IBM TotalStorage™ Network Attached Storage 300G

Service Guide

GY27-0401-00

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NOTE
Before using this information and the product it supports read the safety information in “Appendix C. Notices” on page 91.

First Edition (March 2001)

This guide applies to the IBM TotalStorage™ Network Attached Storage 300G, specifically the 5196 Model G00 appliance.

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About this guide

This guide provides service procedures for the IBM TotalStorage™ Network Attached Storage 300G, which consists of the 5196 Model G00. It is intended for trained service personnel.

Frequently used terms

The following list of terms, used within this document, have these specific meanings:

Term	Definition in this document
Drive bay	A receptacle into which you insert a hard disk drive in an appliance. The bays could be physically located in a separate rack from the appliance.
Engine	The processor that responds to requests for data from clients. This is where the operating software for the Network Attached Storage 300G appliance resides.
Storage unit	Hardware that contains one or more drive bays and a network interface Some storage units contain a RAID controller. There are no other components in a storage unit, and it is accessed by a NAS appliance.
Notes	These notices provide important tips, guidance, or advice.
Attention	These notices indicate possible damage to programs, devices, or data. An attention notice is placed just before the instruction or situation in which damage could occur.
Caution	These notices indicate situations that can be potentially hazardous to you. A caution notice is placed just before descriptions of potentially hazardous procedure steps or situations.
Danger	These notices indicate situations that can be potentially lethal or extremely hazardous to you. A danger notice is placed just before descriptions of potentially lethal or extremely hazardous procedure steps or situations.

Publications

Hardcopy publications shipped with the Network Attached Storage 300G

The following publications are shipped in hardcopy and are also provided in softcopy form at www.ibm.com/storage/support/nas:

- *Network Attached Storage 300G Installation Guide*, GA27-4270

  This publication provides procedures for setting up, cabling, and replacing components of the IBM TotalStorage Network Attached Storage 300G.
- *Release Notes*

  This document provides any changes that were not available at the time this publication was produced.

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Related publications

The following publications contain additional information about the Network Attached Storage 300G:

- *IBM TotalStorage Network Attached Storage 300G User's Reference*, GA27-4271
- *IBM TotalStorage Network Attached Storage 300G Installation Guide*, GA27-4270
- *Safety Information*, 44L2247

Web sites

Getting help online

www.storage.ibm.com/nas

Here you can visit a support page that is specific to your hardware, complete with FAQs, parts information, technical hints and tips, technical publications, and downloadable files, if applicable.

Other helpful sites

www.ibm.com	Main IBM home page
www.ibm.com/storage	IBM Storage home page
www.ibm.com/storage/support/nas	IBM NAS Support home page
www.ibm.com/storage/nas	IBM NAS products
www.tivoli.com	Tivoli
www.cdpi.com	Columbia Data Products

Online support

Use the following Web site to obtain online support:

www.storage.ibm.com/support/nas

Chapter 1. General checkout

The IBM TotalStorage™ Network Attached Storage System 300G consists of the 5196 Model G00 (referred to in this guide as the *appliance*). Diagnostic programs are stored in upgradeable read-only memory (ROM) on the system board. These programs are the primary method of testing the major components of the: the system board, Ethernet controller, RAM, CD-ROM, diskette drive, serial ports, hard drives, and parallel port. 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 correctly.

Note: To display certain error messages and run certain diagnostics programs described in this guide, you will need to attach (before the is powered up) a monitor, keyboard, and mouse.

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.

Notes:

1. If multiple error codes are displayed, diagnose the first error code displayed (see .
2. If the appliance hangs with a POST error, go to “POST error codes” on page 35.
3. If the appliance hangs and no error is displayed, go to “Undetermined problems” on page 44.
4. Power supply problems, see “Power supply LED errors” on page 34.
5. Safety information, see “Appendix C. Notices” on page 91.
6. For intermittent problems, check the error log; see “Event/error logs” on page 13.

Checkout procedure

1. **Checkout Steps**
   - Power-off the 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.
   - 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 35.
   - Check the information LED panel System Error LED; if on, see “Information panel system error LED” on page 30.
   - Check the System Error Log. If an error was recorded by the system, see “Chapter 4. Symptom-to-FRU index” on page 27.
   - Start the Diagnostic Programs. See “Starting the diagnostic programs” on page 14.
   - Check for the following responses:
     a. Beeps
     b. Readable instructions or the Main Menu

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- If the diagnostics completed successfully and you still suspect a problem, see “Undetermined problems” on page 44.

Chapter 2. General information

The IBM TotalStorage™ Network Attached Storage System 300G consists of the 5196 Model G00 (referred to in this guide as the *appliance*), which is a high speed, high performance appliance that connects application and transaction servers to an enterprise Storage Area Network (SAN). This chapter describes the features and options of the 5196 Model G00.

Your 5196 Model G00 comes with a one-year limited warranty.

Products and features

The IBM TotalStorage™ family of products is designed for ease of installation and configuration, with lower administrative and management costs. These products are remotely configured and managed with point-and-click windows and management tools. These systems feature high performance hardware with Powered by Windows® operating system and application code that has been optimized for gateway-specific functions.

Standard features

The 5196 Model G00 includes:

- A single Model 5187-5RY engine
- Dual 933 MHZ Processors
- 1 GB Memory
- 1 port Fibre Channel Adapter
- 1 built-in 10Base-T/100Base-TX Ethernet Controller
- 9.1 GB Hard Drive
- Dual 270 Watt Redundant Power Supplies

Optional features

You can add the following features to the 5196 Model G00:

- IBM 10/100 Ethernet Server adapters
- IBM Gigabit Ethernet SX Server adapters
- Advanced System Management PCI Adapter
- IBM FAStT Host Bus Adapter (Fibre Channel)
- Redundant Network Interface card

Operating specifications

5196 Model G00 at a glance:

Packaging	
Network Attached Storage appliance	5187 Network Attached Storage applianceEngine Model 5RY
Form Factor	Rack mountable / 3U
Node	Single
Physical dimensions	414 mm W x 660.4 mm D x 133.4 mm H16.3 in. W x 26.0 in. D x 5.25 in. H

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Weight	Min. 20.0 kg (44 lb.), max. 28.1 kg (62.1 lb.)
Operating Environment	
Temperature (min.)	10° to 35°C (50° to 95°F) at 0 to 914 m (0 to 3,000 ft.)
Temperature (max.)	10° to 32°C (50° to 90°F) at 914 to 2,133 m (3,000 to 9,000 ft.)
Relative humidity	8% to 80%
Electrical	100 - 240 V ac; 50 HZ - 60 Hz; 4.3 - 2.1 Amps
Processor	Dual 933-MHz Pentium III with 133-MHz front-side bus
Performance	
Level 2 cache (per processor)	256 KB (full speed)
ECC SDRAM memory (standard)	1 GB
Internal fixed disk	9.1 GB for operating storage
File protocols supported	CIFS, NFS, HTTP, FTP, Novell
Integrated advanced system management processor	Yes
Connectivity	
PCI slots	5 (3x64-bit and 2x32-bit)
Ethernet connections	1-port 10/100-Mbps Ethernet (on base)
SAN connection	1-port Fibre Channel Adapter (PCI slot 5)

Features

The appliance is designed to be cost-effective, powerful, and flexible. It offers:

- Impressive performance using an innovative approach to Systems Mangement Program (SMP)

  Your appliance comes standard with two Intel Pentium III microprocessors to enhance performance and provide SMP capability.

- Large data-storage and *hot-swap* capabilities

  The appliance comes standard with a 9.1 GB hot-swap hard drive. This hot-swap feature enables you to remove and replace the hard drive without powering off the appliance.

- Optional PCI adapters

  Your appliance uses peripheral component interconnect (PCI) bus architecture to provide compatibility with a wide range of existing hardware devices and software applications. Your appliance comes standard with one IBM FAStT Host Bus adapter (Fibre Channel) and supports up to four additional PCI adapters in the expansion slots on the system board.

- Redundant cooling capability

  The redundant cooling capability of the hot-swap fans in your appliance allow continued operation if one of the fans fails. You can also replace a failing hot-swap fan without powering off the appliance.

- Redundant power capability

Your appliance comes standard with two 270-watt power supplies to provide a redundant power source. The Power Non-Redundant 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.

- Large system memory

  Your appliance comes standard with 1 GB of system memory. The memory controller provides error checking and 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) (Intel PC-Registered SDIMM Specifications, Revision 1.0 or later).

- System-management capabilities

  Your appliance comes with an Advanced System Management Processor (ASMP) on the system board. The ASMP also provides system monitoring, event recording, and dial-out alert capability.

  Note: The ASMP is sometimes referred to as the service processor.

- Integrated network environment support

  Your appliance 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 appliance 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 cards

  The addition of optional, redundant network interface cards (NIC) provide 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 (see “Ethernet controller troubleshooting chart” on page 17).. This switching occurs without data loss and without user intervention.

Reliability, availability, and serviceability features

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

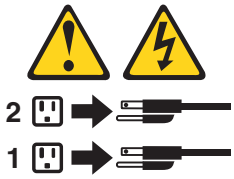
The following is an abbreviated list of the RAS features that your appliance supports.

- Menu-driven setup, system configuration, and diagnostic programs
- Power-on self-test (POST)
- Integrated Advanced System Management Processor (ASMP)
- Predictive failure alerts
- System auto-configuration from configuration menu
- Remote system problem-determination support
- Power and temperature monitoring
- Hot-swap drive bays
- Error codes and messages
- System error logging
- Upgradable BIOS, diagnostics, and Advanced System Management Processor (ASMP) code

- Automatic restart after a power failure
- Parity checking on the PCI bus
- Error checking and correcting (ECC) memory
- Redundant hot-swap power supply
- Redundant hot-swap cooling fan
- Redundant Ethernet connection capabilities (between 10/100 Ethernet adapters)
- Vital Product Data (VPD) on processor complex, system board, power backplane, and each power supply
- Operator information panel and group of diagnostic LEDs on the system board
- Remote Connect

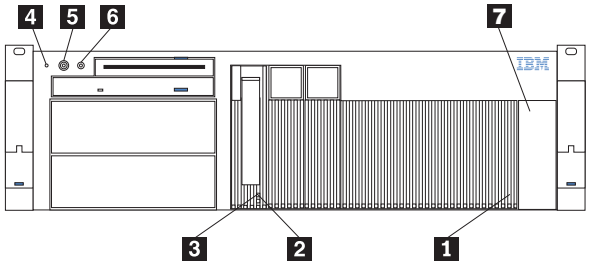
CAUTION:

The power control button on the device and/or the power switch on the power supply do not power 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.



Controls and indicators

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



1. AC power light
2. Hard drive Status light
3. Hard drive activity light
4. System power light
5. Power control botton
6. Reset button
7. Operator information panel (See “Operator information panel” on page 8 for details.)

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 34.

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 34.

Hard Drive Status Light: When this amber light is on continuously, the drive has failed. When the 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 Drive Activity Light: When this green light is flashing, the controller is accessing the drive.

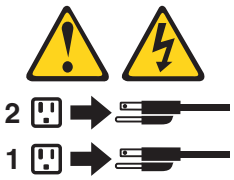
System Power Light: When this green light is on, system power is present in the appliance. When this light flashes, the appliance is in standby mode (the system power supply is powered off and AC current is present). When this light is off, either a power supply, AC power, or a light has failed.

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

Power Control Button: Press this button to manually power the appliance on or off.

CAUTION:

The power control button on the device and/or the power switch on the power supply do not power 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.



You can start the appliance in several ways:

- You can power on the appliance by pressing the Power Control button on the front of the appliance.

  Note: After you plug the power cords into an electrical outlet, wait 20 seconds before pressing the Power Control button. During this time the system-management processor is initializing and the Power Control button does not respond.
- If the appliance is powered on, a power failure occurs, and unattended- start mode is enabled in the Configuration/Setup utility program, the appliance will start automatically when power is restored.
- The Advanced System Management Processor can also power on the appliance.

The appliance can be powered off as follows:

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

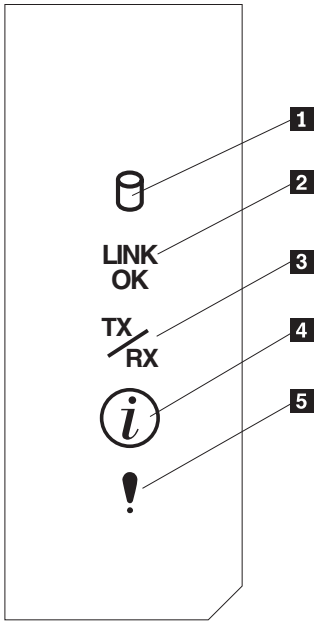
  Note: After powering off the appliance, wait at least 5 seconds before pressing the Power Control button to power the appliance on again.
- You can press and hold the Power Control button for more than 4 seconds to cause an immediate shutdown of the appliance and place it in standby mode. You can use this feature if the operating system hangs.
- You can disconnect the appliance power cords from the electrical outlets to shut off all power to the appliance.

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

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

Operator Information Panel: The lights on this panel give status information for your appliance. See “Operator information panel” for more information.

Operator information panel



1 Hard Drive Activity light

2 Ethernet Link Status light

3 Ethernet Transmit/Receive Activity light

4 Information light

5 System Error light

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

Ethernet Link Status Light: When this green light is on, there is an active connection on the Ethernet port

Ethernet Transmit/Receive Activity Light: When this green light is on, there is transmit or receive activity to or from the appliance.

Information Light: This amber light is on when the information log contains information about certain conditions in your appliance that might affect performance. For example, the light will be on if one of the power supplies were disconnected. A light on the diagnostic LED panel on the system board will also be on. (see “Diagnostics LED panel” on page 11).

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

Chapter 3. Troubleshooting

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

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 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 your appliance. See “Diagnostic programs and error messages” on page 13 for more information.

  Note: To view error messages, you need to attach a monitor, keyboard, and mouse to the appliance before it is powered on.

- **Light path diagnostics**

  Light-emitting diodes (LEDs) help you identify problems with appliance components. These LEDs are part of the light-path diagnostics that are built into your appliance. 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

Your appliance has LEDs to help you identify problems with some appliance components. These LEDs are part of the light path diagnostics built into the appliance. 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 34.

Light path diagnostics

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

Diagnostics LED panel

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

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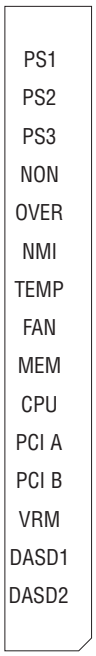
Note: You will need to remove the top cover (see “Removing the cover and bezel” on page 55) to view these LEDs.



Light path diagnostics table

The System Error LED on the operator information panel is On when certain system errors occur. If the System Error LED is On, use the following table to help determine the cause of the error and the action you should take. See table in “Information panel system error LED” on page 30 and Table 6 on page 53.

POST

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

If POST finishes without detecting any problems, one long beep and three short beeps sound.

If POST detects a problem, a series of beeps sound. See “Beep symptoms” on page 27 and “POST error messages” for more information.

Notes:

1. If you have a power-on password or administrator password set, 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

Note: To view POST error messages, you will need to attach a monitor, keyboard, and mouse to the appliance before it is powered up.

The table,“POST error codes” on page 35, provides information about the POST error messages that can appear during startup.

Event/error logs

The POST error log contains the three most recent error codes and messages that the system generated during POST. The System Event/Error Log contains all error messages issued during POST and all system status messages from the Advanced System Management Processor.In event of a POST error, check the System Event/Error Log as it may indicate the most recent errors commonly associated with typical hardware failures. It may not detect all hardware failures but many times will provide an indicator as to the nature of key failures.

To view the contents of the error logs, start the Configuration/Setup Utility program (“Starting the Configuration/Setup Utility program” on page 77); then, select **Event/Error Logs** from the main menu (81).

Diagnostic programs and error messages

The appliance 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 your appliance.

For a list of error messages and codes, see “Diagnostic error codes” on page 31.

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 appliance 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:

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

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.

Starting the diagnostic programs

To start the diagnostic programs:

1. Ensure you have connected a monitor, keyboard, and mouse to your appliance.

   Notes:

   a. When you *do not* have a monitor, keyboard, and mouse attached and the appliance passes POST, one long and three short beeps sound.
   b. When you *have* a monitor, keyboard, and mouse attached and the appliance passes POST, one beep sounds. If the appliance fails POST, a series of beeps sound (see “Beep symptoms” on page 27 for more details) and an error message appears on the monitor screen.

2. Power on the appliance and watch the screen.

   Note: To run the diagnostic programs, you must start the appliance 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.

3. When the message `F2 for Diagnostics` appears, press F2. If a POST error is encountered, a series of beeps sound and an error message appears on the monitor screen.

4. Type in the appropriate password; then, press Enter. If a system error is encountered, the Configuration/Setup screen appears. Press **Esc** to start the Diagnostic program.

   Note: To run the diagnostic programs, you must start the appliance 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.

5. Select either **Extended** or **Basic** from the top of the screen. (*PC-Doctor 2.0* with a copyright statement appears at the bottom of this screen.)
6. 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. Press F1 while running the diagnostic programs to obtain `Help` information. Also 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**.

   b. If the appliance stops during testing and you cannot continue, restart the appliance and try running the diagnostic programs again.

   c. If you run the diagnostic programs with either no mouse or a USB mouse attached to your appliance, 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. The regular mouse test can test a USB mouse. Also, you can run the USB hub test only if there are no USB devices attached.

   e. You can view appliance 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.

   f. You cannot use the diagnostics program to test adapters. Use the procedure outlined in “Running adapter diagnostics” on page 21.

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 appliance 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 4 on page 16

To view the test log:

1. Ensure a monitor, keyboard, and mouse is connected to the appliance.
2. Power on the appliance and watch the screen.

If the appliance is on, shut down your operating system and restart the appliance.

3. When the message `F2 for Diagnostics` appears, press F2.

   If a power-on password or administrator password is set, the appliance prompts you for it. Type in the appropriate password; then, press Enter.

4. When the Diagnostic Programs screen appears, select **Utility** from the top of the screen.
5. 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 appliance is powered on. When you power off the power to the appliance, 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 31.

Attention: If diagnostic error messages appear that are not listed in the tables, make sure that your appliance has the latest levels of BIOS, Advanced System.

Recovering BIOS

If your BIOS has become corrupted, such as from a power failure during a flash update, you can recover your 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:

- Download a BIOS flash diskette from the Website:**www.storage.ibm.com/support/NAS**
- Contact your IBM service representative.

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:

- Ensure that you have the appliance correctly connected to the Ethernet with a verified cable that has been correctly built to the related Category 3, 4, or 5 unshielded twisted pair (UTP) standards. See Table 7 on page 69 for Ethernet RJ-45 pin assignments.

  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.
- Ensure that heartbeat is inoperable on the adapter card or transiever you are using to connect to the Ethernet.

- If you are connecting through an Ethernet hub or repeater, validate that the signal lights are operational while the device is on and connected to the LAN.
- 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 is On 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 is on 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.
- Ensure that you are using the correct device drivers, supplied with your appliance.
- Check for operating system-specific causes for the problem.
- Ensure that the device drivers on the client and appliance are using the same protocol.
- Test the Ethernet controller by running the diagnostic program.

Ethernet controller troubleshooting chart

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
Ethernet Link Status light is not On.	Check the following: • Ensure that the hub is powered 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, ensure that you also manually configure the speed. • Run diagnostics on the LEDs. If the problem remains, go to “Starting the diagnostic programs” on page 14 to run the diagnostic programs.
The Ethernet Transmit/Receive Activity light does not light.	Check the following: **Note:** The Ethernet Transmit/Receive Activity LED is On only when data is sent to or by this Ethernet controller. • Ensure 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.	Check the following: • Ensure that you are using Category 5 cabling when operating the appliance 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 appliance.	Check the following: • Ensure that the cable is connected to the Ethernet controller. • Ensure that your PCI system BIOS is current. • Reseat the adapter. • Ensure that the adapter you are testing is supported by the appliance. Go to “Starting the diagnostic programs” on page 14 to run the diagnostic programs.
The Ethernet controller stopped working without apparent cause.	Check the following: • Run diagnostics for the Ethernet controller. • Try a different connector on the hub. • Reinstall the device drivers. Refer to your operating-system documentation and to the *User's Reference* information. If the problem remains, go to “Starting the diagnostic programs” on page 14 to run the diagnostic programs.

10/100 Ethernet Adapter troubleshooting chart

Use the following troubleshooting chart to find solutions to 10/100 Mbps Ethernet adapter problems that have definite symptoms.

Table 2. Ethernet troubleshooting chart

Ethernet adapter problem	Suggested Action
The adapter cannot connect to the network.	Check the following: 1. Ensure that the network cable is installed correctly. The cable must be securely attached at both RJ-45 connections (adapter and hub). The maximum allowable distance from adapter to the hub is 100 m (328 ft). If the cable is attached and the distance is within acceptable limits but the problem persists, try a different cable. If you are directly connecting two computers without a hub or switch, make sure you are using a crossover cable. 2. Check the LED lights on the adapter. The adapter has two diagnostic LEDs, one on each side of the cable connector. These lights help you to determine whether there is a problem with the connector, cable, switch, or hub. **ACT/LNK — On** • Adapter and switch is receiving power and cable connection between them is good **ACT/LNK — Off** Check the following: • Adapter not sending or receiving data • Adapter or switch not receiving power • Cable connection between adapter and switch is faulty • Drivers not configured properly **ACT/LNK — Flashing** Normal operation. LED flashes when the adapter sends or receives data. The frequency of the flashes varies with the amount of network traffic **100 — On** Adapter is operating at 100 Mbps **100 — Off** Adapter is operating at 10 Mbps 3. Ensure that you are using the correct drivers. Ensure that you are using the drivers that come with this adapter. Drivers that support previous versions of this adapter do not support this version of the adapter. 4. Ensure that the switch port and the adapter have the same duplex setting. If you configured the adapter for full-duplex, ensure that the switch port is also configured for full-duplex. Setting the wrong duplex mode can degrade performance, cause data loss, or result in lost connections.
Diagnostics pass, but the connection fails or errors occur.	Check the following: 1. For 100 Mbps: • Use Category 5 cabling and ensure that the network cable is securely attached. • Verify the adapter is seated firmly in the slot and connected to a 100BASE-TX hub/switch (not 100BASE-T4). 2. Ensure the duplex mode setting on the adapter matches the setting on the switch
The LNK LED is not On.	Check the following: 1. Ensure that you loaded the correct network drivers. 2. Check all connections at the adapter and the switch. 3. Try another port on the switch. 4. Ensure that the duplex mode setting on the adapter matches the setting on the switch. 5. Ensure that you have the correct type of cable between the adapter and the hub. 100BASE-TX requires two pairs. Some hubs require a crossover cable while others require a straight-through cable.

Table 2. Ethernet troubleshooting chart (continued)

Ethernet adapter problem	Suggested Action
The ACT LED is not On.	Check the following: 1. Ensure that you loaded the correct network drivers. 2. The network might be idle. Try accessing a server. 3. The adapter is not transmitting or receiving data. Try another adapter. 4. Ensure that you are using two-pair cable for TX wiring.
Adapter stops working without apparent cause.	Check the following: 1. Run the diagnostics. 2. Try reseating the adapter in its slot, or try a different slot if necessary. 3. The network driver files might be corrupt or missing. Remove and then reinstall the drivers.
The LNK LED is not On when you connect the power.	Check the following: Ensure that the network cable is securely attached at both ends.

Gigabit Ethernet SX adapter troubleshooting chart

Use the following troubleshooting chart to find solutions to gigabit Ethernet adapter problems that have definite symptoms.

Table 3. Ethernet troubleshooting chart

Gigabit adapter problem	Suggested Action
No Link or TX/RX Activity	If you cannot link to your switch, check the following: 1. Check the following LED lights on the adapter: **TX — On** The adapter is sending data **RX — On** The adapter is receiving data. **Link — On** The adapter is connected to a valid link partner and is receiving link pulses. **Link — Off** Link is inoperative. • Check all connections at the adapter and link partner • Make sure the link partner is set to 1000 Mbps and full-duplex • Ensure the required drivers are loaded **PRO — Programmable LED** Identifies the adapter by blinking. Use the Identify Adapter push-button in INTEL PROSet II to control blinking. 2. Ensure 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.
Your appliance cannot find the Gigabit Ethernet SX adapter	Check the following: 1. Verify that the adapter is seated firmly in the slot 2. Try a different Gigabit Ethernet SX adapter
Diagnostics pass but the connection fails	Check the following: Ensure the network cable is securely attached

Table 3. Ethernet troubleshooting chart (continued)

Gigabit adapter problem	Suggested Action
Another adapter stopped working after you installed the Gigabit Ethernet SX Adapter	Check the following: 1. Verify that the cable is connected to the Gigabit Ethernet SX Adapter and not to another adapter. 2. Check for a resource conflict 3. Ensure both adapters are seated firmly in the slot 4. Check all cables
The adapter stopped working without apparent cause	Check the following: 1. Try reseating the adapter 2. The network driver files might be damaged or deleted. Reinstall the drivers 3. Try a different Gigabit Ethernet SX Adapter
LINK LED is not On	Check the following: 1. Ensure that you have loaded the adapter driver 2. Check all connections at the adapter and the buffered repeater or switch 3. Try another port on the buffered repeater or switch 4. Ensure that the buffered repeater or switch port is configured for 1000 Mbps and full-duplex. 5. Try changing the auto-negotiation setting on the link partner, if possible
RX or TX LED is no On	Check the following: 1. Ensure that you have loaded the adapter driver 2. Network might be idle; try logging in from a workstation 3. The adapter is not transmitting or receiving data; try another adapter

Running adapter diagnostics

This section describes how to test the adapter using the diagnostics.

Testing Ethernet adapters

Your appliance comes equipped with Intel PROSet II for monitoring the status of the Ethernet adapter PCI cards. PROSet software also lets you test the Ethernet adapter to see if there are any problems with the adapter hardware, the cabling, or the network connection. You can also use diagnostics to isolate problems during troubleshooting. To access the PROSet utility, you must first go into Terminal Services. For instructions on how to invoke Terminal Services, refer to ″Terminal Services and the IBM NAS Administration Console″ in the *User's Reference*. Within Terminal Services perform the following steps:

1. Double-click the INTEL PROSet II icon in the Control Panel to start the INTEL PROSet II utility.
2. In INTEL PROSet II utility, select the Ethernet adapter you want to test (Gigabit Ethernet SX Server adapter or 10/100 Ethernet Adapter).
3. Select the **Diagnostics** tab. A list of available tests is displayed.
4. Select **Run Tests**.

   You can also select or deselect individual tests with the check boxes. If an error is detected, information about the error is displayed.
5. Repeat steps 2 through 4 for each Ethernet adapter installed in the computer.

Testing the FAStT Host adapter (Fibre Channel)

Your appliance also comes with FastT Check for viewing the status of your Fibre Channel connection as well as testing the adapter. To use FastT Check utility you must first go into Terminal Services. For instructions on how to invoke Terminal Services, please see ″Terminal Services and the IBM NAS Administration Console″ of the *User's Reference*. You access FastT Check by going into the IBM NAS Admin console, selecting **NAS Management** > **Storage** > **NAS Utilities** > **FastT Check**. Select **Connect**. A diagnostic panel displays the following general information related to your Fibre Channel adapter which can be useful if you need to place a support call:

- Node name (which is the world-wide name or MAC address of the Fiber Channel adapter)
- Loop ID
- BIOS version
- Firmware version number
- Device driver version number
- PCI slot number

Note: Ensure that there is no adapter activity before running the test or data can be lost.

To test the Fibre Channel adapter, select the adapter and then select the Diagnostic push-button.

Testing the Advanced System Management adapter

1. Insert the Advance System Management Utility CD-ROM into the CD-ROM drive and restart the appliance. If your appliance does not boot from the CD-ROM, use POST/BIOS setup to configure the CD-ROM drive as a boot device.
2. After your appliance boots, the main option menu appears. The main menu contains the following selections:
   - `Hardware Status and Information`
   - `Configuration Settings`
   - `Update System Management firmware`
3. Use the up and down arrow keys to select **Hardware Status and Information** and press **Enter**. The Hardware Status and Information menu contains the list of Advanced System Management devices in the Gateway with the following diagnostic test results:

```
      System Management Processor Communication   :  Passed
 ->   Built in  Self Test Status  ......    : Passed
      Boot Sector Code Revision ...         :6, Build ID:  RIET62A
      Main Application Code Revision        :4, Build ID:  ILET15A

      System Management Processor Communication   :  Passed
 ->   Built in  Self Test Status  ......    : Passed
      Boot Sector Code Revision ...         :6, Build ID:  WMICT60A
      Main Application Code Revision        :4, Build ID:  WMXT57A
```

4. Use the up and down arrow keys to select the device you want to look at in more detail. Press **Enter**. You will see a list of tests and results on the device:

```
          Current System Management Processor Status

     Current BIST Results:
        SRAM Memory Test:                   Passed
        Serial Port 1 Test :                Passed
        Serial Port 2 Test:                 Passed
        NVRAM Memory Test                   Passed
        Realtime Clock Test                 Passed
```

```
   Programmable Gate Array Test:       Passed
   I2C Interface Test:                 Passed
   Main Application Checksum:          Passed
   Boot Sector Checksum:               Passed

         Current System Management Adapter Status

Current BIST Results:
   SRAM Memory Test:                   Passed
   Serial Port 1 Test :                Passed
   Serial Port 2 Test:                 Passed
   NVRAM Memory Test                   Passed
   Realtime Clock Test                 Passed
   Programmable Gate Array Test:       Passed
   I2C Interface Test:                 Passed
   Main Application Checksum:          Passed
   Boot Sector Checksum:               Passed
   Onboard Ethernet Hardware Test:     Passed
   PCI EEPROM Initialization Test:     Passed
```

5. When you are finished viewing this information, press **Esc** to return to the main option menu. Remove the CD then restart the appliance.

Power checkout

Power problems can be difficult to troubleshoot. For example, a short circuit can exist anywhere on any of the power distribution busses. Usually a short circuit causes 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 appliance and disconnect the AC cord(s).
2. Check for loose cables in the power subsystem. Also check for short circuits, for example, 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 the appliance is at minimum configuration required for power on (see ″Minimum operating requirements″ on page 44).
4. Reconnect the AC cord and power on the appliance. If the appliance powers up successfully, replace adapters and devices one at a time until the problem is isolated. If the appliance 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 an appliance to power up (see page 44). For specific problems, see “Power error messages” on page 41.

Replacing the battery

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

CAUTION: When replacing the battery, use only IBM Part Number 10L6432 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.

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

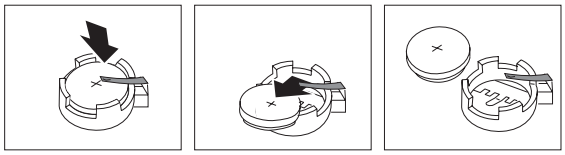
If you replace the original lithium battery with a heavy-metal battery or a battery with heavy-metal components, be aware of the following environmental consideration. Batteries and accumulators that contain heavy metals must not be disposed of with normal domestic waste. They will be taken back free of charge by the manufacturer, distributor, or representative, to be recycled or disposed of in a proper manner.

Note: Before you begin be sure to read “Before you begin” on page 53. Follow any special handling and installation instructions supplied with the replacement battery.

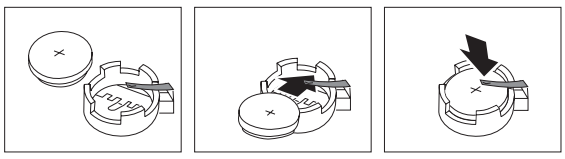
Note: After you replace the battery, you must reconfigure your appliance and reset the system date and time.

To replace the battery:

1. Review the information in “Before you begin” on page 53 and any special handling and installation instructions supplied with the replacement battery.
2. Power-off the appliance and peripheral devices and disconnect all external cables and power cords; then, remove the appliance 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 appliance cover and connect the cables.

Note: Wait approximately 20 seconds after you plug the power cord of your appliance into an electrical outlet for the Power Control button to become active.

6. Power-on the appliance.
7. Start the Configuration/Setup Utility program and set configuration parameters.
   - Set the system date and time.
   - Set the power-on password.
   - Reconfigure your appliance.

Temperature checkout

Correct cooling of the appliance is important for proper operation and reliability. Ensure that:

- 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 top cover is in place during normal operation
- There is at least 50 mm (2 inches) of ventilated space at the sides of the appliance and 100 mm (4 inches) at the rear of the appliance
- The top cover is removed for no longer than 30 minutes while the appliance is operating
- The processor housing cover covering the processor and memory area is removed for no longer that ten minutes while the appliance 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 appliance are met. See “Products and features” on page 3.

For more information on specific temperature error messages, see “Temperature error messages” on page 40.

Chapter 4. Symptom-to-FRU index

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 your appliance.

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

Note: These diagnostic error messages require the attachment of a monitor, keyboard, and mouse (before you power on the appliance) to enable you to see them.

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 appliance is functioning correctly.

Beeps	Description
1-2-3	• One beep • A pause (or break) • Two beeps • A pause (or break) • Three Beeps
4	Four continuous beeps

Beep/Symptom	FRU/Action
1-1-2 (Processor register test failed)	1. **Processor**
1-1-3 (CMOS write/read test failed)	1. **Battery** 2. System Board
1-1-4 (BIOS EEPROM checksum failed)	1. **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**
1-3-2 (1st 64K RAM parity test failed)	1. **DIMM** 2. System Board
2-1-1 (Secondary DMA register failed)	1. **System Board**

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Beep/Symptom	FRU/Action
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**
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. **Jumper on J14** 2. 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**
3-2-3 (Math coprocessor failed)	1. **Processor**
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 80)	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. 12 C Cable

Beep/Symptom	FRU/Action
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 77.) 2. DIMMs 3. Memory Board 4. System Board
Two Short Beeps (Information only, the configuration has changed)	1. **Run Diagnostics** 2. Run Configuration/Setup
Three Short Beeps	1. **DIMM** 2. System Board
One Continuous Beep	1. **Processor** 2. System Board
Repeating Short Beeps	1. **Keyboard** 2. System Board
One Long and One Short Beep	1. **Video adapter (if present)** 2. System Board
One Long and Two Short Beeps	1. **Video adapter (if present)** 2. System Board
Two Long and Two Short Beeps	1. **Video adapter**

No Beep symptoms

No Beep Symptom	FRU/Action
No beep and the system operates correctly.	1. **Check speaker cables** 2. Speaker 3. System Board
No Beeps occur after successfully completing POST (The Power-On Status is disabled.)	1. **Run Configuration/Setup, set the Start Options Power-On Status to enable.** 2. Check speaker connections 3. System Board
No ac power(Power supply ac LED is off)	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	1. **See "Undetermined problems" on page 44**
System will not power-up (Power supply ac LED is on)	1. **See"Power supply LED errors" on page 34**

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 52.
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.)	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.
CPU LED on (The LED next to the failing CPU should be on.)	1. **Processor 1 or 2.**
VRM LED on (The LED next to the failing VRM should be on.)	1. **Voltage regulator module indicated by the VRM LED on the system board that is turned 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.)	1. **Failing drive.** 2. Be sure the fans are operating correctly and the air flow is good. 3. SCSI Backplane.
FAN LED on	1. **Check individual fan LEDs.** 2. Replace respective fan. 3. Fan Cable. 4. System Board. 5. Power Backplane Board.
MEM LED on (The LED next to the failing DIMM is on.)	1. **DIMM.** 2. Failing DIMM in slot J1-J4.
NMI LED on	1. **Reboot the system.** 2. Check the System Error Log.
PCI A LED on	1. **PCI Card in slot 5.** 2. Remove all PCI adapters from slots 1-5. 3. System Board.
PCI B LED on	1. **Card in slots 3-5.** 2. Remove all PCI adapters from slots 1-5. 3. System Board.
PCI C LED on	1. **Remove all PCI adapters from slots 1-5.** 2. System Board.

Diagnostic Panel LED	FRU/Action
PS1 LED on	1. **Check the DC Good LED on power supply 1. If off, replace power supply 1.** 2. Power Backplane.
PS2 LED on	1. **Check the DC Good LED on power supply 2. If off, replace power supply 2.** 2. Power Backplane.
TEMP LED on (look at test cases)	1. **Ambient temperature must be within normal operating specifications. See "Products and features" on page 3.** 2. Ensure fans are operating correctly. 3. Examine System Error Log. a. System over recommended temperature b. 1) Information LED Panel 2) System Board c. DASD over recommended temperature (DASD LED also on) 1) Overheating hard drive 2) DASD Backplane 3) System Board d. System over recommended temperature for CPU X (where X is CPU 1, 2,) (CPU LED also on) 1) CPU X e. System Board over recommended temperature 4. If the CPU LED on the diagnostics panel is also on, one of the microprocessors has caused the error.

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**
011-XXX-000 (Failed COM1 Serial Port test)	1. **System Board**

Error Code/Symptom	FRU/Action
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. **System Board** 2. Make sure parallel port is not disabled. 3. Re-run USB external loopback test.
015-XXX-198 (USB device connected during USB test)	1. **System Board** 2. Remove USB devices from USB1 and USB2. 3. Re-run USB external loopback test.
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.
075-XXX-000 (Failed Power Supply test)	1. **Power Supply**
089-XXX-001 (Failed Microprocessor test)	1. **VRM for Microprocessor 1** 2. Microprocessor 1
089-XXX-002 (Failed Microprocessor test)	1. **VRM 2** for Microprocessor 2 2. Microprocessor 2
165-XXX-000 (Failed Service Processor test)	1. **System Board.** Before replacing the System Board, ensure that System Board jumper J45 is not installed (the default) when the error occurs. 2. Power Backplane 3. Hot-Swap Drive Backplane
180-XXX-000 (Diagnostics LED failure)	1. **Run Diagnostic LED test for the failing LED.**
180-XXX-001 (Failed information LED panel test)	1. **Information LED Panel** 2. Power Switch 3. Assembly
180-XXX-002 (Failed Diagnostics LED Panel test)	1. **Diagnostics LED Panel** 2. Power Switch 3. Assembly

Error Code/Symptom	FRU/Action
180-XXX-003 (Failed System Board LED test)	1. **System Board**
180-XXX-004 (Failed System Board LED test)	1. **System Board**
180-XXX-005 (Failed SCSI Backplane LED test)	1. **SCSI Backplane** 2. SCSI Backplane Cable 3. System Board
180-XXX-006 (Memory Board LED test)	1. **Memory Board** 2. System Board
201-XXX-0NN (Failed Memory test, see ″Memory Settings″ on page 80)	1. **DIMM Location slots 1-4 where NN = DIMM location.** **Note:** NN=1=DIMM 2 =2=DIMM 1 =3=DIMM 4 =4=DIMM 3 2. System Board
201-XXX-999 (Multiple DIMM failure, see error text)	1. **See error text for failing DIMMs** 2. System Board
202-XXX-001 (Failed System Cache test)	1. **VRM 1** 2. Microprocessor 1
202-XXX-002 (Failed System Cache test)	1. **VRM 2** 2. Microprocessor 2
206-XXX-000 (Failed Diskette Drive test)	1. **Cable** 2. Diskette Drive 3. System Board
215-XXX-000 (Failed IDE CD-ROM test)	1. **CD-ROM Drive Cables** 2. CD-ROM Drive 3. System Board
217-XXX-000 (Failed BIOS Fixed Disk test)	1. **Fixed Disk 1**
301-XXX-000 (Failed Keyboard test)	1. **Keyboard**
405-XXX-000 (Failed Ethernet test on controller on the System Board)	1. **Verify that Ethernet is not disabled in BIOS.** 2. System Board
405-XXX-00N (Failed Ethernet test on adapter in PCI slot N)	1. **Adapter in PCI slot N.** 2. System Board
415-XXX-000 (Failed Modem test)	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.	1. **Clean the CD.** 2. Run CD-ROM diagnostics 3. CD-ROM Drive

Error Symptom	FRU/Action
CD-ROM drive tray is not working . (The server must be powered-on)	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.	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
Power switch does not work and reset button does work. There is not a jumper for forcing power on for the server.	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	1. **If there is a diskette in the drive, verify that:** 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

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 51).

AC Good LED	DC Good LED	Description	FRU/Action
Off	Off	No power to system or ac problem.	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.	1. **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: a. Power Switch Assembly b. System Board 2. 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. 3. Power Supply 4. Power Backplane 5. System Board
On	On	Power is OK.	N/A

POST error codes

Note: These diagnostic error messages require the attachment of a monitor, keyboard, and mouse (before you power on the appliance) to enable you to see them.

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.)	1. **Run Configuration/Setup** 2. Battery 3. System Board 4. Processor
101, 102 (System and processor error)	1. **System Board**
106 (System and processor error)	1. **System Board**
111 (Channel check error)	1. **Failing 15A adapter** 2. Memory DIMM 3. System Board
114 (Adapter read-only memory error)	1. **Failing Adapter** 2. Run Diagnostics
129 (Internal cache error)	1. **Processor**
151 (Real time clock error)	1. **Run Diagnostics** 2. Battery 3. System Board

Error Code/Symptom	FRU/Action
161 (Real time clock battery error)	1. **Run Configuration/Setup** 2. Battery 3. System Board
162 (Device Configuration Error) **Note:** Be sure to load the default settings and any additional desired settings; then, **save the configuration.**	1. **Run Configuration/Setup** 2. Battery 3. Failing Device 4. System Board
163 (Real-Time Clock error)	1. **Run Configuration/Setup** 2. Battery 3. System Board
164 (Memory configuration changed, see ″Memory settings″ on page 80.)	1. **Run Configuration/Setup** 2. DIMM
175 (Hardware error)	1. **System Board**
176 (appliance cover or cable cover was removed without a key being used)	1. **Run Configuration/Setup** 2. System Board 3. C2 Security Switch
177, 178 (Security hardware error)	1. **Run Configuration/Setup** 2. System Board
184 (Power-on password corrupted)	1. **Run Configuration/Setup** 2. System Board
185 (Drive startup sequence information corrupted)	1. **Run Configuration/Setup** 2. System Board
186 (Security hardware control logic failed)	1. **Run Configuration/Setup** 2. System Board
187 (VPD serial number not set.)	1. **Set serial number in Setup** 2. System Board
188 (Bad EEPROM CRC #2)	1. **Run Configuration/Setup** 2. System Board
189 (An attempt was made to access the server with invalid passwords)	1. **Run Configuration/Setup, enter the administrator password**
201 (Memory test error, see ″Memory Settings″ on page 80.) 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.	1. **DIMM** 2. System Board
229 (Cache error)	1. **Processor**
262 (DRAM parity configuration error)	1. **Run configuration /setup** 2. Battery 3. System Board
289 (DIMM has been disabled by the user or system, see ″Memory Settings″ on page 80.)	1. **Run Configuration/Setup, if disabled by user** 2. Disabled DIMM, if not disabled by user.

Error Code/Symptom	FRU/Action
301 (Keyboard or keyboard controller error)	1. **Keyboard** 2. System Board
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**
1301 (I^2C cable to front panel not found)	1. **Cable** 2. Front Panel 3. Power Switch Assembly 4. System Board
1302 (I^2C cable from system board to power on and reset switches not found)	1. **Cable** 2. Power Switch Assembly 3. System Board
1303 (I^2C cable from system board to power backplane not found)	1. **Cable** 2. Power Backplane 3. System Board
1304 (I^2C cable to diagnostic LED board not found)	1. **Power Switch Assembly** 2. System Board

Error Code/Symptom	FRU/Action
1600 (The Service Processor is not functioning) Do the following before replacing a FRU: 1. Ensure that a jumper is not installed on J45. 2. Remove the ac power to the appliance, wait 20 seconds; then, reconnect the ac power. Wait 30 seconds; then, power-on the appliance.	1. **System Board**
1601 (The appliance is able to communicate to the Service Processor, but the Service Processor failed to respond at the start of POST.) Do the following before replacing a FRU: 1. Remove the ac power to the appliance, wait 20 seconds; then, reconnect the ac power. Wait 30 seconds; then, power-on the appliance.. 2. Flash update the Service Processor.	1. **System Board**
1762 (Fixed Disk Configuration error)	1. **Fixed Disk Drive** 2. Fixed Disk Cables 3. Run Configuration/Setup 4. Fixed Disk Adapter 5. SCSI Backplane 6. System Board
178X (Fixed Disk error)	1. **Fixed Disk Cables** 2. Run Diagnostics 3. Fixed Disk Adapter 4. Fixed Disk Drive 5. System Board
1800 (No more hardware interrupt available for PCI adapter)	1. **Run Configuration/Setup** 2. Failing Adapter 3. System Board
1962 (Drive does not contain a valid boot sector)	1. **Verify a bootable operating system is installed** 2. Run Diagnostics 3. Hard Disk Drive 4. SCSI Backplane 5. Cable 6. System Board
2400 (Video controller test failure)	1. **Video Adapter (if installed)** 2. System Board
2462 (Video memory configuration error)	1. **Video Adapter (if installed)** 2. System Board

Error Code/Symptom	FRU/Action
5962 (IDE CD-ROM configuration error)	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)	1. **Pointing Device** 2. System Board
00019501 (Processor 1 is not functioning - check VRM and processor LEDs)	1. **VRM 1, VRM 2** 2. Processor 1 3. System Board
00019502 (Processor 2 is not functioning - check VRM and processor LEDs)	1. **VRM 2** 2. Processor 2
00019701 (Processor 1 failed)	1. **Processor 1** 2. System Board
00019702 (Processor 2 failed)	1. **Processor 2** 2. System Board
00180100 (No room for PCI option ROM)	1. **Run Configuration/Setup** 2. Failing Adapter 3. System Board
00180200 (No more I/O space available for PCI adapter)	1. **Run Configuration/Setup** 2. Failing Adapter 3. System Board
00180300 (No more memory (above 1MB for PCI adapter)	1. **Run Configuration/Setup** 2. Failing Adapter 3. System Board
00180400 (No more memory (below 1MB for PCI adapter)	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)	1. **Remove Failing PCI Card** 2. System Board
00180600 (PCI to PCI bridge error)	1. **Run Configuration/Setup** 2. Move the failing adapter to slot 1 or 2 3. Failing Adapter 4. System Board
00180700, 00180800 (General PCI error)	1. **System Board** 2. PCI Card
01295085 (ECC checking hardware test error)	1. **System Board** 2. Processor

Error Code/Symptom	FRU/Action
01298001 (No update data for processor 1)	1. **Ensure all processors are the same stepping level and cache size.** 2. Processor 1
01298002 (No update data for processor 2)	1. **Ensure all processors are the same stepping level and cache size.** 2. Processor 2
01298101 (Bad update data for processor 1)	1. **Ensure all processors are the same stepping level and cache size.** 2. Processor 1
01298102 (Bad update data for processor 2)	1. **Ensure all processors are the same stepping level and cache size.** 2. Processor 2
I9990301 (Fixed boot sector error)	1. **Hard Disk Drive** 2. SCSI Backplane 3. Cable 4. System Board
I9990305 (Fixed boot sector error, no operating system installed)	1. **Install operating system to hard disk drive.**
I9990650 (AC power has been restored)	1. **Check cable** 2. Check for interruption of power supply 3. Power Cable

SCSI error codes

Error Code	FRU/Action
All SCSI Errors One or more of the following might be causing the problem: • A failing SCSI device (adapter, drive, controller) • An improper SCSI configuration or SCSI termination jumper setting • An improperly installed cable • A defective cable	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. The last device in each SCSI chain is terminated correctly. 4. The SCSI devices are configured correctly.

Temperature error messages

Message	Action
DASD bank 2 Over Temperature (level-critical; Direct Access Storage Device bay ″X″ was over temperature)	1. **Ensure appliance is being properly cooled**; see “Temperature checkout” on page 25.
DASD Over recommended Temperature (sensor X) (level-warning; DASD bay ″X″ had over temperature condition)	1. **Ensure appliance is being properly cooled**; see “Temperature checkout” on page 25.

Message	Action
DASD under recommended temperature (sensor X) (level-warning; direct access storage device bay ″X″ had under temperature condition)	1. **Ambient temperature must be within normal operating specifications**; see “Products and features” on page 3.
DASD 1 Over Temperature (level-critical; sensor for DASD1 reported temperature over recommended range)	1. **Ensure appliance is being properly cooled**; see “Temperature checkout” on page 25.
Power Supply ″X″ Temperature Fault (level-critical; power supply ″x″ had over temperature condition)	1. **Ensure appliance is being properly cooled;** see “Temperature checkout” on page 25. 2. Replace Power Supply ″X″
System board is over recommended temperature (level-warning; system board is over recommended temperature)	1. **Ensure appliance is being properly cooled**; see “Temperature checkout” on page 25. 2. Replace system board
System board is under recommended temperature (level-warning; system board is under recommended temperature)	1. **Ambient temperature must be within normal operating specifications**; see “Products and features” on page 3.
System over temperature for CPU ″X″ (level-warning; CPU ″X″ reporting over temperature condition)	1. **Ensure appliance is being properly cooled** ; see“Temperature checkout” on page 25
System under recommended CPU ″X″ temperature (level-warning; system reporting under temperature condition for CPU ″X″)	1. **Ambient temperature must be within normal operating specifications**; see “Products and features” on page 3.

Fan error messages

Message	Action
Fan ″X″ failure (level-critical; fan ″X″ had a failure)	1. **Check connections to fan ″X″** 2. Replace fan ″X″
Fan ″X″ fault (level-critical; fan ″X″ beyond recommended RPM range)	1. **Check connections to fan ″X″** 2. Replace fan ″X″
Fan ″X″ Outside Recommended Speed Action	1. **Replace fan ″X″**

Power error messages

Message	Action
Power supply ″X″ current share fault (level-critical; excessive current demand on power supply ″X″)	1. **See “Power checkout” on page 23**
Power supply ″X″ DC good fault (level-critical; power good signal not detected for power supply ″X″)	1. **Replace power supply ″X″**
Power supply ″X″ temperature fault	1. **Replace fan ″X″**
Power supply ″X″ removed	1. **No action required - information only**

Message	Action
Power supply ″X″ fan fault (level-critical; fan fault in power supply ″X″)	1. **Replace power supply ″X″**
Power supply ″X″ 12V fault (level-critical; overcurrent condition detected)	1. **See “Power checkout” on page 23**
Power supply ″X″ 3.3V fault (level-critical; 3.3V power supply ″X″ had an error)	1. **See “Power checkout” on page 23**
Power supply ″X″ 5V fault (level-critical; 5V power supply ″X″ had an error)	1. **See “Power checkout” on page 23**
System over recommended ″X″ current (level-non-critical; system running too much current on that voltage)	1. **See “Power checkout” on page 23**
System running non-redundant power (level-non-critical; system does not have redundant power)	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″ v (level-warning; indicated voltage supply under nominal value; value for ″X″ can be +12, -12, or +5)	1. **Check connections to power subsystem** 2. Replace power supply 3. Replace power backplane
System under recommended voltage on 3.3 v (level-warning; 3.3 volt supply under nominal value)	1. **Check connections to power subsystem** 2. Replace power supply 3. Replace power backplane
System under recommended X current (level-non-critical; system drawing less current than recommended on voltage ″X″)	1. **See “Power checkout” on page 23**
″X″ V bus fault (level-critical; overcurrent condition on ″X″ voltage bus)	1. **Check for short circuit on ″X″ voltage bus** 2. See “Power checkout” on page 23
12V ″X″ bus fault (level-critical; overcurrent condition on 12 volt ″X″ voltage bus)	1. **Check for short circuit on 12 volt ″X″ voltage bus** 2. See “Power checkout” on page 23
5V fault (level-critical; overcurrent condition on 5 V subsystem)	1. **Check for short circuit on 5 v bus** 2. See “Power checkout” on page 23
240 VA fault (level-critical; overcurrent or overvoltage condition in power subsystem)	1. **See “Power checkout” on page 23**

Appliance shutdown

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

Voltage related appliance 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 23**

Message	Action
System shutoff due to ″X″ current under min value (level-critical; current on voltage bus ″X″ under minimum value)	1. **See “Power checkout” on page 23**
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 power supply** 2. Replace power supply backplane

Temperature related system shutdown

Message	Action
System shutoff due to board over temperature (level-critical; board is over temperature)	1. **Ensure appliance is being properly cooled**, see “Temperature checkout” on page 25. 2. Replace board
System shutoff due to CPU ″X″ over temperature (level-critical; CPU ″X″ is over temperature)	1. **Ensure appliance is being properly cooled**, see “Temperature checkout” on page 25. 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 “Products and features” on page 3. 2.
System shutoff due to DASD temperature (sensor X) (level-critical; DASD area reported temperature outside recommended operating range)	1. **Ensure appliance is being properly cooled**, see “Temperature checkout” on page 25.
System shutoff due to high ambient temperature (level-critical; high ambient temperature)	1. **Ambient temperature must be within normal operating specifications**, see “Products and features” 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 “Products and features” 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)	1. **Reseat CPU** 2. Reseat VRM 3. Replace CPU

Bus fault messages

Message	Action
Failure reading 12C device. Check devices on bus 0.	1. **Replace system board**
Failure reading 12C device. Check devices on bus 1.	1. **Reseat power Supply** 2. Replace power supply 3. Replace power supply backplane 4. Replace system board
Failure reading 12C device. Check devices on bus 2.	1. **Replace DASD backplane** 2. Replace system board
Failure reading 12C device. Check devices on bus 3.	1. **Replace system board**
Failure reading 12C device. Check devices on bus 4.	1. **Replace DIMM** 2. Replace system board

Undetermined problems

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

Note: A corrupt CMOS can cause undetermined problems.

Check the LEDs on all the power supplies, see"Power supply LED errors" on page 34. If the LEDs indicate the power supplies are working correctly, return here and do the following:

1. Power-off the appliance.
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 appliance)
   - Modem, mouse, or non-IBM devices
   - Each adapter
   - Drives
   - Memory-Modules (1 Gigabyte)

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 1 bank of 128 MB DIMMs)

4. Power-on the appliance. 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 appliance, 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.

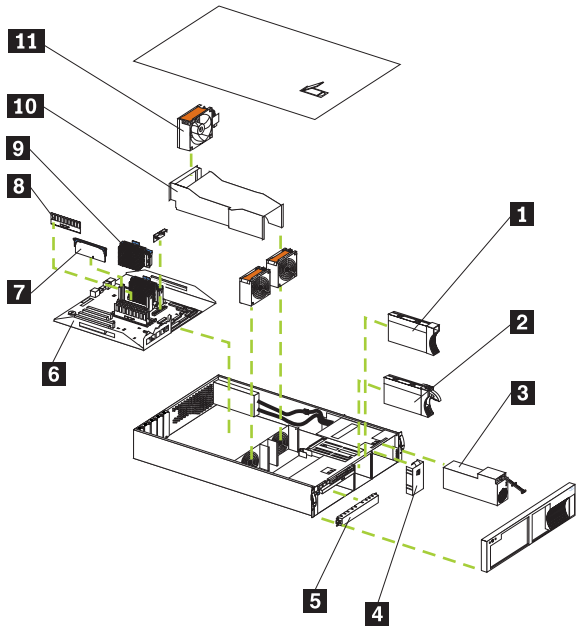
Chapter 5. Installing options

This chapter provides instructions to help you add options to your appliance. Some option-removal instructions are provided, in case you need to remove one option to install another.

Exploded view of the appliance

The orange color on components and labels in your appliance identifies hot-swap or hot-plug components. This means that you can install or remove the components while the appliance is running, provided that your appliance is configured to support this function. For complete information about installing or removing a hot-swap or hot-plug component, see the information provided in the detailed procedures in this document under “Replacing a hot-swap drive” on page 59.

The blue color on components and labels indicates touch points where a component can be gripped, a latch moved, and so on.



1. Slim HDD bezel filler assembly
2. Hard drive tray
3. Power Supply
4. Filler panel for the power supply bay
5. Filler panel for the device bay
6. System board
7. Terminator Card
8. DIMM
9. Microprocessor
10. Air baffle
11. Rear fan

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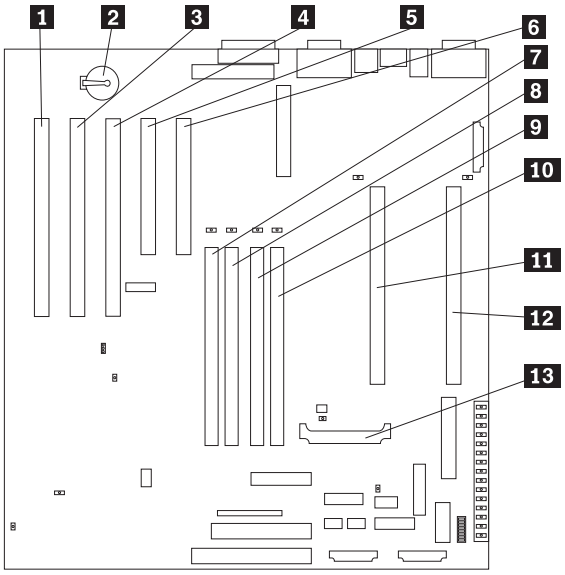
System board layout

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

System board options connectors

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



1 PCI slot 5 64-bit (J44)

2 Battery

3 PCI slot 4 64-bit (J39)

4 PCI slot 3 64-bit (J34)

5 PCI slot 2 32-bit (J32)

6 PCI slot 1 32-bit (J27)

7 DIMM 1 (J23)

8 DIMM 2 (J21)

9 DIMM 3 (J19)

10 DIMM 4 (J18)

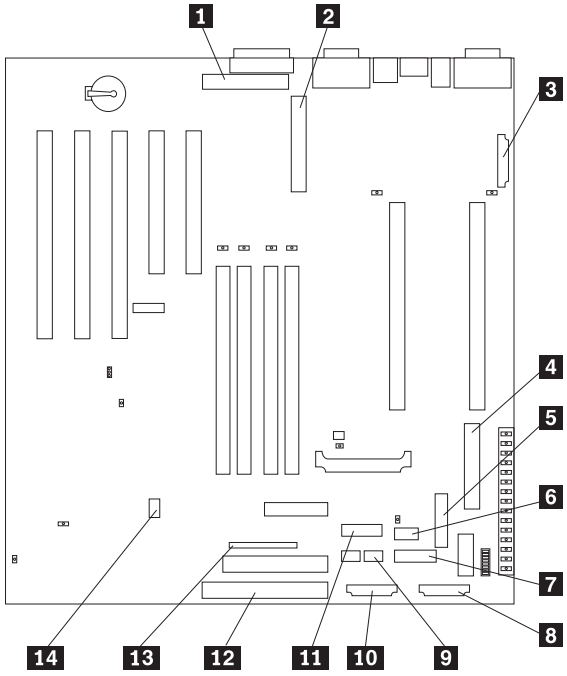
11 Primary microprocessor (U17)

12 Secondary microprocessor (U3)

13 Voltage regulator module 2 (VRM2) (U26)

System board internal cable connectors

The following shows internal cable connectors on the system board.



1 Internal SCSI channel A (J29)

2 Internal SCSI channel B (J17)

3 Fan 3 (J35)

4 Main Power (J4)

5 Power (J51)

6 Fan 1 (J59)

7 3.3V power for optional backplane (J52)

8 Power system management (J12)

9 DASD (SCSI) system management (J5)

10 Fan 2 (J60)

11 Operator information panel (J50)

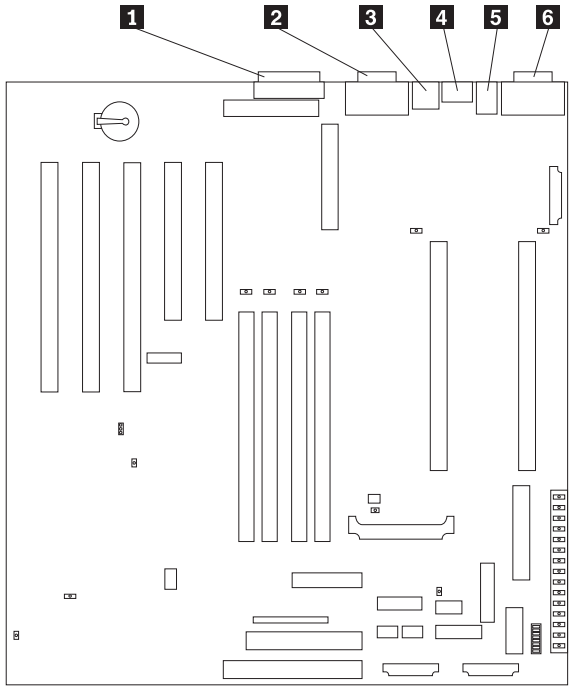
12 On-off / Reset panel (J38)

13 IDE (J31)

14 Diskette (J26)

System board external port connectors

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



1 Parallel port (J22)

2 Video / Advanced System Management Process or port (J13)

3 USB ports (J11)

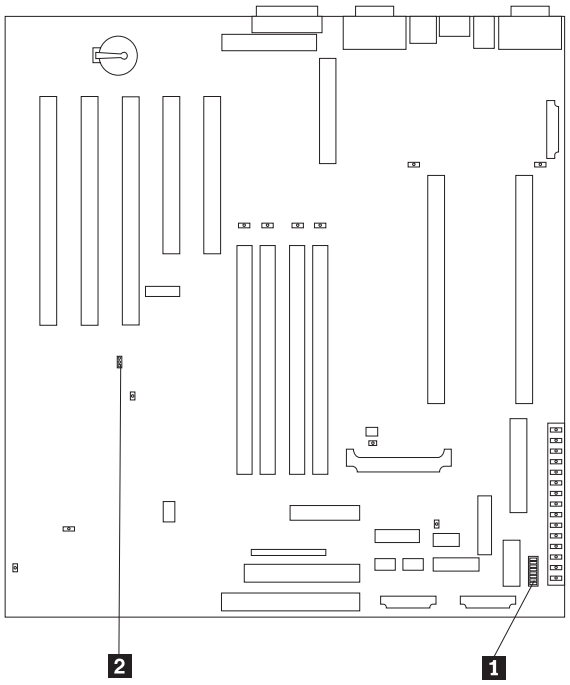
4 Ethernet ports (J9)

5 Keyboard / mouse port (J6)

6 Serial ports (J3)

System board switches and jumpers

The following dentifies the switches and jumpers on the system board.



1 System board switch block (SW1)

2 Boot block jumper (J37)

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. See “Recovering BIOS” 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 4. Switches 1-8

Switch number	Description
1- 4	Microprocessor speed setting. See Table 5 on page 52.
5	Power-on override. When On, overrides the power-on switch and forces power-on mode. The appliance boots up without the use of the power-on switch. The default setting is Off (disabled).
6	Clock frequency selection. When On, sets the host bus speed to 100 MHz. When Off, the host bus speed is 133 MHz. The default setting is Off.
7	Reserved. The default setting is Off.

Table 4. Switches 1-8 (continued)

Switch number	Description
8	Password override. When On, bypass the power-on password. When Off, require the user to enter the power-on password at startup, if one is set. The default setting is Off.

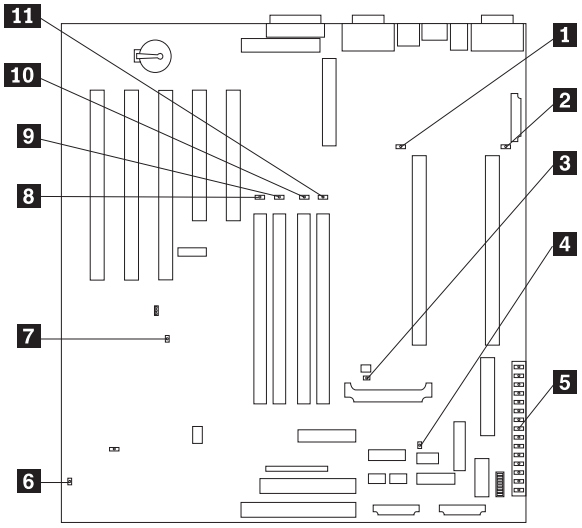
Table 5. Microprocessor speed settings

Microprocessor speed	Switch 1	Switch 2	Switch 3	Switch 4
133/1000MHz	off	off	off	on

Note: The speed settings shown above apply only to unlocked processors. If the processors are production level they are locked and there is no need to change the speed settings.

System board LED locations

The following identifies LEDs on the system board. Refer to this figure when solving problems with the appliance.



1 Secondary microprocessor failure (CR7)

2 Primary microprocessor failure (CR1)

3 Voltage regulator module (VRM2) failure (CR16)

4 Integrated voltage regulator (VRM1) failure (CR4)

5 Diagnostics panel (See Table 6)

6 Advanced System Management Processor error (CR70)

7 Power-on (CR56)

8 DIMM1 failure (CR21)

9 DIMM2 failure (CR28)

10 DIMM3 ailure (CR18)

11 DIMM4 failure (CR20)

Table 6. Diagnostics panel LEDs

CR	LED	Description
29	**PS1**	Power supply 1 failure.
30	**PS2**	Power supply 2 failure.
31	**PS3**	Not used.
32	**NON**	Non-redundant power.
33	**OVER**	Overspecification. The system has exceeded the power capibilities of the installed power supply units.
34	**NMI**	Non-maskable-interrupt occurred.
22	**TEMP**	System temperature exceeded maximum rating.
23	**FAN**	A fan failed or is operating slowly.
24	**MEM**	Memory failure. One or more dual in-line memory modules (DIMMS) failed.
25	**CPU**	Microprocessor failure. One or both microprocessors failed.
26	**PCI 1**	Error on primary PCI channel (A) or system board.
27	**PCI 2**	Error on secondary PCI channel (B) or system board.
58	**VRM**	Error on voltage regulator module or on integrated voltage regulator.
53	**DASD1**	SCSI bus A failure. The SCSI backplane (if any) or a device connected to SCSI bus A failed.
57	**DASD2**	SCSI bus B failure. The SCSI hot-swap hard drive backplane on SCSI bus B failed.

Before you begin

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

- Become familiar with the safety and handling guidelines specified under “Working inside an appliance with power on” on page 54, “Handling static-sensitive devices” on page 54, and read “Appendix C. Notices” on page 91. These guidelines will help you work safely while working with your appliance or options.
- You do not need to turn off the appliance 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 your appliance indentifies 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 indentifies touch points where a component can be gripped, a latch moved, and so on.
- Ensure that you have an adequate number of properly grounded electrical outlets for your appliance, monitor, and any other options that you intend to install.
- Back up all important data before you make changes to hard drives.
- Have a small, flat-blade screwdriver available.

System reliability considerations

To help ensure correct cooling and system reliability, Ensure that:

- Each of the drive bays has either a drive or a filler panel installed.
- Each of the power supply bays has a power supply installed.

- Space is available around the appliance to allow the appliance cooling system to work correctly. Refer to the documentation that comes with the rack.
- The cover is removed for no longer than 30 minutes while the appliance 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.
- A failed fan is replaced within 48 hours.

Working inside an appliance with power on

Your appliance 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 appliance that is powered on:

- Avoid loose-fitting clothing on your forearms. Button long-sleeved shirts before working inside the appliance; do not wear cuff links while your are working inside the appliance.
- Do not allow your necktie to hang inside the appliance.
- 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 appliance as you lean over it.
- Take care to avoid dropping any metallic objects, such as paper clips, hair pins, or screws, into the appliance.

Handling static-sensitive devices

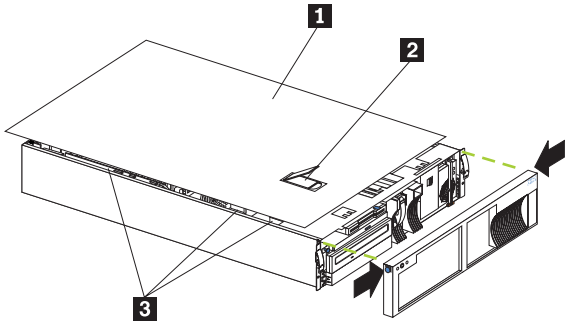
Static electricity, though harmless to you, can seriously damage appliance components or options.

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 appliance 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 appliance 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 appliance 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 appliance's covers or any metal surface.

Removing the cover and bezel



1 Cover

2 Cover release latch

3 Flanges

To remove the top cover:

1. Review the information in “Before you begin” on page 53.
2. If you are planning to install or remove any part other than a hot-swap hard drive, hot-swap power supply, or hot-swap fan, turn off the appliance and all attached devices and disconnect all external cables and power cords.
3. Release the left and right side latches and pull the appliance out of the rack enclosure until both slide rails lock.

   Note: When the appliance is in the locked position, you can reach the cables on the back of the appliance.
4. Lift the cover-release latch and slide the top cover toward the rear of the appliance about 25 mm (1 inch). Lift the cover off the appliance and set aside.

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

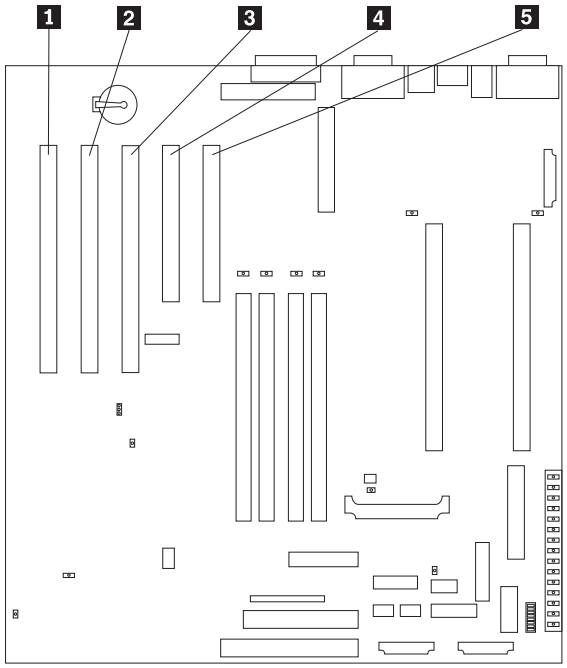
To remove the bezel:

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

Working with adapters

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

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



1 PCI slot 5 64-bit (J44) (Fibre Channel adapter)

2 PCI slot 4 64-bit (J39)

3 PCI slot 3 64-bit (J34)

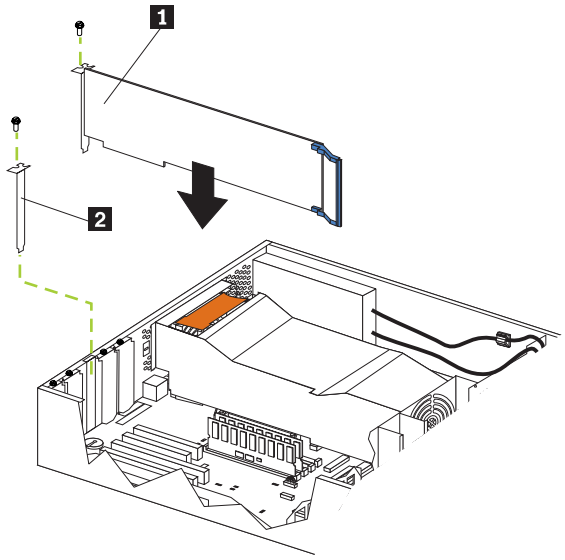
4 PCI slot 2 32-bit (J32)

5 PCI slot 1 32-bit (J27)

Adapter considerations

Before you continue with the adapter-installation procedure, review the considerations listed in “Appendix B. PCI Adapter Placement” on page 89 as to which PCI should be used for new adapter.:

Adapter installation instructions



1 Adapter

2 Expansion-slot cover

To install an adapter:

1. Review the information in “Before you begin” on page 53.
2. Power-off the appliance and peripheral devices and disconnect all external cables and power cords; then, remove the cover (see “Removing the cover and bezel” on page 55).
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 appliance. 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 appliance, ensure 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.

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 cover and bezel" on page 66.

Replacing internal drives

Your appliance contains several types of drives, such as:
- Diskette
- Hard drive
- CD-ROM

Your appliance contains hardware that lets you replace a failed hard drive without powering off the appliance. Therefore, you have the advantage of continuing to operate your system while a hard drive is replaced. These drives are known as *hot-swappable* or *hot-swap* drives.

The hot-swap drive bay has two indicator lights (see "Controls and indicators" on page 6). If the amber hard-disk status light is lit continuously, the drive is faulty and needs to be replaced. When the hard drive status light indicates a drive fault, you can replace that hot-swap drive without powering off the appliance.

Internal drive bays

Internal drives are installed in *bays*. Your appliance comes with the following preinstalled drives:
- One 1 3.5-inch, 1.44 MB diskette drive
- One IDE CD-ROM drive
- One slim-high (1-inch) hot-swap 9.1 GB hard drive

The hot-swap bay connects to a SCSI *backplane*. This backplane is a printed circuit board behind the bay.

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.

A 16-bit (wide) SCSI cable connects the SCSI hard drive backplane to an integrated SCSI controller on the system board. An additional 16-bit 1-drop SCSI cable is shipped inside your appliance. It is folded and restrained with a cable clamp on the bottom of the appliance 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.

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.

Your appliance automatically sets SCSI IDs for the hard drive.

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

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

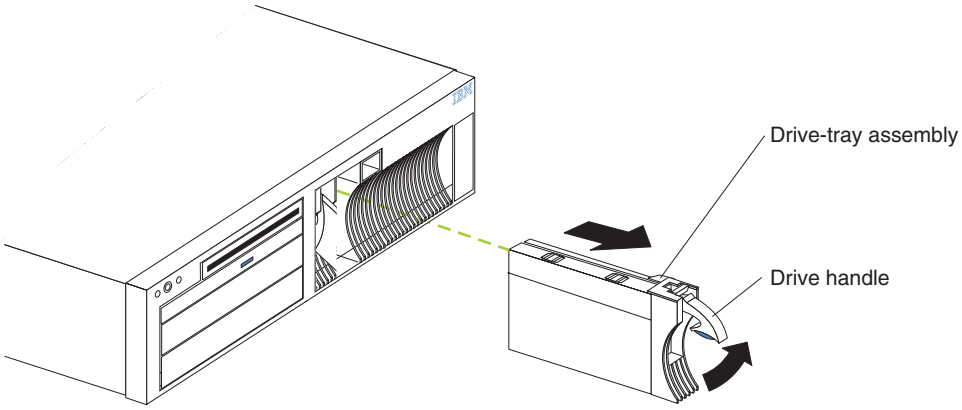
Replacing a hot-swap drive

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

This section gives the procedure for replacing a hot-swap hard drive.

Notes:

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



Attention: When you handle Electrostatic Discharge-Sensitive devices (ESD), take precautions to avoid damage from static electricity. For details on handling these devices, see “Handling electrostatic discharge-sensitive devices” on page 94.

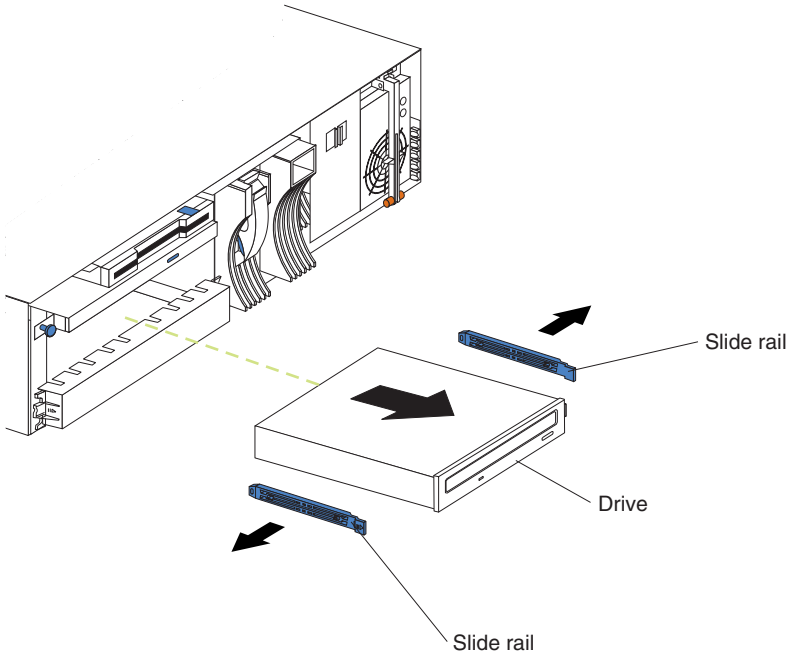
To replace a hard drive:

1. Review the information in “Before you begin” on page 53.

   Attention: To maintain proper system cooling, do not operate the appliance for more than two minutes without either a drive or a filler panel installed.
2. Lift up on the tray handle until it unlocks.
3. Gently pull the drive-tray assembly out of the bay until the drive disconnects from the backplane and then slide the drive assembly out of the appliance.

4. Install a new hard disk drive:
   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.
5. Check the hard drive status indicators to verify that the hard drive is operating correctly.
   - When the amber light is on continuously, the hard drive has failed.
   - The green activity light flashes when there is activity on the drive.

Replacing a non-hot-swap drive

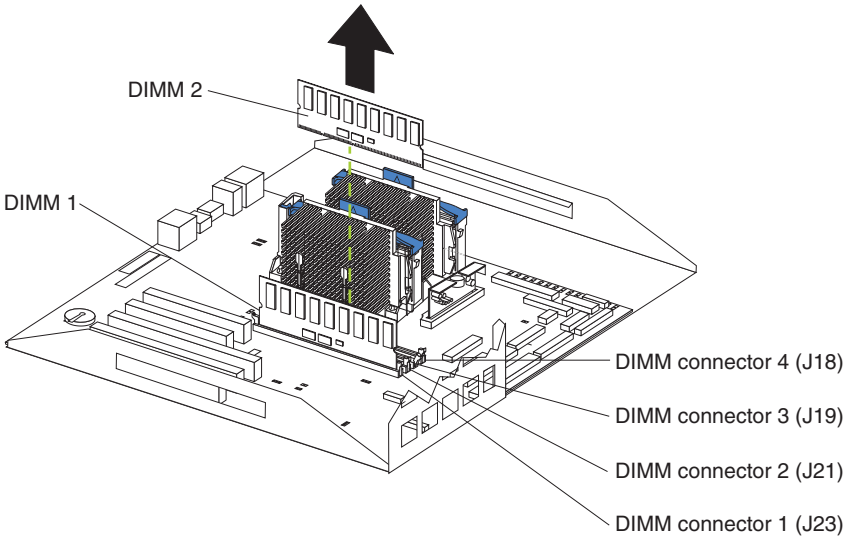


To install a non-hot-swap drive:

1. Review the information in“Before you begin” on page 53.
2. Turn off the appliance and then remove the cover. (See “Removing the cover and bezel” on page 55.)
3. Remove the trim bezel.
4. Remove the cable connecting the CD-ROM drive to the IDE connector on the system board.
5. Slide out the old CD-ROM drive from the appliance.
6. Touch the static-protective bag containing the drive to any unpainted metal surface on the appliance; then, remove the drive from the bag and place it on a static-protective surface.
7. Set any jumpers or switches on the drive according to the documentation that comes with the drive.

8. Install rails on the drive.
   - Remove the blue slide rails off the old CD-ROM drive.
   - Clip the rails onto the sides of the new drive.
9. 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.
10. Reconnect the cable from the CD-ROM drive to the IDE connector on the system board.
11. Set the jumper on the back of the new drive to slave.

Replacing memory modules



To replace a DIMM:

Attention: When you handle Electrostatic Discharge-Sensitive devices (ESD), take precautions to avoid damage from static electricity. For details on handling these devices, see “Handling electrostatic discharge-sensitive devices” on page 94.

1. Review the information in “Appendix C. Notices” on page 91. Also review the documentation that comes with your option.
2. Power off the appliance and remove the cover. (See “Removing the cover and bezel” on page 55.)
3. Touch the static-protective package containing the DIMM to any unpainted metal surface on the appliance. Then, remove the DIMM from the package.

   Note: To avoid breaking the retaining clips or damaging the DIMM connectors, handle the clips gently.
4. Remove the DIMM by opening the retaining clips that secure the DIMM in its connector and gently lifting the module up and out of its connector.
5. Installing the new 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 on the other edge of the DIMM. Press straight into the connector. Ensure that the retaining clips snap into the closed positions.

c. Ensure the retaining clips are in the closed position. If a gap exists between the DIMM and the retaining clips, the DIMM has not been correctly installed. In this case, open the retaining clips and remove the DIMM; then, reinsert the DIMM.

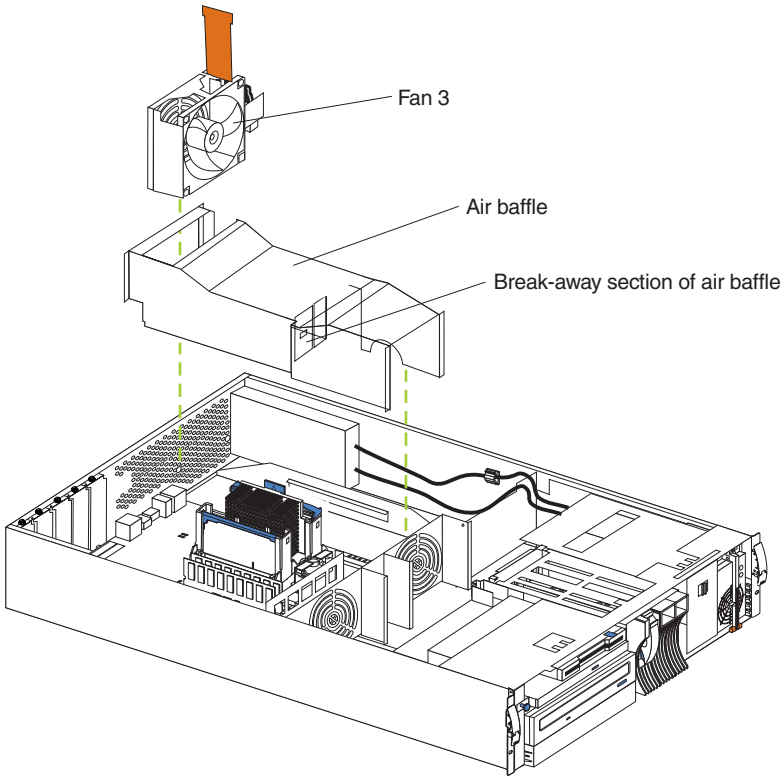
Replacing microprocessors

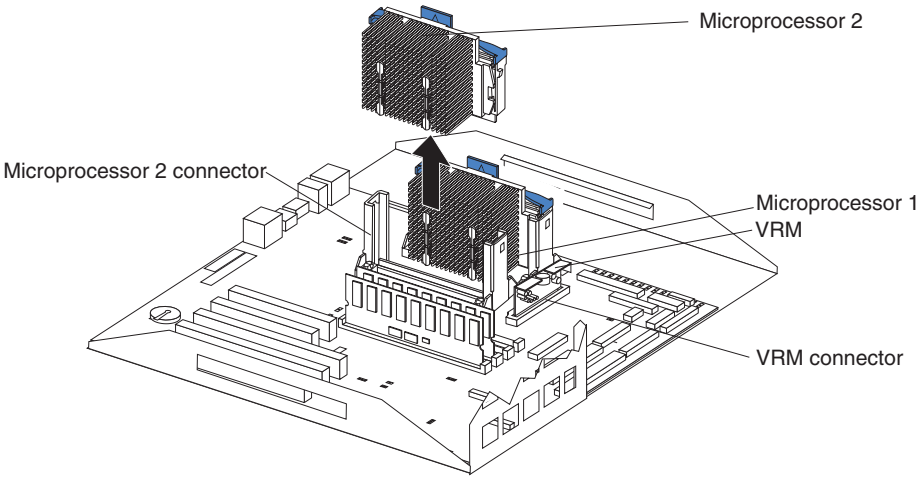
Your appliance comes with two microprocessors installed on the system board.

Note: Before you replace a defective microprocessor, review the documentation that comes with the microprocessor, so that you can determine whether you need to update the appliance basic input/output system (BIOS). The latest level of BIOS for your appliance is available through this Website: **www.storage.ibm.com/support/nas**.

Your appliance comes with two microprocessors installed on the system board.

Attention: To avoid damage and ensure proper appliance operation when you install a new microprocessor, use microprocessors that have the same cache size and type, and the same clock speed.





To replace a microprocessor:

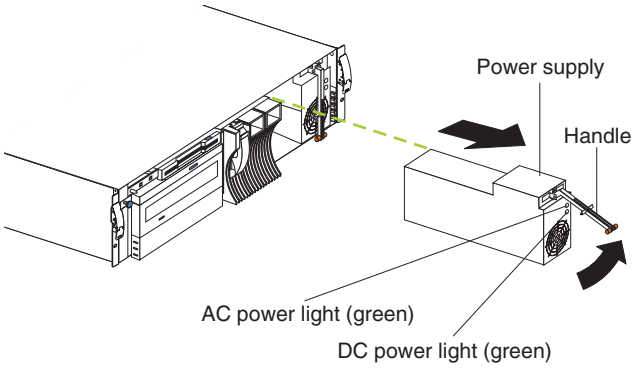
1. Review the information in “Before you begin” on page 53.
2. Power-off the appliance and peripheral devices and disconnect all external cables and power cords; then, remove the cover (see “Removing the cover and bezel” on page 55).
3. Remove the fan 3 assembly by lifting the orange handle on top of the fan assembly and lifting out the fan assemble.
4. Remove the air baffle by grasping it at the sides and lifting it out.
5. Remove the defective microprocessor by pulling upward on the microprocessor handle and lifting it out.
6. Install the new microprocessor:
   a. Touch the static-protective package containing the new microprocessor to any *unpainted* metal surface on the appliance; then, remove the microprocessor from the package.
   b. Center the microprocessor over the microprocessor connector and carefully press the microprocessor into the connector.
7. Install the air baffle. Make sure the sides of the air baffle fit inside the brackets on the appliance.
8. Install the fan 3 assembly.
9. If you have other options to install or remove, do so now; otherwise, go to “Installing the cover and bezel” on page 66.

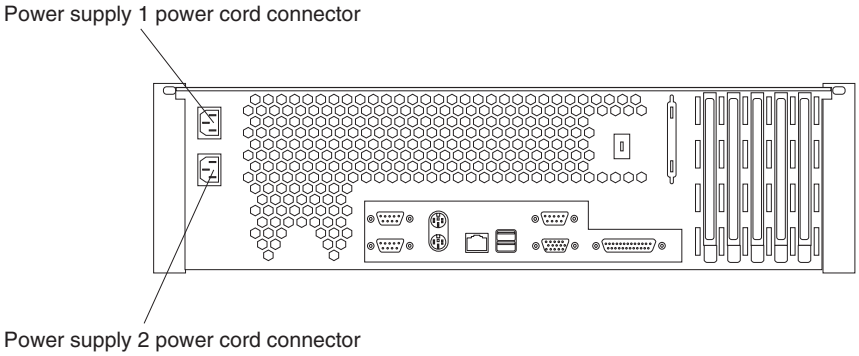
Replacing power supplies

Your appliance comes with two power supplies, which are hot-swappable.

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.





1. Remove the bezel. See “Removing the cover and bezel” on page 55.
2. Unplug the power cord for the power supply you want to replace from the electrical outlet.
3. Unplug the power cord from the back of the appliance.
4. Lift up the power supply handle and gently slide the power supply out of the chassis.

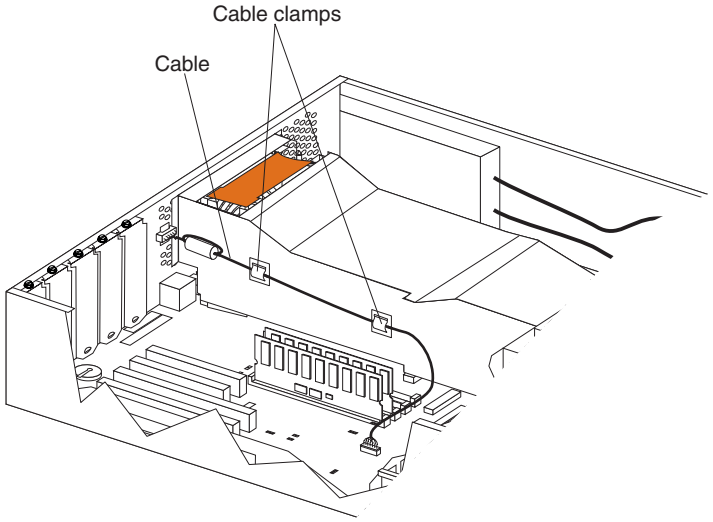
   Note: During normal operation, each power-supply bay must have a power supply installed for correct cooling.
5. Install the new power supply in the bay:
   a. Place the handle on the power supply in the open position and slide the power supply into the chassis.
   b. Gently close the handle to seat the power supply in the bay.
6. Re-plug the power cord for the new power supply into the power cord connector at the rear of the appliance.
7. Re-plug the power cord into a properly grounded electrical outlet.

8. Verify that the dc Power light and ac Power light on the power supply are On, indicating that the power supply is operating correctly.
9. Replace the bezel. (See “Installing the cover and bezel” on page 66.)

Routing the Advanced System Management Interconnect option cable

Route the Advanced System Management Interconnect option cable as shown in the following illustration.

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

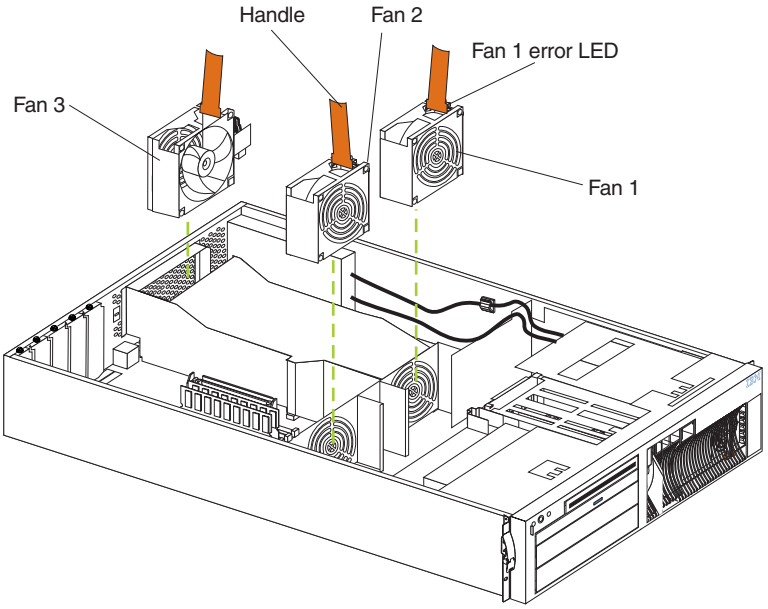


Replacing a fan assembly

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

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

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

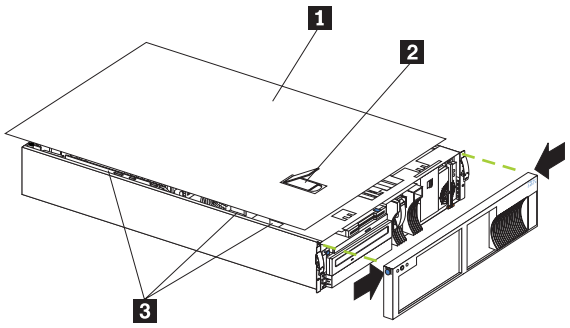


To replace a fan assembly:

1. Remove the cover. See “Removing the cover and bezel” on page 55.

   Attention: To ensure correct 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 On. Remove the failing fan assembly from the appliance by lifting the orange handle on the top of the fan assembly and pulling the fan assembly out.
3. Slide the replacement fan assembly into the appliance 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 On, reseat the fan.
5. Replace the cover. See “Installing the cover and bezel”.

Installing the cover and bezel



1 Cover

2 Cover-release latch

3 Flanges

To install the 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 appliance chassis.
2. Close the cover-release latch.

To install the bezel:

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

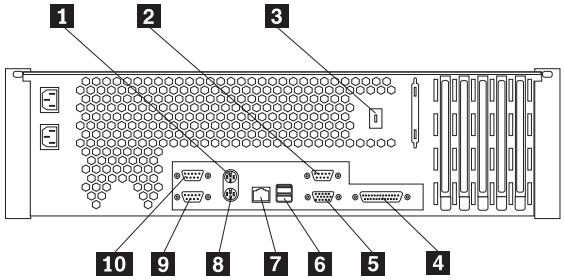
To complete the installation:

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

Input/Output ports

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

- One Parallel port
- One Video port
- One Keyboard port
- One Auxiliary-device (pointing device) port
- Two Ultra3 SCSI ports
- Two Serial ports
- Two Universal Serial Bus ports
- One Ethernet port
- Three Advanced System Management ports



1 Mouse

2 Management port C

3 Advanced System Management Interconnect knockout

4 Parallel

5 Video

6 Universal serial bus (USB) 1 and 2

7 Ethernet

8 Keyboard

9 Serial B

10 Serial A

Parallel port

Your appliance has one parallel port. This port supports three standard Institute of Electrical and Electronics Engineers (IEEE) 1284 modes of operation: Standard Parallel Port (SPP), Enhanced Parallel Port (EPP), and Extended Capability Port (ECP).

Video port

Your appliance comes with an integrated super video graphics array (SVGA) video controller. The video port is not used during the normal operation..

Keyboard port

There is one keyboard on the rear of your appliance. The keyboard port is not used during the normal operation.

Auxiliary-device (pointing device) port

The system board has one auxiliary-device port that supports a mouse or other pointing device. The auxiliary-device port is not used during the normal operation.

Ultra3 SCSI ports

Your appliance has an integrated dual-channel Ultra3 small computer system interface (SCSI) controller. This controller supports two independent Ultra 160/m 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

Serial ports

Your appliance has two standard serial ports: Serial port A and Serial port B. The operating system can use and share both serial ports; however, the integrated Advanced System Management Processor can use and share only Serial port A.

Universal Serial Bus ports

Your appliance 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.

Ethernet port

Your appliance 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 your appliance.

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 your appliance 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.

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.

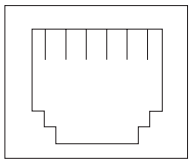


Table 7. Ethernet RJ-45 connector pin-number assignments.

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

Advanced System Management ports

Your appliance has three communication ports dedicated to the Advanced System Management Processor. One port uses a standard D-shell serial-port connector, connector C. The other two ports, which are used for the RS-485 function, use a dual RJ-45 connector.

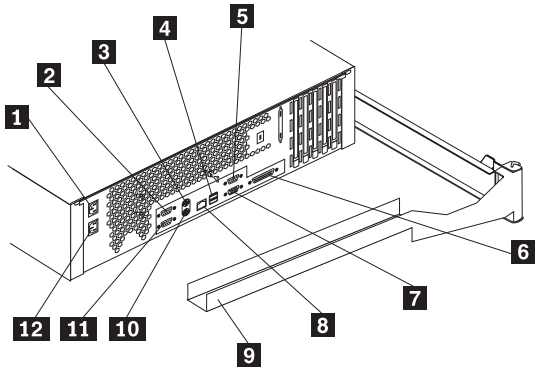
You can attach a dedicated modem to the D-shell system-management connector on the rear of your appliance to communicate with the integrated Advanced System Management Processor.

The RS-485 function uses the RJ-45 system-management connectors. This function enables you to connect the Advanced System Management Processors of several rack-mounted appliances so that they can communicate with each other in half-duplex mode.

Cabling the appliance

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

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



1 Power supply 1 power cord connector

2 Serial A

3 Mouse

4 Universal serial bus (USB) 1 and 2

5 Management port C

6 Parallel

7 Video

8 Ethernet

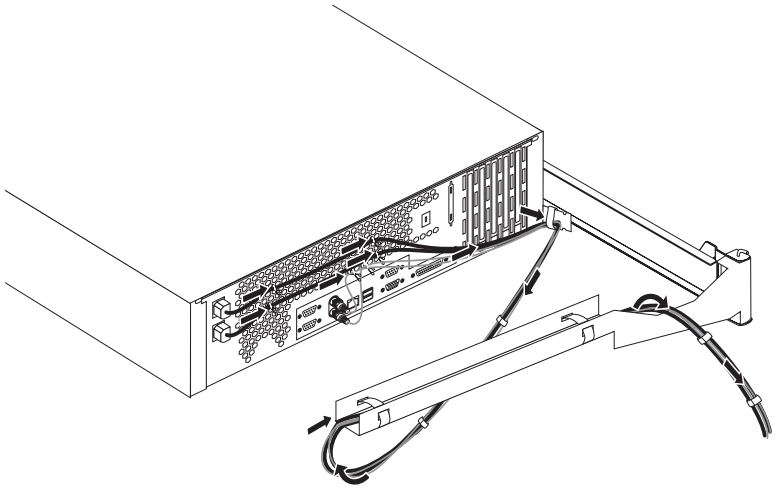
9 Cable-management arm

10 Keyboard

11 Serial B

12 Power supply 2 power cord connector

The following shows routing of cables through the cable-management arm.

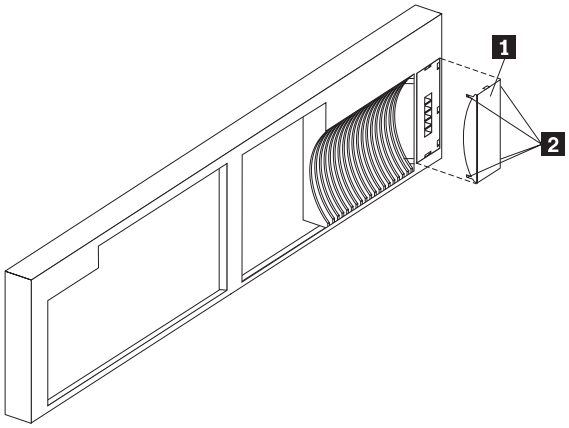


FRU information

Field Replaceable Units (FRUs) should be replaced by qualified service personnel only.

Note: Before performing any removals, read “Appendix C. Notices” on page 91 and “Before you begin” on page 53.

Removing the LED cover



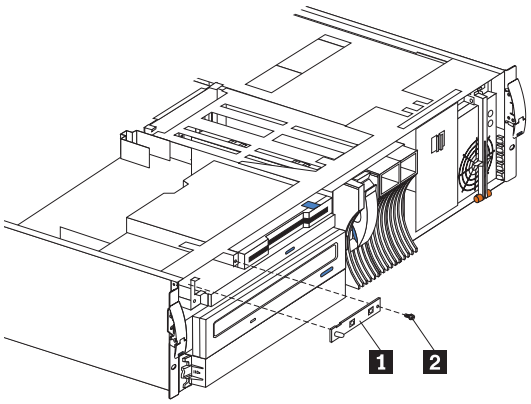
1 Front LED cover

2 Tabs

To remove the LED cover, do the following:

1. Remove the cover. See “Removing the cover and bezel” on page 55.
2. From the back of the cover, release the four tabs 1 and gently pry away the LED cover 2 .

Removing the on/off reset board



1 On/Off Reset Board

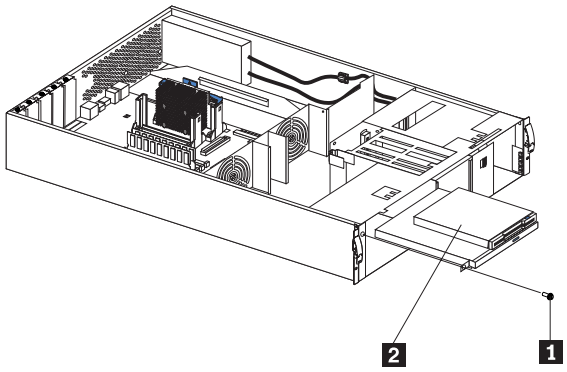
2 Screw

To remove the on/off reset board:

1. Remove the cover. See “Removing the cover and bezel” on page 55.

2. Disconnect the cables from the system board.
3. Remove the screw 2 .
4. Gently pull off the board 1 .

Removing the diskette/CDROM drive



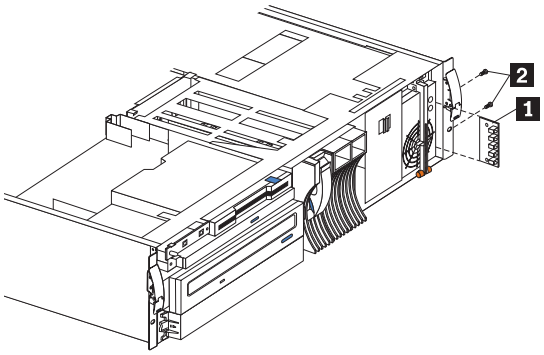
1 Screw

2 12.7MM Diskette/CDROM Drive

To remove the LED board:

1. Remove the cover. See “Removing the cover and bezel” on page 55.
2. Disconnect the cable.
3. Remove the screw 1 .
4. Carefully pull out drive 2 to remove.

Removing the LED board



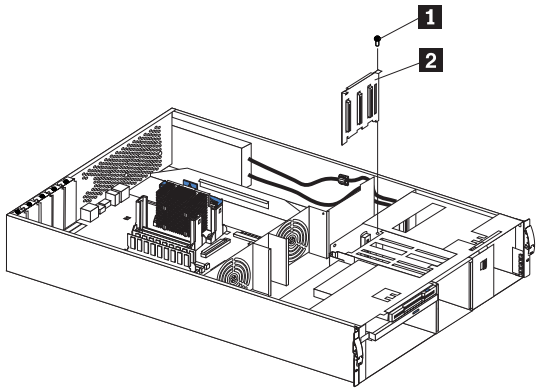
1 LED board

2 Screws(2)

To remove the LED board:

1. Remove the cover. See “Removing the cover and bezel” on page 55.
2. Disconnect the LED board cable from the system board .
3. Remove the two screws 2 .
4. Carefully slide out the board 1 .

Removing the SCSI backplane assembly



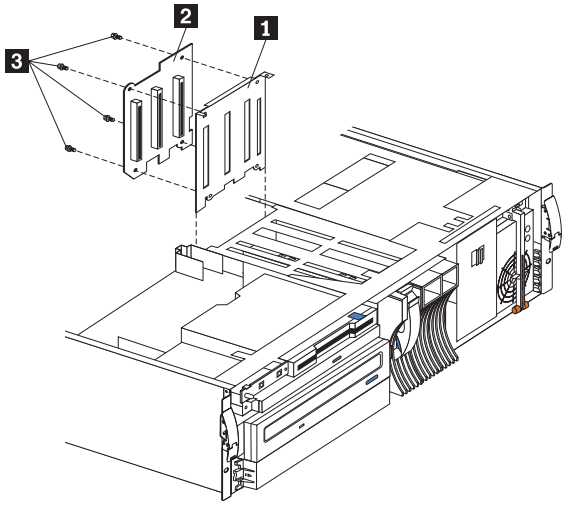
1 Screw

2 SCSI Backplane

To remove the hot-swap hard drive backplane:

1. Remove the cover. See “Removing the cover and bezel” on page 55.
2. Disconnect cables.
3. Remove the screw 1 from the top of the assembly.
4. Gently slide the SCSI backplane assembly 2 up to remove.

Removing the hot-swap hard drive backplane



1 Backplane bracket

2 Backplane board

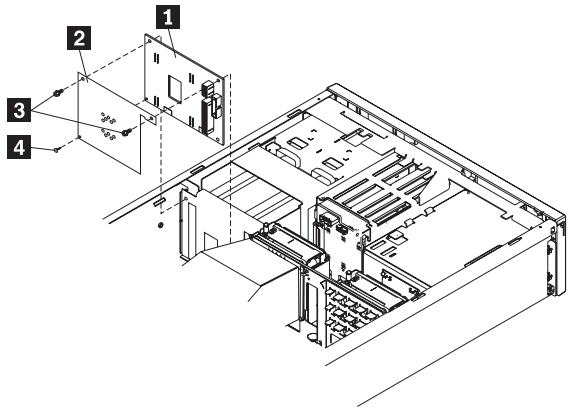
3 Screws (4)

To remove the hot-swap hard drive backplane:

1. Remove the cover. See “Removing the cover and bezel” on page 55.
2. Pull out the hard drives in order to disconnect them from the backplane.
3. Remove the screw from the top of the backplane bracket 1.
4. Lift the backplane from the chassis.

5. Remove the cables from the backplane 2 .
6. Remove the four screws 3 .
7. Gently lift up to remove the backplane board 2 .

Removing the power supply backplane



1 Backplane

2 Insulator

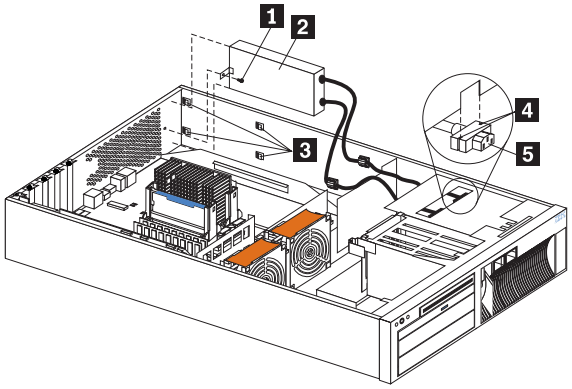
3 Screws (2)

4 Plastic retainer

To remove the power supply backplane:

1. Remove the cover. See “Removing the cover and bezel” on page 55.
2. Remove power supplies from the backplane 1 .
3. Disconnect cables from the backplane.
4. Remove the two screws 3 .
5. Remove the plastic retainer 4 .
6. Remove insulator 2 and replace on new backplane.

Removing the AC Distribution Box



1 Screw

2 AC distributor box

3 Chassis clips

4 Chassis slot

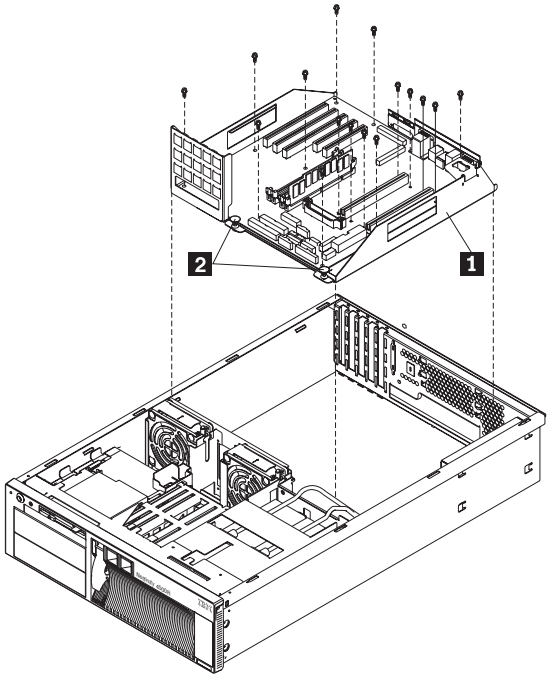
5 Cable receptacle

To remove the AC distribution box:

1. Remove the cover. See “Removing the cover and bezel” on page 55.
2. Remove screw 1 .
3. Pull the AC distribution box 2 toward front of machine in order to release it from the chassis clips 3 .
4. Remove the two hot-swap power supplies.
5. 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 correctly replace receptacles, 1 to 1 and 2 to 2 as labeled.

Removing the system board



1 System board cage

2 Knobs

To remove the system board:

1. Remove the cover. See “Removing the cover and bezel” on page 55.
2. Remove the rear air flow fan.
3. Remove the air cover.
4. Remove the system board cables.
5. Pull up on the two knobs 2 .
6. Pull up on the system board cage 1 to remove from the chassis.

Chapter 6. Using system-level utilities

The following configuration programs are provided with your appliance.

Note: Using these utilities for your appliance requires the attachment of a monitor, keyboard, and mouse.

- **Configuration/Setup Utility**

  The Configuration/Setup Utility program is part of the *basic input/output system (BIOS)* that comes with your appliance. You can use this program to configure serial and parallel 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 83 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. Power-on the appliance 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 enter the administrator password to access the full Configuration/Setup menu.
3. Follow the instructions that appear on the screen.

Choices available from the Configuration/Setup main menu

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:

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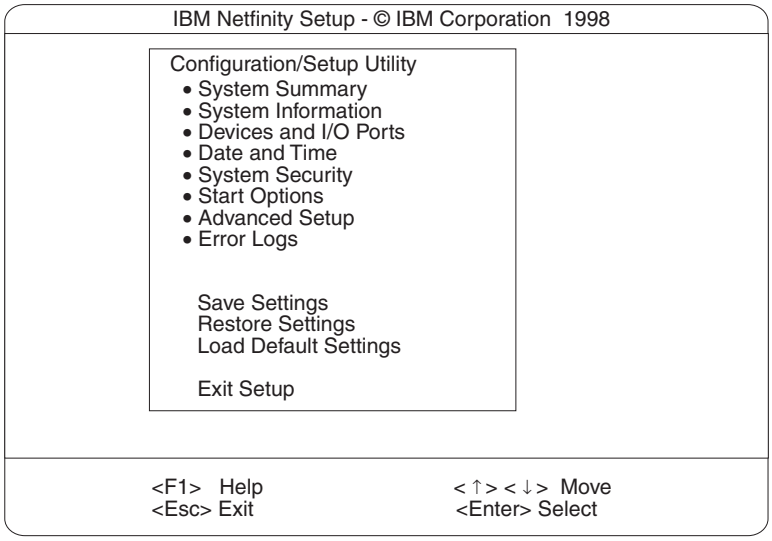


Notes:

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 your 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.

  This choice appears on both the full and limited Configuration/Setup Utility menus.

- **System Information**

  Select this choice to display information about your appliance. Changes that you make on other menus might appear on this summary screen. You cannot edit any fields. The System Information choice appears only on the full Configuration/Setup Utility main menu.

  – **Product Data**

    Select this choice to view system information, such as the machine type and model, the appliance serial number, and the revision level or issue date of the BIOS stored in the flash electronically erasable programmable ROM (EEPROM).

  – **System Card Data**

    Select this choice to view vital product data (VPD) for some appliance components.

- **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 and to change the system time sent to the Configuration/Setup Utility (service processor) when the server is started. This choice appears only on the full Configuration/Setup Utility main menu.

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

You can set a time delta to be added or subtracted from the system time that is sent to the service processor (Configuration/Setup Utility) each time the server is started. Use the number keys to enter the hours and minutes and + or – to add or subtract from the system time. If you want the system clock time to be the same as the Configuration/Setup Utility clock time, leave the value set at its default of 0.

- **System Security**

  Select this choice to set passwords or a system owner's name. This choice appears only on the full Configuration/Setup Utility main menu.

  You can implement two levels of password protection:

  – **Power-on Password**

    Select this choice to set or change a power-on password. See "Using passwords" on page 81 for more information.

  – **Administrator Password**

    Select this choice to set or change an administrator password.

    Attention: If an administrator password is set and then forgotten, it cannot be overridden or removed. You must replace the system board.

    The administrator password provides access to all choices on the Configuration/Setup Utility main menu. You can set, change, or delete both the administrator and power-on passwords, and allow a power-on password to be changed by the user.

    See "Using passwords" on page 81 for more information.

  – **System Owner's Name**

    Select this choice to specify a system owner's name, which will display during POST. You can remove or change the name only from the System Security menu. You can use any combination of up to 16 characters for the system owner's name.

- **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 your appliance.

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

  The appliance 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 checks the hard drive in bay 1, and then checks a network adapter.

  You also can select which PCI SCSI adapter is given boot precedence. The first drive that is attached to the selected adapter will be assigned drive number 80L and the operating system will start from that drive. The default for boot precedence is Disabled. The range of choices depends upon the number of PCI SCSI adapters installed in the server.

  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.

- **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.

  – **Processor Serial Number Access**

    Select this choice to identify if the microprocessor serial number in the microprocessor is readable.

  – **Core Chipset Control**

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

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

  – **Cache Control**

    Select this choice to enable or disable the microprocessor cache. In addition, you can define the microprocessor cache type as write-back (WB) or write-through (WT). Selecting write-back mode will provide the maximum system performance.

  – **PCI Slot/Device Information**

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

    Attention: You must use the menu selections to save custom settings for the PCI Slot/Device Information choice. The save, restore and load default settings choices on the main menu of the Configuration/Setup Utility do not save the PCI Slot/Device Information settings.

    After making changes, select:

    - **Save and exit the PCI Utility** to save the changes and return to the Advanced Setup choice.
    - **Exit the PCI Utility without saving changes** to ignore the changes, restore the previous settings, and return to the Advanced Setup choice.

    PCI Device Control allows you to enable or disable the integrated SCSI, video, and Ethernet controllers. You can also enable or disable PCI slots from this menu.

    - The default setting is Enable for all the controllers and PCI slots. If you select Disable, the system will not configure the disabled device and the operating system will not see the device. (This is equivalent to unplugging the device.)
    - If the on-board SCSI controller is disabled and no other controller and mass storage device are installed, operating system startup cannot occur.
    - If the video controller is disabled and no video adapter is installed, the server will have no video capability. However, turning the appliance off and on three times results in a default startup that enables video again.

  – **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, use the arrow keys to highlight the bank that you want to enable; then, use the arrow keys to select **Enable**.

- **System Service Processor Settings**

  Select this choice to view the interrupt-request setting (IRQ) used by the Configuration/Setup Utility (system service processor). You can then use the arrow keys to select a new IRQ setting for the Configuration/Setup Utility from the list of available choices.

- **Event/Error Logs**

  Select this choice to view or clear error logs.

  – Select **Clear error logs** to clear the error or event log.

  – Select **POST Error Log** to view the three most recent error codes and messages that the system generated during POST.

  – Select **System Event/Error Log** to view the system event/error log. The system event/error log contains all the system error and warning messages that the system has generated. You can use the arrow keys to move between pages in the system event/error log.

- **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.

Using passwords

The **System Security** choice appears only on the full Configuration/Setup Utility menu. After you select this choice, you can implement two levels of protection: power-on password and administrator password.

Power-on password

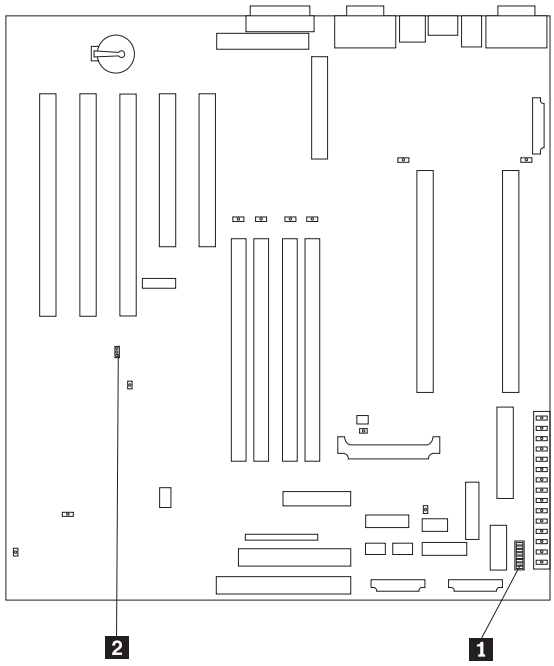
After you set a power-on password, you can enable the unattended-start mode. This locks the keyboard and mouse, but allows the system to start the operating system. The keyboard and mouse remain locked until you enter the correct password.

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 appliance through one of the following methods:

- If an administrator password is set, enter the administrator password at the power-on prompt. Start the Configuration/Setup Utility program and change the power-on password.
- Change the position of the password override switch as described in “Setting the password override switch” on page 82.
- 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 8 on switch block 1) on the system board.

Note: As shown in the illustration, switch 8 is the one at the top of the switch block.



1 System board switch block (SW1)

2 Boot block jumper (J37)

To set the password override switch:

1. Review the information in “Before you begin” on page 53.
2. Power-off the appliance and peripheral devices and disconnect all external cables and power cords; then, remove the cover. See “Removing the cover and bezel” on page 55.
3. Change the setting of the password override switch (switch 8 on switch block 1 on the system board) to ON.
4. Install the appliance cover (see “Installing the cover and bezel” on page 66) and connect all external cables and power cords.

Note: You can now start the Configuration/Setup utility program and change the power-on password. If you want to be prompted for a password when you power-on the appliance, set the password override switch back to the OFF position.

Administrator password

Select this choice to set an administrator password. The administrator password provides access to all choices on the Configuration/Setup Utility main menu. You can set, change, or delete both the administrator and power-on passwords, and allow a power-on password to be changed by the user.

Attention: If an administrator password is set and then forgotten, it cannot be overridden or removed. You must replace the system board.

The following table provides a summary of the password features.

Table 8. Power-on and administrator password features

Type of password	Results
Power-on password	• Enter the password to complete the system startup. • All choices are available on the Configuration/Setup Utility main menu.
Administrator password	• No password is required to start the appliance. • Enter the password to access the Configuration/Setup Utility program. • All choices are available on the Configuration/Setup Utility main menu.
Administrator *and* power-on password	• You can enter either password to complete the appliance startup. • The administrator password provides access to all choices on the Configuration/Setup Utility main menu. You can set, change, or delete both the administrator and power-on passwords, and allow a power-on password to be changed by the user. • The power-on password provides access to a limited set of choices on the Configuration/Setup Utility main menu. This limited access might include changing or deleting the power-on password.

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.

Starting the SCSISelect utility program

To start the SCSISelect utility program:

1. Power-on the appliance.
2. When the `<<< Press <CTRL><A> for SCSISelect™ Utility! >>>` prompt appears, press Ctrl+A.

   Note: If an administrator password has been set, a prompt appears asking you to enter the password to start the SCSISelect Utility program.
3. When prompted, select either channel A (internal) or channel B (external).
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 your 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 *Automatic.*

– **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 Ultra3 SCSI LVD devices is 160.0 MB/s
  - The transfer rate for Ultra2 SCSI LVD devices is 80.0 MB/s
  - The transfer rate for Fast SCSI devices is 20.0 MB/s

– **Advanced Configuration Options**

  Select this choice to view or change the settings for advanced configuration options. These options include enabling support for large hard drives and support for drives with UltraSCSI speeds.

• **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 appliance and watch the SCSISelect messages as each drive starts. After the drive that you want to view or format starts, press Ctrl+A.

• **Format Disk**

  Attention: The Low-Level Format program erases *all* data and programs.

  Select this choice to perform a low-level format on a hard drive. Depending on the hard drive capacity, the Low-Level Format program could take up to two hours.

  Use the Low-Level Format program:

  – When you are installing software that requires a low-level format

  – When you get recurring messages from the diagnostic tests directing you to run the Low-Level Format program on the hard drive

  – As a last resort before replacing a failing hard drive

  Note: If your server has a PCI RAID adapter installed, refer to the RAID adapter documentation for instructions for performing low-level formats on hard drives attached to the adapter.

To start the Low-Level Format program:

1. If the hard drive is working, make a backup copy of all the files and programs on the hard drive. (See your operating system information for instructions.)
2. Select **Format Disk**; then, follow the instructions on the screen.

   Note: Hard drives normally contain more tracks than their stated capacity (to allow for defective tracks). A message appears on the screen if the defect limit is reached. If this happens, have the system serviced.

Appendix A. Parts listing

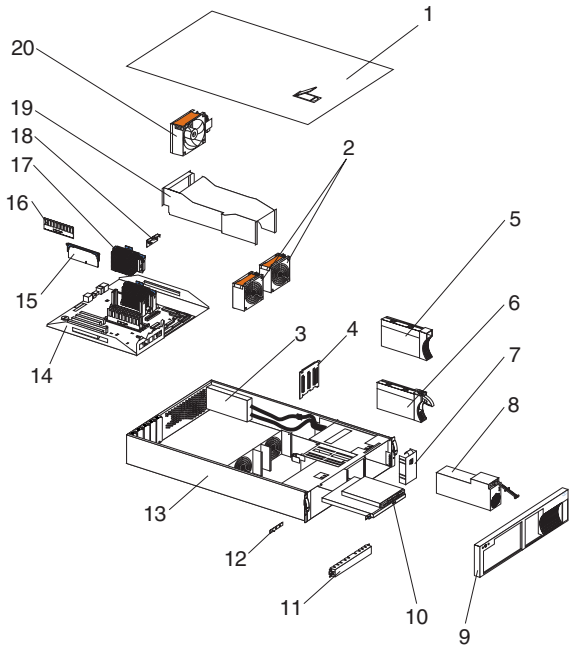


Table 9. System Parts Listing for the 5196 Model G00

Index	System Part (Model No.)	FRU No.
1	Top Cover	38P7581
2	92MM X 38 Fan (2)	37L0305
3	AC Distribution Box Model	37L0313
4	SCSI Backplane Combo/Backplate Assembly	00N8953
5	Slim Hard Disk Drive Bezel Filler Assembly	00N7259
6	9.1 GB Hard Disk Drive, 10000 RPM	37L6216
8	Power Supply with Mounting, 270 WF	37L0311
9	Front Bezel	38P7582
10	12.7MM Diskette Drive	36L8645
10	24X CDROM (Primary)	09N0883
12	Card Assembly, Front Switch Card	00N7213
13	Frame Assembly, (Chassis Weldment)	37L0303
14	System Board Assembly with Tray	09N7812
16	512MB SDIMM Memory (All Models)	33L3128
17	933MHz/133 Processor & Heatsink Assembly	37L6484
18	Voltage Regulator Module	36L8901
19	Baffle, Air	00N7172
20	Rear Fan Assembly (92MM X 38)	00N7248
	24X TEAC CDROM (Alternate)	19K1523
	Power Backplane Insulator	00N7188
	Card Assembly, Front LED Card (Baldplate)	00N7227
	Card Assembly, Power Backplane (All Models)	00N7216
	Card Assembly (CD Interposer)	09N9451
	Card Assembly, SCSI Repeater 160M	00N7293
	Mounting Hardware/Cage	00N7196
	On/Off Switch Cover	09N8012
	Battery (3V)	33F8354
	Lens Cover	00N7178

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Table 9. System Parts Listing for the 5196 Model G00 (continued)

Index	System Part (Model No.)	FRU No.
	Misc FRU Kit	00N7179
	Left External Interface Adapter Side Flange	00N7190
	Right External Interface Adapter Side Flange	00N7192
	Misc Rack Hardware Kit	00N7193
	Slide With Brackets (2)	00N7205
	Bracket, Cable Management Chassis Attach (2) (All Models)	00N7211
	Cable Management Arm Assembly (2)	00N7242
	Hinge Pin (3)	00N7244
	Cable Management Arm Assembly (2)	00N7245
	Mounting Bracket Assembly (CD/FDD)	09N9452
	Cable, Power - IO Planar to Fans 1X7	00N7181
	Cable, Signal I2C - IO Planar to SCSI Backplane (2X7)	00N7185
	Cable, Signal - SCSI Single Ended - Planar to Media	00N7187
	Cable, Power - Signal - Power Backplane to IO Planar 2X10	03K9346
	Cable, Signal LVD-SCSI - Planar to SCSI Backplane	37L0350
	Cable, Power - PWR BP to IO Planar 2X12	37L0354
	Cable, Power - Power Backplane to SCSI Backplane & Media Bays 5-Drop	37L0358
	Cable,Signal LVD-SCSI - Jumper Repeater to SCSI Backplane	00N7198

Power Cords

Item	Part No.
Power cord	6952301
Power cord	14F0033
Power cord	13F9940
Power cord	13F9979
Power cord	13F9997
Power cord	14F0015
Power cord	14F0051
Power cord	14F0069
Power cord	14F0087
Power cord	1838574

Appendix B. PCI Adapter Placement

This appendix contains a table showing where the PCI adapters should be installed. To use the table, look in the left column Configuration to locate the row that contains the list of adapters installed (or to be installed) in your 5196 Model G00. This row will then show where the adapters should be installed.

Example 1: If you have a single Gigabit adapter (in addition to the standard Fibre Channel installed in Slot-5), that adapter should be installed in slot-3.

Example 2: If you have four additional adapters — two 10/100 Ethernet adapters, one Advanced Management, and one Gigabit Ethernet adapter, they should be installed in the following PCI slots:

- Slot-1 — Advanced Management
- Slot-2 —10/100 Ethernet
- Slot-3 —Gigabit Ethernet
- Slot-4 —10/100 Ethernet
- Slot-5 —Fibre Channel (standard)

Configuration • FC- Fibre Channel • 10/100- 10/100 Ethernet • Gig- Gigabit Ethernet • AM- Advanced Mgmt	PCI Slot-1 (32-bit)	PCI Slot-2(32-bit)	PCI Slot-3(64-bit)	PCI Slot-4 (64-bit)	PCI Slot-5 (64-bit)
(none)					FC-std
FC				FC	FC-std
Gig			Gig		FC-std
10/100		10/100			FC-std
AM	AM				FC-std
FC, AM	AM			FC	FC-std
FC, 10/100		10/100		FC	FC-std
FC, Gig			Gig	FC	FC-std
AM, 10/100	AM	10/100			FC-std
AM, Gig	AM		Gig		FC-std
10/100, Gig		10/100	Gig		FC-std
10/100, 10/100		10/100	10/100		FC-std
Gig, Gig			Gig	Gig	FC-std
FC, AM, 10/100	AM	10/100		FC	FC-std
FC, AM, Gig	AM		Gig	FC	FC-std
FC, 10/100, Gig		10/100	Gig	FC	FC-std
FC, Gig, Gig		FC	Gig	Gig	FC-std
FC, 10/100, 10/100		10/100	10/100	FC	FC-std
AM, 10/100, 10/100	AM	10/100	10/100		FC-std
AM, 10/100, Gig	AM	10/100	Gig		FC-std
AM, Gig, Gig	AM		Gig	Gig	FC-std

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10/100, 10/100, 10/100	10/100	10/100	10/100		FC-std
Gig, 10/100, 10/100	10/100	10/100	Gig		FC-std
Gig, Gig, 10/100		10/100	Gig	Gig	FC-std
FC, AM, 10/100,10/100	AM	10/100	10/100	FC	FC-std
FC, AM, 10/100, Gig	AM	10/100	Gig	FC	FC-std
FC, 10/100, 10/100, 10/100	10/100	10/100	10/100	FC	FC-std
FC, 10/100, Gig, Gig	10/100	FC	Gig	Gig	FC-std
FC, Gig, 10/100, 10/100	10/100	10/100	Gig	FC	FC-std
AM, 10/100, 10/100, 10/100	AM	10/100	10/100	10/100	FC-std
AM, 10/100, 10/100, Gig	AM	10/100	Gig	10/100	FC-std
AM, 10/100, Gig, Gig	AM	10/100	Gig	Gig	FC-std
10/100, 10/100, 10/100, 10/100	10/100	10/100	10/100	10/100	FC-std
Gig, 10/100, 10/100, 10/100	10/100	10/100	Gig	10/100	FC-std
Gig, Gig, 10/100, 10/100	10/100	10/100	Gig	Gig	FC-std

Appendix C. Notices

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Safety and environmental notices

The following sections describe the safety and environmental items you must consider for an IBM Network Attached Storage Appliance.

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Safety notices

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 appliance 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 electrostatic discharge-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.

Translated safety notices

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

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

Important: All safety notices in the *Appliance Library* begin with a number. This number is used to cross-reference an English caution or danger notice with translated versions of the caution or danger notice in this section.

Be sure to read all safety notices 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
1. Turn everything OFF.	1. Turn everything OFF.
2. First, attach all cables to devices.	2. First, remove power cords from outlet.
3. Attach signal cables to connectors.	3. Remove signal cables from connectors.
4. Attach power cords to outlet.	4. Remove all cables from devices.
5. Turn device ON.	

- 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.

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)

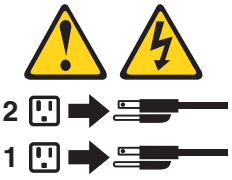
≥32 kg (70.5 lbs)

≥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 lb.) on top of rack-mounted devices.

Importante:

Todas as instruções de cuidado e perigo da *appliance Library* 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:
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.	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 móídulo com uma bateria de lítio, substitua-o apenas pelo mesmo tipo de mídulo, 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 ítica, 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 íticos, e evite exposição direta ao raio.

Instrução 4

≥18 kg (37 lbs)

≥32 kg (70,5 lbs)

≥55 kg (121,2 lbs)

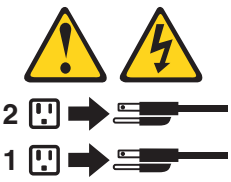
CUIDADO:

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：

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。

将应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。

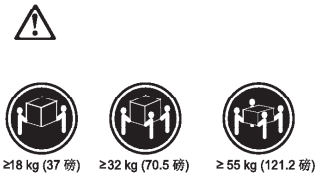
非此处指定的其它控制、调整或与性能有关的操作都有可能导致激光辐射的危险。

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

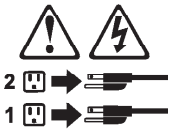


警告：
抬起时请采用安全操作方法。

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：

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：	切斷：
1. 關閉所有開關。	1. 關閉所有開關。
2. 先將所有電纜線接上裝置。	2. 先自電源插座拔掉電源線。
3. 將信號電纜接上接頭。	3. 拔掉接頭上的所有信號電纜。
4. 再將電源線接上電源插座。	4. 再拔掉裝置上的所有電纜線。
5. 開啓裝置的電源。	

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 ℃ (212 ℉)
- 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)

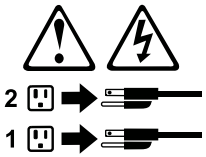
≥ 55 公斤 (121.2 磅)

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 *appliance* 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° 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
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.	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

≥32 kg

≥55 kg

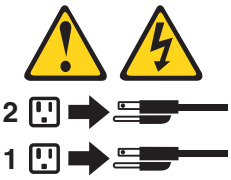
ATTENTION:

Faites-vous aider pour soulever ce produit.

Notice n° 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° 10

ATTENTION:

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

Wichtig:

Alle Sicherheitshinweise in dieser *server-Bibliothek* 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 anschlie*ß*en:	**Kabel lösen:**
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.	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

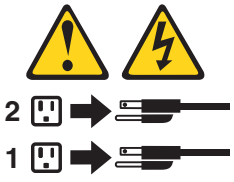
ACHTUNG:

Beim Anheben der Maschine die vorgeschriebenen Sicherheitsbestimmungen beachten.

Hinweis 5

ACHTUNG:

Mit dem Betriebsspannungsschalter an der Vorderseite des Gerätes und dem Betriebsspannungsschalter am Netzteil wird die Stromversorgung für das Gerät nicht unterbrochen. Das Gerät könnte auch mehr als ein Netzkabel aufweisen. Um die gesamte Stromversorgung des Gerätes 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 *appliance Library* 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:**
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.	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:

Aprendo 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

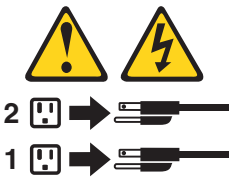
ATTENZIONE:

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.

경고문 1

위험

전원, 전화 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.
- 가능한한 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, 원거리 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:	연결을 끊으려면:
1. 모든 스위치를 끕니다.	1. 모든 스위치를 끕니다.
2. 먼저 모든 케이블을 장치에 연결합니다.	2. 먼저 콘센트에서 전원 코드를 뽑습니다.
3. 신호 케이블을 커넥터에 연결합니다.	3. 신호 케이블을 커넥터에서 제거합니다.
4. 콘센트에 전원 코드를 연결합니다.	4. 장치에서 모든 케이블을 제거합니다.
5. 장치 스위치를 켭니다.	

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.

다음을 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 클래서 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.

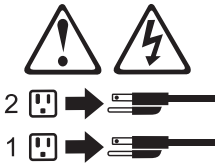
경고문 4

≥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 있는 지 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 precauciín de esta *Biblioteca del servidor* empiezan con un número. Dicho número se emplea para establecer una referencia cruzada de una declaraciín de precauciín o peligro en inglés con las versiones traducidas que de dichas declaraciones pueden encontrarse en esta secciín.

Por ejemplo, si una declaraciín de peligro empieza con el número 1, las traducciones de esta declaraciín de precauciín aparecen en esta secciín bajo Declaraciín 1.

Lea atentamente todas las declaraciones de precauciín y peligro antes de llevar a cabo cualquier operaciín.

Declaración 1

PELIGRO

La corriente eléctrica de los cables telefínicos, de alimentaciín y de comunicaciones es perjudicial.

Para evitar una descarga eléctrica:

- No conecte ni desconecte ningún cable ni realice las operaciones de instalaciín, mantenimiento o reconfiguraciín de este producto durante una tormenta.
- Conecte cada cable de alimentaciín a una toma de alimentaciín eléctrica con conexiín a tierra y cableado correctos.
- Conecte a tomas de alimentaciín 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 sent.al.
- No encienda nunca un equipo cuando haya riesgos de incendio, de inundaciín o de daños estructurales.
- Desconecte los cables de alimentaciín, sistemas de telecomunicaciones, redes y mídems conectados antes de abrir las cubiertas del dispositivo a menos que se indique lo contrario en los procedimientos de instalaciín y configuraciín.

- Conecte y desconecte los cables tal como se describe en la tabla siguiente cuando desee realizar una operaciín de instalaciín, de traslado o de apertura de las cubiertas para este producto o para los dispositivos conectados.

Para la conexin	Para la desconexiín
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 alimentaciín a la toma de alimentaciín. 5. ENCIENDA el dispositivo.	1. APÁGUELO todo. 2. En primer lugar, retire cada cable de alimentaciín de la toma de alimentaciín. 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 legislaciín local.

Declaración 3

PRECAUCIÓN:

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

- No retire las cubiertas. Si retira las cubiertas del producto láser, puede quedar expuesto a radiaciín láser perjudicial. Dentro del dispositivo no existe ninguna pieza que requiera mantenimiento.
- El uso de controles o ajustes o la realizaciín de procedimientos que no sean los que se han especificado aquí pueden dar como resultado una exposiciín 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 radiaciín láser. No mire fijamente el rayo ni lleve a cabo ningún examen directamente con instrumentos ípticos; evite la exposiciín directa al rayo.

Declaración 4

≥18 kg (37 libras)

≥32 kg (70,5 libras)

≥55 kg (121,2 libras)

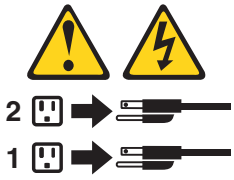
PRECAUCIÓN:

Tome medidas de seguridad al levantar el producto.

Declaración 5

PRECAUCIÓN:

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



Declaración 10

PRECAUCIÓN:

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

Environmental notices

Electronic emission notices

Federal Communications Commission (FCC) Statement: Federal Communications Commission (FCC) Class A Statement

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

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

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

Industry Canada Class A emission compliance statement: This digital apparatus does not exceed the Class A limits for radio noise emissions from digital apparatus as set out in the interference-causing equipment standard entitled *Digital Apparatus*, ICES-003 of Industry Canada.

Avis de Conformité aux normes d'Industrie Canada: Cet appareil numérique respecte les limites de bruits radioélectriques applicables aux appareils numériques de Classe A prescrites dans la norme sur le matériel brouiller : *Appareils Numériques*, NMB-003 édictée par Industrie Canada.

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

United Kingdom telecommunications safety requirement: **Notice to Customers**

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

European Union (EU) conformity statement: This product has been tested and found to comply with the limits for Class A Information Technology Equipment according to European Standard EN 55022. The limits for Class A equipment were derived for commercial and industrial environments to provide reasonable protection against interference with licensed communication equipment.

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

Properly shielded and grounded cables and connectors must be used in order to reduce the potential for causing interference to radio and TV communications and to other electrical or electronic equipment. Such cables and connectors are available from IBM authorized dealers. IBM cannot accept responsibility for any interference caused by using other than recommended cables and connectors.

EMC Directive 89/336/EEC Statements: This product is in conformity with the protection requirements of EU Council Directive 89/336/EEC on the approximation of the laws of the Member States relating to electromagnetic compatibility.

IBM cannot accept responsibility for any failure to satisfy the protection requirements resulting from a non-recommended modification of the product, including the fitting of non-IBM option cards.

FCCA (Text für alle in Deutschland vertriebenen EN 55022 Klasse A Geräte.):
Zulassungsbescheinigung laut dem Deutschen Gesetz über die elektromagnetische Verträglichkeit von Geräten (EMVG) vom 30. August 1995 (bzw. der EMC EG Richlinie 89/336)

Dieses Gerät ist berechtigt, in Übereinstimmung mit dem Deutschen EMVG das EG-Konformitätszeichen - CE - zu führen.

Verantwortlich für die Konformitätserklärung nach Paragraph 5 des EMVG ist Scott Enke, Director, Worldwide Manufacturing Operations, PO Box 12195, 3039 Cornwallis, Research Triangle Park, NC U.S.A. 27709–2195.

Das Gerät erfüllt die Schutzanforderungen nach EN 50082-1 und EN 55022 Klasse A.

EN 55022 Klasse A Geräte müssen mit folgendem Warnhinweis versehen werden:

“Warnung: Dies ist eine Einrichtung der Klasse A. Diese Einrichtung kann im Wohnbereich Funkstörungen verursachen; in diesem Fall kann vom Betreiber verlangt werden, angemessene Maßnahmen durchzuführen und dafür aufzukommen.”

EN 50082-1 Hinweis:

“Wird dieses Gerät in einer industriellen Umgebung betrieben (wie in EN 50082-2 festgelegt), dann kann es dabei eventuell gestört werden. In solch einem Fall ist der Abstand bzw. die Abschirmung zu der industriellen Störquelle zu vergrößern.”

Anmerkung:

Um die Einhaltung des EMVG sicherzustellen, sind die Geräte, wie in den IBM Handbüchern angegeben, zu installieren und zu betreiben.

Taiwan electrical emission statement:

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

Japanese Voluntary Control Council for Interference (VCCI) statement:

この装置は、情報処理装置等電波障害自主規制協議会（ＶＣＣＩ）の基準に基づくクラスＡ情報技術装置です。この装置を家庭環境で使用すると電波妨害を引き起こすことがあります。この場合には使用者が適切な対策を講ずるよう要求されることがあります。

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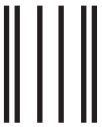

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