System x3800, System x3850, System x3950, and
System x3950 E FAQ

Hints and Tips

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Note: Before using this information and the product it supports, be sure to read the general information in Appendix B, “Notices,” on page 33.

Third Edition (July 2006)

Contents

Chapter 1. Introduction

The information provided in this document is based on technical observations, and it is intended to supplement the IBM® System x™3800 (Type 8865), System x3850 (Type 8863), System x3950 (Type 8872), and System x3950 E (Type 8874) documentation that comes with the server. The topics are arranged alphabetically to help you find the information.

See Appendix A, “System x3800 model PAE,” on page 31 for installation and troubleshooting hints and tips specific to the System x3800 model PAE server.

The latest versions of the documentation for the server is available in Portable Document Format (PDF) from http://www.ibm.com/servers/eserver/support/xseries/index.html.

Related documentation

The server documentation includes the following documents:

- *Problem Determination and Service Guide*

  This document is in Portable Document Format (PDF) on the IBM *Documentation* CD. It contains information to help you solve problems yourself, and it contains information for service technicians.
- *Installation Guide*

  This printed document contains instructions for setting up the server and basic instructions for installing some options.
- *User’s Guide*

  This document is in PDF on the IBM *Documentation* CD. It provides general information about the server, including information about features, and how to configure the server. It also contains detailed instructions for installing, removing, and connecting optional devices that the server supports.
- *Rack Installation Instructions*

  (Some models only) This printed document contains instructions for installing the server in a rack.
- *Safety Information*

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

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

If firmware and documentation updates are available, you can download them from the IBM Web site. The server might have features that are not described in the documentation that comes with the server, and 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. To check for updates, go to http://www.ibm.com/servers/eserver/support/xseries/index.html, select the server from the **Hardware** list, and click **Go**. For firmware updates, click the **Download** tab. For documentation updates, click the **Install and use** tab, and click **Product documentation**.

You can obtain up-to-date information about the server and other IBM server products at http://www.ibm.com/systems/x/.

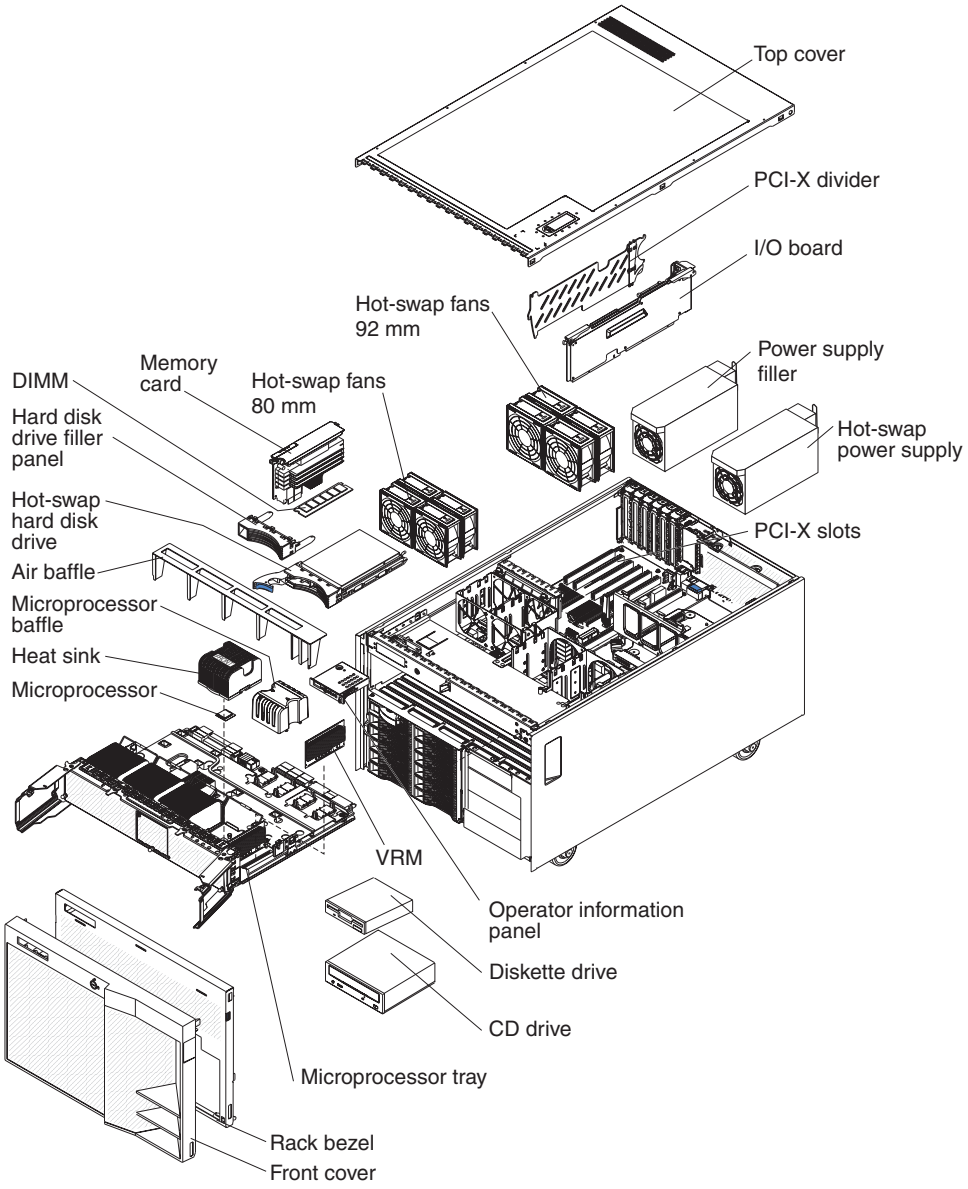
Before you begin

Read the following information before you use the hints and tips in this document:

- Review the “Safety information” and “Handling static-sensitive devices” sections in the documentation that comes with the server. These guidelines will help you work safely while working with the server or options.
- Back up all important data before you make changes to disk drives.
- For a list of supported options for the server, go to http://www.ibm.com/servers/eserver/serverproven/compat/us/.
- Verify the following server components and connections:
  - All adapters, boards, fans, power supplies, and internal devices are fully seated and connected correctly.
  - All cables and cords are connected securely to the server and to any installed optional devices.
  - Each drive bay contains either a drive or a filler panel.
  - Each unoccupied PCI-X slot contains an expansion-slot cover.
  - (System x3950 and System x3950 E server only) If the server has redundant power, power supplies are installed in both power-supply bays.
  - (System x3950 and System x3950 E server only) For redundant and hot-swappable operation, the power supplies are connected to 200-240 V ac. The power supplies are hot-swappable and redundant only at 200-240 V ac.
  - All microprocessors are the same type and have the same cache size and clock speed.
- Verify the server installation:
  - There is sufficient space around the server to allow the cooling system to work properly.
  - The top cover is closed during normal operation. For proper cooling, do not leave the cover open for more than 15 minutes.
  - The rack into which you plan to install the server has perforated doors.
- When you replace a hot-swap drive, wait 15 seconds after removing the defective drive before you install the new drive.

Major components of the System x3800 Type 8865 server

The following illustration shows the major components in the server.



System x3800 Type 8865 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. System x3800 Type 8865 server features and specifications

Microprocessor:
- Intel® Xeon™
- 1 MB Level-2 cache
- 667 MHz front-side bus (FSB)
- Support for up to four microprocessors

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

Memory:
- Minimum: 1 GB depending on server model, expandable to 64 GB
- Type: 333 MHz, registered, ECC, PC2-3200 double data rate (DDR) II, SDRAM
- Sizes: 512 MB (some models only), 1 GB, 2 GB or 4 GB in pairs
- Connectors: Two-way interleaved, four dual inline memory module (DIMM) connectors per memory card
- Maximum: Four memory cards, each card containing two pairs of PC2-3200 DDRII DIMMs

Drives:
- CD: IDE
- Diskette: 1.44 MB
- Serial Attached SCSI (SAS) hard disk drive

Expansion bays:
- Twelve SAS, 3.5-inch bays
- Three 5.25-inch bays (CD-ROM installed)
- One 3.5-inch bay (diskette drive installed)

Expansion slots:

Six PCI-X 2.0 hot-plug 266 MHz/64-bit slots

Upgradeable microcode:

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

Upgradeable to three power supplies:
- Standard: Two 775 watt 110 V or 220 V ac input dual-rated power supplies
- Upgradeable to three power supplies

Size:
- 7 U
- Height: 311 mm (12.3 in.)
- Depth: 715 mm (28.15 in.)
- Width: 440 mm (17.32 in.)
- Weight: approximately 55 kg (121.2 lb) when fully configured or 47 kg (104 lb) minimum

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

Integrated functions:
- Baseboard management controller
- IBM EXA-32 Chipset with integrated memory and I/O controller
- Service processor support for Remote Supervisor Adapter II SlimLine
- Light path diagnostics
- Three Universal Serial Bus (USB) ports (2.0)
  - Two on rear of server
  - One on front of server
- Broadcom 5704C dual 10/100/1000 Gigabit Ethernet controllers
- ATI 7000-M video
  - 16 MB video memory
  - SVGA compatible
- Mouse connector
- Keyboard connector
- Serial connector

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

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

Heat output:

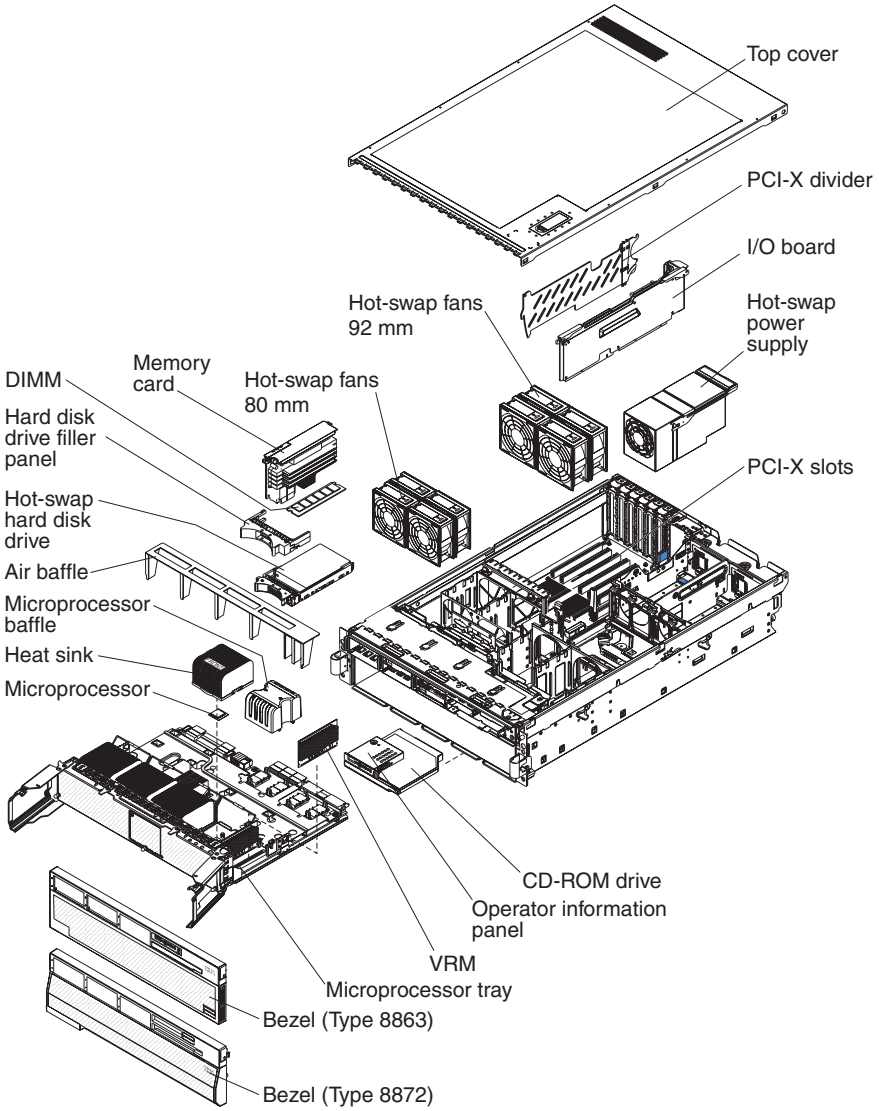
Approximate heat output in British thermal units (Btu) per hour:
- Minimum configuration: 2006 Btu (588 watts) per hour
- Maximum configuration: 6346 Btu (1860 watts) per hour

Electrical input:
- Sine-wave input (50-60 Hz) required
- Input voltage low range:
  - Minimum: 100 V ac
  - Maximum: 127 V ac
- Input voltage high range:
  - Minimum: 200 V ac
  - Maximum: 240 V ac
- Approximate input kilovolt-amperes (kVA):
  - Minimum: 0.60 kVA
  - Maximum: 1.9 kVA

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

Major components of the System x3850 Type 8863, System x3950 Type 8872, and System x3950 E Type 8874 server

The following illustration shows the major components in the server.



System x3850 Type 8863 features and specifications

The following information is a summary of the features and specifications of the System x3850 server. Depending on the server model, some features might not be available, or some specifications might not apply.

Table 2. System x3850 Type 8863 features and specifications

Microprocessor:
- Intel Xeon
- 1 MB Level-2 cache
- 667 MHz front-side bus (FSB)
- Support for up to four microprocessors

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

Memory:
- Minimum: 2 GB depending on server model, expandable to 32 GB
- Type: 333 MHz, registered, ECC, PC2-3200 double data rate (DDR) II, SDRAM
- Sizes: 1 GB or 2 GB in pairs
- Connectors: Two-way interleaved, four dual inline memory module (DIMM) connectors per memory card
- Maximum: Four memory cards, each card containing two pairs of PC2-3200 DDRII DIMMS

Drives:
- Slim DVD-ROM: IDE
- Serial Attached SCSI (SAS) hard disk drives

Expansion bays:
- Six SAS, 2.5-inch bays
- One 12.7-mm removable-media drive bay (DVD-ROM drive installed)

Expansion slots:

Six PCI-X 2.0 hot-plug 266 MHz/64-bit slots

Upgradeable microcode:

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

Power supply:
- Standard: One dual-rated power supply
  - 1300 watts at 220 V ac input
  - 650 watts at 110 V ac input
- Upgradeable to two power supplies (hot-swappable at 220 V ac only)

Size:
- 3U
- Height: 128.35 mm (5.05 in.)
- Depth: 715 mm (28.15 in.)
- Width: 440 mm (17.32 in.)
- Weight: approximately 38.5 kg (85 lb) when fully configured or 31.75 kg (70 lb) minimum

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

Integrated functions:
- Baseboard management controller
- IBM EXA-32 Chipset with integrated memory and I/O controller
- Service processor support for Remote Supervisor Adapter II SlimLine
- Light path diagnostics
- Three Universal Serial Bus (USB) ports
  - Two on rear of server
  - One on front of server
- Broadcom 5704C dual 10/100/1000 Gigabit Ethernet controllers
- ATI 7000-M video
  - 16 MB video memory
  - SVGA compatible
- Mouse connector
- Keyboard connector
- Serial connector

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

Environment:
- Air temperature:
  - Server on:
    - 10° to 35°C (50° to 95°F); altitude: 0 to 914 m (3000 ft). If the server has a dual-core microprocessor, at maximum power reduce the 35°C by 1°C per 300 m above sea level, or the microprocessor might throttle to remain within the internal thermal specifications.
    - 10° to 32°C (50° to 90°F); altitude: 914 m to 2133 m (7000 ft.)
- Humidity:
  - Server on: 8% to 80%
  - Server off: 8% to 80%

Electrical input:
- Sine-wave input (50-60 Hz) required
- Input voltage high range:
  - Minimum: 200 V ac
  - Maximum: 240 V ac
- Approximate input kilovolt-amperes (kVA):
  - Minimum: 0.08 kVA
  - Maximum: 1.6 kVA

Notes:

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

System x3950 Type 8872 and System x3950 E Type 8874 features and specifications

The following information is a summary of the features and specifications of the System x3950 servers.

Table 3. System x3950 Type 8872 and System x3950 E Type 8874 features and specifications

Microprocessor (not standard on System x3950 E models):
- Intel Xeon MP
- 1 MB (minimum) Level-2 cache
- 4 MB or 8 MB Level-3 cache
- 667 MHz front-side bus (FSB)
- Support for up to four microprocessors

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

Memory (not standard on System x3950 E models):
- Minimum: 2 GB depending on server model, expandable to 64 GB
- Type: 333 MHz, registered, ECC, PC2-3200 double data rate (DDR) II, SDRAM
- Sizes: 1 GB, 2 GB, or 4 GB in pairs
- Connectors: Two-way interleaved, four dual inline memory module (DIMM) connectors per memory card
- Maximum: Four memory cards, each card containing two pairs of PC2-3200 DDRII DIMMs

Drives:
- Slim DVD-ROM: IDE
- Serial Attached SCSI (SAS) hard disk drives

Expansion bays:
- Six SAS, 2.5-inch bays
- One 12.7-mm removable-media drive bay (DVD drive installed, standard on some models only)

Expansion slots:

Six PCI-X 2.0 hot-plug 266 MHz/64-bit slots

Upgradeable microcode:

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

Power supply:
- Standard: Two dual-rated power supplies
  - 1300 watts at 220 V ac input
  - 650 watts at 110 V ac input
- Hot-swappable at 220 V ac only

Size:
- 3U
- Height: 128.35 mm (5.05 in.)
- Depth: 715 mm (28.15 in.)
- Width: 440 mm (17.32 in.)
- Weight: approximately 38.5 kg (85 lb) when fully configured or 31.75 kg (70 lb) minimum

Integrated functions:
- Baseboard management controller
- IBM EXA-32 Chipset with integrated memory and I/O controller
- Service processor support for Remote Supervisor Adapter II SlimLine
- Light path diagnostics
- Three Universal Serial Bus (USB) ports (2.0)
  - Two on rear of server
  - One on front of server
- Broadcom 5704C dual 10/100/1000 Gigabit Ethernet controllers
- ATI 7000-M video
  - 16 MB video memory
  - SVGA compatible
- Mouse connector
- Keyboard connector
- Serial connector
- SMP Expansion Ports

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

Environment:
- Air temperature:
  - Server on:
    - 10° to 35°C (50° to 95°F); altitude: 0 to 914 m (3000 ft). If the server has a dual-core microprocessor, at maximum power reduce the 35°C by 1°C per 300 m above sea level, or the microprocessor might throttle to remain within the internal thermal specifications.
    - 10 to 32°C (50° to 90°F); altitude: 914 m to 2133 m (7000 ft).
  - Server off: 10° to 43°C (50.0° to 109.4°F); maximum altitude: 2133 m (6998.0 ft)
- Humidity:
  - Server on: 8% to 80%
  - Server off: 8% to 80%

Heat output:

Approximate heat output in British thermal units (Btu) per hour:
- Minimum configuration: 1364 Btu (400 watts) per hour
- Maximum configuration: 5780 Btu (1700 watts) per hour

Electrical input:
- Sine-wave input (50-60 Hz) required
- Input voltage low range:
  - Minimum: 100 V ac
  - Maximum: 127 V ac
- Input voltage high range:
  - Minimum: 200 V ac
  - Maximum: 240 V ac
- Approximate input kilovolt-amperes (kVA):
  - Minimum: 0.40 kVA
  - Maximum: 1.6 kVA

Scalability support:

Maximum configuration:
- Eight nodes
- 32-way operation
- 128 DIMMs
- 48 SAS hard disk drives
- 48 PCI-X adapters

Chapter 2. Hints and tips

This chapter contains installation and troubleshooting hints and tips related to the System x3800, System x3850, System x3950, and System x3950 E servers. This information is intended to supplement the server documentation (listed on page 1).

Component removal and installation

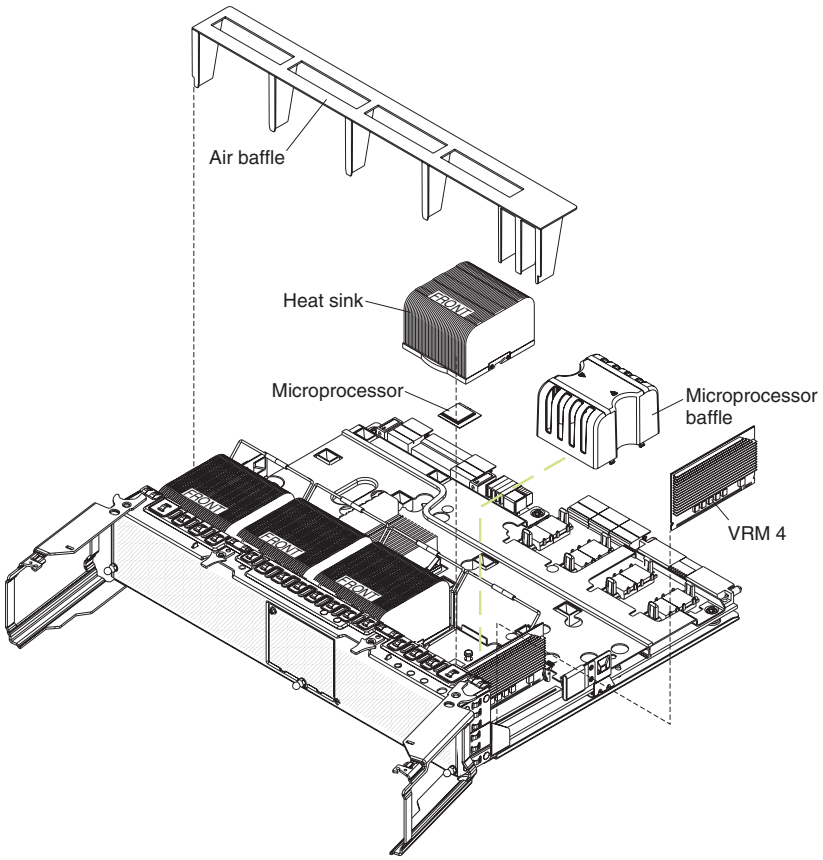
This section contains information about component removal and installation.

Microprocessor tray

The following notes describe information that you must consider concerning opening and closing the microprocessor tray.

Attention: To avoid damage to the microprocessor board, microprocessor heat sinks, memory cards, DIMMs, and other server components, when you open the microprocessor tray, observe the following guidelines:

- Remove all fans and memory cards before you open the microprocessor tray.
- If the microprocessor tray does not slide freely, lift up on the top of the hard disk drive bays while opening the microprocessor tray to avoid damage to the microprocessor heat sinks. See http://www.ibm.com/servers/eserver/support/xseries/index.html and search for MIGR-60199 for additional information on opening the microprocessor tray.
- Make sure that the air baffle lies flat and within the grooves on top of the microprocessor heat sinks and microprocessor baffles and that the air baffle remains in place while you close the microprocessor tray. You might find it helpful to hold the air baffle in place with your thumbs while closing the microprocessor tray.



(System x3950 and System x3950 E server only) Power supplies

Each power supply is rated at 1300 watts at 220 V ac, and is capable of powering a fully loaded server without redundancy. At 110 V ac, the power rating is 650 watts for each power supply.

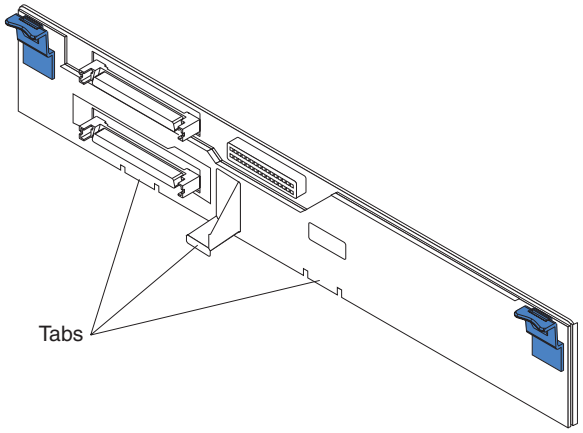
The following notes describe information that you must consider when installing a hot swap power supply:

- The server comes with a minimum of one power supply and supports up to two power supplies (hot-swappable at 220 V ac only).
- The power supplies are numbered from left to right (1 and 2) as viewed from the rear of the server. Power supplies must be installed in the following sequence: power supply 1, then power supply 2.
- One 110 V ac power supply can support a maximum configuration of 1 microprocessor, 2 PCI-X adapters, 3 hard disk drives, and 4 DIMMs. If you exceed this configuration, you must either install a second power supply or use 220 V ac input.

  Two power supplies at 110 V ac will not support a full configuration with redundancy. Use 220 V ac input to maintain full redundancy with a full configuration.
- The NONRED LED on the light path diagnostics panel is lit to indicate that the server is operating with non-redundant power. Either add an optional power supply or use a 220 V ac input source.
- Check the BMC log for errors before replacing a suspected bad power supply. For example, a shorted circuit board might indicate improper voltage levels in the BMC log due to current-limiting circuit protection.

(System x3950 and System x3950 E server only) SAS hard disk drive backplane installation

When the SAS hard disk drive backplane is reinstalled, connectors on both the hard disk drives and backplane can become damaged if the backplane is not seated properly. Make sure that the backplane is fully seated before installing the hard disk drives. Three tabs on the rear of the backplane assembly must be fully seated into slots in the chassis.



(System x3800 server only) Tape-drive installation

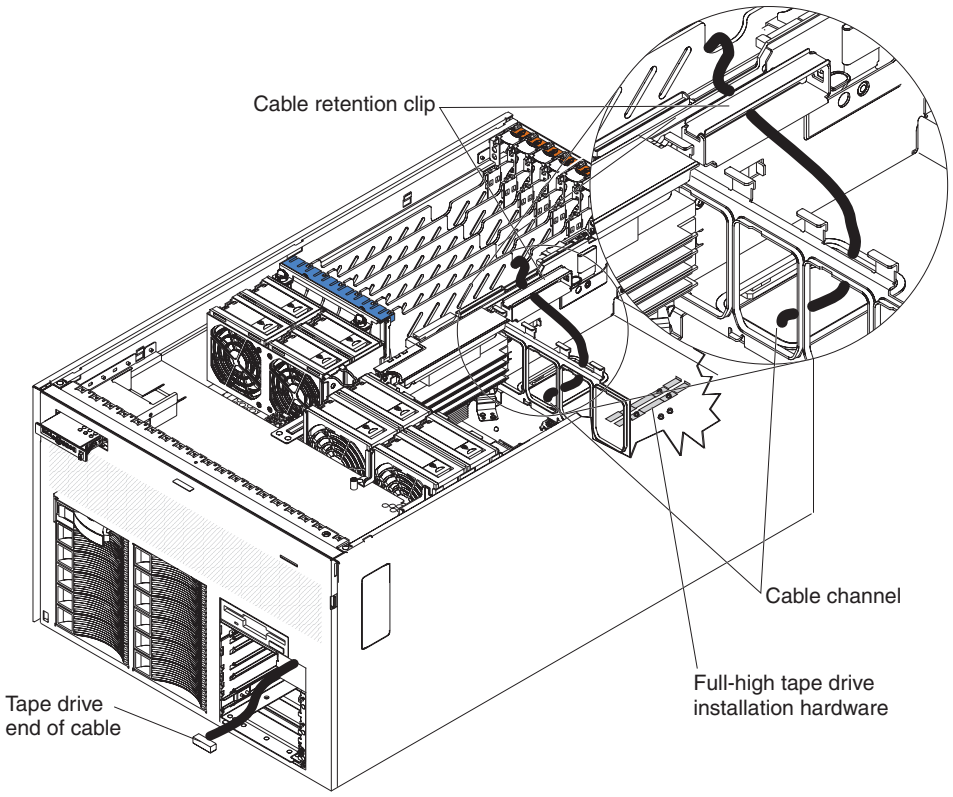
If you plan to install an optional tape drive in one of the 5.25-inch drive bays, the following notes describe information that you must consider:

- You must install a SCSI adapter to use a tape drive. Install the adapter in the first available slot that is nearest the I/O board to ensure that you can connect the SCSI cable to the tape drive.
- The server supports up to two 5.25-inch, half-high, SCSI tape drives or one full-high SCSI tape drive in the 5.25-inch bays. A SCSI adapter is required to support the tape drives. Install the adapter in the first available slot that is nearest the I/O board to ensure that you can connect the SCSI cable to the tape drive. Route the SCSI cable along the same path as the existing media-signal cable. Start at the SCSI adapter and route the SCSI cable over the I/O board and through the cable retention clip; then, route the cable through the cable channel and through the server to the 5.25-inch tape drive bays.

  To install a full-high tape drive, remove the metal rails and screws from inside the chassis and attach the rails to the tape drive using the four identical screws. Fasten the drive in the bay using the two remaining screws.

  To install a half-high tape drive, remove the blue rails from the back of the 5.25-inch filler panel and snap the rails on the tape drive.

  The following illustration shows the cable routing and the location of the rails and screws for installing a full-high tape drive.



Notes:

1. For clarity, the media-signal cable and other cables are not shown in the illustration.
2. The tape drive might come with a round cable, as shown in the illustration, or a ribbon cable.

Firmware updates

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

To update the firmware on new installations or on servers that are not in production, contact IBM and obtain a modified Update*Xpress* CD.

To update the firmware at the next restart on servers that are required to remain in production, complete the following steps:

1. Download and update the BIOS, BMC, Remote Supervisor Adapter II SlimLine, and Diagnostics firmware.
2. Schedule a convenient time to update the ServeRAID™-8i, SAS, and Remote Supervisor Adapter II SlimLine firmware.

Notes:

1. If the server is part of a cluster, only update the firmware when instructed by an IBM service representative. Disconnect the server from the cluster before you perform any updates.
2. If the server is part of a multi-node configuration, start each node individually, or delete the scalable partition until the updates are complete.

Downloadable firmware updates

Firmware updates are available from the following Web sites:

- Update*Xpress* CD: http://www-307.ibm.com/pc/support/site.wss/MIGR-53046.html
- BIOS code update: http://www-1.ibm.com/support/docview.wss?uid=psg1MIGR-64067
- Diagnostics code update: http://www-1.ibm.com/support/docview.wss?uid=psg1MIGR-62889
- BMC firmware update: http://www-307.ibm.com/pc/support/site.wss/document.do?lndocid=MIGR-64081
- SAS BIOS code update: http://www-306.ibm.com/pc/support/site.wss/document.do?lndocid=MIGR-61993
- SAS hard disk drive firmware update: http://www-307.ibm.com/pc/support/site.wss/document.do?sitestyle=ibm&lndocid=MIGR-62832
- CPLD code update: http://www-307.ibm.com/pc/support/site.wss/document.do?lndocid=MIGR-60630
- Remote Supervisor Adapter II SlimLine firmware update: http://www-307.ibm.com/pc/support/site.wss/MIGR-59068.html
- ServeRAID device driver update: http://www-307.ibm.com/pc/support/site.wss/document.do?lndocid=MIGR-495PES#serveraid8i
- ServeRAID firmware update: http://www-307.ibm.com/pc/support/site.wss/document.do?lndocid=MIGR-61529
- IPMI device driver update: http://www-307.ibm.com/pc/support/site.wss/MIGR-57774.html

Firmware update considerations

Consider the following when you update the server using a USB diskette drive:

- Follow the installation instructions in any readme files that come with the updates.
- To start a BIOS update, start the server to the BIOS update diskette and select option 1.
- To start a diagnostics code update, start the server to the BIOS update diskette and select option 2.
- To start a BMC firmware update, start the server to the BMC firmware diskette.
- To start a CPLD code update, start the server to the CPLD update diskette. After the update is complete, remove power to the server, wait 30-45 seconds; then, restart the server.
- To start a SAS firmware update, download the update file, extract the image to an update CD; then, start the server to the update CD.
- To start a SAS BIOS update, start the server to the SAS BIOS update diskette. This update is required only if the ServeRAID-8i is not installed.
- If the server is part of a cluster, only update the firmware when instructed by an IBM service representative. Disconnect the server from the cluster before you perform any updates.
- If the server is part of a multi-node configuration, start each node individually or delete the scalable partition until the updates are complete.
- If you are using a Linux® operating system, use the dd command to create diskettes with the .img extension. For example: `dd if=/xxxxxxx.img of=/dev/fd0` where */dev/fd0* is the path to the diskette drive.

- If you are using a Windows® operating system, use the dd command to create a diskette with the .img extension. For example: `dsk4w32 filename.img a: /f`.

  Note: The dsk4w32.exe file is available on the ServeRAID Support CD in the \Diskette\Tools folder.

Firmware updates using the Remote Supervisor Adapter II SlimLine

If a USB diskette drive is not available and a Remote Supervisor Adapter II SlimLine is installed in the server, complete the following steps to update the firmware through the remote control feature:

1. Download the firmware update .img files.
2. Log into the adapter.
3. Select **Remote Control** under the **Tasks** menu.
4. Select **Start Remote Control in Single User Mode**.

   Note: After starting the remote control feature, move the video speed slider to 5 MB.
5. Choose **Select File** from the text box.
6. Click **>>**.
7. Select **Mount Drive**.
8. Browse to the .img file and select it.
9. Select **Yes** to upload the file.
10. Press Ctrl+Alt+Del to restart the server and perform the update.

    Note: To make the updates quicker, complete the following steps before you restart the server.
    a. Select the .img file from the text box.
    b. Select **Unmount Drive**.
11. Repeat steps 1 through 10 until all the updates are complete.
12. Select **Unmount Drive**; then, restart the server.

Note: The diagnostics code cannot be updated through the remote control feature because it requires two diskettes and the remote control feature only allows one .img file to be mounted at a time. You can use the Windows or Linux operating system update procedure to perform the diagnostics code update.

System x3950 E server firmware updates

Complete the following steps to update the firmware on the System x3950 E server:

1. Connect a USB diskette drive or USB CD or DVD drive to the server.
2. Connect a monitor and keyboard to the server and turn on the monitor.
3. Insert the firmware update diskette or CD or DVD into the drive and start the server.
4. When the prompt `Hit escape to boot standalone` appears, press Esc.
5. Follow the prompts to complete the update.
6. Repeat step 1 through step 5 to update the firmware on all nodes.

You can update firmware for the System x3950 E server in a single-node configuration as shown in the following table.

Table 4. Firmware updates for the System x3950 E server in a single-node configuration

Firmware update	BIOS	BMC	Remote Supervisor Adapter II SlimLine[1]	Diags	CPLD
Diskette	Yes	Yes	No	Yes	Yes
CD or DVD	Yes	Yes	No	No	Yes
Linux or Windows flash	Yes	Yes	Yes[1]	Yes	Yes

You can update firmware for the System x3950 E server in a multi-node configuration as shown in the following table.

Table 5. Firmware updates for the System x3950 E server in a multi-node configuration

Firmware update	BIOS	BMC	Remote Supervisor Adapter II SlimLine[1]	Diags[2]	CPLD
Diskette	Yes	Yes	No	N/A	No
CD or DVD	Yes	Yes	No	N/A	No
Linux or Windows flash	No	No	No[1]	N/A	No

[1] Remote Supervisor Adapter II SlimLine firmware updates are available only through a service processor Ethernet network connection.

[2] Diagnostics firmware updates are required only for the primary node in a multi-node configuration.

Remote Supervisor Adapter II SlimLine firmware updates

Complete the following steps to update the Remote Supervisor Adapter II SlimLine firmware:

1. Connect the service processor to an Ethernet network through the SP connector on the rear of the server using an Ethernet (straight-through or crossover) cable.
2. Log in to the adapter; then, set the values as follows:
   a. **Device IP address:** 192.168.70.200
   b. **Device subnet mask:** 255.255.255.0
3. Open the internet browser and type `192.168.70.125` in the address/location bar.
4. At the login screen, type the following:

   Default Login Name: `USERID` (all capital letters)

   Default Password: `PASSW0RD` (all capital letters and 0 replaces the letter O)
5. Download the Remote Supervisor Adapter II SlimLine firmware to a folder.
6. From the main menu, select the **Firmware Update** option under the **Tasks** menu.
7. Select the following files individually, in the order listed:
   a. PAETBRUS.pkt
   b. PAETMNUS.pkt

8. After you complete the firmware update, select **Restart ASM** from the **ASM Control** menu.

USB portable diskette drive

To update the firmware with a USB diskette drive, obtain and connect a USB diskette drive approved for use with your server: IBM part number 05K9276 or 40K1692.

Memory and microprocessors

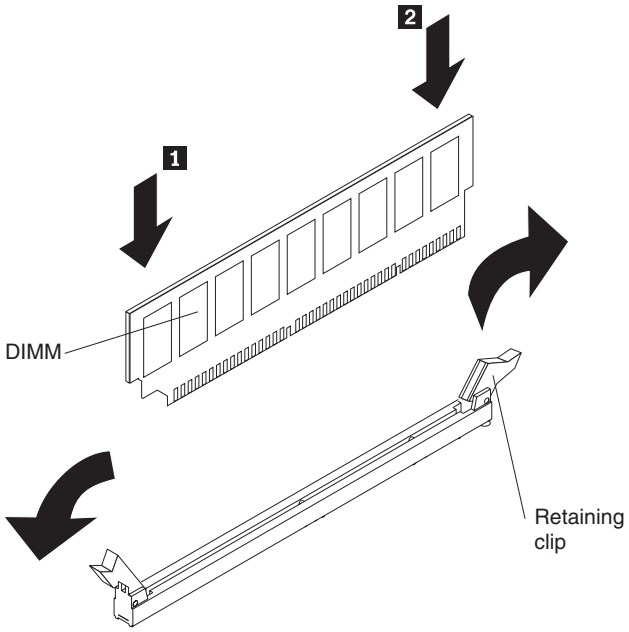
This section contains information about memory and microprocessors.

Bent pins on memory card and possible F2 checkpoint POST failure

If POST fails at checkpoint F2, check all memory cards for possible bent pins. If the pins are bent, replace the damaged memory card. Checkpoint codes are shown on the checkpoint display, which is on the I/O board.

Memory module installation

To avoid damage, you must handle memory modules (DIMMs) gently during installation.



See the information that comes with your server and the following instructions to install memory modules:

1. Turn the DIMM so that the DIMM keys align correctly with the slot.
2. Insert the DIMM into the connector by aligning the edges of the DIMM with the slots at the ends of the DIMM connector. Firmly press one end of the DIMM into the connector; then, press the other end into the connector. The retaining clips snap into the locked position when the DIMM is seated in the connector. If there is a gap between the DIMM and the retaining clips, the DIMM has not been correctly inserted; open the retaining clips, remove the DIMM, and then reinsert it.

Memory performance

The following notes describe information that you must consider about memory performance:

- The number of installed DIMMs is critical to memory performance. The optimal configuration is 16 installed DIMMs. Eight installed DIMMs provide 3-5% slower performance. Compared to eight DIMMs, four installed DIMMs provide 5-10% slower performance, for some applications.
- You can populate more than one memory card with DIMMs to improve memory performance. With four DIMMs installed in a single memory card the server is slower than with two DIMMS each installed in two memory cards. Each memory card supports four DIMMs.
- Full array memory mirroring (FAMM) creates a redundant copy of system memory. This provides increased fault tolerance, but also reduces the available memory by half. Memory performance is not affected, while system performance typically follows maximum available memory.

Microprocessor performance

The server is configured by default to optimize database transaction processing. However, if the server runs file server or web server applications, database transaction processing slows performance. Disabling prefetch processing for applications that don't take advantage of it can improve performance 10-20%. Prefetch processing forces the microprocessors to preload extra cache lines for every request.

Complete the following steps to disable prefetch processing:

1. Turn on the server.
2. When the prompt `Press F1 for Configuration/Setup` appears, press F1.
3. Select **Advanced Setup**.
4. Select **CPU Options**.
5. Select **HW Prefetch**.
6. **Disable** the feature from this window.

Operator information panel and lightpath diagnostics

This section contains information about the operator information panel and lightpath diagnostics.

Dim operator information panel LEDs

Problem: The operator information panel LEDs might appear dim. This can occur because the plastic contact separators on the I/O board connector (where the flex cable plugs) are sharp and can scrape the metal contacts on either end of the cable when the flex cable is inserted.

Solution: Complete the following steps, if the operator information panel LEDs appear dim:

1. Turn off the server.
2. Remove the white flex operator information panel ribbon cable from the I/O board and inspect the metal contacts for damage.
3. Replace the cable if the metal contacts are lifted from the cable or if there are signs of the metal being scraped.

4. See http://www.ibm.com/servers/eserver/support/xseries/index.html and search for MIGR-60141 for further information.

Note: This problem might also result from a blown fuse on the I/O board. If that condition occurs, replace the I/O board.

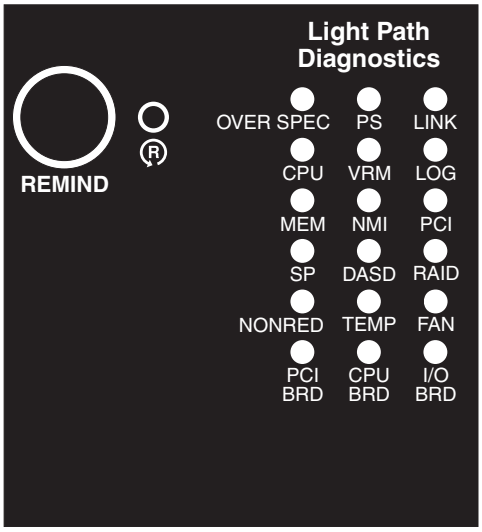
Information LED is lit if integrated Ethernet controller is disabled

Description: If the integrated Ethernet controller is disabled from the Configuration/Setup Utility program, the information LED on the operator information panel and the LOG LED on the light path diagnostics panel might light during POST. The `Planar/PCI Device is disabled or not responding` error message might also display in the POST error log.

Solution: Either enable the Ethernet controller or clear the POST error log to turn off the LEDs.

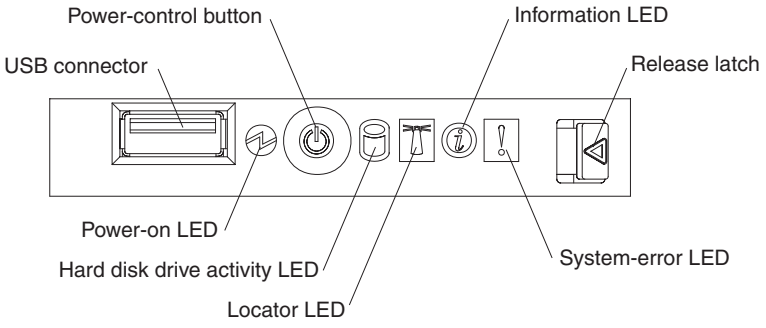
Light path diagnostics

To view the light path diagnostics panel, press the release latch on the front of the operator information panel to the left; then, slide it forward. This reveals the light path diagnostics panel. Lit LEDs on this panel indicate the type of error that has occurred.



Information LED

The following illustration shows the operator information panel.



When the information LED on the operator information panel is lit, it indicates that there is a suboptimal condition in the server and that light path diagnostics will light

an additional LED to help isolate the condition. If the LOG LED on the light path diagnostics panel is lit, information about the condition is available in the baseboard management controller (BMC) log or in the system-event log. The condition might be that the BMC log is full or almost full.

This LED and the LEDs on the light path diagnostics panel remain lit until you resolve the condition. If the only condition is that the BMC log is full or almost full, clear the BMC log or the system-event log through the Configuration/Setup Utility program to turn off the lit LEDs.

Important: If the server has a baseboard management controller, clear the BMC log and system-event log after you resolve all conditions. This will turn off the information LED and LOG LED, if all conditions are resolved.

Complete the following steps to clear the BMC log:

1. Turn on the server.
2. When the prompt `Press F1 for Configuration/Setup` appears, press F1.
3. Select **Advanced Setup**.
4. Select **Baseboard management controller (BMC) settings**.
5. Select **BMC System Event Log**.
6. Select **Clear error logs** to clear the BMC log.

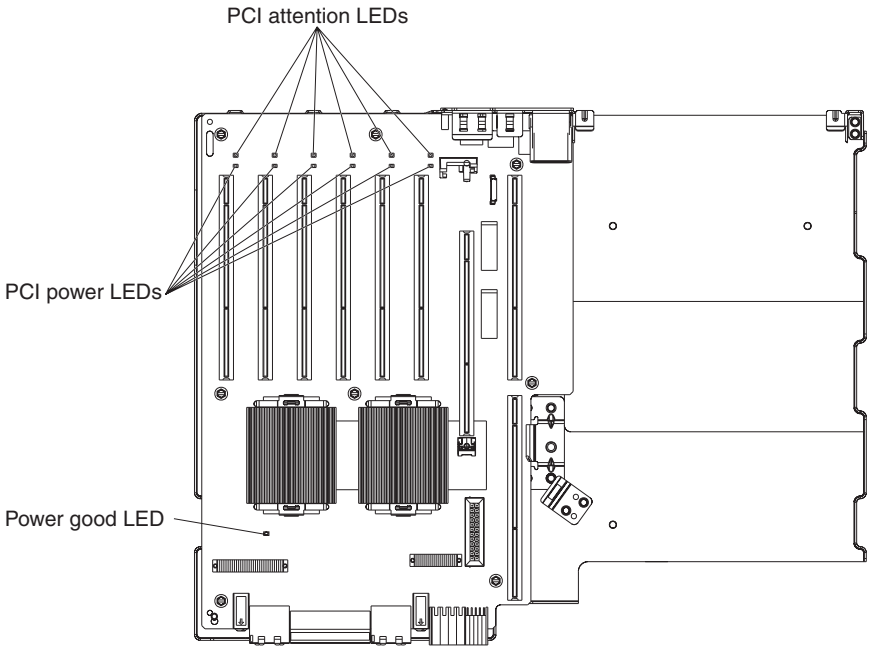
You can also clear the BMC log using the SMBridge command-line tools. See http://www.ibm.com/servers/eserver/support/xseries/index.html and search for MIGR-57729 for additional information on the SMBridge utility.

PCI-X board LEDs

Use the PCI LED on the light path diagnostics panel to diagnose an adapter problem. If the PCI LED is lit, a PCI adapter has failed. To identify the failing adapter, remove the top cover and view the attention LEDs on the PCI-X board to isolate the problem.

Note: The attention LEDs are amber and the power LEDs are green on the PCI-X board.

The following illustration shows the LEDs on the PCI-X board.



VRM LED

The VRM, CPU, and PCI-X BRD LEDs on the light path diagnostics panel might be lit at the same time if an installed VRM has failed. If the LEDs are lit and you are unable to isolate the error, first replace the installable VRMs (VRM3 and VRM4). Download and install the latest BMC code to correct the LED problem, when the code is available.

(System x3950 and System x3950 E server only) Power-control-button shield

A power-control-button shield comes with the server to prevent the server from being turned off accidentally. The shield might detach from the power-control button. Contact IBM to obtain a replacement power control-shield. See http://www.ibm.com/planetwide/ for support telephone numbers.

Optional devices

This section contains information about optional devices.

ServeRAID-8i controller

This section contains information about the ServeRAID-8i controller.

ARCSAS.SYS device driver errors

The ServeRAID-8i ARCSAS.SYS device driver might produce red-bulleted errors in the Windows Server 2003 system event log. This error is informational only. Apply Service Pack 1 or higher to remove the ARCSAS.SYS device driver errors.

Availability of error logs

ServeRAID-8i error logs are available only from ServeRAID Manager with the operating system installed and with the ServeRAID Manager Agent running.

Command timeout error

If a command timeout error occurs during startup, replace the hard disk drive associated with the error.

Data loss with RAID level 5EE array

Attention: A problem has been found that might put data at risk in RAID level 5EE arrays during compaction and expansion cycles. Do not configure RAID level 5EE arrays until a fix for the problem is available. See http://www.ibm.com/servers/eserver/support/xseries/index.html and search for RETAIN Tip H184325 for further information.

Data scrubbing feature

On the ServeRAID-8i controller, the default setting for the data scrubbing feature is off. For maximum data protection, turn on this feature from either ServeRAID Manager within the operating system or from the *IBM ServeRAID Support* CD.

Drive assignments and front bezel bay IDs

Description: The ServeRAID-8i drive assignments in the ARCCONF GETCONFIG log or support archive might not correlate with the front bezel bay IDs. The ServeRAID-8i logs are incorrect, but ServeRAID Manager will correlate the bay IDs with the slots.

Solution: Before removing a drive, compare the hard disk drive serial numbers to verify that you have selected the correct disk, if you remove a hard disk drive based on ServeRAID-8i log information. The following illustration shows how the ServeRAID configuration logs correlate with the front bezel bay IDs:

Bay ID assignments on front bezel

0	1	2
3	4	5

ServeRAID Manager hard disk drive assignments

0	1	2
4	5	6

Logs fail to show drive array assignment

If you configure a RAID level 1 or RAID level 10 mirrored array, the ServeRAID Manager configuration logs (Raid1x.log) and the ARCCONF GETCONFIG log might fail to indicate which physical drives are mirrored. RAID level 5, RAID level 50, and other parity arrays indicate the stripe order in the logs.

Red Hat device drivers

ServeRAID-8i device drivers for the Red Hat Enterprise Linux operating system are currently not available. You can compile the ServeRAID-8i device driver from the *IBM ServeRAID Support* CD, when available. See the documentation provided on the *IBM ServeRAID Support* CD for instructions.

Replacement hard disk drives might not rebuild

Description: The ServeRAID-8i controller might fail to rebuild replacement hard disk drives when replaced in an array.

Solution: The following notes describe possible solutions:

- Remove the hard disk drive from the server, wait 30 seconds; then, replace the hard disk drive.
- Restart the server, remove the drive from the server, wait 30 seconds; then, replace the hard disk drive.
- Make sure that the SAS hard disk drive firmware version on the replacement hard disk drive and all other hard disk drives in the array is later than version 5.11. Contact IBM to obtain the SAS hard disk drive firmware update utility. See http://www.ibm.com/planetwide/ for support telephone numbers.

SAS firmware update with ServeRAID-8i controller

SAS firmware cannot be updated with a ServeRAID-8i controller installed in the server. You must remove the ServeRAID-8i controller to update the SAS firmware.

POST error codes during initialization

Description: If the server is running a Linux operating system, error messages might occur during POST while the ServeRAID-8i controller initializes.

Solution: The following notes describe information that you must consider, if an error message occurs:

- If a kernel panic error occurs, debug the ServeRAID-8i controller and SAS subsystem. See the *Problem Determination and Service Guide* on the IBM *Documentation* CD for more information.
- A possible resolution is to remove the ServeRAID-8i controller from the server, restart the server, press F1 for the Configuration/Setup Utility program, and restore the factory settings. Then, reinstall the ServeRAID-8i controller and restart the server.

Supported options

For a list of supported options, go to http://www.ibm.com/servers/eserver/serverproven/compat/us/.

USB diskette drive

A USB diskette drive does not come with the server. If you must apply code updates using a diskette, you must provide a USB diskette drive. Obtain IBM part number 05K9276.

Problem determination

This section contains information about problem determination.

(Trained service technicians only) Checkpoint codes

Checkpoint codes give the check that was taking place at the time the system stopped; they do not provide error codes or suggested replacement parts. The checkpoint display will indicate where the server has stopped without waiting for the video to initialize at each startup during problem isolation.

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

The checkpoint display is located on the I/O board.

Checkpoint codes can be found at http://w3.pc.ibm.com/helpcenter/infotips/techinfo/MIGR-58350.html.

DVD-ROM drive access

If you are unable to access the DVD-ROM drive, update the complex programmable logic device (CPLD) code with version 1.01, or later. To download the CPLD code, see http://www.ibm.com/servers/eserver/support/xseries/index.html and search for MIGR-60630.

Force power on jumper

Description: If the server does not turn on, see the section about power problems in the *Problem Determination and Service Guide* on the IBM *Documentation* CD. Also, see "Server fails to start" on page 24 of this document. In addition, you can bypass the operator information panel power-control button by using the force power on jumper (J2) on the I/O board. The following conditions might occur after you change the position of the jumper:

1. The server appears to power on and the fans spin.
2. The server halts at checkpoint 0b.
3. The monitor screen is blank.
4. The PCI-X board power good LED (CR11) is off.

Solution: Press the power-control button to turn on the server and resume the power-on sequence.

Performance checklist

To maintain server performance, complete the following steps.

1. View the light path diagnostic LEDs located on the following components:
   Operator information panel
   Light path diagnostics panel
   Memory card
   PCI-X board
   Microprocessor board
2. Update the following firmware to the latest levels:
   BIOS
   BMC
   Remote Supervisor Adapter II SlimLine
   CPLD
   Diagnostics
3. Make sure that the following conditions are met:
   - The PCI-X board is not affected by ECA064, which requires a mandatory replacement of the PCI-X board. Go to http://www.ibm.com/servers/eserver/support/xseries/index.html and search for MIGR-60781 for more information.
   - The operating system is compatible with the server. Go to http://www.ibm.com/servers/eserver/serverproven/compat/us/nos/matrix.shtml for a list of supported operating systems.

Note: To check for operating system dependencies, click next to the operating system.

- All optional devices are designed for the server. Go to http://www.ibm.com/servers/eserver/serverproven/compat/us/index.html for a list of supported options.

4. Install the latest device drivers. Go to http://www.ibm.com/servers/eserver/support/xseries/index.html and search for MIGR-59142 for the latest device drivers.
5. If you suspect a problem with the server, see the *Problem Determination and Service Guide* on the IBM *System x Documentation* CD.

POST error code 001801*nn*

A 001801*nn* (where *nn* represents the PCI slot number) POST error code indicates a PCI device resource allocation error. Complete the following troubleshooting steps to resolve the condition:

- Disable the BIOS on all adapters that do not require booting. You can disable the integrated devices from the Configuration/Setup Utility program.
- Disable the BIOS of other adapters that might also use the ROM space, for example the Remote Supervisor Adapter II SlimLine.
- Load defaults in the SAS/SATA Configuration Utility program.
- Disable the PXE boot for the integrated Ethernet controller. Disable the PXE boot from the Configuration/Setup Utility program, if you choose to perform this troubleshooting step.
- Remove all network adapters from the startup sequence.
- Reallocate the boot order of the adapters so that the adapters with larger boot ROMs have more space to load.

For further instructions on resolving the condition, see http://www.ibm.com/servers/eserver/support/xseries/index.html and search for MIGR-61663.

Server fails to start

Complete the following troubleshooting steps, if the server fails to start:

1. If a Remote Supervisor Adapter II SlimLine is installed in the server, when you turn on the server for the first time, the server might appear to be unresponsive for an unusual length of time (one minute to several minutes). To solve the condition, when the server completes POST, flash the BIOS and BMC firmware to the latest levels. Then, flash update the Remote Supervisor Adapter II SlimLine. See http://www.ibm.com/servers/eserver/support/xseries/index.html and search for MIGR-59095 for further information.
2. Complete the following steps to replace the operator information panel ribbon cable:
   a. Turn off the server.
   b. Remove the white flex operator information panel ribbon cable from the I/O board and inspect the metal contacts for damage.
   c. Replace the cable if the metal contacts are lifted from the cable or if there are signs of the metal being scraped.
   d. See http://www.ibm.com/servers/eserver/support/xseries/index.html and search for MIGR-60141 for further information.
3. Over heated inductors at L14, L17, L28, L29, and L32 on the PCI-X board might cause power faults that will prevent the server from starting. See

http://www.ibm.com/servers/eserver/support/xseries/index.html and search for RETAIN Tip H184310 for further information.

Remote Supervisor Adapter II SlimLine and BMC

This section contains information about the Remote Supervisor Adapter II SlimLine and BMC.

BMC log entries

The following notes describe information about the number of entries in the BMC log:

- The LOG LED on the light path diagnostics panel is lit when the BMC log is 75% full (370 entries).
- Depending on the server configuration, each ac power cycle results in about 30-50 entries. With a Remote Supervisor Adapter II SlimLine installed, the number of entries doubles at each ac power cycle.
- Each warm startup or Ctrl-Alt-Del startup results in four to seven entries.
- During initial setup or extensive problem determination activity, the BMC log can fill rapidly because ac power cycles are common when installing boards, microprocessors, DIMMs, and other components.
- No further entries can be written to the BMC log when it is full with 512 entries.
- To make sure that there is sufficient space for future events, clear the BMC log after you clear all conditions.

  Note: Clearing the Remote Supervisor Adapter II SlimLine log does not clear the BMC log.
- See “Information LED” on page 18 for instructions on how to clear the BMC log.

Boot order communication

The server communicates boot order in the following sequence: BIOS, BMC, and the Remote Supervisor Adapter II SlimLine.

Cannot update Remote Supervisor Adapter II SlimLine IP address in BIOS

Description: After a Remote Supervisor Adapter II SlimLine is installed, you might not be able to change the IP address, subnet, or gateway from the Configuration/Setup Utility program.

Solution: Flash the Remote Supervisor Adapter II SlimLine to the latest available firmware level.

Communication failure and long POST

Description: If a Remote Supervisor Adapter II SlimLine is installed in the server, when you turn on the server for the first time, the server might appear to be unresponsive for an unusual length of time (one minute to several minutes).

Solution: When the server completes POST, flash the BIOS and BMC firmware to the latest available levels. Then, flash the Remote Supervisor Adapter II SlimLine firmware. See http://www.ibm.com/servers/eserver/support/xseries/index.html and search for MIGR-59095 for further information.

Additional symptoms might include a system halt at checkpoint c7, a 1602 communications POST error code, or both.

Error indicates microprocessor board bent pins

If the `Redundant PCI Bridge Link Failed` error message occurs in the BMC log or system-event log, check the microprocessor board for bent pins. If you are unable to straighten the pins, replace the microprocessor board (trained service technician only).

Remote Supervisor Adapter II SlimLine and BMC troubleshooting tips

The following resources are available for troubleshooting the Remote Supervisor Adapter II SlimLine and baseboard management controller:

- Use the SMBridge utility to retrieve BMC data remotely. The default IP address for the BMC is 10.1.1.97 subnet 255.255.255.0. To download the utility and for instructions on how to use the utility, see http://www.ibm.com/servers/eserver/support/xseries/index.html and search for MIGR-57729.
- Use the Syscon utility to retrieve BMC log data. The utility differs slightly from the SMBridge utility. Contact IBM to obtain this utility, if needed. See http://www.ibm.com/planetwide/ for support telephone numbers.
- Contact IBM to have the BMC log data analyzed. See http://www.ibm.com/planetwide/ for support telephone numbers.

Remote Supervisor Adapter II SlimLine might fail on ac power cycle

After an ac power cycle (ac power is removed and reapplied to the server), the Remote Supervisor Adapter II SlimLine might not log events for two or three minutes in the system-event log when indicated from the BMC. Wait two or three minutes before you press the power-on button and the Remote Supervisor Adapter II SlimLine will record BMC-indicated events during the power on sequence.

If problem determination activity is in progress and you cannot start the server, wait two or three minutes before you press the power-control button; then, view the BMC log and system-event log.

Remote Supervisor Adapter II SlimLine network access delay

The default network setting on a Remote Supervisor Adapter II SlimLine is DHCP. If the adapter is unable to obtain a valid IP address, it will use the default static IP address. There might be a three to four minute delay in network access to the adapter each time the adapter is restarted. During this time, the Remote Supervisor Adapter II SlimLine is searching for an IP address from a DHCP server. Set the static IP address, if the adapter is not using DHCP.

Note: The default static IP address is 192.168.70.125.

Software

This section contains information about software.

Broadcom Gigabyte Ethernet controller default settings

The server comes with an integrated Broadcom 5704C dual Gigabit Ethernet controller, which supports connection to a 10-Mbps, 100-Mbps, or 1000-Mbps network. The following notes describe information that you must consider regarding the default settings of the controller:

- The default setting on the controller is Auto-Negotiate, and the controller should link at the speed of the switch when the server is turned on. When in Stand-by mode, the speed setting reduces to 10-Mbps/100-Mbps, which is the default for the IPMI link (into the BMC).
- 1000-Mbps IPMI (BMC) communications has not been tested and is not supported.

IBM Director

IBM Director is a workgroup-hardware-management tool that you can use to centrally manage your IBM servers. IBM Director code updates might be required to support System x3800, System x3850, and System x3950 servers. See ftp://ftp.software.ibm.com/pc/pccbbs/pc_servers_pdf/dir4.21_x366_known_issues.pdf for more information.

PCI scan sequence

The server scans devices and PCI-X slots to assign system resources in the following order: integrated Ethernet controller, integrated SAS controller, and then PCI and PCI-X slots 1 through 6.

To change the order in which the server scans devices and PCI-X slots, start the Configuration/Setup Utility program and select **Start Options** from the main menu.

The start options settings specify the scan order in which the server checks devices to find a boot record. The server starts from the first boot record that it finds.

Red Hat Enterprise Linux Version 3 Update 4

Problem: If the server is running Red Hat Enterprise Linux Version 3 Update 4 and the default kernel is not used, the server might receive microprocessor errors.

Solution: Install Red Hat Enterprise Linux Version 3 Update 4 and automatically install the default kernel.

SAS Windows 2000 Server device driver

Description: A SCSI (SAS) device driver that is not available on the Windows 2000 Server installation CD is required for the remote installation of Windows 2000 Server.

Solution: Use a version of Windows 2000 Server that includes at least Service Pack 3. See the Microsoft® Knowledge Base article 302098 (“INACCESSIBLE_BOOT_DEVICE” Message After Changing a SCSI Adapter Resource).

Support telephone numbers

View support telephone numbers at http://www.ibm.com/planetwide/.

Chapter 3. Getting help and technical assistance

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

Before you call

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

- Check all cables to make sure that they are connected.
- Check the power switches to make sure that the system and any optional devices are turned on.
- Use the troubleshooting information in your system documentation, and use the diagnostic tools that come with your system. Information about diagnostic tools is in the *Hardware Maintenance Manual and Troubleshooting Guide* or *Problem Determination and Service Guide* on the IBM *Documentation* CD that comes with your system.

  Note: For some IntelliStation models, the *Hardware Maintenance Manual and Troubleshooting Guide* is available only from the IBM support Web site.
- Go to the IBM support Web site at http://www.ibm.com/servers/eserver/support/xseries/index.html to check for technical information, hints, tips, and new device drivers or to submit a request for information.

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

Using the documentation

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

Getting help and information from the World Wide Web

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

You can find service information for IBM systems and optional devices at http://www.ibm.com/servers/eserver/support/xseries/index.html.

Software service and support

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

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

Hardware service and support

Important: When you call for service, you will be asked to provide the four-digit machine type of your system, which is 8863, 8865, 8872, or 8874.

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

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

Appendix A. System x3800 model PAE

This section contains installation and troubleshooting hints and tips related to the System x3800 Type 8865 model PAE server:

Bezel and hard disk drive cage replacement

If you must replace either the bezel or the hard disk drive cage, replace both the bezel (FRU 26R0775) and the hard drive cage (FRU 26R0773).

Hard disk drives

The following section describes information about hard disk drives.

Support

The server as shipped supports only 10 000 RPM hard disk drives.

Closing the tray handle during installation

When installing a hard disk drive, you might experience difficulty closing the tray handle.

Complete the following steps if you experience difficulty closing the tray handle:

1. Remove the hard disk drive from the drive bay.
2. Reinstall the drive in the drive bay and firmly close the tray handle.

Tray alignment

Hard disk drives might align incorrectly in the drive bay during installation and not seat fully in the drive bay.

Complete the following steps to make sure that the hard disk drives align correctly in the drive bay:

1. Remove the hard disk drive from the drive bay.
2. If unoccupied, install a filler panel in the drive bay below the drive bay in which you are installing the drive.
3. Reinstall the hard disk drive in the drive bay.

Removal

Note: To prevent bezel interference with hard disk drive removal, press on the front of the bezel to the left of the hard disk drive handle while you remove the drive. Alternatively, remove the bezel before you remove a hard disk drive.

The bezel might interfere with hard disk drive removal.

The following notes describe possible solutions:

- If the hard disk drive is partially installed and the hard disk drive handle is caught between the bezel and the chassis, close the handle to release the handle from behind the bezel.
- Remove the bezel and remove the hard disk drive; then, reinstall the bezel.

SAS hard disk drives auto-negotiate 1.5 GB/ps transfer speed

The SAS hard disk drives negotiate 1.5 GB/ps transfer speed after exiting the SAS/SATA Configuration Utility program (accessed by pressing Ctrl+A during startup).

Performance is not affected by the 1.5 GB/ps transfer speed because the speed supports the maximum throughput for the current SAS hard disk drives. Maintain the 1.5 GB/ps setting. A future version of the SAS BIOS code will contain a fix to enable updating the transfer speed setting.

Appendix B. Notices

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Important notes

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

CD drive speeds list the variable read rate. Actual speeds vary and are often less than the maximum possible.

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

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

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

Maximum memory may require replacement of the standard memory with an optional memory module.

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