

IBM

@server

Hints, Tips, and Frequently Asked
Questions for the xSeries 440

Quick Reference



Note: Before using this information and the product it supports, be sure to read the general information in Appendix A, "Notices" on page 29.

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Chapter 1. Introduction

The information provided in this *Quick Reference* is based on technical observations and it is intended to supplement the standard IBM® *eServer xSeries™ 440* documentation, which includes the following:

- *IBM eServer xSeries 440 Installation Guide*
- *IBM eServer xSeries 440 Option Installation Guide*
- *IBM eServer xSeries 440 Rack Installation Instructions*
- *IBM eServer xSeries 440 User's Guide*
- *IBM eServer xSeries 440 Hardware Maintenance Manual (HMM)*
- Hints and Tips (located at <http://www.ibm.com/pc/support/>)
- Documentation provided with software and optional devices

You can obtain up-to-date information about the xSeries 440 server and other IBM server products at <http://www.ibm.com/eserver/xseries/>.

Before you begin

Please read the following before you use the information in this document:

- Review the "Safety information", "Handling static-sensitive devices", and "Working inside a server with power on" sections in the documentation provided with the xSeries 440 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 xSeries 440, refer to <http://www.ibm.com/pc/us/compat/> on the World Wide Web.

Note: Some preconfigured servers have a unique list of supported options. See the software documentation provided with those servers for more information.

Getting started

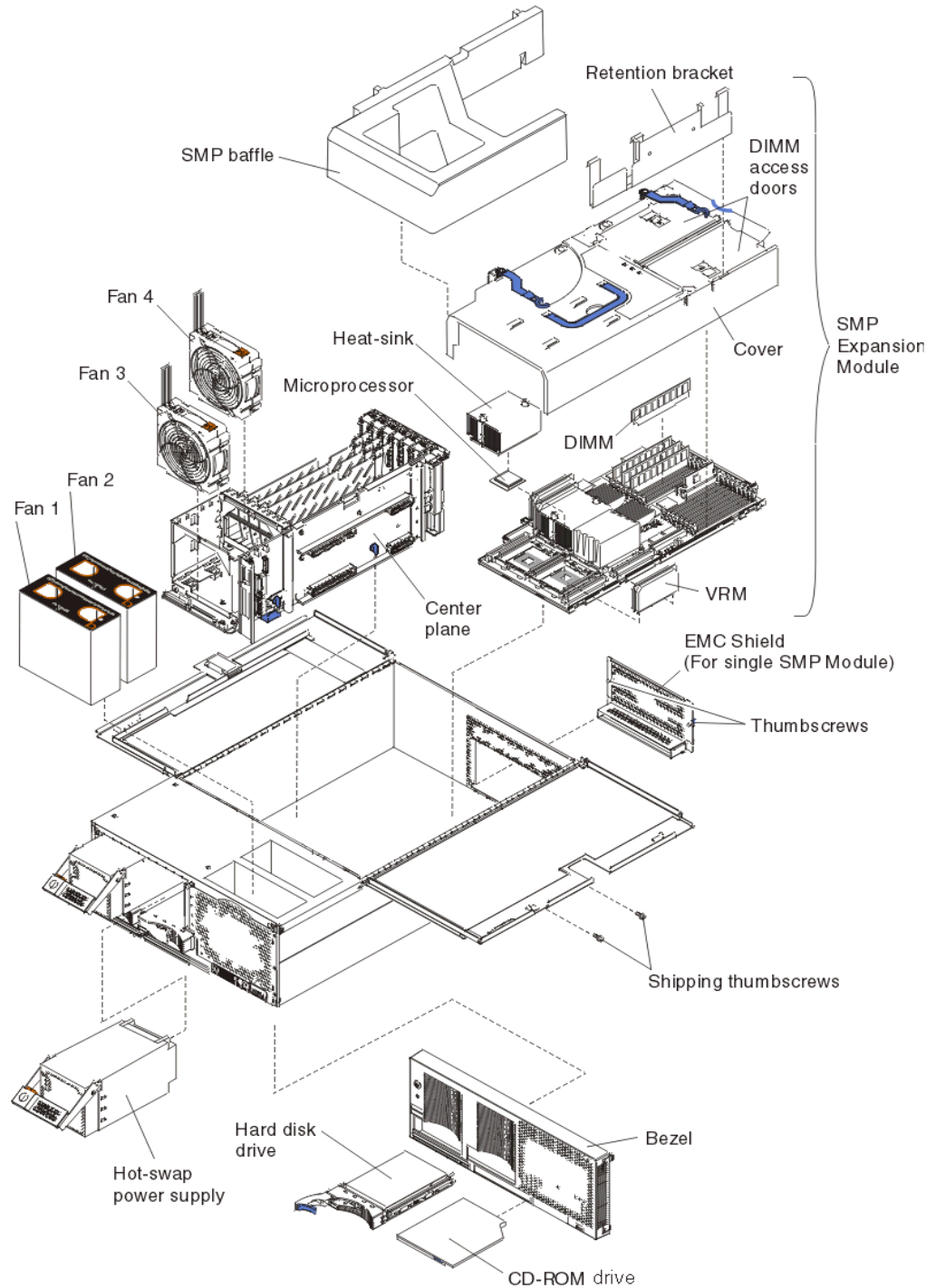
After you receive and unpack your server, verify the following:

- All cables, cords, adapters, boards, fans, and power supplies are fully seated and connected properly.
- The thumbscrews for the EMC shield are tight.
- The metal shipping/retention bracket is installed between the chassis and the upper and lower SMP Expansion Modules (if upper is installed). (See "SMP Expansion Modules" on page 25 for more information.)
- If the server contains only one SMP Expansion Module, ensure that the SMP baffle is installed in the server. (See "SMP Expansion Modules" on page 13 for more information.)
- If the server contains two SMP Expansion Modules, ensure that the scalability cables are connected properly. (See "Cabling" on page 18 for more information.)

Major components of the xSeries 440 server

The following illustration shows the locations of major components in the xSeries 440 server.

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



Chapter 2. Hints and tips

This chapter contains some installation and troubleshooting hints and tips related to the @server xSeries 440 server. This information is intended to supplement the standard xSeries 440 documentation, which includes the following:

- *IBM @server xSeries 440 Installation Guide*
- *IBM @server xSeries 440 Option Installation Guide*
- *IBM @server xSeries 440 Rack Installation Instructions*
- *IBM @server xSeries 440 User's Guide*
- *IBM @server xSeries 440 Hardware Maintenance Manual (HMM)*
- Hints and Tips (located at <http://www.ibm.com/pc/support/>)
- Documentation provided with software and optional devices

Cabling

For additional cabling information, see “Cabling” on page 18.

Ensure retention of main power cables

Description: When sliding the server in and out of the rack enclosure, the power cords might loosen or detach from the server.

Solution: In addition to the cable strap used to secure the power cords to the hinge plate (as stated in step 13 of the *Rack Installation Instructions*), install a cable strap around the power cords and the cable-management arm, directly behind the hinge that connects the arm to the hinge plate.



For more information: See Tip H76202 at <http://www.ibm.com/pc/support/>.

Scalability cables difficult to install and remove

Description: The EMC shield (scalability bracket) on some xSeries 440 servers is not recessed enough, and this makes it is very difficult to install and remove the scalability cables. (For additional information about connecting the scalability cables, see “Cabling” on page 18.)

Solution: Obtain the replacement EMC shield. For assistance in obtaining the replacement EMC shield:

- In the United States and Canada, call 1-800-772-2227 and ask for FRU part number 24P1240.
- In all other countries, go to <http://www.ibm.com/planetwide/> to view a list of the most current support telephone numbers; then, call the support line for your country or region and ask for FRU part number 24P1240.

A new Miscellaneous Parts Kit that includes the replacement EMC shield (24P1240) will be available in September, 2002.

For more information: See Tip H081720 at <http://www.ibm.com/pc/support/>.

Covers

Top-cover latch difficult to use on servers manufactured prior to 6/14/02

Description: The top-cover latch on some xSeries 440 servers manufactured prior to June 14, 2002 are difficult to operate. Systems manufactured after 6/14/2002 are not affected.

Note: The system chassis is marked with a date on the front left side.

Solution: Replace the cover latch. Order FRU part number 24P1289 for systems that have a chassis label dated 6/14/2002 or before.

Use a flat-blade screwdriver or similar tool to remove the existing top-cover latch; then, snap the replacement latch into place.



For more information: See Tip H176156 at <http://www.ibm.com/pc/support/> .

Error log messages

Machine Check Architecture (MCA) with BIOS 1.02 or earlier

Description: The microprocessors or SMP Expansion Modules are disabled when the following MCA message appears in the error log of xSeries 440 servers running BIOS 1.02 or earlier:

Error Code: 00151200 MCA: Unrecoverable Error Detected

Error Code:

Error Data: ProcID=08

Error Data:

Entry Number: 5

Solution: Download and install the xSeries 440 BIOS Update version 1.03 or later. You can obtain the BIOS update at <http://www.ibm.com/pc/qtechinfo/MIGR-42518.html/>.

MCA is still a valid error message that can appear if a problem occurs. BIOS Update version 1.03 corrects the specific problem described above.

For more information: See Tip H176213 at <http://www.ibm.com/pc/support/>.

Ethernet messages

PRO/1000 XT Gigabit Ethernet: NMI error or dropped connection

Description: Nonmaskable Interrupt (NMI) errors or dropped network connections can occur if an Intel® PRO/1000 XT server adapter is installed in any of the 133 MHz slots in the server.

Note: For additional information about NMI error messages, see “Nonmaskable Interrupts (NMI)” on page 22.

Known configuration: An IBM xSeries 440, type 8687 server (any model) with an Intel PRO/1000 XT server adapter (option part number 22P6801, FRU part number 22P6809) installed. An IBM RXE-100 Remote Expansion Enclosure, Type 8684, model 1RZ is attached to the server.

Solution: Move the PRO/1000 XT adapter to a slower PCI slot. The xSeries 440 server supports six hot-plug 64-bit adapters in the expansion slots as follows:

Slot 1	66 MHz
Slot 2	66 MHz
Slot 3	100 MHz (133 MHz if Slot 4 is empty)
Slot 4	100 MHz (133 MHz if Slot 3 is empty)
Slot 5	133 MHz
Slot 6	133 MHz

For more information: See Tip H033438 at <http://www.ibm.com/pc/support/>.

Linux

For additional information, see “Network operating systems” on page 21.

Linux operating-system clock drifts from the system real-time clock (RTC)

Description: The Linux operating-system clock drifts or loses time when the service processor is in a Remote Console session. The longer the Remote Console session, the more the clock is skewed. This occurs with any supported version of the Linux operating system.

Linux tics their operating-system clock roughly 100 times a second. If you are in a Remote Console session during this same time frame, there are anywhere from 8 to 60 SMI (System Management Interrupts) events occurring (depending on the activity). Due to these events, some of the Linux timer tics are getting missed and thus the time shift.

Notes:

1. The system real-time clock is operating correctly; only the Linux operating-system clock is losing time.
2. SMI are used to do the remote video updates through the service processor.

Workaround: Synchronize the Linux operating-system clock to the system RTC.

There are two options:

- Periodically restart the server. This will cause the Linux operating-system clock to sync up with the system RTC.
- Use a time server on the network to periodically synchronize the Linux operating-system clock to the time server.

For more information: See Tip H176196 at <http://www.ibm.com/pc/support/>.

USB keyboard and trackpoint mouse with SuSe Linux, version 8.0

Description: The USB keyboard and Trackpoint mouse work fine during installation; however, after reboot one of them might cease to function properly.

Note: Unplugging and re plugging the device (into the rear USB slots) might fix the problem.

Known configuration affected: An xSeries 440 server with the following installed:

- A Trackpoint USB Space Saver Keyboard, option part number 22P5150, replacement part number (FRU) 24P0340
- The usb-uhci device driver for the VIA USB UHCI controller
- SuSe Linux, version 8.0

This behavior occurs due to new timing code for USB that was introduced into the kernel. This issue is being investigated and should be resolved in the third quarter of 2002.

Workaround: Use a PS/2[®] keyboard.

For more information: See Tip H176029 at <http://www.ibm.com/pc/support/>.

Novell Netware

For additional information, see “Network operating systems” on page 21.

Novell NetWare 5.1 reboots itself after the server shuts down

Description: Instead of going to the DOS prompt after the server is shut down, the server reboots itself.

Attention: NetWare 5.1 is not listed on the ServerProven™ list as a supported NOS for the xSeries 440 server.

This behavior will be corrected in NetWare 5.1 Support Pack version 5. The Support Pack is scheduled for release during the summer of 2002, and it will be available at <http://support.novell.com/produpdate/patchlist.html/>.

Workaround: Start the Configuration/Setup Utility program and enable the Processor/Memory Card State to use two SMP Expansion Modules. This option is disabled when the server reboots. To do this:

1. Start the system.
2. When the message Press F1 for Configuration/Setup appears, press F1.
3. Enable the SMP Expansion Module (CEC option). To do this:
 - a. Select **Advanced Setup**.
 - b. Select **CPU Socket State**.
 - c. Enable all microprocessors.
4. Enable the CEC2 Processor/Memory Card State to support two SMP Expansion Modules. To do this:
 - a. Restart the server. When the message Press F1 for Configuration/Setup appears, press F1.
 - b. Select **Advanced Setup**.
 - c. Set the CEC2 Processor Memory Card state to Enabled.

Note: If the server does not restart, disconnect the ac power cords, wait about 10 seconds, reconnect the ac power cords, and then repeat the steps above.

For more information: See Tip H176163 at <http://www.ibm.com/pc/support/>.

Novell NetWare 6.0 presents fluctuating and extreme utilization percentage values

Description: The server shows extreme utilization values (such as 13000%), this value should not exceed 100%. NetWare 6.0 Support Pack version 2 will correct this behavior.

Solution: Install Support Pack version 2. The Support Pack version 2 is scheduled for release during the summer of 2002. It will be available from the <http://support.novell.com/produpdate/patchlist.html/> Web site.

For more information: See Tip H176060 at <http://www.ibm.com/pc/support/>.

Power

Hot-swap power supply procedure

Description: The system will not power on after you remove and reinstall both power supplies with the ac power cords attached.

Solution: When removing both hot-swap power supplies, disconnect all ac power cords from the system.

For more information: See Tip H176490 at <http://www.ibm.com/pc/support/>.

Remote Supervisor Adapter (RSA)

RSA event logs continually report "IP: Unknown Higher layer protocol"

Description: This error occurs with RSA firmware level 1.03 or earlier. It is informational only, and it will be removed in the next release of the RSA firmware.

This error appears in the event logs when the RSA TCP/IP stack receives an IP packet that it does not know how to interpret.

Solution: Update the RSA firmware. The next level of the RSA firmware is scheduled for release in the third quarter of 2002. It will be available at the <http://www.ibm.com/pc/support/> Web site. Search on Remote Supervisor Adapter Firmware.

For more information: See Tip H176191 at <http://www.ibm.com/pc/support/>.

Unable to start remote diagnostics using the RSA

Description: When using the Remote POST/Remote Control features of the RSA and booting into the system diagnostics (F2), if you choose to run any of the diagnostic tests remotely, the remote client becomes “locked”. This problem will be fixed in the next release of the RSA firmware.

The system will continue to function as normal; however, the client screen will appear frozen and you might think the host system is locked.

Solution: Restarting the system (hard reboot) fixes the problem for the current session.

Update the RSA firmware. The next level of the RSA firmware is scheduled for release in the third quarter of 2002. It will be available from the <http://www.ibm.com/pc/support/> Web site. Search on Remote Supervisor Adapter Firmware.

Workaround: Do not run diagnostics when in Remote POST/Remote Control mode until you have updated the RSA firmware.

For more information: See Tip H175738 at <http://www.ibm.com/pc/support/>.

SAP error messages

Time Stamp Counter and SAP errors when two SMP Expansion Modules are installed

Description: Messages similar to the following are recorded in SAP applications:

```
*** WARNING =>
                PfRollIn: roll in time (1022694664/72100)
                before roll out time (1022694666/185481)

*** WARNING =>
                endtime (1022680269/707145)
                before starttime (1022680271/600816)
```

Solution: A future release of the customized xSeries Windows HAL will provide SAP support. Download and install the latest HAL. See “Network operating systems” on page 21 for more information about the HAL.

Workaround: Install only one SMP Expansion Module when using SAP applications.

For more information: See Tip H091336 at <http://www.ibm.com/pc/support/>.

ServeRAID adapters and programs

For additional information, see “ServeRAID adapters” on page 24.

Do not install a ServeRAID™ adapter in PCI slot 1

Description: The spacing between the SCSI cable and the closed cover is very limited when a ServeRAID adapter is installed in PCI slot 1. This situation can damage or ground the SCSI signal cable when the cover is closed, which could result in SCSI or hard disk drive errors.

Note: When installing multiple ServeRAID adapters in a server that has the PCI-X slot enabled for high scan (boot) priority, ensure that the ServeRAID adapter controlling the startup (boot) drive is installed in a PCI slot that is scanned before the PCI slots that contain the other ServeRAID adapters. For information about the PCI scan order, see “PCI scan order” on page 22.

Solution: Do not install a ServeRAID adapter in PCI slot 1.

For more information: See Tip H176217 at <http://www.ibm.com/pc/support/>.

ServeRAID Manager appears washed out and the graphics are not the expected colors

Description: This occurs with the following ServeRAID controllers:

- Netfinity® ServeRAID-4H Ultra160 SCSI Controller, option part number 37L6889, FRU part number 37L6892
- ServeRAID-4Lx Ultra160 SCSI Controller, option part number 06P5740, FRU part number 06P5741
- ServeRAID-4Mx Ultra160 SCSI Controller, option part number 06P5736, FRU part number 06P5737

Solution: There are two options:

- To clear the symptom for the current session only, minimize the application; then, maximize the application.
- To clear the symptom permanently, set the color palette in the Windows® Display Properties to 65536 colors or True Colors.

Note: This option depends on the video memory capacity, so it might not be available at all display resolutions.

For more information: See Tip H175743 at <http://www.ibm.com/pc/support/>.

ServerGuide

”JRE illegal operation” appears when installing Windows 2000 using ServerGuide 6.0.8

Description: When using ServerGuide™ 6.0.8 to install Windows 2000, this intermittent error message might appear after you insert the Windows 2000 CD. This problem will be fixed in ServerGuide 6.0.9.

The following network operating systems are affected:

- Windows 2000 Server with any Service Pack applied
- Windows 2000 Advanced Server with any Service Pack applied

Solution: There are two options:

- Go to <http://www.ibm.com/pc/support/> and download the ServerGuide 6.0.9 CD; then, use the ServerGuide 6.0.9 CD when installing the Windows 2000 operating system.
- Use the ServerGuide 6.0.8 CD. To successfully complete the Windows 2000 installation process using the ServerGuide 6.0.8 CD, you must refresh the files in the system partition.

Complete the following steps to refresh the files in the system partition:

1. If the error message occurs, reinsert the ServerGuide 6.0.8 CD and restart the installation process.
2. From the Main menu, select **Run setup programs and configure hardware**.
3. Select **Windows 2000** from the Operating System list; then, click Next.
4. From the Configuration Method Selection screen, select the **Custom** configuration method; then, click Next.
5. From the Custom menu, select the **Create system partition** task; then, click Next.
6. From the Create System Partition screen, select **Refresh the files in the system partition**; then, click Next.
7. Proceed with the Windows 2000 installation process.

For more information: See Tip H091364 at <http://www.ibm.com/pc/support/>.

SMP Expansion Modules

For additional information, see “SMP Expansion Modules” on page 25.

SMP baffle is required to maintain proper airflow

Description: The SMP baffle (Part number 24P1299) might be mistaken for packing material, but it is required to maintain proper system cooling in servers that contain only one SMP Expansion Module. See “Major components of the xSeries 440 server” on page 2 for the location of the SMP baffle.

Solution: Ensure that the SMP baffle is installed in xSeries 440 servers that contain only one SMP Expansion Module.

Removing an SMP Expansion Module

When you install or remove SMP Expansion Modules, the server configuration information changes. Therefore, you must use the Configuration/Setup Utility program to change and save the new configuration information.

Attention: The installation and removal of the SMP Expansion Module is a two-handed operation. Always use two hands when installing or removing an SMP Expansion Module.

Description: You can damage capacitors on the centerplane if you are not careful when you install or remove an SMP Expansion Module (sometimes referred to as a CEC).

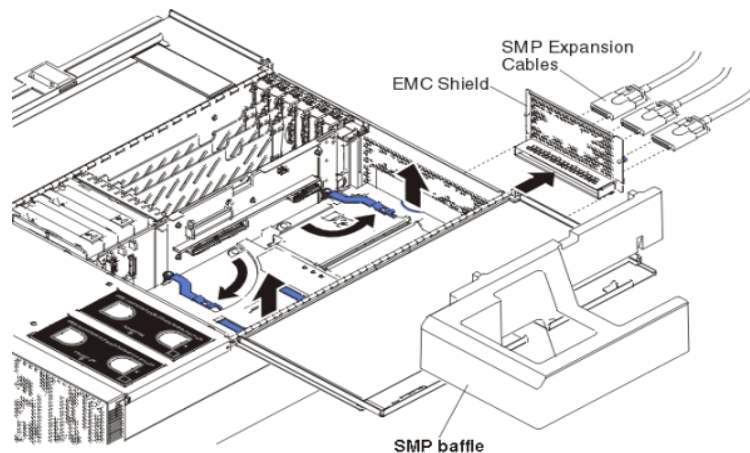
Solution: To help avoid problems, use the following procedure when removing an SMP Expansion Module.

1. Turn off the server and peripheral devices; then, disconnect the power cords and all external cables from the SMP Expansion Module.
2. Remove the shipping/retention bracket screws from the right side of the server.
3. Open the cover.
4. Grasp the shipping/retention bracket or brackets by the removal handles and lift them up and out of the server.

Note: If there is one SMP Expansion Module installed, you will need to remove the SMP baffle from the server; then, remove the shipping/retention bracket from the lower SMP Module.

5. Loosen the blue thumbscrews holding the EMC shield to the back of the server; then, remove the EMC shield from the back of the server.

Note: If there are two SMP Expansion Modules installed in the server, you must first disconnect all of the cables from the SMP Expansion Modules.



6. Grasp the two locking levers on the top of the SMP modules, and lift them up slightly.
7. Working from the right side of the server, rotate the two locking levers toward you until they are fully extended.
8. Being careful not to damage the components on the centerplane, use the handle and the finger relief on the SMP Expansion Module cover to lift the SMP Expansion Module out of the server.

For more information: See Tip H176162 at <http://www.ibm.com/pc/support/>.

Installing an SMP Expansion Module

Attention: The installation and removal of the SMP Expansion Module is a two-handed operation. Always use two hands when installing or removing an SMP Expansion Module.

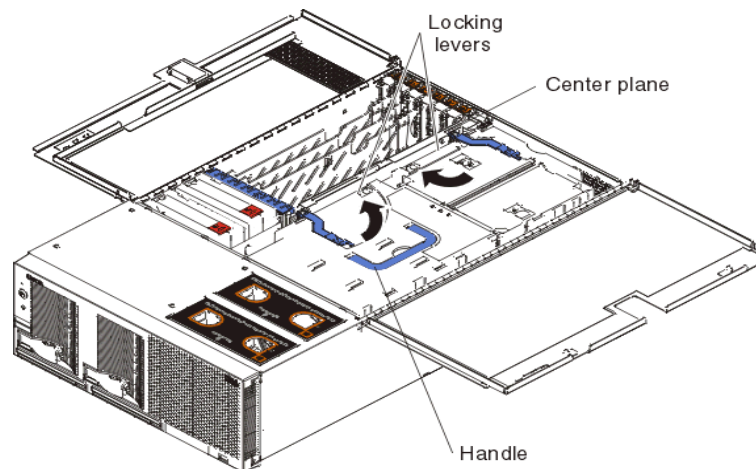
Description: You can damage capacitors on the centerplane if you are not careful when you install or remove an SMP Expansion Module (sometimes referred to as a CEC).

Solution: To help avoid problems, use the following procedure when installing or removing an SMP Expansion Module:

1. Hold the SMP Expansion Module level in a horizontal plane by using the blue handle with one hand and the recessed finger hold with the other hand.

Note: Future SMP Expansion modules will have the IBM Blue touchpoint color around the finger hold.

2. With the SMP Expansion Module slightly tilted down into the system, align the front edge of the SMP Expansion Module against the side of the top cross member of the chassis; then, align the side wall of the SMP Expansion Module against the inside wall of the chassis.
3. While keeping the SMP Expansion Module in a horizontal plane and still maintaining the tilted alignment described in Step 2, carefully lower the SMP Expansion Module into the chassis; then, gently slide the SMP Expansion Module into the mating connectors.



4. Simultaneously move the locking levers into the locked position.
5. Reinstall the EMC shield on the rear of the server; then, tighten the blue thumbscrew.
6. Reinstall the shipping/retention bracket or brackets.

Note: If only one SMP Expansion Module is installed, install the SMP baffle.

7. Close the cover; then, connect the external cables.

Note: If two SMP Expansion Modules are installed, be sure to connect the scalability cables. For more information, see “How should I connect the SMP Expansion cables (scalability cables) when I have two SMP Expansion Modules installed?” on page 18.

For more information: See Tip H176162 at <http://www.ibm.com/pc/support/>.

Windows NT

For additional information, see “Network operating systems” on page 21.

”IRQL_NOT_GREATER_THAN_OR_EQUAL_TO” appears on a Blue screen when installing Windows NT®

Description: This error message might appear on a Blue screen during the Windows NT installation process after the system reboots.

The following network operating systems are affected:

- Microsoft® Windows NT Server 4.0
- Microsoft Windows NT Server, Enterprise Edition

The device driver for the integrated Broadcom Ethernet controller is affected.

Solution: Download and install the xSeries 440 BIOS Update, version 1.03 or later. You can obtain the BIOS update at <http://www.ibm.com/pc/qtechinfo/MIGR-42518.html/>.

Workaround: Complete the following steps to install Windows NT, and then install the BIOS update and Ethernet device drivers:

1. When prompted for a network adapter during the Windows NT installation, choose **Select from List** and then specify the MS Loopback Adapter.
2. After you install Windows NT, install the xSeries 440 BIOS Update, version 1.03. You can obtain the BIOS update at <http://www.ibm.com/pc/qtechinfo/MIGR-42518.html/>.
3. Install the device driver for the integrated Broadcom Ethernet controller.
4. Install the device drivers for any additional PCI NIC adapters installed in the server.

For more information: See Tip H176032 at <http://www.ibm.com/pc/support/>.

Additional hints and tips

The following tips are available on the IBM support site for further problem solving. Search on the tip number:

Tip Number	Description
H03846	Linux hangs XScreenSaver.
H033801	Clients on hot-added Gb Intel NICs may see network failures.
H104697	How to install the HAL in an unattended install.
H176183	Linux SuSe 8.0: TG3 device driver loads after installing the Broadcom 5700 device driver.
H176195	Unable to use Num Lock with the Trackpoint USB Keyboard and Linux in the GUI Console.
H176211	Red Hat Advanced Server 2.1 Summit Kernel;: Compiling Drivers. Unable to load module for driver.
H173431	1801 error when multiple RAID or SCSI adapters are installed.
H176241	Wake on LAN® integrated Ethernet and PCI adapter.

Chapter 3. Frequently asked questions

This chapter contains some frequently asked questions related to the @server xSeries 440 server. This information is intended to supplement the standard xSeries 440 documentation.

- *IBM @server xSeries 440 Installation Guide*
- *IBM @server xSeries 440 Option Installation Guide*
- *IBM @server xSeries 440 Rack Installation Instructions*
- *IBM @server xSeries 440 User's Guide*
- *IBM @server xSeries 440 Hardware Maintenance Manual (HMM)*
- Hints and Tips (located at <http://www.ibm.com/pc/support/>)
- Documentation provided with software and optional devices

Cabling

For additional cabling information, see “Cabling” on page 4.

Should I use an SMP Expansion cable (scalability cable) if I have only one SMP Expansion Module installed?

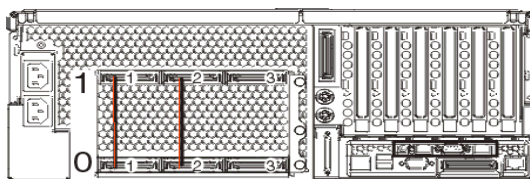
No. Use the SMP Expansion cable (also called scalability cables) only when there are two SMP Expansion Modules installed.

How should I connect the SMP Expansion cables (scalability cables) when I have two SMP Expansion Modules installed?

Depending upon your configuration, there are up to six SMP Expansion ports located on the back of the server. Three ports are located on each SMP Expansion Module.

Complete the following steps to cable two SMP Expansion Modules together:

1. Using the SMP Expansion cable (also called a scalability cable) that came with your SMP Expansion Module option, connect one end of the cable to SMP Expansion port 1 on the lower SMP Expansion Module; then, connect the opposite end of the cable to the SMP Expansion port 1 on the upper SMP Expansion Module.



2. Connect the second SMP Expansion cable (that came either with the server or with the optional second SMP Expansion Module) to SMP Expansion port 2 on the lower SMP Expansion Module; then, connect the opposite end of the cable to the SMP Expansion port 2 on the upper SMP Expansion Module.

Notes:

- a. When two cables are connected to ports 1 and 2, SMP data is interleaved between the cables for better performance. These cables are not redundant. If either of the two cables are removed or fail, the server will either turn off or restart, depending on your configuration. (The xSeries 440 must reboot if one of the cables is unplugged.)
- b. The server will start and operate with one cable attached between the two SMP Expansion Modules.

How do I attach a serial cable from a UPS to the xSeries 440 server?

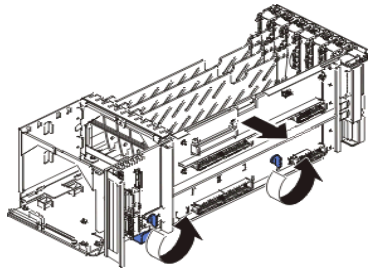
Use the USB–Serial cable adapter, option part number 10K3661. This adapter attaches to the USB port and provides a 9-pin serial interface. Do not use the USB–Serial/Parallel cable adapter, option part number 22P5298; it is not supported on the xSeries 440 server.

Centerplane

What is the recommended procedure for replacing the centerplane on the xSeries 440 server?

Complete the following steps to remove the centerplane:

1. Turn off the server.
2. Disconnect all power cords from the back of the server.
3. Remove the PCI brick from the server and place it on a clean work surface.
4. Remove the shipping/retention brackets from the SMP Expansion Modules.



5. Turn the two thumbscrews to release the centerplane; then, carefully lift the centerplane out of its socket.

Diagnostic tests

Why is the option to test the Scalability Port grayed out in the Diagnostic test menu?

This test is not supported currently, but it will be added in the third quarter of 2002.

Light Path Diagnostics

Where are the Light Path Diagnostics™ LEDs located?

The Light Path Diagnostics panels are located in two places:

- Inside the Light Path Diagnostics drawer, which is located on the front, lower-right corner of the xSeries 440 server. When you press on the front of the drawer, the panel will be visible.
- On the top cover of the server.

In some situations, you can identify the specific device or component that failed by locating the lit LED next to the device or component.

Memory

What is Memory Mirroring?

Memory mirroring is an Active Memory™ feature that offers greater memory reliability and availability. This feature provides protection for memory that is analogous to what RAID-1 disk mirroring provides for hard disk drives.

With the same amount of memory in both memory ports and memory mirroring enabled in the BIOS code, the data from the first memory port is copied or mirrored in the second memory port, giving you a 100% redundant copy of the data stored in memory. In addition, if one memory port is disabled or fails, the data stored in memory remains accessible through the redundant copy in the remaining functional memory port.

What should be done if the system reboots and reports only half of the memory installed?

1. Verify that:
 - The memory modules are seated properly.
 - You have installed the correct type of memory.
 - If you changed the memory, you used the Configuration/Setup Utility program to update the memory-configuration information.
 - All banks of memory on the DIMMs are enabled. The server might have automatically disabled a DIMM bank when it detected a problem, or someone might have disabled a DIMM bank manually.
2. Look in the POST error log for error message 289:
 - If a DIMM was disabled by a system-management interrupt (SMI), replace the DIMM.
 - If the DIMM was disabled by the user or by POST:
 - a. Start the Configuration/Setup Utility program.
 - b. Enable the DIMM.
 - c. Save the configuration and restart the server.
3. If a second SMP Expansion Module is installed, check to see if it has been disabled. (See “Installing an SMP Expansion Module” on page 15 for more information.)

Microprocessor

Can and should hyperthreading be enabled on the xSeries 440 server?

Yes. If your operating system supports hyperthreading, you can use the Configuration/Setup Utility program to enable the hyperthreading for the microprocessors in the local system. Ensure that your operating system supports hyperthreading.

Why does the system report that the microprocessor speed is 1.4 GHz when 1.5 GHz or 1.6 GHz microprocessors are installed?

If the system is turned on and ac power is present when the SMP Expansion Module is installed, the microprocessor speed will default to 1.4 GHz. To correct this behavior:

1. Disconnect ac power from the system; then, wait approximately 1 minute.
2. Reconnect ac power to the system; then, restart the system. Once restarted, the system should report the correct microprocessor speed.

See Tip H176033 located at <http://www.ibm.com/pc/support> for more detailed information.

Network operating systems

For additional information, see “Linux” on page 7, “Novell Netware” on page 8, and “Windows NT” on page 16.

What does it mean when I receive disk I/O error 00002000 while installing Windows on an xSeries 440 server?

Typically, this error is caused by a defective SCSI cable or bent pins on the SCSI cable connector that attaches to the system board or to a SCSI or RAID controller. To help locate and correct this problem, check both ends of the SCSI cable connecting the SCSI backplane to the RAID or SCSI controller.

Why won't Windows Advanced Server install with two SMP Expansion Modules?

To install Windows 2000 Advanced Server with two SMP Expansion Modules, you must download the HAL from <http://www.ibm.com/pc/support/>. This HAL is provided by IBM and is required to install and run Windows 2000 Advanced Server when two SMP Expansion Modules are installed in the server.

If only one SMP Expansion Module is installed in the server, you can install Windows 2000 Advanced server without the HAL; however, when you install the second SMP Expansion Module you must install the HAL.

Note: To avoid potential problems when running Windows 2000 Advanced Server with one or two SMP Expansion Modules, always download and install the HAL.

See Tip H104697 located at <http://www.ibm.com/pc/support/> for more information about the HAL.

Nonmaskable Interrupts (NMI)

What should be done if the system reports an NMI error and the system restarts or displays an NMI error on the Light Path Diagnostic panel?

If an NMI occurs, use the following steps to help identify the failing component:

1. View the System Error Log.
2. Check the PCI and MEM LEDs.
 - If a PCI LED is on, a failing PCI/PCI-X adapter or board could be the problem.
 - If a MEM LED is on, check the DIMM error LEDs on the SMP Expansion Module boards. If there is a DIMM failure, an LED will identify the failing DIMM. Be sure to check the boards in both the lower and upper SMP Expansion Modules, if installed. The problem might stem from a failing DIMM or SMP board.

Important: Your server is designed so that any illuminated LEDs can be illuminated again after ac power is removed. You have up to 12 hours to use the Light Path Diagnostic LEDs after removing ac power from the server. After 12 hours, you must turn on the server again to be able to use the Light Path Diagnostic LEDs to help locate system problems.

Complete the following steps to view the LEDs after removing ac power from the server:

- a. Turn off the server and all peripheral devices.
- b. Press and hold the Light Path Diagnostics (blue) button on the diagnostics panel. The LEDs will light while you press the switch.

Note: You can illuminate the LEDs for a maximum of two minutes. After that time, the circuit that powers the LEDs is exhausted.

3. Restart the server.

PCI scan order

For information about installing a ServeRAID adapter in a server that has a PCI-X slot enabled for high scan (boot) priority, see “ServeRAID adapters and programs” on page 12.

What is the PCI scan order for the xSeries 440 server?

The PCI scan order for systems with selectable slot priority (boot) is as follows: first the integrated devices are scanned; then, PCI slots 1, 2, 6, 5, 3, and 4.

What is the PCI scan order for the xSeries 440 when an RXE-100 Expansion Enclosure is attached?

If an RXE-100 enclosure is attached to an xSeries 440 server, the scan order is as follows: first the xSeries 440 integrated devices; then, the xSeries 440 PCI slots 1, 2, 6, 5, 3, and 4; then, the RXE-100 PCI slots 11, 12, 9, 10, 7, 8, 17, 18, 15, 16, 13, and 14.

Power

What are the power requirements for the xSeries 440?

The xSeries 440 server requires a 220 V power connection for full power-supply redundancy when two SMP Expansion Modules are installed. Whenever possible, use a 220 V connection for all configurations. However, you can use a 110 V outlet/connection, but this can cause loss of power-supply redundancy.

How do you determine when full redundancy is lost when you use 110 V ac for power?

Redundant power is lost when the Nonredundant LED is lit.

What should be done if a power supply AC LED is on but not the DC LED?

Unplug the three power connectors to the centerplane assembly. If the DC Good LED does not come on:

1. Inspect and replace any damaged power cables.
2. Check ac power to the system.
3. Replace the power supply.
4. Replace the Top Power Board.

What should be done if the system will not turn off?

Verify whether you are using an ACPI or non-ACPI operating system. If you are using a non-ACPI operating system:

1. Press Ctrl+Alt+Delete.
2. Press the power-control button to turn off the system.

Note: If the operating system has stopped functioning, you might need to press and hold the power-control button for more than 4 seconds to cause an immediate shutdown of the server and to force it into Standby mode.

What should be done if the system will not turn on?

Verify that:

- The power cables are properly connected to the server.
- The electrical outlet is functioning properly.
- The type of memory installed is correct.
- The LEDs on the power supply are on.
- The microprocessors are installed in the correct sequence.
- If you have just installed an option, remove it and restart the server. If the server now turns on, you might have installed more options than the power supply supports.
- Use the Remote Supervisor Adapter to check the system error logs remotely.

What should be done if the AC and DC LEDs initially turn on and then a few seconds later, the DC LED turns off?

1. Inspect and replace any damaged power cables.
2. Check ac power to the system.
3. Check the power supply.
4. Check the Top Power Board.

ServeRAID adapters

For additional information about ServeRAID adapters, see “ServeRAID adapters and programs” on page 12.

Why does Windows reorder its logical disks in Disk Management if I have a ServeRAID-4H and a ServeRAID-4Lx or -4Mx installed and the ServeRAID-4H is in the lower priority slot?

Windows registers devices in alphabetical order. Therefore, the ServeRAID-4H controller gets registered first because of its device driver name (IPSRAIDN.SYS). The ServeRAID-4Lx or -4Mx get registered after the -4H driver because the driver name (NFRD960.SYS) comes after the -4H driver name in the registry.

The workaround for this issue requires that you edit the registry as follows:

Attention: Be very careful when editing the registry file. Incorrect modifications could cause unpredictable results.

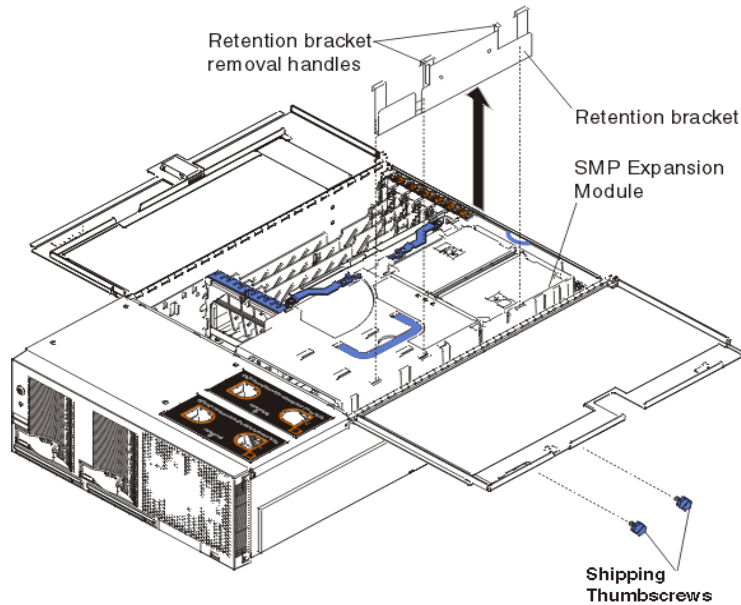
1. Open the **regedt32** file.
2. Under HKEY_LOCAL_MACHINE, expand SYSTEM.
3. Expand Current Control Set.
4. Expand Services.
5. Double-click on ipsraidn and record its tag value.
6. Double-click on nfrd960 and record its tag value.
7. Change the tag value of nfrd960 to the ipsraidn tag value.
8. Double-click ipsraidn again and change its tag value to the original nfrd960 tag value.
9. Save and exit the regedt32 file; then, restart the system.

SMP Expansion Modules

For additional information, see “SMP Expansion Modules” on page 13.

Should the shipping/retention bracket for the SMP Expansion Module be removed after shipment?

The shipping/retention bracket installed between the chassis and the Upper and Lower SMP Expansion Modules (if upper is installed) is required for correct system operation.



Attention: If you remove this bracket, you must replace it.

If a shipping/retention bracket is not available, order FRU part number 24P1283.

What is the correct removal/replacement procedure for an SMP Expansion Module?

See “Removing an SMP Expansion Module” on page 14 and “Installing an SMP Expansion Module” on page 15 for detailed instructions.

What should change if I want to install a second SMP Expansion Module?

Use the following guidelines when you install a second SMP Expansion Module:

1. When you install or remove SMP Expansion Modules, the server configuration information changes. Therefore, you must use the Configuration/Setup Utility program to change and save the new configuration information.
2. If you are using the Windows 2000 Advanced Server operating system, you must download the HAL from <http://www.ibm.com/pc/support/>. This HAL is provided by IBM and is required to install and run Windows 2000 Advanced Server when two SMP Expansion Modules are installed in the server.

Note: For more information about the HAL, see Tip H104697 located at <http://www.ibm.com/pc/support/>.

3. See “How should I connect the SMP Expansion cables (scalability cables) when I have two SMP Expansion Modules installed?” on page 18 for cabling information.

What should be done if the system recognizes only the Lower SMP Expansion Module during startup?

If the system recognizes only the lower SMP Expansion Module during startup, visually check the centerplane for bent pins and missing or broken capacitors. Also check each SMP Expansion Module for damaged connectors.

Complete the following steps to bring the system back up with both SMP Expansion Modules:

1. Turn off the server; then, disconnect all cables and power cords from the back of the server.
2. Open the server cover and verify that the top SMP Expansion Module is installed properly.

Note: If you want to reseat the SMP Expansion Module, see “Removing an SMP Expansion Module” on page 14 and “Installing an SMP Expansion Module” on page 15 for instructions.

3. Close the server cover; then, connect the external cables and power cords. See “Cabling” on page 18 for information about connecting the scalability cables when two SMP Expansion Modules are installed.
4. Turn on the server.
5. When the message Press F1 for Configuration/Setup appears, press F1.
6. From the main menu, select **Load Default Settings**.
7. Select **Advanced Setup** and ensure that the **CEC2 Processor/Memory Card State** is set to **Enabled**.
8. Press Esc to return to the main menu; then, save the settings.
9. Exit from the Configuration/Setup utility program.

Chapter 4. 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 xSeries 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 is turned on.
- Use the troubleshooting information in your system documentation, and use the diagnostic tools that come with your system.
- Go to the IBM Support Web site at <http://www.ibm.com/pc/support/> to check for technical information, hints, tips, and new device drivers.
- Use an IBM discussion forum on the IBM Web site to ask questions.

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

Using the documentation

Information about your IBM xSeries system and preinstalled software, if any, is available in the documentation that comes with your system. That documentation includes printed books, online books, 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/pc/support/> and follow the instructions. Also, you can order publications through the IBM Publications Ordering System at <http://www.elink.ibm.com/public/applications/publications/cgibin/pbi.cgi>.

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 xSeries products, services, and support. The address for IBM xSeries information is <http://www.ibm.com/eserver/xseries/>.

You can find service information for your IBM products, including supported options, at <http://www.ibm.com/pc/support/>. If you click **Profile** from the support page, you can create a customized support page. The support page has many sources of information and ways for you to solve problems, including:

- Diagnosing problems, using the IBM Online Assistant
- Downloading the latest device drivers and updates for your products
- Viewing Frequently Asked Questions (FAQ)
- Viewing hints and tips to help you solve problems
- Participating in IBM discussion forums
- Setting up e-mail notification of technical updates about your products

Software service and support

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

For more information about Support Line and other IBM services, go to <http://www.ibm.com/services/>, or go to <http://www.ibm.com/planetwide/> for support telephone numbers.

Hardware service and support

You can receive hardware service through IBM Integrated Technology Services or through your IBM reseller, if your reseller is authorized by IBM to provide warranty service. Go to <http://www.ibm.com/planetwide/> for support telephone numbers.

In the U.S. and Canada, hardware service and support is available 24 hours a day, 7 days a week.

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Important notes

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

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

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