



xSeries 300



Hardware Maintenance Manual



xSeries 300

Note: Before using this information and the product it supports, be sure to read the general information under "Notices" on page 119.

First Edition (May 2001)

INTERNATIONAL BUSINESS MACHINES CORPORATION PROVIDES THIS PUBLICATION "AS IS" WITHOUT WARRANTY OF ANY KIND, EITHER EXPRESS OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE. Some states do not allow disclaimer of express or implied warranties in certain transactions, therefore, this statement may not apply to you.

This publication could include technical inaccuracies or typographical errors. Changes are periodically made to the information herein; these changes will be incorporated in new editions of the publication. IBM may make improvements and/or changes in the product(s) and/or the program(s) described in this publication at any time.

This publication was developed for products and services offered in the United States of America. IBM may not offer the products, services, or features discussed in this document in other countries, and the information is subject to change without notice.

Consult your local IBM representative for information on the products, services, and features available in your area.

Requests for technical information about IBM products should be made to your IBM reseller or IBM marketing representative.

xSeries 300

© Copyright International Business Machines Corporation 2000. All rights reserved.

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

About this manual

This manual contains diagnostic information, a Symptom-to-FRU index, service information, error codes, error messages, and configuration information for the IBM® eServer xSeries 300 server.

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

Important safety information

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

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

注意和危险声明 (简体中文)

重要事项:

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

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

在按说明执行任何操作前，请务必阅读所有注意和危险声明。

注意及危險聲明 (中文)

重要資訊：

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

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

執行任何指示之前，請詳讀所有「注意」及「危險」的聲明。

Prenez connaissance de toutes les consignes de type Attention et

Danger avant de procéder aux opérations décrites par les instructions.

Lesen Sie alle Sicherheitshinweise, bevor Sie eine Anweisung ausführen.

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

주의 및 위험 경고문(한글)

중요:

이 책에 나오는 모든 주의 및 위험 경고문은 번호로 시작됩니다. 이 번호는 *Safety Information* 책에 나오는 영문판 주의 및 위험 경고문과 한글판 주의 및 위험 경고문을 상호 참조하는데 사용됩니다.

예를 들어 주의 경고문이 번호 1로 시작되면 *Safety Information* 책에서 이 주의 경고문은 경고문 1번 아래에 나옵니다.

지시를 따라 수행하기 전에 먼저 모든 주의 및 위험 경고문을 읽도록 하십시오.

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

Online Support

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

File download address is:

<http://www.us.pc.ibm.com/files.html>

IBM Online Addresses

The HMM manuals online address is:

<http://www.us.pc.ibm.com/cdt/hmm.html>

The IBM PC Company Support Page is:

<http://www.us.pc.ibm.com/support/index.html>

The IBM PC Company Home Page is:

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

Contents

About this manual	iii
Important safety information	iii
Online Support	iv
IBM Online Addresses	iv
Chapter 1.General checkout	1
Chapter 2.General information	3
Features and specifications	4
What the IBM xSeries 300 offers	5
Reliability, availability, and serviceability features	6
Server controls and indicators	7
Front view	7
Rear view	8
Turning on the server	9
Turning off the server	9
Standby mode	10
Chapter 3.Diagnostics	11
Diagnostic tools overview	11
POST	11
POST beep code descriptions	11
POST error messages	11
Small computer system interface messages (some models)	12
Diagnostic programs and error messages	12
Text messages	13
Starting the diagnostic programs	14
Using the diagnostics CD	14
Downloading the diagnostics program	14
Using the diagnostic diskette	15
Viewing the test log	15
Diagnostic error message tables	15
Power checkout	16
Recovering BIOS code	17
Clearing CMOS	19
Replacing the battery	19
Temperature checkout	20
Diagnosing errors	21
Troubleshooting the Ethernet controller	21
Network connection problems	21
Ethernet controller troubleshooting chart	22
Ethernet controller messages	25
Novell NetWare or IntraNetWare system ODI driver teaming messages	25
NDIS 4.0 (Windows NT) driver messages	27
Ethernet teaming messages:	30
Chapter 4.Configuring the server	33
Starting the utility programs	34
Using the Configuration/Setup Utility program	34
Starting the Configuration/Setup Utility program	34
Using the SCSISelect utility program (some models)	34
Starting the SCSISelect utility program	34
Using the PXE boot agent utility program	35
Starting the PXE boot agent utility program	35
Using the ServerGuide CDs	36
ServerGuide startup problems	37
Chapter 5.Installing Options	39
Major components of the xSeries 300 server	40

Before you begin	40
Working inside the server with the power on	41
System reliability considerations	41
Handling static-sensitive devices	41
Removing the cover	42
System board	43
System board internal cable connectors	44
System board jumpers	45
Working with adapters	45
Adapter considerations	46
Installing an adapter	46
Hard disk drives	48
Installing or replacing a hard disk drive	48
Working with DIMMs	49
Installing DIMMs	49
Replacing the fan assembly	51
Removing and installing a microprocessor	51
Removing a microprocessor	53
Installing a microprocessor	55
Installing the cover	57
Working with cables	58
Chapter 6.FRU information (service only)	59
Diskette/CD-ROM drives	59
Diskette/CD-ROM drive bracket	60
Power supply	61
PCI riser card	61
System board	62
Chapter 7.Symptom-to-FRU index	63
Beep symptoms	63
No beep symptoms	63
Diagnostic error codes	63
Error symptoms	67
POST error codes	69
ServeRAID	70
Undetermined problems	70
Chapter 8.Parts listing	73
Keyboards	76
Power cords	77
Chapter 9.Related service information	79
Safety information	79
General safety	79
Electrical safety	80
Safety inspection guide	81
Handling electrostatic discharge-sensitive devices	82
Grounding requirements	83
Safety notices (multi-lingual translations)	83
Send us your comments!	118
Problem determination tips	119
Notices	119
Trademarks	120

Chapter 1. General checkout

The server diagnostic programs are stored on CD-ROM. These programs are the primary method of testing the major components of the server: the system board, Ethernet controller, video controller, RAM, keyboard, mouse (pointing device), diskette drive, serial ports, and hard drives. You can also use them to test some external devices. See “Diagnostic programs and error messages” on page 12.

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

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

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

A system might be part of a cluster if:

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

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

Notes:

1. Safety information, see “Safety information” on page 79.
2. For systems that are part of a shared DASD cluster, run one test at a time in looped mode. Do not run all tests in looped mode, as this could enable the DASD diagnostic tests.
3. If multiple error codes are displayed, diagnose the first error code displayed.
4. If the computer hangs with a POST error, go to “POST error codes” on page 69.

Chapter 2. General information

The IBM® eServer xSeries 300 server is a one U-high¹ rack-model server for high-volume network transaction processing. This high-performance server is ideally suited for networking environments that require superior microprocessor performance, efficient memory management, flexibility, and reliable data storage.

The xSeries 300 server comes with a three-year limited warranty and IBM Server Start Up Support. If you have access to the World Wide Web, you can obtain up-to-date information about your xSeries 300 model and other IBM server products at the following World Wide Web addresses:

<http://www.ibm.com/eserver/xseries>

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

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

Features and specifications

The following table provides a summary of the features and specifications for your xSeries 300.

<p>Microprocessor:</p> <p>Supports either of the two listed microprocessors (depending on your model)</p> <ul style="list-style-type: none"> One Intel® Pentium® III with 256 KB* Level-2 cache and MMX™ (MMX2) technology or One Intel Celeron™ with 128 KB Level-2 cache and MMX (MMX2) technology <p>Memory:</p> <ul style="list-style-type: none"> Minimum: 128 MB* Maximum: 1.5 GB* Type: PC133 MHz, ECC SDRAM, unregistered DIMMs only Slots: Three dual inline Supports 128, 256, and 512 MB DIMMs <p>Drives:</p> <ul style="list-style-type: none"> Diskette: 1.44 MB CD-ROM: 24X IDE Supports up to two hard disk drives <p>Expansion bays:</p> <p>Two 3.5-in. slim-high bays for hard disk drives</p> <p>PCI expansion slots:</p> <p>Two 33 MHz/32-bit on the system board</p> <p>Power supply:</p> <p>200 watt (110 or 220 V ac auto-sensing) with Wake on LAN support</p>	<p>Video:</p> <ul style="list-style-type: none"> S3 Savage 4 Pro video on system board Compatible with SVGA and VGA 8 MB SDRAM video memory <p>Size:</p> <ul style="list-style-type: none"> Height: 4.37 cm (1.75 inches, 1U) Depth: 63.5 cm (25 inches) Width: 44 cm (17.32 inches) Maximum weight: 19.05 kg (42 lb) depending on your configuration <p>Integrated functions:</p> <ul style="list-style-type: none"> Dual 10BASE-T/100BASE-TX Ethernet controllers on the system board with Alert on LAN™ 2 support Serial port Two USB ports Keyboard port Mouse port Dual-channel bus mastering IDE controller <p>Hard disk controller:</p> <ul style="list-style-type: none"> All models-Dual-channel bus mastering IDE controller Some models-SCSI adapter (Adaptec Ultra160) is installed in one of the expansion-slots <p>Acoustical noise emissions:</p> <ul style="list-style-type: none"> Sound power, idling: 6.6 bel maximum Sound power, operating: 6.8 bel maximum 	<p>Environment:</p> <ul style="list-style-type: none"> Air temperature: <ul style="list-style-type: none"> Server on: 10° to 35° C (50.0° to 95.0° F). Altitude: 0 to 914 m (2998.7 ft) Server on: 10° to 32° C (50.0° to 89.6° F). Altitude: 914 m (2998.7 ft) to 2133 m (6998.0 ft.) Server off: -40° to 60° C (-104° to 140° F). Maximum altitude: 2133 m (6998.0 ft) Humidity: <ul style="list-style-type: none"> Server on: 8% to 80% Server off: 5% to 100% <p>Heat output:</p> <p>Approximate heat output in British thermal unit (Btu) per hour</p> <ul style="list-style-type: none"> Minimum configuration: 171 Btu (50 watts) Maximum configuration: 410 Btu (120 watts) <p>Electrical input:</p> <ul style="list-style-type: none"> Sine-wave input (47-63 Hz) required Input voltage low range: <ul style="list-style-type: none"> Minimum: 90 V ac Maximum: 137 V ac Input voltage high range: <ul style="list-style-type: none"> Minimum: 180 V ac Maximum: 265 V ac Input kilovolt-amperes (kVA) approximately: <ul style="list-style-type: none"> Minimum: 0.095 kVA Maximum: 0.213 kVA
--	--	---

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

What the IBM xSeries 300 offers

The design of your server takes advantage of advancements in memory management and data storage. Your server includes:

- Impressive performance using the latest microprocessor technology.
Your server comes with one Intel Celeron or one Pentium III microprocessor installed.
- Large system memory
The memory bus in your server supports up to 1.5 GB of system memory. The memory controller provides error code correction (ECC) support for up to three industry-standard PC133, 3.3 V, 168-pin, 133 megahertz (MHz), unregistered, synchronous dynamic random access memory (SDRAM) dual inline memory modules (DIMMs).
- Systems-management capabilities
See the documentation provided with your systems-management software for more information.
- Integrated network environment support
Your server comes with two Intel Ethernet controllers on the system board. These Ethernet controllers have an interface for connecting to 10-Mbps or 100-Mbps networks. The server automatically selects between 10BASE-T and 100BASE-TX environments. The controller provides full-duplex (FDX) capability, which enables simultaneous transmission and reception of data on the Ethernet local area network (LAN). These controllers support Alert on LAN 2 technology.
- IBM *ServerGuide*[™] CDs
The *ServerGuide* CDs that are included with your server provide programs to help you set up your server and install the network operating system (NOS). The *ServerGuide* program detects the hardware options that are installed and provides the correct configuration programs and device drivers. In addition, the *ServerGuide* CDs include a variety of application programs for your server.

Reliability, availability, and serviceability features

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

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

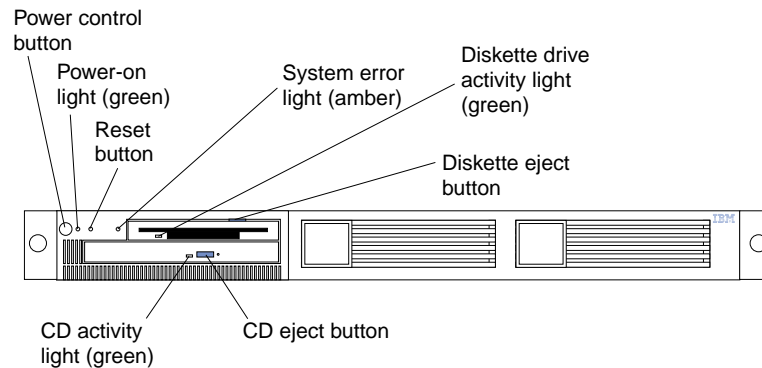
- Reliability features
 - Boot block recovery
 - Cooling fans with speed-sensing capability
 - Customer-upgradable basic input and output system (BIOS) code
 - ECC front-side buses (FSBs) and L2 cache
 - Advanced configuration and power interface (ACPI)
 - Power-on self-test (POST)
 - SDRAM with serial presence detect (SPD)
- Availability features
 - Advanced desktop management interface (DMI) features
 - Auto-restart initial program load (IPL) power supply
 - Automatic error retry or recovery
 - Automatic server restart
 - Automatic restart after power failure
 - Built-in, menu-driven configuration programs
 - Built-in, menu-driven setup programs
 - Failover Ethernet support
 - Menu-driven diagnostic programs on CD-ROM
 - Microsoft® Windows NT® failover support
 - Monitoring support for temperature, voltage, and fan speed
 - Server management
 - Wake on LAN® capability
- Serviceability features
 - 24 hours per day, seven days a week customer support²
 - Adaptec 29160LP built-in self-test (BIST)
 - Alert on LAN 2
 - CD-ROM-based diagnostics
 - Diagnostic support of Ethernet controllers
 - Error codes and messages
 - Processor serial number access
 - Read-only memory (ROM) checksums
 - Standard cables present detection
 - Standby voltage for system management features and monitoring
 - System error logging
 - Vital product data (VPD) (includes information stored in nonvolatile memory for easier remote viewing)

² Service availability will vary by country. Response time will vary depending on the number and nature of incoming calls.

Server controls and indicators

The following section identifies the controls and indicators on the front and rear of your server.

Front view



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

Power-on light: This green LED lights and stays on when you turn on your server, and it blinks when the server is in standby mode.

Reset button: Press this button to reset the server and run the power-on self-test (POST). You might need to use a pen or the end of a straightened paper clip to press the button.

System-error light: This amber LED lights when a system error occurs.

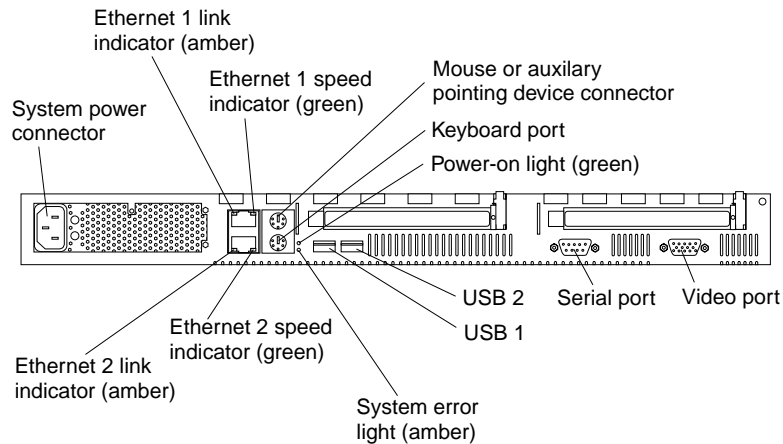
Diskette drive activity light: When this LED is on, it indicates that the diskette drive is in use.

Diskette-eject button: Push this button to release a diskette from the drive.

CD eject button: Push this button to release a CD from the drive.

CD drive activity light: When this light is on, it indicates that the CD-ROM drive is in use.

Rear view



System power connector: The system power cord connects here to provide power to the system.

Ethernet 1 link indicator: This amber LED lights when there is an active link connection on the 10BASE-T or 100BASE-TX interface for Ethernet port 1.

Ethernet 1 speed indicator: This green LED lights when the speed of the Ethernet LAN that is connected to Ethernet port 1 is 100 Mbps.

Auxiliary pointing device: Signal cables for a mouse, trackball, or other pointing device connect to the Auxiliary pointing device connector.

Keyboard port: Signal cables for a keyboard connect to the keyboard port.

Power-on light: This green LED lights and stays on when you turn on your server and will blink when the server is in standby mode. This light duplicates the power on light on the front of the server.

Video port: The signal cable for a monitor connects to the video port.

Serial port: Signal cables for modems or other serial devices connect to the serial port.

USB 2: This is an automatically configured port that you can use to connect one or more USB devices to the server, using Plug and Play technology.

USB 1: This is an automatically configured port that you can use to connect one or more USB devices to the server, using Plug and Play technology.

System-error light: This amber LED lights when a system error occurs. This light duplicates the system error light on the front of the server.

Ethernet 2 speed indicator: This green LED lights when the speed of the Ethernet LAN connected to Ethernet port 2 is 100 Mbps.

Ethernet 2 link indicator: This amber LED lights when there is an active link connection on the 10BASE-T or 100BASE-TX interface for Ethernet port 2.

Turning on the server

Turning on the server refers to the act of plugging the power cord of your server into the power source and starting the operating system.

Complete the following steps to turn on the server:

1. Plug the power cord of your server into the power source.

Note: Plugging the power cord into a power source may cause the server to start automatically. This is an acceptable action.

2. Wait 30 seconds, and then press the power control button on the front of the server.

Turning off the server

Turning off the server refers to the act of disconnecting the server from the power source.

Complete the following steps to turn off the server:

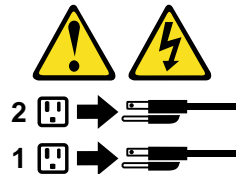
1. Refer to your operating system documentation for the proper procedure to shut down the operating system.

Statement 5



CAUTION:

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



2. Press the power control button on the front of the server. This will put the server in standby mode.
3. Disconnect the server from the power source.

Note: After you turn off the server, wait at least 5 seconds before you turn on the server again.

Standby mode

Standby mode puts the server into a wait state. When in a wait state, the server is not running the operating system, and all core logic is shut down.

Complete the following steps to put the server into the standby mode:

1. Refer to your operating system documentation for the proper procedure to shutdown the operating system.
2. Press the power control button on the front of the server.

Chapter 3. Diagnostics

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

If you cannot locate and correct the problem using the information in this section, refer to “Chapter 7. Symptom-to-FRU index,” on page 63 for more information.

Diagnostic tools overview

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

- **POST beep codes**

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

- **Diagnostic programs and error messages**

The server diagnostic programs are provided on the IBM *Enhanced Diagnostics* CD. These programs test the major components of the server. See “Diagnostic programs and error messages” on page 12 for more information.

POST

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

If POST finishes without detecting any problems, the first window of the operating system or application program appears.

Note:

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 beep code descriptions

POST generates beep codes to indicate successful completion or the detection of a problem.

- One short beep indicates the successful completion of POST.
- More than one beep indicates that POST detected a problem. For more information, see “Beep symptoms” on page 83“.

POST error messages

The possible types of beep codes that your system might emit are:

Repeating long beeps

Indicates that a memory error has occurred. Ensure that all DIMMs are correctly installed.

One long beep and two short beeps

Indicates that a video error has occurred and the BIOS cannot initialize the video screen to display any additional information. Ensure that the video adapter is correctly installed.

For a list of POST errors, see “POST error codes” on page 92.

Small computer system interface messages (some models)

The following table lists actions to take if you receive a SCSI error message.

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

You will get these messages only when running the SCSI Select Utility.

SCSI Messages	Description
All	<p>One or more of the following might be causing the problem.</p> <ul style="list-style-type: none">• A failing SCSI device (adapter or drive)• An improper SCSI configuration• Duplicate SCSI IDs in the same SCSI chain• An improperly installed SCSI terminator• A defective SCSI terminator• An improperly installed cable• A defective cable <p>Action:</p> <p>Verify that:</p> <ul style="list-style-type: none">• The external SCSI devices are turned on. External SCSI devices must be turned on <i>before</i> the server.• The cables for all external SCSI devices are connected correctly.• The last device in each SCSI chain is terminated properly.• The SCSI devices are configured correctly. <p>If the above items are correct, run the diagnostic programs to obtain additional information about the failing device.</p>

Table 1. SCSI messages.

Diagnostic programs and error messages

The server diagnostic programs are stored on the IBM *Enhanced Diagnostics CD*. These programs provide the primary methods of testing the major components of the server.

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

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

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

The error code format is as follows:

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

where:

- fff** is the three-digit function code that indicates the function being tested when the error occurred. For example, function code 089 is for the microprocessor.
- ttt** is the three-digit failure code that indicates the exact test failure that was encountered.
- iii** is the three-digit device ID.
- date** is the date that the diagnostic test was run and the error recorded.
- cc** is the check digit that is used to verify the validity of the information.
- text message** is the diagnostic message that indicates the reason for the problem.

Text messages

The diagnostic text message format is as follows:

Function Name: Result (test specific string)

where:

Function Name

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

Result can be one of the following:

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

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

User Aborted

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

Not Applicable

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

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

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

Test Specific String

This is additional information that is used to analyze the problem.

Starting the diagnostic programs

The IBM Enhanced Diagnostics programs will isolate your server hardware from software that you have installed on your hard disk drive. The programs run independently of the operating system, and *must be run either from the CD or diskette*. This method of testing is generally used when other methods are not accessible or have not been successful in isolating a problem suspected to be hardware related.

An IBM *Enhanced Diagnostics* CD comes with the server. You can also download the latest image of the diagnostics from the World Wide Web at <http://www.ibm.com/pc/support>.

Note: When using diagnostics with a USB Keyboard and Mouse attached, go into Setup and enable USB emulation.

1. Press F1 Config/Setup
2. Select Devices and I/O Ports
3. Select USB Setup
4. Make sure USB Keyboard and Mouse are enabled.

Using the diagnostics CD

To start the IBM Enhanced Diagnostics using the CD, do the following:

1. Turn off your server and any peripheral devices.
2. Turn on all attached devices; then, turn your server on.
3. When you see Press F1 For Configuration/Setup, press the F1 key.
4. When the Configuration/Setup Utility menu appears, select **Start Options**.
5. From the Start Options menu, select **Startup Sequence**.
6. Note the device selected as the First Startup Device. Later, you must restore this setting.
7. Select **CD-ROM** as the First Startup Device.
8. Press Esc two times to return to the Configuration/Setup Utility menu.
9. Place the IBM *Enhanced Diagnostics* CD in the CD-ROM drive.
10. Select **Save & Exit Setup** and follow the prompts. The diagnostics will load. Follow the instructions on the screen to run the diagnostics.

Important

When you finish running the diagnostics and utilities, remove the CD from the CD-ROM drive and turn off the server. You must restore the First Startup Device to the original setting. Use steps 2 through 8 of this procedure to do this.

Downloading the diagnostics program

Do the following to download the latest image of the IBM Enhanced Diagnostics from the World Wide Web and create a startable Enhanced Diagnostics diskette:

1. Go to the following World Wide Web site: <http://www.ibm.com/pc/support/>
2. Download the diagnostics file for your server to a hard disk drive directory (not to a diskette).

3. Go to a DOS prompt and change to the directory where the file was downloaded.
4. Insert a blank high-density diskette in diskette drive A.
5. Type in the following, and then press Enter: *filename a:*
where *filename* is the name of the file you downloaded from the Web.

The downloaded file is self-extracting and will be copied to the diskette. When the copy completes, you have a startable IBM Enhanced Diagnostics diskette.

Using the diagnostic diskette

Do the following to start the IBM Enhanced Diagnostics using the diagnostics diskette, do the following:

1. Turn off your server and any peripheral devices.
2. Insert the IBM Enhanced Diagnostics diskette into the diskette drive.
3. Turn on all attached devices; then, turn on the server.
4. Follow the instructions on the screen.
5. Place the IBM *Enhanced Diagnostics* CD in the CD-ROM drive. The diagnostics will load. Follow the instructions on the screen to run the diagnostics.

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

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

Viewing the test log

The test log records data about system failures and other pertinent information. 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.

1. Insert the *IBM Enhanced Diagnostics* CD.
2. Turn on the system and watch the screen.
If the system is on, shut down your operating system and restart the system.
3. If a power-on password is set, the system prompts you for it. Type in the appropriate password; then, press Enter.
4. Run the appropriate diagnostics program and when the Diagnostic Programs screen appears, select **Utility**.
5. Select **View Test Log** from the list that appears; then, follow the instructions on the screen.
6. You can save the test log to a file on a diskette or to your hard disk drive.

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

Diagnostic error message tables

For descriptions of the error messages that might appear when you run the diagnostic programs, see “Diagnostic error codes” on page 87. If diagnostic error messages appear that are not listed in those tables, make sure that the server has the latest levels

of BIOS, Advanced System Management Processor, ServeRAID, and diagnostics microcode installed.

Power checkout

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

A general procedure for troubleshooting power problems is as follows:

1. Power off the server and disconnect the AC cord(s).
2. Check for loose cables in the power subsystem. Also check for short circuits, for instance if there is a loose screw causing a short circuit on a circuit board.
3. Remove adapters and disconnect the cables and power connectors to all internal and external devices until server is at minimum configuration required for power on (see "Minimum operating requirements" on page 98).
4. Reconnect the AC cord and power on the server. If the server powers up successfully, replace adapters and devices one at a time until the problem is isolated. If server does not power up from minimal configuration, replace FRUs of minimal configuration one at a time until the problem is isolated.

To use this method it is important to know the minimum configuration required for a server to power up (see page 98).

Recovering BIOS code

If the BIOS code has become damaged, such as from a power failure during a flash update, you can recover the BIOS using the boot block jumper and a BIOS flash diskette. The boot block jumper selects between normal BIOS mode and flash recovery mode. In the normal position, the jumper will be installed on pins 2 and 3. In the recovery position, the jumper will be installed on pins 1 and 2.

There are two choices when flashing BIOS. If you select flashing to Server mode, internal only COM PORT 2 and USB keyboard and mouse emulation will be OFF by default. These can be turned on, either individually or both, by going into F1 setup and turning them on. This will require a reboot. If you select flashing to Appliance mode, internal only COM PORT 2 and USB keyboard and mouse emulation will be ON by default. They can be turned off, either individually or both, by going into F1 setup and turning them off. This will require a reboot.

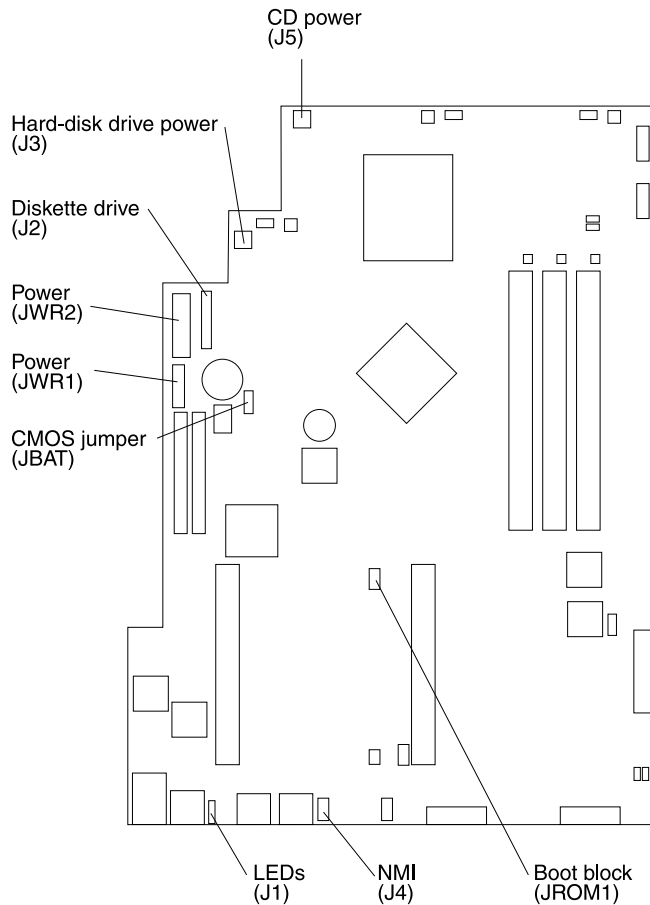
If the only US devices attached are keyboard and mouse and they are not working, investigate the F1 setup settings for these options. You can use a USB keyboard to press F1 and get into setup.

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

- Use the ServerGuide program to make a BIOS flash diskette.
- Download files to make a BIOS flash diskette from the World Wide Web. Go to <http://www.ibm.com/pc/support/>, select IBM System Support, and then make the selections for your system.

Complete the following steps to recover the BIOS code:

1. Turn off the server and peripheral devices and disconnect all external cables and power cords; then, remove the cover, see “Removing the cover” on page 42.
2. Locate jumper JROM1 on the system board.



3. Move the JROM1 jumper to the alternate position (pins 1 and 2) to enable the BIOS recovery mode.
4. Reinstall the cover, see “Installing the cover” on page 57.
5. Reconnect all external cables and power cords and turn on the peripheral devices.
6. Insert the BIOS flash diskette in the diskette drive.
7. Restart the server. The BIOS begins the power-on self-test.
8. The BIOS flash utility automatically starts.
9. When prompted as to whether you want to save the current code to a diskette, type N.
10. When prompted, type Y to continue the flash process.
11. The system automatically starts the flash utility a second time.
12. When prompted as to whether you want to save the current BIOS code, stop the process by removing the BIOS flash diskette from the diskette drive.
13. Turn off the server and peripheral devices and disconnect all external cables and power cords; then, remove the cover, see “Removing the cover” on page 42.
14. Move the JROM1 jumper to the normal position (pins 2 and 3) to return to normal startup mode.
15. Reinstall the cover, see “Installing the cover” on page 57.
16. Reconnect all external cables and power cords and turn on the peripheral devices.
17. Restart the server, which should start up normally.

Clearing CMOS

If you need to *erase* configuration information, you must move the CMOS jumper. See the illustration in “Recovering BIOS code” on page 17 for the location of the CMOS jumper.

The default position is a jumper installed on pins 1 and 2. Before you change the position of this jumper, you *must* turn off the server and peripheral devices, and disconnect all external cables and power cords. Remove the cover and then move the jumper to pins 2 and 3.

After moving the jumper, wait at least 5 minutes for the CMOS information to clear.

Changing the position of this jumper erases all configuration and setup information, including the power-on and administrator passwords. Therefore, you must reconfigure the server after clearing CMOS memory (see “Chapter 4. Configuring the server,” on page 33). If possible, record your server configuration information *before* moving the CMOS jumper.

After you clear the CMOS information, move the jumper back to its normal position (pins 1 and 2). Reconnect the external cables and power cords; then, turn on the peripheral devices and the server.

Replacing the battery

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

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

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



CAUTION:

When replacing the battery, use only IBM Part Number 33F8354 or an equivalent type battery recommended by the manufacturer. If your server 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.

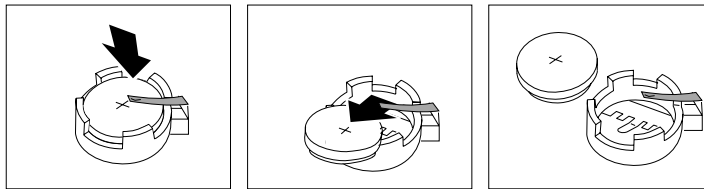
Do not:

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

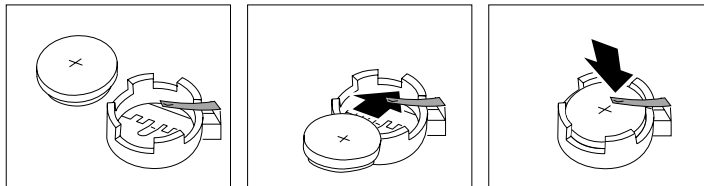
Dispose of the battery as required by local ordinances or regulations.

Do the following to replace the battery:

1. Read “Before you begin” on page 36, and follow any special handling and installation instructions supplied with the replacement battery.
2. Turn off the server and peripheral devices and disconnect all external cables and power cords; then, remove the server cover.
3. Remove the battery:
 - a. Use one finger to lift the battery clip over the battery.
 - b. Use one finger to slightly slide the battery out from its socket. The spring mechanism 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. Do the following to insert the new battery:
 - a. Tilt the battery so that you can insert it into the socket under the battery clip.
 - b. As you slide it under the battery clip, press the battery down into the socket.



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

Temperature checkout

Proper cooling of the server is important for proper operation and server reliability. For a typical xSeries server, you should make sure:

- Each of the drive bays has either a drive or a filler panel installed
- Each of the power supply bays has either a power supply or a filler panel installed
- The server cover is in place during normal operation

- There is at least 50 mm (2 inches) of ventilated space at the sides of the server and 100 mm (4 inches) at the rear of the server
- The server cover is removed for no longer than 30 minutes while the server is operating
- The processor housing cover covering the processor and memory area is removed for no longer than ten minutes while the server is operating
- A removed hot-swap drive is replaced within two minutes of removal
- Cables for optional adapters are routed according to the instructions provided with the adapters (ensure that cables are not restricting air flow)
- The fans are operating correctly and the air flow is good
- A failed fan is replaced within 48 hours

Attention:

If using AOL/2 or system supported monitoring software, and you are receiving a thermal alert with no fan alert, check SYSFA1 and CPUFA2, which are unmonitored and therefore cannot generate alerts, to make certain that those fans are connected to planar power and are functional.

If the system powers itself down, the cause maybe an overheated processor causing a thermal trip. One of your checks should be to ensure that both system fans and both CPU fans are connected to planar power and are functional.

In addition, ensure that the environmental specifications for the server are met. See “Features and specifications” on page 4.

Note: The speed of the fans will increase if:

- One fan fails.
- Ambient temperature gets too high.

Diagnosing errors

To find solutions to problems that have definite symptoms, see “Error symptoms” on page 90.

If you cannot find the problem there, go to “Starting the diagnostic programs” on page 14 to test the server.

If you have just added new software or a new option and the server is not working, do the following before using the error symptoms table:

- Remove the software or device that you just added.
- Run the diagnostic tests to determine if the server is running correctly.
- Reinstall the new software or new device.

Troubleshooting the Ethernet controller

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

Network connection problems

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

- Make sure that the cable is installed correctly.

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

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

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

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

- Determine if the hub supports auto-negotiation. If not, try configuring the integrated Ethernet controller manually to match the speed and duplex mode of the hub.
- Check the LAN activity light (if available) on the front of the server. The LAN activity light illuminates when the Ethernet controller sends or receives data over the Ethernet network. If the LAN activity light is off, make sure that the hub and network are operating and that the correct device drivers are loaded.
- Make sure that you are using the correct device drivers, supplied with your server.
- Check for operating server-specific causes for the problem.
- Make sure that the device drivers on the client and server are using the same protocol.
- Test the Ethernet controller.

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

Ethernet controller troubleshooting chart

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

Ethernet controller problem	Suggested Action
The server stops running when loading device drivers.	<p>The PCI BIOS interrupt settings are incorrect.</p> <p>Check the following:</p> <ul style="list-style-type: none"> • Determine if the IRQ setting assigned to the Ethernet controller is also assigned to another device in the Configuration/Setup Utility program. <p>Although interrupt sharing is allowed for PCI devices, some devices do not function well when they share an interrupt with a dissimilar PCI device. Try changing the IRQ assigned to the Ethernet controller or the other device. For example, for NetWare Versions 3 and 4 it is recommended that disk controllers not share interrupts with LAN controllers.</p> <ul style="list-style-type: none"> • Make sure that you are using the most recent device driver available from the World Wide Web. • Run the network diagnostic program. <p>If the problem remains, call for service.</p>
The LAN activity light (when available) does not light.	<p>Check the following:</p> <ul style="list-style-type: none"> • Make sure that you have loaded the network device drivers. • The network might be idle. Try sending data from this workstation. • Run diagnostics on the LEDs. • The function of this LED can be changed by device driver load parameters. If necessary, remove any LED parameter settings when you load the device drivers.
Data is incorrect or sporadic.	<p>Check the following:</p> <ul style="list-style-type: none"> • Make sure that you are using Category 5 cabling when operating the server at 100 Mbps. • Make sure that the cables do not run close to noise-inducing sources like fluorescent lights.
The Ethernet controller stopped working when another adapter was added to the server.	<p>Check the following:</p> <ul style="list-style-type: none"> • Make sure that the cable is connected to the Ethernet controller. • Make sure that your PCI server BIOS is current. • Reseat the adapter. • Determine if the IRQ setting assigned to the Ethernet adapter is also assigned to another device in the Configuration/Setup Utility program. <p>Although interrupt sharing is allowed for PCI devices, some devices do not function well when they share an interrupt with a dissimilar PCI device. Try changing the IRQ assigned to the Ethernet adapter or the other device.</p> <p>If the problem remains, call for service.</p>

Table 2. Ethernet troubleshooting chart.

Ethernet controller problem	Suggested Action
The Ethernet controller stopped working without apparent cause.	<p data-bbox="699 243 922 273">Check the following:</p> <ul data-bbox="699 285 1377 422" style="list-style-type: none"> <li data-bbox="699 285 1203 315">• Run diagnostics for the Ethernet controller. <li data-bbox="699 327 1133 357">• Try a different connector on the hub. <li data-bbox="699 369 1377 422">• Reinstall the device drivers. Refer to your operating system documentation and to the ServerGuide information. <p data-bbox="699 453 1110 483">If the problem remains, call for service.</p>

Table 2. Ethernet troubleshooting chart.

Ethernet controller messages

The integrated Ethernet controller might display messages from the following device drivers:

- Novell NetWare™ or IntraNetWare system open data-link interface (ODI)
- Network driver interface specification (NDIS) adapter for level 4.0 (Windows NT)

Novell NetWare or IntraNetWare system ODI driver teaming messages

This section provides explanations of the error messages for the Novell NetWare or IntraNetWare system ODI driver, and suggested actions to resolve each problem.

Message	Description
Couldn't allocate resources.	<p>Explanation: An unknown error has occurred when trying to allocate needed resources for the AFT Module.</p> <p>Action:</p> <ul style="list-style-type: none"> • Check the server configuration. If the problem persists, contact your network supplier. • Verify that the Ethernet controller is enabled. If the Ethernet controller is enabled, run the diagnostic programs.
AFT group for primary adapter in slot <i>nnn</i> already exists.	<p>Explanation: An attempt was made to rebind an adapter already in an AFT group.</p> <p>Action: Check the AFT slot numbers for existing AFT teams. If the problem persists, contact your network supplier.</p>
Error locating device control table (DCT) addresses in internal table. Make sure that you have loaded LAN drivers after loading AFT.NLM.	<p>Explanation: The bind command was entered prior to loading the device driver. The device driver must be loaded after loading AFT.NLM, but before any bind command can be issued.</p> <p>Action: Load the driver for the supported adapter and try loading the AFT module again. If the problem persists, contact your network supplier.</p>
Insufficient number of arguments specified.	<p>Explanation: The appropriate or expected number of parameters was not entered in a command.</p> <p>Action: Check the parameters required for the given command. If the problem persists, contact your network supplier.</p>
Duplicate slot numbers detected.	<p>Explanation: An attempt has been made to bind the same slot number more than once.</p> <p>Action: Check the slot numbers entered during the bind. Adapter slot numbers must be valid and unique. If the problem persists, contact your network supplier.</p>
'xxx' is not supported for AFT team.	<p>Explanation: A bind command has been issued for adapters not supported by AFT.NLM.</p> <p>Action: Make sure that you attempt to bind only adapters supported by AFT.NLM.</p>
Primary and Secondary adapters do not match. AFT group is not created.	<p>Explanation: A bind command was entered for an adapter team that is a combination of server and client adapters. An AFT team must be a grouping of the same classification of adapter.</p> <p>Action: Verify that all the adapters bound in a team are of the same classification.</p>
Requested number of Secondary cards are not found.	<p>Explanation: The number of adapters specified in the bind command could not be located.</p> <p>Action: Verify the numbers and slot locations of the adapters to be bound. If the problem persists, contact your network supplier.</p>
Failed to create AFT group. Make sure that the drivers for supported adapters are loaded, primary adapter is bound to protocols, and secondary adapter is not bound to any protocols.	<p>Explanation: Binding of protocol failed. Protocol is either not bound to any adapter or is bound to more than one adapter in the group.</p> <p>Action: Ensure that the protocol is bound to only adapter in an AFT team.</p>

Table 3. NetWare driver messages for the Ethernet controller.

Message	Description
Error identifying slot numbers for the specified board names.	Explanation: The mapping between the board name entered and the slot number for an adapter could not be established. Action: Check the board name for the adapter before issuing the bind command. If the problem persists, contact your network supplier.
Can't unbind specified slot from AFT group. Make sure that the slot you specified is for the primary adapter in an AFT group.	Explanation: The number entered in the unbind command was not the primary adapter in an AFT group. Action: Reissue the unbind command and specify the slot number for the primary adapter.
LAN adapter at slot <i>nnnn</i> (Port <i>0xaa</i>) failed to reset. Check the state of the adapter.	Explanation: The adapter that you specified could not be initialized. Action: <ol style="list-style-type: none"> 1. Load the driver for the supported adapter. 2. Check that the adapter is seated properly in the slot and try loading the AFT module again. If the problem persists, contact your network supplier.
AFT is not supported on this version of NetWare™.	Explanation: The NetWare on your server is not a version supported by AFT. Action: Load and bind AFT only on supported versions of NetWare (currently version 4.11 and above).
Failed to allocate resources tags.	Explanation: An unknown error has occurred when trying to allocate needed resources for the AFT module. Action: Check server configuration. If the problem persists, contact your network supplier.
Please unload all LAN drivers before unloading AFT.NLM.	Explanation: An attempt was made to unload the AFT.NLM module before unloading the adapter driver. Action: Unload the adapter driver before unloading the AFT module.

Table 3. NetWare driver messages for the Ethernet controller.

NDIS 4.0 (Windows NT) driver messages

This section contains the error messages for the NDIS 4.0 drivers. The explanation and recommended action are included with each message.

Error code (hex)	Description
0x00	Explanation: The driver could not register the specified interrupt. Action: Using the Configuration/Setup Utility program, make sure that a PCI interrupt is assigned to your Ethernet card, and that Ethernet is enabled.
0x01	Explanation: One of the PCI cards did not get the required resources. Action: Using the Configuration/Setup Utility program, make sure that a PCI interrupt is assigned to your Ethernet card, and that Ethernet is enabled.
0x02	Explanation: Bad node address (multicast address). Action: Make sure the locally administered address is valid, if one is specified. The address can not be a multicast address.
0x03	Explanation: Failed self-test. Action: Make sure a cable is attached to the Ethernet connector. If the problem persists, call for service.
0x0D	Explanation: Could not allocate enough memory for transmit queues. Action: <ol style="list-style-type: none"> 1. From the Windows NT desktop, select Start Control Panel Networks Adapters. 2. Select your IBM Ethernet adapter from the list. 3. Select Properties Advanced. 4. Lower the resource values that apply to the transmit queue.
0x0E	Explanation: Could not allocate enough memory for receive queue. Action: <ol style="list-style-type: none"> 1. From the Windows NT desktop, select Start Control Panel Networks Adapters. 2. Select your IBM Ethernet adapter from the list. 3. Select Properties Advanced. 4. Lower the resource values that apply to the receive queue.
0x0F	Explanation: Could not allocate enough memory for other structures. Action: <ol style="list-style-type: none"> 1. From the Windows NT desktop, select Start Control Panel Networks Adapters. 2. Select your IBM Ethernet adapter from the list. 3. Select Properties Advanced. 4. Lower the value for the resource named in the message.
0x10	Explanation: Did not find any Ethernet controllers. Action: Using the Configuration/Setup Utility program, make sure that Ethernet is enabled.
0x11	Explanation: Multiple Ethernet controllers found, but none matched the required ID. Action: Using the Configuration/Setup Utility program, make sure that Ethernet is enabled.
0x13	Explanation: Did not find any Ethernet controllers that matched the required subven/subdev. Action: Using the Configuration/Setup Utility program, make sure that Ethernet is enabled.

Table 4. NDIS (Windows NT or Windows 2000) driver messages for the Ethernet controller.

Error code (hex)	Description
0x16	Explanation: Single adapter found, but multiple instances tried to load. Action: Using the Configuration/Setup Utility program, make sure that Ethernet is enabled, and that the slot containing the IBM xSeries 200 10/100 Ethernet Adapter or the IBM 10/100 Etherjet PCI adapter is enabled.
0x17	Explanation: Slot parameter not specified in the registry. Action: Remove the adapter driver and reinstall it. If the problem persists, call for service.
All other 4-character hexadecimal codes	Action: Call for service.

Table 4. NDIS (Windows NT or Windows 2000) driver messages for the Ethernet controller.

Ethernet teaming messages:

This section displays the messages associated with Ethernet teaming.

Event ID	Type	Description
01	Error	Explanation: Team name and physical adapter name are the same. This is an invalid configuration. Action: Reconfigure the adapter team by double-clicking the PROSet icon in the control panel.
02	Error	Explanation: Unable to allocate required resources. Action: Free some memory resources and restart.
03	Error	Explanation: Unable to read required registry parameters. Action: Reconfigure the adapter team by double-clicking the PROSet icon in the control panel.
04	Error	Explanation: Unable to bind to physical adapter. Action: Reconfigure the adapter team by double-clicking the PROSet icon in the control panel.
05	Error	Explanation: Unable to initialize an adapter team. Action: Reconfigure the adapter team by double-clicking the PROSet icon in the control panel.
06	Informational	Explanation: Team <i>nn</i> . Primary adapter is initialized. Action: None.
07	Informational	Explanation: Team <i>nn</i> . Secondary adapter is initialized. Action: None.
08	Informational	Explanation: Team <i>nn</i> . Virtual adapter or Team is initialized. Action: None.
09	Informational	Explanation: Team <i>nn</i> . Primary adapter is switching over. Action: None.
10	Warning	Explanation: Team <i>nn</i> . Adapter link down. Action: Make sure the adapter is functioning properly.
11	Informational	Explanation: Team <i>nn</i> . Secondary adapter took over. Action: None.
12	Warning	Explanation: Team <i>nn</i> . Secondary adapter is deactivated from the Team. Action: Make sure the secondary adapter is functioning properly and that the adapter cable is securely connected to the LAN.
13	Informational	Explanation: Team <i>nn</i> . Secondary adapter has rejoined the Team. Action: None.
14	Informational	Explanation: Team <i>nn</i> . Secondary adapter link is up. Action: None.
15	Error	Explanation: Team <i>nn</i> . The last adapter has lost its link. Network connection has been lost. Action: Shut down the server and replace the adapters; then, restart the server to reestablish the connection.
16	Informational	Explanation: Team <i>nn</i> . An adapter has reestablished the link. Network connection has been restored. Action: None.

Table 5. NDIS (Windows NT or Windows 2000) driver teaming messages for the Ethernet controller.

Event ID	Type	Description
17	Informational	Explanation: Team <i>nn</i> . Preferred primary adapter has been detected. Action: None.
18	Informational	Explanation: Team <i>nn</i> . Preferred secondary adapter has been detected. Action: None.
19	Informational	Explanation: Team <i>nn</i> . Preferred primary adapter took over. Action: None.
20	Informational	Explanation: Team <i>nn</i> . Preferred secondary adapter took over. Action: None.
21	Warning	Explanation: Team <i>nn</i> . Primary adapter does not sense any Probes. Possible reason: partitioned Team. Action: Make sure the cables of the adapter team are connected to the same LAN segment. Reconfigure the team if necessary.

Table 5. NDIS (Windows NT or Windows 2000) driver teaming messages for the Ethernet controller.

Chapter 4. Configuring the server

The following configuration programs are provided with your server:

- **Configuration/Setup Utility**

This program is part of the basic input/output system (BIOS) code that comes with your server. You can use this program to configure the serial connector assignment, change the drive startup sequence, set the date and time, and set passwords. For information on how to start this utility see, “Starting the Configuration/Setup Utility program” on page 34.

- **SCSISelect Utility**

With the SCSISelect Utility program, you can configure the devices that are attached to the SCSI adapter (provided in some models). Use this program to change default values, resolve configuration conflicts, and perform a low-level format on a SCSI hard disk drive. For information on how to start this utility, see “Starting the SCSISelect utility program” on page 34.

- **PXE Boot Agent Utility**

The Preboot eXecution Environment (PXE) Boot Agent Utility program is part of the BIOS code that comes with the server. You can use this program to change network startup (boot) protocols and startup order, to select operating-system wake-up support, and to set menu wait times. For information on how to start this utility, see “Starting the PXE boot agent utility program” on page 35.

- **ServerGuide™ CDs**

The *ServerGuide* CDs include software setup and installation tools that are specifically designed for IBM xSeries 300 servers. You can use these CDs during the initial installation of your server to configure the server hardware and to simplify your NOS installation. The *ServerGuide* CDs also contain a collection of application programs, which you can install after your server is up and running. See “Using the ServerGuide CDs” on page 36 for more information.

Starting the utility programs

This section provides the instructions for starting the utility programs. For more detailed information about these utility programs, refer to the *User's Reference* on the *IBM xSeries Documentation CD*.

Using the Configuration/Setup Utility program

Configuration/Setup is a menu-driven utility that is part of the BIOS code that comes with your server. You can use it to:

- Configure serial connector assignments
- Change the drive startup sequence
- Enable USB keyboard and mouse support
- Resolve configuration conflicts
- Set the date and time
- Set passwords

Starting the Configuration/Setup Utility program

Complete the following steps to start the Configuration/Setup Utility program:

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

Using the SCSISelect utility program (some models)

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

Note: If your server has a redundant arrays of independent disks (RAID) adapter installed, use the configuration method that is supplied with the RAID adapter to view or change SCSI settings for devices attached to the adapter.

Starting the SCSISelect utility program

Complete the following steps to start the SCSISelect Utility program:

1. Turn on the server.
2. When the <<< Press <CTRL><A> for SCSISelect™ Utility! >>> prompt appears, press Ctrl+A.
3. When the Would you like to configure the host adapter or run the SCSI disk utility? question appears, make your selection and press Enter.
4. Use the arrow keys to select a choice from the menu.
 - Press Esc to exit the SCSISelect Utility program.
 - 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.

Using the PXE boot agent utility program

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

- Change network startup (boot) protocols
- Change startup (boot) order
- Select whether or not to display setup prompt
- Set menu wait time
- Select OS wake up support

Starting the PXE boot agent utility program

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

To start the PXE Boot Agent Utility program:

1. Turn on the server.
2. When the Initializing Intel (R) Boot Agent Version X.X.XX
PXE 2.0 Build XXX (WfM 2.0) prompt appears, press Ctrl+S.
Note: By default you will have two seconds after the prompt appears on the screen to press Ctrl+S.
3. Use the arrow keys or press Enter to select a choice from the menu.
 - Press Esc to return to the previous menu.
 - Press the F4 key to exit.
4. Follow the instructions on the screen to change the settings of the selected items; then, press Enter.

Using the ServerGuide CDs

The *ServerGuide* CDs provide state-of-the-art programs to detect the server model and hardware options that are installed, configure the server hardware, provide device drivers, and install your network operating system (NOS).

Note: If the *ServerGuide* CD does not start, see “ServerGuide startup problems” on page 37.

1. Insert the *Setup and Installation* CD, and restart the server.
2. Follow the instructions on the screens to:
 - a. Select your language.
 - b. Select your keyboard layout and country.
 - c. View the Overview to learn about ServerGuide features.
 - d. View the README file to review installation tips about your NOS and adapter.
 - e. Start the setup and hardware configuration programs.
 - f. Start the NOS installation. You will need your copy of the NOS CD.

Note: For information on the supported NOS versions, refer to the *Setup and Installation* CD label.

ServerGuide startup problems

Look for the symptom in the left column of the chart. Probable solutions to the problem are in the right column.

Setup	Suggested action
Setup and Installation CD will not start.	<ul style="list-style-type: none"> • Ensure that the system is a supported server with a startable (bootable) CD-ROM drive. • If the startup (boot) sequence settings have been altered, be sure the CD-ROM is first in the boot sequence.
ServeRAID™ program cannot view all installed drives - or - cannot install NOS.	If you installed an optional ServeRAID adapter: <ul style="list-style-type: none"> • Ensure that there are no duplicate SCSI IDs or IRQ assignments. • Ensure that the hard disk drive is connected properly.
The <i>Operating System Installation</i> program continuously loops.	Free up more space on the hard disk drive.
ServerGuide will not start <i>your</i> NOS CD.	Ensure that the NOS CD you have is supported by ServerGuide. See the <i>Setup and Installation</i> CD label for a list of NOS versions supported.
Cannot install NOS - option is grayed out.	Either there is no logical drive defined (ServeRAID systems) or the ServerGuide system partition is not present. Run the ServerGuide setup and configuration program and ensure that setup is complete

Table 6. ServerGuide startup problems.

System updates and applications CD	Suggested action
Get "time out" or "Unknown host" errors	Ensure that you have access to the Internet through FTP directly.

Table 7. System updates and applications CD.

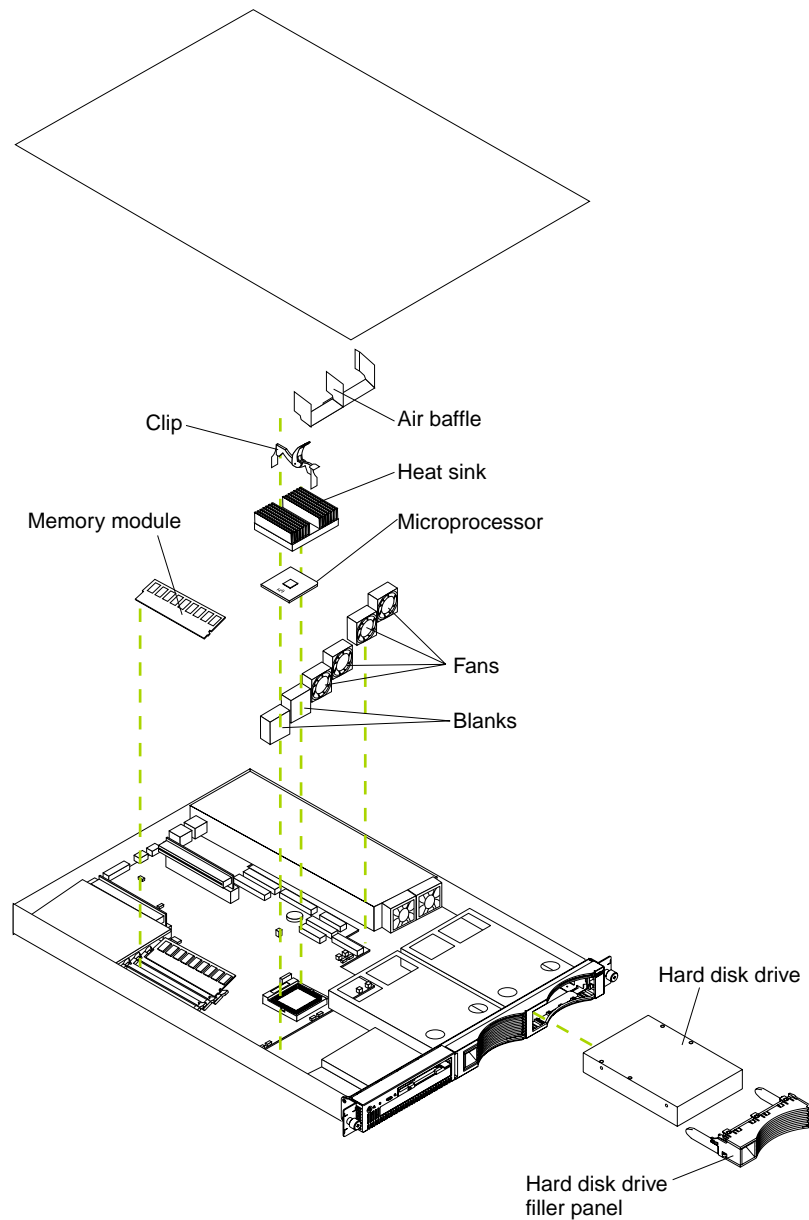
Chapter 5. Installing Options

This chapter provides basic information that is needed to install hardware options in your server. For more detailed installation information, refer to the *User's Reference* on the *IBM xSeries Documentation CD*.

Major components of the xSeries 300 server

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

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



Before you begin

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

- Become familiar with the safety and handling guidelines provided in:

- “Safety information” on page 105;
- “Handling electrostatic discharge-sensitive devices” on page 108; and
- “Safety notices (multi-lingual translations)” on page 109.

These guidelines will help you work safely while working with the server or options.

- Make sure that you have an adequate number of properly grounded electrical outlets for the server, monitor, and any other options that you intend to install.
- Back up all important data before you make changes to disk drives.
- For a list of supported options for the 200, refer to <http://www.ibm.com/pc/us/compat> on the World Wide Web.

Working inside the server with the power on

The server is designed with safety in mind. Follow these guidelines when you work inside a server that is turned on:

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

System reliability considerations

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

- Each of the drive bays either has a drive, or a filler panel and electromagnetic compatibility (EMC) shield installed.
- There is space around the server to allow the server cooling system to work properly. Leave about 127 mm (5 in.) of space around the front and rear of the server.
- Cables for optional adapters are routed according to the instructions that are provided with the adapters.
- A failed fan is replaced within 48 hours.

Handling static-sensitive devices

Attention: Static electricity can damage electronic devices and your system. To avoid damage, keep static-sensitive devices in their static-protective bag until you are ready to install them.

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

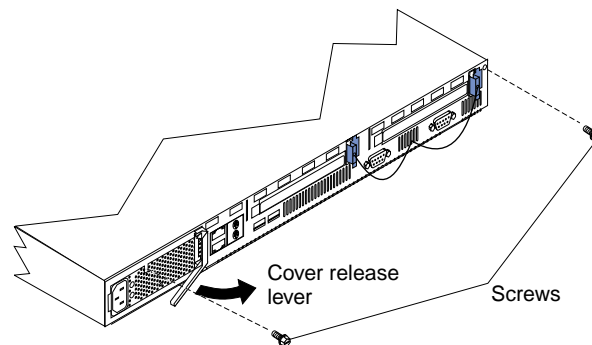
- Limit your movement. Movement can cause static electricity to build up around you.
- Handle the device carefully, holding it by its edges or its frame.
- Do not touch solder joints, pins, or exposed printed circuitry.

- Do not leave the device where others can handle and possibly damage the device.
- While the device is still in its anti-static package, touch it to an unpainted metal part of the system unit for at least two seconds. (This drains static electricity from the package and from your body.)
- Remove the device from its package and install it directly into your system unit without setting it down. If it is necessary to set the device down, place it on its static-protective package. (If your device is an adapter, place it component side up.) Do not place the device on your system unit cover or on a metal table.
- Take additional care when handling devices during cold weather as heating reduces indoor humidity and increases static electricity.

Removing the cover

Complete the following steps to remove the server cover:

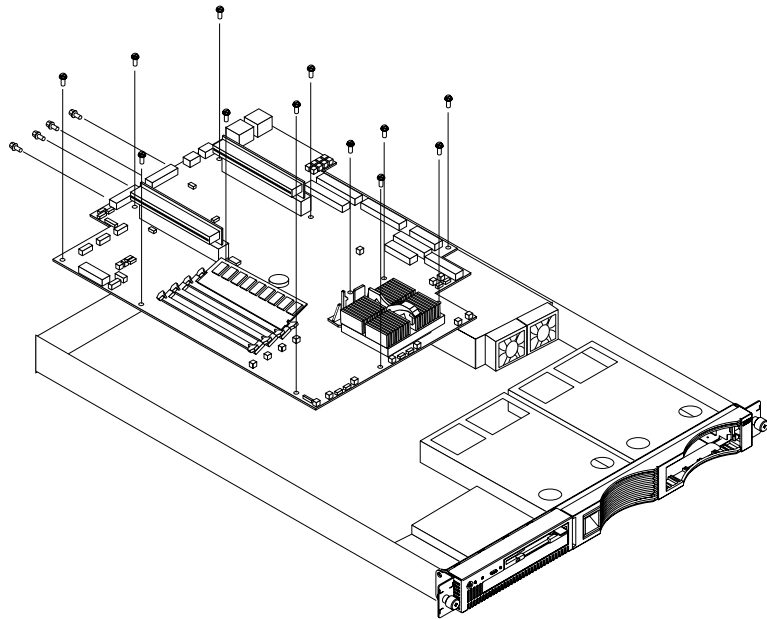
1. Review the information in “Before you begin” on page 40.
2. Turn off the server and all attached devices and disconnect all external cables and power cords.



3. Remove the two screws from the rear of the server.
4. Pull out on the cover-release lever at the back of the server to release the cover.
5. Slide the cover back, then up and off the server.

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

System board



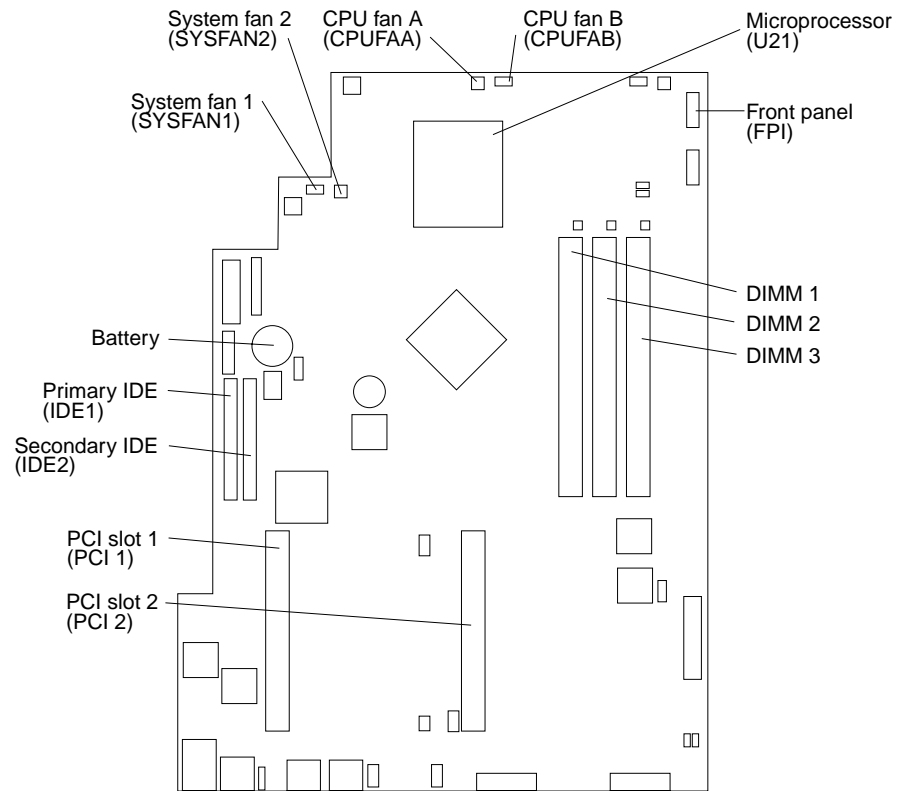
To remove the system board:

Note: Read “Safety information” on page 79 and “Before you begin” on page 40.

1. Power off the server.
2. Remove the cover. See “Removing the cover” on page 42.
3. Disconnect all cables from the system board.
4. Remove the adapter retaining latch (see “Removing a microprocessor” on page 53).
5. Remove the microprocessors. See “Removing a microprocessor” on page 53.
6. Remove the memory modules. See “Installing DIMMs” on page 49.
7. Remove screws from the system board.
8. Remove the four screws from the rear of the server.
9. Pull up on the system board to remove from the chassis.

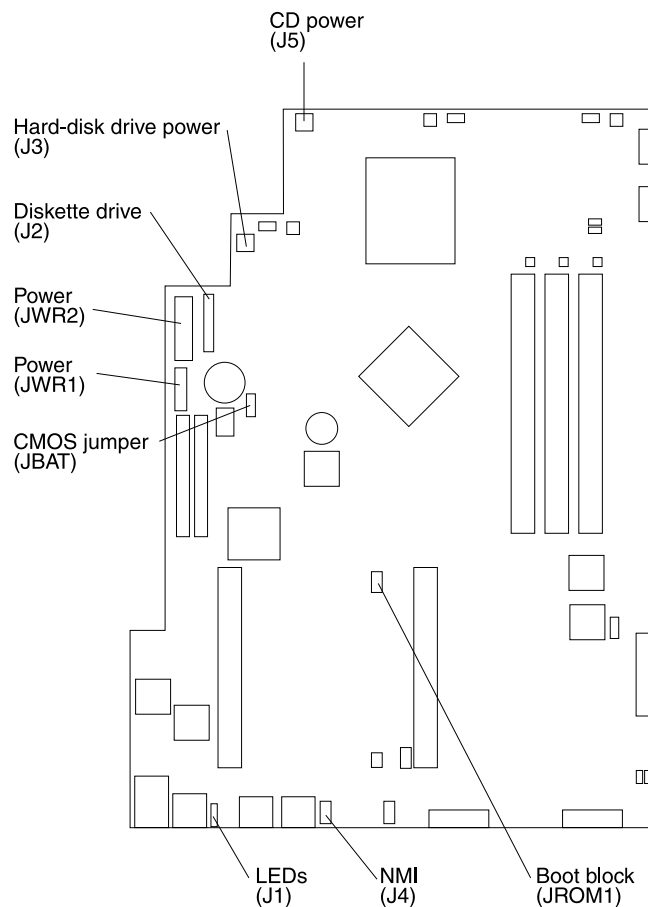
System board internal cable connectors

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



System board jumpers

The following illustration identifies the jumpers on the system board.



Working with adapters

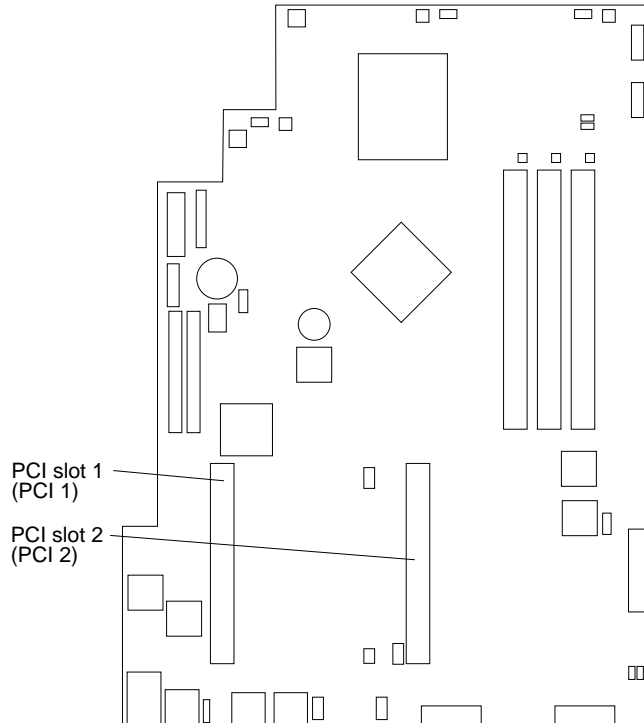
Your server comes with two peripheral component interconnect (PCI) adapter slots on the system board with riser cards installed in them.

Note: Some models come with a SCSI adapter card installed in PCI slot 2.

Attention: Your server comes with an integrated video controller on the system board. When you install a video adapter in a PCI slot, the server BIOS automatically disables the integrated video controller. This enables the video adapter in the PCI slot to control the video functions for your monitor.

The following illustration shows the location of the 33 MHz PCI expansion slots on the system board.

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



Adapter considerations

Before you install adapters, review the following:

- Locate the documentation that comes with the adapter and follow those instructions in addition to the instructions in this chapter.
- If you need to change the switch settings or jumper settings on your adapter, follow the instructions that come with the adapter.
- You can install 32-bit full-length or half-length adapters in the expansion slots. Full-length adapters are installed in slot 1 only; half-length adapters are installed in either slot 1 or 2.
- Your server supports 5.0 V and universal PCI adapters; it does not support 3.3 V only adapters.
- Your server uses a rotational interrupt technique to configure PCI adapters. You can use this technique to install PCI adapters that currently do not support sharing of PCI interrupts.
- The system scans PCI slots to assign system resources. By default the system starts (boots) the CD-ROM and diskette drives first. Then it starts PCI slot 2, PCI slot 1, and the integrated Ethernet.

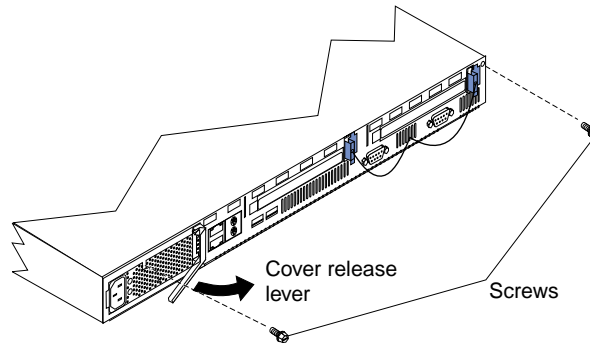
Note: You can use the Configuration/Setup Utility program to change the boot precedence for your server. Select **Start Options** from the Configuration/Setup Utility program main menu.

Installing an adapter

Complete the following steps to install an adapter:

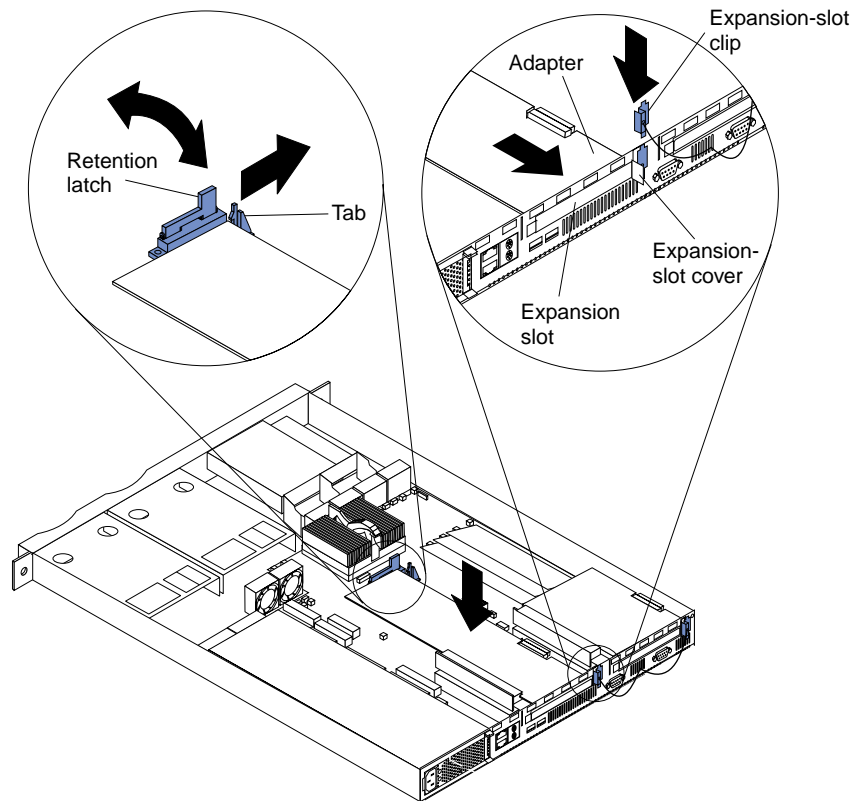
Attention: When you handle static-sensitive devices, take precautions to avoid damage from static electricity. For details on handling these devices, see “Handling static-sensitive devices” on page 41.

1. Review the information in “Safety information” on page 79, and “Before you begin” on page 40.
2. Turn off the server and peripheral devices.
3. Remove all external cables from the server.
4. Remove the server cover.



5. Remove the expansion-slot clip that holds the expansion-slot cover in place by sliding it upward and off the frame of the server.

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



6. Remove the expansion-slot cover.
7. Refer to the documentation that comes with your adapter for any cabling instructions.
Attention: You should route adapter cables before you install the adapter.
8. Set any jumpers or switches as described by the adapter manufacturer.
9. Install the adapter:
Note: When installing an adapter into slot 2, skip steps a and d.
 - a. Open the adapter-retention latch by pushing the blue tab to release it. Then, push the latch up to the full open position.
 - b. Carefully grasp the adapter by its top edge or upper corners, and align it with the connector on the PCI riser-card.
 - c. Press the adapter *firmly* into the riser card connector.
Attention: When you install an adapter, be sure the adapter is correctly seated in the riser-card connector before you turn on the server. Improperly seated adapters might cause damage to the system board, the riser card, or the adapter.
 - d. Push down on the blue adapter retention latch until it clicks into place, securing the adapter.
 - e. Replace the expansion-slot clip by sliding it down until it latches into place and holds the adapter securely.
10. Connect the internal cables to the adapter.
Attention: Route cables so that they do not block the flow of air from the fans.
11. If you have other options to install or remove, do so now.
12. Replace the cover on the server; then, install the server in the rack and connect all external cables. For more information, see “Installing the cover” on page 57, and the “Rack installation” flyer for instructions.

Hard disk drives

Depending on the model, your server supports two SCSI or two IDE hard disk drives.

Installing or replacing a hard disk drive

Complete the following steps to install or replace a hard disk drive:

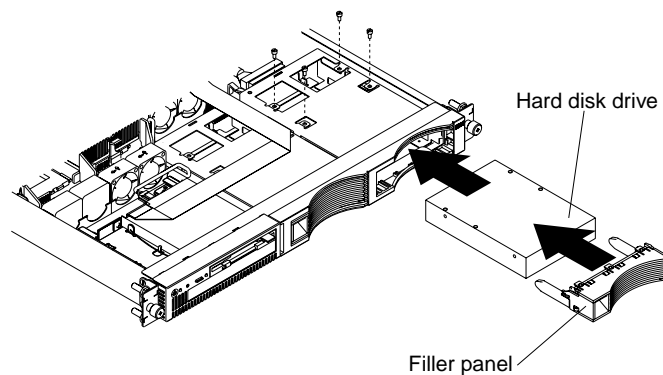
Attention: When you handle static-sensitive devices, take precautions to avoid damage from static electricity. For details on handling these devices, see “Handling static-sensitive devices” on page 41.

1. Inspect the drive for any signs of damage.
2. Review the information in “Safety information” on page 79, and “Before you begin” on page 40.
3. Check the instructions that come with the drive for more information about installing your drive.

Notes:

- a. If you are installing an IDE hard disk drive, you must set the drive to primary (master) or secondary (subordinate), depending on the configuration of your server. See the documentation that comes with the drive for instructions.
- b. If you are installing a SCSI hard disk drive, refer to the documentation that comes with your drive before installing it.

4. Turn off the server and peripheral devices and disconnect all external cables and power cords.
5. Remove the server cover.
Note: If you are replacing a failing hard disk drive, remove the fans behind the drive bay in which you are working; then, disconnect the power and signal cables from the hard disk drive. For information on how to remove the fan, see "Fan assembly replacement", on the *IBM xSeries Documentation* CD.
6. Remove the filler panel from one of the hard disk drive bays.
7. Install the new hard disk drive in the drive bay:
 - a. Slide the drive into the bay and align the screw holes in the drive with the screw holes in the server chassis.
 - b. Use a screwdriver to secure the hard disk drive to the server chassis.



- c. Connect the signal cable and power cable to the rear of the drive. Ensure that the cables do not obstruct the fan behind the drive bay.
8. If you have other options to install or remove, do so now.
9. Replace the server cover. See "Installing the cover" on page 57.

Working with DIMMs

Your xSeries 300 server supports 128 MB, 256 MB, and 512 MB DIMMs. See the ServerProven list at <http://www.ibm.com/pc/compat> for a list of DIMMs for use with your server.

Install additional DIMMs in DIMM connector 2 first, then in DIMM connector 3. (See the following illustration for memory connector locations.)

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

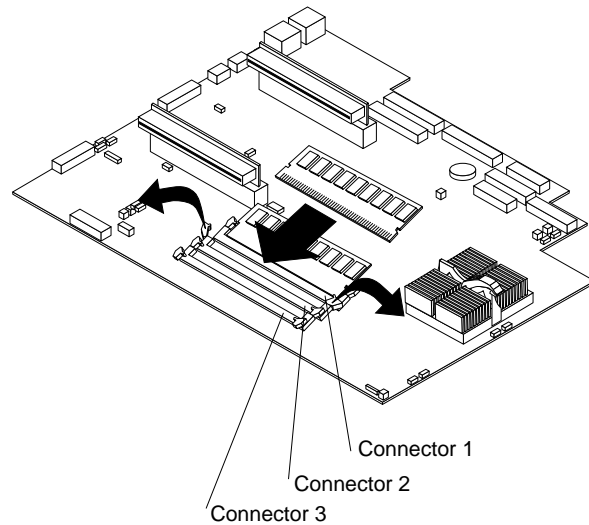
Installing DIMMs

Complete the following steps to install a DIMM:

1. Review the safety precautions beginning on page 111.
2. Turn off the server and peripheral devices.
3. Remove all external cables from the server; then, remove the cover. For more information, see "Removing the cover" on page 42.

Attention: When you handle static-sensitive devices, take precautions to avoid damage from static electricity. For details on handling these devices, refer to “Handling static-sensitive devices” on page 41.

4. If necessary, remove the PCI adapter in slot 2 for easier access to the DIMM connectors.
5. Touch the static-protective package containing the DIMM to any unpainted metal surface on the server. Then, remove the DIMM from the package.



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

6. Install the DIMM in the connector.

Attention: To prevent damage to the DIMM connectors, do not force the DIMM into the connector.

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

Note: The DIMM has two index slots, one in the center and the other on the left half of the DIMM connector edge.

- b. Insert the DIMM into the connector by pressing on both corners of the DIMM at the same time. Be sure to press it straight into the connector.
- c. When installing a DIMM, be sure that no gap exists between the DIMM and the retaining clips. If a gap does exist between the DIMM and the retaining clips, remove the DIMM; then, reinsert it properly.

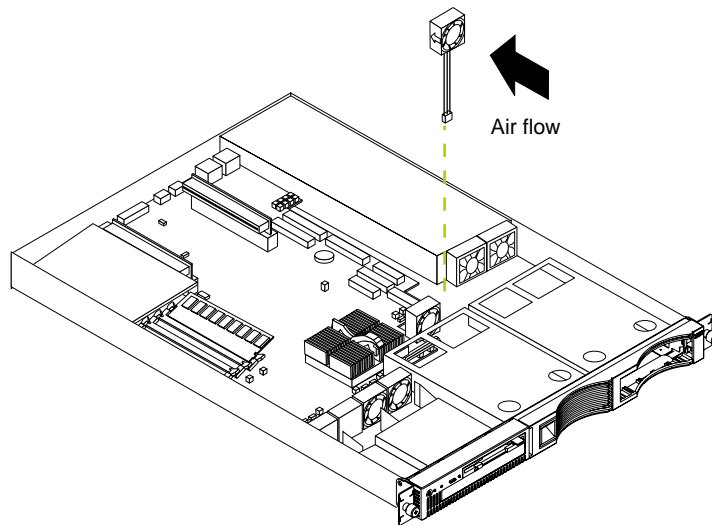
7. If you removed the PCI adapter as described in step 4, install it now.
8. If you have other options to install or remove, do so now.
9. Replace the server cover. For more information on replacing the cover, see “Installing the cover” on page 57.

Replacing the fan assembly

Complete the following steps to replace the fan assembly:

1. Review the information in “Before you begin” on page 40.
2. Turn off the server and peripheral devices.
3. Remove all external cables from the server; then, remove the server from the rack and remove the cover. For more information, see “Removing the cover” on page 42 for instructions.
4. Remove the fan from the server:
 - a. Disconnect the fan cable from the system board.
 - b. Lift the fan away from the server.
5. Orientate the fan so that the air flow arrow on the side of the fan is facing or pointing toward the rear of the server.

Note: Proper air flow is from the front to the rear of the server.



6. Push the replacement fan assembly into the server until it clicks into place.
7. Connect the fan cable to the system board.
8. If you have other options to install or remove, do so now.
9. Replace the cover. See “Installing the cover” on page 57.
10. Reconnect the external cables and power cords; then, turn on the peripheral devices and the server.

Attention: If the system is shut down and there are no other problems indicated, visually check the fans for operation.

Removing and installing a microprocessor

The server only supports one microprocessor, which is installed on the system board in the microprocessor connector (U5).

Notes:

1. Before you install a new microprocessor, review the documentation that comes with the microprocessor, so that you can determine whether you need to update

the server BIOS. The latest level of the BIOS for your server is available through the World Wide Web.

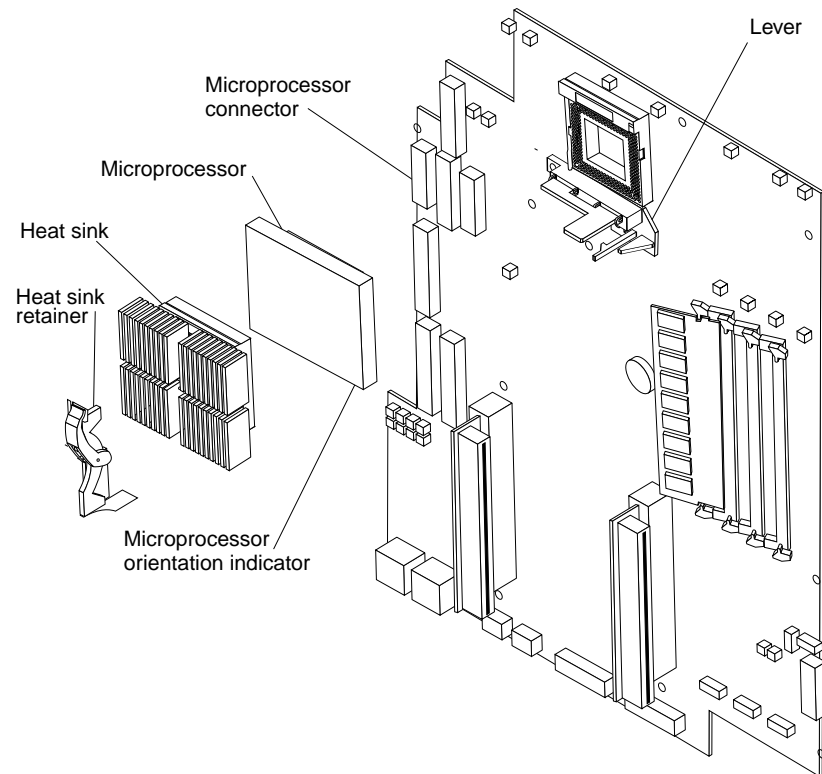
2. For a list of supported operating systems, see <http://www.ibm.com/pc/us/compat/> on the World Wide Web.

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

Attention: To avoid damage and ensure correct server operation when you install a new microprocessor, use a microprocessor that has the same cache size and type, and the same clock speed. Microprocessor internal clock frequencies and external clock frequencies must be identical. See the ServerProven list at <http://www.ibm.com/pc/compat/> for a list of microprocessors for use with your server.

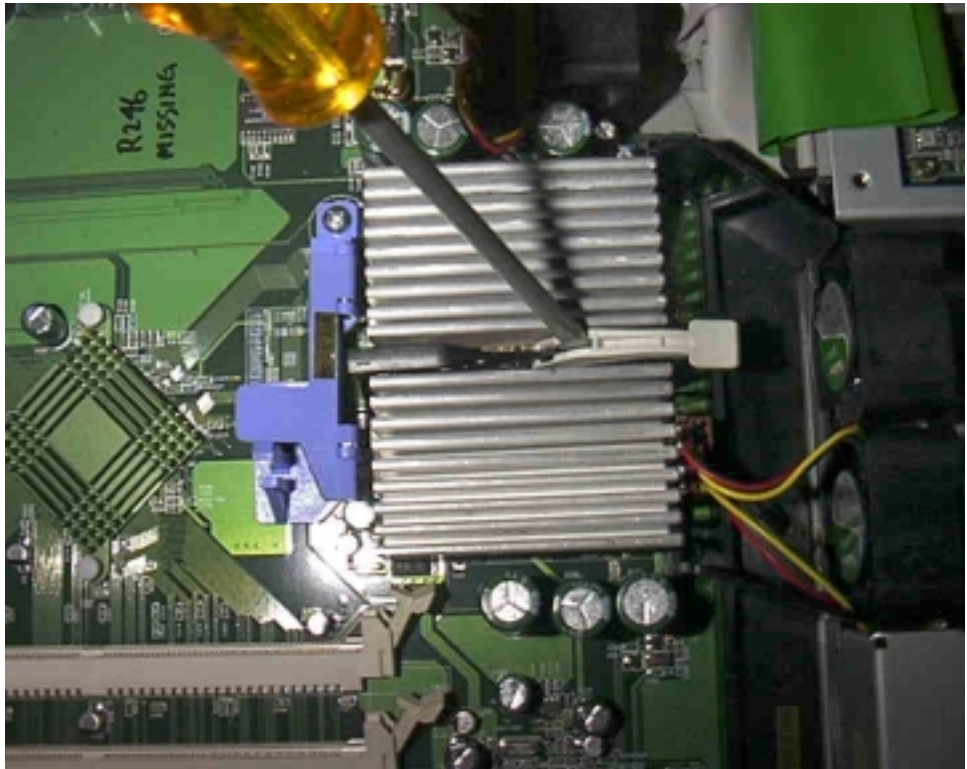
Removing a microprocessor

Complete the following steps to remove a microprocessor.

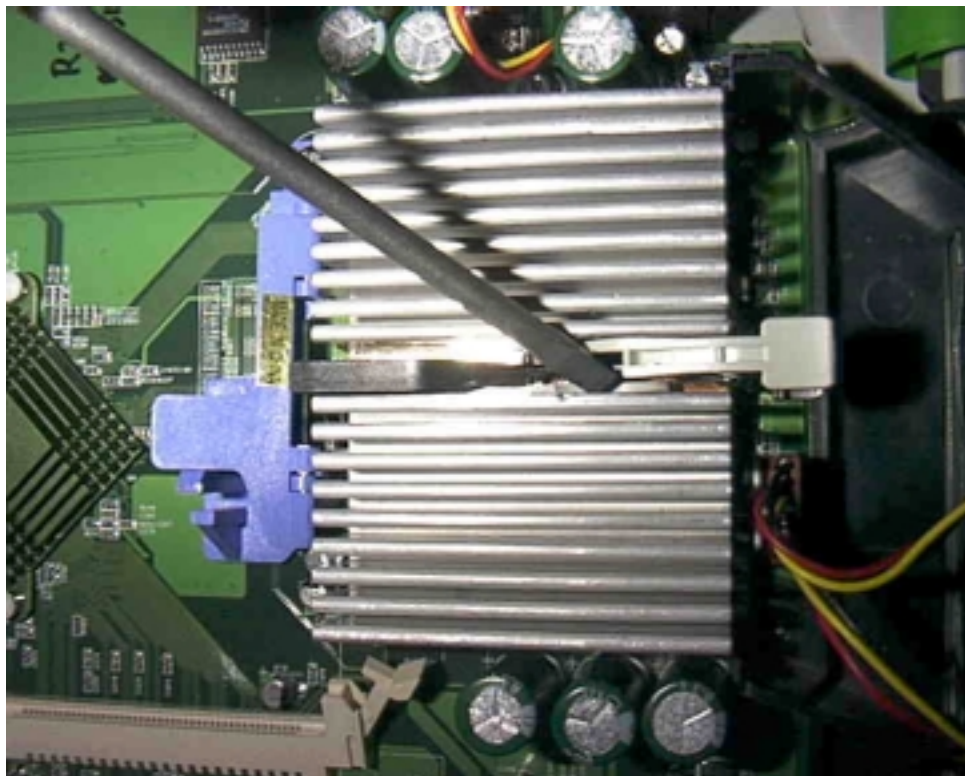


Attention: When you handle ESD-sensitive devices, take precautions to avoid damage from static electricity. For details on handling these devices, see “Handling static-sensitive devices” on page 41.

1. Review the safety precautions listed in “Safety information” on page 105.
2. Turn off the server and peripheral devices and disconnect all external cables and power cords; then, remove the cover (see “Removing the cover” on page 42 for details).
3. Push down and back on the heat-sink retainer to remove it from the heat sink.
4. To remove the heat sink, follow the direction on the picture below by pushing the clip toward the front of the chassis and push back on the handle to lift the front of the clip.



If the handle breaks, remove the handle by placing a screw driver in between both sides of the handle as in the picture above, and twist the screw driver to break off the handle to relieve the pressure from the clip to the heat sink, as in the picture below. *put second pic here*



CAUTION:

Exercise extreme caution when removing the heatsink. Be careful not to damage the system board or processor beneath.

Note: Once you remove the heat sink from the microprocessor, you must replace it with a new device.

Pull out and lift up the release lever and remove the microprocessor from the connector. Store the microprocessor in a static-protective bag for possible future use.

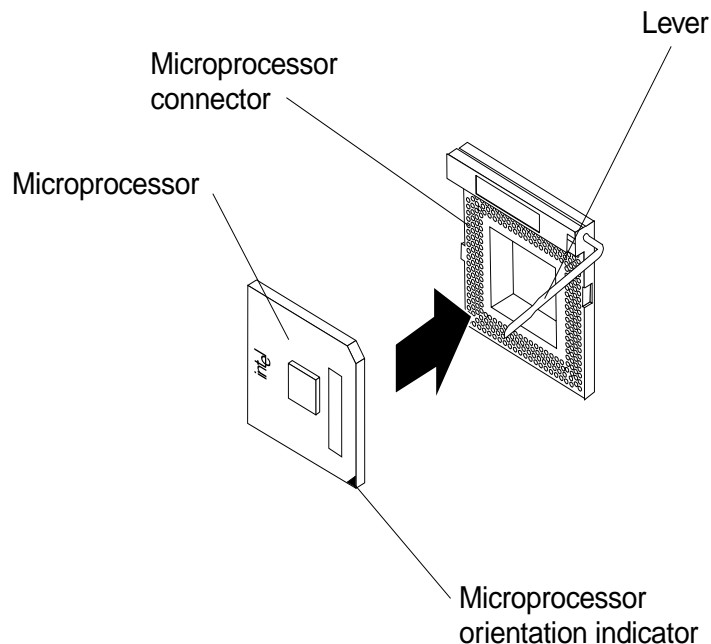
5. If you are installing a new microprocessor, continue with step 4 in “Installing a microprocessor”.

Installing a microprocessor

Complete the following steps to install a microprocessor:

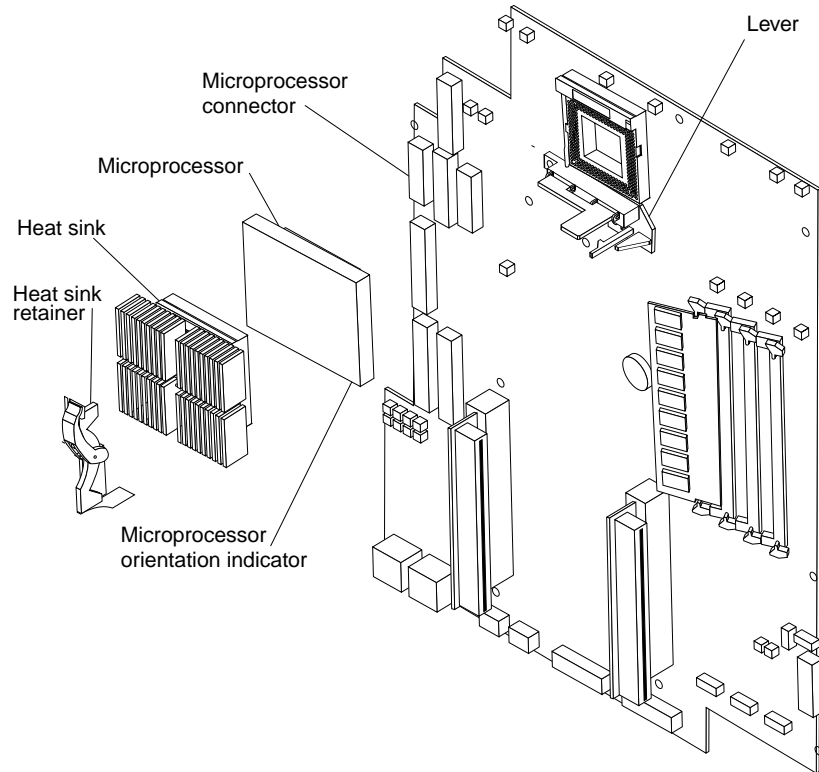
Attention: When you handle ESD-sensitive devices, take precautions to avoid damage from static electricity. For details on handling these devices, refer to IBM Web site <http://www.ibm.com/> and use a search term of ESD.

1. Review the safety precautions listed in “Safety information” on page 105.
2. Turn off the server and peripheral devices and disconnect all external cables and power cords; then, remove the cover (see “Removing the cover” on page 42 for details).
3. Install the microprocessor:
 - a. Touch the static-protective package containing the new microprocessor to any *unpainted* metal surface on the server; then, remove the microprocessor from the package.
 - b. Pull out and lift up on the microprocessor release lever to unlock the microprocessor connector.
 - c. Orient the microprocessor over the microprocessor connector as shown in the following illustration. Carefully press the microprocessor into the connector.



Note: Do not use excessive force when pressing the microprocessor into the connector.

4. Push the microprocessor release lever down to lock the microprocessor into the connector.
5. Install a heat sink.



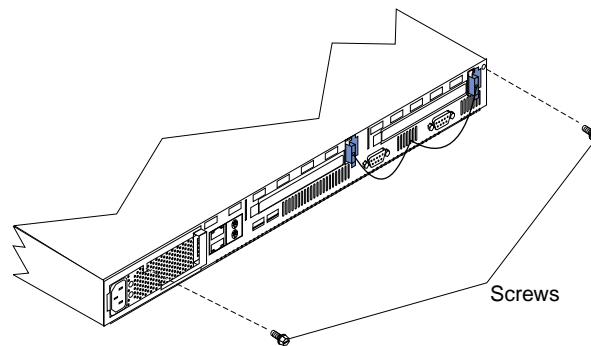
- a. Peel the plastic protective strip off the bottom of the heat sink. Make sure the square of thermal material is still on the bottom of the heat sink; if not, replace the it with a new heat sink.
 - b. Align and place the heat sink on top of the microprocessor.
 - c. Align and push the heat-sink retainer through the groove in the center of the fan sink.
 - d. Insert a small, flat-bladed screwdriver into the tab on the heat-sink retainer.
 - e. Press the screwdriver down to snap the heat-sink retainer into place.
 - f. Connect the heat-sink power cable to the microprocessor heat-sink connector (CPUFA1) on the system board. See “System board internal cable connectors” on page 44 for the location of the microprocessor heat-sink connector.
6. If you have other options to install or remove, do so now; otherwise, replace the cover. See “Installing the cover” on page 57 for instructions on installing the cover.
 7. Reconnect the external cables and power cords; then, turn on the peripheral devices and the server.

Installing the cover

Complete the following steps to install the server cover:

1. Install the cover by placing it into position and sliding it forward. Make sure that the cover engages the tabs at the front and rear of the server.

Attention: Before sliding the cover forward, place the cover over 80% of the box, to ensure that cables are covered, and make sure that all of the tabs on the cover will engage the ledge at the front of the server properly. If all the tabs do not engage the ledge properly, it will be extremely difficult to remove the cover later.



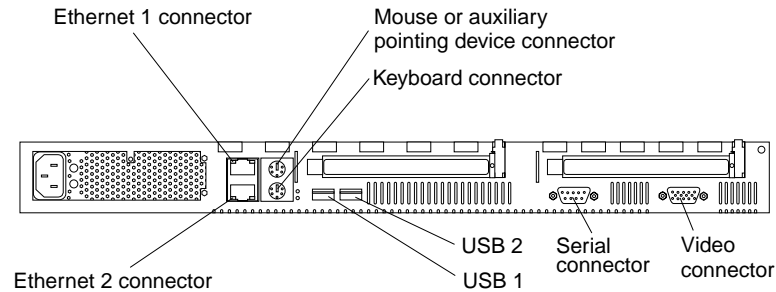
2. Install the screws to secure the cover as shown.
3. Install the server in the rack. See the "Rack installation instructions" included with your server documentation for instructions.
4. Connect the power cord and all external cables to the server, and then plug the power cords into properly grounded electrical outlets. See "Working with cables" on page 58 for connector locations.

Working with cables

There are many different cables that connect to the rear of the server. These include Ethernet, USB, video, pointing device, serial, and power cables. This section describes how to manage these cables.

Notes:

1. Refer to the following illustration to locate the connectors on the back of your server.
2. The illustrations in this document might differ slightly from your hardware.



To effectively manage the cables on this server, keep groups of cables secured together, and do not run cables across the back of the server.

Notes:

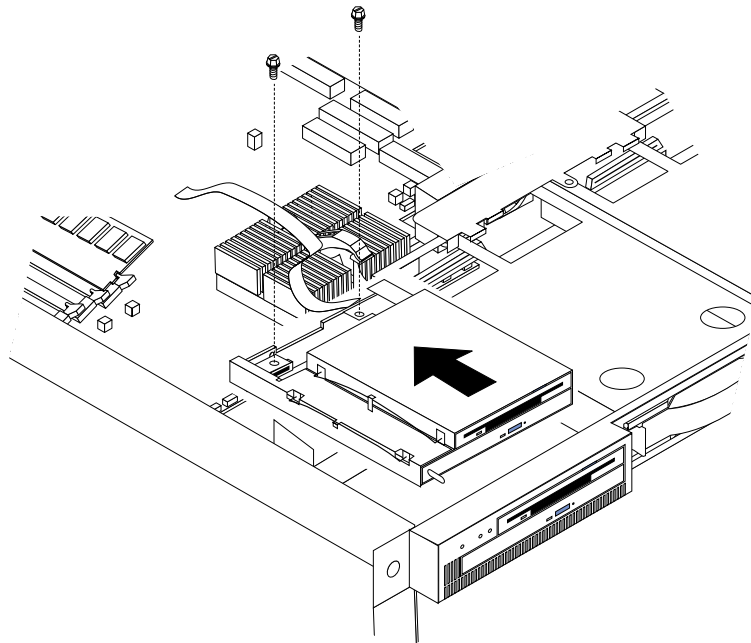
1. Use cable ties to bundle like cables together.
2. Use hook-and-loop straps to secure the cable bundles to the vertical rails of the rack.
3. When possible, separate data and power cables. For more information on cable routing, see the cabling instructions for your xSeries 300 server on the World Wide Web at <http://www.pc.ibm.com/support>.
4. Do not secure cables too tightly. Overtightening can cause internal damage to cables.

Chapter 6. FRU information (service only)

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

Note: Read “Safety information” on page 79 and “Before you begin” on page 40.

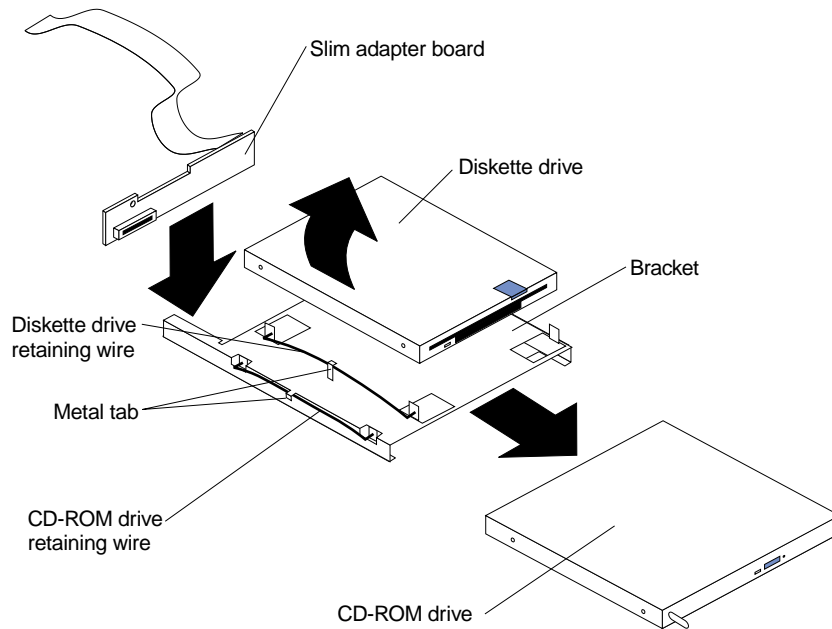
Diskette/CD-ROM drives



To remove the diskette/CD-ROM drive:

1. Power off the server.
2. Remove the cover. See “Removing the cover” on page 42.
3. Disconnect the cables for the floppy disk drive and the CD-ROM drive from the system board.
4. Remove the fans. See “Replacing the fan assembly” on page 51.
5. Remove the screws.
6. Gently pull the CD-ROM/diskette drive subassembly up and back simultaneously to remove it from the system.

Diskette/CD-ROM drive bracket

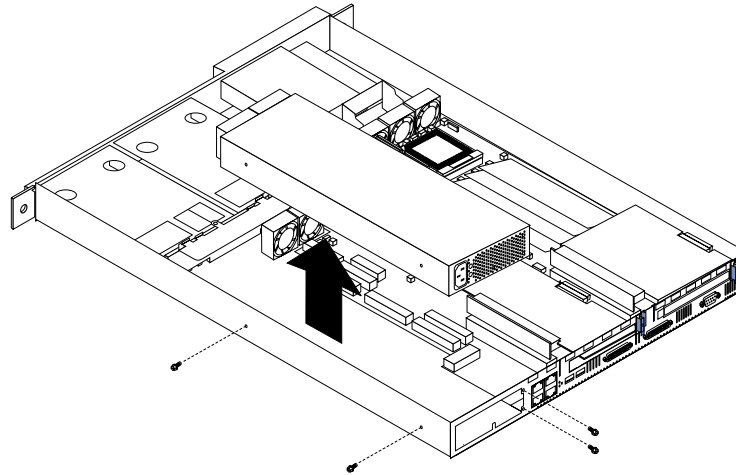


To remove the diskette/CD-ROM drive bracket:

Note: Read “Safety information” on page 79 and “Before you begin” on page 40.

1. Remove the diskette/CD-ROM drive. See “Diskette/CD-ROM drives” on page 59.
2. Remove the diskette drive:
 - a. Remove the diskette drive retaining wire by releasing it from the metal tab and removing it from the holes, and put it in a safe place.
 - b. Lift the diskette drive up on one side until it will separate from the bracket.
 - c. Diskette drive cable:
 - 1) The diskette drive cable is removed by gently pulling the cable up until it is released from the connector.
 - 2) To replace the diskette drive cable, pull up on the connector latch until it is unlocked; then, insert the end of the cable into the connector and gently push down on the connector latch until it clicks into place.
3. Remove the CD-ROM drive:
 - a. Remove the CD-ROM drive retaining wire by releasing it from the metal tab and removing it from the holes, and put it in a safe place.
 - b. Gently loosen the connector of the slim adapter board from the CD-ROM drive connector until it pulls free; slide the slim adapter board down until it clears the notches on the bracket and remove it.
 - c. Slide the bracket toward the rear and remove it.

Power supply



To remove the power supply:

Note: Read “Safety information” on page 79 and “Before you begin” on page 40.

1. Power off the server.
2. Remove the cover. See “Removing the cover” on page 42.
3. Disconnect the cables that connect the power supply to the system board.
4. Remove the screws (2) from the side of the chassis.
5. Remove the screws at the back of the chassis and power supply.
6. Slide the power supply away from the side of the chassis and lift up to remove.

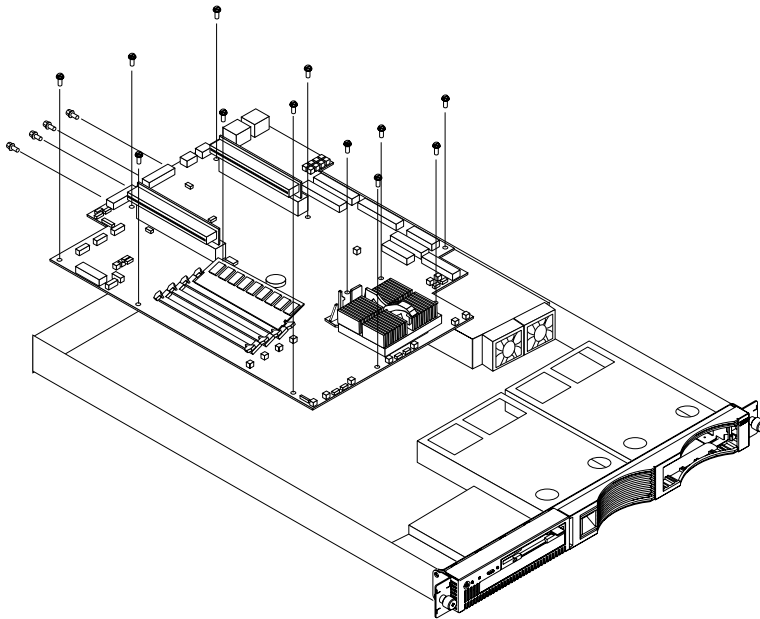
PCI riser card

To remove the PCI riser card:

Note: Read “Safety information” on page 79 and “Before you begin” on page 40.

1. Power off the server.
2. Remove the cover. See “Removing the cover” on page 42.
3. Remove any adapters and put them in a safe place.
4. Disconnect cables.
5. Gently lift up on the card to disconnect it from the system board port.

System board



To remove the system board:

Note: Read “Safety information” on page 79 and “Before you begin” on page 40.

1. Power off the server.
2. Remove the cover. See “Removing the cover” on page 42.
3. Disconnect all cables from the system board.
4. Remove the adapter retaining latch (see “Removing a microprocessor” on page 53).
5. Remove the microprocessors. See “Removing a microprocessor” on page 53.
6. Remove the memory modules. See “Installing DIMMs” on page 49.
7. Remove screws from the system board.
8. Remove the four screws from the rear of the server.
9. Pull up on the system board to remove from the chassis.

Chapter 7. Symptom-to-FRU index

This index supports xSeries 300 server. The Symptom-to-FRU lists symptoms, errors, and the possible causes. The most likely cause is listed first. Use this Symptom-to-FRU index to help you decide which FRUs to have available when servicing the computer.

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

Beep symptoms

Currently there are two kinds of beep codes in BIOS. This code indicates that a video error has occurred and the BIOS cannot initialize the video screen to display any additional information. This beep code consists of a single long beep followed by two short beeps. The other code indicates that your DRAM error has occurred. This beep code consists of a single long repeating beep.

No beep symptoms

No Beep Symptom	FRU/Action
No beep and the system operates correctly.	<ol style="list-style-type: none">1. Check speaker cables2. Speaker3. System board
No Beeps occur after successfully completing POST	<ol style="list-style-type: none">1. Check speaker connections2. Speaker3. System board
No ac power	<ol style="list-style-type: none">1. Check the power cord.2. Power supply.
No beep and no video	<ol style="list-style-type: none">1. See "Undetermined problems" on page 70

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)	<ol style="list-style-type: none">1. System Board

Error Code/Symptom	FRU/Action
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. Video Adapter (if installed) 2. System Board
011-XXX-000 (Failed COM1 Serial Port test)	1. System Board
011-XXX-001 (Failed COM2 Serial Port test)	1. System Board
014-XXX-000 (Failed Parallel Port test)	1. System Board
015-XXX-001 (USB interface not found, board damaged)	1. System Board
015-XXX-015 (Failed USB External Loopback test)	1. Make sure parallel port is not disabled 2. Re-run USB External Loopback test 3. System Board
015-XXX-198 (USB device connected during USB test)	1. Remove USB devices from USB1 and USB2 2. Re-run test 3. System Board
020-XXX-000 (Failed PCI Interface test)	1. System Board
030-XXX-000 (Failed Internal SCSI interface test)	1. System Board
030-XXX-00N (Failed SCSI test on PCI slot N. Check system error log before replacing a FRU.)	1. Adapter in Slot N
035-XXX-099	1. No adapters were found. 2. If adapter is installed re-check connection.

Error Code/Symptom	FRU/Action
035-XXX-S99 (Failed RAID test on PCI slot S. S = number of failing PCI slot. Check System Error Log before replacing a FRU.)	<ol style="list-style-type: none"> 1. Adapter 2. SCSI Backplane 3. Cable
035-XXX-SNN (Check System Error Log before replacing a FRU. S = number of failing PCI slot; NN = SCSI ID of failing fixed disk.)	<ol style="list-style-type: none"> 1. Fixed Disk with SCSI ID NN on RAID adapter in PCI slot S.
035-253-S99 (RAID adapter initialization failure)	<ol style="list-style-type: none"> 1. ServeRAID Adapter in slot S is not configured properly. Obtain the basic and extended configuration status and refer to the ServeRAID Hardware Maintenance Manual for more information. 2. Cable 3. Adapter
075-XXX-000 (Failed Power Supply test)	<ol style="list-style-type: none"> 1. Power Supply
089-XXX-001 (Failed Microprocessor test)	<ol style="list-style-type: none"> 1. Microprocessor
180-XXX-003 (Failed System Board LED test)	<ol style="list-style-type: none"> 1. System Board
201-XXX-0NN (Failed Memory test) NN = DIMM location.	<ol style="list-style-type: none"> 1. DIMM Location J1-J4 2. Memory card
201-XXX-999 (Multiple DIMM failure, see error text.)	<ol style="list-style-type: none"> 1. See error text for failing DIMMs
202-XXX-001 (Failed System Cache test)	<ol style="list-style-type: none"> 1. Microprocessor CPU 1
206-XXX-000 (Failed Diskette Drive test)	<ol style="list-style-type: none"> 1. Cable 2. Diskette Drive 3. System Board
215-XXX-000 (Failed IDE CD-ROM test)	<ol style="list-style-type: none"> 1. CD-ROM Drive Cables 2. CD-ROM Drive 3. System Board

Error Code/Symptom	FRU/Action
<p>217-XXX-000</p> <p>(Failed BIOS Fixed Disk test)</p> <p>Note: If RAID is configured, the fixed disk number refers to the RAID logical array.</p>	<p>1. Fixed Disk 1</p>
<p>217-XXX-001</p> <p>(Failed BIOS Fixed Disk test)</p> <p>Note: If RAID is configured, the fixed disk number refers to the RAID logical array.</p>	<p>1. Fixed Disk 2</p>
<p>217-XXX-002</p> <p>(Failed BIOS Fixed Disk test)</p> <p>Note: If RAID is configured, the fixed disk number refers to the RAID logical array.</p>	<p>1. Fixed Disk 3</p>
<p>264-XXX-0NN</p> <p>(NN = SCSI ID of failing Tape Drive)</p>	<p>1. Tape Cartridge, if user executed the Read/Write Tape Drive test (XXX = 256)</p> <p>2. SCSI or power cable connected to the tape drive with SCSI ID NN</p> <p>3. Tape drive with SCSI ID NN – refer to Help and Service Information appendix of tape drive's User Guide.</p> <p>4. I/O Legacy Board or SCSI Controller – run SCSI Controller diagnostic to determine of SCSI bus is functioning properly.</p>
<p>264-XXX-999</p> <p>(Errors on multiple tape drives, see error text for more info)</p>	<p>1. See error messages/text in the PC Doctor error log for detailed information on each individual tape drive error.</p>
<p>301-XXX-000</p> <p>(Failed Keyboard test)</p>	<p>1. Keyboard</p>
<p>405-XXX-000</p> <p>(Failed Ethernet test on controller on the System Board)</p>	<p>1. Verify that Ethernet is not disabled in BIOS.</p> <p>2. System Board</p>
<p>405-XXX-00N</p> <p>(Failed Ethernet test on adapter in PCI slot N)</p>	<p>1. Adapter in PCI slot N.</p> <p>2. System Board</p>
<p>415-XXX-000</p> <p>(Failed Modem test)</p>	<p>1. Cable</p> <p>2. Modem</p> <p>3. System Board</p>

Error symptoms

General	FRU/Action
CD is not working properly.	<ol style="list-style-type: none"> 1. Clean the CD. 2. Run CD-ROM diagnostics. 3. CD-ROM Drive
CD-ROM drive tray is not working. (The server must be powered-on.)	<ol style="list-style-type: none"> 1. Insert the end of a paper clip into the manual tray-release opening. 2. Run CD-ROM diagnostics. 3. CD-ROM Drive
CD-ROM drive is not recognized.	<ol style="list-style-type: none"> 1. Run Configuration/Setup, enable primary IDE channel. 2. Check cables and jumpers. 3. Check for correct device driver. 4. Run CD-ROM diagnostics. 5. CD-ROM drive 6. System Board
Power switch does not work.	<ol style="list-style-type: none"> 1. Verify that switch number 5 of switch block is Off. 2. Power Switch Assembly 3. System Board
CD-ROM drive cable is not plugged in.	<ol style="list-style-type: none"> 1. Make sure CD-ROM drive cable is plugged in.
Diskette drive in-use light stays on, or the system bypasses the diskette drive, or the diskette drive does not work.	<ol style="list-style-type: none"> 1. If there is a diskette in the drive, verify that: <ol style="list-style-type: none"> a. The diskette drive is enabled in the Configuration/Setup utility program. b. The diskette is good and not damaged. (Try another diskette if you have one.) c. The diskette is inserted correctly in the drive. d. The diskette contains the necessary files to start the server. e. The software program is OK. f. Cable is installed correctly (proper orientation) 2. Run Diskette Drive Diagnostics. 3. Cable 4. Diskette Drive 5. System Board
Drives not recognized by Fixed Disk diagnostic. e.g. there are 6 drives, but the fixed-disk test only shows 3	<ol style="list-style-type: none"> 1. Remove the first drive that doesn't show up and rerun the Fixed Disk diagnostic. If the remaining drives then show up, replace the drive you removed.
Hang during Fixed Disk diagnostic	<ol style="list-style-type: none"> 1. Remove the hard file being tested at the time of the hang. Rerun the diagnostic. If successful, replace the drive you removed.

General	FRU/Action
Monitor problems (general). Some IBM monitors have their own self-tests. If you suspect a problem with the monitor, refer to the information that comes with the monitor for adjusting and testing instructions.	<ol style="list-style-type: none"> 1. Monitor 2. Run Video Diagnostics. If diagnostics pass, the problem may be a video driver. 3. Display Adapter / System Board
System Error and DIMM X LED on	<ol style="list-style-type: none"> 1. Replace DIMM X
System Error and CPU X LED on	<ol style="list-style-type: none"> 1. Replace CPU X
System is shut down with no apparent cause	<ol style="list-style-type: none"> 1. Visually check the system fans for operation.

Setup	Action
<i>Setup and Installation CD</i> won't start.	<ul style="list-style-type: none"> • Be sure the server is supported; all eServers with a startable (bootable) CD-ROM drive are supported. • If the startup (boot) sequence settings have been altered, be sure the CD-ROM is first in the boot sequence. • If more than one CD-ROM drive is installed, be sure that only one drive is set as the primary drive. Start the CD from the primary drive.
ServeRAID program cannot view all installed drives - or - cannot install NOS.	<ul style="list-style-type: none"> • Be sure there are no duplicate SCSI IDs or IRQ assignments. • Be sure that the hard disk drive is connected properly.
The <i>Operating System Installation</i> program continuously loops.	Free up more space on the hard disk.
ServerGuide won't start <i>your</i> NOS CD.	Be sure the NOS CD you have is supported by ServerGuide. See the <i>Setup and Installation CD</i> label for a list of NOS versions supported.
Can't install NOS - option is grayed out.	Either there is no logical drive defined (ServeRAID systems) or the ServerGuide system partition is not present. Run the setup and configuration program.

Setup	Action
<i>Setup and Installation CD</i> won't start.	<ul style="list-style-type: none"> • Be sure the server is supported; all eServers with a startable (bootable) CD-ROM drive are supported. • If the startup (boot) sequence settings have been altered, be sure the CD-ROM is first in the boot sequence. • If more than one CD-ROM drive is installed, be sure that only one drive is set as the primary drive. Start the CD from the primary drive.
ServeRAID program cannot view all installed drives - or - cannot install NOS.	<ul style="list-style-type: none"> • Be sure there are no duplicate SCSI IDs or IRQ assignments. • Be sure that the hard disk drive is connected properly.
The <i>Operating System Installation</i> program continuously loops.	Free up more space on the hard disk.

Setup	Action
ServerGuide won't start <i>your</i> NOS CD.	Be sure the NOS CD you have is supported by ServerGuide. See the <i>Setup and Installation</i> CD label for a list of NOS versions supported.
Can't install NOS - option is grayed out.	Either there is no logical drive defined (ServeRAID systems) or the ServerGuide system partition is not present. Run the setup and configuration program.

TechConnect CD	Action
Can't start TechConnect CD.	Be sure you're starting the CD on a system with Microsoft Windows installed.
Can't view publications from TechConnect CD, or text is unreadable.	Be sure you have the Adobe reader installed (available from the TechConnect CD).

Diskette Factory CD	Action
Get "time out" or "Unknown host" errors	Be sure you have access to the Internet through FTP directly.

POST error codes

Error Code/Symptom	FRU/Action
CMOS battery has failed	Cause: CMOS battery is no longer functional. Action: Replace CMOS battery.
CMOS checksum error	Cause: Checksum of COMS is incorrect. This can indicate that CMOS has become corrupt. This error may have been caused by a weak battery. Action: Check the battery and replace if necessary.
Disk boot failure, insert system disk and press enter	Cause: No boot device was found. This could mean that either a boot drive was not detected or the drive does not contain proper system boot files. Action: Insert a system disk into drive A: and press <Enter>. Make sure the controller is inserted correctly and all cables are properly attached. Also be sure the disk is formatted as a boot device. Then reboot the system.
Diskette drives or types mismatch error	Cause: Type of diskette drive installed in the system is different from the CMOS definition. Action: Run Setup to reconfigure the drive type correctly.
Display switch is set incorrectly	Cause: Display switch on the motherboard can be set to either monochrome or color. This indicates the switch is set to a different setting than indicated in setup. Action: Determine which setting is correct, and then either turn off the system and change the jumper, or enter setup and change the video selection.
Display type has changed since last boot	Cause: Since last powering off the system, the display adapter has been changed. Action: Configure the system for the new display type.
EISA configuration checksum error	Cause: The EISA non-volatile RAM checksum is incorrect or can not correctly read the EIS slot. This can indicate either the EISA non-volatile memory has become corrupt or the slot has been configured incorrectly. Ensure the card is installed firmly in the slot. Action: Run EISA configuration utility.
EISA configuration is not complete	Cause: The slot configuration information stored in the EISA non-volatile memory is incomplete. Action: Run EISA configuration utility.
Error encountered initializing hard drive	Cause: Hard drive cannot be initialized. Action: Ensure adapter is installed correctly and all cables are correctly and firmly attached. Ensure the correct hard drive type is selected in setup.

Error Code/Symptom	FRU/Action
Error initializing hard disk controller	Cause: Cannot initialize controller. Action: Ensure the cable is correctly and firmly installed in the bus. Ensure the correct hard drive type is selected in setup. Check to see if any jumper needs to be set correctly on the hard drive.
Floppy disk cntrlr error or no cntrlr present	Cause: Can not find or initialize the floppy disk controller. Action: Make sure the controller is installed correctly and firmly. If there are no floppy drives installed, be sure the diskette drive selection in setup is set to None.
Invalid EISA configuration	Cause: The non-volatile memory containing EIS configuration information was programmed incorrectly or has become corrupt. Action: Re-run EIS configuration utility to correctly program the memory.
Keyboard error or no keyboard present	Cause: Cannot initialize the keyboard. Action: Make sure the keyboard is attached correctly and no keys are being pressed during the boot. If configuring the system without a keyboard, set the error halt condition in setup to HALT ON ALL BUT KEYBOARD. This will cause the BIOS to ignore the missing keyboard and continue the boot.
Memory address error at ...	Cause: Memory address error at specific location. Action: Use this location along with the memory map for the system to find and replace the failed memory DIMM.
Memory parity error at ...	Cause: Memory parity error at a specific location. Action: Use this location along with the memory map for the system to find and replace the failed memory DIMM.
Memory size has changed since last boot	Cause: Memory has been added or removed since the last boot. Action: In EISA mode, use configuration utility to reconfigure the memory. In ISA mode, enter setup and enter the new memory size in the memory fields.
Memory verify error at ...	Cause: Error verifying a value already written to memory. Action: Use the location along with your system memory map to locate and replace the defective DIMM.
Offending address not found	Cause: This message is used in conjunction with the I/O channel check and RAM PARITY error message when the segment that has caused the problem cannot be isolated.
Press a key to reboot	Cause: An error has occurred that requires a reboot. Action: Press any key.
Press F1 to disable NMI, F2 to reboot	Cause: BIOS detected a non-maskable interrupt condition during boot. Action: Press F1 to disable NMI or F2 to reboot the system with NMI enabled.
RAM parity error - checking for segment...	Cause: Parity error in Random Access Memory.
Should be empty but EIS board found	Cause: A valid board ID was found in a slot that was configured as having no board ID. Action: Run EISA configuration utility.

ServeRAID

For ServeRAID error codes and procedures, refer to the Hardware Maintenance Manual for the particular RAID adapter in the system being serviced.

Undetermined problems

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

Note: A corrupt CMOS can cause undetermined problems.

If power problems are suspected:

1. Power-off the computer.
2. Be sure the system is cabled correctly.
3. Remove or disconnect the following (one at a time) until you find the failure (power-on the computer and reconfigure each time).

- Any external devices
- Surge suppressor device (on the computer)
- Modem, printer, mouse, or non-IBM devices
- Each adapter
- Drives
- Memory Modules (Minimum requirement = one 128 MB DIMM)

Note: Minimum operating requirements are:

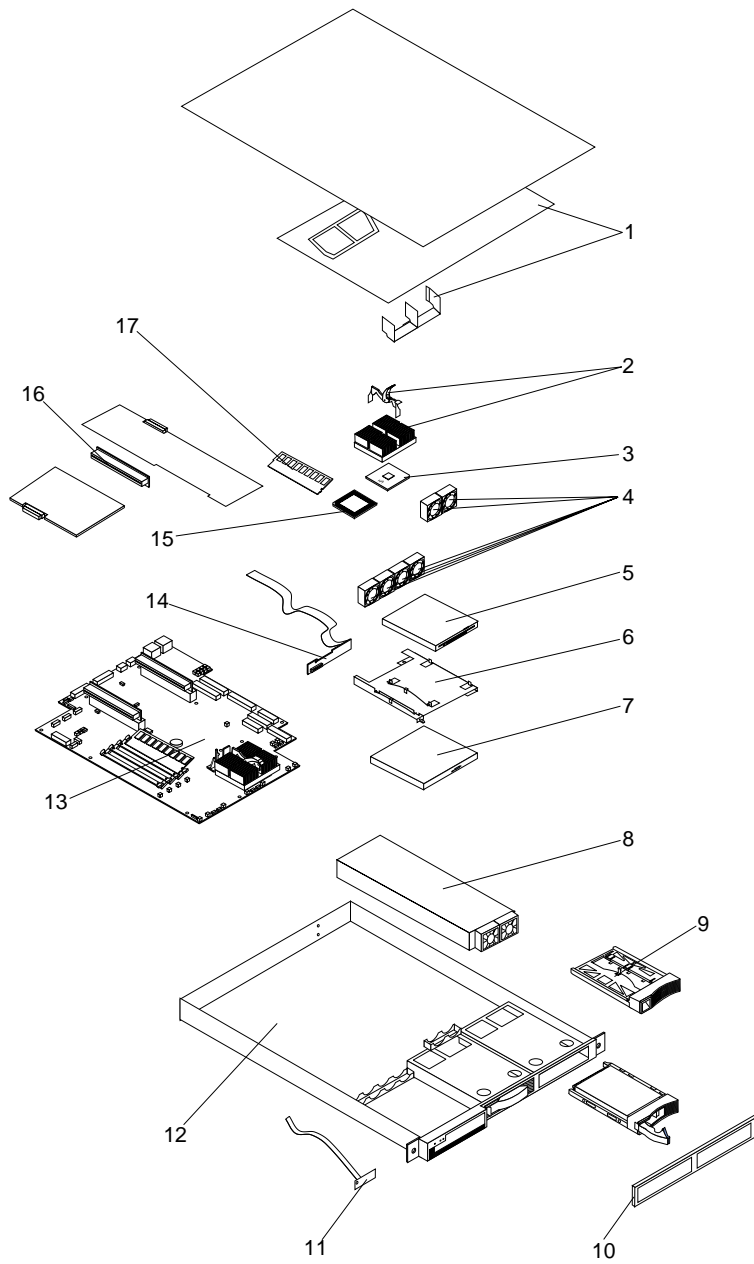
- a. 1 Power Supply
 - b. System Board
 - c. 1 Microprocessor
 - d. 1 Terminator Card in Slot 2
 - e. 1 Memory Module (minimum of 1 DIMM in slot labeled DIMM 1)
4. Power-on the computer. If the problem remains, suspect the following FRUs in the order listed:
- Power Supply
System Board

Notes:

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

Chapter 8. Parts listing

The xSeries 300 Parts Listing supports the following models: 21x, 22x, 23x, 81x, 82x, 83x



Index	System Part (Model Number)	FRU Number
1	Bracket/Baffle (All Models)	00N6993
2	Heat Sink/Clip Assembly (All Models)	00N6987
3	Terminator Card (all models)	09N8007
4	Fan with Connector (All Models)	00N6991
5	3.5 Floppy Disk Drive, 12.7MM (All Models)	36L8645
6	Floppy Disk Drive/CD Bracket (All Models)	00N6999
7	CD-ROM drive, 24X LG (All Models)	09N0883
8	Power Supply, 200 Watt (All Models)	00N7711
9	Blank Hard Disk Drive (All Models)	06P6245
10	Bezel, Right Front (All Models)	24P0651
11	Switch card (all models)	09N7225
12	Chassis (All Models)	00N6990
13	Planar (All Models)	25P4493
14	Slim Adapter Board (All Models)	19K1351
15	800/133 MHz Processor (models 21X, 22X, 23X)	25P4418
15	1000/133 MHz Processor (models 81X, 82X, 83X)	24P1621
16	PCI Riser Card (All Models)	24P0646
17	Memory, 256MB/133MHz ECC (All Models)	33L3145
17	Memory, 128MB 133MHz ECC (All Models) (optional)	33L3143
	Hardware Kit (All Models)	00N6997
	Rail Assembly (All Models)	00N6994
	External Interface Adapter Bracket (All Models)	00N6995
	Cable, CD-Power (All Models)	00N6989
	Cable, FDD Signal (All Models)	00N6998
	Battery, 3.0 Volt (8590) (All Models)	33F8354
	Line Cord (All Models)	36L8886
	Heatsink clip (all models)	06P6240
	Fan Blank (all models)	24P0637
	Bezel, Left Front (all models)	24P0641
	Service Label (all models)	24P0649
	Cable, SCSI 68-Pin (all models)	06P6237
	Cable, HDD 4-Pin Power (all models)	24P0622
	Cable, IDE Signal (all models)	24P0657
	HDD, 18.2 SCSI (models 23x, 83x)	19K1485
	HDD, 20.0 GB ATA-100 (models 22x, 82x)	19K1565

Keyboards

	Keyboard	FRU No.
	US English	37L2551
	French Canadian	37L2552
	LA Spanish	37L2553
	Arabic	37L2555
	Belgium/French	37L2556
	Belgium/UK	37L2557
	Bulgarian	37L2558
	Czech	37L2559
	Danish	37L2560
	Dutch	37L2561
	French	37L2562
	German	37L2563
	Greek	37L2564
	Hebrew	37L2565
	Hungarian	37L2566
	Korean	02K0901
	Iceland	37L2567
	Italy	37L2568
	Norwegian	37L2569
	Polish	37L2570
	Portuguese	37L2571
	Romanian	37L2572
	Russian	37L2573
	Serbian/Cyrillic	37L2574
	Slavic	37L2575
	Spanish	37L2576
	Swedish/Finn	37L2577
	Swiss, F/G	37L2578
	Turkish	37L2579
	Turkish	37L2580
	UK English	37L2581
	Yugosl/Lat	37L2582
	US English-EMEA	37L2583
	Chinese/US	37L2585
	Thailand	37L2587
	French Canadian	37L0913

Power cords

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

Chapter 9. Related service information

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

Safety information

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

General safety

Follow these rules to ensure general safety:

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

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

- Reinstall all covers correctly before returning the machine to the customer.

Electrical safety



CAUTION:

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

Observe the following rules when working on electrical equipment.

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

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

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

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

- Regularly inspect and maintain your electrical hand tools for safe operational condition.
- Do not use worn or broken tools and testers.
- *Never assume* that power has been disconnected from a circuit. First, *check* that it has been powered-off.
- Always look carefully for possible hazards in your work area. Examples of these hazards are moist floors, nongrounded power extension cables, power surges, and missing safety grounds.
- Do not touch live electrical circuits with the reflective surface of a plastic dental mirror. The surface is conductive; such touching can cause personal injury and machine damage.
- Do not service the following parts with the power on when they are removed from their normal operating places in a machine:
 - Power supply units
 - Pumps
 - Blowers and fans
 - Motor generatorsand 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.

Safety notices (multi-lingual translations)

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

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

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

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

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

- Statement 1



DANGER

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

To avoid a shock hazard:

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

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

To Connect	To Disconnect
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.**

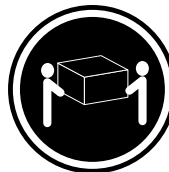


DANGER

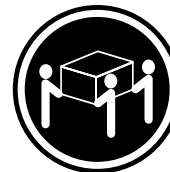
Some laser products contain an embedded Class 3A or Class 3B laser diode. Note the following:

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

- Statement 4



≥18 kg (37 lbs)



≥32 kg (70.5 lbs)



≥55 kg (121.2 lbs)

CAUTION:

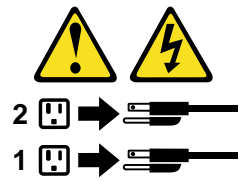
Use safe practices when lifting.

- Statement 5



CAUTION:

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



- Statement 10



CAUTION:

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



Importante:

Todas as instruções de cuidado e perigo da *Server 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:
<ol style="list-style-type: none"> 1. DESLIGUE Tudo. 2. Primeiramente, conecte todos os cabos aos dispositivos. 3. Conecte os cabos de sinal aos conectores. 4. Conecte os cabos de alimentação às tomadas. 5. LIGUE os dispositivos. 	<ol style="list-style-type: none"> 1. DESLIGUE Tudo. 2. Primeiramente, remova os cabos de alimentação das tomadas. 3. Remova os cabos de sinal dos conectores. 4. Remova todos os cabos dos dispositivos.

Instrução 2



CUIDADO:

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

Não:

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

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

Instrução 3



PRECAUCIÓN:

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

- Não remova as tampas. A remoção das tampas de um produto a laser pode resultar em exposição prejudicial à radiação de laser. Nenhuma peça localizada no interior do dispositivo pode ser consertada.

- A utilização de controles ou ajustes ou a execução de procedimentos diferentes dos especificados aqui pode resultar em exposição prejudicial à radiação.

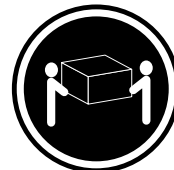


PERIGO

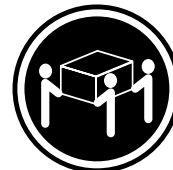
Alguns produtos a laser contêm um diodo laser da Classe 3A ou Classe 3B embutido. Observe o seguinte:

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

Instrução 4



≥18 kg (37 lbs)



≥32 kg (70,5 lbs)



≥55 kg (121,2 lbs)

CUIDADO:

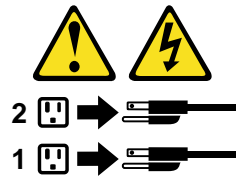
Ao levantar a máquina, faça-o com segurança.

Instrução 5



CUIDADO:

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

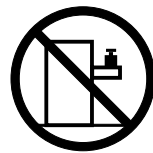


CUIDADO:

Instrução 10



CUIDADO:



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

重要:

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

例如，如果一个提醒条款前的数字为 1，则本部分中相应的译文也带有标号 1。

在执行任何指示的操作之前，请确保您已经阅读了全部提醒和危险条款。

声明 1



危险

电源、电话和通信电缆中带有危险电流。

为避免电击：

雷电期间不要拆接电缆或安装、维修及重新配置本产品。

将所有电源线连接至正确布线并已安全接地的电源插座上。

将与本产品连接的所有设备连接至正确布线的插座上。

尽量只使用单手拆接信号电缆。

有水、火及结构损坏迹象时，请勿打开任何设备。

除非在安装配置过程中有明确指示，否则，打开设备机盖前应先断开与电源线、远程通信系统、网络和调制解调器的所有连接。

安装、移动或打开本产品及其附带设备的机盖时，应按下表所述连接和断开电缆。

连接时：

1. 关闭所有设备。
2. 首先将所有电缆连接至设备。
3. 将信号电缆连接至接口。
4. 将电源线连接至插座。

断开连接时：

1. 关闭所有设备。
2. 首先从插座中拔出电源线。
3. 从接口上拔下信号电缆。

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：
扔入或浸入水中
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致激光辐射的危险。



危险

某些激光产品中包含内嵌的 3A 级或 3B 级激光二极管。请注意以下事项。
打开时会产生激光辐射。不要直视光束，不要使用光学仪器直接观看光束，避免直接暴露于光束之下。

声明 4



≥18 kg (37 磅)



≥32 kg (70.5 磅)



≥55 kg (121.2 磅)

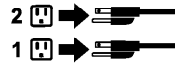
警告：
抬起时请采用安全操作方法。

声明 5



警告：

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



声明 6



警告：

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

声明 7



警告:

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

声明 8



警告:

不要拆除电源外盖或贴有下列标签的任何部件。



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

声明 9



警告:

为避免人员伤害，拆除设备上的风扇前应拨下热插拔风扇电缆。

声明 10



警告:

机柜安装的设备上面不能放置重于 82kg (180 磅) 的物品。



> 82 kg (180 磅)

声明 11



警告:

下面的标签表明附近有锋利的边、角或接头。



声明 12



警告:

下面的标签表明附近有高热表面。



重要資訊：

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

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

執行任何指示之前，請詳讀所有「注意」及「危險」的聲明。

聲明 1



危險

電源、電話及通信電纜上所產生的電流均有危險性。

欲避免電擊危險：

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

連接：

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

切斷：

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

聲明 2



注意：

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

請勿將電池：

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

請遵照當地法令規章處理廢棄電池。

聲明 3



注意：

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

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



危險

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

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

聲明 4



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

注意：

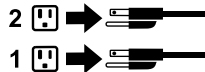
抬起裝置時，請注意安全設施。

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 *Server* 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.	1. Mettez les unités hors tension.
2. Commencez par brancher tous les cordons sur les unités.	2. Débranchez les cordons d'alimentation des prises.
3. Branchez les câbles d'interface sur des connecteurs.	3. Débranchez les câbles d'interface des connecteurs.
4. Branchez les cordons d'alimentation sur des prises.	4. Débranchez tous les câbles des unités.
5. Mettez les unités sous tension.	



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.

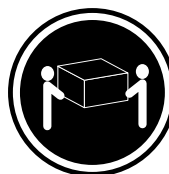


DANGER

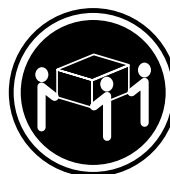
Certains produits laser contiennent une diode laser de classe 3A ou 3B. Prenez connaissance des informations suivantes:

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.

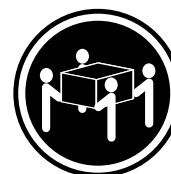
Notice n° 4



≥18 kg



≥32 kg



≥55 kg

ATTENTION:

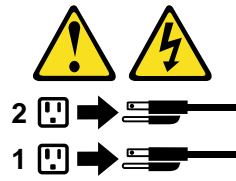
Faites-vous aider pour soulever ce produit.

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 anschließen:	Kabel lösen:
1. Alle Geräte ausschalten und Netzstecker ziehen.	1. Alle Geräte ausschalten.
2. Zuerst alle Kabel an Einheiten anschließen.	2. Zuerst Netzstecker von Steckdose lösen.
3. Signalkabel an Anschlußbuchsen anschließen.	3. Signalkabel von Anschlußbuchsen lösen.
4. Netzstecker an Steckdose anschließen.	4. Alle Kabel von Einheiten lösen.
5. Gerät einschalten.	

Hinweis 2



ACHTUNG:

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

Die Batterie nicht:

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

Die örtlichen Bestimmungen für die Entsorgung von Sondermüll beachten.

Hinweis 3



ACHTUNG:

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

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

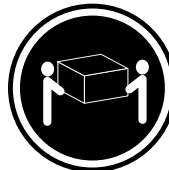


VORSICHT

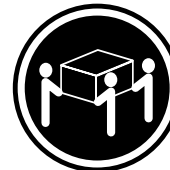
Manche CD-ROM-Laufwerke enthalten eine eingebaute Laserdiode der Klasse 3A oder 3B. Die nachfolgend aufgeführten Punkte beachten.

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

Hinweis 4



≥18 kg



≥32 kg



≥55 kg

ACHTUNG:

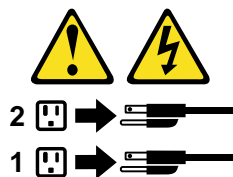
Beim Anheben der Maschine die vorgeschriebenen Sicherheitsbestimmungen beachten.

Hinweis 5



ACHTUNG:

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



Hinweis 10



ACHTUNG:



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

Importante:

Tutti gli avvisi di attenzione e di pericolo riportati nella pubblicazione *Server 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.	1. SPEGNERE tutti i dispositivi.
2. Collegare prima tutti i cavi alle unità.	2. Rimuovere prima i cavi di alimentazione dalle prese elettriche.
3. Collegare i cavi di segnale ai connettori.	3. Rimuovere i cavi di segnale dai connettori.
4. Collegare i cavi di alimentazione alle prese elettriche.	4. Rimuovere tutti i cavi dalle unità.
5. ACCENDERE le 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.

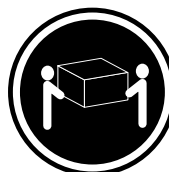


PERICOLO

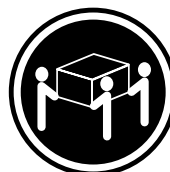
Alcuni prodotti laser contengono all'interno un diodo laser di Classe 3A o Classe 3B. Prestare attenzione a quanto segue:

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

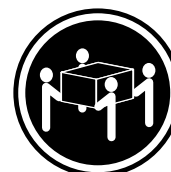
Avviso 4



≥ 18 kg



≥ 32 kg



≥ 55 kg

ATTENZIONE:

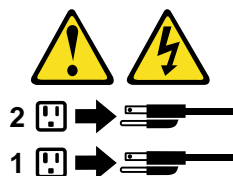
Durante il sollevamento della macchina seguire delle norme di sicurezza.

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

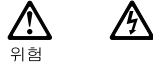


ATTENZIONE:



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:

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

연결을 끊으려면:

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

경고문 2



주의:

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

다음은 주의하십시오.

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

지역 법령이나 규정의 요구에 따라 배터리를 처분하십시오.

경고문 3



주의:

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

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

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



위험

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

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

경고문 4



≥18 kg (37 lbs)



≥ 32 kg (70.5 lbs)



≥ 55 kg (121.2 lbs)

주의:

기계를 들 때는 안전하게 들어 올리십시오.

경고문 5



주의:

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



경고문 10



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



>82 kg (180 lbs)

Importante:

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

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

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

Declaración 1



PELIGRO

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

Para evitar una descarga eléctrica:

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

Para la conexi3n	Para la desconexi3n
1. APÁGUELO todo.	1. APÁGUELO todo.
2. En primer lugar, conecte los cables a los dispositivos.	2. En primer lugar, retire cada cable de alimentaci3n de la toma de alimentaci3n.
3. Conecte los cables de se1al a los conectores.	3. Retire los cables de se1al de los conectores.
4. Conecte cada cable de alimentaci3n a la toma de alimentaci3n.	4. Retire los cables de los dispositivos.
5. ENCIENDA el dispositivo.	

Declaraci3n 2



PRECAUCI3N:

Cuando desee sustituir la bater3a de litio, utilice 3nicamente el n3mero de pieza 33F8354 de IBM o cualquier tipo de bater3a equivalente que recomiende el fabricante. Si el sistema tiene un m3dulo que contiene una bater3a de litio, sustit3yalo 3nicamente por el mismo tipo de m3dulo, que ha de estar creado por el mismo fabricante. La bater3a 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

Despr3ndase de la bater3a siguiendo los requisitos que exija el reglamento o la legislaci3n local.

Declaraci3n 3



PRECAUCI3N:

Cuando instale productos l3aser (como, por ejemplo, CD-ROM, unidades DVD, dispositivos de fibra 3ptica o transmisores), tenga en cuenta las advertencias siguientes:

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



PELIGRO

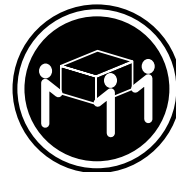
Algunos productos láser contienen un diodo de láser incorporado de Clase 3A o de Clase 3B. Tenga en cuenta la advertencia siguiente.

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

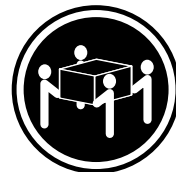
Declaración 4



≥18 kg (37 libras)



≥32 kg (70,5 libras)



≥55 kg (121,2 libras)

PRECAUCIÓN:

Tome medidas de seguridad al levantar el producto.

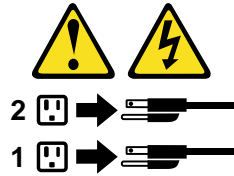
Declaración 5



PRECAUCIÓN:

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

eliminar la corriente eléctrica del dispositivo, asegúrese de desconectar todos los cables de alimentación de la fuente de alimentación.



Declaración 10



PRECAUCIÓN:



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

Send us your comments!

We want to know your opinion about this manual (part number 06P1796). Your input will help us to improve our publications.

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

Name: _____

Phone number: _____

1. Do you like this manual?

Yes No

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

3. What is your service experience level?

Less than five years

More than five years

4. Which servers do you service most?

Thank you for your response!

Problem determination tips

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

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

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

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

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

Notices

References in this publication to IBM products, programs, or services do not imply that IBM intends to make these available in all countries in which IBM operates. Any reference to an IBM product, program, or service is not intended to state or imply that only that IBM product, program, or service may be used. Subject to IBM's valid intellectual property or other legally protectable rights, any functionally equivalent product, program, or service may be used instead of the IBM product, program, or service. The evaluation and verification of operation in conjunction with other

products, except those expressly designated by IBM, are the responsibility of the user.

Trademarks

The following items are trademarks of the IBM Corporation in the United States or other countries or both:

HelpCenter	HelpFax
IBM	OS/2
NetBAY3	Netfinity
Netfinity Manager	ThinkPad
SystemXtra	

The following terms are trademarks of other companies:

Notes	Lotus Development Corporation
-------	-------------------------------

MMX and Pentium are trademarks or registered trademarks of Intel Corporation.

UNIX is a trademark or registered trademark of The Open Group in the United States and other countries.

Windows NT is a trademark or registered trademark of Microsoft Corporation.



Part Number: 24P2924

File Number:



Printed in the United States of America
on recycled paper containing 10%
recovered post-consumer fiber.

24P2924

