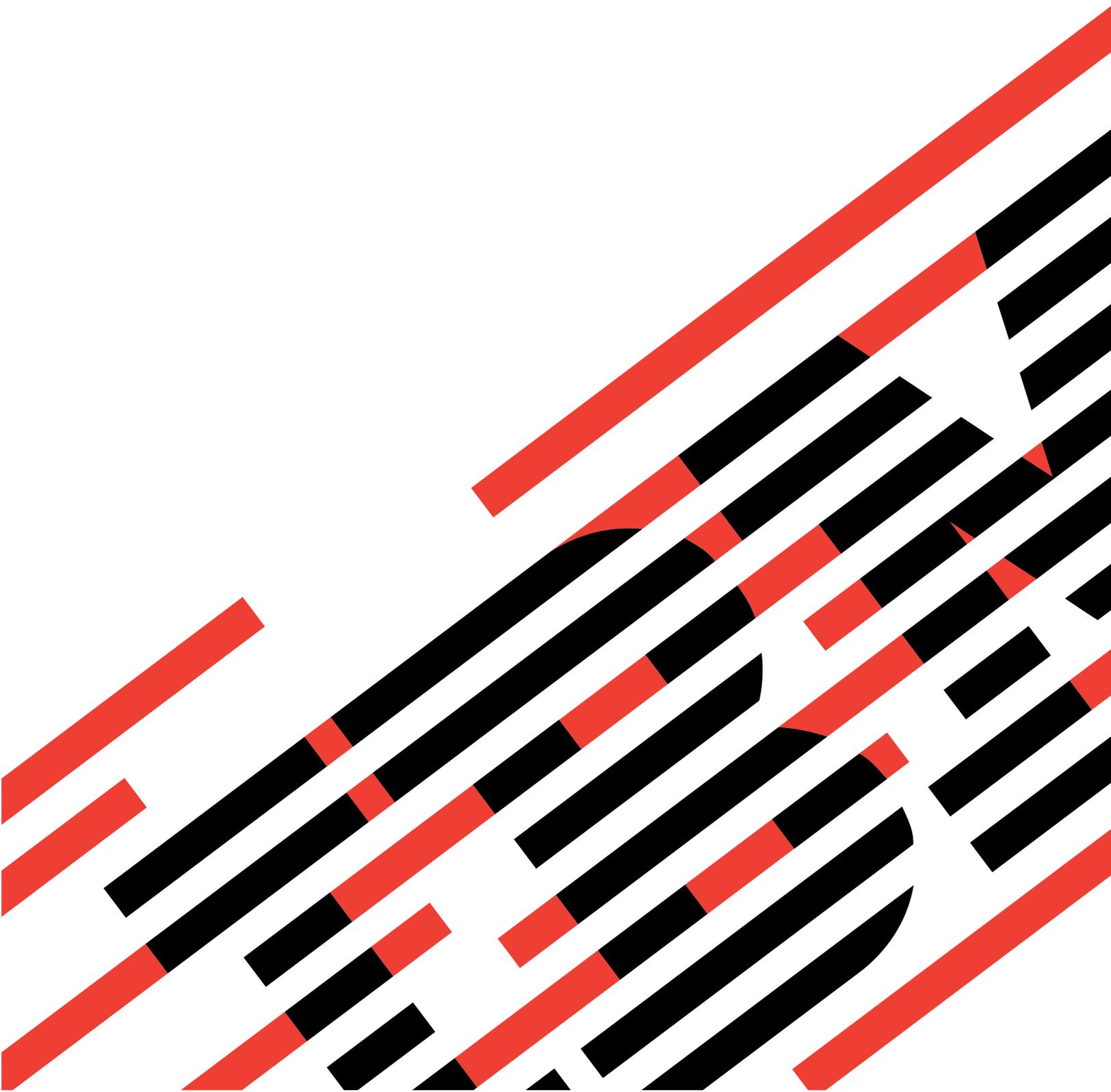
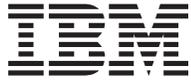




Hardware Maintenance Manual
xSeries 342 Type 8669





@server

Hardware Maintenance Manual
xSeries 342 Type 8669

Note

Before using this information and the product it supports, be sure to read the general information under "Notices" on page 143.

First Edition (June 2001; updated December 2001, March 2002, July 2002)

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About this manual

This manual contains diagnostic information, a Symptom-to-FRU index, service information, error codes, error messages, and configuration information for the IBM®
eServer xSeries 342.

Important: This manual is intended for trained servicers who are familiar with IBM PC Server products.

Important safety information

Be sure to read all caution and danger statements in this book before performing any of the instructions. See "Safety information" on page 109.

Leia todas as instruções de cuidado e perigo antes de executar qualquer operação.

注意和危险声明 (简体中文)

重要事项:

本书中的所有注意和危险声明之前都有编号。该编号用于英语的注意或危险声明与 *Safety Information* 一书中可以找到的翻译版本的注意或危险声明进行交叉引用。

例如，如果一个注意声明以编号 1 开始，那么对该注意声明的翻译出现在 *Safety Information* 一书中的声明 1 中。

在按说明执行任何操作前，请务必阅读所有注意和危险声明。

注意及危险声明 (中文)

重要資訊：

本書中所有「注意」及「危險」的聲明均以數字開始。此一數字是用來作為交互參考之用，英文「注意」或「危險」聲明可在「安全資訊」(Safety Information)一書中找到相同內容的「注意」或「危險」聲明的譯文。

例如，有一「危險」聲明以數字 1 開始，則該「危險」聲明的譯文將出現在「安全資訊」(Safety Information)一書的「聲明」1 中。

執行任何指示之前，請詳讀所有「注意」及「危險」的聲明。

Prenez connaissance de toutes les consignes de type Attention et Danger avant de procéder aux opérations décrites par les instructions.

Lesen Sie alle Sicherheitshinweise, bevor Sie eine Anweisung ausführen.

Accertarsi di leggere tutti gli avvisi di attenzione e di pericolo prima di effettuare qualsiasi operazione.

중요:

본 *Server Library*에 있는 모든 주의 및 위험 경고문은 번호로 시작합니다. 이 번호는 영문 주의 혹은 위험 경고문과 이 절에 나오는 번역된 버전의 주의 혹은 위험 경고문을 상호 참조하는 데 사용됩니다.

예를 들어, 주의 경고문이 번호 1로 시작하면, 번역된 해당 주의 경고문을 본 절의 경고문 1에서 찾아볼 수 있습니다.

모든 지시사항을 수행하기 전에 반드시 모든 주의 및 위험 경고문을 읽으십시오.

Lea atentamente todas las declaraciones de precaución y peligro ante de llevar a cabo cualquier operación.

Online support

Use the World Wide Web (WWW) to download Diagnostic, BIOS Flash, and Device Driver files.

File download address is:

<http://www.ibm.com/pc/support>

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General checkout

The server diagnostic programs are stored in upgradable read-only memory (ROM) on the system board. These programs are the primary method of testing the major components of the server: the system board, Ethernet controller, video controller, RAM, keyboard, mouse (pointing device), diskette drive, serial ports, and hard drives. You can also use them to test some external devices. See “Diagnostic programs and error messages” on page 13.

Also, if you cannot determine whether a problem is caused by the hardware or by the software, you can run the diagnostic programs to confirm that the hardware is working properly.

When you run the diagnostic programs, a single problem might cause several error messages. When this occurs, work to correct the cause of the first error message. After the cause of the first error message is corrected, the other error messages might not occur the next time you run the test.

A failed system might be part of a shared DASD cluster (two or more systems sharing the same external storage device(s)). Prior to running diagnostics, verify that the failing system is not part of a shared DASD cluster.

A system might be part of a cluster if:

- The customer identifies the system as part of a cluster.
- One or more external storage units are attached to the system and at least one of the attached storage units is additionally attached to another system or unidentifiable source.
- One or more systems are located near the failing system.

If the failing system is suspected to be part of a shared DASD cluster, all diagnostic tests can be run except diagnostic tests which test the storage unit (DASD residing in the storage unit) or the storage adapter attached to the storage unit.

Notes:

1. For systems that are part of a shared DASD cluster, run one test at a time in looped mode. Do not run all tests in looped mode, as this could enable the DASD diagnostic tests.
2. If multiple error codes are displayed, diagnose the first error code displayed.
3. If the computer hangs with a POST error, go to “POST error codes” on page 93.
4. If the computer hangs and no error is displayed, go to “Undetermined problems” on page 102.
5. Power supply problems, see “Power supply LED errors” on page 92.
6. Safety information, see “Safety information” on page 109.
7. For intermittent problems, check the error log; see “Error logs” on page 12.

001 IS THE SYSTEM PART OF A CLUSTER?

YES. Schedule maintenance with the customer. Shut down all systems related to the cluster. Run storage test.

NO. Go to step **002** .

002 IF THE SYSTEM IS NOT PART OF A CLUSTER:

- Power-off the computer and all external devices.
- Check all cables and power cords.
- Set all display controls to the middle position.
- Power-on all external devices.
- Power-on the computer.
- Record any POST error messages displayed on the screen. If an error is displayed, look up the first error in the “POST error codes” on page 93.
- Check the information LED panel System Error LED; if on, see “Information panel system error LED” on page 85.
- Check the System Error Log. If an error was recorded by the system, see “Symptom-to-FRU index” on page 83.
- Start the Diagnostic Programs. See “Starting the diagnostic programs” on page 15.
- Check for the following responses:
 1. One beep.
 2. Readable instructions or the Main Menu.

003 DID YOU RECEIVE BOTH OF THE CORRECT RESPONSES?

NO. Find the failure symptom in “Symptom-to-FRU index” on page 83.

YES. Run the Diagnostic programs. If necessary, refer to “Starting the diagnostic programs” on page 15.

If you receive an error, go to “Symptom-to-FRU index” on page 83.

If the diagnostics completed successfully and you still suspect a problem, see “Undetermined problems” on page 102.

General information

The IBM eServer xSeries 342 server is a high-performance server that supports symmetric multiprocessing (SMP). It is ideally suited for networking environments that require superior microprocessor performance, efficient memory management, flexibility, and large amounts of reliable data storage.

Performance, ease of use, reliability, and expansion capabilities were key considerations during the design of this server. These design features make it possible for you to customize the system hardware to meet your needs today, while providing flexible expansion capabilities for the future.

If you have access to the World Wide Web, you can obtain up-to-date information about the server model and other IBM server products at the following World Wide Web address: <http://www.ibm.com/eserver/xseries>.

Features and specifications

The following table provides a summary of the features and specifications for the xSeries 342:

Microprocessor:

- Intel® Pentium® III
- 256 KB or 512 KB Level-2 cache
- Supports up to two microprocessors

Memory:

- Maximum: 4 GB
- Type: ECC, SDRAM, PC133, Registered DIMMs
- Slots: Four (two-way interleaved)

Drives standard:

- Diskette: 1.44 MB
- CD-ROM: 24X IDE

Expansion bays:

- Hot-swap: Three slim high
- Non-hot-swap: Two 5.25-inch, replaceable with a three slim-high hot-swap drive expansion option

PCI expansion slots:

- One 33 MHz/32-bit
- Two 33 MHz/64-bit
- Two 66 MHz/64-bit

Hot-swap power supplies:

- 270 Watt (115-230 V ac)
- Minimum: One
- Maximum: Two, second power supply provides redundant power

Redundant cooling:

- Three hot-swap fans

Video:

- S3 video controller
- Compatible with SVGA and VGA
- 8 MB video memory

Size (3U):

- Height: 128 mm (5 in.)
- Depth: 695 mm (27.3 in.)
- Width: 440 mm (17.3 in.)
- Weight: 21.3 to 29.5 (47 to 65 lbs.) depending upon configuration

Integrated functions:

- Dual channel Ultra 160 SCSI controller
- One 10BASE-T/100BASE-TX/100BASE-FX, Intel Ethernet controller with Alert on LAN™ and Wake on LAN® support
- Two serial ports
- Two Universal Serial Bus ports
- Keyboard port
- Mouse port
- Video port
- Integrated system management processor (ISMP) with two ISM (RS-485) RJ-45 connectors
- Two ISM (RJ-45) connectors
- One system management Serial C port

Acoustical noise emissions:

- Sound power, idling (open bay): 6.6 bel maximum
- Sound power, operating: 6.8 bel maximum
- Sound pressure, operating: 53 dBa maximum

Environment:

- Air temperature:
 - Server on: 10° to 35° C (50° to 95° F). Altitude: 0 to 914 m (2998 ft.)
 - Server on: 10° to 32° C (50° to 89.6° F). Altitude: 914 m (2998 ft.) to 2133 m (6998 ft.)
 - Server off: 10° to 43° C (50° to 109.4° F). Maximum altitude: 2133 m (6998 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 375 BTU (110 watts)
 - Maximum configuration 1300 BTU (380 watts)

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
- Input kilovolt-amperes (kVA) approximately:
 - Minimum: 0.08 kVA (0.076 kW)
 - Maximum: 0.38 kVA

* KB equals approximately 1000 bytes. MB equals approximately 1000000 bytes. GB equals approximately 1000000000 bytes.

Server features

The xSeries 342 is designed to be cost-effective, powerful, and flexible. The server offers:

- Impressive performance using an innovative approach to SMP
The server supports up to two Intel Pentium III microprocessors. The server comes with one microprocessor installed; you can install an additional microprocessor to enhance performance and provide SMP capability.
- Large data-storage and hot-swap capabilities
All models of the server support up to three hot-swap hard disk drives. This *hot-swap* feature enables you to remove and replace hard disk drives without turning off the server. The xSeries 3-Pack Ultra 160 Hot-Swap Expansion Kit option is available to add three additional drives.
- Optional PCI adapters
The server uses peripheral component interconnect (PCI) bus architecture to provide compatibility with a wide range of existing hardware devices and software applications. The server supports up to five PCI adapters in the expansion slots on the system board.
- Redundant cooling capability
The redundant cooling capability of the hot-swap fans in the server allow continued operation if one of the fans fails. You can also replace a failing hot-swap fan without turning off the server.
- Optional redundant power capability
You can install an additional 270-watt power supply in the server to provide redundant power for the server. The Power Non-Redundant (NON) light emitting diode (LED) in the group of diagnostic LEDs on the system board is lit when the power load is 270 watts or greater with two power supplies installed.
- Large system memory
The memory bus in the server supports up to 4 GB (GB equals approximately 1000000000 bytes) of system memory. The memory controller provides error correcting code (ECC) support for up to four industry standard PC133, 3.3 V, 168-pin, 8-byte, registered, synchronous-dynamic-random access memory (SDRAM) dual inline memory modules (DIMMs).
- IBM integrated system management processor (ISMP)
The integrated system management processor provides environmental monitoring for the server. When environmental conditions exceed thresholds or when system components fail, the ISMP lights the Light Path Diagnostics™ LEDs to indicate the location of the problem. Critical errors, as well as environmental and configuration information, are also included in the error log.
If an optional Remote Supervisor Adapter is installed on the Advanced System Management (ASM) interconnect network, you can view the system health; update the ISMP code; power on, power off, and restart the server; view the error log; view the vital product data; and send alerts over the ASM interconnect network.
- Integrated network environment support
The server comes with an Ethernet controller on the system board. This Ethernet controller has an interface for connecting to 10-Mbps or 100-Mbps networks. The server automatically selects between 10BASE-T and 100BASE-TX. The controller provides full-duplex (FDX) capability, which allows simultaneous transmission and reception of data on the Ethernet local area network (LAN).
- Redundant network-interface card

The addition of an optional, redundant network interface card (NIC) provides a failover capability to a redundant Ethernet connection. If a problem occurs with the primary Ethernet connection, all Ethernet traffic associated with this primary connection is automatically switched to the redundant NIC. This switching occurs without data loss and without user intervention.

- Optional digital linear tape drive

The addition of an optional digital linear tape drive (DLT) allows quick backup of large amounts of data.

- IBM ServerGuide™ CDs

The ServerGuide CDs included with the server provide programs to help you set up the server and install the network operating system (NOS). The ServerGuide program detects the hardware options installed, and provides the correct configuration programs and device drivers. In addition, the ServerGuide CDs include a variety of application programs for the server.

Reliability, availability, and serviceability features

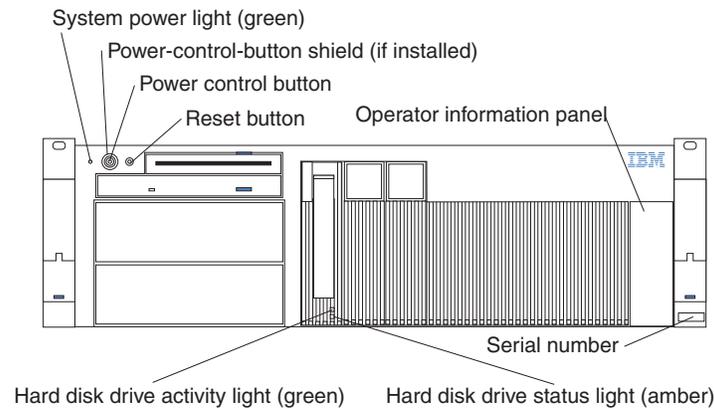
Three of the most important features in server design are reliability, availability, and serviceability (RAS). These factors help to ensure the integrity of the data stored on the server; that the server is available when you want to use it; and that should a failure occur, you can easily diagnose and repair the failure with minimal inconvenience.

The following is an abbreviated list of the RAS features that the server supports.

- Menu-driven setup, system configuration, RAID configuration, and diagnostic programs
- Power-on self-test (POST)
- ROM resident diagnostics
- Integrated System Management Processor
- Predictive failure alerts
- Microprocessor built-in self-test (BIST), internal error signal monitoring, configuration checking, CPU/VRM failure identification through Light Path Diagnostics technology
- Diagnostic support of ServeRAID™ adapters and Ethernet adapters
- Cable detection
- Hot-swap drive bays
- System error logging
- Upgradable BIOS, diagnostics, and system management code
- Automatic restart after a power failure
- Parity checking on the SCSI and PCI buses
- Error checking and correcting (ECC) memory
- Redundant hot-swap power supply option
- Redundant hot-swap cooling
- Redundant Ethernet capabilities (with optional adapter)
- Vital Product Data (VPD) on processor complex, system board, power backplane, SCSI backplane, and each power supply
- Operator information panel and group of diagnostic LEDs on the system board
- Remind button to temporarily turn off LEDs for nonvital alerts

Controls and indicators

The most commonly used controls and status indicators are on the front panel of the server.



System Power Light: When this green light is on, system power is present in the server. When this light flashes, the server is in standby mode (the system power supply is turned off and AC current is present). When this light is off, either a power supply, AC power, or a light has failed.

Attention: If this light is off, it does not mean there is no electrical current present in the server. The light might be burned out. To remove all electrical current from the server, you must unplug the server power cords from the electrical outlets or from the UPS.

Power-control button shield: You can install this circular disk over the power-control button to prevent accidental manual power-off. This disk is provided with the server.

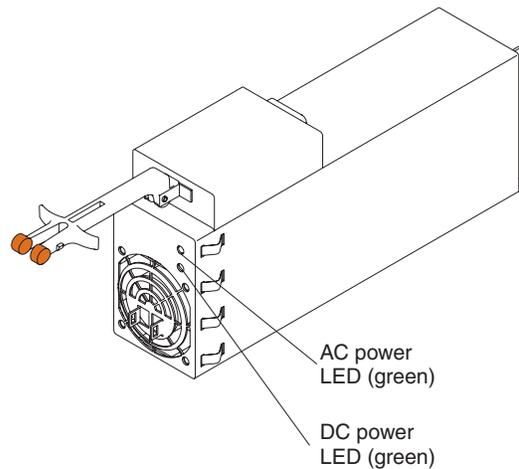
Power-control Button: Press this button to manually turn the server on or off.

Reset Button: Press this button to reset the server and run the power-on self-test (POST).

Operator Information Panel: The lights on this panel give status information for the server. See “Operator information panel” on page 8 for more information.

Hard Disk Drive Status Light: Each of the hot-swap drive bays has a Hard Disk Status light. When this amber light is on continuously, the drive has failed (only if RAID is installed). If a ServeRAID adapter is installed and this light flashes slowly (one flash per second), the drive is being rebuilt. When the light flashes rapidly (three flashes per second), the controller is identifying the drive.

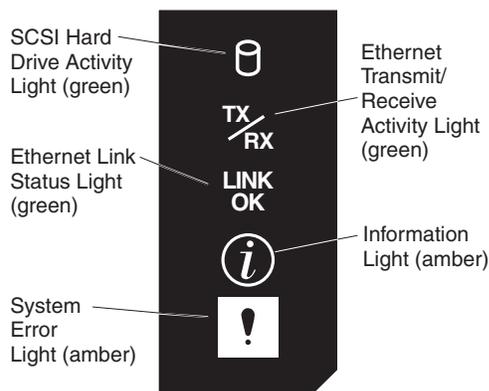
Hard Disk Drive Activity Light: Each of the hot-swap drive bays has a Hard Disk Activity light. When this green light is flashing, the controller is accessing the drive.



AC Power Light: This light provides status information about the power supply. During normal operation, both the AC and DC Power lights are on. For any other combination of lights, see “Power supply LED errors” on page 92.

DC Power Light: This light provides status information about the power supply. During normal operation, both the AC and DC Power lights are on. For any other combination of lights, see “Power supply LED errors” on page 92.

Operator information panel



SCSI Hard Disk Drive Activity Light: This green light is on when there is activity on a hard disk drive.

Ethernet Transmit/Receive Activity Light: When this green light is on, there is transmit or receive activity to or from the server. This light stays on even if the server power is turned off.

Ethernet Link Status Light: When this green light is on, there is an active connection on the Ethernet port. The light stays on even if the server power is turned off.

Information Light: This amber light is on when the system error log contains information about certain conditions in the server that might affect performance.

System Error Light: This amber light is lit when a system error occurs. An LED on the diagnostic LED panel may also be on to further isolate the error.

Powering on the server

You can start the server in several ways:

- You can turn on the server by pressing the power-control button on the front of the server.
- If the server is turned on, a power failure occurs, and unattended-start mode is enabled in the Configuration/Setup utility program, the server will start automatically when power is restored.
- If AC power is present, the server is off, and the wake-up feature is enabled in the Configuration/Setup utility program, the wake-up feature will turn on the server at the set time.
- The Integrated System Management Processor can also turn on the server.

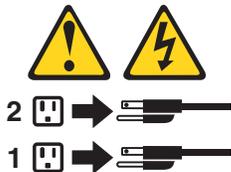
Powering off the server

Statement 5:



CAUTION:

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



The server can be turned off as follows:

- You can turn off the server by pressing the power-control button on the front of the server. Pressing the power-control button starts an orderly shutdown of the operating system, if this feature is supported by the operating system, and places the server in standby mode.

Note: After turning off the server, wait at least 5 seconds before pressing the power-control button to power the server on again.

- You can press and hold the power-control button for more than 4 seconds to cause an immediate shutdown of the server and place the server in standby mode. You can use this feature if the operating system hangs.
- You can disconnect the server power cords from the electrical outlets to shut off all power to the server.

Note: Wait about 15 seconds after disconnecting the power cords for the system to stop running. Watch for the System Power light on the operator information panel to stop blinking.

- If the system was turned on by the wake-up feature or Wake on LAN feature, you can turn it off by either a software routine or by the fail-safe, power-down counter.
- The Integrated System Management Processor can turn off the server.

Diagnosics

This section provides basic troubleshooting information to help you resolve some common problems that might occur with the server.

Diagnostic tools overview

The following tools are available to help you identify and resolve hardware-related problems:

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

The power-on self-test (POST) generates beep codes and messages to indicate successful test completion or the detection of a problem. See “POST” on page 12 for more information.

- **Diagnostic programs and error messages**

The server diagnostic programs are stored in upgradable read-only memory (ROM) on the system board. These programs are the primary method of testing the major components of the server. See “Diagnostic programs and error messages” on page 13 for more information.

- **Light path diagnostics**

The server has light-emitting diodes (LEDs) to help you identify problems with server components. These LEDs are part of the light-path diagnostics that are built into the server. By following the *path of lights*, you can quickly identify the type of system error that occurred. See “Light path diagnostics” for more information.

Identifying problems using LEDs

The server has LEDs to help you identify problems with some server components. These LEDs are part of the light path diagnostics built into the server. By following the *path of lights*, you can identify the type of system error that occurred. See the following sections for more information.

Power supply LEDs

The AC and DC Power LEDs on the power supply provide status information about the power supply. See “Power supply LED errors” on page 92.

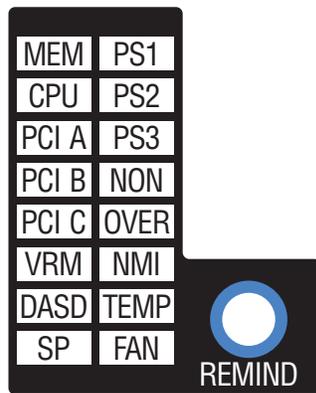
Light path diagnostics

You can use the light path diagnostics built into the server to quickly identify the type of system error that occurred. The diagnostics panel is under the air baffle. The server is designed so that any LEDs that are illuminated remain illuminated when the server shuts down as long as the AC power source is good and the power supplies can supply +5V DC current to the server. This feature helps you isolate the problem if an error causes the server to shut down. See “Light path diagnostics” on page 12.

Diagnosics panel

The following illustration shows the LEDs on the diagnostics panel on the system board. See “Light path diagnostics” on page 12 for information on identifying

problems using these LEDs.



Light path diagnostics

The System Error LED on the operator information panel is lit when certain system errors occur. If the System Error LED on the server is lit, see the table in “Information panel system error LED” on page 85 to determine the cause of the error and the action you should take.

POST

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

If POST finishes without detecting any problems, a single beep sounds and the first screen of the operating system or application program appears.

If POST detects a problem, more than one beep sounds and an error message appears on the screen. See “Beep symptoms” on page 83 and “POST error messages” for more information.

Notes:

1. If you have a power-on password or administrator password set (with Remote Supervisor Adapter installed), you must type the password and press Enter, when prompted, before POST will continue.
2. A single problem might cause several error messages. When this occurs, work to correct the cause of the first error message. After you correct the cause of the first error message, the other error messages usually will not occur the next time you run the test.

POST error messages

The table “POST error codes” on page 93 provides information about the POST error messages that can appear during startup.

Error logs

The POST error log contains the three most recent error codes and messages that the system generated during POST. The system error log contains all messages issued during POST and system status messages from the integrated system management processor.

Note: It is possible during power-on that some system error log entries may contain a date of 01/01/1990 with a time of 00:00:00. These entries occur prior to the ISMP clock being initialized and may be disregarded.

You can view the contents of the error logs from the Configuration/Setup Utility program or from the diagnostic programs.

Log viewing from Configuration/Setup

To view the contents of the error log from the Configuration/Setup Utility, start the Configuration/Setup Utility program; then, select **Error Logs** from the main menu. See “Starting the Configuration/Setup Utility program” on page 23 for more information.

Log viewing from diagnostic programs

To view the contents of the error log from the diagnostic programs, start the diagnostic programs; select **Hardware Info** from the top of the diagnostic programs screen; select **System Error Log** from the list that appears; then, follow the instructions on the screen. See “Starting the diagnostic programs” on page 15 for more information.

SCSI messages (some models)

If you receive a SCSI error message while using the SCSISelect Utility, use the following list to determine the possible cause of the error and what action to take.

Note: If the server does not have a hard disk drive, ignore any message that indicates that the drive is not installed.

One or more of the following might be causing the problem.

- A failing SCSI device (adapter or drive)
- An improper SCSI configuration
- Duplicate SCSI IDs in the same SCSI chain
- An improperly installed SCSI terminator
- A defective SCSI terminator
- An improperly installed cable
- A defective cable

Verify that:

- The external SCSI devices are turned on. External devices must be turned on before the server.
- The cables for all external SCSI devices are connected correctly.
- The last device in each SCSI chain is terminated properly.
- The SCSI devices are configured correctly.

You will get these messages only when running the SCSISelect Utility. See “SCSI error codes” on page 99.

Diagnostic programs and error messages

The server diagnostic programs are stored in upgradable read-only memory (ROM) on the system board. These programs are the primary method of testing the major components of the server.

Diagnostic error messages indicate that a problem exists; they are not intended to be used to identify a failing part. Troubleshooting and servicing of complex problems that are indicated by error messages should be performed by trained service personnel.

Sometimes the first error to occur causes additional errors. In this case, the server displays more than one error message. Always follow the suggested action instructions for the *first* error message that appears.

The following sections contain the error codes that might appear in the detailed test log and summary log when running the diagnostic programs.

The error code format is as follows:

fff-ttt-iii-date-cc-text message

where:

fff is the three-digit function code that indicates the function being tested when the error occurred. For example, function code 089 is for the microprocessor.

ttt is the three-digit failure code that indicates the exact test failure that was encountered.

iii is the three-digit device ID.

date is the date that the diagnostic test was run and the error recorded.

cc is the check digit that is used to verify the validity of the information.

text message
is the diagnostic message that indicates the reason for the problem.

Text messages

The diagnostic text message format is as follows:

Function Name: Result (test specific string)

where:

Function Name

is the name of the function being tested when the error occurred. This corresponds to the function code (fff) given in the previous list.

Result

can be one of the following:

Passed

This result occurs when the diagnostic test completes without any errors.

Failed This result occurs when the diagnostic test discovers an error.

User Aborted

This result occurs when you stop the diagnostic test before it is complete.

Not Applicable

This result occurs when you specify a diagnostic test for a device that is not present.

Aborted

This result occurs when the test could not proceed because of the system configuration.

Warning

This result occurs when a possible problem is reported during the diagnostic test, such as when a device that is to be tested is not installed.

Test Specific String

This is additional information that you can use to analyze the problem.

Starting the diagnostic programs

You can press F1 while running the diagnostic programs to obtain Help information. You also can press F1 from within a help screen to obtain online documentation from which you can select different categories. To exit Help and return to where you left off, press Esc.

To start the diagnostic programs:

1. Turn on the server and watch the screen.

Note: To run the diagnostic programs, you must start the server with the highest level password that is set. That is, if an administrator password is set, you must enter the administrator password, not the power-on password, to run the diagnostic programs.

2. When the message F2 for Diagnostics appears, press F2.
3. Type in the appropriate password; then, press Enter.
4. Select either **Extended** or **Basic** from the top of the screen.
5. When the Diagnostic Programs screen appears, select the test you want to run from the list that appears; then, follow the instructions on the screen.

Notes:

- a. If the server stops during testing and you cannot continue, restart the server and try running the diagnostic programs again.
- b. The keyboard and mouse (pointing device) tests assume that a keyboard and mouse are attached to the server.
- c. If you run the diagnostic programs with either no mouse or a USB mouse attached to the server, you will not be able to navigate between test categories using the **Next Cat** and **Prev Cat** buttons. All other functions provided by mouse-selectable buttons are also available using the function keys.
- d. You can test the USB keyboard by using the regular keyboard test. Also, you can run the USB Interface test only if there are no USB devices attached.
- e. You can view server configuration information (such as system configuration, memory contents, interrupt request (IRQ) use, direct memory access (DMA) use, device drivers, and so on) by selecting **Hardware Info** from the top of the screen.

When the tests have completed, you can view the Test Log by selecting **Utility** from the top of the screen.

If the hardware checks out OK but the problem persists during normal server operations, a software error might be the cause. If you suspect a software problem, refer to the information that comes with the software package.

Viewing the test log

The test log will not contain any information until after the diagnostic program has run.

Note: If you already are running the diagnostic programs, begin with step 3

To view the test log:

1. Turn on the server and watch the screen.
If the server is on, shut down the operating system and restart the server.
2. When the message F2 for Diagnostics appears, press F2.
If a power-on password or administrator password is set, the server prompts you for it. Type in the appropriate password; then, press Enter.
3. When the Diagnostic Programs screen appears, select **Utility** from the top of the screen.
4. Select **View Test Log** from the list that appears; then, follow the instructions on the screen.

The system maintains the test-log data while the server is powered on. When you turn off the power to the server, the test log is cleared.

Diagnostic error message tables

For descriptions of the error messages that might appear when you run the diagnostic programs, see “Diagnostic error codes” on page 87.

Attention: If diagnostic error messages appear that are not listed in the tables, make sure that the server has the latest levels of BIOS, Integrated System Management Processor, ServeRAID, and diagnostics microcode installed.

Recovering BIOS code

If the BIOS code has become damaged, such as from a power failure during a flash update, you can recover the BIOS using the recovery boot block and a BIOS flash diskette.

Note: You can obtain a BIOS flash diskette from one of the following sources:

- Use the ServerGuide program to make a BIOS flash diskette.
- Download a BIOS flash diskette from the World Wide Web. Go to <http://www.ibm.com/pc/support/> and make the appropriate selections.

The flash memory of the server contains a protected area that cannot be overwritten. The recovery boot block is a section of code in this protected area that enables the server to start up and to read a flash diskette. The flash utility recovers the system BIOS from the BIOS recovery files on the diskette.

To recover the BIOS:

1. Turn off the server and peripheral devices and disconnect all external cables and power cords; then, remove the cover.
2. Locate the boot-block jumper block (J16) on the system board.
3. Place a jumper on pins 2 and 3 to enable BIOS backup page.
4. Insert the BIOS flash diskette into the diskette drive.
5. Restart the server.

6. The system completes the power-on self-test (POST). Select 1 – Update POST/BIOS from the menu that contains various flash (update) options.
7. When you are asked if you would like to move the current POST/BIOS image to the backup ROM location, type **N**.
Attention: Typing **Y** will copy the corrupted BIOS into the secondary page.
8. When you are asked if you would like to save the current code to a diskette, select **N**.
9. You will be asked to choose which language you wish to use. Select your language (0-7) and press **Enter** to accept your choice. You will be prompted to remove the diskette and press **Enter** to restart the system. Remove the flash diskette from the diskette drive.
10. Turn off the server.
11. Remove the jumper on the boot-block jumper block or move it to pins 1 and 2 to return to normal startup mode.
12. Restart the server. The system should start up normally.

Troubleshooting the Ethernet controller

This section provides troubleshooting information for problems that might occur with the 10/100 Mbps Ethernet controller.

Network connection problems

If the Ethernet controller cannot connect to the network, check the following:

- Make sure that the cable is installed correctly.

The network cable must be securely attached at all connections. If the cable is attached but the problem persists, try a different cable.

If you set the Ethernet controller to operate at 100 Mbps, you must use Category 5 cabling.

If you directly connect two workstations (without a hub), or if you are not using a hub with X ports, use a crossover cable.

Note: To determine whether a hub has an X port, check the port label. If the label contains an X, the hub has an X port.

- Determine if the hub supports auto-negotiation. If not, try configuring the integrated Ethernet controller manually to match the speed and duplex mode of the hub.
- Check the Ethernet controller lights on the operator information panel.
These lights indicate whether a problem exists with the connector, cable, or hub.
 - The Ethernet Link Status light illuminates when the Ethernet controller receives a LINK pulse from the hub. If the light is off, there might be a bad connector or cable, or a problem with the hub.
 - The Ethernet Transmit/Receive Activity light illuminates when the Ethernet controller sends or receives data over the Ethernet Network. If the Ethernet Transmit/Receive Activity light is off, make sure that the hub and network are operating and that the correct device drivers are loaded.
 - The Ethernet Speed 100 Mbps light illuminates when the Ethernet controller LAN speed is 100 Mbps.
- Make sure that you are using the correct device drivers, supplied with the server.
- Check for operating system-specific causes for the problem.
- Make sure that the device drivers on the client and server are using the same protocol.
- Test the Ethernet controller.

The way you test the Ethernet controller depends on which operating system you are using (see the Ethernet controller device driver README file).

The Ethernet wrap test can be used to determine if a hardware problem is causing the Ethernet connection to fail. To perform the Ethernet wrap test, use the wrap plug (FRU # 60G3981) in conjunction with the diagnostic tests.

If the testing methods above indicate that the hardware is functioning normally but the problem still exists, inform the network administrator.

Ethernet controller troubleshooting chart

You can use the following troubleshooting chart to find solutions to 10/100 Mbps Ethernet controller problems that have definite symptoms.

Table 1. Ethernet troubleshooting chart

Ethernet controller problem	Suggested Action
The server stops running when loading device drivers.	<p>The PCI BIOS interrupt settings are incorrect.</p> <p>Check the following:</p> <ul style="list-style-type: none"> Determine if the interrupt (IRQ) setting assigned to the Ethernet controller is also assigned to another device in the Configuration/Setup Utility program. <p>Although interrupt sharing is allowed for PCI devices, some devices do not function well when they share an interrupt with a dissimilar PCI device. Try changing the IRQ assigned to the Ethernet controller or the other device. For example, for NetWare Versions 3 and 4 it is recommended that disk controllers not share interrupts with LAN controllers.</p> <ul style="list-style-type: none"> Make sure that you are using the most recent device driver available from the World Wide Web. Run the network diagnostic program. <p>If the problem remains, go to “Starting the diagnostic programs” on page 15 to run the diagnostic programs.</p>
Ethernet Link Status light does not light.	<p>Check the following:</p> <ul style="list-style-type: none"> Make sure that the hub is turned on. Check all connections at the Ethernet controller and the hub. Check the cable. A crossover cable is required unless the hub has an X designation. Use another port on the hub. If the hub does not support auto-negotiation, manually configure the Ethernet controller to match the hub. If you manually configured the duplex mode, make sure that you also manually configure the speed. Run diagnostics on the LEDs. <p>If the problem remains, go to “Starting the diagnostic programs” on page 15 to run the diagnostic programs.</p>
The Ethernet Transmit/Receive Activity light does not light.	<p>Check the following:</p> <p>Note: The Ethernet Transmit/Receive Activity LED illuminates only when data is sent to or by this Ethernet controller.</p> <ul style="list-style-type: none"> Make sure that you have loaded the network device drivers. The network might be idle. Try sending data from this workstation. Run diagnostics on the LEDs. The function of this LED can be changed by device driver load parameters. If necessary, remove any LED parameter settings when you load the device drivers.
Data is incorrect or sporadic.	<p>Check the following:</p> <ul style="list-style-type: none"> Make sure that you are using Category 5 cabling when operating the server at 100 Mbps. Make sure that the cables do not run close to noise-inducing sources like fluorescent lights.

Table 1. Ethernet troubleshooting chart (continued)

Ethernet controller problem	Suggested Action
The Ethernet controller stopped working when another adapter was added to the server.	<p>Check the following:</p> <ul style="list-style-type: none"> • Make sure that the cable is connected to the Ethernet controller. • Make sure that the PCI system BIOS is current. • Reseat the adapter. • Determine if the interrupt (IRQ) setting assigned to the Ethernet adapter is also assigned to another device in the Configuration/Setup Utility program. <p>Although interrupt sharing is allowed for PCI devices, some devices do not function well when they share an interrupt with a dissimilar PCI device. Try changing the IRQ assigned to the Ethernet adapter or the other device.</p> <p>If the problem remains, go to “Starting the diagnostic programs” on page 15 to run the diagnostic programs.</p>
The Ethernet controller stopped working without apparent cause.	<p>Check the following:</p> <ul style="list-style-type: none"> • Run diagnostics for the Ethernet controller. • Try a different connector on the hub. • Reinstall the device drivers. Refer to the operating-system documentation and to the ServerGuide information. <p>If the problem remains, go to “Starting the diagnostic programs” on page 15 to run the diagnostic programs.</p>

Power checkout

Power problems can be difficult to troubleshoot. For instance, a short circuit can exist anywhere on any of the power distribution busses. Usually a short circuit will cause the power subsystem to shut down because of an overcurrent condition.

A general procedure for troubleshooting power problems is as follows:

1. Power off the system and disconnect the AC cord(s).
2. Check for loose cables in the power subsystem. Also check for short circuits, for instance if there is a loose screw causing a short circuit on a circuit board.
3. Remove adapters and disconnect the cables and power connectors to all internal and external devices until system is at minimum configuration required for power on (see “Minimum operating requirements” on page 103).
4. Reconnect the AC cord and power on the system. If the system powers up successfully, replace adapters and devices one at a time until the problem is isolated. If system does not power up from minimal configuration, replace FRUs of minimal configuration one at a time until the problem is isolated.

To use this method it is important to know the minimum configuration required for a system to power up (see page 103). For specific problems, see “Power error messages” on page 100.

Replacing the battery

When replacing the battery, you must replace it with a lithium battery of the same type from the same manufacturer. To avoid possible danger, read and follow the safety statement below.

To order replacement batteries, call 1-800-772-2227 within the United States, and 1-800-465-7999 or 1-800-465-6666 within Canada. Outside the U.S. and Canada, call your IBM reseller or IBM marketing representative.

Note: After you replace the battery, you must reconfigure the system and reset the system date and time.

- **Statement 2**

CAUTION:



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

Do not:

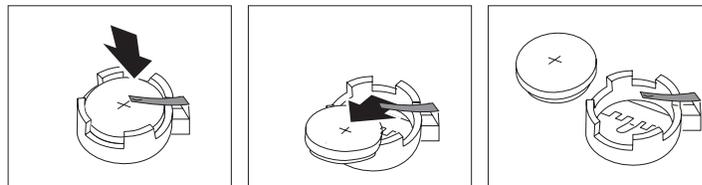
- **Throw or immerse into water.**
- **Heat to more than 100°C (212°F)**
- **Repair or disassemble**

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

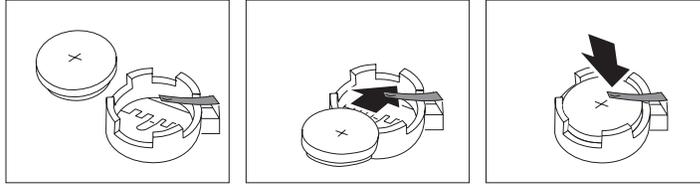
Note: Before you begin be sure to read “Before you begin” on page 40. Follow any special handling and installation instructions supplied with the replacement battery.

To replace the battery:

1. Review the information in “Before you begin” on page 40 and any special handling and installation instructions supplied with the replacement battery.
2. Turn off the server and peripheral devices and disconnect all external cables and power cords; then, remove the server cover.
3. Remove the battery:
 - a. Use one finger to lift the battery clip over the battery.
 - b. Use one finger to slightly slide the battery from its socket. The spring mechanism behind the battery will push the battery out toward you as you slide it from the socket.
 - c. Use your thumb and index finger to pull the battery from under the battery clip.
 - d. Ensure that the battery clip is touching the base of the battery socket by pressing gently on the clip.



4. Insert the new battery:
 - a. Tilt the battery so that you can insert it into the socket, under the battery clip.
 - b. As you slide it under the battery clip, press the battery down into the socket.



5. Reinstall the server cover and connect the cables.
6. Turn the server on.
7. Start the Configuration/Setup Utility program and set configuration parameters.
 - Set the system date and time.
 - Set the power-on password.
 - Reconfigure the server.

Configuration

The following configuration programs are provided with the server:

- **Configuration/Setup Utility**

This program is part of the *basic input/output system (BIOS)* that comes with the server. You can use this program to configure serial port assignments, change interrupt request (IRQ) settings, change the drive startup sequence, set the date and time, and set passwords. See “Using the Configuration/Setup Utility program” for more information.

- **SCSISelect Utility**

With the built-in SCSISelect Utility program, you can configure the devices attached to the integrated SCSI controller. See “Using the SCSISelect utility program” on page 28 for more information.

- **PXE Boot Agent Utility**

The Preboot eXecution Environment (PXE) Boot Agent Utility program is part of the BIOS code that comes with the server. You can use this program to change network startup (boot) protocols and startup (boot) order, to select operating system wake up support, and to set menu wait times. See “Using the PXE boot agent utility program” on page 29 for more information.

- **ServerGuide CDs**

The ServerGuide CDs include software setup and installation tools specifically designed for IBM xSeries servers. You can use these CDs during the initial installation of the server to configure the server hardware and simplify the network operating system installation. The ServerGuide CDs also contain a collection of application programs, which you can install after the server is up and running.

- **ServeRAID programs**

The ServeRAID programs come with the optional ServeRAID adapters and with server models that have a ServeRAID adapter preinstalled. If the server has a ServeRAID adapter installed, you must use the ServeRAID configuration program to define and configure the disk-array subsystem *before* you install the operating system. Refer to the ServeRAID documentation provided on the *xSeries Documentation* CD for more information.

Using the Configuration/Setup Utility program

This section provides the instructions needed to start the Configuration/Setup Utility program and descriptions of the menu choices available.

Starting the Configuration/Setup Utility program

To start the Configuration/Setup Utility program:

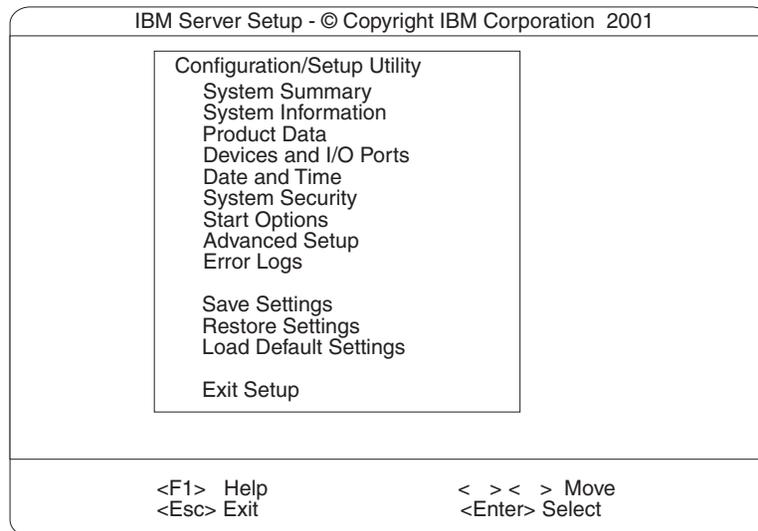
1. Turn on the server and watch the monitor screen.
2. When the message Press F1 for Configuration/Setup appears, press F1.

Note: If you have set both levels of passwords (user and administrator), you must type the administrator password to access the full Configuration/Setup menu.

3. Follow the instructions that appear on the screen.

Main menu of the Configuration/Setup Utility

From the Configuration/Setup Utility main menu, you can select settings that you want to change. The Configuration/Setup Utility main menu is similar to the following:



Notes:

1. You can press F1 to display Help information for a selected menu item.
2. The choices on some menus might differ slightly, depending on the BIOS version in the server.

Descriptions of the choices available from the main menu are as follows:

- **System Summary**

Select this choice to display configuration information. This includes the type and speed of the microprocessors and the amount of memory installed.

Changes that you make to configuration settings appear on this summary screen. You cannot edit the fields.

- **Product Data**

Select this choice to view system information, such as the machine type and model, the server serial number, the system Universally Unique Identifier (UUID) number, the integrated system management processor revision level, and the revision level or issue date of the BIOS code stored in the flash electrically erasable programmable ROM (EEPROM).

Note: The server serial number is used as the name of the system on the ASM interconnect network for any remote alerts. For more information, refer to the system management adapter option documentation.

- **Devices and I/O Ports**

Select this choice to view or change the assignments for devices and input/output ports. This choice appears only on the full Configuration/Setup Utility main menu.

- **Date and Time**

Select this choice to set the system date and time.

The system time is in a 24-hour format (hour:minute:second).

- **System Security**

Select this choice to set or change a power-on password.

If you have an optional Remote Supervisor Adapter installed, you can also set the administrator password and the remote-control password.

After you set a power-on password, you can enable the unattended-start mode. This locks the keyboard and mouse but allows the system to start the operating system. The keyboard and mouse remain locked until you type the correct password. See “Using passwords” on page 27 for more information.

- **Start Options**

Select this choice to view or change the start options. This choice appears only on the full Configuration/Setup Utility main menu. Start options take effect when you start the server.

You can select keyboard operating characteristics, such as whether the keyboard number lock starts on or off. You also can enable the server to run without a diskette drive, monitor, or keyboard.

You can enable a virus-detection test that checks for changes in the master boot record at startup. You also can choose to run POST in the **Enhanced** mode or the **Quick** mode.

- **Startup Sequence Options**

The server uses a startup sequence to determine the device from which the operating system loads. For example, you can define a startup sequence that checks for a startable diskette in the diskette drive; then, it checks the hard disk drive in bay 1, and checks a network adapter.

- **Alert on LAN BIOS**

You can enable Alert on LAN support with this option. The default setting for this menu item is **Disabled**.

- **Advanced Setup**

Select this choice to change values for advanced hardware features, such as cache control and PCI configuration. This choice appears only on the full Configuration/Setup Utility main menu.

A warning message appears above the choices on this menu to alert you that the system might malfunction if these options are configured incorrectly. Follow the instructions on the screen carefully.

- **Core Chipset Control**

Select this choice to modify settings that control features of the core chipset on the system board.

Attention: Do not make changes here unless directed to do so by an IBM authorized service representative.

- **System Partition Visibility**

Select this choice to choose whether the System Partition is visible or hidden.

- **Memory Settings**

Select this choice to manually disable or enable a bank of memory.

If a memory error is detected during POST or memory configuration, the server can automatically disable the failing memory bank and continue operating with reduced memory capacity. If this occurs, you must manually enable the memory bank after the problem is corrected. Select **Memory Settings** from the **Advanced Setup** menu and use the arrow keys to highlight the bank that you want to enable; then, use the arrow keys to select **Enabled**.

- **CPU Options**

Select this choice to set the system cache type for all microprocessors.

- **PCI BUS Control**

Select this choice to view and identify system resources used by PCI devices. PCI devices automatically communicate with the server configuration information. This usually results in automatic configuration of a PCI device.

After making changes, select:

- **PCI MLT** to save the changes and return to the **Advanced Setup** menu.
- **PCI Interrupt Routing** to ignore the changes, restore the previous settings, and return to the **Advanced Setup** menu.
- **Integrated System Management Processor Settings**
Select this choice to set the server to automatically restart after a nonmaskable interrupt (NMI) occurs. The default setting for this menu item is **Enabled**.

- **Error Logs**

Select this choice to view the three most recent error codes and messages that the system generated during POST. You can also select **Clear error logs** to clear the contents of this log.

Note: System status messages available in the **System Error Log** in the Configuration/Setup Utility program are provided only for trained IBM service personnel.

- **Save Settings**

Select this choice to save your customized settings.

- **Restore Settings**

Select this choice to delete your changes and restore the previous settings.

- **Load Default Settings**

Select this choice to cancel your changes and restore the factory settings.

- **Exit Setup**

If you have made any changes, the program will prompt you to save the changes or exit without saving the changes.

Additional Configuration/Setup Utility menu choices

When you install an IBM Remote Supervisor Adapter in the server, you can view additional menu choices in the Configuration/Setup Utility program, such as:

- **System Information**

Select this choice to display information about the server.

- **PCI Slot Information**

Select this choice to view the properties of adapters installed in PCI slots.

- **Administrator Password**

Select this choice to set or change the administrator password.

- **Remote Control Security Settings**

Select this choice to set a remote-control password. When you set a remote-control password, you can also set the number of failed attempts to enter the correct remote-control password, and the duration before another attempt is allowed.

For a list of supported options for the server, refer to <http://www.ibm.com/pc/us/compat/> on the World Wide Web. To order an optional Remote Supervisor Adapter, contact your IBM Reseller or an IBM marketing representative.

Using passwords

The **System Security** choice appears only on the full Configuration/Setup Utility menu. After you select this choice, you can implement the protection level for the power-on password. If you have an optional Remote Supervisor Adapter installed, you can also implement the Administrator password and the Remote Control password. For complete details about the optional Remote Supervisor Adapter, refer to the documentation that comes with the adapter.

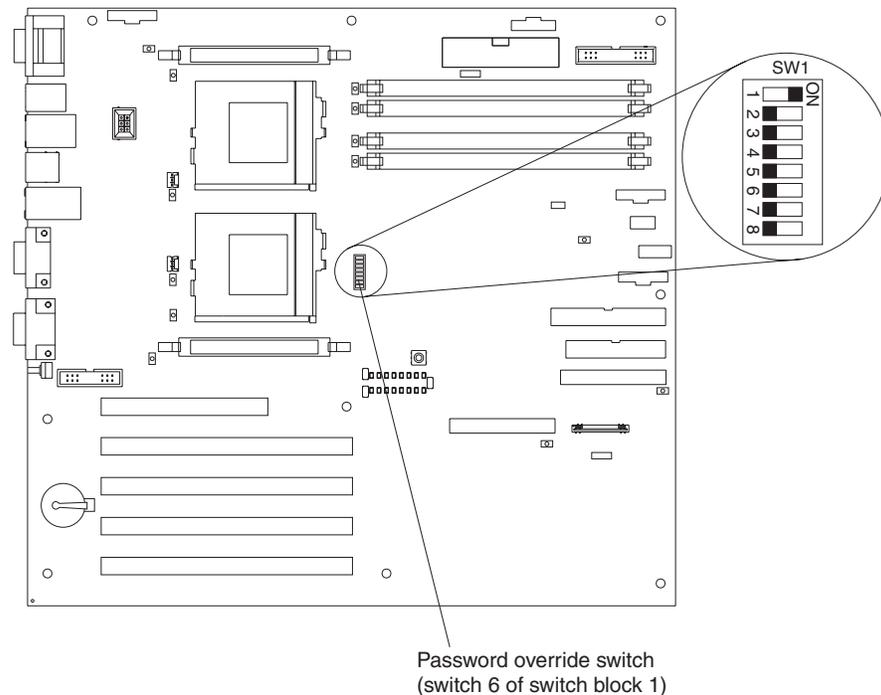
You can use any combination of up to seven characters (A–Z, a–z, and 0–9) for your power-on password. Keep a record of your password in a secure place. If you forget the power-on password, you can regain access to the server through one of the following methods:

- Change the position of the password override switch as described in “Setting the password override switch”.
- Remove the battery and then install the battery.

Setting the password override switch

The following illustration shows the location of the password override switch, switch 6 of switch block 1, on the system board.

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



To set the password override switch:

1. Review the information in “Before you begin” on page 40 and “Safety information” on page 109.
2. Turn off the server and peripheral devices and disconnect all external cables and power cords; then, remove the cover. See “Removing the cover and bezel” on page 42.
3. Change the setting of the password override switch (switch 6 on switch block 1 on the system board) to the opposite side of the switch.
4. Install the server cover and connect all external cables and power cords (see “Installing the server cover and bezel” on page 64).

5. Turn on the server.

Note: You can now start the Configuration/Setup Utility program and set a power-on password. Restart the server; then, press the F1 key to enter the Setup utility. Select **System Security** and change or delete the power-on password. If the power-on password is not changed or deleted, the old password will be reinstated the next time you start the server.

Using the SCSISelect utility program

SCSISelect is a built-in, menu-driven configuration utility program that you can use to:

- View the default SCSI IDs
- Locate and correct configuration conflicts
- Perform a low-level format on a SCSI hard disk

The following sections provide the instructions needed to start the SCSISelect Utility and descriptions of the menu choices available.

Note: If the server has a RAID adapter installed, use the configuration method supplied with the RAID adapter to view or change SCSI settings for devices attached to the adapter.

Starting the SCSISelect utility program

To start the SCSISelect utility program:

1. Turn on the server.
2. When the <<< Press <CTRL><A> for SCSISelect™ Utility! >>> prompt appears, press Ctrl+A.
3. When prompted, select either channel A or channel B.
4. Use the arrow keys to select a choice from the menu.
 - Press Esc to return to the previous menu.
 - Press the F5 key to switch between color and monochrome modes (if the monitor permits).
5. Follow the instructions on the screen to change the settings of the selected items; then, press Enter.

Choices available from the SCSISelect menu

The following choices appear on the SCSISelect Utility menu:

- **Configure/View Host Adapter Settings**

Select this choice to view or change the SCSI controller settings. To reset the SCSI controller to its default values, press F6; then, follow the instructions that appear on the screen.

You can view or change the following controller settings:

- **Host Adapter SCSI ID**

Select this choice to view the SCSI controller ID, normally 7.

- **SCSI Parity Checking**

Select this choice to view the assigned value of *Enabled*.

- **Host Adapter SCSI Termination**

Select this choice to view the assigned value of *Enabled*.

- **Boot Device Options**

Select this choice to configure startable device parameters. Before you can make updates, you must know the ID of the device whose parameters you want to configure.

– **SCSI Device Configuration**

Select this choice to configure SCSI device parameters. Before you can make updates, you must know the ID of the device whose parameters you want to configure.

Note: The Maximum Sync Transfer Rate represents the transfer rate for Ultra SCSI devices.

- The transfer rate for Ultra 160 SCSI LVD devices is 160.0 Mbps.
- The transfer rate for Ultra2 SCSI LVD devices is 80.0 Mbps.
- The transfer rate for Fast SCSI devices is 20.0 Mbps.

– **Advanced Configuration Options**

Select this choice to view or change the settings for advanced configuration options.

• **SCSI Disk Utilities**

Select this choice to view the SCSI IDs that are assigned to each device or to format a SCSI device.

To use the utility program, select a drive from the list. Read the screens carefully before making a selection.

Note: If you press Ctrl+A before the selected drives are ready, an Unexpected SCSI Command Failure screen might appear. Restart the server and watch the SCSISelect messages as each drive spins up. After the drive that you want to view or format spins up, press Ctrl+A.

Using the PXE boot agent utility program

The PXE boot agent is a built-in, menu-driven configuration utility program that you can use to:

- Change network startup (boot) protocols
- Change network startup (boot) order
- Set menu wait times
- Select OS wake up support

Note: Changing the network startup protocols and startup order, as well as selecting the operating-system wake support, are not supported on this product.

The following sections provide instructions for starting the PXE Boot Agent Utility program and descriptions of the menu choices that are available.

Starting the PXE boot agent utility program

The following sections provide the instructions needed to start the PXE Boot Agent Utility and descriptions of the available menu choices.

To start the PXE Boot Agent Utility program, do the following:

1. Turn on the server.
2. When the <Initializing Intel (R) Boot Agent version X.X.XX PXE 2.0 Build XXX (WfM 2.0) prompt appears, press Ctrl+S.

Note: By default, you will have two seconds after the prompt appears on the screen to press Ctrl+S.

3. Use the arrow keys or press Enter to select a choice from the menu:
 - Press Esc to return to the previous menu.
 - Press the F4 key to exit.
4. Follow the instructions on the screen to change the settings of the selected items; then, press Enter.

Choices available from the PXE boot agent menu

The following choices appear on the PXE Boot Agent Utility menu:

- **Network Boot Protocol**

PXE is the default value for this menu item.

Note: Do not change this value. There are no other network boot protocols supported.

- **Boot Order**

Select this choice to change the order in which boot devices are queried.

- Try local drives first, then network (Default)
- Try network only
- Try local drives only
- Try network first, then local drives

Note: This option is not supported on this product. To change the boot order use the Configuration/Setup utility. See “Using the Configuration/Setup Utility program” on page 23 for more information.

- **Show setup prompt**

Select this choice to either display the PXE setup prompt or disable it. Disable is the default setting.

When this choice is enabled, **Press Ctrl+S to enter the setup menu** will appear on the screen under the initializing prompt.

- **Setup time wait menu**

Select this choice to set the amount of time (in seconds) that the system will pause during initialization for a Ctrl+S input.

- 2 seconds (Default)
- 3 seconds
- 5 seconds
- 8 seconds

- **Legacy OS wake up support**

Select this choice to enable or disable the operating system wake up support.

- Disabled (Default)
- Enabled

Note:

1. Use the default setting for the Advanced Configuration and Power Interface (ACPI) aware operating systems, such as Windows 2000 or Windows NT.
2. If the server is running a non-ACPI operating system, you must set the selection to Enable to use the Wake on LAN support.

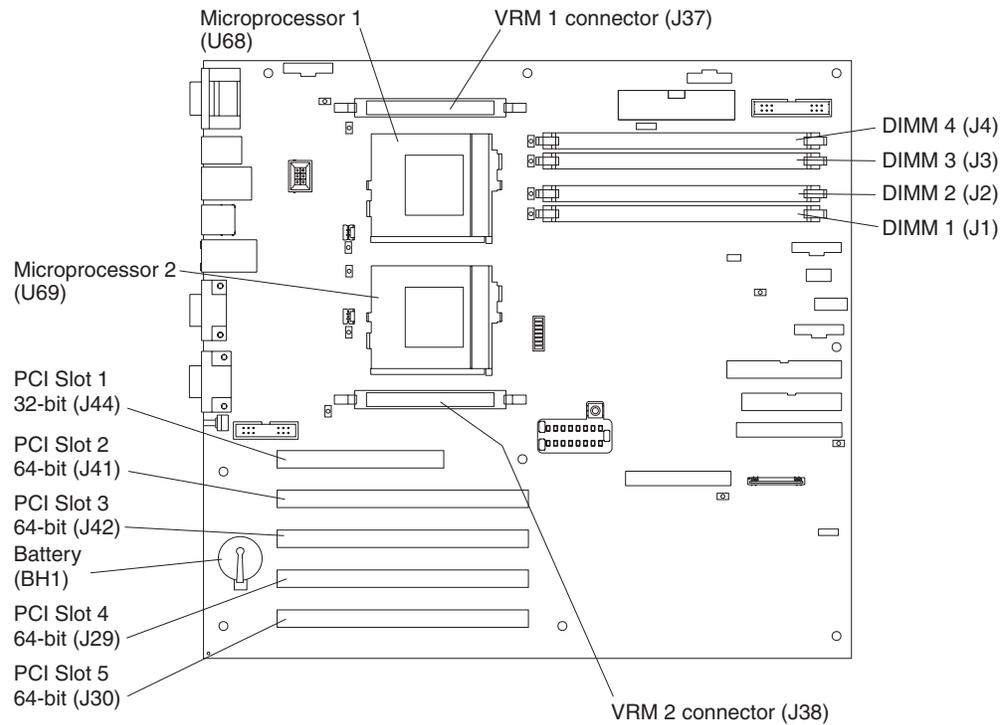
3. When using a non-ACPI operating system, do not send a wake up packet to the server while it is turned on. If a wake up packet has been sent while the server is on, you must turn off the server.

System board layout

The illustrations in the following sections show the components on the system board.

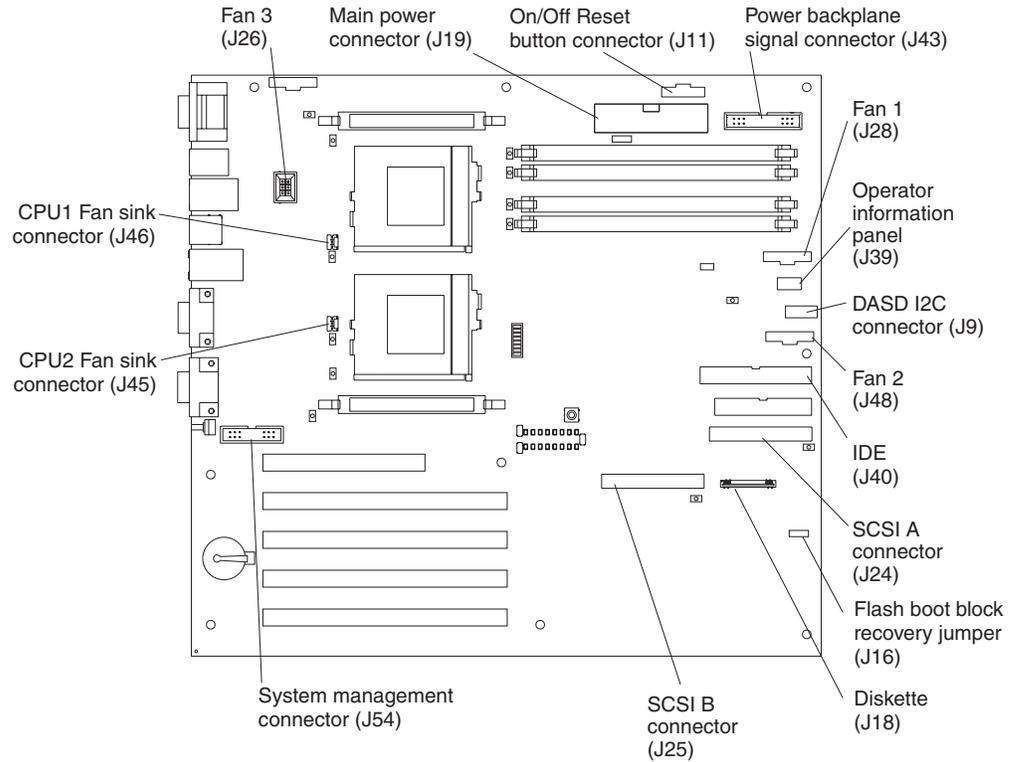
System board options connectors

The following illustration shows a layout of the system board and identifies system-board connectors for user-installable options.



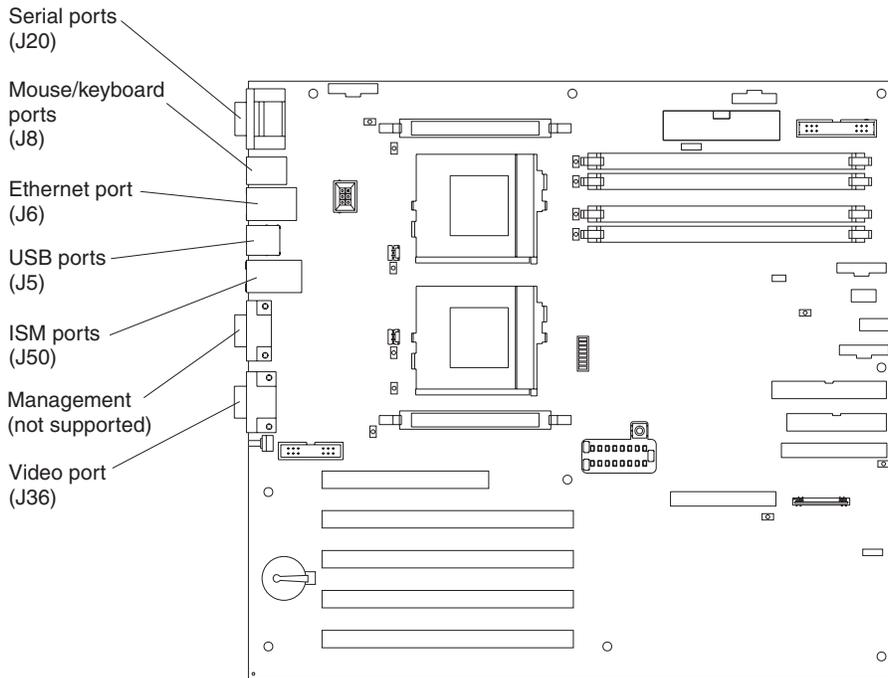
System board internal cable connectors

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



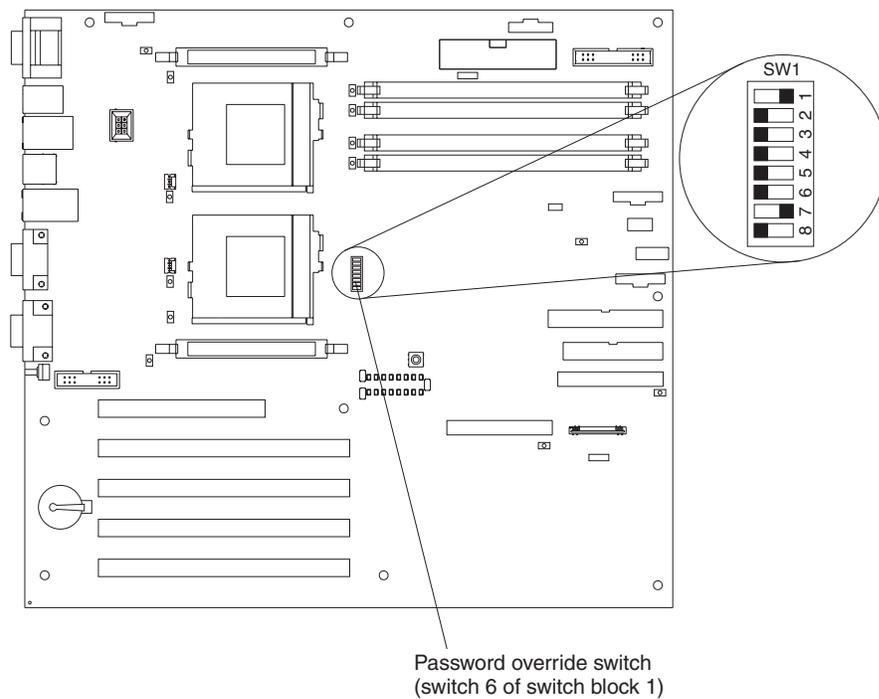
System board external port connectors

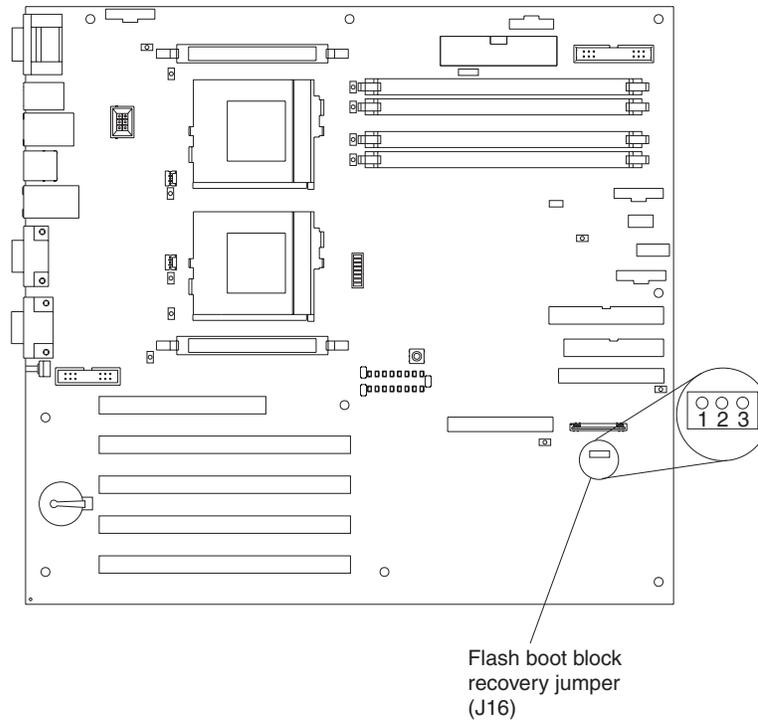
The following illustration shows the external port connectors in the system board.



System board switches and jumpers

The following illustrations identify the switches and jumpers on the system board.





System board jumper blocks

Any jumper blocks on the system board that are not shown in the illustration are reserved. For normal operation of the system, no jumpers should be installed on any of the jumper blocks.

Boot block jumper

If the BIOS has become damaged, such as from a power failure during a flash update, you can recover the BIOS using the boot block jumper and a BIOS flash diskette. See “Recovering BIOS code” on page 16 for information about the boot block jumper.

System board switch block

The switch block contains microswitches 1-8. As shown in this illustration, switch 8 is at the top of the switch block and switch 1 is at the bottom.

The following table describes each switch.

Table 2. Switches 1-8

Switch number	Description
1- 4	Reserved
5	Clock frequency selection. When On, the host bus speed is 100 Mhz. When Off, the host bus speed is 133 Mhz. The default setting is off. Set this to Off to optimize the system performance.
6	Password override. (Toggling this switch allows one opportunity to enter the Setup Utility to change or delete the power-on password.) See “Setting the password override switch” on page 27 for more information.

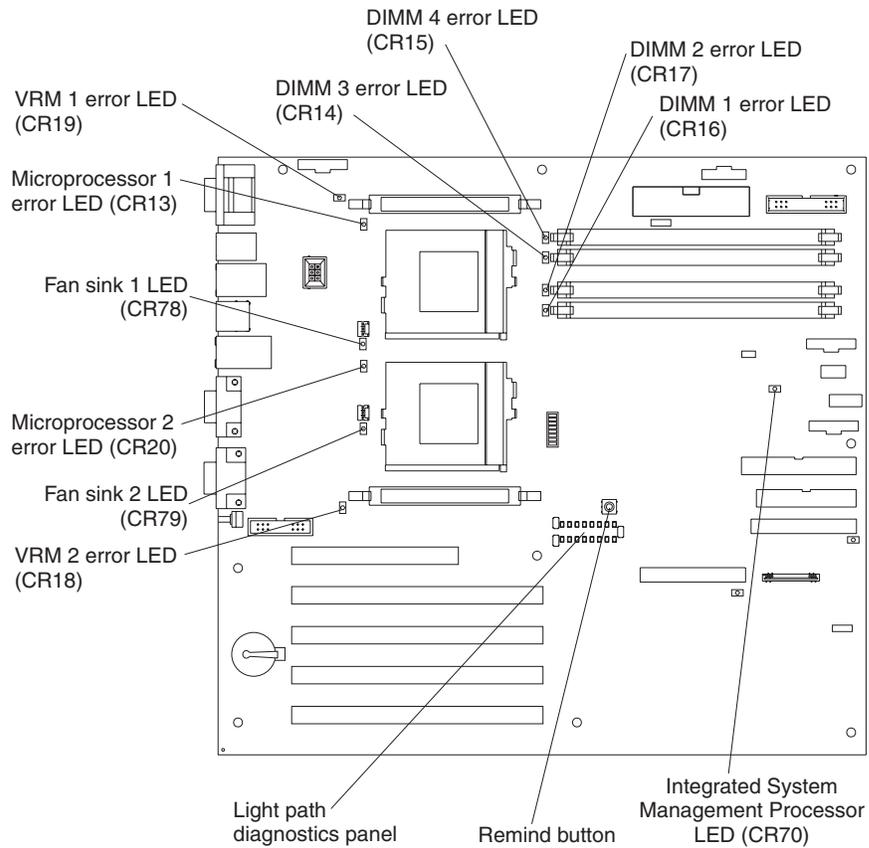
Table 2. Switches 1-8 (continued)

Switch number	Description
7	Reserved. The default setting is Off.
8	Power-on override. When On, overrides the power-on switch and forces power-on mode. The system will always start without the use of the power-on switch. the default setting is Off (disabled).

Note: In most cases the speed settings are locked and there is no need to change them.

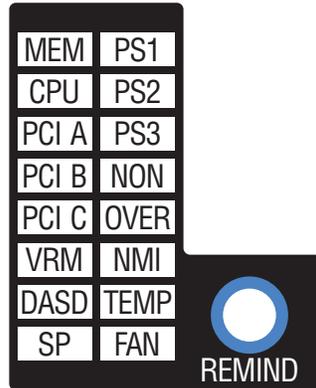
System board LED locations

The following illustration identifies LEDs on the system board. You might need to refer to this figure when solving problems with the server.



Light Path Diagnostics panel

The Light Path Diagnostics LEDs are described in the following table.



LED	Description
MEM	A memory failure occurred. This LED is turned on when any of the Light Path LEDs located near the memory (DIMM) are turned on by the integrated system management processor.
CPU	A CPU failure occurred. This LED is turned on when either of the two Light Path LEDs located near the appropriate CPU socket is turned on by the integrated system management processor.
PCI A	Error occurred on an adapter in PCI slot 1 or on one of the PCI devices integrated on the system board.
PCI B	Error occurred on an adapter in PCI slot 2 or 3 or on one of the PCI devices integrated on the system board.
PCI C	Error occurred on an adapter in PCI slot 4 or 5 or on one of the PCI devices integrated on the system board.
VRM	A VRM failure occurred. This LED is turned on by the hardware when either of the two Light Path LEDs located near the appropriate VRM is turned on by the integrated system management processor.
DASD	System board or SCSI hot-swap hard disk drive failure, hard disk drive removed from either standard or optional expansion hot-swap bay DASD backplane, or hard disk drive temperature has exceeded maximum limit (in this case, the TEMP and System error LEDs will be lit).
SP	An error has been detected in the integrated system management processor.
PS1	Power supply 1 failure or removed.
PS2	Power supply 2 failure or removed (only active when 2nd power supply is installed).
PS3	Not used.
NON-RED	Server power supplies are no longer redundant with two power supplies installed.
OVERSPEC	The system has approached 95% of the power capabilities of the installed power-supply units.
NMI	Nonmaskable interrupt occurred.
TEMP	System temperature exceeded maximum limit. Other LEDs will be on to identify the area of over temperature (such as CPUx, CPU, DASD LEDs).
FAN	Fan failure, or fan is operating slowly or has been removed. This LED is turned on when any of the Light Path LEDs mounted directly on the fan assemblies or near the CPU sockets are turned on by the integrated system management processor.

Remind Button

You can use the Remind button to place the front panel system-error light into a Remind mode. By pressing the button, you acknowledge the failure but indicate that you will not take immediate action. If a new failure occurs, the LED will turn on again.

In the Remind mode, the system-error light flashes every 2 seconds. The system-error light remains in Remind mode until one of the following situations occur:

- All known problems are resolved
- The system is restarted
- A new problem occurs

You can use the Remind button to delay server maintenance until a later time. Also, resetting the system-error light enables the LED to react to another error. If the LED is still solid from the first error, it will mask additional errors.

Integrated System Management Processor LED

The xSeries 342 server has an Integrated System Management Processor feature on the system board. The green Integrated System Management Processor LED flashes, indicating that the system temperature, fan speeds, voltage ranges, power supplies, power backplane, and DASD backplane are being monitored. If an error occurs in any of these areas, the Integrated System Management Processor turns on the respective error LED on the Light Path Diagnostics panel. If the Integrated System Management Processor LED remains on or off, or if it blinks significantly faster than approximately once per second, then an error has occurred. See "SP LED" at "Information panel system error LED" on page 85.

Before you begin

Before you begin to install options in the server, read the following information:

- Become familiar with the safety and handling guidelines specified under "Working inside a server with power on" on page 41, "Handling static-sensitive devices" on page 41, and "Safety information" on page 109. These guidelines will help you work safely while working with the server or options.
- You do not need to turn off the server to install or replace hot-swap power supplies, hot-swap drives, hot-swap fans, or hot-plug PCI adapters.
- The orange color on components and labels in the server identifies hot-swap or hot-plug components. This means that you can install or remove the component while the system is running, provided that your system is configured to support this function. For complete details about installing or removing a hot-swap or hot-plug component, see the information provided in this chapter.
- The blue color on components and labels identifies touch points where a component can be gripped, a latch moved, and so on.
- Make sure that you have an adequate number of properly grounded electrical outlets for the server, monitor, and any other options that you intend to install.
- Back up all important data before you make changes to disk drives.
- Have a small, flat-blade screwdriver available.
- For a list of supported options for the server, refer to <http://www.ibm.com/pc/us/compat> on the World Wide Web.

System reliability considerations

To help ensure proper cooling and system reliability, make sure:

- Each of the drive bays has either a drive or a filler panel installed.
- Each of the power supply bays has either a power supply or a filler panel installed.
- The cover is in place during normal operation.
- There is at least 50 mm (2 inches) of ventilated space at the sides of the server and 100 mm (4 inches) at the rear of the server.
- The cover is removed for no longer than 30 minutes while the server is operating.
- The processor housing cover (if available on the server) that protects the processor and memory area is removed for no longer than ten minutes while the server is operating.
- A removed hot-swap drive is replaced within two minutes of removal.
- Cables for optional adapters are routed according to the instructions provided with the adapters (ensure that cables are not restricting air flow).
- The fans are operating correctly and the air flow is good.
- A failed fan is replaced within 48 hours.

In addition, ensure that the environmental specifications for the system are met. See “Features and specifications” on page 3.

For information on temperature error messages, see “Temperature error messages” on page 99.

Working inside a server with power on

The server supports hot-plug, hot-add, and hot-swap devices and it is designed to operate safely while turned on with the cover removed. Follow these guidelines when you work inside a server that is turned on:

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

Handling static-sensitive devices

Static electricity, though harmless to you, can seriously damage server components or options.

Note: When you are adding an internal option, do not open the static-protective package containing the option until you are instructed to do so.

When you handle options and other server components, take these precautions to avoid damage from static electricity:

- Limit your movement. Movement can cause static electricity to build up around you.

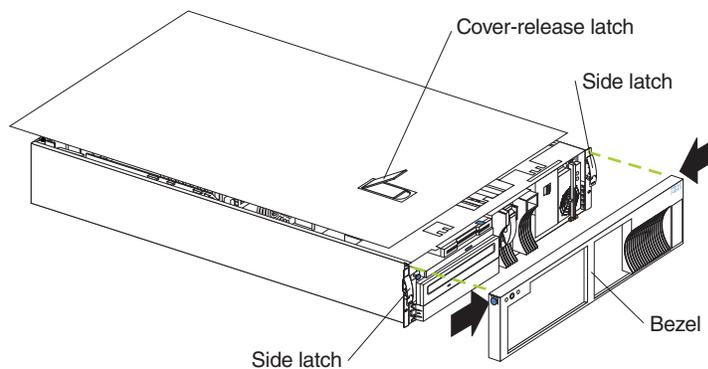
- Always handle components carefully. Handle adapters, the memory board, and memory modules (DIMMs) by the edges. Never touch any exposed circuitry.
- Prevent others from touching components.
- When you are installing a new option, touch the static-protective package containing the option to a metal expansion-slot screw or other unpainted metal surface on the server for at least two seconds. (This reduces static electricity from the package and from your body.)
- When possible, remove the option and install it directly into the server without setting the option down. When this is not possible, place the static-protective package that the option comes in on a smooth, level surface and place the option on it.
- Do not place the option on the server's covers or any metal surface.

Locations

The following sections describe how to remove and/or install certain components inside the server.

Removing the cover and bezel

The following section describes how to remove the cover and bezel.



To remove the server top cover:

1. Review the information in “Before you begin” on page 40.
2. If you are planning to install or remove any part other than a hot-swap hard disk drive, hot-swap power supply, or hot-swap fan, turn off the server and all attached devices and disconnect all external cables and power cords.

Statement 1:



DANGER

Electrical current from power, telephone, and communication cables is hazardous. To avoid a shock hazard:

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

To connect:

- a. Turn everything OFF.
- b. First, attach all cables to devices.
- c. Attach signal cables to connectors.
- d. Attach power cords to outlet.
- e. Turn device ON.

To disconnect:

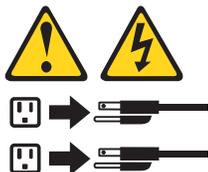
- a. Turn everything OFF.
- b. First, remove power cords from outlet.
- c. Remove signal cables from connectors.
- d. Remove all cables from devices.

Statement 5:



CAUTION:

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



3. Release the left and right side latches and pull the server out of the rack enclosure until both slide rails lock.

Note: When the server is in the locked position, you can reach the cables on the back of the server.

4. Lift the cover-release latch. Lift the cover off the server and set the cover aside.

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

To remove the bezel:

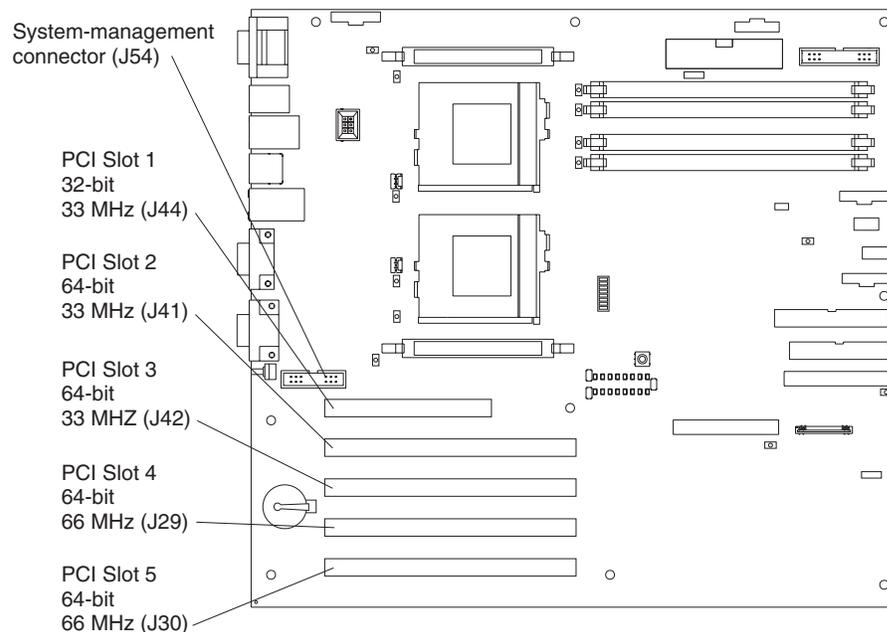
1. Press in on the top sides of the bezel and pull the bezel away from the server front.
2. Store the bezel in a safe place.

Adapters

You can install up to five peripheral component interconnect (PCI) adapters in the expansion connectors on the system board.

The server comes with a video controller. This video controller is an integrated component on the system board. It is not removable. If you want to disable this controller and use a video adapter instead, you can install a video adapter in an expansion slot. When you install a video adapter, the server BIOS automatically disables the integrated video controller.

The following illustration shows the location of the PCI expansion slots on the system board.



Adapter considerations

Before you continue with the adapter-installation procedure:

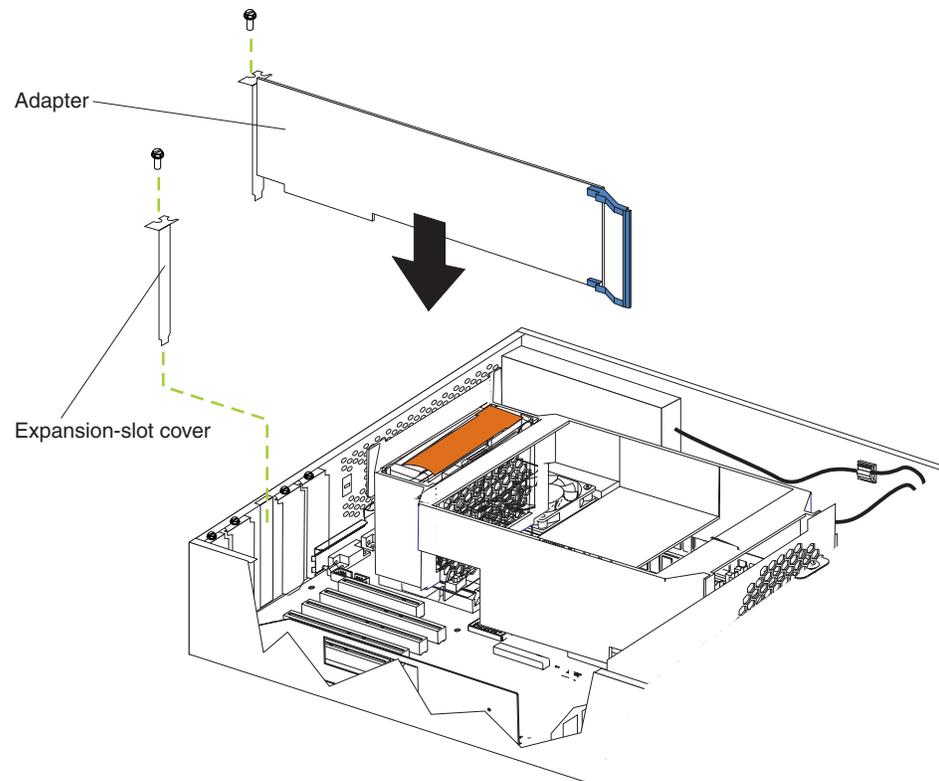
- Review the documentation that comes with the adapter and follow those instructions in addition to the instructions given in this section. If you need to change the switch or jumper settings on your adapter, follow the instructions that come with the adapter.
- You can install full-length adapters in all expansion slots.
- You can install a 32-bit adapter in any of the PCI slots.
- The server supports 5.0 V signalling and universal PCI adapters in slots 1, 2, and 3; it supports 3.3 V signalling or PCI adapters in slots 4 and 5.

- The server uses a rotational interrupt technique to configure PCI adapters. Because of this technique, you can install a variety of PCI adapters that currently do not support sharing of PCI interrupts.
- PCI slot 1 is on PCI bus A, PCI slots 2 and 3 are on PCI bus B, and PCI slots 4 and 5 are on PCI bus C. The system scans PCI slot 1, the system board Ethernet, PCI slots 2-5, the system board SCSI, channel A, and the system board SCSI channel B, if you have not changed the boot precedence from the default.

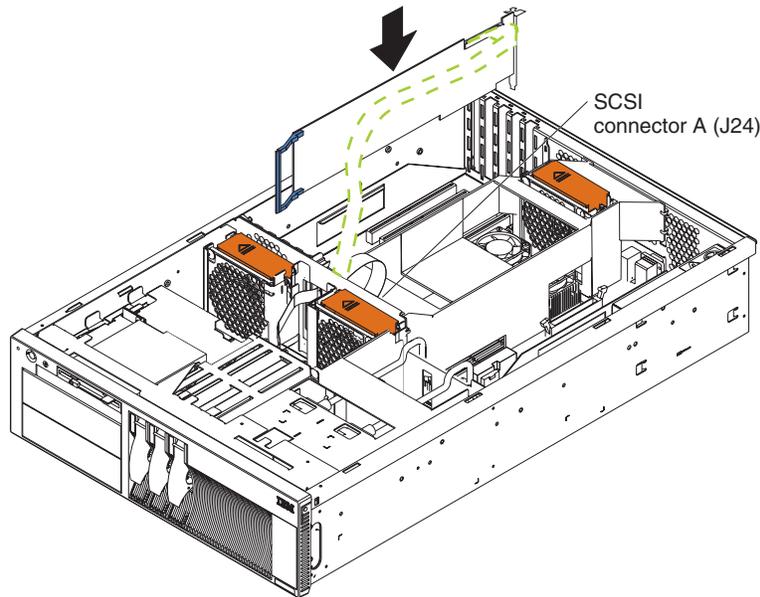
You can use the Configuration/Setup Utility program to change the boot precedence for the server. Select **Start Options** from the Configuration/Setup Utility program.

Note: The Remote Supervisor Adapter must be installed in PCI slot 1.

Adapter installation



The following illustration shows the rerouting of the SCSI cable if you install a ServerRAID adapter.



To install an adapter:

1. Review the information in “Before you begin” on page 40.
2. Turn off the server and peripheral devices and disconnect all external cables and power cords; then, remove the cover (see “Removing the cover and bezel” on page 42).
3. Determine which expansion slot you will use for the adapter.

Attention: Check the instructions that come with the adapter for any requirements or restrictions.

4. Remove the expansion-slot cover:
 - a. Loosen and remove the screw on the top of the expansion-slot cover.
 - b. Slide the expansion-slot cover out of the server. Store it in a safe place for future use.

Attention: Expansion-slot covers must be installed on the openings for all vacant slots. This maintains the electromagnetic emissions characteristics of the system and ensures proper cooling of system components.

5. Refer to the documentation that comes with your adapter for any cabling instructions. It might be easier for you to route any cables before you install the adapter.
6. Remove the adapter from the static-protective package.

Attention: Avoid touching the components and gold-edge connectors on the adapter.

7. Place the adapter, component-side up, on a flat, static-protective surface.
8. Set any jumpers or switches as described by the adapter manufacturer.
9. Install the adapter:
 - a. Carefully grasp the adapter by its top edge or upper corners, and align it with the expansion slot on the system board.
 - b. Press the adapter *firmly* into the expansion slot.

Attention: When you install an adapter in the server, be sure that it is completely and correctly seated in the system-board connector before you apply power. Incomplete insertion might cause damage to the system board or the adapter.

- c. Insert and tighten the expansion-slot screw on the top of the adapter bracket.
10. Connect any needed cables to the adapter.
 - If you are installing a ServeRAID adapter, disconnect the cable from SCSI connector A (J24) on the system board and plug it into the connector on the top of the ServeRAID adapter.
 - If you are installing an adapter that is not a ServeRAID adapter, refer to the documentation that came with your adapter for cabling instructions.

Attention: Route cables so that the flow of air from the fans is not blocked.

11. If you have other options to install or remove, do so now; otherwise, go to “Installing the server cover and bezel” on page 64.

Internal drives

If you add different types of drives, your system can read multiple types of media and store more data. Several types of drives are available, such as:

- Diskette
- Hard disk
- CD-ROM
- Tape

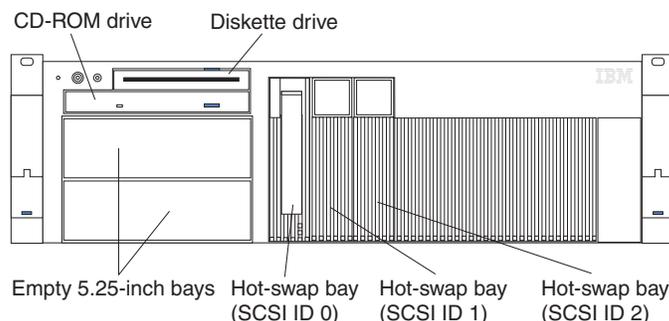
The server contains hardware that lets you replace a failed hard disk drive without turning off the server. Therefore, you have the advantage of continuing to operate your system while a hard disk drive is removed or installed. These drives are known as *hot-swappable* or *hot-swap* drives.

Each hot-swap drive bay has two indicator lights (see “Controls and indicators” on page 7). If the amber hard-disk status light is lit continuously, that individual drive is faulty and needs to be replaced. When the hard-disk status light indicates a drive fault, you can replace that hot-swap drive without turning off the server.

Each hot-swap drive that you plan to install must have a hot-swap-drive tray attached. The drive must have a single connector attachment (SCA) connector. Hot-swap-drive trays come with the hot-swap drives.

Internal drive bays

Internal drives are installed in *bays*. The server comes with a preinstalled diskette drive and a preinstalled CD-ROM drive.



- The server comes with one 3.5-inch, 1.44 MB diskette drive and one 48x IDE CD-ROM drive.
- The empty bays below the diskette drive come without a device installed. You can use these bays for 5.25-inch, half-high, removable-media drives, such as tape backup drives. You also can combine these bays into a single, full-high bay and install a digital linear tape (DLT) drive; or, you can install an xSeries Media Bay Ultra 160 Hot Swap Conversion Kit option, which converts these bays to three hot-swap drive bays.
- The xSeries 342 server supports only one diskette drive.
- If you are installing a device with a 50-pin connector in either of the 5.25-inch bays, you need a 68-pin to 50-pin converter (option number 32G3925).
- The server supports three slim-high (1-inch) hot-swap hard disk drives in the hot-swap bays. If the server has the xSeries Media Bay Ultra 160 Hot Swap Conversion Kit option installed, it supports three additional hot-swap hard disk drives.
- The hot-swap bays connect to a SCSI *backplane*. This backplane is a printed circuit board behind the bay.

Note: The server EMI integrity and cooling are both protected by having the 5.25-inch bays covered or occupied. When you install a drive, save the filler panel from the bay, in case you later remove the drive and do not replace it with another.

SCSI drives

Some drives have a special design called *small computer system interface*, or SCSI. This design allows you to attach multiple drives to a single SCSI channel.

Notes:

1. Any information about SCSI drives also applies to other SCSI devices, such as tape drives.
2. If you plan to install both internal and external SCSI devices, you must follow the instructions in “Connecting external options” on page 65, in addition to the instructions in this section.

A 16-bit (wide) SCSI cable connects the SCSI hard-disk drive backplane to an integrated SCSI controller on the system board. An additional 16-bit 1-drop SCSI cable is shipped inside the server. It is folded and restrained with a cable clamp on the bottom of the server chassis near the empty bays. You can use this cable to connect an optional SCSI device installed in one of the empty 5.25-inch bays to the SCSI channel A connector on the system board.

SCSI IDs

Each SCSI device that is connected to an individual channel of a SCSI controller needs a unique identification (ID) so that the controller can identify the devices and ensure that different devices do not attempt to transfer data at the same time. If you need to set IDs for SCSI devices, refer to the instructions that come with those devices.

The server automatically sets SCSI IDs for hot-swap hard disk drives.

The SCSI ID assigned to each hot-swap bay is shown on the server beside the bay. The server uses the hard disk drive SCSI IDs to send status information to the indicator lights above each hot-swap bay.

The processing sequence for SCSI devices is set through the SCSISelect Utility program. The default sequence proceeds from the lowest SCSI ID to the highest (0 to 15). The SCSI controller uses ID 7.

Ensure that the device you are installing is not terminated. It is not necessary to set termination jumpers on internal SCSI devices. The server hardware provides termination for all internal SCSI devices.

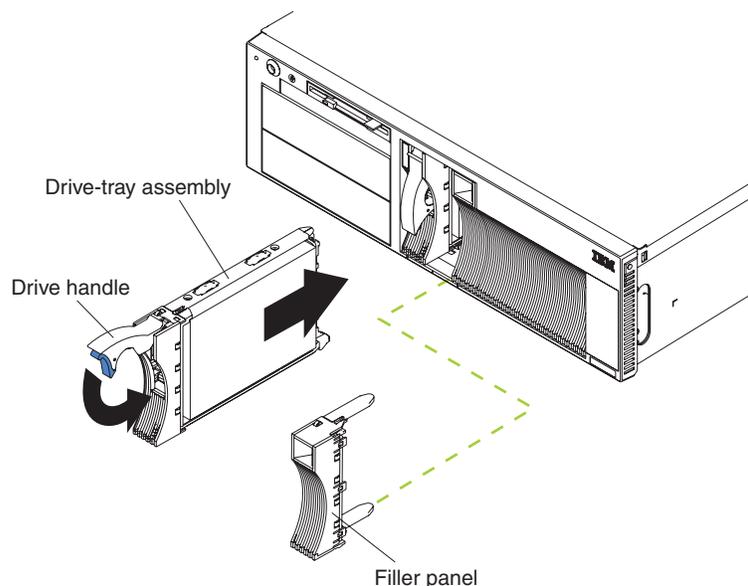
Hot-swap drive installation

The hot-swap drive bays support hot-swap drives only.

This section gives the procedure for installing a hot-swap hard disk drive. If you want to remove a drive, reverse the following steps.

Notes:

1. To minimize the possibility of damage to the hard disk drives, install the server in the rack before installing the hard disk drives.
2. You do not have to turn off the server to install hot-swap drives. However, you must turn off the server when performing any steps that involve installing or removing cables.



To install a drive in a hot-swap drive bay:

1. Review the information in “Before you begin” on page 40.

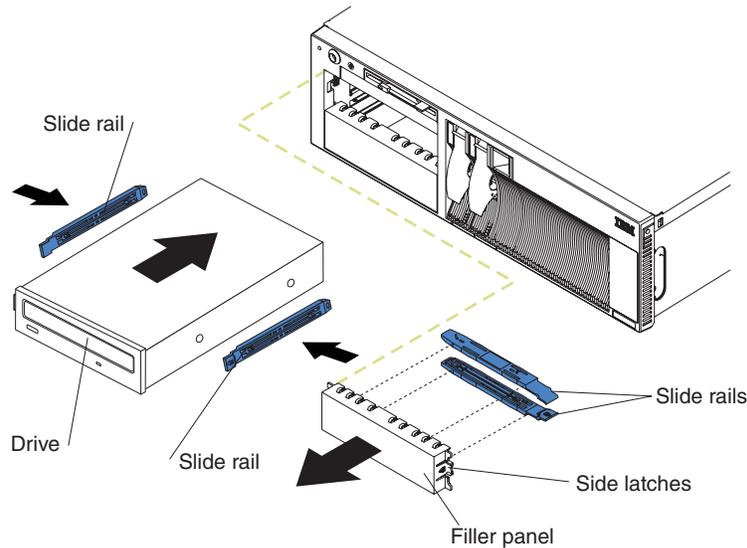
Attention: To maintain proper system cooling, do not operate the server for more than two minutes without either a drive or a filler panel installed for each bay.

2. Remove the filler panel from one of the empty hot-swap bays by inserting your finger into the depression on the filler panel and pulling it away from the server.
3. Install the hard disk drive in the hot-swap bay:
 - a. Ensure the tray handle is open (that is, perpendicular to the drive).
 - b. Align the drive/tray assembly with the guide rails in the bay.
 - c. Gently push the drive/tray assembly into the bay until the drive connects to the backplane.
 - d. Push the tray handle down until it locks.

4. Check the hard disk drive status indicators to verify that the hard disk drive is operating properly.

Non-hot-swap drive installation

Before you install drives in the server, verify that you have all the cables and any other equipment specified in the documentation that comes with the internal drive. You might also need to perform certain preinstallation activities. Some of the steps are required only during the initial installation of an option.



To install a non-hot-swap drive:

1. Review the information in “Before you begin” on page 40.
2. Turn off the server and peripheral devices and then remove the cover and bezel. (See “Removing the cover and bezel” on page 42.)
3. Remove the filler panel from the bay opening by pushing in the side latches and pulling the filler panel away from the server. You do not need the filler panel when you have a drive installed in the bay.

Note: The electromagnetic interference (EMI) integrity and cooling are protected by having the non-hot-swap bays covered or occupied. When you install a drive, save the filler panel from the bay, in case you later remove the drive and do not replace it with another.

4. Touch the static-protective bag containing the drive to any unpainted metal surface on the server; then, remove the drive from the bag and place it on a static-protective surface.
5. Set any jumpers or switches on the drive according to the documentation that comes with the drive.
6. Install rails on the drive.
 - If you are installing a standard-size drive:
 - a. Pull the blue slide rails off the back of the filler panel.
 - b. Clip the rails onto the sides of the drive.
 - If you are installing a digital linear tape (DLT) backup drive, use the metal slide rails and screws that are shipped in the box that contains the server documentation.
7. Place the drive so that the slide rails engage in the bay guide rails. Push the drive into the bay until it clicks into place.

8. If you are installing a SCSI device, continue with the next step. If you are installing an IDE device, go to step 11.
9. To install a SCSI device:
 - a. Attach the connector on the 1-drop SCSI cable for the non-hot-swap drive bays to the back of the drive. The cable is shipped restrained in a cable clamp on the bottom of the server chassis near the bays. Connect the other end of the cable to SCSI channel A on the system board, if it is not already attached. See "System board internal cable connectors" on page 35 for the location of the SCSI channel A connector.

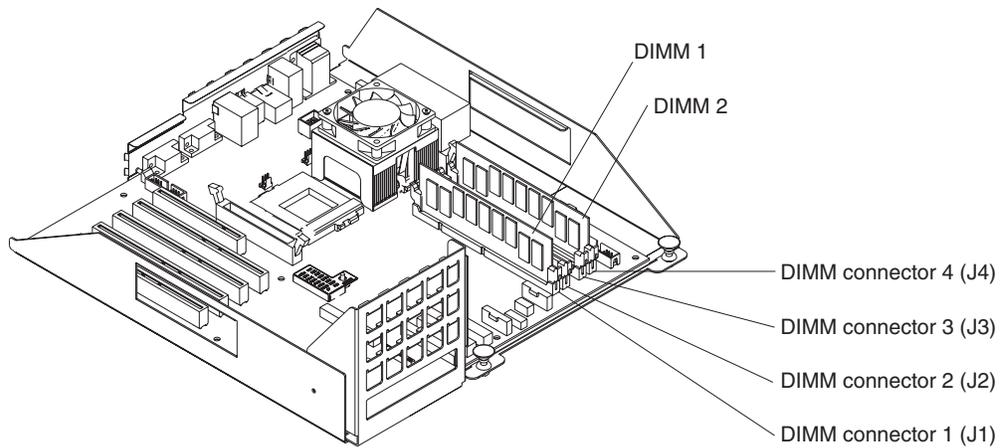
Note: If you want to install more than one optional SCSI 5.25-inch device, install an optional SCSI adapter to control the device.
 - b. Connect a power cable to the back of the drive. Power cables for non-hot-swap drives come installed in the server. The connectors are keyed and can be inserted only one way.
 - c. Continue with step 11
10. To install an IDE device, such as a CD-ROM drive or a DVD-ROM drive, use the two-drop IDE cable that comes with the option:
 - a. Remove the cable connecting the CD-ROM drive to the IDE connector on the system board.
 - b. Using the two-drop cable that came with your IDE option, connect the CD-ROM drive and the IDE device to the IDE connector on the system board.
 - c. Set the jumper on the back of the new IDE device to slave.
11. If you have other options to install or remove, do so now; otherwise, go to "Installing the server cover and bezel" on page 64.

Memory modules

Adding memory to the server is an easy way to make programs run faster. You can increase the amount of memory in the server by installing options called *memory-module kits*. Each kit contains one industry-standard, dual inline memory module (DIMM). The server uses a two-way interleaved memory configuration. You must install matched pairs of memory kits, but the set in slots 1 and 4 do not need to be the same size as the set in slots 2 and 3.

Notes:

1. The server comes with two dual inline memory modules (DIMMs) installed in DIMM slots 1 and 4. Install additional DIMMs as a matched pair in DIMM connectors 2 and 3 and as instructed in the documentation that comes with your option.
2. Your xSeries 342 server supports 128 MB, 256 MB, 512 MB, and 1 GB DIMMs. You must install the DIMMs in pairs of the same size. Place pair 1 in slots 1 and 4 and pair 2 in slots 2 and 3. Refer to the ServerProven™ list on the World Wide Web at <http://www.ibm.com/pc/compat> for information about memory modules for use with the server.
3. Installing or removing DIMMs changes the configuration information in the server. Therefore, after installing or removing a DIMM, you must save the new configuration information in the Configuration/Setup Utility program. When you restart the server, the system displays a message indicating that the memory configuration has changed. Start the Configuration/Setup Utility program and select **Save Settings**.



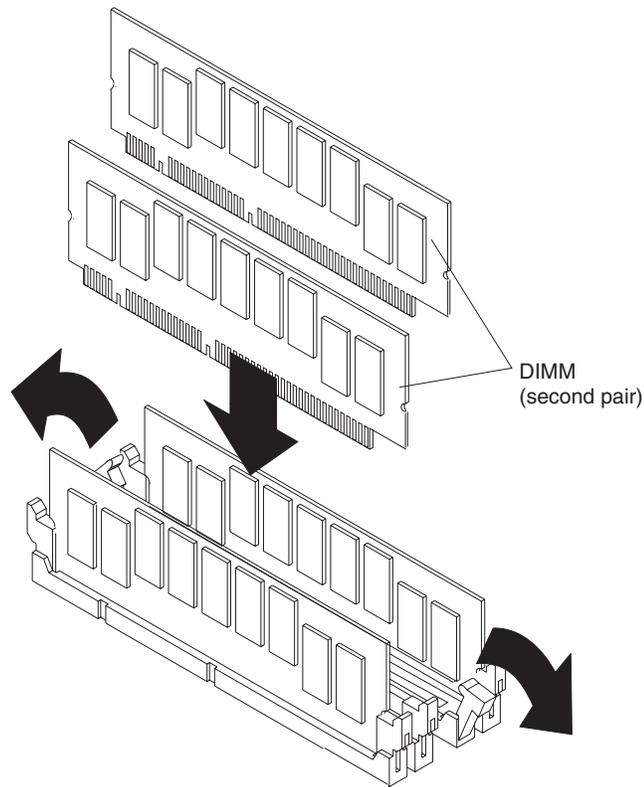
To install a DIMM:

1. Review the information in “Before you begin” on page 40, “Safety information” on page 109, and “Handling static-sensitive devices” on page 41. Also review the documentation that comes with your option.
2. Turn off the server and peripheral devices and disconnect all external cables and power cords.
3. Remove the cover. (See “Removing the cover and bezel” on page 42.)
4. Touch the static-protective package containing the DIMM to any unpainted metal surface on the server. Then, remove the DIMM from the package. You must install memory in matched pairs: the first pair must be in slots 1 and 4 and the second pair must be in slots 2 and 3.

Attention: To avoid breaking the retaining clips or damaging the DIMM connectors, handle the clips gently.

5. Install the DIMM:

- a. Turn the DIMM so that the pins align correctly with the connector.



- b. Insert the DIMM into the connector by pressing on one edge of the DIMM and then the other edge of the DIMM. Be sure to press straight into the connector. Be sure that the retaining clips snap into the closed position.
 - c. Make sure the retaining clips are in the closed position. If a gap exists between the DIMM and the retaining clips, the DIMM has not been properly installed. In this case, open the retaining clips and remove the DIMM; then, reinsert the DIMM.
 - d. Repeat steps 5a through 5c for the second DIMM; then continue with step 6.
6. If you have other options to install or remove, do so now; otherwise, go to “Installing the server cover and bezel” on page 64.

Microprocessor installation

The server comes with one microprocessor installed on the system board. If you install an additional microprocessor, the server can operate as a symmetric multiprocessing (SMP) server. With SMP, certain operating systems and application programs can distribute the processing load between the microprocessors.

Notes:

1. Before you install a new microprocessor, review the documentation that comes with the microprocessor, so that you can determine whether you need to update the server basic input/output system (BIOS). The latest level of BIOS for the server is available through the World Wide Web.
2. Obtain an SMP-capable operating system (optional). For a list of supported operating systems, see <http://www.ibm.com/pc/us/compat/> on the World Wide Web.

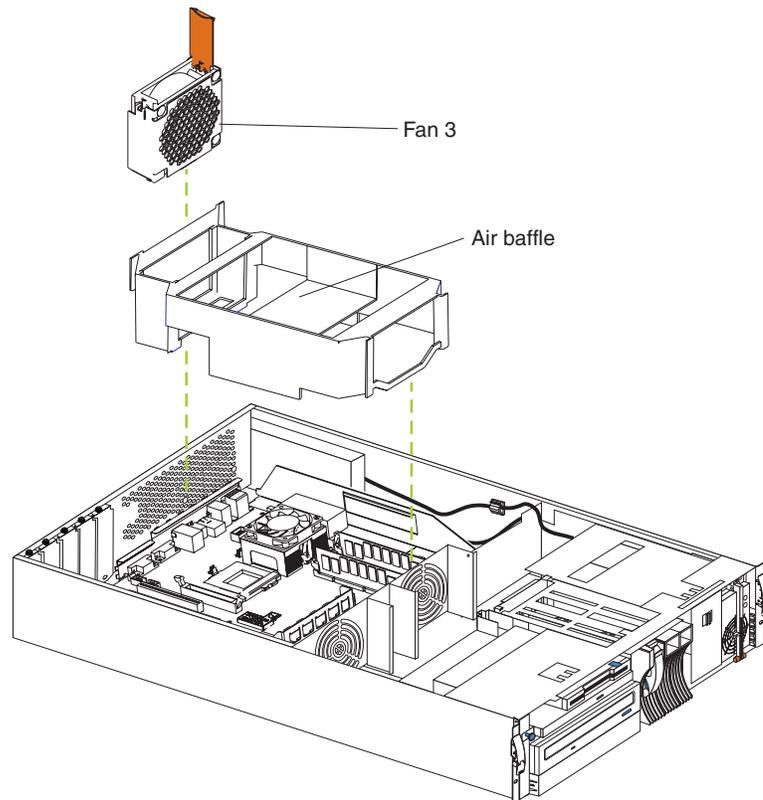
3. If two microprocessors are installed, the microprocessor installed in connector U69 is the startup processor, and the microprocessor installed in U68 is the application processor.

Attention: To avoid damage and ensure proper server operation when you install a new or an additional microprocessor, use microprocessors that have the same cache size and type, and the same clock speed. Microprocessor internal and external clock frequencies must be identical.

Microprocessor installation in Models 1RX, 2RX, 4RX, 1TG, 2TG, 4TG

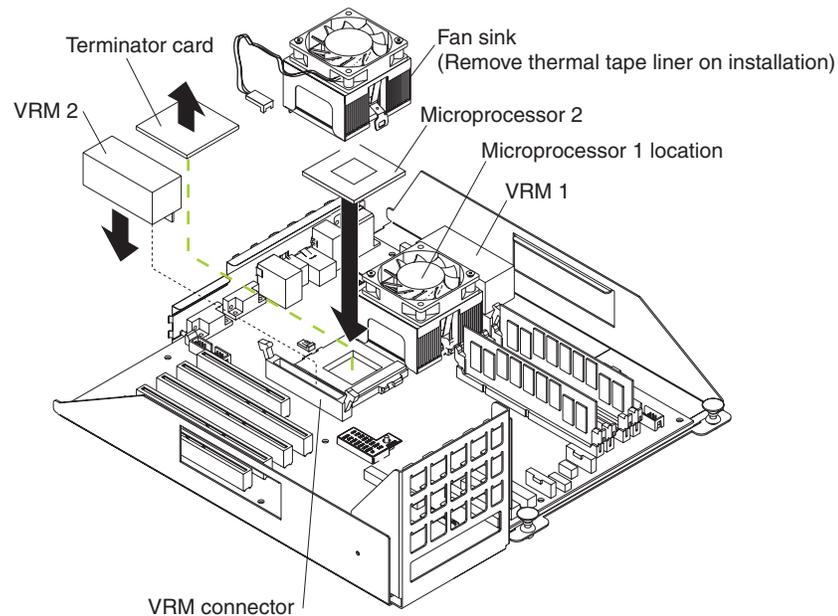
To install an additional microprocessor in Models 1RX, 2RX, 4RX, 1TG, 2TG, 4TG:

1. Review the information in “Before you begin” on page 40.
2. Turn off the server and peripheral devices and disconnect all external cables and power cords; then remove the cover (see “Removing the cover and bezel” on page 42).
3. Remove the fan 3 assembly by lifting the orange handle on top of the fan assembly and pulling the fan assembly away from the server.



4. Remove the air baffle by grasping it at the sides and lifting it from the server.

5. Remove the terminator card from the microprocessor connector by lifting the release arm on the carrier. Leave the arm in its open position.



6. Store the terminator card in a safe place in the static-protective package that your new microprocessor is shipped in; you will need to install it again, if you ever remove the microprocessor.
7. Install the microprocessor:
 - a. Touch the static-protective package containing the new microprocessor to any *unpainted* metal surface on the server; then, remove the microprocessor from the package.
 - b. Line up the microprocessor over the microprocessor connector and carefully press the microprocessor into the connector. Make sure that the corner with the gold arrow is lined up with pin C1 on the planar.
 - c. Press down and latch the release arm.

Note: To remove a microprocessor, pull upward on the microprocessor release arm and then lift the microprocessor off of the connector.

8. Install the voltage regulator module (VRM) included in the microprocessor kit.

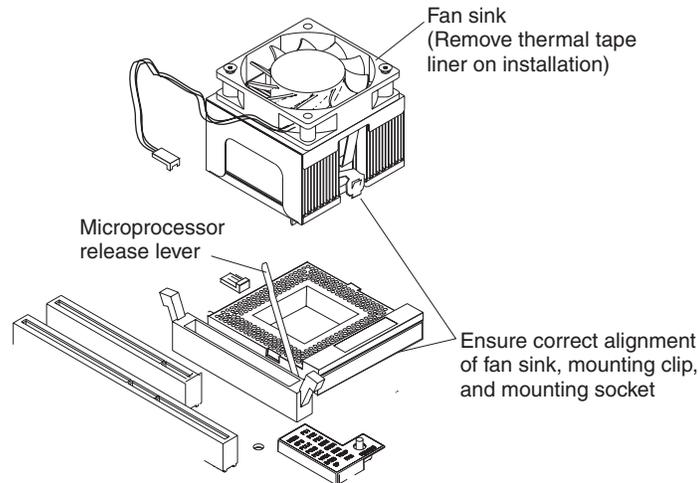
Attention: When installing or replacing a VRM, use only a VRM specified for use with the xSeries 342 server. Use of other VRMs might cause the server to overheat.

- a. Center the VRM over the VRM connector. Make sure that the VRM is oriented and aligned correctly.
- b. Press the VRM into the connector.

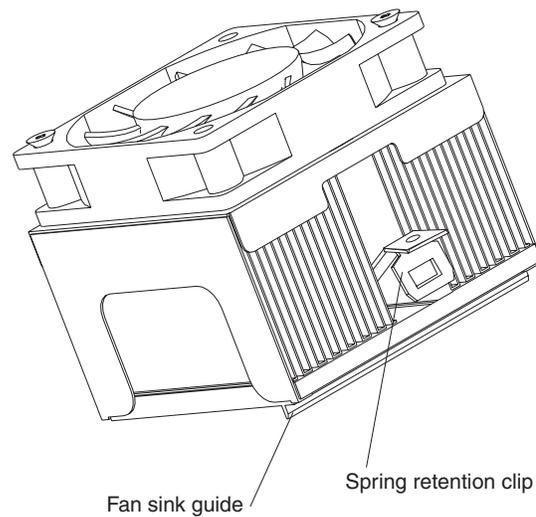
Note: If you remove the microprocessor later, remember to install the terminator card in the appropriate microprocessor connector and to remove the VRM.

9. Remove the thermal tape liner from the underside of the fan sink and discard.

- Set the fan sink into place.



Make sure the fan sink guide fits between the processor and the processor socket.



- Press down and latch the spring retention clip on the back of the fan sink (the side facing the back of the server).
- Press down and latch the spring retention clip on the front of the fan sink (the side facing the front of the server).
- Plug the fan sink into the fan sink connector on the system board (J46). Make sure the cable is not in a position to interfere with the fan sink operation.
- Reinstall the air baffle. Make sure the sides of the air baffle fit inside the brackets on the server.
- Reinstall the fan 3 assembly and make sure that the connector engages.
- If you have other options to install or remove, do so now; otherwise, go to “Installing the server cover and bezel” on page 64.

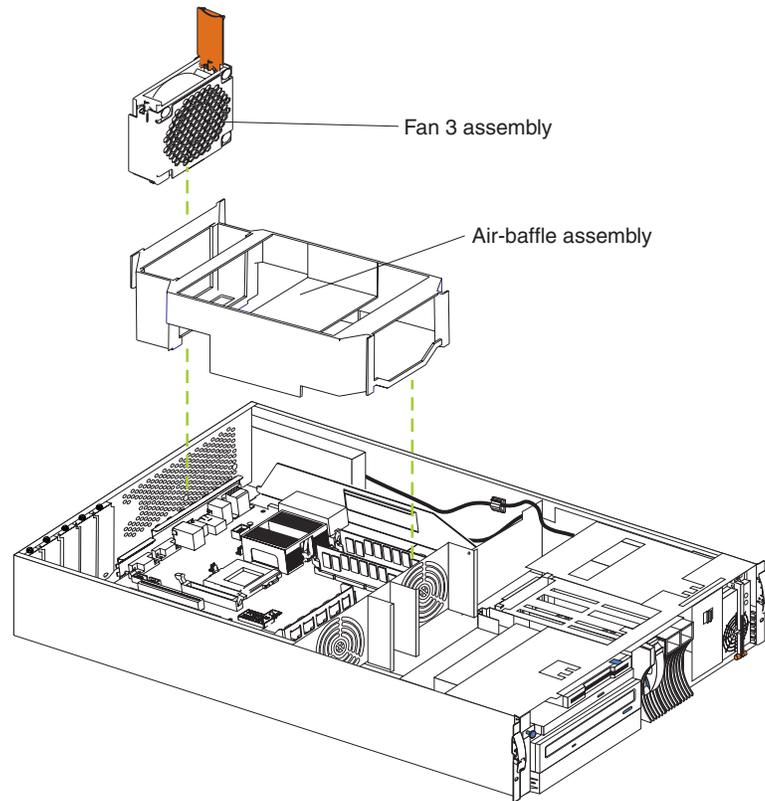
Microprocessor installation in Model 5RX

To install an additional microprocessor in Model 5RX:

- Review the information in “Before you begin” on page 40.
- Turn off the server and peripheral devices and disconnect all external cables and power cords; then remove the cover (see “Removing the cover and bezel” on page 42).

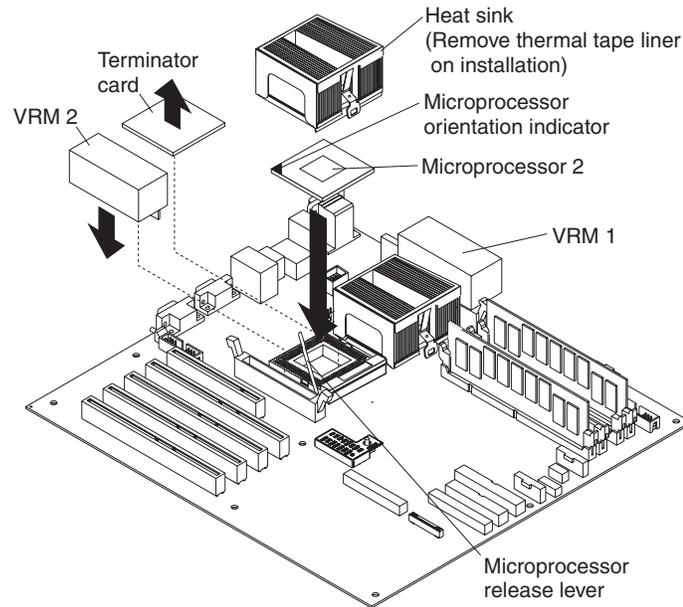
3. Remove the fan 3 assembly by lifting the handle on top of the fan assembly and pulling the fan assembly away from the server.

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



4. Lift and remove the air-baffle assembly from the server.
5. Install the microprocessor.
 - a. Pull out and lift up the release lever; then, remove the terminator card from the microprocessor socket. Store the terminator card in a safe place, such as the static-protective package that your new microprocessor comes in.

Note: You will need to reinstall the terminator card if you ever remove the microprocessor and do not replace it.



- b. Touch the static-protective package containing the new microprocessor to any unpainted metal surface on the server; then, remove the microprocessor from the package.
 - c. Using the orientation indicators on the microprocessor and on the microprocessor socket, align the microprocessor pins over the socket; then, carefully press the microprocessor into the socket.
 - d. Press down and latch the release lever.
6. Install the voltage regulator module (VRM) included in the microprocessor kit.

Attention: When installing or replacing a VRM, you must use the same type of VRM that comes shipped on your server. Use of other VRMs might cause your server to overheat.

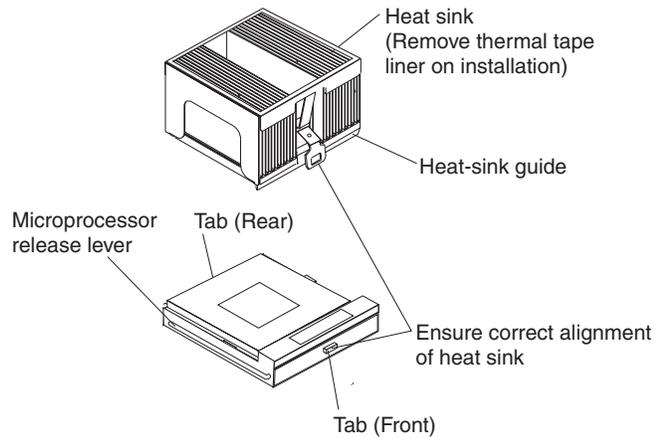
- a. Open the retaining clips located on the ends of the VRM connector, if necessary.
- b. Center the VRM over the VRM connector. Make sure that the VRM is oriented and aligned correctly.
- c. Press the VRM into the connector. Make sure the retaining clips snap into the closed position.

Note: If you remove the microprocessor later, install a terminator card in the vacant microprocessor socket and remove the appropriate VRM.

7. Install the heat sink.

Attention: You must install the same type of heat sink that comes installed in your server.

- a. Remove the thermal tape liner from the underside of the heat sink and discard it.

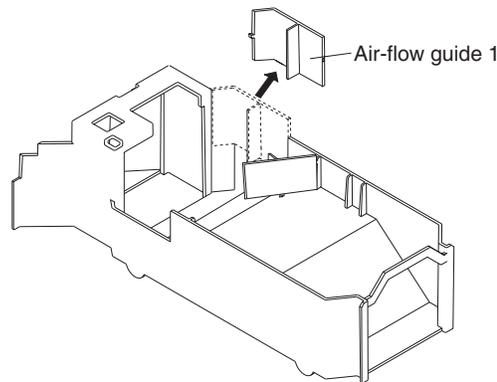


- b. Align and place the heat sink on the top of the microprocessor.

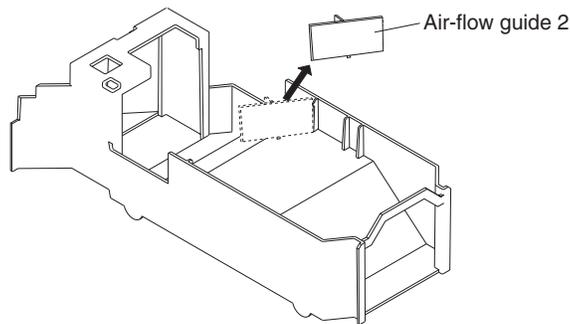
Note: Be sure the heat-sink guide fits between the microprocessor and the microprocessor socket.

- c. Press down and latch the spring-retention clip on the rear of the heat sink onto the tab located on the rear of the microprocessor connector (the side facing the rear of the server).
 - d. Press down and latch the spring-retention clip located at the front of the heat sink onto the tab located on the front of the microprocessor socket (the side facing the front of the server).
8. Reinstall the air-baffle assembly.

Attention: You must remove the air-flow guides from the air-baffle assembly when you install an additional microprocessor on the system board. Otherwise, the air-flow guides must remain in place to ensure proper air flow.



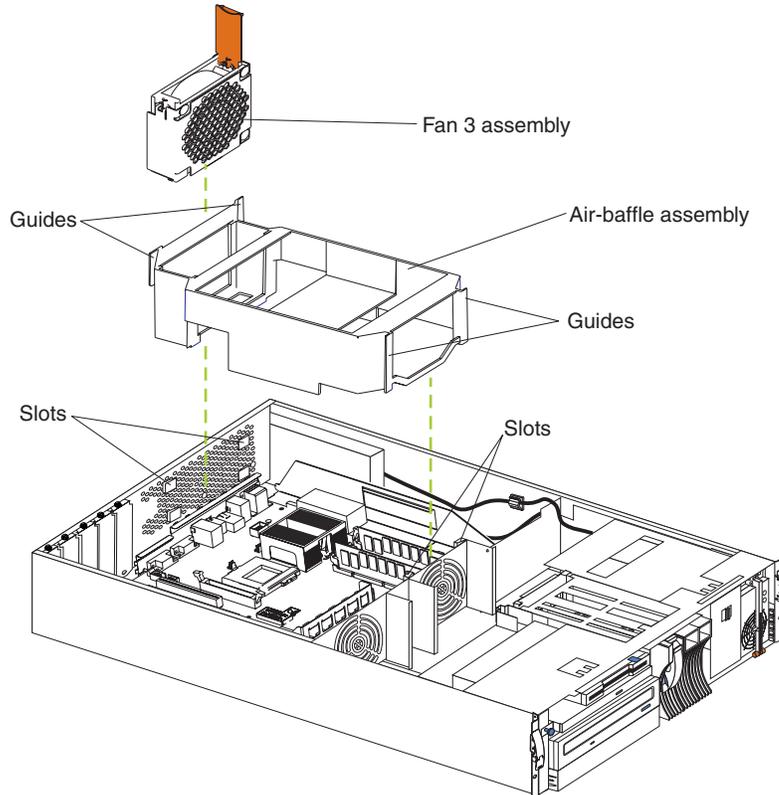
- a. Remove the air-flow guide 1 (external) from the air-baffle assembly by rotating the guide in a back and forth motion.



- b. Remove the air-flow guide 2 (internal) from the air-baffle assembly by rotating the guide in a back and forth motion.
- c. Align the air-baffle guides with the slots located on the chassis; then, slide the air-baffle assembly into place.

Note: You must use the same air-baffle assembly that comes installed in your server to ensure proper server operation.

Attention: Once the air baffle has been modified for use with two microprocessors, it will no longer function adequately for use with one microprocessor only. If you remove the second microprocessor and operate the server with only one microprocessor, you must use an air baffle assembly that has not been modified to remove the air-flow guides.



9. Reinstall the fan 3 assembly and make sure the fan is fully seated into the connector.

10. If you have other options to install, do so now. Otherwise, install the server cover (see “Installing the server cover and bezel” on page 64).

Hot-swap power supply installation

The server comes with one power supply. You can install an additional power supply.

Note: You do not need to turn off the power to the server to install a hot-swap power supply.

- **Statement 8**

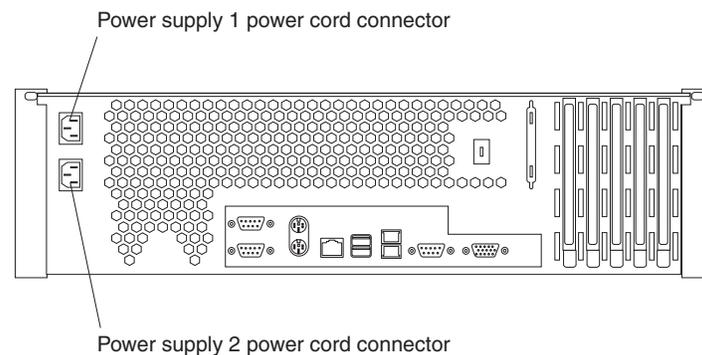


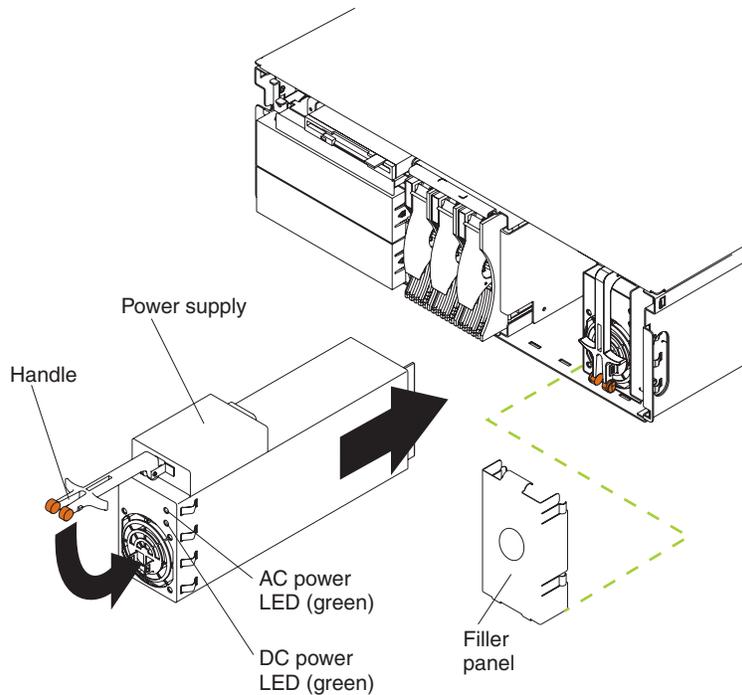
CAUTION:

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



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





To install a power supply:

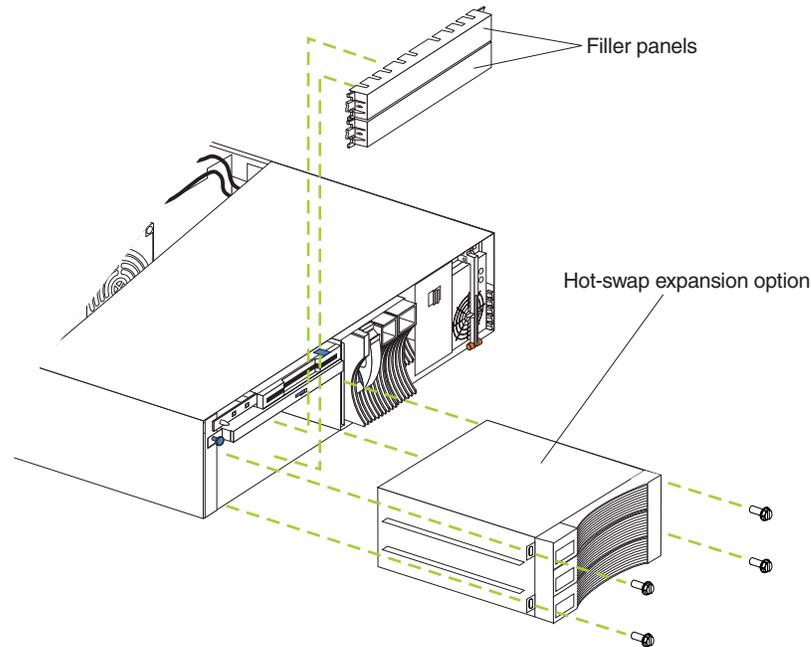
1. Remove the bezel. See “Removing the cover and bezel” on page 42.
2. Remove the filler panel from the empty power supply bay by inserting your finger into the depression on the filler panel and pulling it away from the server. Save the filler panel in case you remove the power supply at a later time.

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

3. Install the power supply in the bay:
 - a. Place the handle on the power supply in the open position, pinch the side-clips, and slide the power supply into the chassis.
 - b. Gently close the handle to seat the power supply in the bay.
4. Plug the power cord for the added power supply into the power cord connector on the rear of the server.
5. Route the power cord through the cable-management arm.
6. Plug the power cord into a properly grounded electrical outlet.
7. Verify that the DC Power light and AC Power light on the power supply are lit, indicating that the power supply is operating correctly.
8. Replace the bezel. See “Installing the server cover and bezel” on page 64.

3-Pack Ultra 160 Hot-Swap Expansion Kit

You can install an xSeries 3-Pack Ultra160 Hot-Swap Expansion Kit in the server to provide three additional hot-swap hard disk drives.



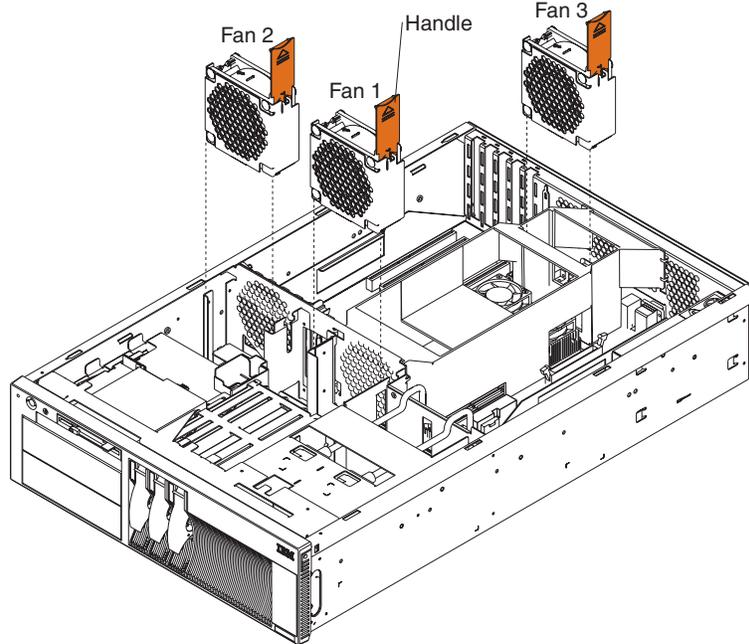
To install a xSeries 3-Pack Ultra160 Hot-Swap Expansion Kit:

1. Review the information in “Before you begin” on page 40, “Safety information” on page 109, and “Handling static-sensitive devices” on page 41.
2. Turn off the server and peripheral devices and disconnect all external cables and power cords; then, remove the cover and bezel. (See “Removing the cover and bezel” on page 42.)
3. Release the side latches to remove the filler panels from the bays below the CD-ROM drive.
4. Refer to the documentation provided with the option to assemble the hot-swap expansion option.
5. Slide the hot-swap expansion option into the bays and attach it to the server with the screws provided in the kit.
6. Refer to the documentation provided with the option to complete the installation of the option. (See “System board internal cable connectors” on page 35 for locations of the cable connectors on the system board.)
7. If you have other options to install or remove, do so now; otherwise, go to “Installing the server cover and bezel” on page 64.

Hot-swap fan assembly replacement

The server comes with three hot-swap fan assemblies. You do not need to turn off the power to the server to replace a hot-swap fan assembly.

Attention: Replace a fan that has failed within 48 hours to help ensure proper cooling.



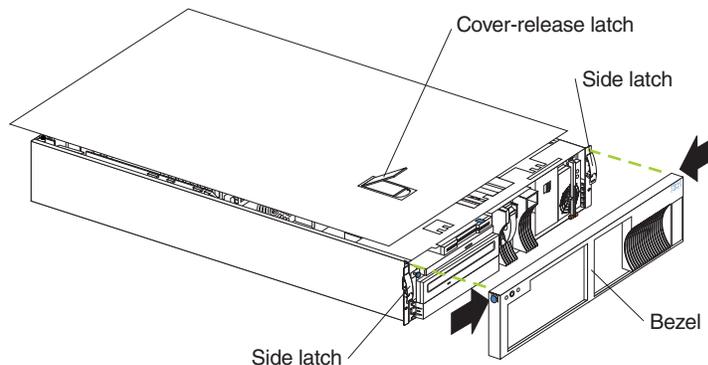
To replace a hot-swap fan assembly:

1. Remove the cover. See “Removing the cover and bezel” on page 42.

Attention: To ensure proper system cooling, do not remove the top cover for more than 30 minutes during this procedure.

2. The LED on the failing fan assembly will be lit. Remove the failing fan assembly from the server by lifting the orange handle on the top of the fan assembly and pulling the fan assembly away from the server.
3. Slide the replacement fan assembly into the server until it clicks into place.
4. Verify that the FAN LED on the diagnostics panel on the system board is not lit. If the FAN LED is lit, reseat the fan.
5. Replace the cover. See “Installing the server cover and bezel” below.

Installing the server cover and bezel



To install the server cover:

1. Place the cover-release latch in the open (up) position and align the flanges on the left and right sides of the cover with the slots on the server chassis.

2. Close the cover-release latch.

To install the bezel:

1. Align the trim bezel with the front of the server.
2. Press inward on the top sides of the bezel and press the bezel toward the server until it clicks into place.

To complete the installation:

If you disconnected any cables from the back of the server, reconnect the cables; then, plug the power cords into properly grounded electrical outlets.

Connecting external options

If you install a SCSI adapter, you can attach a SCSI storage expansion enclosure to the server.

Cabling requirements

To select and order the correct cables for use with external devices, contact your IBM reseller or IBM marketing representative.

For information about the maximum length of SCSI cable between the terminated ends of the cable, see ANSI SCSI Standards:

- X3.131-1986 (SCSI)
- X3.131-1994 (SCSI-2)
- X3T10/1071D

Adhering to these standards ensures that the server operates properly.

Setting SCSI IDs for external devices

Each SCSI device that is connected to a SCSI controller must have a unique SCSI ID, so that the SCSI controller can identify the devices and ensure that different devices do not attempt to transfer data at the same time. SCSI devices that are connected to different SCSI controllers can have duplicate SCSI IDs. The SCSI controller uses one of the SCSI IDs; the default SCSI ID for the SCSI controller is 7. Refer to the instructions that come with the SCSI devices for more information about setting a SCSI ID.

Installation procedure

To attach an external device:

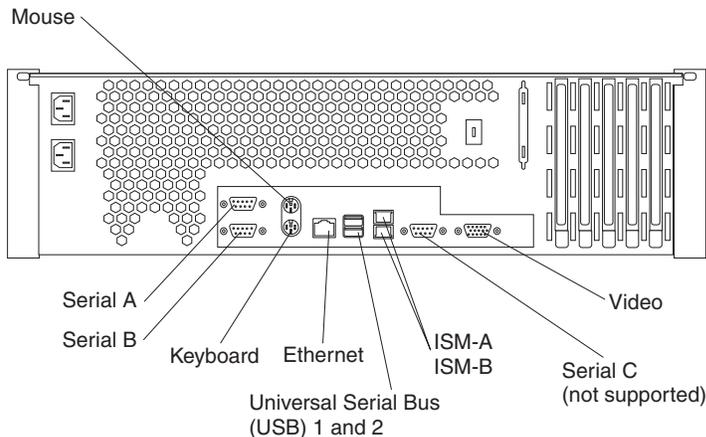
1. Turn off the server and all attached devices.
2. Follow the instructions that come with the option to prepare it for installation and to connect it to the server.

Input/Output ports

This section provides information about the input/output (I/O) ports on the rear of the server. These ports include the following:

- One video port
- Two integrated system management (RS-485) ports
- One management port (not supported)
- Two Universal Serial Bus (USB) ports
- One Ethernet port

- One keyboard port
- One auxiliary pointing device (mouse) port
- Two serial ports
- Dual-channel Ultra160 ports (internal connectors only)

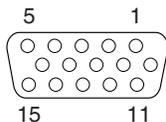


Video port

The server comes with an integrated super video graphics array (SVGA) video controller. This controller is not removable, but you can disable it by installing a PCI video adapter.

Note: If you install a PCI video adapter, the server BIOS will automatically disable the integrated video adapter.

The following table shows the pin-number assignments for the 15-pin analog video connector on the rear of the server.



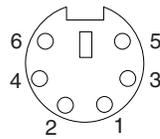
Pin	Signal	Pin	Signal	Pin	Signal
1	Red	6	Ground	11	Not connected
2	Green or monochrome	7	Ground	12	DDC SDA
3	Blue	8	Ground	13	Horizontal synchronization (Hsynch)
4	Not connected	9	+5 V dc	14	Vertical synchronization (Vsynch)
5	Ground	10	Ground	15	DDC SDL

Keyboard port

There is one keyboard on the rear of the server.

Note: If you attach a standard (non-USB) keyboard to the keyboard connector, the USB ports and devices will be disabled during the power-on self-test (POST).

The following table shows the pin-number assignments for the keyboard connector on the rear of the server.

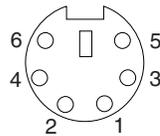


Pin	I/O	Signal
1	I/O	Data
2	N/A	Reserved
3	N/A	Ground
4	N/A	+5 V dc
5	I/O	Keyboard clock
6	N/A	Reserved

Auxiliary-device (pointing device) port

The system board has one auxiliary-device port that supports a mouse or other pointing device.

The following table shows the pin-number assignments for the auxiliary-device connector on the rear of the server.



Pin	Signal
1	Data
2	Not connected
3	Ground
4	+5 V dc
5	Clock
6	Not connected

Ultra 160 SCSI ports

The server has an integrated dual-channel Ultra 160 small computer system interface (SCSI) controller. This controller supports two independent Ultra 160 SCSI channels: one internal and one external. Each of these channels supports up to 15 SCSI devices. In addition, this controller uses:

- Double-transition clocking to achieve high transfer rates
- Domain name validation to negotiate compatible data transfer speeds with each device
- Cyclic-redundancy checking (CRC), instead of the usual parity checking, to significantly improve data reliability
- An active terminator on the system board for SCSI bus termination

You can use the external LVD SCSI channel connector, on the rear of the server, to connect different types of small computer system interface (SCSI) devices. Inside the server, a SCSI cable connects the internal SCSI channel connector to the hot-swap drive backplane.

Note: If you install a PCI RAID adapter to configure and manage the internal hot-swap drives, you must move the SCSI cable from the system-board SCSI connector to an internal channel connector on the RAID adapter.

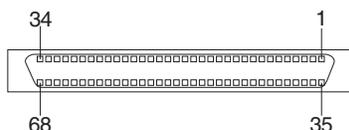
SCSI cabling requirements: If you plan to attach external SCSI devices, you must order additional SCSI cables. To select and order the correct cables for use with external devices, contact your IBM reseller or IBM marketing representative.

For information about the maximum length of SCSI cable between the terminated ends of the cable, refer to the ANSI SCSI standards. Adhering to these standards will help ensure that the server operates properly.

Setting SCSI IDs: Each SCSI device connected to a SCSI controller must have a unique SCSI ID. This ID enables the SCSI controller to identify the device and ensure that different devices on the same SCSI channel do not attempt to transfer data simultaneously. SCSI devices that are connected to different SCSI channels can have duplicate SCSI IDs.

The hot-swap-drive backplane controls the SCSI IDs for the internal hot-swap drive bays. However, when you attach SCSI devices to the external SCSI connector, you must set a unique ID for the device. Refer to the information that is provided with the device for instructions to set its SCSI ID.

SCSI connector pin-number assignments: The following table shows the pin-number assignments for the 68-pin SCSI connectors.



Pin	Signal	Pin	Signal
1	+Data 12	35	-Data 12
2	+Data 13	36	-Data 13
3	+Data 14	37	-Data 14
4	+Data 15	38	-Data 15
5	+Data P1	39	-Data P1
6	+Data 0	40	-Data 0
7	+Data 1	41	-Data 1
8	+Data 2	42	-Data 2
9	+Data 3	43	-Data 3
10	+Data 4	44	-Data 4
11	+Data 5	45	-Data 5
12	+Data 6	46	-Data 6
13	+Data 7	47	-Data 7
14	+Data P	48	-Data P

Pin	Signal	Pin	Signal
15	Ground	49	Ground
16	DIFFSENS	50	Ground
17	Term power	51	Term power
18	Term power	52	Term power
19	Reserved	53	Reserved
20	Ground	54	Ground
21	+Attention	55	-Attention
22	Ground	56	Ground
23	+Busy	57	-Busy
24	+Acknowledge	58	-Acknowledge
25	+Reset	59	-Reset
26	+Message	60	-Message
27	+Select	61	-Select
28	+Control/Data	62	-Control/Data
29	+Request	63	-Request
30	+Input/Output	64	-Input/Output
31	+Data 8	65	-Data 8
32	+Data 9	66	-Data9
33	+Data 10	67	-Data 10
34	+Data 11	68	-Data 11

Serial ports

The server has two standard serial ports, Serial port A and Serial port B. The operating system can use both serial ports, Serial port A and Serial port B.

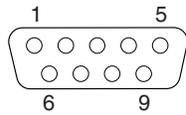
Some application programs require specific ports, and some modems function properly only at certain communication port addresses. You might need to use the Configuration/Setup Utility program to change communication port address assignments to prevent or resolve address conflicts.

Viewing or changing the serial-port assignments: To view or change the serial-port assignments:

1. Restart the server and watch the monitor screen.
2. When the message Press F1 for Configuration/Setup appears, press F1.
3. From the main menu, click **Devices and I/O Ports**; then, press Enter.
4. Select the serial port; then, use the arrow keys to advance through the settings available.
5. Select **Save Settings**; then, select **Exit Setup** to exit from the Configuration/Setup Utility main menu.

Serial-port connectors: The following table shows the pin-number assignments for the 9-pin, male D-shell serial-port connectors on the rear of the server. These

pin-number assignments conform to the industry standard.



Pin	Signal	Pin	Signal
1	Data carrier detect	6	Data set ready
2	Receive data	7	Request to send
3	Transmit data	8	Clear to send
4	Data terminal ready	9	Ring indicator
5	Signal ground		

Universal Serial Bus ports

The server has two Universal Serial Bus (USB) ports, which configure automatically. USB is an emerging serial interface standard for telephony and multimedia devices. It uses Plug and Play technology to determine the type of device attached to the connector.

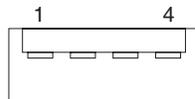
Notes:

1. If you attach a standard (non-USB) keyboard to the keyboard connector, the USB ports and devices will be disabled during the power-on self-test (POST).
2. If you install a USB keyboard that has a mouse port, the USB keyboard emulates a mouse and you will not be able to disable the mouse settings in the Configuration/Setup Utility program.

USB cables and hubs: You need a 4-pin cable to connect devices to USB 1 or USB 2. If you plan to attach more than two USB devices, you must use a hub to connect the devices. The hub provides multiple connectors for attaching additional external USB devices.

USB technology provides 12 megabits-per-second (Mbps) speed with a maximum of 127 external devices and a maximum signal distance of five meters (16 ft.) per segment.

USB-port connectors: Each USB port has an external connector on the rear of the server for attaching USB compatible devices.



The following table shows the pin-number assignments for the USB-port connectors on the rear of the server.

Table 3. USB-port connector pin-number assignments

Pin	Signal
1	VCC + 5 V VCC
2	-Data
3	+Data
4	Ground

Ethernet port

The server comes with an integrated Ethernet controller. This controller provides an interface for connecting to 10-Mbps or 100-Mbps networks and provides full-duplex (FDX) capability, which enables simultaneous transmission and reception of data on the Ethernet local area network (LAN).

To access the Ethernet port, connect a Category 3, 4 or 5 unshielded twisted-pair (UTP) cable to the RJ-45 connector on the rear of the server.

Note: The 100BASE-TX Fast Ethernet standard requires that the cabling in the network be Category 5 or higher.

Configuring the Ethernet controller: When you connect the server to the network, the Ethernet controller automatically detects the data-transfer rate (10 Mbps or 100 Mbps) on the network and then sets the controller to operate at the appropriate rate. That is, the Ethernet controller will adjust to the network data rate, whether the data rate is standard Ethernet (10BASE-T), Fast Ethernet (100BASE-TX), half duplex (HDX), or full duplex (FDX). The controller supports half-duplex (HDX) and full-duplex (FDX) modes at both speeds.

The Ethernet controller is a PCI Plug and Play device. You do not need to set any jumpers or configure the controller for your operating system before you use the Ethernet controller. However, you must install a device driver to enable your operating system to address the Ethernet controller. The device drivers are provided on the ServerGuide CDs.

Failover for redundant Ethernet: The IBM Netfinity 10/100 Fault Tolerant Adapter is an optional redundant network interface card (NIC adapter) that you can install in the server. If you install this NIC adapter and connect it to the same logical segment as the primary Ethernet controller, you can configure the server to support a *failover* function. You can configure either the integrated Ethernet controller or the NIC adapter as the primary Ethernet controller. In failover mode, if the primary Ethernet controller detects a link failure, all Ethernet traffic associated with it is switched to the redundant (secondary) controller. This switching occurs without any user intervention. When the primary link is restored to an operational state, the Ethernet traffic switches back to the primary Ethernet controller. The switch back to the primary Ethernet controller can be automatic or manually controlled, depending on the setup and operating system.

Note that only one controller in the redundant pair is active at any given time. For example, if the primary Ethernet controller is active, then the secondary Ethernet controller cannot be used for any other network operation.

Note: Your operating system determines the maximum number of IBM Netfinity 10/100 Fault Tolerant Adapters that you can install in the server. See the documentation that comes with the adapter for more information.

Considerations when combining failover and hot-plug functions: If your operating system supports hot-plug PCI adapters and the optional redundant NIC adapter is installed in a hot-plug PCI slot (this system does not have a hot-plug PCI), you can replace the NIC adapter without powering off the server — even if it is the primary Ethernet controller. Disconnecting the Ethernet cable from the primary Ethernet controller will cause the Ethernet traffic to switch automatically to the secondary Ethernet controller. This can be very useful if a faulty adapter causes a network problem, or if you want to upgrade the primary adapter hardware.

Note: If you hot-replace the primary adapter while the Ethernet traffic is being handled by the secondary Ethernet controller, the traffic does not automatically switch back to the primary adapter when the primary adapter comes back online. See “Configuring for failover”.

Configuring for failover: The failover feature currently is supported by Windows NT Server and Novell IntraNetWare. The setup required for each operating system follows.

Windows NT Server:

IBM offers hot-plug support for Windows NT Server Version 4.0. Failover can work in conjunction with hot-plug support or independently. If you are not using hot-plug support, go to “Windows NT Server failover setup” on page 73.

Windows NT Server hot-plug setup:

IBM Netfinity Hot Plug PCI for Windows NT Server 4.0 package is available for download from the IBM Web site at:

<http://www.ibm.com/pc/support>

Enter the brand type of **Server**, click on **Downloadable files** and look for **Hot Plug**. The IBM Netfinity Hot Plug PCI for Windows NT Server 4.0 package uses the Intel Desktop Management Interface (DMI) to control hot-plug support for the Ethernet controllers. The Ethernet controller in your computer is DMI compliant. Download and install the following software in the order listed:

1. IBM Failover DMI Agent
2. IBM PCI Hot Plug Solution
3. IBM Netfinity 10/100 Fault Tolerant Adapter device drivers

Note: The order of installation is important. You must install the IBM Netfinity Hot Plug for Windows NT.

Note: The order of installation is important. You must install the IBM Netfinity Hot Plug for Windows NT Server 4.0 package before you install the IBM Netfinity 10/100 Fault Tolerant Adapter driver. If you install the adapter device driver before the PCI Hot Plug Solution package, the adapter device driver will not recognize the hot-plug code. This happens because the adapter device driver only checks the NT registry for the Hot Plug package during installation. If the PCI Hot Plug Solution package is added after the adapter device driver is installed, the adapter must be removed and added again in order for it to detect the PCI Hot-Plug Solution code.

To install the IBM Failover DMI Agent:

1. Download the DMI EXE file from the xSeries Support web page and extract the files onto a diskette.
2. Insert the diskette into the diskette drive.
3. From the Start menu, select the **Run** option.
4. Type A:\SETUP.EXE in the Open box.
5. Click **Ok**. The setup wizard opens.
6. Follow the instructions that are given by the setup wizard until the program is installed.
7. Restart the server.

To install the IBM PCI Hot Plug Solution package:

1. Download the IBM PCI Hot Plug Services EXE file from the xSeries Support web page and extract the files onto a diskette.
2. Log on to Windows NT Server as a user in the Administrator group.
3. Insert the diskette into the diskette drive.
4. From the Start menu, select the **Run** option.
5. Type A:\SETUP.EXE in the Open box.
6. Click **OK**. The Setup wizard opens.
7. Follow the instructions given by the setup wizard until the program is installed.

Windows NT Server failover setup:

To install the IBM Netfinity 10/100 Fault Tolerant Adapter device drivers:

1. Add the redundant NIC adapter according to the instructions that are provided with the adapter.
2. Use the ServerGuide CDs to install the AMD PCNet Ethernet Family adapter device driver.
3. Do not select the Grouping box at this point; you must first restart the machine.
4. From the Windows NT Server desktop, select **Control Panel**, then select the **Network** icon, then select the **Adapters** tab.
5. Highlight one of the adapters that will be in the redundant pair and then click the **Properties...** button.
6. Check the Grouping box. This will show the possible combinations for redundant pairs.
7. Select the adapter pair you want and then select **OK**. Note that the integrated Ethernet controller is located at PCI bus A, slot 2.

Two options are available for recovering from a failover condition. The options are determined by the Enable for DMI / Hot Swap Support checkbox. If the IBM Netfinity Hot Plug PCI for Windows NT Server 4.0 package is installed, this checkbox will appear at the bottom of the Adapter Properties panel. If you do not have the IBM Netfinity Hot Plug PCI for Windows NT Server 4.0 package installed on the server, you will not see the Enable for DMI / Hot Swap Support checkbox.

If the Enable for DMI / Hot Swap Support checkbox is not checked or is not present, traffic will automatically switch back to the primary adapter when the primary link status is restored. In this mode, the adapter cannot be hot-swapped. Users with the IBM Netfinity Hot Plug PCI for Windows NT Server 4.0 package installed should check the Enable for DMI / Hot Swap Support checkbox.

If the Enable for DMI / Hot Swap Support checkbox is checked, traffic will remain on the secondary adapter until the user directs it to return to the primary adapter. This can be done after the hot-swap replacement of the primary adapter or by using the DMI interface.

8. Select **Close** to exit from the Network setup.

When you restart the server, the failover function will be in effect.

If a failover occurs, a message is written to the NT Event Viewer log. In addition, if the Enable for DMI / Hot Swap Support checkbox is checked, a DMI alert will also be generated.

IntraNetWare:

1. Add the redundant NIC adapter according to the instructions that are provided with the adapter.
2. Load the device driver by using the following command:

```
LOAD d:\path\PCNTNW.LAN PRIMARY=x SECONDARY=y
```

where *d* and *path* are the drive and path where the driver is located, and *x* and *y* are the PCI slot numbers where the redundant pair is located.

The slot number associated with the integrated Ethernet controller can vary depending on the configuration of the server. To determine the slot number, load the driver with no parameters. The driver will display the available slot numbers. The slot number that is greater than 10000 will be the slot number of integrated Ethernet controller. When the slot number of the integrated Ethernet controller is determined, reload the driver with the appropriate parameters.

3. When the driver is loaded, bind it to a protocol stack.

The failover function is now enabled. If a failover occurs:

- The operating system console generates a message.
- The custom counters for the device driver contain variables that define the state of the failover function and the location of the redundant pair. You can use the NetWare Monitor to view the custom counters.

Note: If the primary adapter was hot-replaced while the Ethernet traffic was being handled by the secondary Ethernet controller, the traffic does not automatically switch back to the primary adapter when the primary adapter comes back online. In this case, issue the command:

```
LOAD d:\path\PCNTNW SCAN
```

where *d* and *path* are the drive and path where the driver is located. This command causes the device driver to locate the primary adapter and switch the Ethernet traffic to it.

Ethernet port connector: The following table shows the pin-number assignments for the RJ-45 connector. These assignments apply to both 10BASE-T and 100BASE-TX devices.

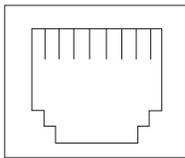


Table 4. Ethernet RJ-45 connector pin-number assignments.

Pin	Signal	Pin	Signal
1	Transmit data+	5	Not connected
2	Transmit data-	6	Receive data -
3	Receive data+	7	Not connected
4	Not connected	8	Not connected

Integrated System Management Processor ports

The integrated system management (ISM) ports (ISM-A and ISM-B) use a dual RJ-45 connector to interconnect ISM processors of several servers through an optional Remote Supervisor Adapter.

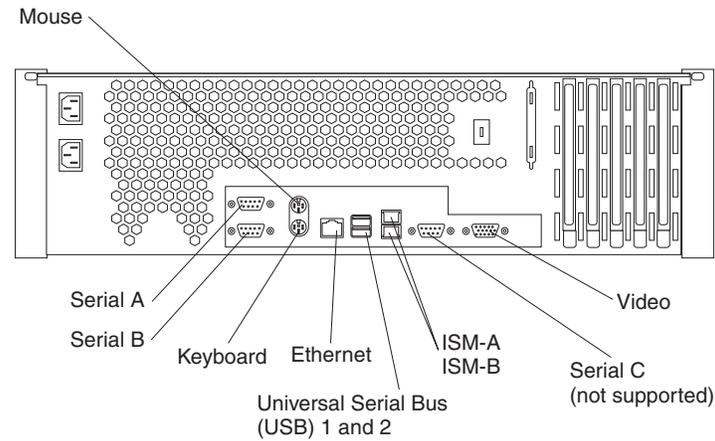
Note: ISM ports (ISM A and B) are used for the RS-485 interconnect network communications.

Refer to the Remote Supervisor Adapter option documentation for detailed information about the ASM interconnect network.

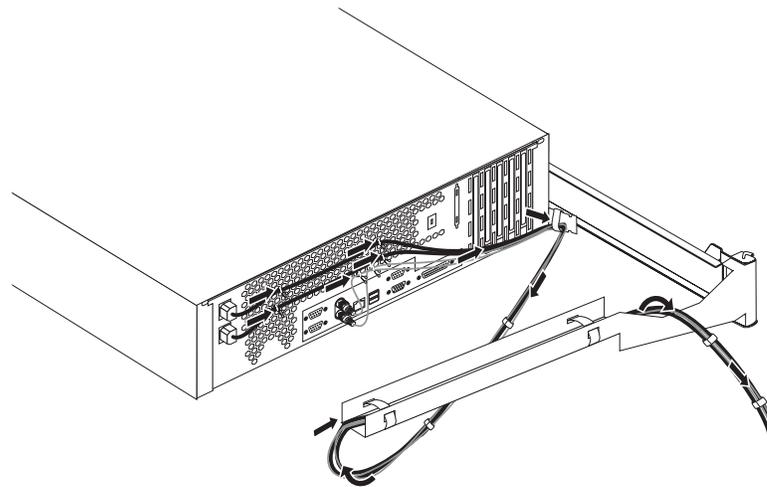
Cabling the server

The following illustration shows input/output connectors and cable routing for the server.

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



Refer to the following illustration for the routing of cables through the cable-management arm.

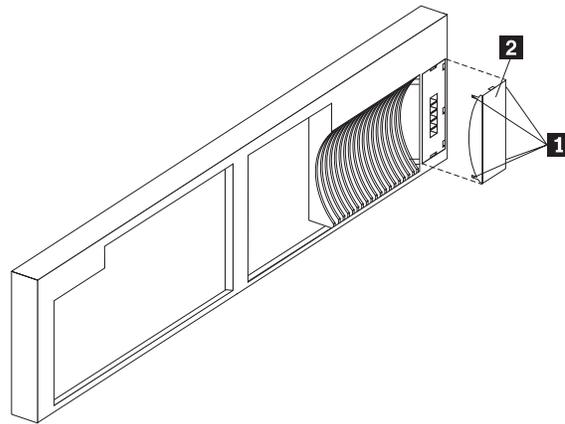


FRU information (service only)

Field Replacement Units (FRUs) for the xSeries 342 should be replaced by qualified service personnel only.

Note: Before performing any removals, read “Safety information” on page 109, “Before you begin” on page 40 and “Handling static-sensitive devices” on page 41.

LED cover

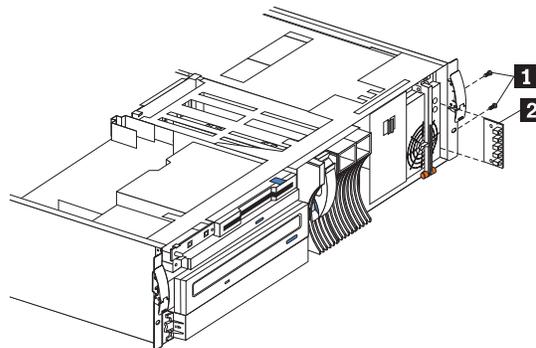


Note: Before beginning, read “Safety information” on page 109, “Before you begin” on page 40 and “Handling static-sensitive devices” on page 41.

To remove the LED cover, do the following:

1. Turn off server and disconnect all external cables and power cords.
2. Remove the cover. See “Removing the cover and bezel” on page 42.
3. From the back of the cover, release the four tabs **1** and gently pry away the LED cover **2**.

LED board

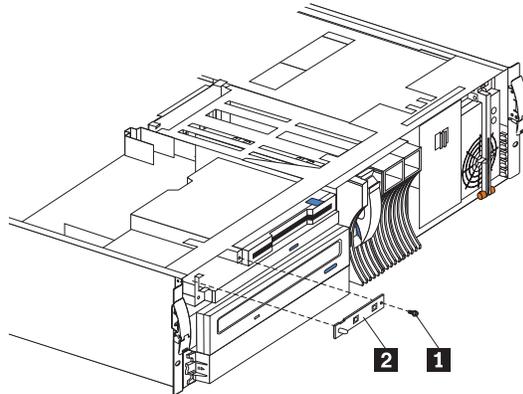


Note: Before beginning, read “Safety information” on page 109, “Before you begin” on page 40 and “Handling static-sensitive devices” on page 41.

To remove the LED board:

1. Turn off server and disconnect all external cables and power cords.
2. Remove the cover. See “Removing the cover and bezel” on page 42.
3. Disconnect the LED board cable from the system board, connector (J39).
4. Remove the two screws **1**.
5. Carefully slide out the board **2**.

On/off reset board

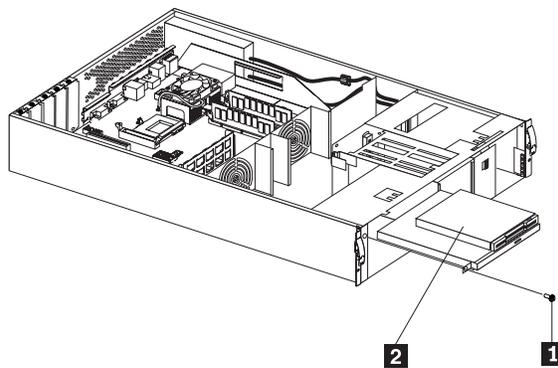


Note: Before beginning, read “Safety information” on page 109, “Before you begin” on page 40 and “Handling static-sensitive devices” on page 41.

To remove the on/off reset board:

1. Turn off server and disconnect all external cables and power cords.
2. Remove the cover. See “Removing the cover and bezel” on page 42.
3. Disconnect the cable from the system board, connector (J11).
4. Remove the screw **1**.
5. Gently pull off the board **2**.

Diskette/CD-ROM drive

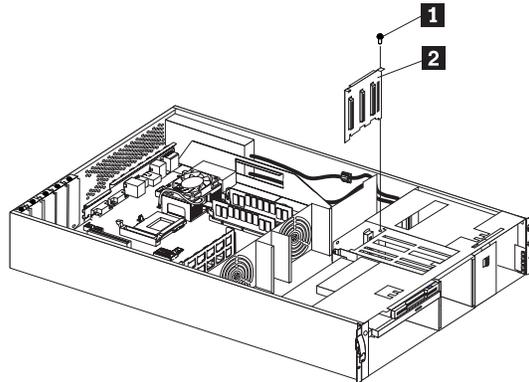


Note: Before beginning, read “Safety information” on page 109, “Before you begin” on page 40 and “Handling static-sensitive devices” on page 41.

To remove the diskette/CDROM drive:

1. Turn off server and disconnect all external cables and power cords.
2. Remove the cover. See “Removing the cover and bezel” on page 42.
3. Disconnect the cable, connector (J18), from the system board.
4. Remove the screw **1**.
5. Carefully pull out drive **2** to remove.

SCSI backplane

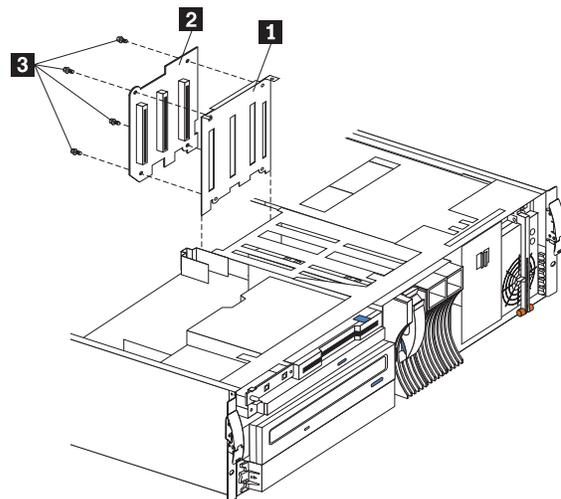


Note: Before beginning, read “Safety information” on page 109, “Before you begin” on page 40 and “Handling static-sensitive devices” on page 41.

To remove the hot-swap hard disk drive backplane:

1. Turn off server and disconnect all external cables and power cords.
2. Remove the cover. See “Removing the cover and bezel” on page 42.
3. Disconnect all cables connected to the backplane.
4. Remove the screw **1** from the top of the assembly.
5. Gently slide the SCSI backplane assembly **2** up to remove.

Hot-swap hard disk drive backplane assembly

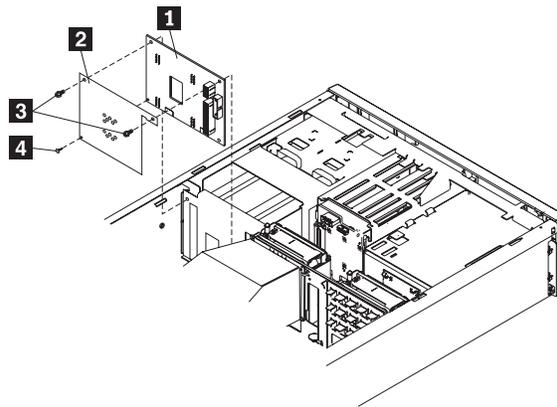


Note: Before beginning, read “Safety information” on page 109, “Before you begin” on page 40 and “Handling static-sensitive devices” on page 41.

To remove the hot-swap hard disk drive backplane:

1. Turn off server and disconnect all external cables and power cords.
2. Remove the cover. See “Removing the cover and bezel” on page 42.
3. Pull out the hard drives in order to disconnect them from the backplane.
4. Remove the screw from the top of the backplane bracket **1**.
5. Lift the backplane from the chassis.
6. Remove the cables from the backplane **2**.
7. Remove the four screws **3**.
8. Gently lift up to remove the backplane board.

Power supply backplane

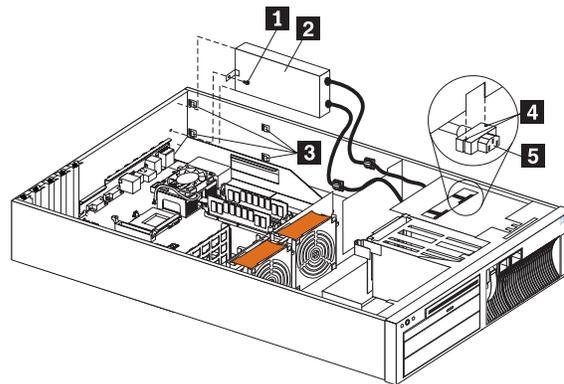


Note: Before beginning, read “Safety information” on page 109 and “Handling static-sensitive devices” on page 41.

To remove the power supply backplane:

1. Turn off server and disconnect all external cables and power cords.
2. Remove the cover. See “Removing the cover and bezel” on page 42.
3. Remove power supplies from the backplane **1**.
4. Disconnect all cables from the backplane.
5. Remove the two screws **3**.
6. Remove the plastic retainer **4**.
7. Remove insulator **2** and replace on new backplane.

AC distribution box



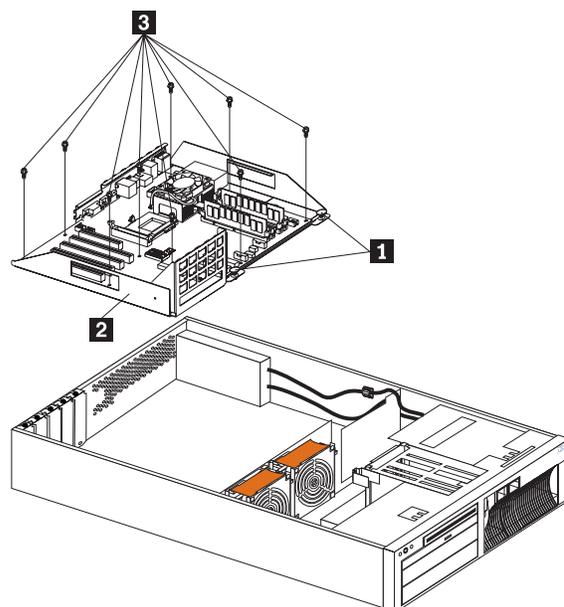
Note: Before beginning, read “Safety information” on page 109, “Before you begin” on page 40 and “Handling static-sensitive devices” on page 41.

To remove the AC distribution box:

1. Turn off server and disconnect all external cables and power cords.
2. Remove the cover. See “Removing the cover and bezel” on page 42.
3. Remove screw **1**.
4. Pull the AC distribution box **1** toward front of machine in order to release it from the chassis clips **3**.
5. Remove the two hot-swap power supplies.
6. Pull down on the cable receptacle **5** to release it from the chassis.

Note: To install the receptacle, push up into the chassis opening of slot **4**. Be sure to properly replace receptacles, 1 to 1 and 2 to 2, as labeled.

System board



Note: Before beginning, read “Safety information” on page 109, “Before you begin” on page 40 and “Handling static-sensitive devices” on page 41.

To remove the system board:

Note: When replacing the system board, you must either update the system with the latest firmware or restore the pre-existing firmware that the customer provides on a diskette or CD image.

1. Turn off server and disconnect all external cables and power cords.
2. Remove the cover. See “Removing the cover and bezel” on page 42.
3. Remove the rear air flow fan.
4. Remove the air baffle.
5. Remove the system board cables.
6. Pull up on the two knobs **1**.
7. Pull up on the system board cage **2** to remove from the chassis.
8. Remove the 9 screws **3** to remove system board from system board cage.

Symptom-to-FRU index

This index supports xSeries 342 servers. The Symptom-to-FRU lists symptoms, errors, and the possible causes. The most likely cause is listed first. Use this Symptom-to-FRU index to help you decide which FRUs to have available when servicing the computer.

The POST BIOS displays POST error codes and messages on the screen.

Beep symptoms

Beep symptoms are short tones or a series of short tones separated by pauses (intervals without sound). See the following examples.

Note: One beep after successfully completing POST indicates the system is functioning properly.

Beeps	Description
1-2-3	<ul style="list-style-type: none">• One beep• A pause (or break)• Two beeps• A pause (or break)• Three Beeps
4	Four continuous beeps

Beep/Symptom	FRU/Action
1-1-3 (CMOS write/read test failed)	1. Battery 2. System Board
1-1-4 (BIOS EEPROM checksum failed)	1. Recover BIOS 2. System Board
1-2-1 (Programmable Interval Timer failed)	1. System Board
1-2-2 (DMA initialization failed)	1. System Board
1-2-3 (DMA page register write/read failed)	1. System Board
1-2-4 (RAM refresh verification failed)	1. DIMM 2. System Board
1-3-1 (1st 64K RAM test failed)	1. DIMM
2-1-1 (Secondary DMA register failed)	1. System Board
2-1-2 (Primary DMA register failed)	1. System Board
2-1-3 (Primary interrupt mask register failed)	1. System Board
2-1-4 (Secondary interrupt mask register failed)	1. System Board

Beep/Symptom	FRU/Action
2-2-2 (Keyboard controller failed)	1. System Board 2. Keyboard
2-2-3 (CMOS power failure and checksum checks failed)	1. Battery 2. System Board
2-2-4 (CMOS configuration information validation failed)	1. Battery 2. System Board
2-3-1 (Screen initialization failed)	1. System Board
2-3-2 (Screen memory failed)	1. System Board
2-3-3 (Screen retrace failed)	1. System Board
2-3-4 (Search for video ROM failed)	1. System Board
2-4-1 (Video failed; screen believed operable)	1. System Board
3-1-1 (Timer tick interrupt failed)	1. System Board
3-1-2 (Interval timer channel 2 failed)	1. System Board
3-1-3 (RAM test failed above address OFFFFH))	1. DIMM 2. System Board
3-1-4 (Time-Of-Day clock failed)	1. Battery 2. System Board
3-2-1 (Serial port failed)	1. System Board
3-2-2 (Parallel port failed)	1. System Board
3-2-4 (Failure comparing CMOS memory size against actual)	1. DIMM 2. Battery
3-3-1 (Memory size mismatch occurred; see "Memory Settings" on page 25)	1. DIMM 2. Battery
3-3-2 (Critical SMBUS error occurred)	1. Disconnect the server power cord from outlet, wait 30 seconds and retry. 2. System Board 3. DIMMs 4. DASD Backplane 5. Power Supply 6. Power Supply Backplane 7. 12C Cable
3-3-3 (No operational memory in system)	1. Install or reseat the memory modules, then do a 3 boot reset. (See "Using the Configuration/Setup Utility program" on page 23.) 2. DIMMs 3. Memory Board 4. System Board
4-4-4 (Optional system management adapter not installed in slot 1 or not functioning correctly)	1. Verify that adapter is installed in slot 1. 2. Adapter 3. System Board

Beep/Symptom	FRU/Action
Two Short Beeps (Information only, the configuration has changed)	<ol style="list-style-type: none"> 1. Run Diagnostics 2. Run Configuration/Setup
Three Short Beeps	<ol style="list-style-type: none"> 1. DIMM 2. System Board
One Continuous Beep	<ol style="list-style-type: none"> 1. Processor 2. Optional Processor (if installed) 3. System Board
Repeating Short Beeps	<ol style="list-style-type: none"> 1. Keyboard 2. System Board
One Long and One Short Beep	<ol style="list-style-type: none"> 1. Video adapter (if present) 2. System Board
One Long and Two Short Beeps	<ol style="list-style-type: none"> 1. Video adapter (if present) 2. System Board
Two Long and Two Short Beeps	<ol style="list-style-type: none"> 1. Video adapter

No Beep symptoms

No Beep Symptom	FRU/Action
No beep and the system operates correctly.	<ol style="list-style-type: none"> 1. Check speaker cables 2. Speaker 3. System Board
No Beeps occur after successfully completing POST (The Power-On Status is disabled.)	<ol style="list-style-type: none"> 1. Run Configuration/Setup, set the Start Options Power-On Status to enable. 2. Check speaker connection 3. System Board
No ac power (Power supply ac LED is off)	<ol style="list-style-type: none"> 1. Check the power cord. 2. Power Supply (If two are installed, swap them to determine if one is defective.) 3. Power Backplane 4. Hot-Swap Power AC Inlet Box
No beep and no video	<ol style="list-style-type: none"> 1. See “Undetermined problems” on page 102
System will not power-up (Power supply ac LED is on)	<ol style="list-style-type: none"> 1. See “Power supply LED errors” on page 92

Information panel system error LED

The system error LED is turned on when an error is detected. If the system error LED is on, remove the cover and check the diagnostic panel LEDs. The following is a complete list of diagnostic panel LEDs followed by the FRU/Action for correcting the problem. The following chart is valid only when the system error LED is on.

Note: If a diagnostic panel LED is on and the information LED panel system error LED is off, there is probably an LED problem. Run LED diagnostics.

Notes:

1. To locate the LEDs on the system board see “System board LED locations” on page 38.
2. Check the System Error Log for additional information before replacing a FRU.
3. The DIMM error LEDs, processor error LEDs, and VRM error LEDs turn off when the system is powered down.

Diagnostic Panel LED	FRU/Action
All LEDs off (Check System Error Log for error condition, then clear System Error Log when the problem is found.)	<ol style="list-style-type: none"> 1. System Error Log is 75% full; clear the log. 2. PFA alert; check log for failure; clear PFA alert; remove AC power for at least 20 seconds, reconnect, then power up system. 3. Run Information Panel diagnostics.
MEM LED on (The LED next to the failing DIMM is on.)	<ol style="list-style-type: none"> 1. Processor/PCI Board. 2. Failing DIMM in slot J1-J4.
CPU LED on (The LED next to the failing CPU should be on.)	<ol style="list-style-type: none"> 1. Processor 1 or 2. 2. System Board
PCI A LED on	<ol style="list-style-type: none"> 1. PCI Card in slot 1. 2. Remove all PCI adapters from slots 1-5. 3. System Board.
PCI B LED on	<ol style="list-style-type: none"> 1. Card in slots 2-3. 2. Remove all PCI adapters from slots 1-5. 3. System Board.
PCI C LED on	<ol style="list-style-type: none"> 1. Card in slots 4-5. 2. Remove all PCI adapters from slots 1-5. 3. System Board.
VRM LED on (The LED next to the failing VRM should be on.)	<ol style="list-style-type: none"> 1. Voltage regulator module indicated by the VRM LED on. 2. Processor indicated by the Processor LED.
DASD LED on (The LED located next to the drive bay that the failing drive is installed in will be turned on. Check amber drive LED for failing hard drive.)	<ol style="list-style-type: none"> 1. Be sure the fans are operating correctly and the air flow is good. 2. If installed, reseal I2C cable between DASD backplane and DASD I2C on planar (J9). 3. Failing drive. SCSI channel A has failed (This is the SCSI channel for the hot-swap hard disk drives). 4. SCSI Backplane.
SP LED	<ol style="list-style-type: none"> 1. Unplug server for 30 seconds, retry 2. Reflash or update firmware for ISMP, BIOS 3. System Board
PS1 LED on	<ol style="list-style-type: none"> 1. Check the DC Good LED on power supply 1. If off, replace power supply 1. 2. Power Backplane.
PS2 LED on	<ol style="list-style-type: none"> 1. Check the DC Good LED on power supply 2. If off, replace power supply 2. 2. Power Backplane.
NON LED on	<ol style="list-style-type: none"> 1. Check the PS1, PS2, and PS3 LEDs and replace any indicated power supply. 2. Install an additional power supply or remove optional devices from the server.

Diagnostic Panel LED	FRU/Action
OVER LED on	1. Install an optional additional power supply, or remove optional devices from the server.
NMI LED on	1. Reboot the system. 2. Check the System Error Log.
TEMP LED on	1. Ambient temperature must be within normal operating specifications. See “Features and specifications” on page 3. 2. Ensure fans are operating correctly. 3. Examine System Error Log. a. System over recommended temperature 1) Information LED Panel b. DASD over recommended temperature (DASD LED also on) 1) Overheating hard drive 2) DASD Backplane c. System over recommended temperature for CPU X (where X is CPU 1, 2) (CPU LED also on) 1) CPU X 2) System Board d. I/O Legacy Board over recommended temperature 4. If the CPU LED on the diagnostics panel is also on, one of the microprocessors has caused the error.
FAN LED on	1. Check individual fan LEDs. 2. Replace respective fan. 3. Fan Cable. 4. System Board. 5. Power Backplane Board.

Diagnostic error codes

Note: In the following error codes, if *XXX* is *000*, *195*, or *197* **do not** replace a FRU. The description for these error codes are:

000 The test passed.

195 The **Esc** key was pressed to abort the test.

197 This is a warning error and may not indicate a hardware failure.

For all error codes, replace/follow the FRU/Action indicated.

Error Code/Symptom	FRU/Action
001-XXX-000 (Failed core tests)	1. System Board
001-XXX-001 (Failed core tests)	1. System Board
001-250-000 (Failed System Board ECC)	1. System Board
001-250-001 (Failed System Board ECC)	1. System Board
005-XXX-000 (Failed Video test)	1. System Board

Error Code/Symptom	FRU/Action
011-XXX-000 (Failed COM1 Serial Port test)	1. System Board
011-XXX-001 (Failed COM2 Serial Port test)	1. System Board
014-XXX-000 (Failed Parallel Port test)	1. System Board
015-XXX-001 (USB interface not found, board damaged)	1. System Board
015-XXX-015 (Failed USB external loopback test)	1. Make sure parallel port is not disabled. 2. Re-run USB external loopback test. 3. System board
015-XXX-198 (USB device connected during USB test)	1. Remove USB devices from USB1 and USB2. 2. Re-run USB external loopback test. 3. System Board
020-XXX-000 (Failed PCI Interface test)	1. System Board
020-XXX-001 (Failed Hot-Swap Slot 1 PCI Latch test)	1. PCI Hot-Swap Latch Assembly 2. System Board
020-XXX-002 (Failed Hot-Swap Slot 2 PCI Latch test)	1. PCI Hot-Swap Latch Assembly 2. System Board
020-XXX-003 (Failed Hot-Swap Slot 3 PCI Latch test)	1. PCI Hot-Swap Latch Assembly 2. System Board
020-XXX-004 (Failed Hot-Swap Slot 4 PCI Latch test)	1. PCI Hot-Swap Latch Assembly 2. System Board
030-XXX-000 (Failed Internal SCSI interface test)	1. System Board
035-XXX-099	1. No adapters were found. 2. If adapter is installed re-check connection.
035-XXX-S99 (Failed RAID test on PCI slot S, check System Error Log before replacing a FRU)	1. Adapter 2. SCSI Backplane 3. Cable
035-XXX-SNN (Check System Error Log before replacing a FRU, NN = SCSI ID of failing fixed disk)	1. Fixed Disk with SCSI ID NN on RAID adapter in PCI slot S.
035-253-S99 (RAID adapter initialization failure)	1. ServeRAID Adapter in slot S is not configured properly. Obtain the basic and extended configuration status and refer to the ServeRAID Hardware Maintenance Manual for more information. 2. Cable 3. SCSI Backplane 4. Adapter
075-XXX-000 (Failed Power Supply test)	1. Power Supply
089-XXX-001 (Failed Microprocessor test)	1. VRM 1 for Microprocessor 1 2. Microprocessor 1

Error Code/Symptom	FRU/Action
089-XXX-002 (Failed Optional Microprocessor test)	<ol style="list-style-type: none"> 1. VRM 2 for Optional Microprocessor 2 2. Optional Microprocessor 2
166-198-000 System Management: Aborted (Unable to communicate with ASM adapter. It may be busy. Run the test again.) (Communication with the ASM adapter has failed.)	<ol style="list-style-type: none"> 1. Rerun the Diagnostic Test 2. Fix other error conditions and retry. These include other Failed System Management tests and items logged in the optional Remote Supervisor Adapter's System Error Log. 3. Disconnect all server and option power cords from server, wait 30 seconds, reconnect, and retry 4. Remote Supervisor Adapter, if installed 5. System Board
166-201-001 System Management: Failed (I2C Bus Error(s). ISMP indicates I2C errors on bus 0. Potential FRUs: Memory DIMMs, system board.)	<ol style="list-style-type: none"> 1. If installed, reseal I2C cable between Remote Supervisor Adapter (in PCI slot 1/J44) and planar (J54) 2. Reseat Memory DIMMs 3. Memory DIMMs 4. System board
166-201-002 System Management: Failed (I2C Bus Error(s)) (ISMP indicates I2C errors on bus 2. Potential FRUs: LED front panel, system board.)	<ol style="list-style-type: none"> 1. Reseat I2C cable between operator information panel and planar (J39) 2. Operator information panel 3. System board
166-201-003 System Management: Failed (I2C Bus Error(s)) (ISMP indicates I2C error on bus 3. Potential FRUs: power backplane, system board.)	<ol style="list-style-type: none"> 1. Reseat cables between Power Backplane and planar 2. Power Backplane 3. System board
166-201-004 System Management: Failed (I2C Bus Error(s)) (ISMP indicates I2C error on bus 4. Potential FRUs: DASD backplane, system board.)	<ol style="list-style-type: none"> 1. If installed, reseal I2C cable between DASD backplane and DASD I2C on planar (J9) 2. System board
166-201-005 System Management: Failed (I2C Bus Error(s) ISMP indicates I2C errors on bus 0, 1, or 5. Potential FRUs: Memory DIMMs, CPUs, system board.)	<ol style="list-style-type: none"> 1. Reseat Memory DIMMs 2. Reseat processors 3. Memory DIMMs 4. Processors 5. System board
166-250-000 System Management: Failed (I2C cable is disconnected. Reconnect I2C cable between Remote Supervisor Adapter and System Board.)	<ol style="list-style-type: none"> 1. Reseat I2C cables between Remote Supervisor Adapter (in PCI slot 1/J44) and planar (J54) 2. I2C Cable(s)
166-260-000 System Management: Failed (Unable to restart ASM adapter.) (Restart ASM adapter Error. After restarting, ASM communication was lost. Unplug and cold boot to reset ASM adapter.)	<ol style="list-style-type: none"> 1. Disconnect all server and option power cords from server, wait 30 seconds, reconnect, and retry. 2. Reseat Remote Supervisor Adapter (in PCI slots 1/J44). 3. Remote Supervisor Adapter
166-342-000 System Management: Failed (ASM adapter BIST indicate failed tests.)	<ol style="list-style-type: none"> 1. Ensure the latest firmware levels for Remote Supervisor Adapter and BIOS. 2. Disconnect all server and option power cords from server, wait 30 seconds, reconnect, and retry 3. Remote Supervisor Adapter

Error Code/Symptom	FRU/Action
166-400-000 System Management: Failed System management hardware on system board failed) (ISMP Self Test Result failed tests: x where x = Flash, RAM, or ROM.)	<ol style="list-style-type: none"> 1. Re-flash or Update firmware for ISMP 2. System board
180-XXX-000 (Diagnostics LED failure)	1. Run Diagnostic LED test for the failing LED.
180-XXX-001 (Failed Front LED panel test)	<ol style="list-style-type: none"> 1. Operator Information Panel 2. Power Switch Assembly 3. System Board
180-XXX-002 (Failed Diagnostics LED Panel test)	1. System Board
180-361-003 (Failed Fan LED test)	<ol style="list-style-type: none"> 1. Fan(s) 2. System Board
180-XXX-003 (Failed System Board LED test)	1. System Board
180-XXX-005 (Failed SCSI Backplane LED test)	<ol style="list-style-type: none"> 1. SCSI Backplane 2. SCSI Backplane Cable 3. System Board
201-XXX-0NN (Failed Memory test, see "Memory Settings" on page 25)	<ol style="list-style-type: none"> 1. DIMM Location slots 1-4 where NN = DIMM location. Note: NN=1=DIMM 1 =2=DIMM 2 =3=DIMM 3 =4=DIMM 4 2. System Board
201-XXX-999 (Multiple DIMM failure, see error text)	<ol style="list-style-type: none"> 1. See error text for failing DIMMs 2. System Board
202-XXX-001 (Failed System Cache test)	<ol style="list-style-type: none"> 1. VRM 1 2. Microprocessor 1
202-XXX-002 (Failed System Cache test)	<ol style="list-style-type: none"> 1. VRM 2 2. Microprocessor 2
206-XXX-000 (Failed Diskette Drive test)	<ol style="list-style-type: none"> 1. Cable 2. Diskette Drive 3. System Board
215-XXX-000 (Failed IDE CD-ROM test)	<ol style="list-style-type: none"> 1. CD-ROM Drive Cables 2. CD-ROM Drive 3. System Board
217-198-XXX (Could not establish drive parameters)	<ol style="list-style-type: none"> 1. Check cable and termination 2. SCSI Backplane 3. Fixed Disk
217-XXX-000 (Failed BIOS Fixed Disk test) Note: If RAID is configured, the fixed disk number refers to the RAID logical array	1. Fixed Disk 1
217-XXX-001 (Failed BIOS Fixed Disk test) Note: If RAID is configured, the fixed disk number refers to the RAID logical array	1. Fixed Disk 2
217-XXX-002 (Failed BIOS Fixed Disk test) Note: If RAID is configured, the fixed disk number refers to the RAID logical array	1. Fixed Disk 3

Error Code/Symptom	FRU/Action
217-XXX-003 (Failed BIOS Fixed Disk test) Note: If RAID is configured, the fixed disk number refers to the RAID logical array	1. Fixed Disk 4
217-XXX-004 (Failed BIOS Fixed Disk test) Note: If RAID is configured, the fixed disk number refers to the RAID logical array	1. Fixed Disk 5
217-XXX-005 (Failed BIOS Fixed Disk test) Note: If RAID is configured, the fixed disk number refers to the RAID logical array	1. Fixed Disk 6
264-XXX-0NN (Failed Tape Drive test)	<ol style="list-style-type: none"> 1. Tape Cartridge, if user executed the Read/Write Tape Drive test (failure code of XXX = 256) 2. SCSI or Power Cable connected to tape drive with SCSI ID NN. 3. Tape Drive with SCSI ID NN. (Refer to the Help and Service Information appendix of the tape drive's User Guide.) 4. System Board or SCSI Controller. (Run SCSI Controller Diagnostic to determine if the SCSI bus is functioning properly.)
264-XXX-999 (Errors on multiple tape drives, see error text for more info)	1. See error messages/text in the PC Doctor error log for detailed information on each individual tape drive error.
301-XXX-000 (Failed Keyboard test)	1. Keyboard
405-XXX-000 (Failed Ethernet test on controller on the System Board)	<ol style="list-style-type: none"> 1. Verify that Ethernet is not disabled in BIOS. 2. System Board
405-XXX-00N (Failed Ethernet test on adapter in PCI slot N)	<ol style="list-style-type: none"> 1. Adapter in PCI slot N. 2. System Board
415-XXX-000 (Failed Modem test)	<ol style="list-style-type: none"> 1. Cable Note: Ensure modem is present and attached to server. 2. Modem 3. System Board

Error symptoms

Error Symptom	FRU/Action
CD is not working properly.	<ol style="list-style-type: none"> 1. Clean the CD. 2. Run CD-ROM diagnostics 3. CD-ROM Drive
CD-ROM drive tray is not working. (The server must be powered-on)	<ol style="list-style-type: none"> 1. Insert the end of a paper clip into the manual tray-release opening. 2. Run CD-ROM diagnostics 3. CD-ROM Drive
CD-ROM drive is not recognized.	<ol style="list-style-type: none"> 1. Run Configuration/Setup, enable primary IDE channel. 2. Check cables and jumpers. 3. Check for correct device driver. 4. System Board 5. Run CD-ROM diagnostics 6. CD-ROM Drive

Error Symptom	FRU/Action
Power switch does not work and reset button does work. There is not a jumper for forcing power on for the server.	<ol style="list-style-type: none"> 1. Verify that the power-on control jumper on J23 extension cable is on pins 1 and 2. 2. Power Switch Assembly 3. System Board
Diskette drive in-use light stays on, or the system bypasses the diskette drive, or the diskette drive does not work	<ol style="list-style-type: none"> 1. If there is a diskette in the drive, verify that: <ol style="list-style-type: none"> a. The diskette drive is enabled in the Configuration/Setup utility program. b. The diskette is good and not damaged. (Try another diskette if you have one.) c. The diskette is inserted correctly in the drive. d. The diskette contains the necessary files to start the server. e. The software program is OK. f. Cable is installed correctly (proper orientation) 2. Run Diskette Drive Diagnostics 3. Cable 4. Diskette Drive 5. System Board
Monitor problems (general). Some IBM monitors have their own self-tests. If you suspect a problem with the monitor, refer to the information that comes with the monitor for adjusting and testing instructions.	<ol style="list-style-type: none"> 1. Monitor 2. Run Video Diagnostics. If diagnostics pass, the problem may be a video driver. 3. Display Adapter / System Board
Fixed Disk diagnostic does not recognize drives. Test shows fewer drives than actually installed.	Remove first drive that does not appear and rerun diagnostic. If the remaining drives show up, replace the removed drive.
Fixed Disk diagnostic freezes when run	Remove drive being tested at time of freeze and rerun the diagnostic. If diagnostic completes successfully, replace the removed.

Power supply LED errors

Use the power supply LED information on the following page to troubleshoot power supply problems.

Note: The minimum configuration required for the DC Good light to come on is:

- Power Supply
- Power Backplane
- System Board (with pins 2 and 3 on J23 extension cable connected together to bypass the power switch; see "System board switches and jumpers" on page 36).

AC Good LED	DC Good LED	Description	FRU/Action
Off	Off	No power to system or ac problem.	<ol style="list-style-type: none"> 1. Check ac power to system. 2. Power Supply

AC Good LED	DC Good LED	Description	FRU/Action
On	Off	Standby mode or dc problem.	<ol style="list-style-type: none"> Check system board cable connectors J32, J33, and J35. Move jumper on J32's extension cable to pins 2-3 to bypass power control. If the DC Good LED comes on, press Ctrl+Alt+Delete. Watch the screen for any POST errors. Check the System Error Log for any listed problems. If the system powers up with no errors: <ol style="list-style-type: none"> Power Switch Assembly System Board Remove the adapters and disconnect the cables and power connectors to all internal and external devices. Power-on the system. If the DC Good LED comes on, replace the adapters and devices one at a time until you isolate the problem. Power Supply Power Backplane System Board
On	On	Power is OK.	N/A

POST error codes

In the following error codes, X can be any number or letter.

Error Code/Symptom	FRU/Action
062 (Three consecutive boot failures using the default configuration.)	<ol style="list-style-type: none"> Run Configuration/Setup Battery System Board Processor
101, 102 (System and processor error)	<ol style="list-style-type: none"> System Board
106 (System and processor error)	<ol style="list-style-type: none"> System Board
111 (Channel check error)	<ol style="list-style-type: none"> Failing 15A adapter Memory DIMM System Board
114 (Adapter read-only memory error)	<ol style="list-style-type: none"> Failing Adapter Run Diagnostics
129 (Internal cache error)	<ol style="list-style-type: none"> Processor Optional Processor (if installed)
151 (Real time clock error)	<ol style="list-style-type: none"> Run Diagnostics Battery System Board
161 (Real time clock battery error)	<ol style="list-style-type: none"> Run Configuration/Setup Battery System Board

Error Code/Symptom	FRU/Action
162 (Device Configuration Error) Note: Be sure to load the default settings and any additional desired settings; then, save the configuration.	<ol style="list-style-type: none"> 1. Run Configuration/Setup 2. Battery 3. Failing Device 4. System Board
163 (Real-Time Clock error)	<ol style="list-style-type: none"> 1. Run Configuration/Setup 2. Battery 3. System Board
164 (Memory configuration changed, see "Memory settings" on page 25.)	<ol style="list-style-type: none"> 1. Run Configuration/Setup 2. DIMM 3. System board
175 (Hardware error)	<ol style="list-style-type: none"> 1. System Board
176 (Computer cover or cable cover was removed without a key being used)	<ol style="list-style-type: none"> 1. Run Configuration/Setup 2. System Board 3. C2 Security Switch
177, 178 (Security hardware error)	<ol style="list-style-type: none"> 1. Run Configuration/Setup 2. System Board
184 (Power-on password corrupted)	<ol style="list-style-type: none"> 1. Run Configuration/Setup 2. System Board
185 (Drive startup sequence information corrupted)	<ol style="list-style-type: none"> 1. Run Configuration/Setup 2. System Board
186 (Security hardware control logic failed)	<ol style="list-style-type: none"> 1. Run Configuration/Setup 2. System Board
187 (VPD serial number not set.)	<ol style="list-style-type: none"> 1. Set serial number in Setup 2. System Board
188 (Bad EEPROM CRC #2)	<ol style="list-style-type: none"> 1. Run Configuration/Setup 2. System Board
189 (An attempt was made to access the server with invalid passwords)	<ol style="list-style-type: none"> 1. Run Configuration/Setup, enter the administrator password
201 (Memory test error, see "Memory Settings" on page 25.) If the server does not have the latest level of BIOS installed, update the BIOS to the latest level and run the diagnostic program again.	<ol style="list-style-type: none"> 1. DIMM 2. System Board
229 (Cache error)	<ol style="list-style-type: none"> 1. Processor 2. Optional Processor (if installed)
262 (DRAM parity configuration error)	<ol style="list-style-type: none"> 1. Run configuration / setup 2. Battery 3. System Board
289 (DIMM disabled by POST or user)	<ol style="list-style-type: none"> 1. Run Configuration/Setup, if disabled by user 2. Disabled DIMM, if not disabled by user.
301 (Keyboard or keyboard controller error)	<ol style="list-style-type: none"> 1. Keyboard 2. System Board

Error Code/Symptom	FRU/Action
303 (Keyboard controller error)	1. System Board
602 (Invalid diskette boot record)	1. Diskette 2. Diskette Drive 3. Cable 4. System Board
604 (Diskette drive error)	1. Run Configuration/Setup and Diagnostics 2. Diskette Drive 3. Drive Cable 4. System Board
605 (Unlock failure)	1. Diskette Drive 2. Drive Cable 3. System Board
662 (Diskette drive configuration error)	1. Run Configuration/Setup and Diagnostics 2. Diskette Drive 3. Drive Cable 4. System Board
762 (Coprocessor configuration error)	1. Run configuration setup 2. Battery 3. Processor
962 (Parallel port error)	1. Disconnect external cable on parallel port. 2. Run Configuration/Setup 3. System Board
11XX (System board serial port 1 or 2 error)	1. Disconnect external cable on serial port. 2. Run Configuration/Setup 3. System Board
0001200 (Machine check architecture error)	1. Processor 1 2. Optional Processor 2
1301 (I ² C cable to front panel not found)	1. Cable 2. Front Panel 3. Power Switch Assembly 4. System Board
1302 (I ² C cable from system board to power on and reset switches not found)	1. Cable 2. Power Switch Assembly 3. System Board
1303 (I ² C cable from system board to power backplane not found)	1. Cable 2. Power Backplane 3. System Board
1304 (I ² C cable to diagnostic LED board not found)	1. Power Switch Assembly 2. System Board

Error Code/Symptom	FRU/Action
<p>1600 (The System Management Processor is not functioning) Do the following before replacing a FRU:</p> <ol style="list-style-type: none"> 1. Ensure that a jumper is not installed on J45. 2. Remove the ac power to the system, wait 20 seconds; then, re-connect the ac power. Wait 30 seconds; then, power-on the system. 	<ol style="list-style-type: none"> 1. System Board
<p>1601 (The system is able to communicate to the System Management Processor, but the System Management Processor failed to respond at the start of POST.) Do the following before replacing a FRU:</p> <ol style="list-style-type: none"> 1. Remove the ac power to the system, wait 20 seconds; then, re-connect the ac power. Wait 30 seconds; then, power-on the system. 2. Flash update the Service Processor. 	<ol style="list-style-type: none"> 1. Remote Supervisor Adapter, if installed 2. System Board
<p>1762 (Fixed Disk Configuration error)</p>	<ol style="list-style-type: none"> 1. Fixed Disk Drive 2. Fixed Disk Cables 3. Run Configuration/Setup 4. Fixed Disk Adapter 5. SCSI Backplane 6. System Board
<p>178X (Fixed Disk error)</p>	<ol style="list-style-type: none"> 1. Fixed Disk Cables 2. Run Diagnostics 3. Fixed Disk Adapter 4. Fixed Disk Drive 5. System Board
<p>1800 (No more hardware interrupt available for PCI adapter)</p>	<ol style="list-style-type: none"> 1. Run Configuration/Setup 2. Failing Adapter 3. System Board
<p>1962 (Drive does not contain a valid boot sector)</p>	<ol style="list-style-type: none"> 1. Verify a bootable operating system is installed. 2. Run Diagnostics 3. Hard Disk Drive 4. SCSI Backplane 5. Cable 6. System Board
<p>2400 (Video controller test failure)</p>	<ol style="list-style-type: none"> 1. Video Adapter (if installed) 2. System Board
<p>2462 (Video memory configuration error)</p>	<ol style="list-style-type: none"> 1. Video Adapter (if installed) 2. System Board

Error Code/Symptom	FRU/Action
5962 (IDE CD-ROM configuration error)	<ol style="list-style-type: none"> 1. Run Configuration/Setup 2. CD-ROM Drive 3. CD-ROM Power Cable 4. IDE Cable 5. System Board 6. Battery
8603 (Pointing Device Error)	<ol style="list-style-type: none"> 1. Pointing Device 2. System Board
00019501 (Processor 1 is not functioning - check VRM and processor LEDs)	<ol style="list-style-type: none"> 1. VRM 1 2. Processor 1 3. System Board
00019502 (Processor 2 is not functioning - check VRM and processor LEDs)	<ol style="list-style-type: none"> 1. VRM 2 2. Processor 2
00019701 (Processor 1 failed)	<ol style="list-style-type: none"> 1. Processor 1 2. System Board
00019702 (Processor 2 failed)	<ol style="list-style-type: none"> 1. Processor 2 2. System Board
00180100 (A PCI adapter has requested memory resources that are not available.)	<ol style="list-style-type: none"> 1. Reorder the adapters in the PCI slots. It is important that your boot device is positioned early in the scan order so that it is executed by POST. 2. Ensure that the PCI adapter and all other adapters are set correctly in the Configuration/Setup Utility program. If the memory resource settings are not correct, change the settings. 3. If all memory resources are being used, you might need to remove an adapter to make memory available to the PCI adapter. Disabling the adapter BIOS on the adapter might correct the error. (Refer to documentation provided with the adapter.)
00180200 (No more I/O space available for PCI adapter)	<ol style="list-style-type: none"> 1. Run Configuration/Setup 2. Failing Adapter 3. System Board
00180300 (No more memory (above 1MB for PCI adapter))	<ol style="list-style-type: none"> 1. Run Configuration/Setup 2. Failing Adapter 3. System Board
00180400 (No more memory (below 1MB for PCI adapter))	<ol style="list-style-type: none"> 1. Run Configuration/Setup 2. Move the failing adapter to slot 1 or 2 3. Failing Adapter 4. System Board
00180500 (PCI option ROM checksum error)	<ol style="list-style-type: none"> 1. Remove Failing PCI Card 2. System Board
00180600 (PCI to PCI bridge error)	<ol style="list-style-type: none"> 1. Run Configuration/Setup 2. Move the failing adapter to slot 1 or 2 3. Failing Adapter 4. System Board

Error Code/Symptom	FRU/Action
00180700, 00180800 (General PCI error)	<ol style="list-style-type: none"> 1. System Board 2. PCI Card
01295085 (ECC checking hardware test error)	<ol style="list-style-type: none"> 1. System Board 2. Processor
01298001 (No update data for processor 1)	<ol style="list-style-type: none"> 1. Ensure all processors are the same stepping level and cache size. 2. Processor 1
01298002 (No update data for processor 2)	<ol style="list-style-type: none"> 1. Ensure all processors are the same stepping level and cache size. 2. Processor 2
01298101 (Bad update data for processor 1)	<ol style="list-style-type: none"> 1. Ensure all processors are the same stepping level and cache size. 2. Processor 1
01298102 (Bad update data for processor 2)	<ol style="list-style-type: none"> 1. Ensure all processors are the same stepping level and cache size. 2. Processor 2
I9990301 (Fixed disk sector error)	<ol style="list-style-type: none"> 1. Hard Disk Drive 2. SCSI Backplane 3. Cable 4. System Board
I9990305 (Fixed disk sector error, no operating system installed)	<ol style="list-style-type: none"> 1. Install operating system to hard disk drive.
I9990650 (AC power has been restored)	<ol style="list-style-type: none"> 1. Check cable 2. Check for interruption of power supply 3. Power Cable

Service processor error codes

When viewed from POST, service processor error codes will appear in hexadecimal form (generally beginning with A2, A3, A4, A5, A6, A7, AD, AE or E1). However, when viewed from the System Error Log, the messages will appear as text. To determine a possible error condition for the service processor, refer to the System Error Log (see "Log viewing from diagnostic programs" on page 13).

SCSI error codes

Error Code	FRU/Action
<p>All SCSI Errors One or more of the following might be causing the problem:</p> <ul style="list-style-type: none"> • A failing SCSI device (adapter, drive, controller) • An improper SCSI configuration or SCSI termination jumper setting • Duplicate SCSI IDs in the same SCSI chain • A missing or improperly installed SCSI terminator • A defective SCSI terminator • An improperly installed cable • A defective cable 	<ol style="list-style-type: none"> 1. External SCSI devices must be powered-on before you power-on the server. 2. The cables for all external SCSI devices are connected correctly. 3. If you have attached an external SCSI device to the server, make sure the external SCSI termination is set to automatic. 4. The last device in each SCSI chain is terminated correctly. 5. The SCSI devices are configured correctly.

Temperature error messages

Message	Action
DASD Over Temperature (level-critical; Direct Access Storage Device bay "X" was over temperature)	<ol style="list-style-type: none"> 1. Ensure system is being properly cooled; see "System reliability considerations" on page 41.
DASD Over recommended Temperature (sensor X) (level-warning; DASD bay "X" had over temperature condition)	<ol style="list-style-type: none"> 1. Ensure system is being properly cooled; see "System reliability considerations" on page 41.
DASD under recommended temperature (sensor X) (level-warning; direct access storage device bay "X" had under temperature condition)	<ol style="list-style-type: none"> 1. Ambient temperature must be within normal operating specifications; see "Features and specifications" on page 3.
DASD Over Temperature (level-critical; sensor for DASD1 reported temperature over recommended range)	<ol style="list-style-type: none"> 1. Ensure system is being properly cooled; see "System reliability considerations" on page 41.
Power Supply "X" Temperature Fault (level-critical; power supply "x" had over temperature condition)	<ol style="list-style-type: none"> 1. Ensure system is being properly cooled; see "System reliability considerations" on page 41. 2. Replace Power Supply "X"
System board is over recommended temperature (level-warning; system board is over recommended temperature)	<ol style="list-style-type: none"> 1. Ensure system is being properly cooled; see "System reliability considerations" on page 41. 2. Replace system board
System board is under recommended temperature (level-warning; system board is under recommended temperature)	<ol style="list-style-type: none"> 1. Ambient temperature must be within normal operating specifications; see "Features and specifications" on page 3.
System over temperature for CPU "X" (level-warning; CPU "X" reporting over temperature condition)	<ol style="list-style-type: none"> 1. Ensure system is being properly cooled; see "System reliability considerations" on page 41.
System under recommended CPU "X" temperature (level-warning; system reporting under temperature condition for CPU "X")	<ol style="list-style-type: none"> 1. Ambient temperature must be within normal operating specifications; see "Features and specifications" on page 3.

Fan error messages

Message	Action
Fan "X" failure (level-critical; fan "X" had a failure)	<ol style="list-style-type: none"> 1. Check connections to fan "X" 2. Replace fan "X"
Fan "X" fault (level-critical; fan "X" beyond recommended RPM range)	<ol style="list-style-type: none"> 1. Check connections to fan "X" 2. Replace fan "X"
Fan "X" Outside Recommended Speed Action	<ol style="list-style-type: none"> 1. Replace Fan "X"

Power error messages

Message	Action
Power supply "X" current share fault (level-critical; excessive current demand on power supply "X")	<ol style="list-style-type: none"> 1. Replace power supply "X"
Power supply "X" DC good fault (level-critical; power good signal not detected for power supply "X")	<ol style="list-style-type: none"> 1. Replace power supply "X"
Power supply "X" temperature fault	<ol style="list-style-type: none"> 1. Replace power supply "X"
Power supply "X" removed	<ol style="list-style-type: none"> 1. No action required - information only
Power supply "X" fan fault (level-critical; fan fault in power supply "X")	<ol style="list-style-type: none"> 1. Replace power supply "X"
Power supply "X" 12V fault (level-critical; overcurrent condition detected)	<ol style="list-style-type: none"> 1. See "Power checkout" on page 19.
Power supply "X" 3.3V fault (level-critical; 3.3V power supply "X" had an error)	<ol style="list-style-type: none"> 1. See "Power checkout" on page 19.
Power supply "X" 5V fault (level-critical; 5V power supply "X" had an error)	<ol style="list-style-type: none"> 1. See "Power checkout" on page 19.
System running non-redundant power (level-non-critical; system does not have redundant power)	<ol style="list-style-type: none"> 1. Add another power supply 2. Remove options from system 3. System can continue to operate without redundancy protection if 1 and 2 above are not followed.
System under recommended voltage for "X" (level-warning; indicated voltage supply under nominal value; value for "X" can be +12, -12, or +5)	<ol style="list-style-type: none"> 1. Check connections to power subsystem 2. Replace power supply 3. Replace power backplane

System shutdown

Refer to the following tables when experiencing system shutdown related to voltage or temperature problems.

Voltage related system shutdown

Message	Action
System shutoff due to "X" current over max value (level-critical; system drawing too much current on voltage "X" bus)	1. See "Power checkout" on page 19.
System shutoff due to "X" V over voltage (level-critical; system shutoff due to "X" supply over voltage)	1. Check power supply connectors 2. Replace power supply 3. Replace power backplane
System shutoff due to "X" V under voltage (level-critical system shutoff due to "X" supply under voltage)	1. Check power supply connectors 2. Replace power supply 3. Replace power backplane
System shutoff due to VRM "X" over voltage	1. Replace VRM "X"
System shutoff due to excessive (< 240 VA) loading	1. See "Power checkout" on page 19. 2. Cycle AC On/Off to enable retry

Temperature related system shutdown

Message	Action
System shutoff due to board over temperature (level-critical; board is over temperature)	1. Ensure system is being properly cooled , see "System reliability considerations" on page 41. 2. Replace board
System shutoff due to CPU "X" over temperature (level-critical; CPU "X" is over temperature)	1. Ensure system is being properly cooled , see "System reliability considerations" on page 41. 2. Replace CPU "X"
System shutoff due to CPU "X" under temperature (level-critical; CPU "X" is under temperature)	1. Ambient temperature must be within normal operating specifications , see "Features and specifications" on page 3. 2.
System shutoff due to DASD temperature (sensor X) (level-critical; DASD area reported temperature outside recommended operating range)	1. Ensure system is being properly cooled , see "System reliability considerations" on page 41.
System shutoff due to high ambient temperature (level-critical; high ambient temperature)	1. Ambient temperature must be within normal operating specifications , see "Features and specifications" on page 3.
System shutoff due to system board under temperature (level-critical; system board is under temperature)	1. Ambient temperature must be within normal operating specifications , see "Features and specifications" on page 3.

DASD checkout

Message	Action
Hard drive "X" removal detected (level-critical; hard drive "X" has been removed)	1. Information only, take action as appropriate.

Host Built-In Self Test (BIST)

Message	Action
Host fail (level-informational; host's built-in self test failed)	<ol style="list-style-type: none">1. Reseat CPU2. Reseat VRM3. Replace CPU

Bus fault messages

Bus fault messages	Message Action
Failure reading 12C device. Check devices on bus 0.	<ol style="list-style-type: none">1. If installed, reseat I2C cable between Remote Supervisor Adapter (in PCI slot 1/J44) and planar (J45)2. Reseat Memory DIMMs3. Memory DIMMs4. System board
Failure reading 12C device. Check devices on bus 1.	<ol style="list-style-type: none">1. Reseat I2C cable between operator information panel and planar (J39)2. Replace Operator information panel3. System board
Failure reading 12C device. Check devices on bus 2.	<ol style="list-style-type: none">1. Reseat cable between Power Backplane and planar (J43)2. Reseat Power Backplane3. Reseat Power Supply4. Replace Power Backplane5. Replace Power Supply6. Replace System board
Failure reading 12C device. Check devices on bus 3.	<ol style="list-style-type: none">1. Reseat Cable (Signal I2C - IO Planar to SCSI Backplane) between DASD backplane and connector (J9) of planar2. Replace DASD backplane3. Replace System board
Failure reading I2C device. Check device on bus 4.	<ol style="list-style-type: none">1. System board

Undetermined problems

You are here because the diagnostic tests did not identify the failure, the Devices List is incorrect, or the system is inoperative.

Note: A corrupt CMOS can cause undetermined problems.

Note: A corrupt BIOS can cause undetermined problems. (See "Recovering BIOS code" on page 16.)

Check the LEDs on all the power supplies, see "Power supply LED errors" on page 92. If the LEDs indicate the power supplies are working correctly, return here and do the following:

1. Power-off the computer.
2. Be sure the system is cabled correctly.

3. Remove or disconnect the following (one at a time) until you find the failure (power-on the computer and reconfigure each time).
 - Any external devices
 - Surge suppressor device (on the computer)
 - Modem, printer, mouse, or non-IBM devices
 - Each adapter
 - Drives
 - Memory-Modules (Minimum requirement = 256 MB (2 banks of 128 MB DIMMs))

Note: Minimum operating requirements are:

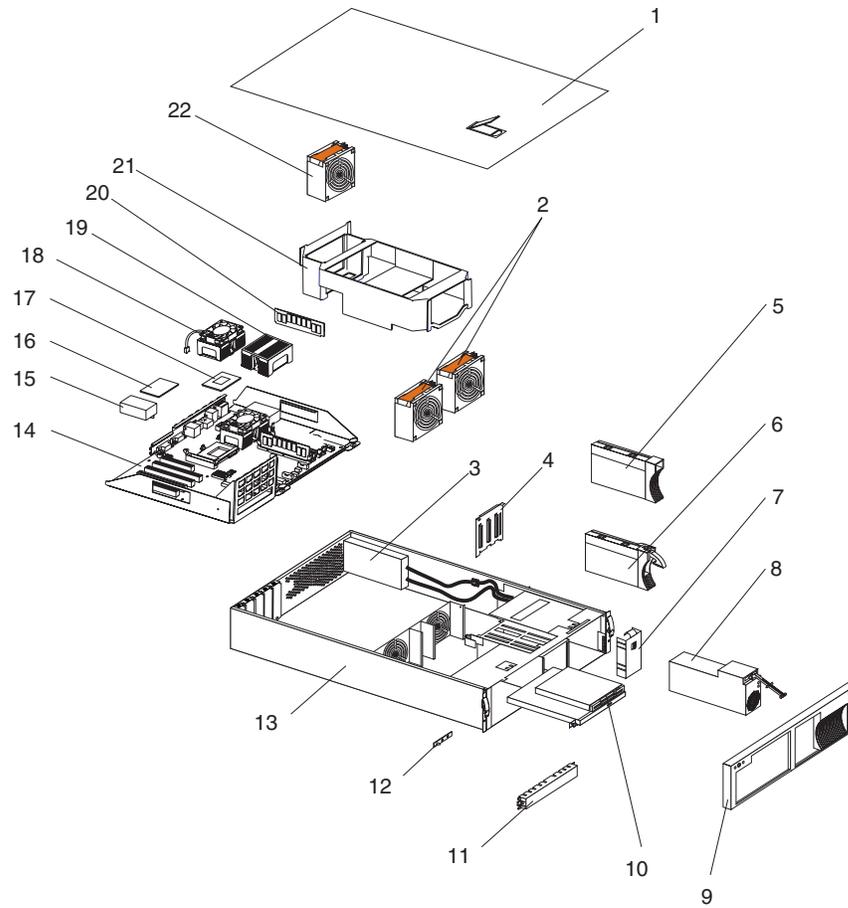
- a. 1 Power Supply
 - b. Power Backplane
 - c. System Board
 - d. 1 Microprocessor and VRM
 - e. 1 Terminator Card
 - f. Memory Module (with a minimum of two 128 MB DIMMs)
4. Power-on the computer. If the problem remains, suspect the following FRUs in the order listed:
 - Power Supply
 - Power Backplane
 - System Board

Notes:

1. If the problem goes away when you remove an adapter from the system, and replacing that adapter does not correct the problem, suspect the System Board.
2. If you suspect a networking problem and all the system tests pass, suspect a network cabling problem external to the system.

Parts listing, xSeries 342

This parts listing supports the xSeries 342 (Type 8669) Models 1RX, 2RX, 4RX, 5RX, 1TG, 2TG, 4TG.



System

Index	System (xSeries 342 Models 1RX, 2RX, 4RX, 5RX, 1TG, 2TG, 4TG)	FRU No.
1	Top Cover (All models)	37L0365
2	92MM X 38 Fan (All models)	37L0305
3	AC Distribution Box (All models)	37L0313
4	SCSI Backplane Combo/Backplate Assembly (All models)	00N8953
5	Hard Disk Drive Blank (All models)	00N7259
6	9.1 GB Hard Disk Drive, 7200 RPM	37L6212
6	18.2 GB Hard Disk Drive, 7200 RPM	37L6213
6	9.1 GB Hard Disk Drive, 10000 RPM	37L6216
6	18.2 GB Hard Disk Drive, 10000 RPM	37L6217
6	9.1 GB Hard Disk Drive, Ultra 160 MB	19K0610
6	18.2 GB Hard Disk Drive, Ultra 160 MB	19K0611
6	36.4 GB Hard Disk Drive Ultra 160 MB	19K0612
6	18 GB Hard Disk Drive 10000 RPM (Models 1TG, 2TG, 4TG)	19K0632
6	Hard Disk Drive, 18GB 10K RPM (Models 1TG, 2TG, 4TG)	19K0614
7	Panel, Power Supply Filler (All models)	37L0331
8	Power Supply with Mounting, 270 WF (All models)	37L0311
9	Bezel, eServer (All models)	06P5907
10	12.7MM Diskette Drive (All models)	36L8645
10	24X CD-ROM Drive, Delta (primary) (All models)	06P5151
10	24X CD-ROM Drive, LG (alternate) (All models)	06P5263
10	24X CD-ROM Drive, LG (alternate) (All models)	19K1523
11	Blank 5.25 Hard Disk Drive Bezel (Snap Mount) (All models)	00N6407
12	Card Assembly, Front Switch Card (All models)	00N7213
13	Frame Assembly (All models)	06P5931
14	Planar (Models 1RX, 1TG, 2RX, 2TG, 4RX, 4TG)	48P9072
14	Planar (Model 5RX)	49P3064
15	Voltage Regulator Module	24P6893
16	Terminator Card Assembly (All models)	25P1866
17	133/1000-256K Pentium III (Models 1RX, 1TG)	25P2603
17	133/1133-256K Pentium III (Models 2RX, 2TG)	25P2605
17	133/1266-512K Pentium III (Models 4RX, 4TG)	25P2601
17	133/1400-512K Pentium III (Model 5RX)	49P2814
18	Fan sink (Models 1RX, 1TG, 2RX, 2TG, 4RX, 4TG)	22P4370
19	Heat sink (Model 5RX)	32P0575
20	Memory, 128MB RDIMM P133 (Models 1RX, 2RX, 4RX, 5RX)	33L3321
20	Memory, 256MB ECC SDRAM (Models 1TG, 2TG, 4TG)	33L3323
20	512MB SDIMM Memory (All models)	33L3325
20	1GB SDIMM Memory (All models)	33L3327
21	Baffle, Air (Models 1RX, 1TG, 2RX, 2TG, 4RX, 4TG)	06P5924
21	Baffle, Air (Model 5RX)	06P5987
22	Rear Fan Assembly (92MM X 38)	00N7248
	Power Backplane Insulator (All models)	00N7188
	Left External Interface Adapter Side Flange (All models)	00N7190
	Right External Interface Adapter Side Flange (All models)	00N7192
	Label, System Service (All models)	06P5925
	Mounting Bracket Assembly (CD/FDD) (All models)	09N9452
	Battery (3V) (All models)	33F8354
	On/Off Switch Cover (All models)	09N8012
	Misc. Rack Hardware Kit (All models)	00N7193
	Slide with Bracket (Models 1RX, 1TG, 2RX, 2TG, 4RX, 4TG, 5RX)	37L6579
	Bracket, Cable Management Chassis (2) (All models)	00N7211
	Cable Management Arm Assembly (All models)	00N7242

Index	System (xSeries 342 Models 1RX, 2RX, 4RX, 5RX, 1TG, 2TG, 4TG)	FRU No.
	Cable Management (All models)	00N7245
	Hinge Pin (3) (All models)	00N7244
	Lens Cover (All models)	00N7178
	Misc FRU Kit (All models)	00N7179
	Mounting Hardware/Cage (All models)	00N7196
	Card Assembly, Neolite (Models 1TG, 2TG, 4TG)	06P5741
	Card Assembly, Power Backplane (All models)	00N7216
	Card Assembly, Front LED Card Assembly (All models)	00N7227
	Card Assembly (CD Interposer) (All models)	09N9451
	Cable, Power - IO Planar to Fans 1X7 (3) (All models)	00N7181
	Cable, Signal I2C - IO Planar to SCSI Backplane (2X7) (All models)	00N7185
	Cable, Signal - SCSI Planar to Media (PT-PT) (All models)	00N7187
	Cable, Power - Signal (All models)	06P5922
	Cable, Signal (All models)	06P5978
	Cable, Signal LVD-SCSI - Planar to SCSI Backplane (All models)	37L0350
	Cable, Power - Power Backplane to IO Planar 2X12 (All models)	37L0354
	Cable, Power - PWR BP to SCSI BP & Media Bay 5-Drop (All models)	37L0358
	Power cord (All models)	6952300

Keyboards

Keyboard	FRU No.
US English	37L2551
French Canadian	37L2552
LA Spanish	37L2553
Arabic	37L2555
Belgium/French	37L2556
Belgium/UK	37L2557
Bulgarian	37L2558
Czech	37L2559
Danish	37L2560
Dutch	37L2561
French	37L2562
German	37L2563
Greek	37L2564
Hebrew	37L2565
Hungarian	37L2566
Korean	02K0901
Iceland	37L2567
Italy	37L2568
Norwegian	37L2569
Polish	37L2570
Portuguese	37L2571
Romanian	37L2572
Russian	37L2573
Serbian/Cyrillic	37L2574
Slavic	37L2575
Spanish	37L2576
Swedish/Finn	37L2577
Swiss, F/G	37L2578
Turkish	37L2579
Turkish	37L2580
UK English	37L2581

Keyboard	FRU No.
Yugosl/Lat	37L2582
US English-EMEA	37L2583
Chinese/US	37L2585
Thailand	37L2587
French Canadian	37L0913

Power cords

Power cord	FRU No.
China (PRC)	01K9851
Japan	01K9853
Thailand	12J5120
Israel	12J5122
Bangladesh, Burma, India, Pakistan, South Africa, Sri Lanka	12J5124
Chile, Ethiopia, Italy, Libya, Somalia	12J5126
Argentina, Australia, New Zealand, Papua New Guinea, Paraguay, Uruguay, Western Samoa	12J5128
Antigua, Bahrain, Brunei, Channel Islands, Cyprus, Dubai, Fiji, Ghana, Hong Kong, Iraq, Ireland, Kenya, Kuwait, Malawi, Malaysia, Malta, Nepal, Nigeria, Polynesia, Qatar, Sierra Leone, Singapore, Tanzania, Uganda, United Kingdom, Yemen, Zambia	12J5987
Afghanistan, Algeria, Andorra, Angola, Austria, Belgium, Benin, Bulgaria, Burkina Faso, Burundi, Cameroon, Central African Rep., Chad, Czech Republic, Egypt, Finland, France, French Guiana, Germany, Greece, Guinea, Hungary, Iceland, Indonesia, Iran, Ivory Coast, Jordan, Lebanon, Luxembourg, Macau, Malagasy, Mali, Martinique, Mauritania, Mauritius, Monaco, Morocco, Mozambique, Netherlands, New Caledonia, Niger, Norway, Poland, Portugal, Romania, Senegal, Slovakia, Spain, Sudan, Sweden, Syria, Togo, Tunisia, Turkey, former USSR, Vietnam, former Yugoslavia, Zaire, Zimbabwe	55H6643
Denmark, Switzerland, Liechtenstein	55H6646
Bahamas, Barbados, Bermuda, Bolivia, Brazil, Canada, Cayman Islands, Colombia, Costa Rica, Dominican Republic, Ecuador, El Salvador, Guatemala, Guyana, Haiti, Honduras, Jamaica, Korea (South), Liberia, Mexico, Netherlands Antilles, Nicaragua, Panama, Peru, Philippines, Saudi Arabia, Suriname, Taiwan, Trinidad (West Indies), Venezuela	76H4865
United States of America	6952301 (110) 1838574 (220) 36L8886 (220V/15A)

Related service information

Note: The service procedures are designed to help you isolate problems. They are written with the assumption that you have model-specific training on all computers, or that are familiar with the computers, functions, terminology, and service information provided in this manual.

Safety information

The following section contains the safety information that you need to be familiar with before servicing an IBM computer.

General safety

Follow these rules to ensure general safety:

- Observe good housekeeping in the area of the machines during and after maintenance.
- When lifting any heavy object:
 1. Ensure you can stand safely without slipping.
 2. Distribute the weight of the object equally between your feet.
 3. Use a slow lifting force. Never move suddenly or twist when you attempt to lift.
 4. Lift by standing or by pushing up with your leg muscles; this action removes the strain from the muscles in your back. *Do not attempt to lift any objects that weigh more than 16 kg (35 lb) or objects that you think are too heavy for you.*
- Do not perform any action that causes hazards to the customer, or that makes the equipment unsafe.
- Before you start the machine, ensure that other service representatives and the customer's personnel are not in a hazardous position.
- Place removed covers and other parts in a safe place, away from all personnel, while you are servicing the machine.
- Keep your tool case away from walk areas so that other people will not trip over it.
- Do not wear loose clothing that can be trapped in the moving parts of a machine. Ensure that your sleeves are fastened or rolled up above your elbows. If your hair is long, fasten it.
- Insert the ends of your necktie or scarf inside clothing or fasten it with a nonconductive clip, approximately 8 centimeters (3 inches) from the end.
- Do not wear jewelry, chains, metal-frame eyeglasses, or metal fasteners for your clothing.

Remember: Metal objects are good electrical conductors.
- Wear safety glasses when you are: hammering, drilling soldering, cutting wire, attaching springs, using solvents, or working in any other conditions that might be hazardous to your eyes.
- After service, reinstall all safety shields, guards, labels, and ground wires. Replace any safety device that is worn or defective.
- Reinstall all covers correctly before returning the machine to the customer.

Electrical safety



CAUTION:

Electrical current from power, telephone, and communication cables can be hazardous. To avoid personal injury or equipment damage, disconnect the attached power cords, telecommunication systems, networks, and modems before you open the server covers, unless instructed otherwise in the installation and configuration procedures.

Observe the following rules when working on electrical equipment.

Important: Use only approved tools and test equipment. Some hand tools have handles covered with a soft material that does not insulate you when working with live electrical currents.

Many customers have, near their equipment, rubber floor mats that contain small conductive fibers to decrease electrostatic discharges. Do not use this type of mat to protect yourself from electrical shock.

- Find the room emergency power-off (EPO) switch, disconnecting switch, or electrical outlet. If an electrical accident occurs, you can then operate the switch or unplug the power cord quickly.
- Do not work alone under hazardous conditions or near equipment that has hazardous voltages.
- Disconnect all power before:
 - Performing a mechanical inspection
 - Working near power supplies
 - Removing or installing main units
- Before you start to work on the machine, unplug the power cord. If you cannot unplug it, ask the customer to power-off the wall box that supplies power to the machine and to lock the wall box in the off position.
- If you need to work on a machine that has exposed electrical circuits, observe the following precautions:
 - Ensure that another person, familiar with the power-off controls, is near you.
Remember: Another person must be there to switch off the power, if necessary.
 - Use only one hand when working with powered-on electrical equipment; keep the other hand in your pocket or behind your back.
Remember: There must be a complete circuit to cause electrical shock. By observing the above rule, you may prevent a current from passing through your body.
 - When using testers, set the controls correctly and use the approved probe leads and accessories for that tester.
 - Stand on suitable rubber mats (obtained locally, if necessary) to insulate you from grounds such as metal floor strips and machine frames.

Observe the special safety precautions when you work with very high voltages; these instructions are in the safety sections of maintenance information. Use extreme care when measuring high voltages.

- Regularly inspect and maintain your electrical hand tools for safe operational condition.
 - Do not use worn or broken tools and testers.
 - *Never assume* that power has been disconnected from a circuit. First, *check* that it has been powered-off.
 - Always look carefully for possible hazards in your work area. Examples of these hazards are moist floors, nongrounded power extension cables, power surges, and missing safety grounds.
 - Do not touch live electrical circuits with the reflective surface of a plastic dental mirror. The surface is conductive; such touching can cause personal injury and machine damage.
 - Do not service the following parts with the power on when they are removed from their normal operating places in a machine:
 - Power supply units
 - Pumps
 - Blowers and fans
 - Motor generators
- and similar units. (This practice ensures correct grounding of the units.)
- If an electrical accident occurs:
 - Use caution; do not become a victim yourself.
 - Switch off power.
 - Send another person to get medical aid.

Safety inspection guide

The intent of this inspection guide is to assist you in identifying potentially unsafe conditions on these products. Each machine, as it was designed and built, had required safety items installed to protect users and service personnel from injury. This guide addresses only those items. However, good judgment should be used to identify potential safety hazards due to attachment of non-IBM features or options not covered by this inspection guide.

If any unsafe conditions are present, you must determine how serious the apparent hazard could be and whether you can continue without first correcting the problem.

Consider these conditions and the safety hazards they present:

- Electrical hazards, especially primary power (primary voltage on the frame can cause serious or fatal electrical shock).
- Explosive hazards, such as a damaged CRT face or bulging capacitor
- Mechanical hazards, such as loose or missing hardware

The guide consists of a series of steps presented in a checklist. Begin the checks with the power off, and the power cord disconnected.

Checklist:

1. Check exterior covers for damage (loose, broken, or sharp edges).
2. Power-off the computer. Disconnect the power cord.
3. Check the power cord for:

- a. A third-wire ground connector in good condition. Use a meter to measure third-wire ground continuity for 0.1 ohm or less between the external ground pin and frame ground.
 - b. The power cord should be the appropriate type as specified in the parts listings.
 - c. Insulation must not be frayed or worn.
4. Remove the cover.
 5. Check for any obvious non-IBM alterations. Use good judgment as to the safety of any non-IBM alterations.
 6. Check inside the unit for any obvious unsafe conditions, such as metal filings, contamination, water or other liquids, or signs of fire or smoke damage.
 7. Check for worn, frayed, or pinched cables.
 8. Check that the power-supply cover fasteners (screws or rivets) have not been removed or tampered with.

Handling static-sensitive devices

Any computer part containing transistors or integrated circuits (ICs) should be considered sensitive to electrostatic discharge (ESD). ESD damage can occur when there is a difference in charge between objects. Protect against ESD damage by equalizing the charge so that the machine, the part, the work mat, and the person handling the part are all at the same charge.

Notes:

1. Use product-specific ESD procedures when they exceed the requirements noted here.
2. Make sure that the ESD protective devices you use have been certified (ISO 9000) as fully effective.

When handling ESD-sensitive parts:

- Keep the parts in protective packages until they are inserted into the product.
- Avoid contact with other people.
- Wear a grounded wrist strap against your skin to eliminate static on your body.
- Prevent the part from touching your clothing. Most clothing is insulative and retains a charge even when you are wearing a wrist strap.
- Use the black side of a grounded work mat to provide a static-free work surface. The mat is especially useful when handling ESD-sensitive devices.
- Select a grounding system, such as those listed below, to provide protection that meets the specific service requirement.

Note: The use of a grounding system is desirable but not required to protect against ESD damage.

- Attach the ESD ground clip to any frame ground, ground braid, or green-wire ground.
- Use an ESD common ground or reference point when working on a double-insulated or battery-operated system. You can use coax or connector-outside shells on these systems.
- Use the round ground-prong of the ac plug on ac-operated computers.

Grounding requirements

Electrical grounding of the computer is required for operator safety and correct system function. Proper grounding of the electrical outlet can be verified by a certified electrician.

Safety notices (multi-lingual translations)

The caution and danger safety notices in this section are provided in the following languages:

- English
- Brazilian/Portuguese
- Chinese
- French
- German
- Italian
- Korean
- Spanish

Important: All caution and danger statements in this IBM documentation begin with a number. This number is used to cross reference an English caution or danger statement with translated versions of the caution or danger statement in this section.

For example, if a caution statement begins with a number 1, translations for that caution statement appear in this section under statement 1.

Be sure to read all caution and danger statements before performing any of the instructions.

- Statement 1



DANGER

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

To avoid a shock hazard:

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

- **Connect and disconnect cables as described in the following table when installing, moving, or opening covers on this product or attached devices.**

To Connect	To Disconnect
<ol style="list-style-type: none"> 1. Turn everything OFF. 2. First, attach all cables to devices. 3. Attach signal cables to connectors. 4. Attach power cords to outlet. 5. Turn device ON. 	<ol style="list-style-type: none"> 1. Turn everything OFF. 2. First, remove power cords from outlet. 3. Remove signal cables from connectors. 4. Remove all cables from devices.

- Statement 2



CAUTION:

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

Do not:

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

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

- Statement 3



CAUTION:

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

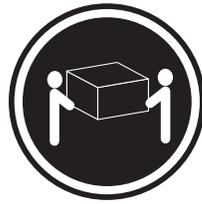
- **Do not remove the covers. Removing the covers of the laser product could result in exposure to hazardous laser radiation. There are no serviceable parts inside the device.**
- **Use of controls or adjustments or performance of procedures other than those specified herein might result in hazardous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



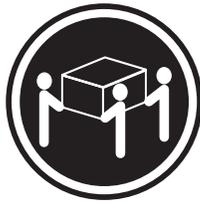
DANGER: Some laser products contain an embedded Class 3A or Class 3B laser diode. Note the following:

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

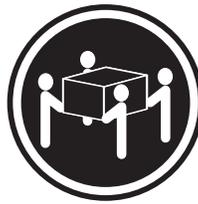
- Statement 4



≥18 kg (37 lbs)



≥32 kg (70.5 lbs)



≥55 kg (121.2 lbs)

CAUTION:
Use safe practices when lifting.

- Statement 5



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



- Statement 10

CAUTION:

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



Importante:

Todas as instruções de cuidado e perigo da IBM documentation começam com um número. Este número é utilizado para fazer referência cruzada de uma instrução de cuidado ou perigo no idioma inglês com as versões traduzidas das instruções de cuidado ou perigo encontradas nesta seção.

Por exemplo, se uma instrução de cuidado é iniciada com o número 1, as traduções para aquela instrução de cuidado aparecem nesta seção sob a instrução 1.

Certifique-se de ler todas as instruções de cuidado e perigo antes de executar qualquer operação.

Instrução 1



PERIGO

A corrente elétrica proveniente de cabos de alimentação, de telefone e de comunicações é perigosa.

Para evitar risco de choque:

- Não conecte ou desconecte cabos e não realize instalação, manutenção ou reconfiguração deste produto durante uma tempestade com raios.
- Conecte todos os cabos de alimentação a tomadas elétricas corretamente instaladas e aterradas.
- Conecte todos os equipamentos ao qual esse produto será conectado a tomadas corretamente instaladas.
- Sempre que possível, utilize apenas uma das mãos para conectar ou desconectar cabos de sinal.
- Nunca ligue qualquer equipamento quando existir evidência de danos por fogo, água ou na estrutura.
- Desconecte cabos de alimentação, sistemas de telecomunicação, redes e modems antes de abrir as tampas dos dispositivos, a menos que especificado de maneira diferente nos procedimentos de instalação e configuração.
- Conecte e desconecte cabos conforme descrito na seguinte tabela, ao instalar ou movimentar este produto ou os dispositivos conectados, ou ao abrir suas tampas.

Para Conectar:	Para Desconectar:
<ol style="list-style-type: none">1. DESLIGUE Tudo.2. Primeiramente, conecte todos os cabos aos dispositivos.3. Conecte os cabos de sinal aos conectores.4. Conecte os cabos de alimentação às tomadas.5. LIGUE os dispositivos.	<ol style="list-style-type: none">1. DESLIGUE Tudo.2. Primeiramente, remova os cabos de alimentação das tomadas.3. Remova os cabos de sinal dos conectores.4. Remova todos os cabos dos dispositivos.

Instrução 2



CUIDADO:

Ao substituir a bateria de lítio, utilize apenas uma bateria IBM, Número de Peça 33F8354 ou uma bateria de tipo equivalente, recomendada pelo fabricante. Se o seu sistema possui um módulo com uma bateria de lítio, substitua-o apenas pelo mesmo tipo de módulo, do mesmo fabricante. A bateria contém lítio e pode explodir se não for utilizada, manuseada e descartada de maneira correta.

Não:

- Jogue ou coloque na água
- Aqueça a mais de 100°C (212°F)
- Conserte nem desmonte

Para descartar a bateria, entre em contato com a área de atendimento a clientes IBM, pelo telefone (011) 889-8986, para obter informações sobre como enviar a bateria pelo correio para a IBM.

Instrução 3



PRECAUCIÓN:

Quando produtos a laser (unidades de CD-ROM, unidades de DVD, dispositivos de fibra ótica, transmissores, etc.) estiverem instalados, observe o seguinte:

- Não remova as tampas. A remoção das tampas de um produto a laser pode resultar em exposição prejudicial à radiação de laser. Nenhuma peça localizada no interior do dispositivo pode ser consertada.
- A utilização de controles ou ajustes ou a execução de procedimentos diferentes dos especificados aqui pode resultar em exposição prejudicial à radiação.

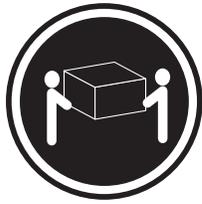
PERIGO

Alguns produtos a laser contêm um diodo laser da Classe 3A ou Classe 3B embutido. Observe o seguinte:

Radiação de laser quando aberto. Não olhe diretamente para o raio a olho nu ou com instrumentos óticos, e evite exposição direta ao raio.

Instrução 4





≥18 kg (37 lbs)



≥32 kg (70.5 lbs)



≥55 kg (121.2 lbs)

CUIDADO:

Ao levantar a máquina, faça-o com segurança.

Instrução 5



CUIDADO:

Os botões Liga/Desliga localizados no dispositivo e na fonte de alimentação não desligam a corrente elétrica fornecida ao dispositivo. O dispositivo também pode ter mais de um cabo de alimentação. Para remover toda a corrente elétrica do dispositivo, assegure que todos os cabos de alimentação estejam desconectados da fonte de energia elétrica.



CUIDADO:

Instrução 10



CUIDADO:



Não coloque nenhum objeto com peso superior a 82 kg (180 lbs.) sobre dispositivos montados em rack.

重要:

Server Library 中的所有提醒和危险条款前都有一个数字标识。该数字是用来交叉引用一个英文的提醒和危险条款及本部分中的与之对应的已翻译成其它文字的提醒和危险条款。

例如, 如果一个提醒条款前的数字为 1, 则本部分中相应的译文也带有标号 1。

在执行任何指示的操作之前, 请确保您已经阅读了全部提醒和危险条款。

声明 1



危险

电源、电话和通信电缆中带有危险电流。
为避免电击:
雷电期间不要拆接电缆或安装、维修及重新配置本产品。
将所有电源线连接至正确布线并已安全接地的电源插座上。
将与本产品连接的所有设备连接至正确布线的插座上。
尽量只使用单手拆接信号电缆。
有水、火及结构损坏迹象时, 请勿打开任何设备。
除非在安装配置过程中有明确指示, 否则, 打开设备机盖前应先断开与电源线、远程通信系统、网络和调制解调器的所有连接。
安装、移动或打开本产品及其附带设备的机盖时, 应按下表所述连接和断开电缆。

连接时:	断开连接时:
1. 关闭所有设备。	1. 关闭所有设备。
2. 首先将所有电缆连接至设备。	2. 首先从插座中拔出电源线。
3. 将信号电缆连接至接口。	3. 从接口上拔下信号电缆。
4. 将电源线连接至插座。	

声明 2



警告:

更换锂电池时，只能使用 IBM 产品号 33F8354 或者是厂商推荐的等同类型的电池。

如果系统模块中含有锂电池，则只能使用同一厂商制造的同一类型的模块进行更换。电池中含有锂。如果使用、拿放或处理不当，可能会发生爆炸。

请勿对电池进行下列操作：
扔入或浸入水电
加热超过 100 (212 F)
进行修理或分解
请按本地法规要求处理电池。

声明 3



警告:

安装激光产品（如 CD-ROM、DVD 驱动器、光纤设备或送话器）时，应注意以下事项：

不要拆除外盖。拆除激光产品的外盖可能会导致激光辐射的危险，本设备中没有用户可维修的部件。

非此处指定的其它控制、调整或与性能有关的操作都有可能导致激光辐射的危险。



危险

某些激光产品中包含内嵌的 3A 级或 3B 级激光二极管。请注意以下事项。

打开时会产生激光辐射。不要直视光束，不要使用光学仪器直接观看光束，避免直接暴露于光束之下。

声明 4



≥18 kg (37 磅)



≥32 kg (70.5 磅)



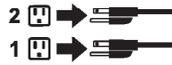
≥55 kg (121.2 磅)

警告：
抬起时请采用安全操作方法。

声明 5



警告：
使用设备上的电源控制按钮和电源上的开关都不能断开本设备上的电流。
另外，本设备可能带有多条电源线。如要断开设备上的所有电流，请确
保所有电源线均已与电源断开连接。



声明 6



警告：
如果在电源线连接设备的一端安装了固定松紧夹，则必须将电源线的另一端连接至
使用方便的电源。

声明 7



警告:

如果设备带有外门，则在移动或抬起设备前应将其拆除或固定以避免造成人员伤害。外门支撑不了设备的重量。

声明 8



警告:

不要拆除电源外盖或贴有下列标签的任何部件。



贴有此标签的组件内部存在高电压、高电流的危险。这些组件中没有用户可维修的部件。如果怀疑其中的部件存在问题，应与服务技术人员联系。

声明 9



警告:

为避免人员伤害，拆除设备上的风扇前应拨下热插拔风扇电缆。

声明 10



警告:

机柜安装的设备上面不能放置重于 82kg (180 磅) 的物品。



> 82 kg (180 磅)

声明 11



警告:

下面的标签表明附近有锋利的边、角或接头。



声明 12



警告:

下面的标签表明附近有高热表面。



重要資訊：

Server Library 中所有「注意」及「危險」的聲明均以數字開始。此一數字是用來作為交互參考之用，英文「注意」或「危險」聲明可在本節中找到相同內容的「注意」或「危險」聲明的譯文。

例如，有一「危險」聲明以數字 1 開始，則該「危險」聲明的譯文將出現在本節的「聲明」1 中。

執行任何指示之前，請詳讀所有「注意」及「危險」的聲明。

聲明 1



危險

電源、電話及通信電纜上所產生的電流均有危險性。

欲避免電擊危險：

- 在雷雨期間，請勿連接或切斷本產品上的任何電纜線，或安裝、維修及重新架構本產品。
- 請將電源線接至接線及接地正確的電源插座。
- 請將本產品隨附的設備連接至接線正確的插座。
- 儘可能使用單手來連接或切斷信號電纜線。
- 當設備有火燒或泡水的痕跡，或有結構性損害時，請勿開啓該設備的電源。
- 在安裝及架構之時，若非非常熟悉，在開啓裝置蓋子之前，請切斷電源線、電信系統、網路及數據機。
- 在安裝、移動本產品或附加裝置，或開啓其蓋子時，請依照下表中「連接」及「切斷」電纜線的步驟執行。

連接：

1. 關閉所有開關。
2. 先將所有電纜線接上裝置。
3. 將信號電纜接上接頭。
4. 再將電源線接上電源插座。
5. 開啓裝置的電源。

切斷：

1. 關閉所有開關。
2. 先自電源插座拔掉電源線。
3. 拔掉接頭上的所有信號電纜。
4. 再拔掉裝置上的所有電纜線。

聲明 2



注意：

更換鋰電池時，只可使用 IBM 零件編號 33F8354 的電池，或製造商建議之相當類型的電池。若系統中具有包含鋰電池的模組，在更換此模組時，請使用相同廠商製造的相同模組類型。如未正確使用、處理或丟棄含有鋰的電池時，可能會引發爆炸。

請勿將電池：

- 丟入或浸入水中
- 加熱超過 100 °C (212 °F)
- 修理或拆開

請遵照當地法令規章處理廢棄電池。

聲明 3



注意：

安裝雷射產品(如 CD-ROM、DVD 光碟機、光纖裝置或發射器)時，請注意下列事項：

- 請勿移開蓋子。移開雷射產品的蓋子，您可能會暴露於危險的雷射輻射之下。裝置中沒有需要維修的組件。
- 不依此處所指示的控制、調整或處理步驟，您可能會暴露於危險的輻射之下。



危險

有些雷射產品含有內嵌式 Class 3A 或 Class 3B 雷射二極體。請注意下列事項：

開啓時會產生雷射輻射。請勿凝視光束，不要使用光學儀器直接觀察，且應避免直接暴露在光束下。

聲明 4



≥ 18 公斤 (37 磅) ≥ 32 公斤 (70.5 磅) ≥ 55 公斤 (121.2 磅)

注意：

抬起裝置時，請注意安全措施。

聲明 5



注意：

裝置上的電源控制按鈕及電源供應器上的電源開關均無法關閉裝置上的電流。

本裝置可能有一條以上的電源線。如要移除裝置上的所有電流，請確認所有電源線已與電源分離。



聲明 10



注意：

請勿將任何重量超過 82 公斤 (180 磅) 的物品置於已安裝機架的裝置上方。



>82 公斤 (180 磅)

Important:

Toutes les consignes Attention et Danger indiquées dans la bibliothèque IBM documentation sont précédées d'un numéro. Ce dernier permet de mettre en correspondance la consigne en anglais avec ses versions traduites dans la présente section.

Par exemple, si une consigne de type Attention est précédée du chiffre 1, ses traductions sont également précédées du chiffre 1 dans la présente section.

Prenez connaissance de toutes les consignes de type Attention et Danger avant de procéder aux opérations décrites par les instructions.

Notice n^o 1



DANGER

Le courant électrique passant dans les câbles de communication, ou les cordons téléphoniques et d'alimentation peut être dangereux.

Pour éviter tout risque de choc électrique:

- Ne manipulez aucun câble et n'effectuez aucune opération d'installation, d'entretien ou de reconfiguration de ce produit au cours d'un orage.
- Branchez tous les cordons d'alimentation sur un socle de prise de courant correctement câblé et mis à la terre.
- Branchez sur des socles de prise de courant correctement câblés tout équipement connecté à ce produit.
- Lorsque cela est possible, n'utilisez qu'une seule main pour connecter ou déconnecter les câbles d'interface.
- Ne mettez jamais un équipement sous tension en cas d'incendie ou d'inondation, ou en présence de dommages matériels.
- Avant de retirer les carters de l'unité, mettez celle-ci hors tension et déconnectez ses cordons d'alimentation, ainsi que les câbles qui la relient aux réseaux, aux systèmes de télécommunication et aux modems (sauf instruction contraire mentionnée dans les procédures d'installation et de configuration).
- Lorsque vous installez ou que vous déplacez le présent produit ou des périphériques qui lui sont raccordés, reportez-vous aux instructions ci-dessous pour connecter et déconnecter les différents cordons.

Connexion	Déconnexion
<ol style="list-style-type: none">1. Mettez les unités hors tension.2. Commencez par brancher tous les cordons sur les unités.3. Branchez les câbles d'interface sur des connecteurs.4. Branchez les cordons d'alimentation sur des prises.5. Mettez les unités sous tension.	<ol style="list-style-type: none">1. Mettez les unités hors tension.2. Débranchez les cordons d'alimentation des prises.3. Débranchez les câbles d'interface des connecteurs.4. Débranchez tous les câbles des unités.



Notice n° 2

ATTENTION:

Remplacez la pile au lithium usagée par une pile de référence identique exclusivement - voir la référence IBM - ou par une pile équivalente recommandée par le fabricant. Si votre système est doté d'un module contenant une pile au lithium, vous devez le remplacer uniquement par un module identique, produit par le même fabricant. La pile contient du lithium et présente donc un risque d'explosion en cas de mauvaise manipulation ou utilisation.

- Ne la jetez pas à l'eau.
- Ne l'exposez pas à une température supérieure à 100 °C.
- Ne cherchez pas à la réparer ou à la démonter.

Pour la mise au rebut, reportez-vous à la réglementation en vigueur.



Notice n° 3

ATTENTION:

Si des produits laser sont installés (tels que des unités de CD-ROM ou de DVD, des périphériques contenant des fibres optiques ou des émetteurs-récepteurs), prenez connaissance des informations suivantes:

- N'ouvrez pas ces produits pour éviter une exposition directe au rayon laser. Vous ne pouvez effectuer aucune opération de maintenance à l'intérieur.
- Pour éviter tout risque d'exposition au rayon laser, respectez les consignes de réglage et d'utilisation des commandes, ainsi que les procédures décrites dans le présent document.



DANGER

Certains produits laser contiennent une diode laser de classe 3A ou 3B. Prenez connaissance des informations suivantes:

Rayonnement laser lorsque le carter est ouvert. évitez de regarder fixement le faisceau ou de l'observer à l'aide d'instruments optiques. évitez une exposition directe au rayon.

Notice n° 4





≥18 kg (37 lbs)

≥32 kg (70.5 lbs)

≥55 kg (121.2 lbs)

ATTENTION:

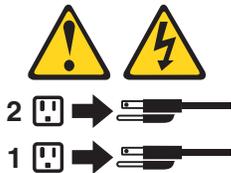
Faites-vous aider pour soulever ce produit.

Notice n^o 5



ATTENTION:

Le bouton de mise sous tension/hors tension de l'unité et l'interrupteur d'alimentation du bloc d'alimentation ne coupent pas l'arrivée de courant électrique à l'intérieur de la machine. Il se peut que votre unité dispose de plusieurs cordons d'alimentation. Pour isoler totalement l'unité du réseau électrique, débranchez tous les cordons d'alimentation des socles de prise de courant.



Notice n^o 10



ATTENTION:

Ne posez pas d'objet dont le poids dépasse 82 kg sur les unités montées en armoire.

Wichtig:

Alle Sicherheitshinweise in dieser IBM documentation beginnen mit einer Nummer. Diese Nummer verweist auf einen englischen Sicherheitshinweis mit den übersetzten Versionen dieses Hinweises in diesem Abschnitt.

Wenn z. B. ein Sicherheitshinweis mit der Nummer 1 beginnt, so erscheint die Übersetzung für diesen Sicherheitshinweis in diesem Abschnitt unter dem Hinweis 1.

Lesen Sie alle Sicherheitshinweise, bevor Sie eine Anweisung ausführen.

Hinweis 1



VORSICHT

Elektrische Spannungen von Netz-, Telefon- und Datenübertragungsleitungen sind gefährlich.

Aus Sicherheitsgründen:

- Bei Gewitter an diesem Gerät keine Kabel anschließen oder lösen. Ferner keine Installations-, Wartungs- oder Rekonfigurationsarbeiten durchführen.
- Gerät nur an eine Schutzkontaktsteckdose mit ordnungsgemäß geerdetem Schutzkontakt anschließen.
- Alle angeschlossenen Geräte ebenfalls an Schutzkontaktsteckdosen mit ordnungsgemäß geerdetem Schutzkontakt anschließen.
- Signalkabel möglichst einhändig anschließen oder lösen.
- Keine Geräte einschalten, wenn die Gefahr einer Beschädigung durch Feuer, Wasser oder andere Einflüsse besteht.
- Die Verbindung zu den angeschlossenen Netzkabeln, Telekommunikationssystemen, Netzwerken und Modems ist vor dem Öffnen des Gehäuses zu unterbrechen. Es sei denn, dies ist in den zugehörigen Installations- und Konfigurationsprozeduren anders angegeben.
- Nur nach den nachfolgend aufgeführten Anweisungen arbeiten, die für Installation, Transport oder Öffnen von Gehäusen von Personal Computern oder angeschlossenen Einheiten gelten.

Kabel anschließen:	Kabel lösen:
<ol style="list-style-type: none">1. Alle Geräte ausschalten und Netzstecker ziehen.2. Zuerst alle Kabel an Einheiten anschließen.3. Signalkabel an Anschlußbuchsen anschließen.4. Netzstecker an Steckdose anschließen.5. Gerät einschalten.	<ol style="list-style-type: none">1. Alle Geräte ausschalten.2. Zuerst Netzstecker von Steckdose lösen.3. Signalkabel von Anschlußbuchsen lösen.4. Alle Kabel von Einheiten lösen.

Hinweis 2



ACHTUNG:

Eine verbrauchte Batterie nur durch eine Batterie mit der IBM Teilenummer 33F8354 oder durch eine vom Hersteller empfohlene Batterie ersetzen. Wenn Ihr System ein Modul mit einer Lithium-Batterie enthält, ersetzen Sie es immer mit dem selben Modultyp vom selben Hersteller. Die Batterie enthält Lithium und kann bei unsachgemäßer Verwendung, Handhabung oder Entsorgung explodieren.

Die Batterie nicht:

- mit Wasser in Berührung bringen.
- über 100 C erhitzen.
- reparieren oder zerlegen.

Die örtlichen Bestimmungen für die Entsorgung von Sondermüll beachten.

Hinweis 3



ACHTUNG:

Wenn ein Laserprodukt (z. B. CD-ROM-Laufwerke, DVD-Laufwerke, Einheiten mit Glasfaserkabeln oder Transmitter) installiert ist, beachten Sie folgendes.

- Das Entfernen der Abdeckungen des CD-ROM-Laufwerks kann zu gefährlicher Laserstrahlung führen. Es befinden sich keine Teile innerhalb des CD-ROM-Laufwerks, die vom Benutzer gewartet werden müssen. Die Verkleidung des CD-ROM-Laufwerks nicht öffnen.
- Steuer- und Einstellelemente sowie Verfahren nur entsprechend den Anweisungen im vorliegenden Handbuch einsetzen. Andernfalls kann gefährliche Laserstrahlung auftreten.



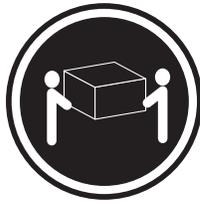
VORSICHT

Manche CD-ROM-Laufwerke enthalten eine eingebaute Laserdiode der Klasse 3A oder 3B. Die nachfolgend aufgeführten Punkte beachten.

Laserstrahlung bei geöffneter Tür. Niemals direkt in den Laserstrahl sehen, nicht direkt mit optischen Instrumenten betrachten und den Strahlungsbereich meiden.

Hinweis 4





≥18 kg



≥32 kg



≥55 kg

ACHTUNG:

Beim Anheben der Maschine die vorgeschriebenen Sicherheitsbestimmungen beachten.

Hinweis 5



ACHTUNG:

Mit dem Betriebsspannungsschalter an der Vorderseite des Servers und dem Betriebsspannungsschalter am Netzteil wird die Stromversorgung für den Server nicht unterbrochen. Der Server könnte auch mehr als ein Netzkabel aufweisen. Um die gesamte Stromversorgung des Servers auszuschalten, muß sichergestellt werden, daß alle Netzkabel aus den Netzsteckdosen herausgezogen wurden.



Hinweis 10



ACHTUNG:



Keine Gegenstände, die mehr als 82 kg wiegen, auf Rack-Einheiten ablegen.

Importante:

Tutti gli avvisi di attenzione e di pericolo riportati nella pubblicazione IBM documentation iniziano con un numero. Questo numero viene utilizzato per confrontare avvisi di attenzione o di pericolo in inglese con le versioni tradotte riportate in questa sezione.

Ad esempio, se un avviso di attenzione inizia con il numero 1, la relativa versione tradotta è presente in questa sezione con la stessa numerazione.

Prima di eseguire una qualsiasi istruzione, accertarsi di leggere tutti gli avvisi di attenzione e di pericolo.

Avviso 1



PERICOLO

La corrente elettrica circolante nei cavi di alimentazione, del telefono e di segnale è pericolosa.

Per evitare il pericolo di scosse elettriche:

- Non collegare o scollegare i cavi, non effettuare l'installazione, la manutenzione o la riconfigurazione di questo prodotto durante i temporali.
- Collegare tutti i cavi di alimentazione ad una presa elettrica correttamente cablata e munita di terra di sicurezza.
- Collegare qualsiasi apparecchiatura collegata a questo prodotto ad una presa elettrica correttamente cablata e munita di terra di sicurezza.
- Quando possibile, collegare o scollegare i cavi di segnale con una sola mano.
- Non accendere qualsiasi apparecchiatura in presenza di fuoco, acqua o se sono presenti danni all'apparecchiatura stessa.
- Scollegare i cavi di alimentazione, i sistemi di telecomunicazioni, le reti e i modem prima di aprire i coperchi delle unità, se non diversamente indicato nelle procedure di installazione e configurazione.
- Collegare e scollegare i cavi come descritto nella seguente tabella quando si effettuano l'installazione, la rimozione o l'apertura dei coperchi di questo prodotto o delle unità collegate.

Per collegare:	Per scollegare:
<ol style="list-style-type: none">1. SPEGNERE tutti i dispositivi.2. Collegare prima tutti i cavi alle unità.3. Collegare i cavi di segnale ai connettori.4. Collegare i cavi di alimentazione alle prese elettriche.5. ACCENDERE le unità.	<ol style="list-style-type: none">1. SPEGNERE tutti i dispositivi.2. Rimuovere prima i cavi di alimentazione dalle prese elettriche.3. Rimuovere i cavi di segnale dai connettori.4. Rimuovere tutti i cavi dalle unità.

Avviso 2



ATTENZIONE:

Quando si sostituisce la batteria al litio, utilizzare solo una batteria IBM con numero parte 33F8354 o batterie dello stesso tipo o di tipo equivalente consigliate dal produttore. Se il sistema di cui si dispone è provvisto di un modulo contenente una batteria al litio, sostituire tale batteria solo con un tipo di modulo uguale a quello fornito dal produttore. La batteria contiene litio e può esplodere se utilizzata, maneggiata o smaltita impropriamente.

Evitare di:

- Gettarla o immergerla in acqua
- Riscaldarla ad una temperatura superiore ai 100°C
- Cercare di ripararla o smontarla

Smaltire secondo la normativa in vigore (D.Lgs 22 del 5/2/9) e successive disposizioni nazionali e locali.

Avviso 3



ATTENZIONE:

Quando si installano prodotti laser come, ad esempio, le unità DVD, CD-ROM, a fibre ottiche o trasmettitori, prestare attenzione a quanto segue:

- Non rimuovere i coperchi. L'apertura dei coperchi di prodotti laser può determinare l'esposizione a radiazioni laser pericolose. All'interno delle unità non vi sono parti su cui effettuare l'assistenza tecnica.
- L'utilizzo di controlli, regolazioni o l'esecuzione di procedure non descritti nel presente manuale possono provocare l'esposizione a radiazioni pericolose.



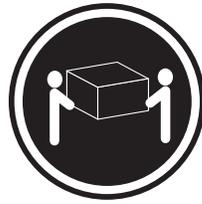
PERICOLO

Alcuni prodotti laser contengono all'interno un diodo laser di Classe 3A o Classe 3B. Prestare attenzione a quanto segue:

Aperto l'unità vengono emesse radiazioni laser. Non fissare il fascio, non guardarlo direttamente con strumenti ottici ed evitare l'esposizione diretta al fascio.

Avviso 4





≥18 kg



≥32 kg



≥55 kg

ATTENZIONE:

Durante il sollevamento della macchina seguire delle norme di sicurezza.

Avviso 5



ATTENZIONE:

Il pulsante del controllo dell'alimentazione situato sull'unità e l'interruttore di alimentazione posto sull'alimentatore non disattiva la corrente elettrica fornita all'unità. L'unità potrebbe disporre di più di un cavo di alimentazione. Per disattivare la corrente elettrica dall'unità, accertarsi che tutti i cavi di alimentazione siano scollegati dalla sorgente di alimentazione.



Avviso 10



ATTENZIONE:



Non poggiare oggetti che pesano più di 82 kg sulla parte superiore delle unità montate in rack.

중요:

본 *Server Library*에 있는 모든 주의 및 위험 경고문은 번호로 시작합니다. 이 번호는 영문 주의 혹은 위험 경고문과 이 절에 나오는 번역된 버전의 주의 혹은 위험 경고문을 상호 참조하는 데 사용됩니다.

예를 들어, 주의 경고문이 번호 1로 시작하면, 번역된 해당 주의 경고문을 본 절의 경고문 1에서 찾아볼 수 있습니다.

모든 지시사항을 수행하기 전에 반드시 모든 주의 및 위험 경고문을 읽으십시오.

경고문 1



위험

전원, 전하 및 통신 케이블로부터 흘러 나오는 전류는 위험합니다.

전기 충격을 피하려면:

- 뇌우를 동반할 때는 케이블의 연결이나 철수, 이 제품의 설치, 유지보수 또는 재구성을 하지 마십시오.
- 모든 전원 코드를 적절히 배선 및 접지해야 합니다.
- 이 제품에 연결될 모든 장비를 적절하게 배선된 콘센트에 연결하십시오.
- 가능한 한 신호 케이블을 한 손으로 연결하거나 끊으십시오.
- 화재, 수해 또는 구조상의 손상이 있을 경우 장비를 켜지 마십시오.
- 설치 및 구성 프로시저에 다른 설명이 없는 한, 장치 덮개를 열기 전에 연결된 전원 코드, 원격 리 통신 시스템, 네트워크 및 모뎀을 끊어 주십시오.
- 제품 또는 접속된 장치를 설치, 이동 및 덮개를 열 때 다음 설명에 따라 케이블을 연결하거나 끊도록 하십시오.

연결하려면:

1. 모든 스위치를 끕니다.
2. 먼저 모든 케이블을 장치에 연결합니다.
3. 신호 케이블을 커넥터에 연결합니다.
4. 콘센트에 전원 코드를 연결합니다.
5. 장치 스위치를 켭니다.

연결을 끊으려면:

1. 모든 스위치를 끕니다.
2. 먼저 콘센트에서 전원 코드를 뽑습니다.
3. 신호 케이블을 커넥터에서 제거합니다.
4. 장치에서 모든 케이블을 제거합니다.

경고문 2



주의:

리튬 배터리를 교체할 때는 IBM 부품 번호 33F8354 또는 제조업체에서 권장하는 동등한 유형의 배터리를 사용하십시오. 시스템에 리튬 배터리를 갖고 있는 모듈이 있으면 동일한 제조업체에서 생산된 동일한 모듈 유형으로 교체하십시오. 배터리에 리튬이 있을 경우 제대로 사용, 처리 또는 처분하지 않으면 폭발할 수 있습니다.

다음은 주의하십시오.

- 던지거나 물에 담그지 않도록 하십시오.
- 100°C(212°F) 이상으로 가열하지 마십시오.
- 수리하거나 분해하지 마십시오.

지역 법령이나 규정의 요구에 따라 배터리를 처분하십시오.

경고문 3



주의:

레이저 제품(CD-ROMs, DVD 드라이브, 광 장치 또는 트랜스미터 등과 같은)이 설치되어 있을 경우 다음을 유의하십시오.

- 덮개를 제거하지 마십시오. 레이저 제품의 덮개를 제거했을 경우 위험한 레이저 광선에 노출될 수 있습니다. 이 장치 안에는 서비스를 받을 수 있는 부품이 없습니다.

- 여기에서 지정하지 않은 방식의 제어, 조절 또는 실행으로 인해 위험한 레이저 광선에 노출될 수 있습니다.



위험

일부 레이저 제품에는 클래스 3A 또는 클래스 3B 레이저 다이오드가 들어 있습니다. 다음을 주의하십시오.

열면 레이저 광선에 노출됩니다. 광선을 주시하거나 광학 기계를 직접 쳐다보지 않도록 하고 광선에 노출되지 않도록 하십시오.

경고문 4



≥18 kg (37 lbs)



≥ 32 kg (70.5 lbs)



≥ 55 kg (121.2 lbs)

주의:

기계를 들 때는 안전하게 들어 올리십시오.

경고문 5



주의:

장치의 전원 제어 버튼 및 전원 공급기의 전원 스위치는 장치에 공급되는 전류를 차단하지 않습니다. 장치에 둘 이상의 전원 코드가 연결되어 있을 수도 있습니다. 장치에서 모든 전류를 차단하려면 모든 전원 코드가 전원으로부터 차단되어 있는지 확인하십시오.



경고문 10



주의:

서랍형 모델의 장치 상단에 82 kg(180 lbs.)이 넘는 물체를 올려 놓지 마십시오.



>82 kg (180 lbs)

Importante:

Todas las declaraciones de precaución de esta IBM documentation empiezan con un número. Dicho número se emplea para establecer una referencia cruzada de una declaración de precaución o peligro en inglés con las versiones traducidas que de dichas declaraciones pueden encontrarse en esta sección.

Por ejemplo, si una declaración de peligro empieza con el número 1, las traducciones de esta declaración de precaución aparecen en esta sección bajo Declaración 1.

Lea atentamente todas las declaraciones de precaución y peligro antes de llevar a cabo cualquier operación.

Declaración 1



PELIGRO

La corriente eléctrica de los cables telefónicos, de alimentación y de comunicaciones es perjudicial.

Para evitar una descarga eléctrica:

- No conecte ni desconecte ningún cable ni realice las operaciones de instalación, mantenimiento o reconfiguración de este producto durante una tormenta.
- Conecte cada cable de alimentación a una toma de alimentación eléctrica con conexión a tierra y cableado correctos.
- Conecte a tomas de alimentación con un cableado correcto cualquier equipo que vaya a estar conectado a este producto.
- Si es posible, utilice una sola mano cuando conecte o desconecte los cables de señal.
- No encienda nunca un equipo cuando haya riesgos de incendio, de inundación o de daños estructurales.
- Desconecte los cables de alimentación, sistemas de telecomunicaciones, redes y módems conectados antes de abrir las cubiertas del dispositivo a menos que se indique lo contrario en los procedimientos de instalación y configuración.
- Conecte y desconecte los cables tal como se describe en la tabla siguiente cuando desee realizar una operación de instalación, de traslado o de apertura de las cubiertas para este producto o para los dispositivos conectados.

Para la conexión	Para la desconexión
<ol style="list-style-type: none">1. APÁGUELO todo.2. En primer lugar, conecte los cables a los dispositivos.3. Conecte los cables de señal a los conectores.4. Conecte cada cable de alimentación a la toma de alimentación.5. ENCIENDA el dispositivo.	<ol style="list-style-type: none">1. APÁGUELO todo.2. En primer lugar, retire cada cable de alimentación de la toma de alimentación.3. Retire los cables de señal de los conectores.4. Retire los cables de los dispositivos.

Declaración 2



PRECAUCIÓN:

Cuando desee sustituir la batería de litio, utilice únicamente el número de pieza 33F8354 de IBM o cualquier tipo de batería equivalente que recomiende el fabricante. Si el sistema tiene un módulo que contiene una batería de litio, sustitúyalo únicamente por el mismo tipo de módulo, que ha de estar creado por el mismo fabricante. La batería contiene litio y puede explotar si el usuario no la utiliza ni la maneja de forma adecuada o si no se desprende de la misma como corresponde.

No realice las acciones siguientes:

- Arrojarla al agua o sumergirla
- Calentarla a una temperatura que supere los 100°C (212°F)
- Repararla o desmontarla

Despréndase de la batería siguiendo los requisitos que exija el reglamento o la legislación local.

Declaración 3



PRECAUCIÓN:

Cuando instale productos láser (como, por ejemplo, CD-ROM, unidades DVD, dispositivos de fibra óptica o transmisores), tenga en cuenta las advertencias siguientes:

- No retire las cubiertas. Si retira las cubiertas del producto láser, puede quedar expuesto a radiación láser perjudicial. Dentro del dispositivo no existe ninguna pieza que requiera mantenimiento.
- El uso de controles o ajustes o la realización de procedimientos que no sean los que se han especificado aquí pueden dar como resultado una exposición perjudicial a las radiaciones.

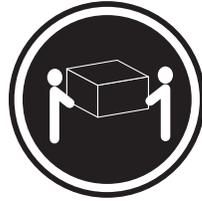


PELIGRO

Algunos productos láser contienen un diodo de láser incorporado de Clase 3A o de Clase 3B. Tenga en cuenta la advertencia siguiente.

Cuando se abre, hay radiación láser. No mire fijamente el rayo ni lleve a cabo ningún examen directamente con instrumentos ópticos; evite la exposición directa al rayo.

Declaración 4



≥18 kg



≥32 kg



≥55 kg

PRECAUCIÓN:

Tome medidas de seguridad al levantar el producto.

Declaración 5



PRECAUCIÓN:

El botón de control de alimentación del dispositivo y el interruptor de alimentación de la fuente de alimentación no apagan la corriente eléctrica suministrada al dispositivo. Es posible también que el dispositivo tenga más de un cable de alimentación. Para eliminar la corriente eléctrica del dispositivo, asegúrese de desconectar todos los cables de alimentación de la fuente de alimentación.



Declaración 10



PRECAUCIÓN:



No coloque ningún objeto que pese más de 82 kg (180 libras) encima de los dispositivos montados en bastidor.

Send us your comments!

We want to know your opinion about this manual (part number 24P2922). Your input will help us to improve our publications.

Please photocopy this survey, complete it, and then fax it to **IBM HMM Survey** at **919-543-8167 (USA)**.

Name: _____

Phone number: _____

1. Do you like this manual?

Yes No

2. What would you like to see added, changed, or deleted in this manual?

3. What is your service experience level?

Less than five years

More than five years

4. Which servers do you service most?

Thank you for your response!

Problem determination tips

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

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

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

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

Comparing the configuration and software set-up between "working and non-working" systems will often lead to problem resolution.

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GHz, MHz only measures microprocessor internal clock speed, not application performance. Many factors affect application performance.

When referring to hard disk drive capacity, GB equals one billion bytes. Total user-accessible capacity may vary depending on operating environments.

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