Identifier (UUID)” on page 226, and “Updating the DMI/SMBIOS data” on page 229 for more information.

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

To install the system board, complete the following steps:

1. Read the safety information that begins on page vii and “Installation guidelines” on page 149.
2. Align the system board with the chassis, and replace the seven screws that you removed in step 10 of “Removing the system board” on page 204.



3. Reinstall the microprocessor and heat sink (see “Installing the microprocessor” on page 201).
4. Reinstall the system battery (see “Installing the system battery” on page 181).
5. Reinstall the DIMMs (see “Installing a memory module” on page 173).
6. Reinstall the air baffle (see “Installing the air baffle” on page 156).
7. Reinstall the PCI riser-card assembly (see “Installing the PCI riser-card assembly” on page 157).
8. Reconnect to the system board the cables that you disconnected.
9. Install the server top cover (see “Installing the server top cover” on page 153).
10. Reconnect the power cords and any cables that you removed.
11. Turn on the peripheral devices and the server.

Important: Perform the following updates:

- Either update the server with the latest RAID firmware or restore the pre-existing firmware from a diskette or CD image.
- Update the UUID (see “Updating the Universal Unique Identifier (UUID)” on page 226).
- Update the DMI/SMBIOS (see “Updating the DMI/SMBIOS data” on page 229).
- Clear the CMOS data (see JP1 in “System-board jumpers” on page 16).

Chapter 6. Configuration information and instructions

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

Updating the firmware

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

The firmware for the server is periodically updated and is available for download on the IBM website. To check for the latest level of firmware, such as the server firmware, vital product data (VPD) code, device drivers, and IMM2 firmware, go to <http://www.ibm.com/supportportal/> or <http://www.ibm.com/support/fixcentral/>.

Download the latest firmware for the server; then, install the firmware, using the instructions that are included with the downloaded files.

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

A flash utility enables you to update hardware and server firmware and eliminates the need to manually install new firmware or firmware updates from a physical diskette or other medium. To find a flash utility, complete the following steps:

1. Go to <http://www-947.ibm.com/support/entry/portal/docdisplay?Indocid=SERV-XPRESS>.
2. Download IMM, uEFI, pDSA code from <http://www.ibm.com/support/fixcentral/>.
3. Follow IMM, uEFI, pDSA readme file for firmware update

The following items are downloadable at <http://www.ibm.com/supportportal/> or <http://www.ibm.com/support/fixcentral/>:

- Server firmware is stored in ROM on the system board.
- IMM2 firmware is stored in ROM on the system board.
- Ethernet firmware is stored in ROM on the Ethernet controller.
- ServeRAID firmware is stored in ROM on the ServeRAID adapter.
- SAS/SATA firmware is stored in ROM on the SAS/SATA controller on the system board.

Major components contain VPD code. You can select to update the MT/Serial Number in VPD code with Advanced Settings Utility after firmware update procedure is completed.

Configuring the server

The *ServerGuide* program provides software-setup tools and installation tools that are designed for the server. Use this CD during the installation of the server to configure basic hardware features, such as an integrated SAS/SATA controller with RAID capabilities, and to simplify the installation of your operating system. For information about using this CD, see “Using the ServerGuide Setup and Installation CD” on page 208.

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

- **Setup utility**

The UEFI (formerly BIOS) Setup Utility program is part of the basic input/output system firmware. Use it to 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 Setup utility” on page 210.

- **Boot Manager program**

The Boot Manager program is part of the server firmware. Use it to override the startup sequence that is set in the Setup utility and temporarily assign a device to be first in the startup sequence. For more information about using this program, see “Using the Boot Manager program” on page 215.

Note: OPRM configuration utility is only available for emulex 10G card.

- **Integrated management module**

Use the integrated management module II (IMM2) for configuration, to update the firmware and sensor data record/field replaceable unit (SDR/FRU) data, and to remotely manage a system. For information about using these programs, see “Using the integrated management module II (IMM2)” on page 216.

- **Ethernet controller configuration**

For information about configuring the Ethernet controller, see “Configuring the Gigabit Ethernet controller” on page 221.

- **IBM Advanced Settings Utility (ASU) program**

Use this program as an alternative to the Setup utility for modifying UEFI settings. Use the ASU program online to modify UEFI settings from the command line without the need to restart the server to access the Setup utility. For more information about using this program, see “IBM Advanced Settings Utility program” on page 225.

- **LSI Configuration Utility program**

Use the LSI Configuration Utility program to configure the integrated SATA controller with RAID capabilities and the devices that are attached to it. For information about using this program, see “Using the LSI Configuration Utility program” on page 222.

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

Table 16. Server configuration and applications for configuring and managing RAID arrays

Server configuration	RAID array configuration (before operating system is installed)	RAID array management (after operating system is installed)
ServeRAID-BR10il v2 adapter installed	LSI Utility (Setup utility, press Ctrl+C), ServerGuide	MegaRAID Storage Manager (for monitoring storage only)

Using the ServerGuide Setup and Installation CD

The *ServerGuide Setup and Installation* CD provides software setup tools and installation tools that are designed for your server. The ServerGuide program detects the server model and hardware options 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. To download the CD, go to <http://www.ibm.com/support/entry/portal/docdisplay?Indocid=SERV-GUIDE> and click **IBM Service and Support Site**.

The ServerGuide program has the following features:

- An easy-to-use interface
- Diskette-free setup, and configuration programs that are based on detected hardware
- ServeRAID Manager program, which configures your ServeRAID adapter
- Device drivers that are provided for your server model and detected hardware
- Operating-system partition size and file-system type that are selectable during setup

ServerGuide features

Features and functions can vary slightly with different versions of the ServerGuide program. To learn more about the version that you have, start the *ServerGuide Setup and Installation* CD and view the online overview. Not all features are supported on all server models.

The ServerGuide program requires a supported IBM server with an enabled startable (bootable) CD drive. In addition to the *ServerGuide Setup and Installation* CD, you must have your operating-system CD to install the operating system.

The ServerGuide program performs the following tasks:

- Sets system date and time
- Detects the RAID adapter or controller and runs the SAS/SATA RAID configuration program
- Checks the microcode (firmware) levels of a ServeRAID adapter and determines whether a later level is available from the CD
- Detects installed hardware options and provides updated device drivers for most adapters and devices
- Provides diskette-free installation for supported Windows operating systems
- Includes an online readme file with links to tips for your hardware and operating-system installation

Setup and configuration overview

When you use the *ServerGuide Setup and Installation* CD, you do not need setup diskettes. You can use the CD to configure any supported IBM server model. The setup program provides a list of tasks that are required to set up your server model. On a server with a ServeRAID adapter or SAS/SATA controller with RAID capabilities, you can run the SAS RAID configuration program to create logical drives.

Note: Features and functions can vary slightly with different versions of the ServerGuide program.

When you start the *ServerGuide Setup and Installation* CD, the program prompts you to complete the following tasks:

- Select your language.
- Select your keyboard layout and country.
- View the overview to learn about ServerGuide features.
- View the readme file to review installation tips for your operating system and adapter.
- Start the operating-system installation. You will need your operating-system CD.

Typical operating-system installation

The ServerGuide program can reduce the time it takes to install an operating system. It provides the device drivers that are required for your hardware and for the operating system that you are installing. This section describes a typical ServerGuide operating-system installation.

Note: Features and functions can vary slightly with different versions of the ServerGuide program.

1. After you have completed the setup process, the operating-system installation program starts. (You will need your operating-system CD to complete the installation.)
2. The ServerGuide program stores information about the server model, 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, go to <http://www.ibm.com/supportportal/> to download the latest operating-system installation instructions.

Using the Setup utility

Use the Setup utility to perform the following tasks:

- View configuration information
- View and change assignments for devices and I/O ports
- Set the date and time
- Set the startup characteristics of the server and the order of startup devices
- Set and change settings for advanced hardware features
- View, set, and change settings for power-management features
- View and clear error logs
- Resolve configuration conflicts

Starting the Setup utility

To start the Setup utility, complete the following steps:

1. Turn on the server.

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

2. When the prompt <F1> Setup is displayed, press F1. If you have set an administrator password, you must type the administrator password to access the full Setup utility menu. If you do not type the administrator password, a limited Setup utility menu is available.
3. Select settings to view or change.

Setup utility menu choices

The following choices are on the Setup utility main menu. Depending on the version of the firmware, some menu choices might differ slightly from these descriptions.

- **System Information**

Select this choice to view information about the server. When you make changes through other choices in the Setup utility, some of those changes are reflected in the system information; you cannot change settings directly in the system information. This choice is on the full Setup utility menu only.

- **System Summary**

Select this choice to view configuration information, including the ID, speed, and cache size of the microprocessors, machine type and model of the server, the serial number, the system UUID, and the amount of installed memory. When you make configuration changes through other options in the Setup utility, the changes are reflected in the system summary; you cannot change settings directly in the system summary.

- **Product Data**

Select this choice to view the system-board identifier, the revision level or issue date of the firmware, the integrated management module and diagnostics code, and the version and date.

This choice is on the full Setup utility menu only.

- **System Settings**

Select this choice to view or change the server component settings.

- **Adapters and UEFI Drivers**

Select this choice to view information about the UEFI 1.10 and UEFI 2.0 compliant adapters and drivers installed in the server.

- **Processors**

Select this choice to view or change the processor settings.

- **Memory**

Select this choice to view or change the memory settings.

- **Devices and I/O Ports**

Select this choice to view or change assignments for devices and input/output (I/O) ports. You can configure the serial ports, configure remote console redirection, enable or disable integrated Ethernet controllers. If you disable a device, it cannot be configured, and the operating system will not be able to detect it (this is equivalent to disconnecting the device).

- **Power**

Select this choice to set the operating mode if a power loss occurs.

- **Operating Modes**

Select this choice to view or change the operating profile (performance and power utilization).

- **Legacy Support**

Select this choice to view or set legacy support.

- **Force Legacy Video on Boot**

Select this choice to force INT video support, if the operating system does not support UEFI video output standards.

- **Rehook INT 19h**

Select this choice to enable or disable devices from taking control of the boot process. The default is **Disable**.

- **Legacy Thunk Support**

Select this choice to enable or disable UEFI to interact with PCI mass storage devices that are non-UEFI compliant.

- **Integrated Management Module**

Select this choice to view or change the settings for the integrated management module.

- **POST Watchdog Timer**

Select this choice to view or enable the POST watchdog timer.

- **POST Watchdog Timer Value**

Select this choice to view or set the POST loader watchdog timer value.

- **Reboot System on NMI**

Enable or disable restarting the system whenever a nonmaskable interrupt (NMI) occurs. **Disabled** is the default.

- **Commands on USB Interface Preference**

Select this choice to enable or disable the Ethernet over USB interface on IMM2.

- **Network Configuration**

Select this choice to view the system management network interface port, the IMM2 MAC address, the current IMM2 IP address, and host name; define the static IMM2 IP address, subnet mask, and gateway address, specify whether to use the static IP address or have DHCP assign the IMM2 IP address, save the network changes, and reset the IMM2.

- **Reset IMM2 to Defaults**

Select this choice to view or reset IMM2 to the default settings.

- **Reset IMM2**

Select this choice to reset IMM2.

- **System Security**

Select this choice to view or configure security settings.

- **Network**

Select this choice to view or configure the network device options, such as PXE and network devices.

- **Date and Time**

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

This choice is on the full Setup utility menu only.

- **Start Options**

Select this choice to view or boot to devices, including the startup sequence. The server starts from the first boot record it finds.

This choice is on the full Setup utility menu only.

- **Boot Manager**

Select this choice to view, add, delete, or change the device boot priority, boot from a file, select a one-time boot, or reset the boot order to the default setting.

If the server has Wake on LAN hardware and software and the operating system supports Wake on LAN functions, you can specify a startup sequence for the Wake on LAN functions. For example, you can define a startup sequence that checks for a disc in the CD-RW/DVD drive, then checks the hard disk drive, and then checks a network adapter.

Note: OPRM configuration utility is only available for emulex 10G card.

- **System Event Logs**

Select this choice to enter the System Event Manager, where you can view the POST event log and system-event log.

The POST event log contains the three most recent error codes and messages that were generated during POST.

The system-event logs contain POST and system management interrupt (SMI) events and all events that are generated by the integrated management module that is embedded in the integrated management module.

Important: If the system-error LED on the front of the server is lit but there are no other error indications, clear the system-event log. Also, after you complete a repair or correct an error, clear the system-event log to turn off the system-error LED on the front of the server.

- **POST Event Viewer**

Select this choice to enter the POST event viewer to view the POST event log.

- **System Event Log**

Select this choice to view the system-event log.

- **Clear System Event Log**

Select this choice to clear the system-event log.

- **User Security**

Select this choice to set or clear passwords. See “Passwords” on page 214 for more information.

This choice is on the full and limited Setup utility menu.

- **Set Power-on Password**

Select this choice to set the power-on password. See “Power-on password” on page 214 for more information.

- **Clear Power-on Password**

Select this choice to clear the power-on password. See “Power-on password” on page 214 for more information.

- **Set Administrator Password**

Select this choice to set an administrator password. An administrator password is intended to be used by a system administrator; it limits access to the full Setup utility menu. If an administrator password is set, the full Setup utility menu is available only if you type the administrator password at the password prompt. For more information, see “Administrator password” on page 215.

- **Clear Administrator Password**

Select this choice to clear an administrator password. For more information, see “Administrator password” on page 215.

- **Save Settings**

Select this choice to save the changes that you have made in the settings.

- **Restore Settings**

Select this choice to cancel the changes that you have made in the settings and restore the previous settings.

- **Load Default Settings**

Select this choice to cancel the changes that you have made in the settings and restore the factory settings.

- **Exit Setup**

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

Passwords

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

If you set only a power-on password, you must type the power-on password to complete the system startup and to have access to the full Setup utility menu.

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

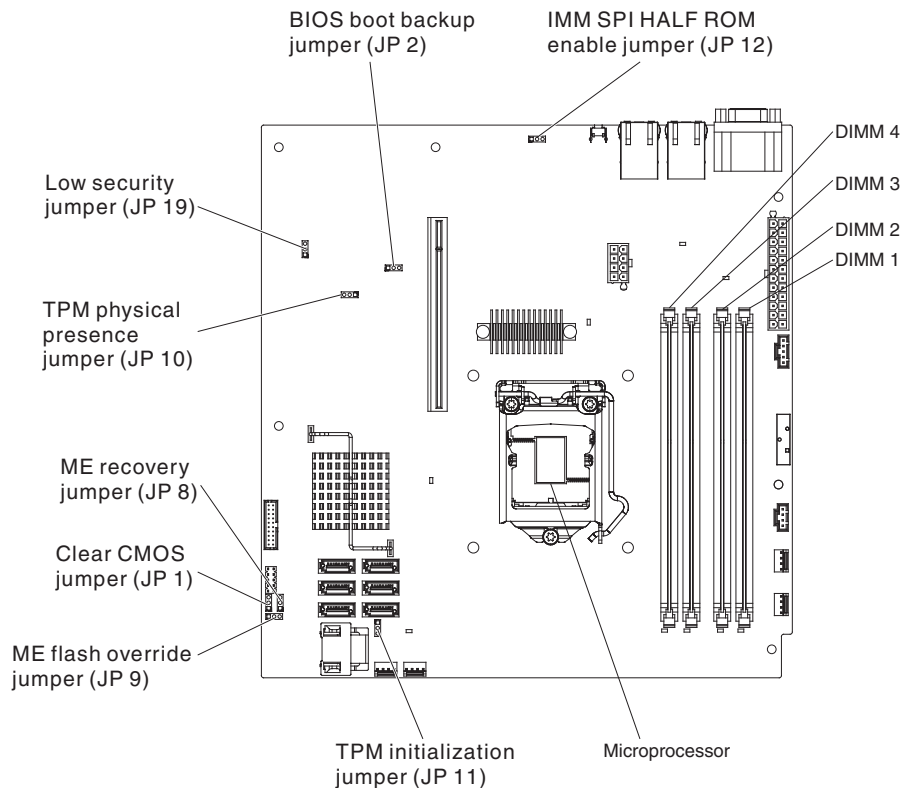
If you set a power-on password for a user and an administrator password for a system administrator, you can type either password to complete the system startup. A system administrator who types the administrator password has access to the full Setup utility menu; the system administrator can give the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

Power-on password: If a power-on password is set, when you turn on the server, the system startup will not be completed until you type the power-on password. You can use any combination of 6 - 20 printable ASCII characters for the password.

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

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

- If an administrator password is set, type the administrator password at the password prompt. Start the Setup utility and reset the power-on password.
- Remove the battery from the server and then reinstall it. See "Removing the system battery" on page 179 for instructions for removing the battery.
- Change the position of the clear CMOS jumper on the system board to pins 2 and 3 to clear the power-on password. The jumper location is shown in the following illustration.



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 blocks that are not shown in this document.

The clear CMOS jumper does not affect the administrator password.

Administrator password: If an administrator password is set, you must type the administrator password for access to the full Setup utility menu. You can use any combination of 6 - 20 printable ASCII characters for the password.

Attention: If you forget the administrator password, you cannot reset the password. You must replace the system board.

Using the Boot Manager program

The Boot Manager program is a built-in, menu-driven configuration utility program that you can use to temporarily redefine the first startup device without changing settings in the Setup utility.

To use the Boot Manager program, complete the following steps:

1. Turn off the server.
2. Restart the server.
3. When the prompt <F12> Select Boot Device is displayed, press F12. If a bootable USB mass storage device is installed, a submenu item (**USB Key/Disk**) is displayed.
4. Use the Up Arrow and Down Arrow keys to select an item from the **Boot Selection Menu** and press Enter.

Note: OPROM configuration utility is only available for emulex 10G card.

The next time the server starts, it returns to the startup sequence that is set in the Setup utility.

Starting the backup server firmware

The system board contains a backup copy area for the server firmware (formerly BIOS firmware). This is a secondary copy of the server firmware that you update only during the process of updating the server firmware. If the primary copy of the server firmware becomes damaged, use this backup copy.

To force the server to start from the backup copy, turn off the server; then, place the JP2 jumper in the backup position (pins 2 and 3).

Use the backup copy of the server firmware until the primary copy is restored. After the primary copy is restored, turn off the server; then, move the JP2 jumper back to the primary position (pins 1 and 2).

Using the integrated management module II (IMM2)

The Integrated Management Module II (IMM2) is the second generation of the functions that were formerly provided by the Integrated Management Module (IMM). It combines service processor functions and the video controller in a single chip.

The IMM2 supports the following basic systems-management features:

- Environmental monitor with fan speed control for temperature, voltages, fan failure, and power supply failure.
- DIMM error assistance. The Unified Extensible Firmware Interface (UEFI) disables a failing DIMM that is detected during POST, and the IMM2 lights the associated system error LED and the failing DIMM error LED.
- System event-log (SEL).
- ROM-based IMM2 firmware flash updates.
- Auto Boot Failure Recovery (ABR).
- Nonmaskable interrupt (NMI) detection and reporting.
- Automatic Server Restart (ASR) when POST is not complete or the operating system hangs and the operating system watchdog timer times-out. The IMM2 allows the administrator to generate a nonmaskable interrupt (NMI) by pressing an NMI button on the system board for an operating-system memory dump. ASR is supported by IPMI.
- Intelligent Platform Management Interface (IPMI) Specification V2.0 and Intelligent Platform Management Bus (IPMB) support.
- Invalid system configuration (CNFG) LED support.
- Serial over LAN (SOL).
- Power/reset control (power-on, hard and soft shutdown, hard and soft reset).
- Alerts (IPMI style PET traps).

Using IPMITool

IPMITool provides various tools that you can use to manage and configure an IPMI system. You can use IPMITool in-band to manage and configure the IMM2. For more information about IPMITool, or to download IPMITool, go to <http://sourceforge.net/>

Managing tools and utilities with IMM2 and IBM System x Server Firmware

This section describes the tools and utilities that are supported by IMM2 and IBM System x Server Firmware. The IBM tools that you use to manage the IMM2 in-band do not require you to install device drivers. However, if you choose to use certain tools such as IPMITool in-band, you must install the OpenIPMI drivers.

Updates and downloads for IBM systems-management tools and utilities are available on the IBM website. To check for updates to tools and utilities, complete the following steps.

Note: Changes are made periodically to the IBM website. Procedures for locating firmware and documentation might vary slightly from what is described in this document. See <http://www-947.ibm.com/support/entry/portal/docdisplay?brand=5000008&Indocid=TOOL-CENTER>.

Using IBM Advanced Settings Utility (ASU)

IBM Advanced Settings Utility (ASU) version 3.0.0 or later is required to manage IMM2. ASU is a tool that you can use to modify firmware settings from the command-line interface on multiple operating-system platforms. It also enables you to issue selected IMM2 setup commands. You can use ASU in-band to manage and configure the IMM2.

For more information about the ASU, go to <http://www.ibm.com/support/entry/portal/docdisplay?Indocid=TOOL-ASU>.

Using IBM Flash utilities and update utilities

A flash utility enables you to update hardware and server firmware and eliminates the need to manually install new firmware or firmware updates from a physical diskette or other medium. To find a flash utility, complete the following steps:

1. Go to <http://www.ibm.com/supportportal/>.
2. Under Product support, click System x.
3. Type flash utility in the search field and click Search.
4. Click the link to the applicable flash utility.

A flash utility enables you to update hardware and server firmware and eliminates the need to manually install new firmware or firmware updates from a physical diskette or other medium. To find a flash utility, complete the following steps:

1. Go to <http://www-947.ibm.com/support/entry/portal/docdisplay?Indocid=SERV-XPRESS>.
2. Download IMM, uEFI, pDSA code from <http://www.ibm.com/support/fixcentral/>.
3. Follow IMM, uEFI, pDSA readme file for firmware update

Resetting the IMM2 with the Setup utility

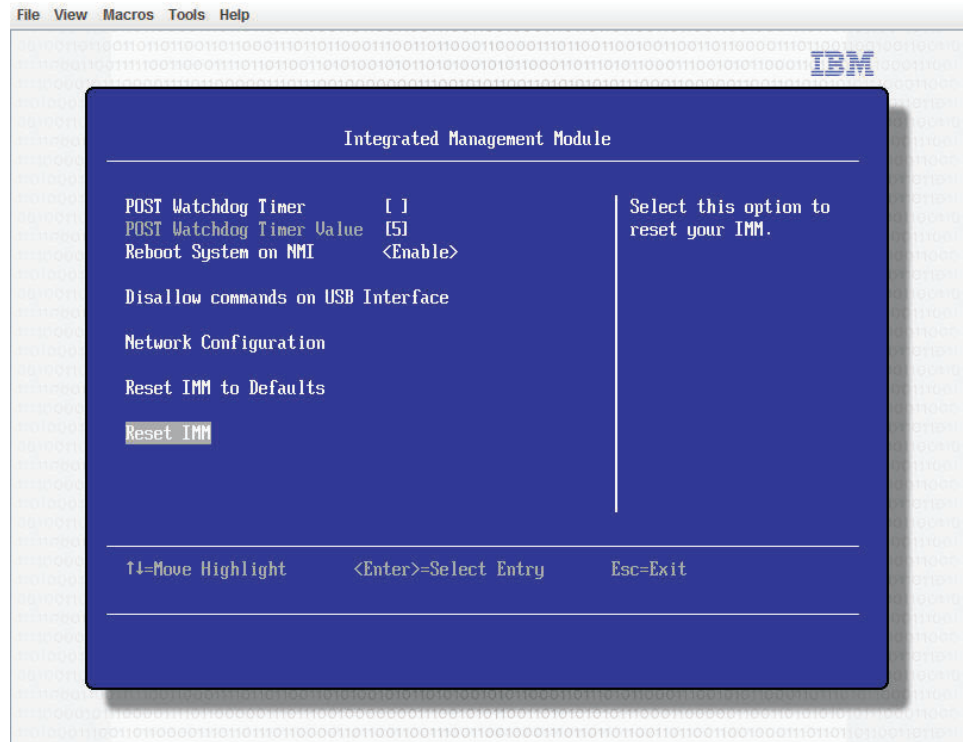
To reset the IMM2 through the Setup utility, complete the following steps:

1. Turn on the server.

Note: Approximately 60 seconds after the server is connected to ac power, the power-control button becomes active.

2. When the prompt F1 Setup is displayed, press F1. If you have set both a power-on password and an administrator password, you must type the administrator password to access the full Setup utility menu.

3. From the Setup utility main menu, select **System Settings**.
4. On the next screen, select **Integrated Management Module**.
5. Select **Reset IMM**.



Note: After you reset the IMM2, this confirmation message is displayed immediately:

IMM2 reset command has been sent successfully!! Press ENTER to continue.

The IMM2 reset process is not yet complete. You must wait approximately 3 minutes for the IMM2 to reset before the IMM2 is functional again. If you attempt to access sever firmware information while the server is resetting, Unknown is displayed in the fields, and the description is Error retrieving information from IMM2.

LAN over USB

A LAN over USB interface enables in-band communications to the IMM2; the IMM2 hardware on the system board presents an internal Ethernet NIC from the IMM2 to the operating system.

Typically, the IMM2 IP address for the LAN over USB interface is set to a static address of 169.254.95.118 with a subnet mask of 255.255.0.0. In the event of an IP address collision on the network, the IMM2 might obtain a different IP address in the 169.254.xxx.xxx range.

Because the IMM2 might obtain a random IP address for the LAN over USB interface, the ASU and firmware flash utilities, DSA, and the IBM Systems Director Agent use the Service Location Protocol (SLP) to discover the IMM2 IP address. These tools perform an SLP multicast discovery on the LAN over USB interface. When they receive a response from the IMM2, they obtain the attributes that contain the IP address that the IMM2 is using for the LAN over USB interface.

Potential conflicts with the LAN over USB interface

In some situations, the IMM2 LAN over USB interface can conflict with certain network configurations, applications, or both. For example, Open MPI attempts to use all of the available network interfaces on a server. Open MPI detects the IMM2 LAN over USB interface and attempts to use it to communicate with other systems in a clustered environment. The LAN over USB interface is an internal interface, so this interface does not work for external communications with other systems in the cluster.

Resolving conflicts with the IMM2 LAN over USB interface

There are several actions that resolve LAN over USB conflicts with network configurations and applications:

- For conflicts with Open MPI, configure the application so that it does not attempt to use the interface.
- Take the interface down (run `ifdown` under Linux).
- Remove the device driver (run `rmmod` under Linux).

Configuring the LAN over USB interface manually

For the IMM2 to use the LAN over USB interface, you might have to complete other configuration tasks if the automatic setup fails or if you prefer to set up the LAN over USB manually. The firmware update package or Advanced Settings Utility attempts to perform the setup automatically. For more information about LAN over USB configuration on different operating systems, see the IBM white paper *Transitioning to UEFI and IMM on the IBM website*.

Installing device drivers

For the IMM2 to use the LAN over USB interface, you might have to install operating-system drivers. If the automatic setup fails or if you prefer to set up the LAN over USB manually, use one of the following procedures. For more information about LAN over USB configuration on different operating systems, see the IBM white paper *Transitioning to UEFI and IMM on the IBM website*.

Installing the Windows IPMI device driver: The Microsoft IPMI device driver is not installed by default on Microsoft Windows Server 2003 R2 operating systems. To install the Microsoft IPMI device driver, complete the following steps:

1. From the Windows desktop, click **Start → Control Panel → Add or Remove Programs**.
2. Click **Add/Remove Windows Components**.
3. From the component list, select **Management and Monitoring Tools**, and then click **Details**.
4. Select **Hardware Management**.
5. Click **Next**. The installation wizard opens and guides you through the installation.

Note: The Windows installation CD might be required.

Installing the LAN over USB Windows device driver: When you install Windows, an unknown RNDIS device is shown in the Device Manager. You must install a Windows INF file that identifies this device and is required by Windows operating system to detect and use the LAN over USB functionality. The signed version of the INF is included in all of the Windows versions of the IMM2, UEFI, and DSA update packages. The file needs to be installed only once. To install the Windows INF file, complete the following steps:

1. Obtain the IMM2 update package.

2. Extract the `ibm_rndis_server_os.inf` and `device.cat` files from the firmware update package and copy them to the `\WINDOWS\inf` subdirectory.
3. **For Windows 2003:** Install the `ibm_rndis_server_os.inf` file by right-clicking on the file and selecting **Install**. This generates a PNF file of the same name in `\WINDOWS\inf`. **For Windows 2008:** Go to **Computer Management**, then **Device Manager** and locate the RNDIS Device. Select **Properties** → **Driver** → **Reinstall driver**. Point the server to the `\Windows\inf` directory, where it can locate the `ibm_rndis_server_os.inf` file and install the device.
4. Go to **Computer Management**, then **Device Manager**, right-click **Network adapters**, and select **Scan for hardware changes**. A message confirms that the Ethernet device is found and installed. The New Hardware Wizard starts automatically.
5. When you are prompted Can Windows connect to Windows Update to search for software?, click **No, not this time**. Click **Next** to continue.
6. When you are prompted What do you want the wizard to do?, click **Install from a list or specific location (Advanced)**. Click **Next** to continue.
7. When you are prompted Please choose your search and installation options, click **Don't search. I will choose the driver to install**. Click **Next** to continue.
8. When you are prompted Select a hardware type, and then click Next, click **Network adapters**. Click **Next** to continue.
9. When you are prompted Completing the Found New Hardware Wizard, click **Finish**.

Note: A new local area connection is displayed and might state This connection has limited or no connectivity. Ignore this message.

10. Go back to the Device Manager. Verify that **IBM USB Remote NDIS Network Device** appears under **Network Adapters**.
11. Open a command prompt, type `ipconfig`, and press Enter. The local area connection for the IBM USB RNDIS is displayed with an IP address in the range of 169.254.xxx.xxx with a subnet mask set to 255.255.0.0.

Installing the LAN over USB Linux device driver: Current versions of Linux, such as RHEL 5 Update 6 and SLES 10 Service Pack 4, support the LAN over USB interface by default. This interface is detected and displayed during the installation of these operating systems. When you configure the device, use a static IP address of 169.254.95.130 with a subnet mask of 255.255.0.0.

Note: Older Linux distributions might not detect the LAN over USB interface and might require manual configuration. For information about configuring LAN over USB on specific Linux distributions, see the IBM white paper *Transitioning to UEFI and IMM* on the IBM website.

The IMM2 LAN over USB interface requires that the `usbnet` and `cdc_ether` device drivers be loaded. If the device drivers have not been installed, use the `modprobe` command to install them. When these device drivers are installed, the IMM2 USB network interface is shown as a network device in the operating system. To discover the name that the operating system has assigned to the IMM2 USB network interface, type:

```
dmesg | grep -i cdc ether
```

Use the `ifconfig` command to configure the interface to have an IP address in the range 169.254.xxx.xxx. For example:

```
ifconfig IMM2_device_name 169.254.1.102 netmask 255.255.0.0
```

This interface is configured to have an IP address in the 169.254.xxx.xxx range each time that the operating system is started.

Enabling the Intel Gigabit Ethernet Utility program

The Intel Gigabit Ethernet Utility program is part of the server firmware. You can use it to configure the network as a startable device, and you can customize where the network startup option appears in the startup sequence. Enable and disable the Intel Gigabit Ethernet Utility program from the Setup utility.

Configuring the Gigabit Ethernet controller

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.

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. To find updated information about configuring the controllers:

1. Go to <http://www.ibm.com/supportportal/>.
2. Under **Product support**, click **System x**.
3. From the **Product family** menu, select **System x3250 M4**, and click **Continue**.
4. Under **Popular links**, click **Downloads**.
5. Under **Downloads and fixes**, click **View System x3250 M4 downloads**.
6. Under menu, click **Network**.

Enabling and configuring Serial over LAN (SOL)

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

To enable and configure the server for SOL, you must update and configure the UEFI code; update and configure the integrated management module (IMM2) firmware; update and configure the Ethernet controller firmware; and enable the operating system for an SOL connection.

UEFI update and configuration

To update and configure the UEFI code to enable SOL, complete the following steps:

1. Update the UEFI code:
 - a. Download the latest version of the UEFI code from <http://www.ibm.com/supportportal/>.
 - b. Update the UEFI code, following the instructions that come with the update file that you downloaded.
2. Update the IMM2 firmware:
 - a. Download the latest version of the IMM2 firmware from <http://www.ibm.com/supportportal/> or <http://www.ibm.com/support/fixcentral/>.

- b. Update the IMM2 firmware, following the instructions that come with the update file that you downloaded.
3. Configure the UEFI settings:
 - a. When you are prompted to start the Configuration/Setup Utility program, restart the server and press F1.
 - b. Select **System Settings** → **Devices and I/O Ports**.
 - c. Select **Console Redirection Settings**; then, make sure that the values are set as follows:
 - **COM Port 1**: Enable
 - **Remote Console**: Enable
 - **Serial Port Sharing**: Enable
 - **Serial Port Access Mode**: Dedicated COM1 Settings
 - **Baud Rate**: 115200
 - **Data Bits**: 8
 - **Parity**: None Stop
 - **Bits**: 1
 - **Thermal Emulation**: ANSI
 - **Active After Boot**: Enable
 - **Flow Control**: Hardware
 - d. Press Esc twice to exit the **Devices and I/O Ports** section of the Configuration/Setup Utility program.
 - e. Select **Save Settings**; then, press Enter.
 - f. Press Enter to confirm.
 - g. Select **Exit Setup**; then, press Enter.
 - h. Make sure that Yes, exit the Setup Utility is selected; then, press Enter.

Using the LSI Configuration Utility program

Note: OPROM configuration utility is only available for emulex 10G card. Use the LSI Configuration Utility program to configure and manage redundant array of independent disks (RAID) arrays. Be sure to use this program as described in this document.

- Use the LSI Configuration Utility program to perform the following tasks:
 - Perform a low-level format on a hard disk drive
 - Create an array of hard disk drives with or without a hot-spare drive
 - Set protocol parameters on hard disk drives

The integrated SATA controller with RAID capabilities supports RAID arrays. You can use the LSI Configuration Utility program to configure RAID 1 (IM), RAID 1E (IME), and RAID 0 (IS) for a single pair of attached devices. If you install the optional ServeRAID-MR10i or ServeRAID-MR10s SAS/SATA controller, it provides RAID levels 0, 1, and 10 support. If you install a different type of RAID adapter, follow the instructions in the documentation that comes with the adapter to view or change settings for attached devices.

In addition, you can download an LSI command-line configuration program from <http://www.ibm.com/supportportal/>.

When you are using the LSI Configuration Utility program to configure and manage arrays, consider the following information:

- The integrated SATA controller with RAID capabilities supports the following features:
 - Integrated Mirroring (IM) with hot-spare support (also known as RAID 1)
Use this option to create an integrated array of two disks plus up to two optional hot spares. All data on the primary disk can be migrated.
 - Integrated Mirroring Enhanced (IME) with hot-spare support (also known as RAID 1E)
Use this option to create an integrated mirror enhanced array of three to eight disks, including up to two optional hot spares. All data on the array disks will be deleted.
 - Integrated Striping (IS) (also known as RAID 0)
Use this option to create an integrated striping array of two to eight disks. All data on the array disks will be deleted.
- Hard disk drive capacities affect how you create arrays. The drives in an array can have different capacities, but the RAID controller treats them as if they all have the capacity of the smallest hard disk drive.
- If you use an integrated SATA controller with RAID capabilities to configure a RAID 1 (mirrored) array after you have installed the operating system, you will lose access to any data or applications that were previously stored on the secondary drive of the mirrored pair.
- If you install a different type of RAID controller, see the documentation that comes with the controller for information about viewing and changing settings for attached devices.

Starting the LSI Configuration Utility program

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

1. Turn on the server.

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

2. When the prompt <F1 Setup> is displayed, press F1. If you have set an administrator password, you are prompted to type the password.
3. Select **System Settings → Adapters and UEFI drivers**.
4. Select **Please refresh this page on the first visit** and press Enter.
5. Select **LSI controller_driver_name Driver** and press Enter, where *controller_driver_name* is the name of the SAS/SATA controller driver. For the SAS/SATA controller driver name, see the documentation that comes with your controller.
6. To perform storage-management tasks, follow the procedures in the documentation that comes with the SAS/SATA controller.

When you have finished changing settings, press Esc to exit from the program; select **Save** to save the settings that you have changed.

Formatting a hard disk drive

Low-level formatting removes all data from the hard disk. If there is data on the disk that you want to save, back up the hard disk before you perform this procedure.

Note: Before you format a hard disk, make sure that the disk is not part of a mirrored pair.

To format a drive, complete the following steps:

1. From the list of adapters, select the controller (channel) for the drive that you want to format and press Enter.
2. Select **SAS Topology** and press Enter.
3. Select **Direct Attach Devices** and press Enter.
4. To highlight the drive that you want to format, use the Up Arrow and Down Arrow keys. To scroll left and right, use the Left Arrow and Right Arrow keys or the End key. Press Alt+D.
5. To start the low-level formatting operation, select **Format** and press Enter.

Creating a RAID array of hard disk drives

To create a RAID array of hard disk drives, complete the following steps:

1. From the list of adapters, select the controller (channel) for the drives that you want to mirror.
2. Select **RAID Properties**.
3. Select the type of array that you want to create.
4. Use the arrow keys to highlight the first drive in the pair; then, press the Minus (-) or Plus (+) key to change the mirror value to **Primary**.
5. Continue to select the next drive using the Minus (-) or Plus (+) key until you have selected all the drives for your array.
6. Press C to create the disk array.
7. Select **Apply changes and exit menu** to create the array.

Creating a software RAID array of hard disk drives

To create a software RAID array of hard disk drives, complete the following steps:

1. Turn on the server.

Note: Approximately 1 to 3 minutes after the server is connected to ac power, the power-control button becomes active after the power-on LED flashes slowly.
2. When the prompt <F1 Setup> is displayed, press F1. If you have set an administrator password, you are prompted to type the password.
3. Under **System Settings**, select **Devices and I/O Ports**.
4. Confirm to configure SATA as **RAID**.
5. Save the setting and reboot the system.
6. Press F1 to boot the uEFI setup menu.
7. Under **System Settings**, select **Storage**.
8. Under **Configuration Options**, select **LSI MegaRAID Controller Configuration Utility** → **Virtual Drive Management** → **Create Configuration**.
9. Select the type of array that you want to create.
10. Select **Select Drives** and use space key to select all the drives for your array.
11. Select **Apply Change** to create the array.
12. When the prompt Success is displayed, select **OK** to continue.
13. After the system auto skip to the next screen, select **Save Configuration**.
14. When the prompt create RAID will cause data lost on the physical HDD is displayed, use space key to select **Confirm**.
15. Select **Yes** to continue.
16. Select **OK** to continue.
17. To initialize virtual disk, select **LSI MegaRAID Controller Configuration Utility** → **Virtual Drive Management** → **Select Virtual Drive Operation**.

18. Select **Start Operation** .
19. Select **Yes** to confirm.
20. When the prompt Success is displayed, select **OK**.

Notes:

1. Software RAID is not supported in Redhat 6.1 UEFI mode.
2. You can create software RAID with Linux OS RAID. LSI software RAID is turned off in Linux OS by default.
3. Legacy OS installation is not supported when BBS boot is enabled on ServeRAID M5014.
4. Brocade adapters are supported in Windows 2011 SBS with 3.0.0.0 driver package or later version installed.

Disable a software RAID array of hard disk drives

To disable a software RAID array of hard disk drives, complete the following steps:

1. Turn on the server.

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

2. When the prompt <F1 Setup> is displayed, press F1. If you have set an administrator password, you are prompted to type the password.
3. Select **Devices and I/O Ports → Adapters and UEFI drivers**.
4. Save the setting and reboot the system.
5. Press F1 to boot the uEFI setup menu.
6. Select **Devices and I/O Ports → Configure SATA as**.
7. Select **IDE** or **AHCI**.
8. Save the setting and reboot the system.

IBM Advanced Settings Utility program

The IBM Advanced Settings Utility (ASU) program is an alternative to the Setup utility for modifying UEFI settings. Use the ASU program online or out of band to modify UEFI settings from the command line without the need to restart the system to access the Setup utility.

In addition, the ASU program provides limited settings for configuring the IPMI function in the IMM2 through the command-line interface.

Use the command-line interface to issue setup commands. You can save any of the settings as a file and run the file as a script. The ASU program supports scripting environments through a batch-processing mode.

For more information and to download the ASU program, go to <http://www.ibm.com/support/entry/portal/docdisplay?Indocid=TOOL-ASU>.

Updating IBM Systems Director

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

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

To locate and install a newer version of IBM Systems Director, complete the following steps:

1. Check for the latest version of IBM Systems Director:
 - a. Go to <http://www.ibm.com/systems/software/director/downloads/index.html>.
 - b. If a newer version of IBM Systems Director than what comes with the server is shown in the drop-down list, follow the instructions on the web page to download the latest version.
2. Install the IBM Systems Director program.

If your management server is connected to the Internet, to locate and install updates and interim fixes, complete the following steps:

1. Make sure that you have run the Discovery and Inventory collection tasks.
2. On the Welcome page of the IBM Systems Director web interface, click **View updates**.
3. Click **Check for updates**. The available updates are displayed in a table.
4. Select the updates that you want to install, and click **Install** to start the installation wizard.

If your management server is not connected to the Internet, to locate and install updates and interim fixes, complete the following steps:

1. Make sure that you have run the Discovery and Inventory collection tasks.
2. On a system that is connected to the Internet, go to <http://www.ibm.com/support/fixcentral/>.
3. From the **Product family** list, select **IBM Systems Director**.
4. From the **Product** list, select **IBM Systems Director**.
5. From the **Installed version** list, select the latest version, and click **Continue**.
6. Download the available updates.
7. Copy the downloaded files to the management server.
8. On the management server, on the Welcome page of the IBM Systems Director web interface, click the **Manage** tab, and click **Update Manager**.
9. Click **Import updates** and specify the location of the downloaded files that you copied to the management server.
10. Return to the Welcome page of the web interface, and click **View updates**.
11. Select the updates that you want to install, and click **Install** to start the installation wizard.

Updating the Universal Unique Identifier (UUID)

The Universal Unique Identifier (UUID) must be updated when the system board is replaced. Use the Advanced Settings Utility to update the UUID in the UEFI-based server. The ASU is an online tool that supports several operating systems. Make sure that you download the version for your operating system. You can download the ASU from the IBM website. To download the ASU and update the UUID, complete the following steps.

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

1. Download the Advanced Settings Utility (ASU):
 - a. Go to <http://www.ibm.com/support/entry/portal/docdisplay?&Indocid=TOOL-CENTER>.

- b. Scroll down to **Configuration** and click **Advanced Settings Utility**.
 - c. In the next window under Related Information, click the **Advanced Settings Utility** link and download the ASU version for your operating system.
2. ASU sets the UUID in the Integrated Management Module 2 (IMM2). Select one of the following methods to access the Integrated Management Module 2 (IMM2) to set the UUID:
 - Online from the target system (LAN or keyboard console style (KCS) access)
 - Remote access to the target system (LAN based)
 - Bootable media containing ASU (LAN or KCS, depending upon the bootable media)

Note: IBM provides a method for building a bootable media. You can create a bootable media using the Bootable Media Creator (BoMC) application from the Tools Center website.

3. Copy and unpack the ASU package, which also includes other required files, to the server. Make sure that you unpack the ASU and the required files to the same directory. In addition to the application executable (asu or asu64), the following files are required:
 - For Windows based operating systems:
 - ibm_rndis_server_os.inf
 - device.cat
 - For Linux based operating systems:
 - cdc_interface.sh
4. After you install ASU, use the following command syntax to set the UUID:


```
asu set SYSTEM_PROD_DATA.SysInfoUUID <uuid_value> [access_method]
```

Where:

<uuid_value>

Up to 16-byte hexadecimal value assigned by you.

[access_method]

The access method that you selected to use from the following methods:

- Online authenticated LAN access, type the command:


```
[host <IMM2_internal_ip>] [user <IMM2_user_id>] [password <IMM2_password>]
```

Where:

IMM2_internal_ip

The IMM2 internal LAN/USB IP address. The default value is 169.254.95.118.

IMM2_user_id

The IMM2 account (1 of 12 accounts). The default value is USERID.

IMM2_password

The IMM2 account password (1 of 12 accounts). The default value is PASSWORD (with a zero 0 not an O).

Note: If you do not specify any of these parameters, ASU will use the default values. When the default values are used and ASU is unable to access the IMM2 using the online authenticated LAN access method, ASU will automatically use the unauthenticated KCS access method.

The following commands are examples of using the userid and password default values and not using the default values:

Example that does not use the userid and password default values:
asu set SYSTEM_PROD_DATA.SysInfoUUID <uuid_value> user <user_id>
password <password>

Example that does use the userid and password default values:
asu set SYSTEM_PROD_DATA.SysInfoUUID <uuid_value>

- Online KCS access (unauthenticated and user restricted):

You do not need to specify a value for *access_method* when you use this access method.

Example:

asu set SYSTEM_PROD_DATA.SysInfoUUID <uuid_value>

The KCS access method uses the IPMI/KCS interface. This method requires that the IPMI driver be installed. Some operating systems have the IPMI driver installed by default. ASU provides the corresponding mapping layer. See the *Advanced Settings Utility Users Guide* for more details. You can access the ASU Users Guide from the IBM website.

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

- a. Go to <http://www.ibm.com/supportportal/>.
 - b. Under Product support, select **System x**.
 - c. Under Popular links, select **Tools and utilities**.
 - d. In the left pane, click **System x and BladeCenter Tools Center**.
 - e. Scroll down and click **Tools reference**.
 - f. Scroll down and click the plus-sign (+) for Configuration tools to expand the list; then, select **Advanced Settings Utility (ASU)**.
 - g. In the next window under Related Information, click the **Advanced Settings Utility** link.
- Remote LAN access, type the command:

Note: When using the remote LAN access method to access IMM2 using the LAN from a client, the *host* and the *IMM2_external_ip* address are required parameters.

```
host <IMM2_external_ip> [user <IMM2_user_id> [[password  
<IMM2_password>]
```

Where:

IMM2_external_ip

The external IMM2 LAN IP address. There is no default value. This parameter is required.

IMM2_user_id

The IMM2 account (1 of 12 accounts). The default value is USERID.

IMM2_password

The IMM2 account password (1 of 12 accounts). The default value is PASSWORD (with a zero 0 not an O).

The following commands are examples of using the user ID and password default values and not using the default values:

Example that does not use the user ID and password default values:
asu set SYSTEM_PROD_DATA.SysInfoUUID <uuid_value> host <IMM2_ip>
user <user_id> password <password>

Example that does use the userid and password default values:
asu set SYSTEM_PROD_DATA.SysInfoUUID <uuid_value> host <IMM2_ip>

- Bootable media:

You can also build a bootable media using the applications available through the Tools Center website at <http://publib.boulder.ibm.com/infocenter/toolscctr/v1r0/index.jsp>. From the left pane, click **IBM System x and BladeCenter Tools Center**, then click **Tool reference** for the available tools.

5. Restart the server.

Updating the DMI/SMBIOS data

The Desktop Management Interface (DMI) must be updated when the system board is replaced. Use the Advanced Settings Utility to update the DMI in the UEFI-based server. The ASU is an online tool that supports several operating systems. Make sure that you download the version for your operating system. You can download the ASU from the IBM website. To download the ASU and update the DMI, complete the following steps.

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

1. Download the Advanced Settings Utility (ASU):
 - a. Go to <http://www.ibm.com/supportportal/>.
 - b. Under Product support, select **System x**.
 - c. Under Popular links, select **Tools and utilities**.
 - d. In the left pane, click **System x and BladeCenter Tools Center**.
 - e. Scroll down and click **Tools reference**.
 - f. Scroll down and click the plus-sign (+) for Configuration tools to expand the list; then, select **Advanced Settings Utility (ASU)**.
 - g. In the next window under Related Information, click the **Advanced Settings Utility** link and download the ASU version for your operating system.
2. ASU sets the DMI in the Integrated Management Module 2 (IMM2). Select one of the following methods to access the Integrated Management Module 2 (IMM2) to set the DMI:
 - Online from the target system (LAN or keyboard console style (KCS) access)
 - Remote access to the target system (LAN based)
 - Bootable media containing ASU (LAN or KCS, depending upon the bootable media)

Note: IBM provides a method for building a bootable media. You can create a bootable media using the Bootable Media Creator (BoMC) application from the Tools Center website.

3. Copy and unpack the ASU package, which also includes other required files, to the server. Make sure that you unpack the ASU and the required files to the same directory. In addition to the application executable (asu or asu64), the following files are required:
 - For Windows based operating systems:
 - ibm_rndis_server_os.inf

- device.cat
 - For Linux based operating systems:
 - cdc_interface.sh
4. After you install ASU, Type the following commands to set the DMI:

```
asu set SYSTEM_PROD_DATA.SysInfoProdName <m/t_model> [access_method]
asu set SYSTEM_PROD_DATA.SysInfoSerialNum <s/n> [access_method]
asu set SYSTEM_PROD_DATA.SysEncloseAssetTag <asset_tag> [access_method]
```

Where:

<m/t_model>

The server machine type and model number. Type mtm xxxxyy, where xxxx is the machine type and yy is the server model number.

<s/n>

The serial number on the server. Type sn zzzzzzz, where zzzzzzz is the serial number.

<asset_method>

The server asset tag number. Type asset
aaaaaaaaaaaaaaaaaaaaaaaaaaaaaa, where
aaaaaaaaaaaaaaaaaaaaaaaaaaaaaa is the asset tag number.

[access_method]

The access method that you select to use from the following methods:

- Online authenticated LAN access, type the command:

```
[host <IMM2_internal_ip>] [user <IMM2_user_id>] [password  
<IMM2_password>]
```

Where:

IMM2_internal_ip

The IMM2 internal LAN/USB IP address. The default value is 169.254.95.118.

IMM2_user_id

The IMM2 account (1 of 12 accounts). The default value is USERID.

IMM2_password

The IMM2 account password (1 of 12 accounts). The default value is PASSWORD (with a zero 0 not an O).

Note: If you do not specify any of these parameters, ASU will use the default values. When the default values are used and ASU is unable to access the IMM2 using the online authenticated LAN access method, ASU will automatically use the following unauthenticated KCS access method.

The following commands are examples of using the userid and password default values and not using the default values:

Examples that do not use the userid and password default values:

```
asu set SYSTEM_PROD_DATA.SysInfoProdName <m/t_model>
user <IMM2_user_id> password <IMM2_password>
asu set SYSTEM_PROD_DATA.SysInfoSerialNum <s/n> user <IMM2_user_id>
password <IMM2_password>
asu set SYSTEM_PROD_DATA.SysEncloseAssetTag <asset_tag>
user <IMM2_user_id> password <IMM2_password>
```

Examples that do use the userid and password default values:

```
asu set SYSTEM_PROD_DATA.SysInfoProdName <m/t_model>
```

```
asu set SYSTEM_PROD_DATA.SysInfoSerialNum <s/n>
asu set SYSTEM_PROD_DATA.SysEncloseAssetTag <asset_tag>
```

- Online KCS access (unauthenticated and user restricted):

You do not need to specify a value for *access_method* when you use this access method.

The KCS access method uses the IPMI/KCS interface. This method requires that the IPMI driver be installed. Some operating systems have the IPMI driver installed by default. ASU provides the corresponding mapping layer. See the *Advanced Settings Utility Users Guide* at <http://www-947.ibm.com/systems/support/supportsite.wss/docdisplay?brandind=5000008&Indocid=MIGR-55021> for more details.

The following commands are examples of using the userid and password default values and not using the default values:

Examples that do not use the userid and password default values:

```
asu set SYSTEM_PROD_DATA.SysInfoProdName <m/t_model>
asu set SYSTEM_PROD_DATA.SysInfoSerialNum <s/n>
asu set SYSTEM_PROD_DATA.SysEncloseAssetTag <asset_tag>
```

- Remote LAN access, type the command:

Note: When using the remote LAN access method to access IMM2 using the LAN from a client, the *host* and the *IMM2_external_ip* address are required parameters.

```
host <IMM2_external_ip> [user <IMM2_user_id>[[password
<IMM2_password>]
```

Where:

IMM2_external_ip

The external IMM2 LAN IP address. There is no default value. This parameter is required.

IMM2_user_id

The IMM2 account (1 of 12 accounts). The default value is USERID.

IMM2_password

The IMM2 account password (1 of 12 accounts). The default value is PASSWORD (with a zero 0 not an O).

The following commands are examples of using the userid and password default values and not using the default values:

Examples that do not use the userid and password default values:

```
asu set SYSTEM_PROD_DATA.SysInfoProdName <m/t_model> host <IMM2_ip>
user <IMM2_user_id> password <IMM2_password>
asu set SYSTEM_PROD_DATA.SysInfoSerialNum <s/n> host <IMM2_ip>
user <IMM2_user_id> password <IMM2_password>
asu set SYSTEM_PROD_DATA.SysEncloseAssetTag <asset_tag> host <IMM2_ip>
user <IMM2_user_id> password <IMM2_password>
```

Examples that do use the userid and password default values:

```
asu set SYSTEM_PROD_DATA.SysInfoProdName <m/t_model> host <IMM2_ip>
asu set SYSTEM_PROD_DATA.SysInfoSerialNum <s/n> host <IMM2_ip>
asu set SYSTEM_PROD_DATA.SysEncloseAssetTag <asset_tag> host <IMM2_ip>
```

- Bootable media:

You can also build a bootable media using the applications available through the Tools Center website at <http://publib.boulder.ibm.com/infocenter/toolscetr/>

v1r0/index.jsp. From the left pane, click **IBM System x and BladeCenter Tools Center**, then click **Tool reference** for the available tools.

5. Restart the server.

Appendix A. Getting help and technical assistance

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

Before you call

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

- Check all cables to make sure that they are connected.
- Check the power switches to make sure that the system and any optional devices are turned on.
- Use the troubleshooting information in your system documentation, and use the diagnostic tools that come with your system. Information about diagnostic tools is in the *Problem Determination and Service Guide* on the IBM Documentation CD that comes with your system.
- Go to the IBM support website at <http://www.ibm.com/supportportal/> 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/supportportal/> 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 website 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/supportportal/>.

Software service and support

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

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

Hardware service and support

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

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

IBM Taiwan product service

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

IBM Taiwan product service contact information:

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

Appendix B. Notices

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

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

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

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

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

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

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

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

Trademarks

IBM, the IBM logo, and [ibm.com](http://www.ibm.com) are trademarks of International Business Machines Corp., registered in many jurisdictions worldwide. Other product and service names might be trademarks of IBM or other companies. A current list of IBM trademarks is available on the web at "Copyright and trademark information" at <http://www.ibm.com/legal/copytrade.shtml>.

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

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

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

Java and all Java-based trademarks and logos are trademarks or registered trademarks of Oracle and/or its affiliates.

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

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

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

Important notes

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

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

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

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

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

Maximum memory might require replacement of the standard memory with an optional memory module.

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

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

Some software might differ from its retail version (if available) and might not include user manuals or all program functionality.

Particulate contamination

Attention: Airborne particulates (including metal flakes or particles) and reactive gases acting alone or in combination with other environmental factors such as humidity or temperature might pose a risk to the server that is described in this document. Risks that are posed by the presence of excessive particulate levels or concentrations of harmful gases include damage that might cause the server to malfunction or cease functioning altogether. This specification sets forth limits for particulates and gases that are intended to avoid such damage. The limits must not be viewed or used as definitive limits, because numerous other factors, such as temperature or moisture content of the air, can influence the impact of particulates or environmental corrosives and gaseous contaminant transfer. In the absence of specific limits that are set forth in this document, you must implement practices that maintain particulate and gas levels that are consistent with the protection of human health and safety. If IBM determines that the levels of particulates or gases in your environment have caused damage to the server, IBM may condition provision of repair or replacement of servers or parts on implementation of appropriate remedial measures to mitigate such environmental contamination. Implementation of such remedial measures is a customer responsibility.

Table 17. Limits for particulates and gases

Contaminant	Limits
Particulate	<ul style="list-style-type: none">• The room air must be continuously filtered with 40% atmospheric dust spot efficiency (MERV 9) according to ASHRAE Standard 52.2¹.• Air that enters a data center must be filtered to 99.97% efficiency or greater, using high-efficiency particulate air (HEPA) filters that meet MIL-STD-282.• The deliquescent relative humidity of the particulate contamination must be more than 60%².• The room must be free of conductive contamination such as zinc whiskers.
Gaseous	<ul style="list-style-type: none">• Copper: Class G1 as per ANSI/ISA 71.04-1985³• Silver: Corrosion rate of less than 300 Å in 30 days

¹ ASHRAE 52.2-2008 - *Method of Testing General Ventilation Air-Cleaning Devices for Removal Efficiency by Particle Size*. Atlanta: American Society of Heating, Refrigerating and Air-Conditioning Engineers, Inc.

² The deliquescent relative humidity of particulate contamination is the relative humidity at which the dust absorbs enough water to become wet and promote ionic conduction.

³ ANSI/ISA-71.04-1985. *Environmental conditions for process measurement and control systems: Airborne contaminants*. Instrument Society of America, Research Triangle Park, North Carolina, U.S.A.

Documentation format

The publications for this product are in Adobe Portable Document Format (PDF) and should be compliant with accessibility standards. If you experience difficulties when you use the PDF files and want to request a web-based format or accessible PDF document for a publication, direct your mail to the following address:

*Information Development
IBM Corporation
205/A015
3039 E. Cornwallis Road
P.O. Box 12195
Research Triangle Park, North Carolina 27709-2195*

U.S.A.

In the request, be sure to include the publication part number and title.

When you send information to IBM, you grant IBM a nonexclusive right to use or distribute the information in any way it believes appropriate without incurring any obligation to you.

Telecommunication regulatory statement

This product is not intended to be connected directly or indirectly by any means whatsoever to interfaces of public telecommunications networks, nor is it intended to be used in a public services network.

Electronic emission notices

Note: When attaching a monitor to the equipment, you must use the designated monitor cable and any interference suppression devices supplied with the monitor.

Federal Communications Commission (FCC) statement

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

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

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

Industry Canada Class A emission compliance statement

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

Avis de conformité à la réglementation d'Industrie Canada

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

Australia and New Zealand Class A statement

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

European Union EMC Directive conformance statement

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

Attention: This is an EN 55022 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.

Responsible manufacturer:

International Business Machines Corp.
New Orchard Road
Armonk, New York 10504
914-499-1900

European Community contact:

IBM Technical Regulations, Department M456
IBM-Allee 1, 71137 Ehningen, Germany
Telephone: +49 7032 15-2937
Email: tjahn@de.ibm.com

Germany Class A statement

Deutschsprachiger EU Hinweis:

Hinweis für Geräte der Klasse A EU-Richtlinie zur Elektromagnetischen Verträglichkeit

Dieses Produkt entspricht den Schutzanforderungen der EU-Richtlinie 2004/108/EG zur Angleichung der Rechtsvorschriften über die elektromagnetische Verträglichkeit in den EU-Mitgliedsstaaten und hält die Grenzwerte der EN 55022 Klasse A ein.

Um dieses sicherzustellen, sind die Geräte wie in den Handbüchern beschrieben zu installieren und zu betreiben. Des Weiteren dürfen auch nur von der IBM empfohlene Kabel angeschlossen werden. IBM übernimmt keine Verantwortung für die Einhaltung der Schutzanforderungen, wenn das Produkt ohne Zustimmung der IBM verändert bzw. wenn Erweiterungskomponenten von Fremdherstellern ohne Empfehlung der IBM gesteckt/eingebaut werden.

EN 55022 Klasse A Geräte müssen mit folgendem Warnhinweis versehen werden: "Warnung: Dieses ist eine Einrichtung der Klasse A. Diese Einrichtung kann im Wohnbereich Funk-Störungen verursachen; in diesem Fall kann vom Betreiber verlangt werden, angemessene Maßnahmen zu ergreifen und dafür aufzukommen."

Deutschland: Einhaltung des Gesetzes über die elektromagnetische Verträglichkeit von Geräten

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

Zulassungsbescheinigung laut dem Deutschen Gesetz über die elektromagnetische Verträglichkeit von Geräten (EMVG) (bzw. der EMC EG Richtlinie 2004/108/EG) für Geräte der Klasse A

Dieses Gerät ist berechtigt, in Übereinstimmung mit dem Deutschen EMVG das EG-Konformitätszeichen - CE - zu führen.

Verantwortlich für die Einhaltung der EMV Vorschriften ist der Hersteller:

International Business Machines Corp.
New Orchard Road
Armonk, New York 10504
914-499-1900

Der verantwortliche Ansprechpartner des Herstellers in der EU ist:

IBM Deutschland
Technical Regulations, Department M456
IBM-Allee 1, 71137 Ehningen, Germany
Telephone: +49 7032 15-2937
Email: tjahn@de.ibm.com

Generelle Informationen:

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

VCCI Class A statement

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

This is a Class A product based on the standard of the Voluntary Control Council for Interference (VCCI). If this equipment is used in a domestic environment, radio interference may occur, in which case the user may be required to take corrective actions.

Japan Electronics and Information Technology Industries Association (JEITA) statement

高調波ガイドライン適合品

Japanese Electronics and Information Technology Industries Association (JEITA)
Confirmed Harmonics Guideline (products less than or equal to 20 A per phase)

Korean Class A warning statement

이 기기는 업무용(A급)으로 전자파적합기기로서
판매자 또는 사용자는 이 점을 주의하시기
바라며, 가정외의 지역에서 사용하는 것을 목
적으로 합니다.

Russia Electromagnetic Interference (EMI) Class A statement

ВНИМАНИЕ! Настоящее изделие относится к классу А.
В жилых помещениях оно может создавать радиопомехи, для
снижения которых необходимы дополнительные меры

People's Republic of China Class A electronic emission statement

声 明

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

Taiwan Class A compliance statement

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

Index

A

- ABR, automatic boot failure recovery 135
- accessible documentation 237
- acoustical noise emissions 8
- adapter
 - installation 159
 - supported 159
- adapter ServeRAID
 - installing 161
- adapter, ServeRAID
 - removing 160
- administrator password
 - clear 213
 - set 213
- air baffle
 - removing 155
- air deflector
 - important note 191
 - location 191
- ASM event log 22
- assertion event, system-event log 22
- assistance, getting 233
- ASU 217
- attention notices 6
- automatic boot failure recovery (ABR) 135

B

- backplate
 - installing 188
 - removing 187
- battery, replacing 181
- battery, system
 - replacing 179
- bays 7
- bezel
 - removing 154
- bezel,
 - installing 155
- boot failure, three consecutive 136
- Boot Manager program 208, 215

C

- caution statements 6
- CD-RW/DVD
 - drive activity LED 10
 - eject button 10
- checkout procedure 78, 79
- Class A electronic emission notice 238
- code updates 1
- components
 - on the server 142
- configuration
 - ServerGuide Setup and Installation CD 207
 - Setup utility 207

- configuration programs
 - LSI Configuration Utility 208
- configuring
 - with ServerGuide 209
- configuring hardware 207
- configuring your server 207
- connector
 - Ethernet 11
 - power supply 11
 - serial 11
 - USB 10, 11
 - video
 - rear 11
- connectors 11
 - external 15
 - internal 14
 - on the rear of the server 10
- contamination, particulate and gaseous 8, 237
- controllers
 - Ethernet 221
- creating
 - a RAID array 224
 - a software RAID array 224
- CRUs, replacing
 - system battery 179
 - top cover 153
- customer replaceable units (CRUs) 141

D

- danger statements 6
- deassertion event, system-event log 22
- diagnosing a problem 3
- diagnostic
 - LEDs, error 95
 - messages 101
 - test log, viewing 102
 - tools, overview 21
- diagnostic programs 100
- dimension 8
- DIMM
 - installing 173
 - removing 173
- DIMM LEDs 96
- disable
 - a software RAID array 225
- display problems 87
- documentation format 237
- drive, DVD
 - installing 185
 - removing 184
- DSA 1, 100
- DSA log 22
- DVD drive
 - installing 170, 185
 - problems 90
 - removing 168, 184
- Dynamic System Analysis 1, 100

E

- electrical input 8
- electronic emission Class A notice 238
- environment 8
- error codes and messages
 - IMM2 38
 - POST 24
- error symptoms
 - DVD drive 90
 - general 80
 - hard disk drive 80
 - intermittent 82
 - keyboard, non-USB 83
 - memory 85
 - microprocessor 86
 - monitor 87
 - mouse, non-USB 83
 - optional devices 89
 - pointing device, non-USB 83
 - power 91
 - serial port 92
 - ServerGuide 93
 - software 94
 - USB port 95
- Ethernet
 - activity status LED 11
 - controller
 - troubleshooting 136
 - link status LED 11
- Ethernet connector 11
- Ethernet controller configuration 208
- event logs 1, 22
 - clearing 24
- expansion bays 7

F

- fans
 - determine error 177
 - installing 178
 - removing 177
- FCC Class A notice 238
- features 7
 - ServerGuide 209
- field replaceable units (FRUs) 141
- firmware, server
 - starting the backup 216
- firmware, server, recovering 133
- firmware, server, updating 201
- firmware, updating 207
- Flash utilities 217
- formatting
 - a hard disk drive 223
- FRUs, replacing
 - microprocessor 199
 - operator information panel assembly 186
 - power supply 190

G

- gaseous contamination 8, 237
- getting help 233
- grease, thermal 203

H

- hard disk drive
 - formatting 223
 - installing 164
 - problems 80
 - removing 163
- hard disk drive activity LED 10
- hard disk drive status LED 10
- hardware service and support 234
- hardware, configuring 207
- heat output 8
- heat sink
 - installing 201
- help, getting 233
- humidity 8

I

- IBM Advanced Settings Utility program
 - overview 225
- IBM Support Line 234
- IBM System x Server Firmware
 - Setup utility 217
 - tools and utilities 217
- IBM Systems Director
 - updating 225
- IMM
 - managing tools and utilities 217
- IMM2 207, 208, 216, 217
 - error messages 38
- IMM2 event log 22
- IMM2 heartbeat
 - LED 99
- IMM2 heartbeat LED 97
- important notices 6
- installation guidelines 149
- installation order
 - memory modules 176
- installing
 - a heat sink 201
 - a microprocessor 201
 - backplate 188
 - battery 181
 - bezel 155
 - DIMM 173
 - DVD cable 185
 - DVD drive 170
 - fan 178
 - hard disk drive 164
 - hot-swap power supply 184
 - memory 173
 - operator-information panel 187
 - PCI riser-card assembly 157
 - power paddle card 197

- installing (*continued*)
 - power supply 192
 - safety cover 194
 - ServerRAID adapter 161
 - simple-swap backplate 188
 - the system board 205
 - top cover 153
- integrated functions 7
- integrated management module 13
 - LED 99
- integrated management module 2
 - using 216
- integrated management module event log 22
- integrated management module II
 - error messages 38
- Integrated Management Module programs 208
- Intel Gigabit Ethernet Utility program
 - enabling 221
- intermittent problems 82
- internal connectors 14
- IPMItool 216

J

- jumper
 - UEFI boot recovery 134
- jumpers 16

K

- keyboard problems 83

L

- LED
 - AC power LED 11
 - DC power LED 11
 - Ethernet-activity status 11
 - Ethernet-link status 11
 - for CD-RW/DVD drive activity 10
 - for hard disk drive activity 10
 - for hard disk drive status 10
 - integrated management module 99
 - location 9
 - Power-error LED 11
 - power-on 9
 - power-on button 10
 - system locator 10
 - system-error 10
- LED,
 - IMM2 heartbeat 97, 99
 - RTMM heartbeat 97, 99
 - System-board error 97
- LEDs
 - on the system board 95
- LEDs,
 - DIMM 96
 - Microprocessor error 97
- LEDs, system pulse 99
- License Agreement for Machine Code 5
- Licenses and Attributions Documents 5

- light path diagnostics 1
- Linux license agreement 5
- logs
 - system event message 38
- LSI Configuration Utility program
 - starting 223
 - using 222

M

- memory
 - installing 173
 - removing 173
 - specifications 7
- memory module
 - order of installation 176
- memory problems 85
- menu choices
 - for the Setup utility 210
- messages
 - diagnostic 101
- messages, error
 - POST 24
- microprocessor
 - installing 201
 - problems 86
 - replacing 199
 - specifications 7
- Microprocessor error LED 97
- monitor problems 87

N

- NOS installation
 - with ServerGuide 210
 - without ServerGuide 210
- notes 6
- notes, important 236
- notices 235
 - electronic emission 238
 - FCC, Class A 238
- notices and statements 6

O

- online publications 6
- online service request 3
- operator information panel assembly, replacing 186
- optional device problems 89
- optional optical drive
 - specifications 7
- order of installation
 - memory modules 176

P

- particulate contamination 8, 237
- parts listing 141, 143
- password 214
 - administrator 214

- password (*continued*)
 - power-on 214
- PCI adapter
 - removing 158
- PCI expansion slots 7
- PCI riser-card assembly
 - installing 157
 - removing 157
- POST
 - error codes 24
- POST event log 22
- power
 - power-on LED 11
 - server 11
 - specifications 8
 - supply 7
- power cords 147
- power paddle card
 - installing 197
- power paddle cover
 - removing 196
- power problems 91, 136
- power supply
 - hot-swap 183
 - installing 183, 184
 - replacing 190
- Power supply with AEM
 - AC power LED 11
 - DC power LED 11
 - Power-error LED 11
- power-on LED 9
- power-on password
 - clear 213
 - set 213
- power-supply
 - removing 182
- problem diagnosis 3
- problem isolation tables 80
- problems
 - DVD drive 90
 - Ethernet controller 136
 - hard disk drive 80
 - IMM2 38
 - intermittent 82
 - memory 85
 - microprocessor 86
 - monitor 87
 - mouse 83, 84
 - optional devices 89
 - pointing device 84
 - power 91, 136
 - serial port 92
 - software 94
 - undetermined 137
 - USB port 95
 - video 87, 95
- public services network, use in 238
- public telecommunications network, connection to 238
- publications 5

R

- rack installation instructions 6
- RAID array
 - creating 224
- rear view
 - of the server 10
- recovering the server firmware 133
- removing
 - air baffle 155
 - backplate 187
 - battery, system 179
 - bezel 154
 - DIMM 173
 - DVD drive 168
 - fan 177
 - hard disk drive 163
 - hot-swap power supply 182
 - memory 173
 - operator information panel assembly 186
 - PCI adapter 158
 - PCI riser-card assembly 157
 - power paddle cover 196
 - power supply 190
 - safety cover 193
 - simple-swap backplate 187
 - system board 204
 - the DVD cable 184
 - the ServeRAID adapter 160
- replacement parts 141
- replacing
 - battery 181
 - battery, system 179
 - bezel 155
 - microprocessor 199
 - operator information panel assembly 186
 - power supply 190
- reset button 10
- reset IMM2 217
- RETAIN tips 3
- riser card
 - connector location 14
 - slots 19
- RTMM heartbeat
 - LED 99
- RTMM heartbeat LED 97
- running
 - the diagnostic programs 101

S

- safety cover
 - installing 194
 - removing 193
- serial connector 11
- serial port problems 92
- server
 - turning it on 11
- Server
 - power features 11
- server components 142

- server firmware
 - updating 201
- server firmware, recovering 133
- server rear view 10
- server replaceable units 141
- server, backup firmware
 - starting 216
- ServerGuide
 - features 209
 - NOS installation 210
 - setup 209
 - Setup and Installation CD 207
 - using 208
- service request, online 3
- Setup utility 207, 208, 210
 - menu choices 210
 - starting 210
 - using 210
- shutdown 12
- simple-swap backplate
 - installing 188
 - removing 187
- size 8
- slot locations
 - adapter 19
 - PCI Express 19
- slots
 - PCI expansion 7
- software problems 94
- software RAID array
 - creating 224
 - disable 225
- software service and support 234
- specifications 7
- standby 18
- standby mode 11
- start here
 - troubleshooting procedures 1
- starting
 - the LSI Configuration Utility program 223
 - the server firmware 216
 - the Setup utility 210
- statements and notices 6
- support, web site 233
- system
 - error LED front 10
 - locator LED, front 10
- system board
 - error LEDs 95
 - installing 205
 - internal connectors 14
 - jumper blocks 16
 - jumpers 16
 - removing 204
- system event log 38
- system pulse LEDs 99
- System-board error LED 97
- system-event log 22

T

- telephone numbers 234
- temperature 8
- test log, viewing 102
- thermal grease 203
- three boot failure 136
- TOE 7
- tools 217
 - Flash utilities 207, 217
 - IPMItool 216
- tools, diagnostic 21
- top cover
 - installing 153
 - removing 153
- trademarks 235
- troubleshooting 3
- troubleshooting procedures
 - start here 1
- turning off the server 12
 - integrated management module 13
- turning on the server 11, 12

U

- UEFI
 - boot recovery jumper 134
- undetermined problems 137
- undocumented problems 3
- United States electronic emission Class A notice 238
- United States FCC Class A notice 238
- Universal Serial Bus (USB) problems 95
- UpdateXpress 2
- updating
 - IBM Systems Director 225
 - server firmware 201
 - Systems Director, IBM 225
- updating firmware 207
- USB
 - connector 10, 11
- using
 - IMM2 216
 - the integrated management module 2 216
 - the LSI Configuration Utility program 222
 - the Setup utility 210
- Using IBM Advanced Settings Utility (ASU) 217
- utilities
 - See tools
- utility
 - Setup 210
- Utility program
 - IBM Advanced Settings 225
- utility, Setup 208

V

- video connector
 - rear 11
- video controller, integrated
 - specifications 8
- video problems 87

viewing event logs 22

W

Wake on LAN feature 12

warranty 5

web site

 publication ordering 233

 support 233

 support line, telephone numbers 234

website

 UEFI flash diskette 133

weight 8



Part Number: 00D3170

Printed in USA

(1P) P/N: 00D3170

