IBM Netfinity Servers   S09N-1017-00

IBM Netfinity 3500-M10 - Type 8655
Models 11Y, 12Y, 21Y, 22Y, 31Y, 32Y

Hardware Maintenance Manual

August 1999

We Want Your Comments!
(Please see page 235)

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IBM

About This Manual

This manual contains diagnostic information, a Symptom-to-FRU Index, service information, error codes, error messages, and configuration information for the Netfinity 3500-M10 - Type 8655.

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 사용됩
니다.

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 읽
도록 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) or the IBM PC
Company BBS to download Diagnostic, BIOS Flash, and
Device Driver files.

File download address is:

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

The IBM PC Company BBS can be reached at (919)
517-0001.

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.ibm.com/support/index.html

The IBM PC Company Home Page is:

http://www.pc.ibm.com

Contents

Netfinity 8655 - Type 8655

Important Information

The power line and power control behavior of the
Netfinity 3500 M10 is different from some earlier
server models. Please observe the following:

- When the power cord is first plugged in, the
  server may appear to power on for a few
  seconds, then power off. This is a normal
  sequence to enable the server to self initialize.
- The power switch will normally operate with a
  single touch. However, in some circumstances
  the server may not immediately power off. In this
  case, hold the power switch down for
  approximately 5 seconds. The server will then
  turn off.

The cover should always be **on** when operating your
server. Proper cooling is required for the reliable
performance of internal components.

General Checkout

> **Attention**
>
> The drives in the computer you are servicing might have been rearranged or the drive startup sequence changed. Be extremely careful during write operations such as copying, saving, or formatting. Data or programs can be overwritten if you select an incorrect drive.

Diagnostic error messages appear when a test program finds a problem with a hardware option. For the test programs to properly determine if a test *Passed*, *Failed*, or *Aborted*, the test programs check the error-return code at test completion.

General error messages appear if a problem or conflict is found by an application program, the operating system, or both. For an explanation of these messages, refer to the information supplied with that software package.

> **Notes**
>
> 1. Before replacing any FRUs, ensure the latest level of BIOS is installed on the system. A down-level BIOS might cause false errors and unnecessary replacement of the system board.
> 2. If multiple error codes are displayed, diagnose the first error code displayed.
> 3. If the computer hangs with a POST error, go to "Symptom-to-FRU index" on page 142.
> 4. If the computer hangs and no error is displayed, go to "Undetermined problem" on page 189.
> 5. If an installed device is not recognized by the diagnostics program, that device might be defective.

The power-on default is quick bring-up. To enable Enhanced bring-up, select the **Start Options** in the Configuration/Setup Utility program (see "Start Options" on page 28) then, enable **Power On Status**.

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.

(CONTINUED)

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

Notes

1. For systems that are part of a shared DASD
   cluster, run one test at a time in looped mode.
   Do not run all tests in looped mode, as this could
   enable the DASD diagnostic tests.

2. If multiple error codes are displayed, diagnose
   the first error code displayed.

3. If the computer hangs with a POST error, go to
   the "Symptom-to-FRU index" on page 142.

4. If the computer hangs and no error is displayed,
   go to "Undetermined problem" on page 189.

5. Power Supply problems, see "Power supply" on
   page 59.

6. Safety information, see "Safety Information" on
   page 196.

001

IS THE SYSTEM PART OF A CLUSTER?
Yes   No

> **002**
>
> Go to Step 004.

003

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

004

– Power-off the computer and all external devices.
– Check all cables and power cords.
– Make sure the system board is seated properly.
– Make sure the processor speed setting matches the
  processor installed in the computer.
– Set all display controls to the middle position.
– Insert the IBM PC Enhanced Diagnostics diskette into
  drive A.
– Power-on all external devices.
– Power-on the computer.
– Check for the following response:

   1. Readable instructions or the Main Menu.

> **Note**
>
> The computer is default to come up quiet (No beep and no memory count and checkpoint code display) when no errors are detected by POST.
>
> To enable Beep and memory count and checkpoint code display when a successful POST occurs:
>
> - Enable **Power on Status** in setup. See "Start Options" on page 28.

DID YOU RECEIVE THE CORRECT RESPONSE?
Yes   No

> **005**
>
> If the Power Management feature is enabled, do the following:
>
> 1. Start the Configuration/Setup Utility program (see "Start Options" on page 28)
> 2. Select **Power Management** from the Configuration/Setup Utility program menu.
> 3. Select **APM**
> 4. Be sure **APM BIOS Mode** is set to **Disabled**. If it is not, press Left Arrow (←) or Right Arrow (→) to change the setting.
> 5. Select **Automatic Hardware Power Management**.
> 6. Set **Automatic Hardware Power Management** to **Disabled**.
>
> – or –
>
> Go to the "Symptom-to-FRU index" on page 142.

006

Run the IBM PC Enhanced Diagnostics test. If necessary, refer to "IBM Enhanced Diagnostics" on page 14.

- If you receive an error, replace the part that the diagnostic program calls out or go to "Symptom-to-FRU index" on page 142.
- If the test stops and you cannot continue, replace the last device tested.

Diagnostics

Computer problems can be caused by hardware, software, or user error (for example, pressing the wrong key). The following tools are available to help identify and resolve hardware-related problems.

Power-on self test (POST)

Each time you turn on your computer, a series of tests that check the basic operation of the computer are performed. This series of tests is called *POST*.

Note

If your computer does not start when you press the power switch, do the following:

- Make sure all cables are securely connected to the correct locations.
- Make sure the computer cover is installed properly (pushed all the way on).

If this does not correct the problem, go to "General Checkout" on page 5.

POST does the following:

- Checks basic system-board operations
- Checks the memory operation
- Compares the current system configuration with that established by the Configuration/Setup Utility program
- Starts the video operation
- Verifies that the diskette drives are working
- Verifies that the hard disk drive and the CD-ROM drive are working

If **Power On Self Test** is set to [*Enhanced*], numbers showing the amount of memory being tested appear in the top-left corner of the screen until the total amount of memory in the system is reached. Quick mode is the default mode of operation. Options for running a quick POST or accessing the Configuration/Setup Utility program appear in the lower-left corner of the screen.

Note

The amount of available memory shown might be somewhat less than expected because of basic input/output system (BIOS) shadowing in random access memory (RAM).

If POST finishes without detecting any problems, the first screen of your operating system or application program appears (if you have not set a power-on password). If you have set a power-on password, a password prompt appears. You must enter your password before the first

screen of your operating system or application program will appear. (For further information on using passwords, refer to "Using the Configuration/Setup Utility Program" on page 19.)

If **Power On Status** is *Enabled* and POST detects a problem, you will hear multiple beeps or no beep. In most cases, an error code appears in the top left corner of the screen, and in some cases a description of the error is displayed beside the code. (Note that the screen will sometimes display multiple error codes and descriptions.) For more information about what caused an error message to appear and what action to take, refer to "Solving POST Error Message Problems" on page 53 and "Symptom-to-FRU index" on page 142.

If you hear no beep at all during POST, go to "General Checkout" on page 5.

Types of Error Messages
Error messages that appear on the screen might be text, numeric, or both. There are several types of error messages:

POST error messages: These messages appear when POST finds problems with the hardware during startup or when a change in the hardware configuration is found. POST error messages are 3-, 4-, 5-, 8-, or 12-character alphanumeric messages and include brief explanations (except I999XXXX errors).

For more information about what caused an error message to appear and what action to take, refer to "Solving POST Error Message Problems" on page 53 and "Symptom-to-FRU index" on page 142.

Errors Specific to the Integrated Ethernet
Subsystem: If a failure Ethernet error condition occurs after the Ethernet controller is initialized, an error message appears on the screen. The two most common error types are *RPL-related error messages* and *DHCP-related error messages*. For example:

```
RPL-ROM-ERR: 105  The Integrated
Ethernet failed the loopback test E62:
Cannot initialize controller.
```

If you experience any error related to the integrated Ethernet subsystem, record the error message, and tell your network administrator about the problem.

SCSI error messages: These messages appear if a problem or conflict is detected by the Adaptec SCSI subsystem. Refer to the SCSI documentation that comes with your computer for information about these messages.

Software-generated error messages: These
messages appear if a problem or conflict is detected by
the application program, the operating system, or both.
Error messages for operating-system and other software
problems are generally text messages, but they also can
be numeric messages. For information about these
software error messages, refer to the information that
comes with the operating system or application program,
or both.

Diagnostic error codes and messages:

These codes and messages appear if a hardware problem
is detected by one of the IBM Enhanced Diagnostics test
programs. Along with error codes, the messages present
text information that can be used to identify a failing part.

Error Messages Specific to the Integrated Ethernet Subsystem

> **Note**
>
> The error messages shown in this section are available only with the integrated Ethernet subsystem. These error messages are not available when RPL (remote program load) or DHCP (dynamic host configuration protocol) is used through optional network adapters.

If a failure condition occurs after the Ethernet controller is initialized, an error message appears on the screen. The error messages that can occur are shown below. If you experience any error related to the integrated Ethernet subsystem, record the error message, and tell your network administrator about the problem.

RPL-Related Error Messages: These error messages are specific to the integrated Ethernet controller and the RPL environment of your computer.

The two most common error messages are shown below.

```
RPL-ROM-ERR:
105  The integrated Ethernet failed the loopback test.
RPL-ROM-ERR:
107  Media test failed; check the cable.
```

Error 105 indicates that a power-on diagnostic test performed by the Ethernet module did not execute correctly. If this error message appears, you must have the computer serviced. Error 107 indicates that the cable from the LAN is not securely connected to the Ethernet port on your computer. Check the cable to ensure that it is properly connected.

Other error messages that might occur are shown in the following table.

RPL-ROM-ERR: 100 The integrated Ethernet cannot be found.

RPL-ROM-ERR: 101 The integrated Ethernet was unable to initialize.

RPL-ROM-ERR: 102 The integrated Ethernet could not be reset.

RPL-ROM-ERR: 103 There are multiple Ethernets in the system. Specify the correct serial number in NET.CFG.

RPL-ROM-ERR: 104 The integrated Ethernet EEPROM is faulty or not present.

RPL-ROM-ERR: 106 The integrated Ethernet is configured for Plug and Play in non-Plug and Play system.

RPL-ROM-ERR: 110 The integrated Ethernet RAM failed the memory test.

DHCP-Related Error Messages: Error

messages related to DHCP and the integrated Ethernet
controller are shown in the following table.

E61: Service boot canceled.	M38: Cannot open TFTP connection.
E62: Cannot initialize controller.	M39: Cannot read from TFTP connection.
E63: Cannot initialize controller.	M40: BOOTP canceled by keystroke.
E67: Cannot initialize controller.	M40: DHCP canceled by keystroke.
E6d: Cannot find BOOTP server.	M41: BOOTP timeout.
E6e: Cannot start from downloaded image.	M41: DHCP timeout.
E71: Too many MTFTP packages.	M42: No client or server IP.
M10: ARP canceled by keystroke.	M43: No bootfile name.
M11: ARP timeout.	M44: Cannot ARP redirected BOOTP server.
M20: Cannot copy memory.	M6f: System is locked! Press Ctrl+Alt+Del to restart.
M21: Cannot write to memory.	M90: Cannot initialize controller for multicast.
M22: Cannot write to memory.	M91: MTFTP canceled by keystroke.
M30: Cannot ARP TFTP address.	M92: MTFTP open timeout.
M31: TFTP canceled by keystroke.	M93: Unknown MTFTP opcode.
M32: TFTP open timeout.	M94: MTFTP read canceled by keystroke.
M33: Unknown TFTP opcode.	M95: MTFTP timeout.
M34: TFTP read canceled by keystroke.	M96: Cannot ARP MTFTP address.
M35: TFTP timeout.	M98: Cannot open MTFTP connection.
	M99: Cannot read from MTFTP connection. Txx: <message from TFTP error packet>

> **Note**
>
> An *x* value that follows an error code represents any
> alphanumeric character.

Beep Codes

Audible beep codes are designed as a way to alert the
user of errors detected during POST when error codes
cannot be displayed. Each beep code is represented by a
number sequence. For example, a "2-3-2" error symptom
(a burst of two beeps, three beeps, then two beeps)
indicates a memory module problem. See "Beep
symptoms" on page 143 for a description of each beep
code.

IBM Enhanced Diagnostics

IBM provides programs that you can run to diagnose hardware and some software problems. Several utility programs that provide helpful information about your computer are also included. The user interface for running these diagnostics and utilities is provided by WaterGate Software's PC Doctor.

The IBM Enhanced Diagnostics will isolate your computer hardware from software that was preinstalled (or that you have installed) on your hard disk. The programs run independently of the operating system, and *must be run either from 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-ROM comes with your computer. You can also download the latest image of the diagnostics from the World Wide Web.

To download the latest image of the IBM Enhanced Diagnostics from the World Wide Web and create a bootable Enhanced Diagnostics Diskette:

1. Go to the following World Wide Web page:

   ```
   http://www.pc.ibm.com/support?lang=
   en_US&page=brand&brand=IBM+PC+Server
   ```

2. Download the .EXE file to a hard disk directory (not to a diskette).
3. Go to a DOS prompt and change the directory to where the file was downloaded.
4. Insert a blank high-density diskette in diskette drive A.
5. Key in the following:

   <filename> a:

   filename is the name of the file you downloaded from the Web.

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

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

1. Turn off your computer and any attached devices.
2. Turn on all attached devices; then turn your computer 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. Select **Startup Sequence** from the Start Options menu.
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. Select **Save Settings** and follow the prompts.
10. Place the IBM Enhanced Diagnostics CD in the CD-ROM drive.
11. Select **Exit Setup** and follow the prompts. The diagnostics will load. Follow the instructions on the screen to run the diagnostics.

Important Information

When you finish running diagnostics and utilities, remove the CD from the CD-ROM drive and turn the computer off. You must restore the First Startup Device back to the original setting. Use steps 2 on page 14 through 9 of the above procedure to do this.

To start the IBM Enhanced Diagnostics using the diagnostic diskette, do the following:

1. Turn off your computer and any attached devices.
2. Insert the IBM Enhanced Diagnostics diskette into diskette drive A.
3. Turn on all attached devices; then turn your computer on.
4. Follow the instructions on the screen.

Other Programs on the IBM Enhanced Diagnostics CD and Diskette:

The IBM Enhanced Diagnostics CD and diskette also contain utility programs designed to provide information about your computer hardware and the way it is configured. This information might be useful in helping to isolate problems related to the operating system and device drivers.

Other Diagnostic Programs on the *Ready-to-Configure Utility Program CD*:

The *Ready-to-Configure Utility Program CD* that comes with your computer also contains diagnostic programs designed specifically for certain operating environments (Windows 95 and Windows NT). Because these versions work with the operating system, they not only test the hardware, but also analyze certain software components of your computer. They are especially useful in isolating problems related to the operating system and device drivers.

Installing Files from Option Diskettes

An optional device or adapter might come with a diskette. Diskettes that are included in option packages usually contain files that the system needs for recognizing and activating the options. Until you install the necessary files, the new device or adapter might cause error messages.

If your optional device or adapter comes with a diskette, you might need to install some configuration (.CFG) files or diagnostic files (.EXE or .COM) from the diskette to your hard disk. Refer to the documentation that comes with the option to see if you need to install files.

Features

The following list summarizes the features of the Netfinity 3500-M10 - Type 8655.

Microprocessor

- Intel® Pentium® III microprocessor
- 512 KB L2 cache memory

Memory

- Four 3.3 V, synchronous, 168-pin, dual in-line memory module (DIMM) sockets
- Installed: synchronous dynamic random access memory (SDRAM) error correcting code (ECC), 100 MHz DIMMs.
- Expandable to 1 GB of SDRAM
- Support for:
    - 64 MB, 128 MB, and 256 MB DIMMs in either single-sided or double-sided configurations
    - DIMM heights up to 2.5 inches
- Flash memory for system programs

Internal Hard Disk Drives

- Standard: One SCSI hard disk drive
- Maximum SCSI devices: Four slimline hard disk drives

Removable Media Drives

- Standard: One 3.5-inch, 1.44 MB diskette drive
- Maximum: One diskette drives and one tape backup

CD-ROM Drive

- One IDE CD-ROM drive

Expansion

- Six drive bays
- Six expansion slots (one dedicated AGP, four dedicated PCI, and one shared ISA/PCI)
- Support for PCI/ISA Plug and Play adapters
- Support for dual microprocessors
- Support for additional internal and external SCSI devices
- Support for 3.5-inch, 1.44 MB diskette drive; internal tape drive
- Support for IBM Netfinity ServeRAID adapter

Power

- 330 W, 115/230 V ac, 50/60 Hz
- Automatic ac voltage sensing
- Built-in overload and surge protection

Intel, MMX, Pentium, Pentium II, and Pentium III are trademarks or registered trademarks of Intel Corporation.

- Advanced Power Management

Security

- Power-on and administrator passwords
- Lockable cover
- Bolt-down capability
- Chassis-intrusion detection
- Startup sequence control
- Startup without diskette drive, keyboard, or mouse
- Unattended start mode
- Control access to diskette, hard disk, serial port, parallel port

Integrated functions

- Ethernet controller
  - 10Base-T and 100Base-TX connectivity
- ECP/EPP parallel port
- Two 16550 UART serial ports
- Two USB ports
- Mouse port
- Keyboard port
- Monitor port (on graphics adapter)
- Ethernet RJ-45 port

System Management

- RPL (remote program load) and DHCP (dynamic host configuration protocol)
- Update POST and BIOS over the network
- Automatic power-on startup sequence
- Remote reset from LAN

Operating Systems (Supported)

- Microsoft Windows NT Server Version 4.0
- Novell Netware Version 4.x or 5.x
- SCO UnixWare
- OS/2 WARP Server SMP

The preceding information covers a variety of models. For a listing of features for your specific model, refer to the System Summary screen in the Configuration/Setup Utility program. For more information, see "Viewing the System Summary" on page 36.

Using the Configuration/Setup Utility Program

The Configuration/Setup Utility program is stored in the EEPROM (electrically erasable programmable read-only memory) of your server. You can use the Configuration/Setup Utility program to view and change the configuration and setup of your server, regardless of which operating system you are using. However, the settings you select in your operating system might override any similar settings in the Configuration/Setup Utility program.

The following is a brief description of the categories that appear in the main menu of the Configuration/Setup Utility program.

- System Summary
- Product Data
- Devices and I/O Ports
- Start Options
- Date and Time
- System Security
- Advanced Setup
- ISA Legacy Resources
- Power Management (Default setting is disable, do not change.)

For common task, refer to the following:

- "Starting and using the program" on page 20, which contains information about starting, using, and exiting the Configuration/Setup Utility.
- "Overview" on page 23, which contains descriptions of the configuration and setup options by categories.
- "Instructions for common procedures" on page 36, which contains more detailed instructions and information for performing some of the more common configuration tasks.
- "Quick reference for network-related settings" on page 49, which contains concise step-by-step instructions for enabling network-related settings for your server.

Starting and using the program

To start the Configuration/Setup Utility program:

1. Turn on your server. If your server is already on when you start this procedure, you must shut down the operating system, turn off the server, wait a few seconds until all in-use lights go off, and restart the server. (Do not use **Ctrl+Alt+Del** to restart the server.)
2. When the Configuration/Setup Utility program prompt appears in the lower left corner of the screen during startup, press **F1**. (The Configuration/Setup Utility program prompt appears on the screen for only a few seconds. You must press **F1** quickly.)
3. If you have *not* set an administrator password, the Configuration/Setup Utility program menu appears on the screen. If you have set an administrator password, the Configuration/Setup Utility program menu will not appear until you type your administrator password at the password prompt and press **Enter**. See "Understanding the power-on password" on page 37 and "Understanding the administrator password" on page 40 for more information.

The menu you see on your server might look slightly different from the menu shown here, but it will operate the same way.

```
                   Configuration/Setup Utility

         Select Option:

         • System Summary
         • Product Data
         • Devices and I/O Ports
         • Start Options
         • Date and Time
         • System Security
         • Advanced Setup
         • ISA Legacy Resources
         • Power Management

         Save Settings
         Restore Settings
         Load Default Settings

         Exit Setup
```

Viewing and changing settings: The
Configuration/Setup Utility program menu lists items that
identify system configuration topics. If a bullet **(•)** appears
beside a menu item, then an additional menu is available.
If a right arrowhead **(►)** appears beside a menu item, then
a change to that item has been made or the
Configuration/Setup Utility program detected an error and
attempted to correct it. Also, an additional menu might
follow a menu item with a ► beside it. If an asterisk **(*)**
appears next to a menu item, it indicates a system
resource conflict. Resolve this conflict before exiting from
the Configuration/Setup Utility program so that your server
will function properly.

When working with the Configuration/Setup Utility program
menu, you must use the keyboard. Refer to the following
table for the keys used to accomplish various tasks.

Keys	Function
↑ ↓	Use these arrow keys to move between menu items until the item you want is highlighted.
← →	Use these arrow keys to display and toggle between choices for a menu item.
Enter	Press this key to select a highlighted menu item.
Esc	Press this key to exit from a menu after viewing or making changes to the settings in the menu.
+	Use this key in some menus to increase the numerical value of a setting.
–	Use this key (the minus or hyphen key) in some menus to decrease the numerical value of a setting.
0–9	Use these number keys in some menus to change the numerical value of a setting.
F1	Press this key for help on a selected menu item.
F9	Press this key if you changed and saved the setting of a selected menu item and you want to restore the setting that was active before you made the change.
F10	Press this key to return the setting of a selected menu item to a default value.

> **Note**
>
> Active keys are displayed at the bottom of each
> screen; not all of the above keys are active with every
> menu.

In the Configuration/Setup Utility program menus, the
configuration information you can change is enclosed in
brackets like these **[ ]**. You cannot change information
that is not surrounded by brackets.

Saving Configuration Settings: In most cases,
when you add or remove hardware from your server or
erase passwords, the BIOS (basic input/output system)
detects the changes and then updates the configuration
automatically. Although the server changes the
configuration settings automatically, you must *save* these
changes in the Configuration/Setup Utility program for the
new configuration to take effect. If you do not save the

new settings, your operating system will not start. To save the configuration after adding or removing hardware, or erasing passwords, complete the following steps.

1. When you turn on the server, an error message indicating that a configuration change has occurred appears approximately 30 seconds after the memory count numbers stop cycling in the top-left corner of the screen. When the configuration error message disappears, the POST Startup Errors screen appears, and you are prompted to **Continue** or **Exit Setup**. Select **Continue**. (If you select **Exit Setup**, you will get another error message.)
2. The Configuration/Setup Utility program menu appears with a right arrowhead (▶) next to the menu category in which the configuration change has occurred. Select this menu item if you want to view the new configuration settings, and then press **Esc** to return to the Configuration/Setup Utility program menu.
3. Select **Save Settings** from the Configuration/Setup Utility program menu.
4. Press **Esc** to exit from the Configuration/Setup Utility program, and follow the instructions on the screen.

Exiting from the program: When you finish viewing or changing settings in the Configuration/Setup Utility program, follow these steps to exit from the program:

1. Press **Esc** to return to the Configuration/Setup Utility program menu. (Depending on where you are in the program, you might have to press **Esc** several times to get back to the Configuration/Setup Utility program menu.)
2. Before you exit from the Configuration/Setup Utility program menu, select **Save Settings** if you want to save all settings as they currently appear. If you do not complete this step, your settings will not be saved.
3. From the Configuration/Setup Utility program menu, press **Esc**, and follow the instructions on the screen.

Overview

The following list contains descriptions of the configuration options according to category.

System Summary: If you select System Summary from the Configuration/Setup Utility main menu, you can *view* the following information about the features of your server. The Configuration/Setup Utility program changes this information automatically if you add or remove options, unless otherwise stated.

Processor   Indicates the type of microprocessor.

Processor Speed Indicates the microprocessor internal clock speed.

Dual Processor Indicates whether a second microprocessor is installed.

L2 Cache Size Indicates the amount of cache memory in Kilobytes. Cache memory is special buffer storage that holds frequently used instructions and data, and works faster than main memory.

Cache State Indicates the state of cache memory, enabled or disabled.

System Memory Indicates the amount of synchronous dynamic random access memory (SDRAM).

Memory Type Indicates the type of memory, such as nonparity or error checking and correction (ECC).

Video Controller Indicates the type of video controller, which processes images on your monitor.

Ethernet Support Indicates the type of Ethernet controller, if installed.

Audio Support Indicates the type of audio controller, if installed.

SCSI Support Indicates whether SCSI support is enabled or disabled.

Diskette Drive A Shows if diskette drive A is installed. The default is: Drive A — 1.44 MB 3.5". To specify the drive capacity, see **Devices and I/O Ports**

Product Data: If you select Product Data from the Configuration/Setup Utility main menu, you can *view* the following information about your server model. The Configuration/Setup Utility program changes this information automatically if the EEPROM (electrically erasable programmable read-only memory) or BIOS (basic input/output system) code is upgraded.

Machine Type/Model Shows the type and model of the server.

Flash EEPROM Revision Level Indicates the revision level of the software installed in the electrically erasable programmable read-only memory (EEPROM).

Boot Block Revision Level Indicates the revision level of the boot (startup) record that is flashed in at manufacturing.

System Board Identifier Shows the ID number of the system board.

System Serial Number Shows the serial number of the server.

System UUID Shows a universally unique identifier for your computer.

BIOS Date Shows the date of the Basic Input/Output System code that contains such basic hardware operations as interaction with diskette drives, hard disk drives, and the keyboard.

Devices and I/O Ports: If you select Devices and I/O Ports from the Configuration/Setup Utility main menu, you can *view* and, in some cases, *change* device or port settings.

> **Note**
>
> The specific device options might vary, depending on the computer model.

You can change port assignments or disable ports if you want to prevent unauthorized transmission of data to any devices attached to the ports.

Mouse You must select whether the mouse is installed or not in this field.

Diskette Drive A If a drive is installed, this field shows the diskette storage capacity of the drive. If you change or add a diskette drive, you might need to use this option to set the correct type.

Diskette Drive B If a drive is installed, this field shows the diskette storage capacity of the drive. If you change or add a diskette drive, you might need to use this option to set the correct type.

Serial Port Setup for Serial Port A Address, Serial Port A IRQ, Serial Port B Address, and Serial Port B IRQ The Serial Port Setup menu shows the addresses and interrupts for the built-in serial ports. If you add adapter cards with serial ports, an error message will notify you if you have an address conflict among the serial ports. Ensure that each serial port has a different address. If you change serial port addresses in this menu, you might also need to make changes in the software that uses serial ports. For instructions on changing your software, see the user's guide or online information that comes with the software.

USB Setup, USB Support, USB Keyboard/Mouse Support, The USB Setup menu presents options to enable or disable the Universal Serial Bus feature. Select Autodetect for USB Keyboard/Mouse Support if you want this support to be enabled when a USB keyboard or a USB mouse is detected after the computer is started. Select Disabled if you will not be using a USB keyboard or USB mouse.

Parallel Port Setup, Parallel Port, Parallel Port Mode, Parallel Port Extended Mode, Parallel Port Extended Mode DMA, and Parallel Port IRQ. The Parallel Port Setup menu shows

the address, mode, interrupt, and other
settings for the built-in parallel port. The
parallel port address can also be set to
Disabled if you want to prevent unauthorized
transmission of data to devices attached to
the port. If you add adapter cards with
parallel ports, an error message will notify
you if you have an address conflict among
the parallel ports. Ensure that each parallel
port has a different address. If you change
parallel port addresses in this menu, you
might also need to make changes in the
software that uses parallel ports. For
instructions on changing your software, see
the information that comes with the software.
If the Parallel Port field is not set to
Disabled, you can choose an operational
mode for the parallel port. You can choose
either Standard mode or one of the extended
modes (ECP, EPP, ECP and EPP, or
Bidirectional). In standard mode, you are
limited to write-only (unidirectional) mode.
The extended modes are bidirectional and
will increase the efficiency of your parallel
port; however, the extended modes use
recent technology, which is not supported by
some hardware. The extended modes are:

- ECP: The extended capabilities port
  (ECP) mode provides higher speed data
  transfers than the Standard mode. The
  ECP mode is used for high-speed
  printers and other devices.
- EPP: The enhanced parallel port (EPP)
  mode also provides high speed data
  transfers. The EPP mode is used for
  LAN adapters, disk drives, and tape
  backups.
- ECP and EPP: This mode combines
  the capabilities of the Extended
  Capabilities Port and Enhanced Parallel
  Port modes. Select this mode if you
  have both ECP and EPP devices
  connected to the parallel port.
- Bidirectional: This mode is used for
  data transfer to other computers and
  supported devices.

The Parallel Port Extended Mode DMA field
shows the channel assignment for direct
memory access (DMA). The parallel port
can use DMA data transfer when the
extended mode is set to either ECP or ECP
and EPP.
The Parallel Port IRQ field shows the
interrupt request number.

Video setup

> **Video Controller**
> **Video Memory**
> **Video Aperature**
> **Primary Display**
> **Palette Snooping**
> **Video Interrupt** The Video Setup menu displays the type of video controller, the amount of video memory, and the size of the video aperture, if applicable. You can also enable or disable Video interrupt.
> Enable Video Interrupt if you are using an application that requires this support.

IDE Drives Setup

> **IDE CD-ROM** The IDE Drives Setup menu displays the CD-ROM drive that either is already installed or can be installed in your server.
> If a CD-ROM drive is installed, it shows the selectable performance. The performance indicates the speed at which the drive will transfer data. To get better disk performance, run the CD-ROM drive in High Performance mode.
> If an IDE CD-ROM drive is set to High Performance mode, you can enable Drive Prefetch for maximum drive performance.

> ┌─ **Note** ─────────────────────┐
> │ IDE CD-ROM devices and some   │
> │ operating systems might not work │
> │ properly with the Drive Prefetch feature │
> │ enabled.   │
> └────────────────────────────────┘

SCSI Setup

> **SCSI Support** You can use the SCSI support menu to enable or disable SCSI support.

Ethernet Setup

> **Ethernet Support**
> **Network Boot**
> **MAC Address** You can use the Ethernet Setup menu to enable or disable the Ethernet feature and view or change related settings.

> ┌─ **Note** ─────────────────────┐
> │ If you install an optional network │
> │ adapter, you must disable Ethernet │
> │ support.   │
> └────────────────────────────────┘

Start Options: If you select Start Options from the Configuration/Setup Utility main menu, you can *view* and *change* settings for device startup sequence, keyboard speed, virus detection, various power-on options, and other features of your server.

Startup Sequence, Primary Startup Sequence, Automatic Power On Startup Sequence, Error Startup Sequence The Startup Sequence menu presents options to specify the order in which the server searches devices for the operating system files when you start up the server. Primary Startup Sequence: Your server has a default primary startup sequence. Use this option if you want to view or change the sequence. Automatic Power On Startup Sequence:Select Enabled for this option if you want to use a different startup sequence when your system is started using automatic power-on features. Error Startup Sequence: Select Disabled for this option if you want to automatically start the Configuration/Setup Utility whenever a POST error occurs. Select another option if you want the system to bypass the Configuration/Setup Utility and use a different startup sequence when a POST error occurs. You will still be able to access the Configuration/Setup Utility using the F1 key or the POST error menu. dt.Keyboard NumLock State This option indicates whether or not the Num Lock feature on the keyboard turns on automatically each time you start up the server. When NumLock is set to On, the keys on the keypad act as numeric keys. When NumLock is set to Off, the keys on the keypad act as cursor keys.

Keyboard Speed This option indicates the speed at which your keyboard responds when you hold down a key (typematic rate). The Normal rate is 10 characters per second. The fast rate is 30 characters per second.

Disketteless Operation When this option is enabled, the server can start up and run without a diskette drive.

> ──── **Note** ────────────────
>
> To disable diskette drive access, see the **System Security** option on the Configuration/Setup Utility main menu.

Keyboardless Operation Mode When this option is
enabled, the server can start up and run
without a keyboard. If you enable this
option, you must disable your power-on
password, which can be done using the
System Security option on the
Configuration/Setup Utility main menu.

Power-On Self-Test Use this option to set the level of
power-on self testing (Quick or Enhanced)
that will be done during the power-on
sequence.

> --- **Note** ---
>
> The Quick setting reduces the amount of
> testing; however, Quick setting is not
> recommended when using an
> unattended start mode.

Power on Logos Use this option to control whether or not
logos are displayed during the power-on
sequence.

Power On F1/Esc Option Use this option to control
whether or not the F1 and Esc key options
are displayed during the power-on sequence.
This setting does not affect the behavior of
these keys, only the display of the options.

Power On Status Use this option to control whether or not
power-on status indicators (such as memory
count and system check points) are
displayed during the power-on sequence.
This option also controls the power-on
beeps.

Virus Detection Use this option to specify whether you
want the virus checker that comes with the
server BIOS to check for viruses each time
you turn on your server. When virus
detection is enabled, your server checks the
master boot record to see if the information
has changed since the last time you turned
on the server. If the information has
changed, the BIOS will display a message
that warns that your system might contain a
virus.

> --- **Note** ---
>
> This option does not have an effect on
> the supplied anti-virus program or on
> additional virus checking programs you
> may have purchased. It also does not
> remove viruses from your server.

Date and Time: If you select Date and Time from the Configuration/Setup Utility main menu, you can *view* and *change* the date and time of the internal clock in your server.

Time   Time shows the time in a 12- or 24-hour format. In a 24-hour 12 midnight is 00:00:00; 12 noon is 12:00:00; 1 p.m. is 13:00:00.

Date   Date displays the set date in MM/DD/YYYY format.

> **Note**
>
> Different countries have different date formats.

System Security: If you select System Security from the Configuration/Setup Utility main menu, you can *view* and, in some cases, *change* the system security settings for your server. You can use this menu to control access to the hard disk and diskette drives. You can also set, change, and delete power-on and administrator passwords.

Enhanced Security If your model has the Enhanced Security feature, this option on the System Security menu shows the current setting for enhanced security. Enhanced security can be enabled or disabled only when you update system programs, as further explained under "Enabling and disabling enhanced security" on page 45. Enhanced security provides extra protection for your administrator password and startup (boot) sequence settings. When enhanced security is enabled, your administrator password and startup sequence are stored in a highly-protected, nonvolatile, security EEPROM module that is separate from CMOS memory and the EEPROM module that stores system programs. When your administrator password and startup sequence are locked in the security EEPROM, they remain intact even if the battery in your server expires or is removed by someone.

Secure IDE Devices and Diskette Drives, IDE Controller, Diskette Drive Access. Use this option to enable or disable access to your IDE CD-ROM drive. All IDE devices (such as CD-ROM drives) attached to the IDE controller can be disabled using the IDE Controller field. Diskette drives attached to the system board can be disabled using the

Diskette Drive Access field. If Diskette Write
Protect is enabled, diskette drives attached
to the system board or riser card will operate
in a read-only mode.

Power-On Password Use this option to *set, change*, or
delete a power-on password. You can also
set **Password Prompt** to On, Off, or Dual.
For additional information about the
power-on password, see "Understanding the
power-on password" on page 37.

Administrator Password Use this option to *set, change*,
or *delete* an administrator password. You
can also set **Power-on password
changeable by user** to No or Yes. For
additional information about the administrator
password, see "Understanding the
administrator password" on page 40.

> --- **Note** ---
>
> See important information about the
> administrator password in
> "Understanding the administrator
> password" on page 40.

Adapter ROM Security If this option is set to Yes, the
keyboard will be locked during adapter ROM
initialization. This can be used in
conjunction with an administrator password
to prevent the use of adapter ROM-based
utility programs.

Advanced Setup: If you select Advanced Setup
from the Configuration/Setup Utility main menu, you can
view and, in some cases, *change* settings for advanced
hardware features, including ROM shadowing, PCI control,
and Plug and Play Control. These settings must be
configured correctly; otherwise, your server might
malfunction.

Cache Control, Cache State, L2 Cache Size. The Cache
Control menu shows how much cache
memory is installed and lets you enable or
disable its use. Cache memory is special
buffer storage that holds frequently used
instructions and data, and works faster than
main memory. With cache memory enabled,
most of your programs will run faster. If you
run programs that require slower speeds,
you can disable cache memory to slow down
your server.

ROM Shadowing The ROM Shadowing menu shows
which system devices are using read-only
memory (ROM) shadowing. With ROM
shadowing, your server stores data from the
specified device in random access memory

(RAM). Because your server can access data in RAM faster than it can access data from ROM, programs run faster when ROM shadowing is enabled. If you install an adapter that has its own ROM, you can enable the ROM shadowing option for that adapter to speed up its performance.

> **Note**
>
> The ROM Shadowing option might not work on adapters that use memory-mapped I/O, such as network adapters.

PCI Control, PCI Adapter Reset, PCI Parity, Network Adapters, Mass Storage Adapters, Display Adapters, Multimedia Devices, Communication Adapters, Serial Adapters. Use PCI control to enable or disable PCI parity and bus mastering for the PCI adapters installed in your server. PCI Adapter Reset can be enabled or disabled. PCI parity allows parity checking of data across the PCI bus. Some adapters do not generate parity and will require the PCI Parity option be set to Disabled. Bus mastering lets installed bus master PCI adapters process information without using the microprocessor.

> **Note**
>
> The default bus master setting for all devices is enable. Do not change this setting. Some devices or adapters might not work properly if the bus master function is enabled when the system is restarted.

The PCI Control Menu is Setup allows you to disable bus mastering for any device that is displayed on the menu. Devices not displayed on the menu cannot be disabled.

> **Note**
>
> If PCI adapters do not operate properly, you might need to disable the PCI Bus Master option.

Plug and Play Control, Set Device Node, Address Decode, Plug and Play Operating System. Use Plug and Play Control to change certain settings for Plug and Play devices. Set Device Node: When this option is disabled, programs will not be able to make changes to the power-on configuration. Address

Decode: Most Plug and Play adapters use 16-bit address decoding. If you are experiencing problems with a Plug and Play adapter, changing the address decode setting to 10-bit might fix the problem. Plug and Play Operating System: Select Yes for this option if you are experiencing POST errors numbered 185x and your startup operating system is Plug and Play compliant. See your operating system documentation to determine if your operating system supports this function.

Processor Speed Control, Processor ID, Processor Updating, Processor Serial Number Access. If you install a microprocessor, use this option to set the microprocessor speed. Ensure that you set the correct speed. If you select a speed that is faster than the microprocessor supports, unpredictable results might occur. The Processor ID is displayed. Enabling or disabling Processor Updating determines whether the BIOS will apply microprocessor updates when the server starts. Enabling or disabling Processsor Serial Number Access determines whether the microprocessor serial number can be accessed (queried) by websites on your intranet or the internet. For example, you would enable this function if your company uses it to track assets.

ISA Legacy Resources: If you select ISA Legacy Resources from the Configuration/Setup Utility main menu, you can configure non-Plug and Play adapters, which are not automatically detected by your server. You must identify the following ISA Legacy resources as dedicated to your new adapter so the BIOS does not attempt to assign them to Plug and Play adapters:

- Memory Resources
- I/O Port Resources
- DMA Resources
- Interrupt Resources

Each of the options on the ISA Legacy Resources menu opens another menu.

Memory Resources Use Memory Resources to allocate system memory regions for an adapter. The menu lists the hexadecimal addresses of the available memory regions. You allocate memory to an adapter by selecting the ISA Resource setting for an available hexadecimal address. Be sure to read the documentation that comes with your adapter. You might need to make changes to the adapter to accommodate the selections you make for Memory Resources. For example, you might have to move jumpers or switches on the adapter, or make changes to the software that comes with the adapter.

I/O Port Resources Use I/O Port Resources to allocate input/output ports for an adapter. The menu lists the hexadecimal addresses of the available I/O ports. You allocate I/O ports to an adapter by selecting the ISA Resource setting for an available hexadecimal address. Be sure to read the documentation that comes with your adapter. You might need to make changes to the adapter to accommodate the selections you make for I/O Port Resources. For example, you might have to move jumpers or switches on the adapter, or make changes to the software that comes with the adapter.

DMA Resources Use DMA Resources to allocate direct memory access (DMA) channels for an adapter. The menu lists the channel assignments for DMA, which allows I/O devices to transfer data to and from memory. You allocate DMA channels to an adapter by selecting the ISA Resource setting for an available channel. Be sure to read the documentation that comes with your adapter. You might need to make changes to the adapter to accommodate the selections you

make for DMA Resources. For example, you might have to move jumpers or switches on the adapter, or make changes to the software that comes with the adapter.

Interrupt Resources Use Interrupt Resources to allocate interrupt requests (IRQs) for an adapter. The menu lists the system IRQs and their functions. You allocate IRQs to an adapter by selecting the ISA Resource setting for an available IRQ. Be sure to read the documentation that comes with your adapter. You might need to make changes to the adapter to accommodate the selections you make for Interrupt Resources. For example, you might have to move jumpers or switches on the adapter, or make changes to the software that comes with the adapter.

Power Management

Important

The power management default setting is disable. Do not change this setting Changing this setting may cause system problems and BIOS problems.

Instructions for common procedures

The following information is step-by-step instructions for some of the more common configuration and setup procedures for your server.

Viewing the System Summary: You can use the Configuration/Setup Utility program to view a summary of the options and features in your server. To view the system summary:

1. Start the Configuration/Setup Utility program (see "Starting and using the program" on page 20).
2. Select **System Summary** from the Configuration/Setup Utility program menu. The System Summary screen appears.

   Depending on your model and configuration, your screen might appear slightly different from the one shown here.

```
                      System Summary

   Processor                Pentium III
   Processor Speed          500 MHz¹
   Dual Processor           Enabled
   L2 Cache Size            512 KB
   Cache State              Enabled
   System Memory            128 MB
   Memory Type              ECC
   Video Controller         S3
   Ethernet Support         Enabled
   Audio Support            Enabled
   SCSI Support             Enabled
   Diskette Drive A:        1.44 MB, 3.5"
   Diskette Drive B:        Not Installed
   IDE Hard Disk Drive 0    Not Installed
   IDE CD-ROM Drive 1       Installed
   IDE CD-ROM Drive 2       Not Installed
   IDE Hard Disk Drive 3    Not Installed
```

---

[1] MHz only denotes the internal clock speed of the microprocessor, not application performance; many factors affect application performance.

Setting the date and time: Your server has an internal clock that maintains the date and time. A battery keeps the clock active when you turn off the server.

To set the date and time:

1. Start the Configuration/Setup Utility program (see "Starting and using the program" on page 20).
2. Select **Date and Time** from the Configuration/Setup Utility program menu.
3. Type the date and time in the appropriate fields.
4. Press **Esc** to return to the Configuration/Setup Utility program menu.
5. Before you exit from the program, select **Save Settings** from the Configuration/Setup Utility program menu and press **Enter**.
6. To exit from the Configuration/Setup Utility program, press **Esc** and follow the instructions on the screen.

Your operating system might also have a function for setting the date and time. Refer to your operating system documentation for more information.

Understanding the power-on password: The *power-on* password feature deters unauthorized persons from gaining access to the information stored in your server. You do not need to set a power-on password, but doing so allows you to control who can use your server. When a power-on password is set, you must type the password at a prompt that appears as the server starts.

When you set the power-on password, you can choose one of three password prompt modes:

On   In password prompt On mode, you are prompted for the power-on password when you turn on the server. Until the correct password is entered, the operating system will not start, and the keyboard will remain locked. If you have a mouse connected to the mouse port, it also will remain locked. If you have a mouse connected to a serial port, it will be activated when the server is started, regardless of whether a password is set.

Off   In password prompt Off mode (sometimes referred to as unattended start mode), you are not prompted to enter your power-on password when you turn on the server. The server will start the operating system. However, if you have a mouse connected to the mouse port, refer to the following text box.

Once the operating system starts in
password prompt Off mode, the keyboard
will remain locked. If you have a mouse
connected to the mouse port, it also will
remain locked.

Although you are not prompted to type a
password in this mode, you can type either
your power-on or administrator password
anytime after POST has completed, even
after the operating system has loaded. If
you type a password, the keyboard will
unlock, but the mouse connected to the
mouse port will remain disabled.

If a power failure occurs, the server will
automatically restart and resume operating in
this mode when power is restored, without
operator intervention.

Note

The password prompt Off mode does
not support any locally or remotely
scheduled shutdowns or restarts.
Therefore, do not use a power-on
wakeup or lockout function.

Dual   In the password prompt Dual mode, the
startup behavior of the server depends on
whether the computer is started from the
computer power switch or by an unattended
method, such as a modem or timer.

If you start the server by using the power
switch, the computer operates the same as it
does in password prompt On mode. Refer
to page 37 for further information.

If the server is started by an unattended
method, such as remotely over a LAN, the
server operates the same as it does in
password prompt Off mode. Refer to page
37 for further information.

If both a power-on and administrator password are set, you
can type either password at the password prompt *that
appears as you start your server*. However, if you want to
change any settings in the Configuration/Setup Utility
program, you must type your administrator password at the
password prompt *that appears when you try to access the
Configuration/Setup Utility program*. If you type your
power-on password at this prompt, you will be able to view
limited information in the Configuration/Setup Utility
program, but you will not be able to change any settings.

The password does not appear on the screen as you type
it. If you type the wrong password, you receive a screen
message telling you so. If you type the wrong password
three times, you must turn the server off and start again.
When you type the correct password, the keyboard and
mouse will unlock, and the server will begin normal
operation.

Setting and changing a power-on password:

Use the Configuration/Setup Utility program to set or
change a power-on password. You can use any
combination of up to seven characters (A–Z, a–z, and 0–9)
for this password.

Important

Keep a record of your power-on password in a secure
place. When a power-on password has been set, you
cannot activate the keyboard and mouse without first
using the password. If you lose or forget your
password, you cannot change or delete it without
removing the server cover and moving a jumper on
the system board. Refer to "Erasing a lost or
forgotten administrator password" on page 43 for
further information.

To set or change a power-on password:

1. Start the Configuration/Setup Utility program (see "Starting and using the program" on page 20).
2. Select **System Security** from the Configuration/Setup Utility program menu.
3. Select **Power-On Password**.
4. Type your password and press Down Arrow (↓).
5. Type your password again.
6. At **Password Prompt**, select **Off**, **On**, or **Dual**. Press Left Arrow (←) or Right Arrow (→) to toggle between selections.
7. Select **Change Power-On Password**, and follow the instructions on the screen.
8. Press **Esc** twice to return to the Configuration/Setup Utility program menu.
9. Before you exit from the program, select **Save Settings** from the Configuration/Setup Utility program menu.
10. To exit from the Configuration/Setup Utility program, press **Esc** and follow the instructions on the screen.

Deleting a power-on password: Use the Configuration/Setup Utility program to delete a power-on password.

To delete a power-on password:

1. Start the Configuration/Setup Utility program (see "Starting and using the program" on page 20).
2. Select **System Security** from the Configuration/Setup Utility program menu.
3. Select **Power-On Password**.
4. Select **Delete Power-On Password** and follow the instructions on the screen.
5. Press **Esc** twice to return to the Configuration/Setup Utility program menu.
6. Before you exit from the program, select **Save Settings** from the Configuration/Setup Utility program menu.
7. To exit from the Configuration/Setup Utility program, press **Esc** and follow the instructions on the screen.

Understanding the administrator password

Important

When enhanced security is enabled, it is vital that you keep a record of your administrator password in a secure place. If you forget or lose the administrator password, the system board in your server must be replaced in order to regain access to the Configuration/Setup Utility program. For more information on Enhanced Security, see "Enhanced security" on page 43.

Setting an administrator password deters unauthorized persons from changing settings in the Configuration/Setup Utility program. When an administrator password is set, you can change settings in the Configuration/Setup Utility program only after typing the administrator password at the password prompt that appears when you try to access the Configuration/Setup Utility program.

If you are responsible for maintaining the settings of several servers, you might want to set an administrator password.

When you set an administrator password, a password prompt appears each time you try to access the Configuration/Setup Utility program. The password does not appear on the screen as you type it. If you type the wrong password, you receive a screen message telling you so. If you type the wrong password three times, you must turn the server off and start again. When you type the correct password, the Configuration/Setup Utility program menu appears.

If both a power-on and administrator password are set, you can type either of the passwords at the password prompt *that appears as you start your server*. However, if you want to change any settings in the Configuration/Setup Utility program, you must type your administrator password at the password prompt *that appears when you try to access the Configuration/Setup Utility program*. If you type your power-on password at this prompt, you will be able to view limited information in the Configuration/Setup Utility program, but you will not be able to change any settings.

Setting or changing an administrator password:
Use the Configuration/Setup Utility program to set or change an administrator password. You can use any combination of up to seven characters (A–Z, a–z, and 0–9) for the password.

> **Important**
>
> Keep a record of your administrator password in a
> secure place. If you lose or forget the administrator
> password, you will not be able to access the
> Configuration/Setup Utility program, and you will not
> be able to erase and reset an administrator password.
> If you lose or forget your password, you must
> complete *one* of the following steps in order to regain
> access to the Configuration/Setup Utility program:
>
> 1. If enhanced security is disabled (default setting),
>   you must remove the server cover and move a
>   jumper on the system board. (Refer to "Erasing
>   a lost or forgotten administrator password" on
>   page 43 for further information.)
> 2. If enhanced security is enabled, you must replace
>   the system board in your server.

To set or change an administrator password:

1. Start the Configuration/Setup Utility program (see
   "Starting and using the program" on page 20).
2. Select **System Security** from the Configuration/Setup
   Utility program menu.
3. Select **Administrator Password**.
4. Type your password and press Down Arrow (↓).
5. Type your password again.
6. At **Power-On Password Changeable by User**, select
   Yes or **No**. Press Left Arrow (←) or Right Arrow (→)
   to toggle between selections. (If you select **Yes** and
   an administrator password is set, the power-on
   password can be changed without having to enter the
   administrator password. If you select **No** and an
   administrator password is set, the power-on password
   cannot be changed unless the administrator password
   is entered.)
7. Select **Change Administrator Password** and follow
   the instructions on the screen.
8. Press **Esc** until you return to the Configuration/Setup
   Utility program menu.
9. Before you exit from the program, select **Save
   Settings** from the Configuration/Setup Utility program
   menu.
10. To exit from the Configuration/Setup Utility program,
    press **Esc** and follow the instructions on the screen.

Deleting an administrator password: Use the
Configuration/Setup Utility program to delete an
administrator password.

To delete an administrator password:

1. Start the Configuration/Setup Utility program (see
   "Starting and using the program" on page 20).
2. Select **System Security** from the Configuration/Setup
   Utility program menu.

3. Select **Administrator Password**.
4. Select **Delete Administrator Password** and follow the instructions on the screen.
5. Press **Esc** until you return to the Configuration/Setup Utility program menu.
6. Before you exit from the program, select **Save Settings** from the Configuration/Setup Utility program menu.
7. To exit from the Configuration/Setup Utility program, press **Esc** and follow the instructions on the screen.

Erasing a lost or forgotten administrator password:

This section applies to lost or forgotten administrator passwords that are *not* protected by enhanced security. For information on lost or forgotten passwords that *are* protected by enhanced security, refer to "Erasing a lost or forgotten administrator password protected by enhanced security" on page 46.

If you have lost or forgotten your administrator password and enhanced security is disabled, you must remove the server cover and move the CMOS Clear jumper (also referred to as the *password* jumper) on the system board in order to erase the password so that you can regain access to the Configuration/Setup Utility program.

See "Erasing lost or forgotten passwords" on page 122 for the procedure to erase the password.

> **Important**
>
> If you move the CMOS Clear jumper, you will lose all setup data stored in the server, and you will need to reconfigure the server. Use the Configuration/Setup Utility program to reconfigure the server and to set a new password.

Enhanced security:

By default, your administrator password is stored in CMOS memory. CMOS memory is battery-powered memory that stores your configuration, setup, and security settings. The information stored in CMOS remains there for the life of the battery, as long as the battery is not removed.

Your server has an enhanced security feature that provides extra protection for your administrator password, as well as your startup (boot) sequence settings. With enhanced security, your administrator password and startup sequence are stored in a highly-protected, nonvolatile, security EEPROM module that is separate from CMOS memory and the EEPROM module that stores system programs. When your administrator password and startup sequence are locked in the security EEPROM, they remain intact even if the battery in your server expires or is removed by someone.

Enhanced security can be enabled or disabled only when you update system programs. The procedure for enabling enhanced security is explained under "Enabling and disabling enhanced security" on page 45.

If enhanced security is enabled and you have not set an administrator password, your server will operate as if enhanced security were disabled. If enhanced security is enabled and you have set an administrator password, your server will operate as follows:

- The contents of the security EEPROM (your administrator password and startup sequence) will be protected from failure of the battery and CMOS memory.
- The security EEPROM will be protected from unauthorized access because it locks after your server is turned on and the system programs have completed their startup routine. Once it is locked, the security EEPROM cannot be read from or written to by any software application or system software until the server is turned off and back on again. In a networking environment, this might prevent certain functions from being performed remotely on your server.

   There is an extra measure of protection for the system programs in your server. Normally, the entire contents of the system programs EEPROM is write protected with a *soft lock*. A soft lock allows the POST/BIOS update utility to function in a network environment. Enhanced security adds a *hard lock*. With a hard lock, when your server is turned on and the system programs startup routine is completed, the POST/BIOS update utility is locked and cannot be unlocked until the server is turned off and back on again and the administrator password is entered. Note that in a networking environment this prevents the system programs in your server from being updated remotely. Someone must be present at your server to turn it on and off in order to unlock the POST/BIOS update utility.

- A chassis-intrusion feature will alert you if the cover of your server has been removed. This feature will work if your server is on or off when the cover is removed. If the cover has been removed, a prompt for your administrator password will appear on the screen, and your server will remain in a halted state until your administrator password is entered.
- As with nonenhanced security, your configuration settings are protected. The settings cannot be changed in the Configuration/Setup Utility program until your administrator password is entered. This means that any changes in server hardware that are detected by the system programs in your server, such as removal of a memory DIMM, will generate a

configuration error until the administrator password is entered.

Enabling and disabling enhanced security:
Enhanced security can be enabled or disabled only when you update the system programs in your server.

To enable or disable enhanced security:

1. Insert a system programs update diskette into drive A in your server. System programs updates are available on the World Wide Web at http://www.ibm.com/pc/support/.
2. Turn on the server. If it is on already, you must turn it off and back on again.
3. The update begins, your server halts, and you are prompted for your administrator password (if you have set an administrator password). The server remains in a halted state until you enter the administrator password.
4. When you enter the administrator password, the update diskette will continue to run, and you are given the option of enabling or disabling enhanced security. Your choice is automatically recorded in the System Security menu of the Configuration/Setup Utility program.

Setting, changing, and deleting an administrator password protected by enhanced security: To
set, change, or delete an administrator password protected by enhanced security, do the following:

1. Turn off all attached devices and the server.
2. Refer to "Disconnecting cables and removing the cover" on page 74 for instructions on safety, disconnecting all cables attached to the server, and removing the server cover.
3. Locate the switch marked as 7 on the rocker switches on the system board. Refer to the system board label inside the server for the location of the switch. Move the switch to the **ON** position. (To do this, push on the **ON** side.)
4. Replace the cover and reconnect the cables.
5. Set, change, or delete your administrator password in the Configuration/Setup Utility program. Refer to "Setting or changing an administrator password" on page 41 or "Deleting an administrator password" on page 42 for instructions.

> **Note**
>
> You must know the administrator password to change or delete it.

6. Disconnect all cables and remove the cover.
7. Move the switch back to the **OFF** position after you have set, changed, or deleted your password.

8. Replace the cover, reconnect the cables, and then turn on the server.

Erasing a lost or forgotten administrator password protected by enhanced security:

When enhanced security is enabled, it is vital that you keep a record of your administrator password in a secure place. If you forget or lose the administrator password, the system board in your server must be replaced in order to regain access to the Configuration/Setup Utility program.

Setting the startup sequence:
Your server can be started (or booted) from several devices including the hard disk drive, diskette drive, CD-ROM drive, and from the network. The startup program looks for these devices in a selected sequence. The Configuration/Setup Utility program is used to select the startup sequence.

Note

The hard disk drive is the default startup device when no other devices are ready. It does not appear in the choices provided by the Configuration/Setup Utility program.

To set the startup sequence:

1. Start the Configuration/Setup Utility program (see "Starting and using the program" on page 20).
2. Select **Start Options** from the Configuration/Setup Utility program menu.
3. Select **Startup Sequence** from the Start Options menu.
4. Select the sequence and devices from the choices provided.
5. If **Automatic Power On Startup Sequence** is *Enabled*, select the sequence and devices from the choices provided.
6. Press **Esc** until you return to the Configuration/Setup Utility program menu.
7. Before you exit from the program, select **Save Settings** from the Configuration/Setup Utility program menu and press **Enter**.
8. To exit from the Configuration/Setup Utility program, press **Esc** and follow the instructions on the screen.

Understanding power management

Important

The power management default setting is disable. Do not change this setting. Changing this setting may cause system problems and BIOS problems.

Your server comes with built-in energy-saving capabilities. You can view and change energy-saving settings using the

Power Management menu in the Configuration/Setup Utility program. This section describes the Power Management features in your server and provides instructions for using these features.

> **Attention**
>
> If a device, such as a monitor, does not have power-management capabilities, it can be damaged when exposed to a reduced-power state. Before you make energy-saving selections for your monitor, check the documentation that comes with your monitor to see if it supports Display Power Management Signaling (DPMS).

Setting power-management features: With Power Management, the server and monitor (if a monitor is attached and the monitor supports DPMS) can be set to go into a reduced-power state if they are inactive for a specified length of time.

- **Time to Low Power:** With this option, you can specify the amount of time that the server must be inactive before Power Management options begin to take effect. You can select from 5 minutes to 1 hour.
- **System Power:** With this option, you can select **On** if you want the server to remain on, or **Off** if you want the server to shut down.
- **Display:** With this option, you can select one of the following reduced-power states:
  - **Standby:** In this mode, the screen is blanked, but the screen image is restored *immediately* when any activity is detected.
  - **Suspend:** In this mode, the monitor uses less power than in Standby mode. The screen is blanked, but the screen image is restored *within a few seconds* after any activity is detected.
  - **Off:** In this mode, the monitor power is turned off. To restore power to the monitor, you must press the monitor power switch. On some monitors, you might have to press the power switch twice.

    If you select **Off**, you must specify the **Time to Display 'off'**. You can select 5 minutes to 1 hour.

    > **Note**
    >
    > Time to display off is the amount of time after the reduced-power state before the display enters the off state.

  - **Disable:** In this mode, the monitor is unaffected by the power management settings.

- **IDE Drives**: This selection enables you to specify if the CD-ROM drives should be enabled or disabled when power-management options take affect.

To set power-management features:

1. Start the Configuration/Setup Utility program (see "Starting and using the program" on page 20).
2. Select **Power Management** from the Configuration/Setup Utility program menu.

   > **Important**
   >
   > The power management default setting is disable. Changing this setting may cause system problems and BIOS problems.

3. Select **APM**.
4. Set **APM BIOS Mode** to **Enabled**.
5. Select values for power management (time to low power, system power, processor speed, display, and time to display off), as necessary.
6. Set **IDE Drives** to **Enabled** or **Disabled**.

   > **Note**
   >
   > SCSI drives are not affected by APM.

7. Press **Esc** twice to return to the Configuration/Setup Utility program menu.
8. Before you exit from the program, select **Save Settings** from the Configuration/Setup Utility program menu.
9. To exit from the Configuration/Setup Utility program, press **Esc** and follow the instructions on the screen.

Setting automatic power-on features: The Automatic Power-On features within the Power Management menu allow you to enable and disable features that automatically turn your server on. You must also select the startup sequence you want to use for the type of power-on event selected. If you select **Automatic**, make sure **Automatic Power On Startup Sequence** in the *Startup Sequence* menu is set to enabled. Otherwise, the system will use the **Primary** startup sequence. To set Automatic Power-On features:

1. Start the Configuration/Setup Utility program (see "Starting and using the program" on page 20).
2. Select **Power Management** from the Configuration/Setup Utility program menu.
3. Select **Automatic Power On**.
4. Select the menu item for the feature you want to set. Use Left Arrow (←) or Right Arrow (→) to select either *Enabled* or *Disabled*.
5. Select Startup Sequence for the feature. Use Left Arrow (←) or Right Arrow (→) to select either *Primary* or *Automatic*.

6. Press **Esc** until you return to the Configuration/Setup Utility program menu.
7. Before you exit from the program, select **Save Settings** from the Configuration/Setup Utility program menu.
8. To exit from the Configuration/Setup Utility program, press **Esc** and follow the instructions on the screen.

Quick reference for network-related settings

The following tables are not intended to help determine which settings to choose. They are only intended to help you quickly find the steps necessary to get to the choices for specific network settings. You can then view the current setting or select a different setting. When finished, you can either save the settings and exit the utility or exit without saving the settings.

The steps in the following tables always start at the Configuration/Setup Utility main menu.

Table 1 (Page 1 of 3). Network-Related Settings		
To Configure	**Select**	**Comments/Notes**
Integrated Ethernet and view the MAC address	1. **Devices and I/O Ports** 2. **Ethernet Setup** 3. **Enabled** or **Disabled** 4. **Network Boot** 5. **RPL** or **DHCP**	If you install an optional network adapter, you must disable the integrated Ethernet controller.

Table 1 (Page 2 of 3). Network-Related Settings		
To Configure	**Select**	**Comments/Notes**
Serial Port Ring Detect	1. **Power Management** 2. **Automatic Power On** 3. **Serial Port Ring Detect** 4. **Enabled** or **Disabled**. If you select **Enabled**, go to the next step. 5. **Startup Sequence** 6. **Primary** or **Automatic**. Go back to the main menu. 7. **Start Options** 8. The first, second, third, and fourth primary startup devices 9. **Automatic Power On Startup Sequence** 10. The first, second, third, and fourth startup devices	Your model might not allow you to select four startup devices.

Table 1 (Page 3 of 3). Network-Related Settings		
To Configure	**Select**	**Comments/Notes**
Modem Ring Detect	1. **Power Management** 2. **Automatic Power On** 3. **Modem Ring Detect** 4. **Enabled** or **Disabled**. If you select **Enabled**, go to the next step. 5. **Startup Sequence** 6. **Primary** or **Automatic**. Go back to the main menu. 7. **Start Options** 8. The first, second, third, and fourth primary startup devices 9. **Automatic Power On Startup Sequence** 10. The first, second, third, and fourth startup devices	Your model might not allow you to select four startup devices.

Additional Service Information

The following additional service information supports the Netfinity 3500-M10 - Type 8655.

-

Solving POST Error Message Problems

If you receive an error message during the power-on-self-test (POST), completing the steps outlined in this section might enable you to resolve the problem.

> **Note**
>
> If you have just added, removed, or changed the location of a device and you receive an error message, follow the procedure described in the **Important** text box on page 21. If the procedure on page 21 does not eliminate the error message, then proceed with the following instructions.

1. Write down all error code numbers and descriptions that appear on the screen as you start your computer. (Note that a single problem can cause several error messages to appear. When you correct the cause of the first error message, the other error messages probably will not appear on the screen the next time you turn on your computer.)
2. If you have set a power-on password, a password prompt appears. If you have set both power-on and administrator passwords, you can type either of the passwords at the password prompt. However, if you think you might need to change any settings in the Configuration/Setup Utility program, you must type your administrator password at the password prompt. If you type your power-on password, you will be able to view error codes and error code descriptions displayed on the POST Startup Errors screen, and you will also be able to view limited information in the Configuration/Setup Utility program. However, you will not be able to change any settings.
3. In the case of most errors, the Configuration/Setup Utility program starts automatically so that you can attempt to identify and correct the problem. When the Configuration/Setup Utility program starts, a screen titled POST Startup Errors appears. (Note that the POST Startup Errors screen does not appear immediately. You must wait approximately one minute.) If the POST Startup Errors screen does not appear, proceed to step 6.
4. At the POST Startup Errors screen, select **Continue** if you want to access the Configuration/Setup Utility program menu. Select **Exit Setup** if you want to exit the Configuration/Setup Utility program. (See the **Important** text box in step 5 for information on exiting the Configuration/Setup Utility program without making any changes to current settings.) To select an item, press Up Arrow (↑) or Down Arrow (↓) to highlight the item, and then press **Enter**.
5. If you selected **Continue** in step 4, the Configuration/Setup Utility program menu appears on

the screen. You will see a pointer next to any menu items that are malfunctioning or that have been changed since the last time you turned on your computer. If you did not knowingly make a change to a flagged menu item, there is probably a malfunction in that item. If you made a change, continue here. If you did not make a change, go to the **Important** text box which follows step 5d.

To use the Configuration/Setup Utility program, do the following:

a. Select the menu item that is flagged (or that you wish to view) by pressing Up Arrow (↑) or Down Arrow (↓), and then press **Enter**.

b. A new menu specific to the item that you selected appears. Press Left Arrow (←) or Right Arrow (→) to toggle between choices for a menu item. (Note that each menu item has a Help screen. To view the Help screen, select the menu item, and then press **F1**.)

c. When you have finished viewing and changing settings, press **Esc** to return to the Configuration/Setup Utility program menu.

d. Before you exit from the program, select **Save Settings**. When you exit from the Configuration/Setup Utility program menu (see step 5e), your operating system will start automatically (unless there is an unresolved problem with the startup device).

> --- **Important** ---
>
> If you did *not* change any settings in the Configuration/Setup Utility program, note the following:
>
> - You will get an error message if you exit from the Configuration/Setup Utility program without selecting **Save Settings**. Your operating system will not start, but the computer will automatically restart. When the computer restarts, you will get a POST error message, and then the Configuration/Setup Utility program will again start automatically.
> - You will *not* get an error message if you select **Save Settings**, and then exit the Configuration/Setup Utility program. Your system will save all settings as they currently appear in the Configuration/Setup Utility program and your operating system will start (unless there is an unresolved problem with the startup device).

e. To exit from the Configuration/Setup Utility
    program, press **Esc** and follow the instructions
    on the screen.
6. For more information about error message and what
    action to take, see "Symptom-to-FRU index" on
    page 142.

System management features

The following information is primarily for network administrators. It describes features that make it possible for a network administrator or file server to remotely manage and control your server.

The BIOS (basic input output system) of your server supports an interface called DMI (Desktop Management Interface). DMI is a method for gathering information about the hardware and software in a computer that makes it possible for network administrators to remotely monitor and control computers in a network environment. DMI can be used to remotely track many types of information about computers, including serial numbers, memory attributes, product-specific characteristics of installed peripherals, temperature, and operating-system configuration information. This information can be accessed using a DMI browser. DMI browsers are provided by all major operating systems and all major LAN management packages (including Netfinity Manager, Intel LANDesk™, and Microsoft SMS).

Your server has hardware integrated on the system board that provides system-management information to the DMI browser.

The following describes some of the other functions that can be performed on your server remotely.

Wake on LAN: The Wake on LAN feature can be used by network administrators to turn on your server from a remote location. When Wake on LAN is used in conjunction with network management software, such as Netfinity Version 4 or later, many types of functions, such as data transfers, software updates, and POST/BIOS updates to your server can be initiated remotely. These functions can be performed after normal working hours and on weekends to save time, increase productivity, and help keep LAN traffic down during the busy hours of the day. Refer to "Using the Configuration/Setup Utility Program" on page 19 for configuration information.

Alert on LAN: Alert on LAN™ is a hardware and software technology supported on some models of your server. It immediately alerts network administrators when the server has a problem, even if the power is off or has no operating system running. For system management, Alert on LAN helps the network administrator to react quickly and effectively when problems occur, rather than waiting for input from the end-user.

RPL or DHCP: RPL (Remote Program Load) and DHCP (Dynamic Host Configuration Protocol) enable a network administrator to control your server. If you use RPL in conjunction with software such as LANClient Control Manager, you can use a feature called *Hybrid RPL*. Using LANClient Control Manager, you set up your computer by installing hybrid images (or files) on the hard disk. Then, each time the computer starts from the network, LANClient Control Manager recognizes your computer as a Hybrid RPL client and a *bootstrap* program is downloaded to your computer. This bootstrap program is small and helps prevent network congestion. Working from the hybrid images, the bootstrap program initiates the startup process from the hard disk of your computer. An advantage to Hybrid RPL is that the network load associated with standard RPL is avoided.

POST/BIOS update over the network: This feature makes it possible for the POST and BIOS in your computer to be updated remotely by a network administrator. Network-management software, such as LANClient Control Manager, is required in order to take advantage of this feature.

Keyboard speed

You can change the speed at which the keyboard responds when you hold down a key. The normal *typematic rate* is 10 characters per second, but you can use the Configuration/Setup Utility program to increase this rate to 30 characters per second. Refer to "Start Options" on page 28 for information on setting keyboard speed.

Locks

To deter unauthorized use of your server, you can lock the cover and keyboard.

Locking the cover: You can use the cover lock and keys to secure the outside cover.

Two identical keys are provided with your server. Locksmiths are not authorized to duplicate these keys. You must order replacement keys from the key manufacturer. The key serial number and the telephone number are on a tag attached to the keys. Store the tag in a safe place.

Locking the keyboard: You can disable the keyboard so that others are unable to use it. If a power-on password is set, the keyboard is locked when you turn on the server. You must type the correct password before the keyboard will unlock. You can enable the power-on password feature with the Configuration/Setup Utility program. See "Setting and changing a power-on password" on page 39.

Some operating systems have a keyboard and mouse
lock-up feature. Check the documentation that comes with
your operating system for more information.

Using a security U-bolt: With a U-bolt and a steel
cable, you can secure your server to a desk, table, or
other fixture. This helps to protect against theft.

Power supply

If the power-on indicator is not on, the power-supply fan is not running, or the computer will not power-off, do the following.

Check/Verify	FRU/Action
1. Verify that the voltage-selector switch is set for the correct voltage.	**Correct the voltage-selector switch setting.**
2. Check the following for proper installation. • Power Cord • On/Off Switch connector • On/Off Switch Power Supply connector • System Board Power Supply connectors • microprocessor(s) connection	**Reseat**
3. Check the power cord for proper continuity.	**Power Cord**
4. Check the power-on switch for continuity.	**Power-on Switch**

If the above are correct, check the following voltages.

Note

These voltages must be checked with the power supply cables connected to the system board.

+ 3.46
+ 3.3

GND
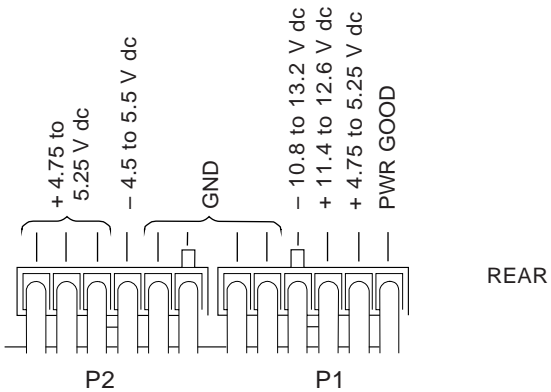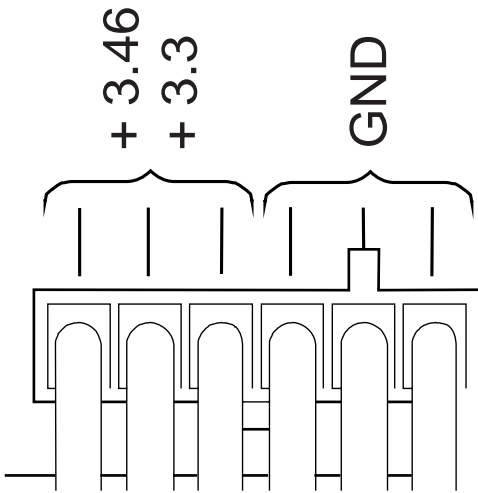
P11

If the voltages are not correct, and the power cord is good, replace the power supply.

If the voltages are correct, and the computer you are servicing has a power supply connector on the riser card, check the following riser card voltages.

Riser Card Connections

Note: These voltages must be checked with the power supply cable connected to the riser card.

+ 3.17
+ 3.46

GND
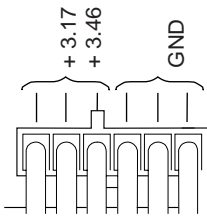
P10

If the voltages are not correct, and the power cord is good, replace the power supply.

System specifications

Size

- Depth: 445 mm (17.5 in.)
- Width: 200 mm (7.9 in.)
- Height: 492 mm (19.4 in.)

Weight

- Maximum configuration (as shipped): 17.3 kg (38 lb)

Environment

- Air temperature:
  - System on: 10° to 35°C (50° to 95°F) at altitude 0–2134 m (7000 ft)
  - System off: –40° to 70°C (–40° to 158°F)
- Humidity:
  - System on: 8% to 80%
  - System off: 8% to 80%

Heat output[3]

- Approximate heat output in British thermal units (Btu) per hour:
  - Maximum configuration (as shipped): 306 Btu/hour (90 watts)
  - Maximum configuration (theoretical)[2]: 1564 Btu/hour (460 watts)

Electrical input[3]

- Sine-wave input (50/60 Hz) is required
- Input voltage:
  - Low range:
    - Minimum: 90 V ac
    - Maximum: 137 V ac
  - High range:
    - Minimum: 180 V ac
    - Maximum: 265 V ac
  - Input kilovolt-amperes (kVA) (approximately):
    - Maximum (configuration as shipped): 0.75 kVA

Acoustical noise-emission values[4]

- Average sound-pressure levels:
  - At operator position:
    - 37 dBA idle
    - 42 dBA operating
  - At bystander position–1 meter (3.3 ft):
    - 34 dBA idle
    - 36 dBA operating
- Declared (upper limit) sound power levels:
  - 5.0 bels idle
  - 5.2 bels operating

---

2   Under typical maximum configurations, the heat output will be substantially below the theoretical maximum.

---

3 Power consumption and heat output vary depending on the
   number and type of optional features installed and the
   power-management optional features in use.
4 These levels were measured in controlled acoustical
   environments according to procedures specified by the
   American National Standards Institute (ANSI) S12.10 and ISO
   7779, and are reported in accordance with ISO 9296.

   Actual sound-pressure levels in your location might exceed the
   average values stated because of room reflections and other
   nearby noise sources. The declared sound power levels
   indicate an upper limit, below which a large number of
   computers will operate.

Locations

The following information supports the Netfinity 3500-M10 Type 8655 server.

Cabling the server

Before cabling the server:

- Make sure you have an adequate number of properly grounded outlets for the server and any other devices.
- Select a location for the server where it will remain dry. Rain or spilled liquids might damage your server.
- Leave about 50 mm (2 in.) of space around the server for proper air circulation.

> **Note**
>
> For additional server stability, turn the four feet a quarter turn away from the server.
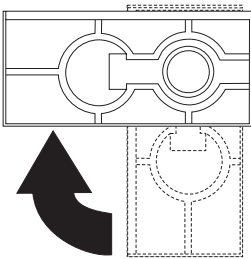
Use the following illustration to cable your server.
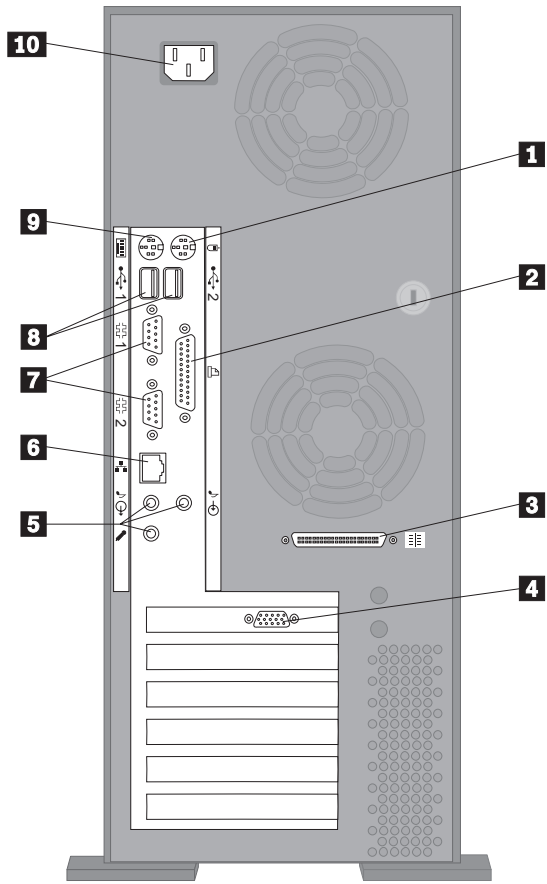
Mouse	**1**
Printer	**2**
SCSI	**3**
Monitor	**4**
Audio	**5**
Ethernet	**6**
Serial Device/Modem	**7**
USB	**8**
Keyboard	**9**
Power cord	**10**
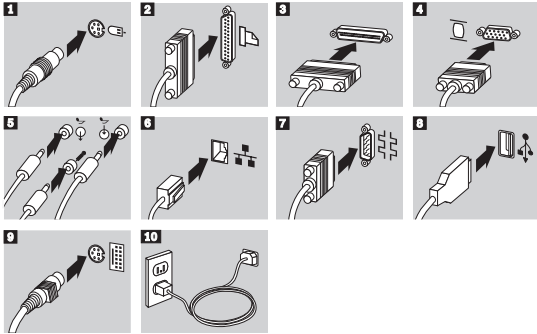
Refer to the *Start Here* booklet for instructions on cabling the server.

Important Information:

- For operation of the system within FCC Class A limits, Class 5 Ethernet cabling must be used.
- If there is a label covering the power connector, remove it. Connect the power cords to the server and other devices first, then plug the cords into properly grounded electrical outlets.
- When the power cord is first plugged in, the server powers on for a few seconds, then powers off. This is normal operation.
- In some circumstances, the server might not power off immediately when the power switch is pressed. In this case, hold the power switch down until the power turns off.

Controls and status indicators

```
┌─ Important ─────────────────────────────────┐
│                                             │
│ The power line and power control behavior of the │
│ Netfinity 3500 M10 is different from some earlier │
│ server models.  Note the following:         │
│                                             │
│   •  When the power cord is first plugged in, the │
│      server might appear to power on for a few │
│      seconds, then power off.  This is a normal │
│      sequence to enable the server to self-initialize. │
│   •  The power switch will normally operate with a │
│      single touch.  However, in some circumstances │
│      the server may not immediately power off.  In this │
│      case, hold the power switch down for │
│      approximately 5 seconds.  The server will then │
│      turn off.                              │
│                                             │
│ Do not operate your server with the cover off.  Proper │
│ cooling is required for the reliable performance of │
│ internal components.                        │
│                                             │
└─────────────────────────────────────────────┘
```
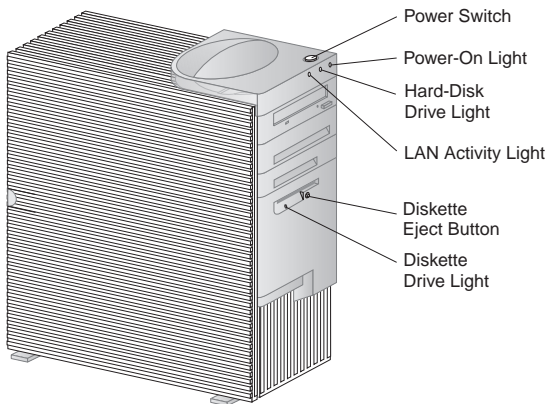

The following describes the operating controls and status indicators located on the front of your server.

Power Switch: Press this switch to turn your server on or off. Do not turn off your server if the in-use light for the hard disk drive or diskette drive is on.

-

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.

Power-On Light: This status indicator lights when you turn on your server.

Hard-Disk Drive Light: When this light is on, it indicates that the hard disk drive is in use.

LAN Activity Light: When this light blinks, it indicates that the integrated Ethernet controller in your server is transmitting to or receiving from another computer.

Diskette Eject Button: Push this button to release a diskette from the drive.

Diskette-Drive Light: When this light is on, it indicates that the diskette drive is in use.

Cleaning the mouse

If the pointer on the screen does not move smoothly with the mouse, you might need to clean the mouse.

1. Turn off the server.
2. Disconnect the mouse cable from the server.
3. Turn the mouse upside down. Unlock the retainer on the bottom of the mouse by moving it in the direction indicated by the arrow on the retainer.
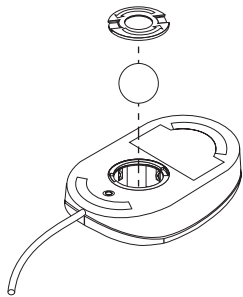
4. Turn the mouse right-side up, and the retainer and ball will drop out.
5. Wash the ball in warm, soapy water, and dry it well.
6. Using a damp cloth, wipe the outside of the mouse and the retainer. Be sure to wipe the rollers inside the mouse.
7. Insert the ball and retainer. Lock the retainer by moving it in the opposite direction of the arrow.
8. Reconnect the mouse cable to the server.

Replacing the battery

Your server has a special type of memory that maintains the date, time, and the settings for built-in features, such as serial- and parallel-port assignments (configuration). A battery keeps this information active when you turn off the server.

The battery requires no charging or maintenance throughout its life; however, no battery lasts forever. If the battery fails, the date, time, and configuration information (including passwords) are lost. An error message is displayed when you turn on the server.

●

> ### 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.

.

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

Moving your server

Important

Do not move your server while it is on. Always turn the server off before you move it.

Normal shipping and handling can cause loss of data from a hard disk. If your server has a hard disk drive, take the following precautions:

1. Back up all files and data from the hard disk.

   Operating systems can vary in the way they perform backup procedures. Some operating systems save only data files, while others make copies of application program files *and* data files. Refer to your operating system documentation for information about software backup.

2. Remove all media (diskettes, compact discs, tapes, and so on) from the drives.

3. Turn the server and all attached devices off. Your hard disk drive automatically parks the read/write heads in a nondata area. This process prevents damage to the hard disk.

4. Unplug the power cords from electrical outlets.

5. Note where you have attached your cables to the rear of the server; then remove them.

   ●

  ≥18 kg (37 lbs)   ≥32 kg (70.5 lbs)   ≥55 kg (121.2 lbs)

Caution

Use safe practices when lifting.

   .

6. If you saved the original shipping cartons and packing materials, use them to pack the units. If you are using different cartons, cushion the units to avoid any damage.

Available options and features

The following are some of the available options and features that are discussed in this section:

- System board components
  - System memory, called dual in-line memory modules (DIMMs)
  - Microprocessor upgrades
  - Switch for diskette-write protection.
  - Jumper for erasing lost or forgotten passwords
  - Battery
- Adapters
  - Peripheral component interconnect (PCI) adapters
  - Industry standard architecture (ISA) adapters
  - Accelerated Graphics Port (AGP) adapters
- Internal drives
- Asset security
  - Cover lock
  - Security U-bolt

For the latest information about available options:

- Look on the following World Wide Web pages:

  `http://www.ibm.com/options/`
  `http://www.ibm.com/support/`

- Within the United States, call 1-800-IBM-2YOU (1-800-426-2968), your IBM reseller, or IBM marketing representative.
- Within Canada, call 1-800-565-3344 or 1-800-465-7999.
- Outside the United States and Canada, contact your IBM reseller or IBM marketing representative.

Preparing to install and remove options

Use the following instructions for accessing and locating the options you want to install or remove.

Using the stabilizing feet: The four feet attached to the bottom cover rotate 90 degrees to provide additional stability for your server.

When you need to access the inside of the server, you might find it easier to lay the server on its side. If you do so, rotate the feet in towards the server, so they do not break off due to the weight of the server.

When you are finished installing the option and have reattached the side cover, turn the four stabilizing feet a quarter turn out from the server and set it carefully back on its feet.
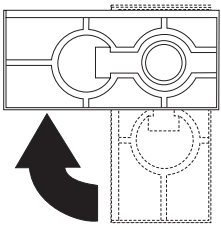
Disconnecting cables and removing the cover

1. Touch the rear of the bare metal frame of the server to dissipate any static electricity from your body.
2. Unplug all power cords from electrical outlets.
3. If you have a modem or fax machine attached to your server, disconnect the telephone line from the wall outlet and the server.
4. Disconnect all cables attached to the server; this includes power cords, input/output (I/O) cables, and any other cables connected to the server.
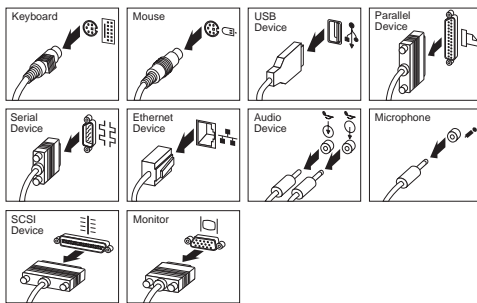
5. If necessary, unlock the server cover.
6. Pull out on the cover release tab at the rear of the side cover.

7. Slide the cover toward the front of the server and lift it off.

Cover-
Release
Tab
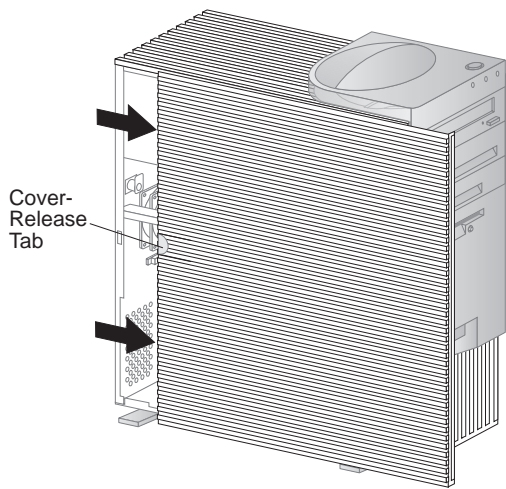
Locating components

The following information helps you locate components and serves as a reference when you need to install options or connect input/output devices.

Your server comes with the following adapters and devices preinstalled:

- A graphics adapter
- A CD-ROM drive in drive bay 1
- A diskette drive in drive bay 4

For more information on drive bays, see "Internal drives" on page 105.

The following illustrations will help you locate the various components in your server. For information on removing the cover, see "Preparing to install and remove options" on page 73.

External view

The following illustration shows the external view of your server as seen from the front.

1   Power-on switch
2   Power-on light
3   Hard disk drive in-use light
4   LAN activity light
5   Bay 1 (CD-ROM drive)
6   CD-ROM eject button
7   CD-ROM emergency eject hole
     (behind the bezel on some models)
8   CD-ROM drive in-use light
9   Bay 2
10   Bay 3
11   Bay 4 (3.5-inch diskette drive)
12   Diskette eject button
13   Diskette drive in-use light
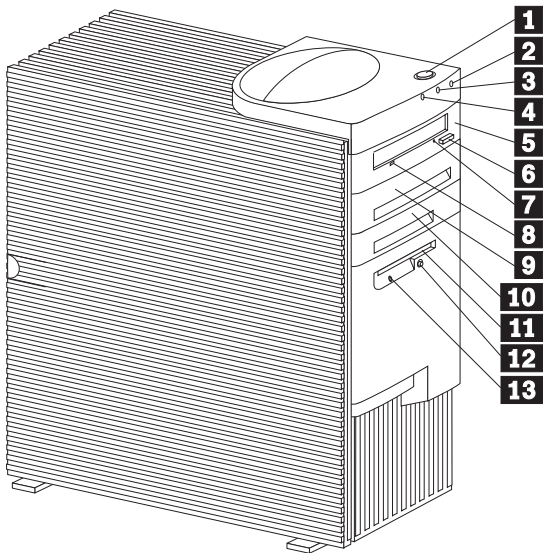
Internal view

The following illustration shows the internal view of your server as seen from the front. For information on removing the cover, see "Preparing to install and remove options" on page 73.

1	Upper drive bracket (bays 1-4)
2	Lower drive bracket (bays 5-6)
3	System board
4	Video adapter
5	Expansion slots
6	Microprocessor
7	Power supply
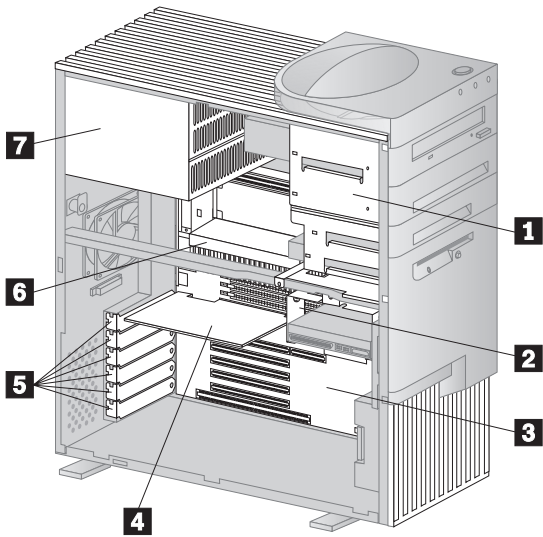
Input/Output connectors

Input/output (I/O) connectors provide ports for transferring information into and out of your server. You can connect a variety of I/O devices to your server, including a monitor, keyboard, mouse, and printer.

At the rear of your server is a panel that provides access to I/O connectors. Adapters installed in expansion slots might also provide I/O connectors.
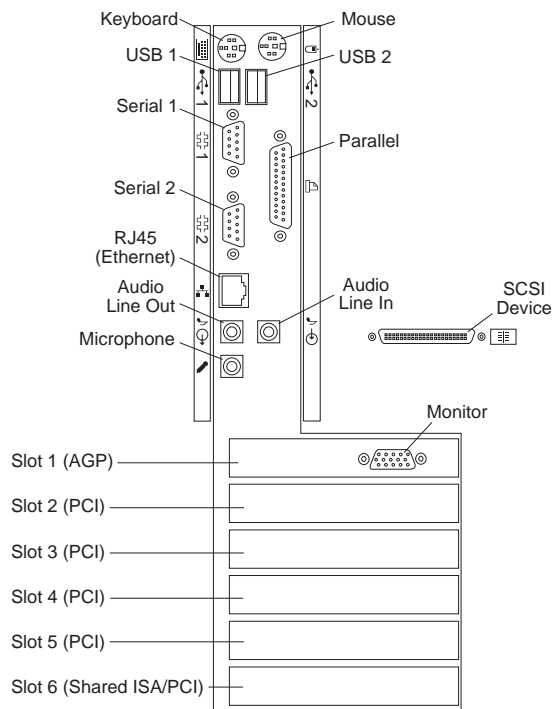
Note

The monitor connector might be in a different slot, depending on the server model.

Identifying parts on the system board

The system board, also called the *planar* or *motherboard*, is the main circuit board in your server. It provides basic computer functions and supports a variety of devices that are IBM-installed or that you can install later.

If you plan to install, remove, or replace hardware in your server, you will need to know the layout of the system board. The following illustration shows the layout of the system board in your server. The numbered pointers show the components that are discussed in this book.

1	Secondary microprocessor socket
2	Primary microprocessor socket
3	Power connector
4	5 V auxiliary power connector
5	DIMM sockets
6	Channel B SCSI connector (68-pin)
7	Diskette drive connector
8	Primary IDE connector
9	Channel B SCSI connector (50-pin)
10	Secondary IDE connector
11	Battery
12	CMOS clear (password) jumper
13	Rocker switches
14	Wake on LAN connector
15	Wake on Modem connector
16	Channel A SCSI connector (68-pin)
17	Shared ISA/PCI slot connector
18	PCI slot connectors
19	AGP slot connector
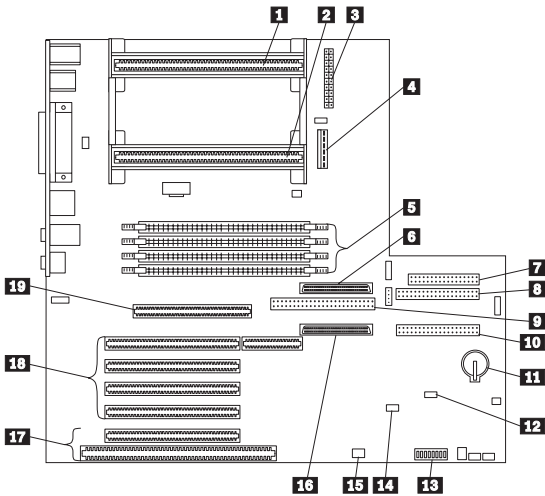
Note

An illustration of the system board and additional information is provided on a label located inside the server.

Accessing the system board

> **Note**
>
> For information on removing the server cover, see
> "Preparing to install and remove options" on page 73.

To access the system board, it helps to place the server
on its side on a table. You might need to remove
adapters, the air baffle, or cables that impede your access
to components on the system board. When disconnecting
cables, it is important to note where they attach, so you
can correctly reattach them later.

Removing and replacing the air baffle

1. There might be cables attached to the bottom of the
   air baffle. If so, disconnect these cables so that the
   air baffle can be moved.
2. Locate the two small latches on the air baffle that
   protrude through the holes on the rear of the server
   and the large latch that snaps into the metal bar.
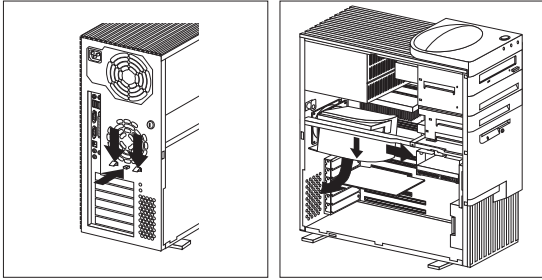
3. Press all the latches down at the same time until they
   unlock and slide the air baffle toward the front of the
   server.
4. Tilt the air baffle as shown, and slide it out, under the
   metal bar and away from the microprocessor.
5. Remove the air baffle from the server.

To replace the air baffle

1. Locate the air baffle as shown below, and attach it to
   the metal bar.
2. Rotate the air baffle toward the microprocessor until it
   is in position to slide to the rear along the metal bar.
3. Align the two small latches on the air baffle so that
   they protrude through the holes on the rear of the
   server. Press the latches down while pushing the
   baffle to the rear until it snaps into position. Make
   sure the large latch is latched into the metal bar.
4. Reconnect any cables that you disconnected from the
   baffle.
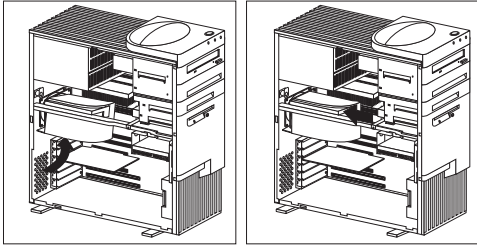
Working with system memory

You can add memory to your server to increase system performance. Your server has four connectors for installing system-memory modules (DIMMs) up to a maximum of 1 GB.

Memory DIMM options: **Important:** Be sure to observe the following guidelines when adding memory DIMM options to your server.

- Only 168-pin, 100 MHz, 3.3V industry standard memory DIMMs are supported.
- Do not mix registered and unregistered DIMMs.
  - The 64 MB and 128 MB DIMMs are *unregistered memory* technology.
  - The 256 MB DIMM is *registered memory* technology.
- The Netfinity 3500 M10 does not support EDO memory. If you use registered DIMMs, you must remove all unregistered DIMMs from your server.

  A mix of registered and unregistered memory prevents the server from completing startup, and results in an error beep sequence and a blank screen.

> **Note**
>
> To locate the DIMM connectors inside your server, see "Identifying parts on the system board" on page 80.
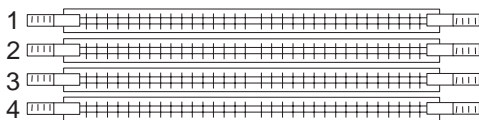
Memory configuration: When you are adding or removing memory, any sequence of DIMM sizes is allowed. A basic rule to follow is to fill each system memory connector sequentially, starting at *DIMM socket 1*.

The following table shows possible memory configurations for your server; this table and additional information can be found on a label located inside your server. Again, alternative configurations are possible.

Note

Values in the following table are represented in megabytes (MB).

DIMM combinations:

Total Memory (MB)	DIMM 1 (MB)	DIMM 2 (MB)	DIMM 3 (MB)	DIMM 4 (MB)
64	64	0	0	0
128	128	0	0	0
128	64	64	0	0
192	64	64	64	0
256	256	0	0	0
256	128	128	0	0
256	128	64	64	0
512	128	128	128	128
512	256	256	0	0
768	256	256	256	0
1024 (1 GB)	256	256	256	256

Installing a DIMM

Before you begin

- Read "Safety Information" on page 196
- Read the instructions that come with the new system memory.
- Turn the server and all other connected devices off.
- Turn off the server and all other connected devices.
- Disconnect all cables attached to the server and remove the server cover (see "Preparing to install and remove options" on page 73).
- Read "Accessing the system board" on page 82.

Note

For information on memory configuration, see "Memory configuration" on page 85.

1. See "Identifying parts on the system board" on page 80 to locate the memory connectors on the system board.
2. If an adapter, the air baffle, or cables restrict your access to the memory connectors, you might have to remove them.
   - To remove an adapter, see "Removing adapters" on page 102.
   - To remove the air baffle, see "Removing and replacing the air baffle" on page 82.
3. Be sure the retaining clips are in the open position, as shown in the illustration on the right. If the retaining clips are perpendicular with the connector, push outward on them until they click open.
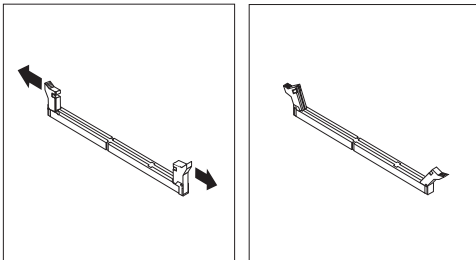
4. Touch the static-protective package containing the DIMM to any *unpainted* (bare) metal surface in the server, and then remove the DIMM.
5. Position the DIMM above the connector so that the two notches on the bottom edge of the DIMM align properly with the connector.
6. Firmly push the DIMM straight into the connector until the retaining clips pop closed and snugly fit around both ends of the DIMM.
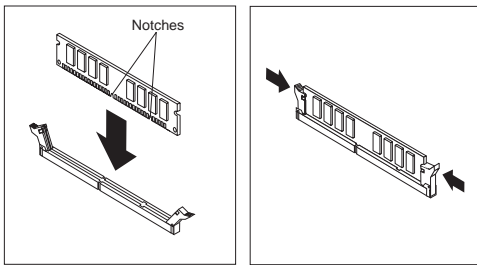
7. To replace the air baffle, see "Removing and replacing the air baffle" on page 82.
8. To install another DIMM, repeat the steps above.

What to do next:

* To work with another option, go to the appropriate section.
* To complete the installation, go to "Completing the installation" on page 126.

Removing a DIMM

1. Locate the DIMM you want to remove on the system board. To locate the desired DIMM, see "Identifying parts on the system board" on page 80.
2. If an adapter, the air baffle, or cables restrict your access to the memory connectors, you might have to remove them.
   - To remove an adapter, see "Removing adapters" on page 102.
   - To remove the air baffle, see "Removing and replacing the air baffle" on page 82.
3. At both ends of the DIMM connector, push outward on the retaining clips until the DIMM is loosened.

   Note

   Be careful not to push too hard on the retaining clips because the DIMM might eject abruptly from the connector.

4. Lift the DIMM out of the connector.
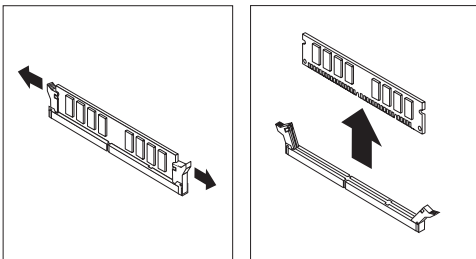
5. To replace the air baffle, see "Removing and replacing the air baffle" on page 82.
6. Store the DIMM in a static-protective package.

What to do next:

- To work with another option, go to the appropriate section.
- To complete the installation, go to "Completing the installation" on page 126.

Working with microprocessors

Your server comes with an intel Pentium III microprocessor. This microprocessor incorporates MMX technology with built-in ECC L2 cache. For the latest information about microprocessor upgrades available for your server, contact your IBM reseller or IBM marketing representative. If you do upgrade the microprocessor, use the instructions that come with the upgrade along with the instructions in this section.

When you install an additional microprocessor, your Netfinity 3500 M10 server can operate as a symmetric multiprocessing (SMP) server. With SMP, certain operating systems and application programs can distribute the processing load between microprocessors. This can enhance performance for database applications, integrated manufacturing solutions, and other applications.

The voltage regulator function is built into the system board. This feature supports each microprocessor on the system board. If you install a second microprocessor, it must operate at the same voltage as the primary microprocessor to ensure proper operation of the voltage regulator feature.

Installing a second microprocessor

> **Attention**
>
> OS for SMP must be installed before the system will recognize a second microprocessor.

> **Before you begin**
>
> - Read "Safety Information" on page 196
> - Thoroughly review the documentation that comes with the microprocessor, so that you can determine whether you need to update the server BIOS. ServerGuide includes IBM Update Connector, a dial-up program that keeps your BIOS and device drivers current. You also can obtain the latest level of BIOS for your server through the World Wide Web and the IBM PC Company Bulletin Board System (BBS). See "Online Support" on page iv for the appropriate World Wide Web addresses.
> - Turn off the server.
> - Disconnect all cables attached to the server and remove the server cover (see "Preparing to install and remove options" on page 73).
> - Read "Accessing the system board" on page 82.

> **Attention**
>
> If you install an additional microprocessor that is
> different from the currently installed microprocessor,
> your server operation might be unreliable. To prevent
> this, use a microprocessor that is identical to the
> currently installed microprocessor (same internal and
> external clock speed, cache size, and voltage
> requirements).

To add a second microprocessor:

1. Read the instructions that come with the new
   microprocessor.
2. See "Identifying parts on the system board" on
   page 80 to locate the secondary microprocessor
   socket.
3. Remove the air baffle. See "Removing and replacing
   the air baffle" on page 82.
4. Remove the terminator card in the secondary
   microprocessor socket.
5. Touch the static-protective package containing the
   new microprocessor to any *unpainted* (bare) metal
   surface in the server, and then remove the new
   microprocessor from the package.
6. Slide the new microprocessor into the microprocessor
   guides, holding the microprocessor against the front
   edge **1** of the guides so that it aligns with the
   connector on the system board. You might find it
   necessary to press the lever **2** on each guide away
   from the guide slightly to complete this step.
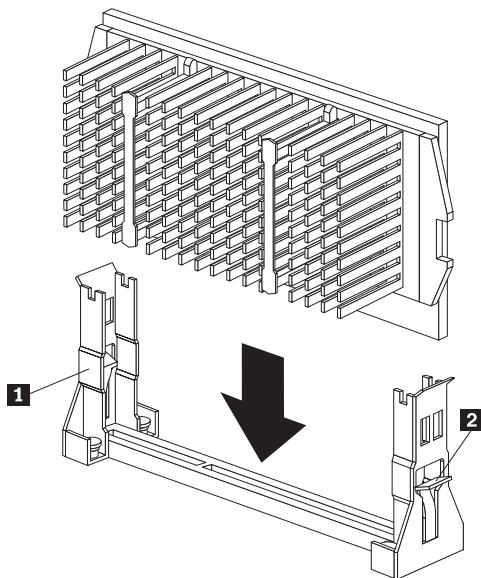
7. Press the microprocessor down until it seats in the connector.
8. Reinstall the air baffle. See "Removing and replacing the air baffle" on page 82.
9. When you add a second microprocessor, it runs at the same speed as the primary microprocessor. For information on the appropriate switch settings, see the label inside the server cover, or contact your IBM reseller or IBM marketing representative.
10. The Configuration/Setup Utility program runs automatically after the server is restarted. If your operating system is configured to support multiple microprocessors, when the operating system starts it recognizes the second microprocessor. For Windows NT Server, for example, you might need to reinstall Windows NT Server and select multiple processor support before the second microprocessor will be recognized.

What to do next:

- To work with another option, go to the appropriate section.
- To complete the installation, go to "Completing the installation" on page 126.

Replacing a microprocessor

```
┌─ Before you begin ──────────────────────┐
│                                         │
│  •  Read "Safety Information" on page 196 │
│  •  Obtain a flash diskette for updating the system │
│     BIOS.  If you do not have a flash diskette, │
│     download one from                   │
│     http://www.ibm.com/pc/support/.     │
│  •  Read the instructions that come with the new │
│     microprocessor.                     │
│  •  Turn off the server.                │
│  •  Disconnect all cables attached to the server and │
│     remove the server cover (see "Preparing to install │
│     and remove options" on page 73).    │
│  •  Read "Accessing the system board" on page 82. │
│                                         │
└─────────────────────────────────────────┘
```

```
┌─ Attention ─────────────────────────────┐
│                                         │
│  The microprocessor and heat sink might be hot if │
│  the server has been running.  Let the  │
│  microprocessor and heat sink cool for 10 minutes │
│  before continuing with the procedure.  │
│                                         │
└─────────────────────────────────────────┘
```

The microprocessor in your server comes with an attached
heat sink. The microprocessor plugs into the system
board and is stabilized with a plastic bracket attached to
the system board. To remove the microprocessor:

1. See "Identifying parts on the system board" on
   page 80 to locate the primary microprocessor socket.

2. Remove the air baffle. See "Removing and replacing
   the air baffle" on page 82.

3. Release the microprocessor by pressing the lever ▪1 on each guide away from the guide slightly while carefully pulling up on the microprocessor.
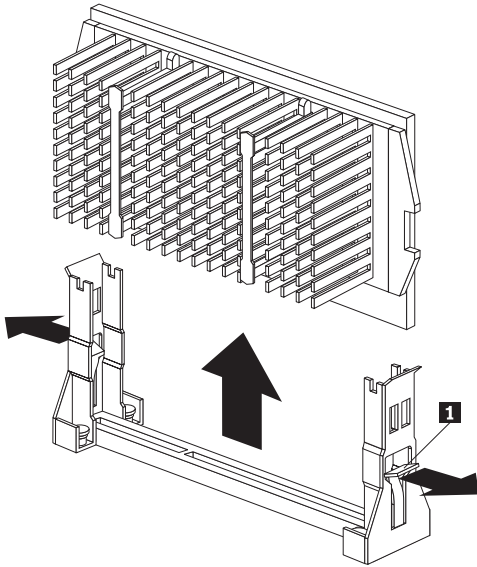
4. Carefully place one hand on the server frame and pull the microprocessor up and out of the connector with the other hand.
5. Store the old microprocessor in a static-protective package.

To replace the microprocessor:

1. Touch the static-protective package containing the new microprocessor to any *unpainted* (bare) metal surface in the server, and then remove the new microprocessor from the package.
2. Slide the new microprocessor into the microprocessor guides, holding the microprocessor against the front edge ▪1 of the guides so that it aligns with the connector on the system board. You might find it necessary to press the lever ▪2 on each guide away from the guide slightly to complete this step.
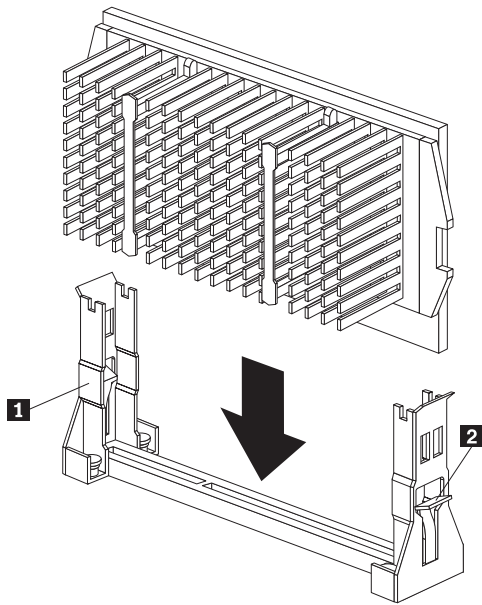
3. Press the microprocessor down until it seats in the connector.
4. Reinstall the air baffle. See "Removing and replacing the air baffle" on page 82.

Note

If a 167 POST error occurs when you start your server, you need to update your system BIOS in order to use the second microprocessor. Follow the instructions for error message 167 in "Symptom-to-FRU index" on page 142.

What to do next:

- To work with another option, go to the appropriate section.
- To complete the installation, go to "Completing the installation" on page 126.

Working with adapters

When you are installing or removing adapters, it is important to resolve any resource conflicts that might arise. For example, if you install an ISA legacy adapter, you might need to manually configure the adapter by setting a variety of switches on the adapter and by using the Configuration/Setup Utility program.

Many adapters now use *Plug and Play* technology which enables the server to automatically configure the adapter, provided that the required resources are available. Refer to the instructions that come with your adapter to determine if it is Plug and Play. For more information, see "Adapter configuration" on page 97.

Adapters

Your server system board has expansion slots used to
connect adapters to the industry standard architecture
(ISA) and peripheral component interconnect (PCI) buses.
In addition, slot 1 is designed for an Accelerated Graphics
Port (AGP) adapter. In summary, there are four PCI slots,
one shared PCI/ISA slot, and one dedicated AGP slot.
You can install only one adapter in the shared PCI/ISA
slot.

The following illustration shows the location of expansion
slots on the system board. Your server comes with a
preinstalled graphics adapter in one of the expansion slots.
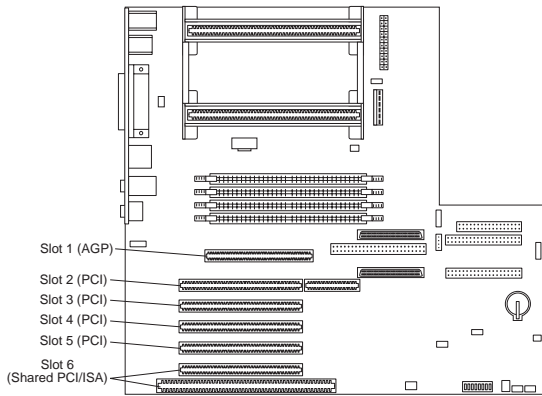
Adapter configuration: Along with the
documentation that comes with your adapter, use the
following information to help with adapter configuration.

Plug and Play adapters: *Plug and Play* is a
configuration method that makes expanding your server
easier. Support for Plug and Play is built into the system
board of your server.

If an adapter is Plug and Play, then there are no switches
or jumpers that must be set on the adapter. A Plug and
Play adapter comes with configuration specifications set in
memory to provide installation information to the server
during startup. When you install or remove Plug and Play
adapters, this information is interpreted by the *basic
input/output system (BIOS)*, which supports Plug and Play
technology. If the required resources are available, then
the BIOS software automatically configures the adapter
around the resources already in use by other devices.

Adapters designed for PCI slots are Plug and Play
devices; many ISA adapters are not Plug and Play
devices. (ISA adapters that are not Plug and Play are
referred to as *legacy adapters*.)

Note

See "Solving POST Error Message Problems" on
page 53 for information on error messages resulting
from resource conflicts.

Legacy adapters: Adapters that are not Plug and Play
are known as *legacy* adapters. If you install a legacy
adapter, you must manually configure it by setting switches
or jumpers on the adapter and by reserving it's resources
using the Configuration/Setup Utility program.

In the Configuration/Setup Utility program, the ISA Legacy
Resources screen shows the server resources that are
typically required by adapters:

- Memory resources
- I/O port resources
- DMA resources
- Interrupt resources

From the appropriate screens, you can select available
resources for the adapter you are installing. Resources
not being used by ISA legacy adapters are listed as
[**Available**]. You must set the resources used by the
newly installed ISA legacy adapter to [**ISA Resource**].
This notifies the Plug and Play software that these
resources are in use.

Just as you change system resources for installed
adapters, you must also change resources when you
remove an ISA legacy adapter. If you remove a legacy

adapter, change the resources it formerly used to
[**Available**]. This allows the Plug and Play software to
automatically use these resources for future configurations,
or you can use these resources for future manual
configurations.

Note

Refer to the documentation that comes with the
adapter for information on required system resources.

For information on configuring ISA legacy adapters, see
"Configuring an ISA legacy adapter" on page 132.

Installing adapters

Before you begin

- Read "Safety Information" on page 196
- Read the instructions that come with the new adapter.
- Turn the server and all other connected devices off.
- Disconnect all cables attached to the server and remove the server cover (see "Preparing to install and remove options" on page 73).

1. Review the instructions that come with the adapter to determine if it must be installed in an AGP, ISA, or PCI expansion slot.
2. Remove the access clip on the rear frame by sliding it upward approximately 12 mm (0.5 in) then slide it to the right until it comes off.

Access
Clip
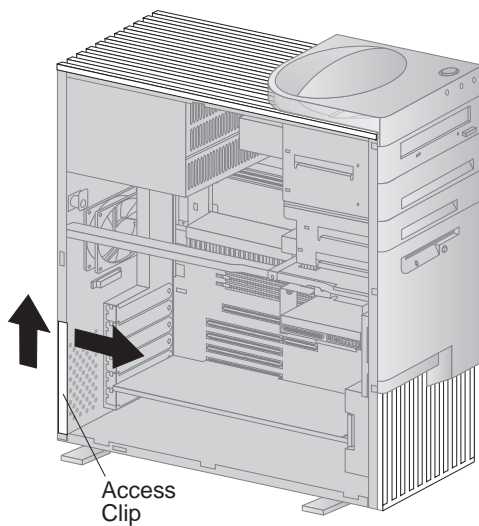
3. Remove the screw and cover for the appropriate
   expansion slot.

Expansion
Slot Cover
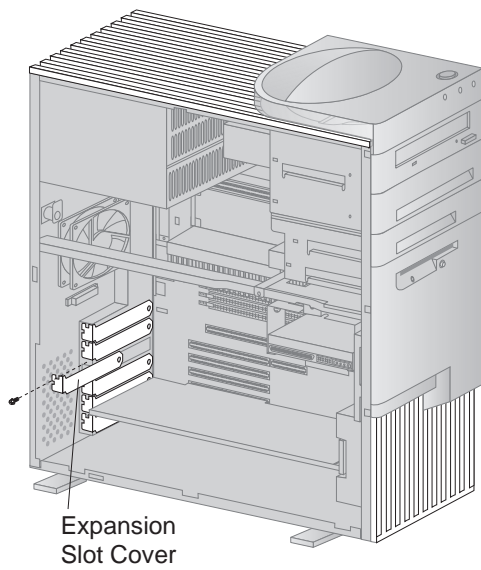
4. Touch the static-protective package containing the
   adapter to any *unpainted* (bare) metal surface in the
   server, then remove the adapter from the package.
5. For full length adapters or adapters with extenders,
   you must push the card retainer toward the front of
   the server until it latches into a position where you
   can insert the adapter into the guides. Then install
   the adapter into the appropriate slot on the system
   board. When the adapter is fully seated, release the
   retainer by pushing inward on the latch. Make sure
   the retainer holds the adapter securely in place.

   ┌─ **Note** ─────────────────────────────┐
   │ AGP graphics adapters must be installed in the │
   │ top expansion slot (slot 1). │
   └──┘

Adapter   Card Retainer
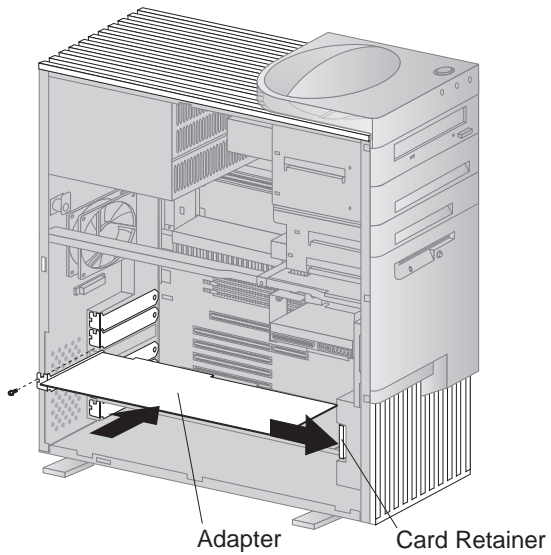
6. Install the screw that secures the adapter in the expansion slot.
7. Replace the access clip by sliding it onto the rear frame until it latches into position.

Note

Adapters require system resources. If you add an ISA legacy adapter, you must use the Configuration/Setup Utility program to set some previously [**Available**] resources to [**ISA Resource**]. For more information, see "Legacy adapters" on page 97.

What to do next:

- To work with another option, go to the appropriate section.
- To complete the installation, go to "Completing the installation" on page 126.

Removing adapters

1. Remove the access clip on the rear frame by sliding it upward approximately 12mm (0.5 in) then slide it to the right until it comes off.

Access
Clip
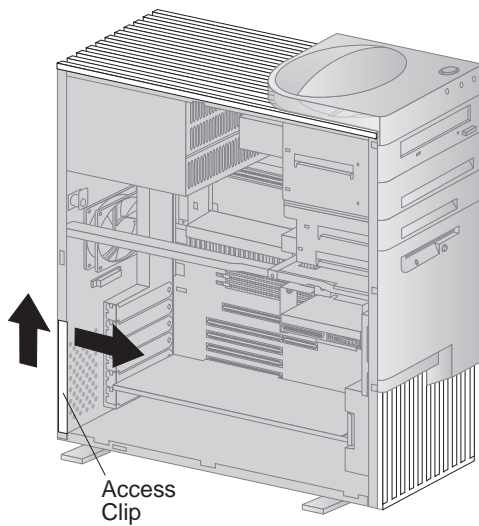
2. Locate the adapter and remove the screw.

3. For full length adapters or adapters with extenders, you must push the card retainer toward the front of the server until it latches into a position where you can remove the adapter. After the adapter is removed, release the retainer by pushing inward on the latch. The following illustrations show an adapter being removed from an expansion slot.

Adapter   Card Retainer
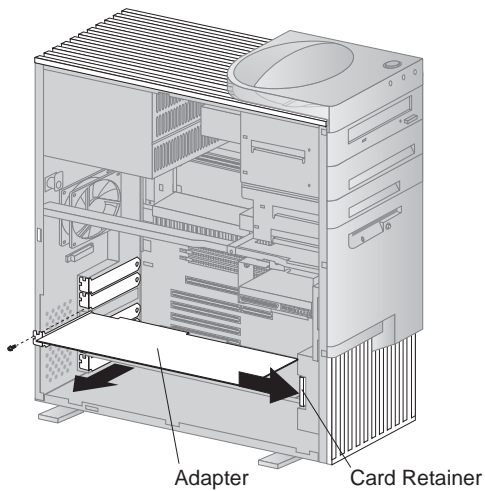
4. Insert the adapter into a static-protective package.
5. If you are not installing another adapter in this slot, install an expansion-slot cover. The following illustrations show the expansion-slot cover being installed.

Expansion
Slot Cover
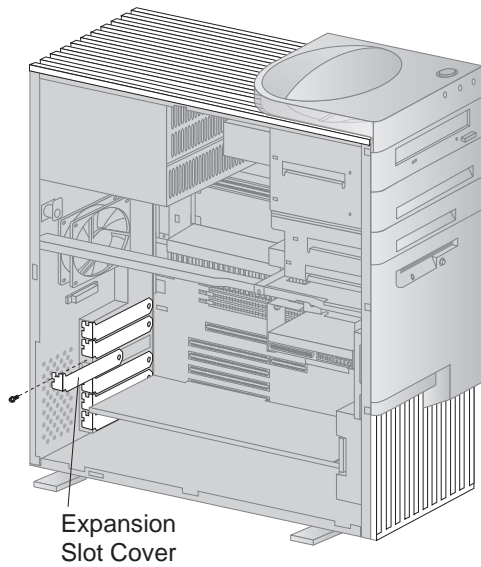
6. Replace the access clip by sliding it onto the rear
   frame until it latches into position.

Note

Removing an adapter frees up system resources. If
you remove an ISA legacy adapter, you must use the
Configuration/Setup Utility program to set the
previously used resources to [**Available**]. For more
information, see "Legacy adapters" on page 97.

What to do next:

- To work with another option, go to the appropriate
  section.
- To complete the installation, go to "Completing the
  installation" on page 126.

Working with internal drives

Use the following information and instructions for installing and removing internal drives.

When you are installing an internal drive, it is important to note what kind of drive you can install in each bay and the height restrictions imposed by each drive bay. Also, it is important to correctly connect the internal drive cables to the installed drive. For more information, see "Internal drives."

Internal drives: Internal drives are devices that your server uses to read and store data. You can add drives to your server to increase storage capacity and to enable your server to read other types of media. Some of the different drives available for your server are:

- Diskette drives
- Hard disk drives
- Tape drives
- CD-ROM drives

Internal drives are installed in *bays*. Within this book, the bays are referred to as bay 1, bay 2, and so on.

Your server comes with the following IBM-installed drives:

- A CD-ROM drive in bay 1.
- A 3.5-inch diskette drive in bay 4.
- A 3.5-inch hard disk drive in bay 5 (in some models).

The following illustration shows the location of the drive bays in your server.

Bay 1
Bay 2
Bay 3
Bay 4
Bay 5
Bay 6
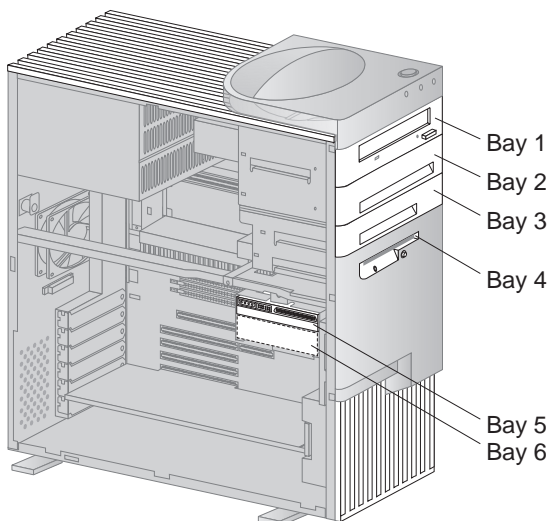
Drive specifications: The following table describes some of the drives you can install in each bay and their height requirements.

Table 2. Drive Specifications		
Bay	**Drives**	**Max. Height mm (in.)**
1	CD-ROM drive tape backup drive 3.5-inch or 5.25-inch	41.3 (1.6)
2	CD-ROM drive tape backup drive 3.5-inch or 5.25-inch	41.3 (1.6)
3	3.5-inch hard disk drive 3.5-inch diskette drive 3.5-inch tape backup drive	25.4 (1.0)
4	3.5-inch diskette drive	25.4 (1.0)
5	3.5-inch hard disk drive	41.3 (1.6)
6	3.5-inch hard disk drive	25.4 (1.0)

Bay	Max height	Drives
1	41.3 mm (1.6 in.)	• CD-ROM drive • tape backup drive 3.5-inch or 5.25-inch
2	41.3 mm (1.6 in.)	• CD-ROM drive • tape backup drive 3.5-inch or 5.25-inch
3	25.4 mm (1.0 in.)	• 3.5-inch hard disk drive • 3.5-inch diskette drive • 3.5-inch tape backup drive
4	25.4 mm (1.0 in.)	3.5-inch diskette drive
5	41.3 mm (1.6 in.)	3.5-inch hard disk drive
6	25.4 mm (1.0 in.)	3.5-inch hard disk drive

Notes

1. Drives that are greater than 41.3 mm (1.6 in.) high cannot be installed.
2. Install removable media (diskettes, tapes, or CDs) drives in the accessible bays: bays 1, 2, 3, or 4.
3. If a 41.3 mm (1.6 in.) drive is installed in either bay 5 or bay 6, no drive can be installed in the other bay of the lower drive bracket.
4. To properly mount a 3.5-inch drive into bay 1 or 2 (5.25-inch bays), use a 3.5-inch conversion kit for a 5.25-inch bay. For more information, see your IBM reseller or IBM marketing representative.

Power and signal cables: Your server uses cables to connect integrated drive electronics (IDE) and SCSI drives to the power supply and system board. The following cables are provided:

- Four-wire *power cables* connect most drives to the power supply. At the end of these cables are plastic connectors that attach to different drives; these connectors vary in size. Also, certain power cables attach to the system board.
- Flat *signal cables* for connecting SCSI, IDE, and diskette drives to the system board; signal cables are sometimes called *ribbon cables*. There are four ribbon signal cables that come with your server:
  - The wider signal cable has three connectors. One of these connectors is attached to the CD-ROM drive, one is a spare, and the third attaches to the primary IDE connector on the system board.
  - One of the narrower signal cables has two connectors. One of the connectors is attached to the diskette drive and the other is attached to the diskette-drive connector on the system board.
  - One 68-pin SCSI ribbon cable has five connectors. Use this cable to connect internal SCSI drives to the SCSI controller channel B connector on the system board.
  - One 68-pin SCSI ribbon cable has two connectors. One end is attached to the external SCSI connector on the back of the server. The other end is attached to the SCSI controller channel A connector on the system board. Attach external SCSI devices to the external SCSI connector on the back of the server.

There is a 50-pin SCSI connector provided for connecting internal *legacy* SCSI devices. Your server does not come with a cable attached to this connector.

Use the following information when you are installing SCSI devices.

1. Prepare each SCSI device *before* installation.
   a. Ensure that the proper SCSI identification (ID) number is set. SCSI IDs range from 0 to 15, and the SCSI ID is automatically or manually set. The default setting for the SCSI controller is 7. If the SCSI device you are installing supports the SCSI Configured AutoMatically (SCAM) protocol, you do not need to manually assign the ID. However, if the device does not support the SCAM protocol, use the documentation that comes with the device to manually set the SCSI ID.
2. Use the instructions in "Working with internal drives" on page 105 to install internal SCSI devices. These instructions are for the general installation of an internal drive in your server.
3. Ensure that the SCSI cables are set up properly.
   a. The cables attach only one way to the connectors on the system board.
   b. There are three cable connectors to the SCSI controller on the system board: a 68-pin, internal SCSI connector for channel A; a 68-pin, external SCSI connector for channel B; and a 50-pin, internal SCSI connector for channel B. If your server has an internal SCSI hard disk drive, it is connected to the channel A, 68-pin connector.

      For connecting external SCSI devices, there is a cable connecting The SCSI controller channel B, 68-pin connector to an external SCSI connector at the rear of the chassis.
   c. Although the physical specifications of your server limit the number of internal devices you can install, it is possible to add internal and external devices to the SCSI controller. For information on extra cables, contact your IBM reseller or IBM marketing representative.
4. If necessary, use the SCSISelect utility program to change settings for the integrated SCSI controller.

Note

To locate connectors on the system board, see "Identifying parts on the system board" on page 80.

The following are some important points to remember when connecting power and signal cables to internal drives:

- The diskette drive, hard disk drive, and CD-ROM drive that are preinstalled in your server come with power and signal cables attached. If you replace any

drives, it is important to remember which cable is attached to which drive.
- When you install a drive, ensure that the drive connector at the end of the signal cable is always connected to a drive; also, ensure that the drive connector at the other end is connected to the system board. This reduces electronic noise from the server.
- If two IDE devices are used on a single cable, one must be designated as the primary or master device and the other a secondary or subordinate device; otherwise, some of the IDE devices might not be recognized by the system. The primary or secondary designation is determined by switch or jumper settings on each IDE device.

For help in selecting drives, cables, and other options for your server, do one of the following:

- Within the United States, call 1-800-IBM-2YOU (1-800-426-2968), your IBM reseller, or your IBM marketing representative.
- Within Canada, call 1-800-565-3344 or 1-800-465-7999.
- Outside the United States and Canada, contact your IBM reseller or IBM marketing representative.

Accessing drive bays

> **Before you begin**
>
> - Read "Safety Information" on page 196
> - Turn off the server and all other connected devices.
> - Disconnect all external cables and power cords, and then remove the server cover (see "Preparing to install and remove options" on page 73).

> **Notes**
>
> 1. Drive bays 1, 4, and (on some models) 5 come with drives preinstalled.
> 2. Drive bays 2 and 3 have a bay panel and static shield installed.
> 3. If you remove a drive which has removable media from a bay and you do not intend to install a new drive immediately, reinstall the static shield and bay panel for that bay.

To access drive bays 1 through 4, go to "Accessing drive bays 1 through 4" on page 110.

To access drive bays 5 and 6, go to "Accessing drive bays 5 and 6" on page 111.

Accessing drive bays 1 through 4:

1. If the drive you are installing has removable media, remove the bay panel from the drive bay by using a flat-bladed screwdriver to pry the tab on the left edge of the panel as shown.
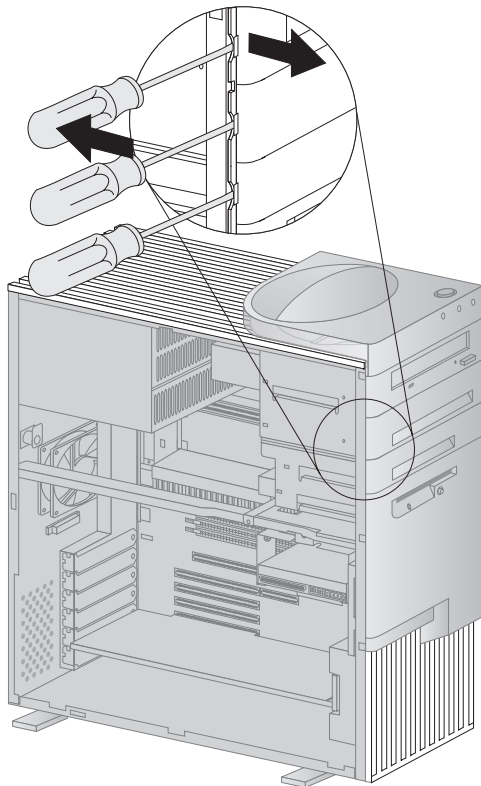
2. Remove the top cover by using a flat-bladed screwdriver to release the tab on the left edge as shown.
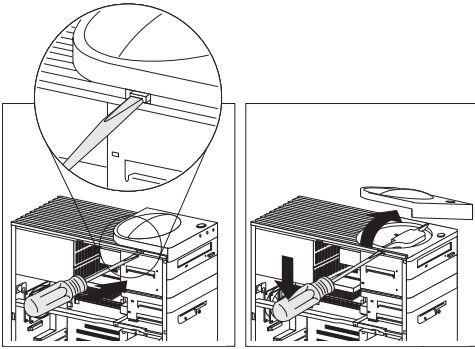
3. Remove the two screws that secure the top and the bottom of the upper drive bracket, then disconnect the power and signal cables attached to the drives in the upper drive bracket.
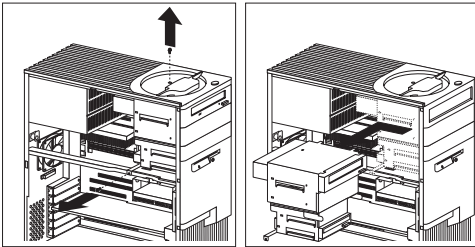
4. Slide the drive bracket to the rear approximately 25 mm (1.0 in.) and then slide it sideways until it is out of the server.
5. If the drive you are installing has removable media, remove the static shield from the drive bay where you are installing the drive.

Accessing drive bays 5 and 6

1. Remove the screw that secures the lower drive bracket.
2. Rotate the drive bracket downward and slide it out.
3. If necessary, disconnect the power and signal cables attached to the drives in the lower drive bracket.
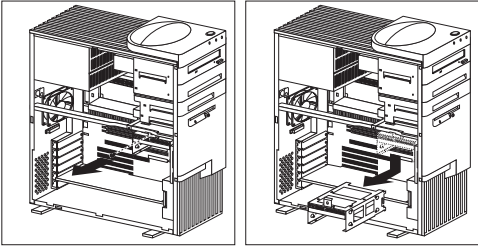
Installing a drive in bay 1, 2, 3, or 4

Before you begin

- Read "Safety Information" on page 196
- Turn off the server and all other connected devices.
- Disconnect all external cables and power cords, and then remove the server cover (see "Preparing to install and remove options" on page 73).
- Read the documentation that comes with the drive.
- Read "Internal drives" on page 105.
- To install a 3.5-inch drive into drive bay 1 or 2 (5.25-inch bays), you must install a conversion kit. For information on purchasing a 3.5-inch conversion kit for a 5.25-inch bay, see your IBM reseller or IBM marketing representative.

Consider the following when installing a drive:

- Bays 1 and 2 can hold up to a 5.25-inch drive, such as a CD-ROM, diskette, or tape drive.
- Bays 3 and 4 can hold up to a 3.5-inch drive, such as a diskette, hard disk, or tape drive.
- Drives that are greater than 41.3 mm (1.6 in.) high cannot be used.
- Drives that require removable media (diskettes, tapes, or CDs) must be installed in the accessible bays: 1, 2, 3, or 4.

1. Determine which drive bay of the upper drive bracket you are going to use.
2. Remove the upper drive bracket. See "Accessing drive bays" on page 109.
3. Touch the static-protective package containing the new drive to any *unpainted* (bare) metal surface and then remove the drive.
4. Install the drive into the upper drive bracket so that the power and signal cable connectors are to the rear of the server. Align the screw holes and insert the four screws.
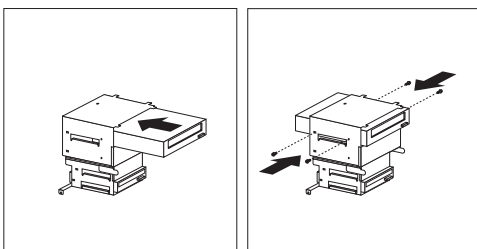
5. Reinstall the upper drive bracket and secure it with screws at the top and bottom.

6. Connect the power and signal cables to the drive(s).
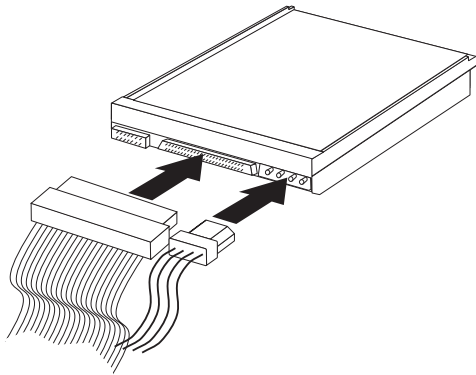
What to do next:

- To work with another option, go to the appropriate section.
- To complete the installation, go to "Completing the installation" on page 126.

Installing a drive in bay 5 or 6: Bays 5 and 6 can accommodate 3.5-inch hard disk drives only.

Before you begin

- Read "Safety Information" on page 196
- Turn the server and all other connected devices off.
- Disconnect all external cables and power cords, and then remove the server cover (see "Preparing to install and remove options" on page 73).
- Read the documentation that comes with the drive.
- Read "Internal drives" on page 105.

---

1. Determine which drive bay of the lower drive bracket you are going to use.
2. Remove the lower drive bracket. See "Accessing drive bays" on page 109.
3. Touch the static-protective package containing the new drive to any *unpainted* (bare) metal surface and then remove the drive.
4. Install the drive into the lower drive bracket so that the power and signal cable connectors are to the open side of the server. Align the screw holes and insert four of the grommet screws that came with your server.
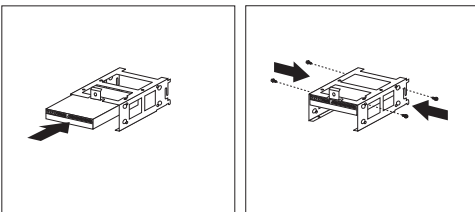
5. Reinstall the lower drive bracket and secure it with the screw.
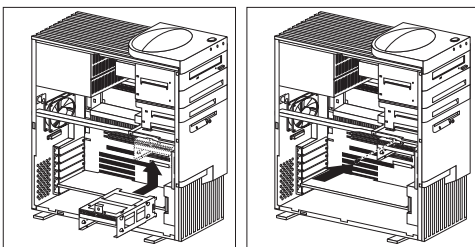
6. Connect the power and signal cables to the drive(s).
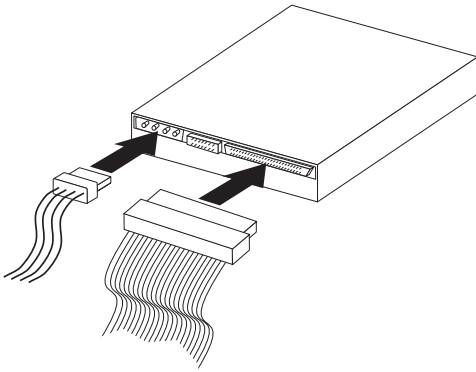
What to do next:

- To work with another option, go to the appropriate section.
- To complete the installation, go to "Completing the installation" on page 126.

Working with security options

This section describes some of the security options that are available for your server.

- To help prevent hardware theft you can use the cover lock and add a security U-bolt and cable to your server.
- To erase lost or forgotten passwords in order to set up password protection, you can move the CMOS clear (password) jumper on the system board.

  > **Important**
  >
  > Clearing CMOS memory erases the configuration of your server. Therefore, you must, reconfigure the server after clearing CMOS memory. If possible, record the configuration information of your server *before* moving the CMOS jumper.

  Use the Configuration/Setup Utility program to set, change, or delete passwords.
- To help deter software and data theft, you can set the diskette write-protect switch on the system board to prevent writing data to diskettes.

The following list is a quick reference to these procedures:

- "Installing a security U-bolt" on page 118
- "Erasing lost or forgotten passwords" on page 122
- "Setting the diskette write-protect switch" on page 125

Installing a security U-bolt: You can add a security U-bolt to the rear of your server. Adding a U-bolt enables you to add a security cable and lock which helps prevent hardware theft. After you add the security cable, make sure that it does not interfere with other cables that are connected to the server.

Before you begin

- Obtain the following:
  - A 19-mm (3/4 in.) U-bolt and threaded nuts that fit the U-bolt
  - A security cable
  - A lock, such as a combination lock or padlock
  - An appropriately sized or adjustable wrench
  - A flat-bladed screwdriver
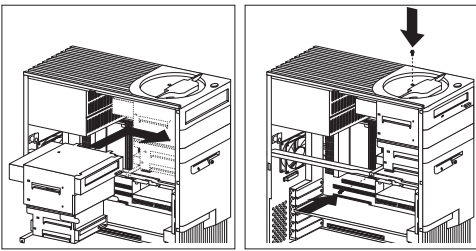- Read "Safety Information" on page 196
- Turn off the server and all other connected devices.
- Disconnect all external cables and power cords, and remove the server cover (see "Preparing to install and remove options" on page 73).

---

1. Use a tool, such as a screwdriver, to remove the two
    metal knockouts.

Metal
Knockouts
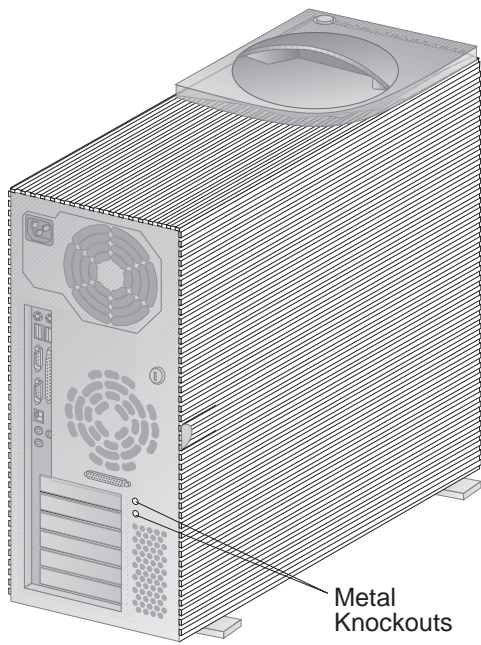
2. Insert the U-bolt through the rear panel, then attach and tighten the nuts with an appropriately sized or adjustable wrench.
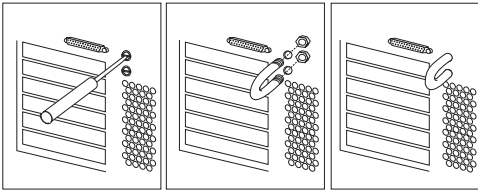
3. Replace the server cover. For more information, see "Replacing the cover and connecting the cables" on page 127.
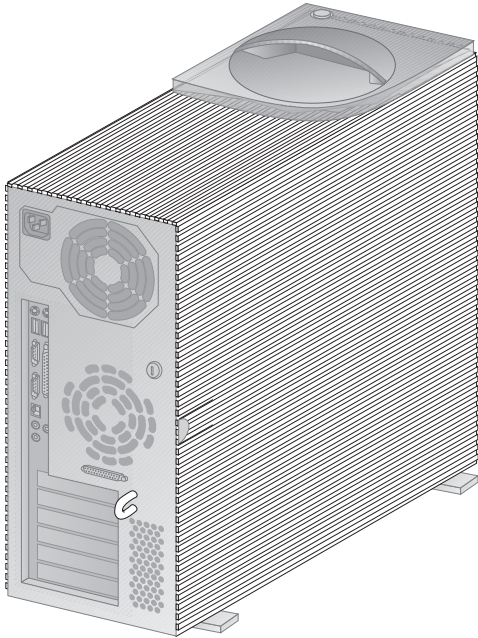
4. Thread the cable through the U-bolt and around an object that is not a part of or permanently secured to the building structure or foundation, and from which it cannot be removed; then fasten the cable ends together with a lock.

    The following illustration shows an example of how this might work.
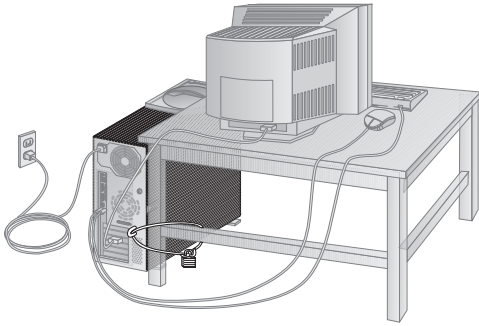
After installing the U-bolt, be sure to keep the server cover locked.

Erasing lost or forgotten passwords

```
Notes

1.  To set, change, or delete a password, see "Using
    the Configuration/Setup Utility Program" on
    page 19.
2.  When enhanced security is enabled, you cannot
    erase the administrator password. If you forget
    or lose the administrator password, the system
    board in your server must be replaced in order to
    regain access to the Configuration/Setup Utility
    program. For more information on enhanced
    security, see "Enhanced security" on page 43.
```

Your server uses *complementary metal-oxide
semiconductor (CMOS)* memory on the system board for
storing configuration and setup information. CMOS
memory maintains information about:

- Date and time
- Security features
- Power-management devices
- Storage devices
- Keyboard and mouse
- ISA legacy configuration information
- Plug and Play configuration information
- Port assignments
- I/O addresses and interrupts
- Other selectable features

Within the security features are the settings for the
power-on and administrator passwords. If you need to
erase a lost or forgotten password, you must erase all
CMOS configuration and setup information by moving the
jumper designated as *Clear CMOS Request*.

To locate this jumper, see "Identifying parts on the system
board" on page 80 or see the label inside the server.

```
Important

Clearing CMOS memory erases the configuration of
your server. Therefore, you must reconfigure the
server after clearing CMOS memory. If possible,
record the configuration information of your server
before moving the CMOS jumper.
```

1. Locate the *Clear CMOS Request* jumper on the system board. For more information, see "Identifying parts on the system board" on page 80 or see the label inside the server.

2. Move the jumper from its normal position (pins 1 and 2) to pins 2 and 3. It might be helpful to use needlenose pliers to move the jumper, but be careful not to damage any system board components or crush the jumper.
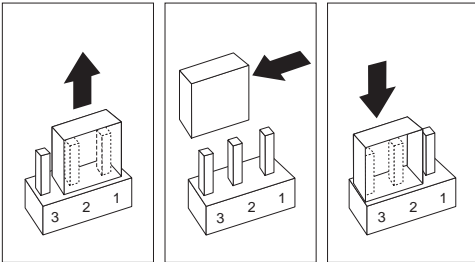
3. Reconnect the power cord only.
4. Turn the server back on for approximately 10 seconds.

> **Attention**
>
> **Do not touch any components while power is on.**

5. Turn off the server. CMOS memory is now cleared.

> **Note**
>
> You might not be able to power off with a single touch of the power switch until POST is nearly complete. Press and hold the power switch for 5 seconds or unplug the power cord to power off your server.

6. Move the jumper back to its normal position (pins 1 and 2).
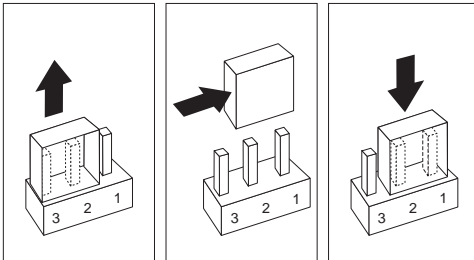
7. Replace the cover and reconnect the

What to do next:
After clearing CMOS memory, you must reconfigure the server. After reassembling the server (go to "Completing the installation" on page 126), use the Configuration/Setup Utility program to reset the date and time, reset any passwords, and reconfigure the server. For more information, refer to "Setting passwords" on page 134.

Setting the diskette write-protect switch:

The diskette write-protect switch controls whether you can write information to a diskette using a diskette drive. The ability to prevent writing to a diskette is particularly useful if you are concerned about the security of information that can be obtained through a network.

Note

This switch does not affect the ability to read information from a diskette.

Before you begin

- Read "Safety Information" on page 196
- Turn off the server and all other connected devices.
- Disconnect all external cables attached to the server, and then remove the server cover (see "Preparing to install and remove options" on page 73).

---

1. Locate the rocker switches on the system board. Refer to the label inside the server or see "Identifying parts on the system board" on page 80.
2. For normal diskette operation or for read-only diskette operation, set switch 8 as illustrated below. It might be helpful to use the end of a small screwdriver to set the switch.
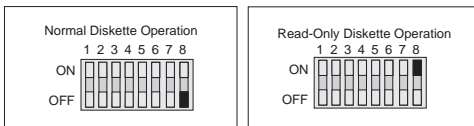
```
Normal Diskette Operation          Read-Only Diskette Operation
   1 2 3 4 5 6 7 8                      1 2 3 4 5 6 7 8
ON [                ]                ON [                ]
OFF [               ]               OFF [               ]
```

What to do next:

- To work with another option, go to the appropriate section.
- To complete the installation, go to "Completing the installation" on page 126.

Completing the installation

After working with options, you need to install any removed parts, replace the cover, and reconnect any cables, including power cords and telephone lines. Also, depending on the option installed, you might need to update information in the Configuration/Setup Utility program.

The following list is a quick reference to these procedures:

- "Replacing the cover and connecting the cables" on page 127
- "Updating the server configuration" on page 127

Replacing the cover and connecting the cables

> **Before you begin**
>
> Read "Safety Information" on page 196

1. Ensure that all components have been reassembled correctly and that no tools or loose screws are left inside your server.
2. Clear any cables that might impede the replacement of the cover.
3. Install the side cover by placing it into position and sliding it to the rear as shown in the following illustration. Make sure the cover is latched into position.
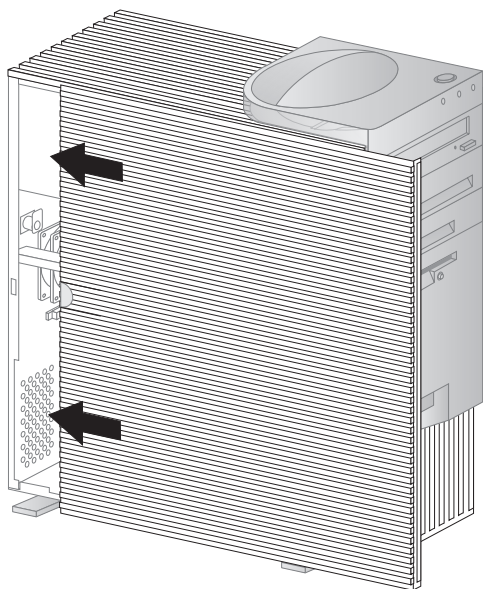
4. Lock the cover.
5. Make sure the stabilizing feet are rotated outward so that they properly support the server. Refer to "Using the stabilizing feet" on page 73.
6. Reconnect the external cables and cords to the server, then plug the power cords into properly grounded electrical outlets.

Updating the server configuration: The configuration information in this section applies to installing options. For more information on using the Configuration/Setup Utility program, see "Using the Configuration/Setup Utility Program" on page 19.

Also, you may need to install device drivers after updating the configuration settings. For more information, see the instructions that come with the option to determine if device drivers are required and how to install them.

After you add, remove, or replace options, you must update the configuration settings. This reconfiguration is performed automatically by the server or *manually* by you. When the server automatically configures an option, it uses system programs. However, you must save the new settings. If the system programs do not update the settings, you can use the Configuration/Setup Utility program to reconfigure the appropriate settings.

For example, when you start your server after adding most internal hard disk drives, the settings are automatically updated, and you use the Configuration/Setup Utility program to save those changes. However, if a resource conflict arises after an ISA legacy adapter is installed or removed, you must manually update the server configuration and save the information.

Note

Make a record of all customized settings before you perform any of the following steps.

Starting the Configuration/Setup Utility program

When you restart the server for the first time after working with most options, a message appears indicating that a configuration change has occurred. You are then prompted to enter the Configuration/Setup Utility program to manually update the configuration settings or to confirm and save the settings that were automatically updated by the system programs.

After you change an option and restart the server, the following screen might appear.

```
            POST Startup Error(s)
 The following error(s) were detected when
 the system was started:
 162 Configuration Change Has Occurred
 Select one of the following:
      Continue
      Exit Setup
```

> **Note**
>
> Depending on the configuration changes that occurred, the error message you see might be different from the one shown here. If the preceding screen appears, select **Continue** until you reach the Configuration/Setup Utility menu (see "Changing settings and exiting" on page 131).

If the preceding screen does not appear, then use the following procedures to access the Configuration/Setup Utility menu.

To access the Configuration/Setup Utility program:

1. Turn on the server.

   If your server is on when you start this procedure, you must shut down the operating system, turn off the server and wait a few seconds, and then restart the server. Do not use **Ctrl+Alt+Del** to restart the server.

2. When the Configuration/Setup Utility prompt appears in the lower left corner of the screen, press **F1**.

   a. If you have *not* set an administrator password, the Configuration/Setup Utility program menu appears. If you have set an administrator password, type the administrator password and press **Enter**.

   b. If you have set both an administrator and a power-on password, you can type either of the passwords at the password prompt. However, if you type your power-on password, you can *view* limited information in the Configuration/Setup Utility program, but you cannot *change* settings. To change settings in the Configuration/Setup Utility program, type your administrator password at the password prompt.

```
      Configuration/Setup Utility

          Select Option:

          •System Summary
          •Product Data
          •Devices and I/O Ports
          •Start Options
          •Date and Time
          •System Security
          •Advanced Setup
          •ISA Legacy Resources
          •Power Management

          Save Settings
          Restore Settings
          Load Default Settings

              Exit Setup
```

Note

The menu you see on your server might look slightly different from the menu shown here, but it will operate the same way.

Changing settings and exiting: In the
Configuration/Setup Utility menus, you can accept the
configuration changes by viewing and saving the changes,
or you can make manual changes and then save the
settings.

The following is a quick reference for identifying symbols in
the Configuration/Setup Utility program. For information on
the function of keys, see "Using the Configuration/Setup
Utility Program" on page 19.

- If a bullet (•) is beside a menu item, then an
  additional menu is available.
- Most information enclosed in brackets ([ ]) can be
  changed. You cannot change information that is not
  surrounded by [ ].
- A right arrowhead (→) beside a menu item indicates
  that a configuration change occurred in that category.
  The → might also appear in subsequent menus.
- If an asterisk (*) is beside a menu item, then a
  resource conflict is detected.

When you complete your changes or finish viewing
information, return to the Configuration/Setup Utility menu
and select **Save Settings** to save the changes. From this
location, you can exit the Configuration/Setup Utility
program.

To exit from the Configuration/Setup Utility program, follow
these steps:

1. From the Configuration/Setup Utility menu, press **Esc**.
2. The Exit Setup menu appears. You can save your
   changes, exit from the Configuration/Setup Utility
   program without saving your changes, or return to the
   Configuration/Setup Utility menu. Use the arrow keys
   to select the desired option and press **Enter**.

Configuring an ISA legacy adapter: To configure an installed ISA legacy adapter, you might need to alter switch or jumper settings on the adapter. Also, you must use the Configuration/Setup Utility program to identify the ISA legacy resource requirements, such as memory locations, I/O assignments, and DMA and interrupt assignments.

Note

For more information about required resources and switch settings, refer to the documentation that comes with the adapter.

To store the legacy resource information for an installed adapter:

1. Start the Configuration/Setup Utility (see "Starting the Configuration/Setup Utility program" on page 129).
2. Select **ISA Legacy Resources** from the Configuration/Setup Utility menu and press **Enter**.
3. As needed, select **Memory Resources, I/O Port Resources, DMA Resources,** or **Interrupt Resources**.
4. Set the appropriate resource to **ISA Resource** and press **Enter**.
5. Remember to save the changes when you exit from the Configuration/Setup Utility program.
6. Return to the Configuration/Setup Utility menu and select **Save Settings** to save the changes. From this location, you can exit the Configuration/Setup Utility program.

   To exit from the Configuration/Setup Utility program, follow these steps:
   a. From the Configuration/Setup Utility menu, press **Esc**.
   b. The Exit Setup menu appears. You can save your changes, exit from the Configuration/Setup Utility program without saving your changes, or return to the Configuration/Setup Utility menu. Use the arrow keys to select the desired option and press **Enter**.

If you remove an ISA legacy adapter, you must set to
Available the system resources that are no longer being
used. To do this, follow the above procedures and select
Available at step 4.

 Note

For more information on adapters and resolving
conflicts, see "Adapter configuration" on page 97 and
"Interrupt and DMA resources" on page 135.

Configuring startup devices: Startup devices are
devices where the server looks for an operating system
when it is powered on. After adding new devices to the
server, you might want to change the sequence of the
startup devices. You can use the Configuration/Setup
Utility program to configure startup devices.

To configure startup devices:
 1. Start the Configuration/Setup Utility (see "Starting the
    Configuration/Setup Utility program" on page 129).
 2. Select **Start Options** from the Configuration/Setup
    Utility menu and press **Enter**.
 3. Select **Startup Sequence** from the Start options
    menu and press **Enter**.
 4. Select **First Startup Device** and press **Enter**.
 5. Use the arrow keys to make your selection and press
    Enter.
 6. If necessary, repeat the above steps for **Second
    Startup Device**, **Third Startup Device**, and **Fourth
    Startup Device**.
 7. If **Automatic Power On Startup Sequence** is
    enabled, repeat the above steps to select the startup
    devices.
 8. Remember to save the changes when you exit from
    the Configuration/Setup Utility program.

Setting passwords: If you used the *Clear CMOS Request* jumper to erase lost or forgotten passwords, configuration and setup information is also erased. You must reconfigure the server, and reset the power-on and administrator passwords.

For information on clearing CMOS memory, see "Erasing lost or forgotten passwords" on page 122.

For more information on password protection and setting the date and time, see "Instructions for common procedures" on page 36.

To set a power-on or administrator password:

1. Start the Configuration/Setup Utility (see "Starting the Configuration/Setup Utility program" on page 129).
2. Select **System Security** from the Configuration/Setup Utility menu and press **Enter**.
3. Select **Administrator Password** or **Power-on Password** and press **Enter**.
4. Type in the new password in the appropriate fields.
5. Select **Change Password** and press **Enter**. For more information, see "Understanding the power-on password" on page 37 or "Understanding the administrator password" on page 40.
6. Remember to save the changes when you exit from the Configuration/Setup Utility program.

Interrupt and DMA resources

This section lists the settings for the default interrupt and direct-memory-access (DMA) resources for your server. If you get a conflict, use this section to see what resources are available.

> **Note**
>
> The interrupt and DMA settings might change when your server is configured.

Table 3. Interrupt Resources

Interrupt Request	System Resource
0	Timer
1	Keyboard
2	Interrupt Controller
3[5]	Serial Port 2
4[5]	Serial Port 1
5	Available
6	Diskette
7[5]	Parallel Port
8	Real Time Clock
9	ACPI
10	Available
11	Available
12	Mouse
13	Coprocessor
14	IDE Drives on primary channel
15	IDE Drives on secondary channel

Interrupt resources:

Interrupt request	System resource
0	Timer
1	Keyboard
2	Interrupt controller
3[5]	Serial port 2
4[5]	Serial port 1
5	Available
6	Diskette
7[5]	Parallel port
8	Real time clock
9	Available
10	Available
11	Available
12	Mouse
13	Coprocessor

---

[5] Can be modified to alternative settings or disabled.

14   IDE drives on primary
                channel
15   IDE drives on secondary
                channel

The Advanced Programmable Interrupt Controller (APIC) manages additional hardware interrupts to the system BIOS. The following interrupts are available to the APIC.

Interrupt request	System resource
16	PCI device
17	PCI device
18	PCI device
19	PCI device
20	Not available
21	Not available
22	Not available
23	Not available
24	SMI (system-management interrupt)

DMA resources:

DMA channel	System Resource
0 - 8 bits	Available
1 - 8 bits	Available
2 - 8 bits	Diskette
3 - 8 bits	Parallel port
4 - 16 bits	System resource
5 - 16 bits	Available
6 - 16 bits	Available
7 - 16 bits	Available

System board switches

The following table provides the system switch identifiers and descriptions of these switches. The system switch block is identified by key **13** in the illustration at "Identifying parts on the system board" on page 80.

Note

Turn off the server and disconnect the power cord before moving any switches.

Table 4. System Board Switch Block

Identifier	Switch Description
1	Reserved
2	Reserved
3	Reserved
4	Reserved
5	BIOS recovery mode. When this switch is set to On, perform BIOS recovery using the boot block (boot block recovery).
	The recovery boot block is in a protected area of flash memory that cannot be overwritten. When the BIOS becomes corrupted (for example, if a power failure occurs during a flash update), the recovery boot block can be used to restore the BIOS. The code in the recovery boot block enables the server to start up and read a flash diskette. The flash utility automatically recovers the system BIOS from the BIOS recovery files on the diskette. When the flash is complete, the switch must be moved to the Off position.
	The default setting is Off (disabled).
6	Ethernet operation mode. When this switch is set to On, the onboard Ethernet controller is disabled. When this switch is set to Off, the onboard Ethernet controller operates normally.
	The default setting is Off.
7	Administrator password locked. When this switch is set to On, the administrator password is unlocked, and may be changed or reset although enhanced security is enabled. When this switch is set to Off, the administrator password is locked, and may not be changed or reset if enhanced security is enabled.
	The default setting is Off.
8	Diskette write protection. When this switch is set to On, prevent writing to diskette. When this switch is set to Off, normal diskette read and write operation is in effect.
	The default setting is Off.

System Board Removal.

To remove the system board. do the following.

1. Disconnect the cables and remove the side cover, see "Preparing to install and remove options" on page 73 and "Disconnecting cables and removing the cover" on page 74.
2. Remove the air baffle, see "Accessing the system board" on page 82.

3. Remove the adapters, see "Working with adapters" on page 95.
4. Remove the DIMMs, see "Working with system memory" on page 84.
5. Remove the microprocessor(s), see "Working with microprocessors" on page 89.
6. Make a note of where the cables are attached to the system board; then, disconnect the system board cables.
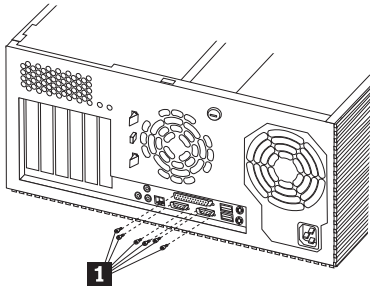
7. Remove the six external connector screws **1** from the rear of the server.
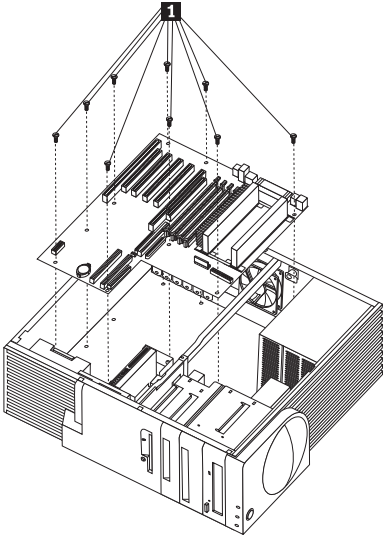
8. Remove the nine system board screws **1** from the system board and remove the system board.

System Board Replacement

To replace the system board, reverse the system board removal procedure. See "System Board Removal." on page 139.

> **Important**
>
> Always flash the server with the latest level BIOS and update the machine type and serial number. The latest level of BIOS for the server is available through the World Wide Web and the IBM Bulletin Board System (BBS). Refer to "Online Support" on page iv for the appropriate World Wide Web addresses and bulletin-board telephone numbers.

Termination requirements

The SCSI controller provides termination for the internal SCSI controller bus (cable) in your server. There are no termination requirements for any SCSI controller devices you install in the hard disk drive bays or attach to this cable.

If you attach a SCSI controller cable and devices to the external SCSI controller connector, set the termination for the last device on that SCSI controller cable to Enabled. Refer to the instructions that come with the SCSI controller device for more information about termination.

Symptom-to-FRU index

The Symptom-to-FRU Index lists error symptoms and possible causes. The most likely cause is listed first. Always begin with "General Checkout" on page 5. This index can also be used to help you decide which FRUs to have available when servicing a computer. If you are unable to correct the problem using this index, go to "Undetermined problem" on page 189.

Notes

- If you have both an error message and an incorrect audio response, diagnose the error message first.
- If you cannot run the diagnostic tests or you get a diagnostic error code when running a test, but did receive a POST error message, diagnose the POST error message first.
- If you did not receive any error message, look for a description of your error symptoms in the first part of this index.
- Check all power supply voltages before you replace the system board. (See "Power supply" on page 59.)
- Check the hard disk drive jumper settings before you replace a hard disk drive.

Important

1. Some errors are indicated with a series of beep codes.

   The Netfinity 3500 - Type 8655 default setting is to come up quiet (No beep and no memory count and checkpoint code display) when no errors are detected by POST. To enable Beep and memory count and checkpoint code display when a successful POST occurs:
   - Enable **Power on Status** in setup.
2. The processor is a separate FRU from the system board; the processor is not included with the system board FRU.

Beep symptoms

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

Beeps	Description
1-2-X	• One Beep • A pause (or break) • Two beeps • A pause (or break) • Any number of beeps
4	Four continuous beeps

Beep Symptom	FRU/Action
1-1-3 CMOS read/write error	1. **Run Setup** 2. System Board
1-1-4 ROM BIOS check error	1. **System Board**
1-2-X DMA error	1. **System Board**
1-3-X	1. **Memory Module** 2. System Board
1-4-4	1. **Keyboard** 2. System Board
1-4-X Error detected in first 64 KB of RAM.	1. **Memory Module** 2. System Board
2-1-1, 2-1-2	1. **Run Setup** 2. System Board
2-1-X First 64 KB of RAM failed.	1. **Memory Module** 2. System Board
2-2-2	1. **Video Adapter** (if installed) 2. System Board
2-2-X First 64 KB of RAM failed.	1. **Memory Module** 2. System Board
2-3-X	1. **Memory Module** 2. System Board
2-4-X	1. **Run Setup** 2. Memory Module 3. System Board
3-1-X DMA register failed.	1. **System Board**
3-2-4 Keyboard controller failed.	1. **System Board** 2. Keyboard
3-3-4 Screen initialization failed.	1. **Video Adapter** (if installed) 2. System Board 3. Display

Beep Symptom	FRU/Action
3-4-1 Screen retrace test detected an error.	1. **Video Adapter** (if installed) 2. System Board 3. Display
3-4-2 POST is searching for video ROM.	1. **Video Adapter** (if installed) 2. System Board
4	1. **Video Adapter** (if installed) 2. System Board
All other beep code sequences.	1. **System Board**
One long and one short beep during POST. Base 640 KB memory error or shadow RAM error.	1. **Memory Module** 2. System Board
One long beep and two or three short beeps during POST. (Video error)	1. **Video Adapter** (if installed) 2. System Board
Three short beeps during POST.	1. System Board
Continuous beep.	1. **System Board**
Repeating short beeps.	1. **Keyboard stuck key?** 2. Keyboard Cable 3. System Board

No beep symptoms

Symptom/Error	FRU/Action
No beep during POST but computer works correctly.	1. **System Board**
No beep during POST.	1. **See "Undetermined problem" on page 189.** 2. System Board 3. Memory Module 4. Any Adapter or Device 5. Power Cord 6. Power Supply

POST error codes

In the following index, "X" can represent any number.

POST Error Code	FRU/Action
000 SCSI Adapter not enabled.	1. **Verify adapter device and Bus Master fields are enabled in PCI configuration program. See documentation shipped with computer.**
02X	1. **SCSI Adapter**
08X Check SCSI terminator installation.	1. **SCSI Cable** 2. SCSI Terminator 3. SCSI Device 4. SCSI Adapter
101 System board interrupt failure.	1. **System Board**
102 System board timer error.	1. **System Board**
106	1. **System Board**
110, 111 System board memory parity error.	1. **Memory Module** 2. System Board
114 Adapter ROM error.	1. **Adapter Memory** 2. System Board
121 Hardware error	1. _____ 2. _____
129 Internal cache test error.	1. **Processor** 2. L2 Cache Memory 3. System Board
151 Real-time clock failure.	1. **System Board**
161 Bad battery.	1. **Run Setup** 2. Battery (See page "Safety Information" on page 196.) 3. System Board

POST Error Code	FRU/Action
162 Configuration mismatch.	1. **Run Setup and verify Configuration** 2. Had a device been added, removed, changed location? If not, suspect that device. 3. Power-on external devices first, then power-on computer. 4. CMOS Backup Battery (See page "Safety Information" on page 196.) 5. System Board
163 Clock not updating or invalid time set.	1. **Time and Date Set?** 2. CMOS Backup Battery (See page "Safety Information" on page 196.) 3. System Board
164 POST detected a base memory or extended memory size mismatch error.	1. **Run Setup. Check System Summary menu for memory size change.** 2. Run the Extended Memory Diagnostic tests.
166 Boot Block Check Sum Error	1. **Run Flash Recovery using Boot Block. See** 2. **System Board**
167 Microprocessor installed that is not supported by the current POST/BIOS.	1. **Run Setup. Check Stepping level for the BIOS level needed, then perform the flash update.** 2. Processor
168 Alert on LAN error	1. **Run Setup. Check to see that Ethernet and Alert on LAN are enabled.** 2. System Board
17X, 18X	1. **C2 Security**
176 Covers were removed or security error was detected	1. **Enter the administration password to clear the error**
177 Corrupted Administrator Password.	1. System Board
183	1. **Enter the administrator password**

POST Error Code	FRU/Action
185 Corrupted boot sequence.	1. **Set configuration and reinstall the boot sequence.**
186 Security error has been cleared	1. **N/A**
187	1. **Clear Administration password** 2. System Board
189	1. **More than three password attempts were made to access the computer.**
190 Chassis intrusion detector was cleared. This is information only, no action required. If this code does not clear:	1. **System Board**
1XX Not listed above.	1. **System Board**
201, 20X Memory data error.	1. **Run Enhanced Diag. Memory Test** 2. Memory Module 3. System Board
225	1. **Unsupported Memory**
229 External cache test error.	1. **L2 Cache Memory** 2. System Board
262 POST detected a base memory or extended memory type error.	1. **Run Setup. Check System Summary menu for memory type change.** 2. Run the Extended Memory Diagnostic tests.
301	1. **Keyboard** 2. Keyboard Cable 3. System Board
303 With an 8603 error.	1. **Mouse** 2. Keyboard 3. Keyboard Cable 4. System Board
303 With no 8603 error.	1. **Keyboard** 2. Keyboard Cable 3. System Board
3XX Not listed above.	1. **Keyboard** 2. Keyboard Cable 3. System Board
5XX	1. **Video Adapter** (if installed) 2. System Board

POST Error Code	FRU/Action
601	1. **Diskette Drive A** 2. Diskette Drive Cable 3. System Board
602	1. **Bad Diskette ?** 2. Verify Diskette and retry.
604 And able to run diagnostics.	1. **Run Setup and verify diskette configuration settings** 2. Diskette Drive A/B 3. Diskette Drive Cable 4. System Board
605 POST cannot unlock the diskette drive.	1. **Diskette Drive** 2. Diskette Drive Cable 3. System Board
662	1. **Diskette drive configuration error or wrong diskette drive type, run Setup Configuration.**
6XX Not listed above.	1. **Diskette Drive** 2. System Board 3. External Drive Adapter 4. Diskette Drive Cable 5. Power Supply
762 Math coprocessor configuration error.	1. **Run Setup** 2. Processor 3. System Board
7XX Not listed above.	1. **Processor** 2. System Board
962 Parallel port configuration error.	1. **Run Configuration** 2. Parallel Adapter (if installed) 3. System Board
9XX	1. **Printer** 2. System Board
1047	1. **16-Bit AT Fast SCSI Adapter**
107X Check SCSI terminator installation.	1. **Check SCSI terminator installation**. 2. SCSI Cable 3. SCSI Terminator 4. SCSI Device 5. SCSI Adapter
1101 Serial connector error, possible system board failure.	1. **Run Advanced Diagnostics**
1101, **1102**, **1106**, **1108**, **1109**	1. **System Board** 2. Any Serial Device

POST Error Code	FRU/Action
1107	1. **Communications Cable** 2. System Board
1102 Card selected feedback error.	1. **Run Advanced Diagnostics**
1103 Port fails register check.	1. **Run Advanced Diagnostics** 2. System Board
1106 Serial option cannot be turned off.	1. **Run Advanced Diagnostics** 2. System Board
1107	1. **Serial Device Cable** 2. System Board
1110 Register test failed.	1. **Run Advanced Diagnostics** 2. System Board
1116 Interrupt error.	1. **Run Advanced Diagnostics**
1117 Failed baud rate test.	1. **Run Advanced Diagnostics**
1162 Serial port configuration error.	1. **Run Configuration** 2. Serial Adapter (if installed) 3. System Board
11XX Not listed above.	1. **System Board**
1201	1. **System Board** 2. Any Serial Device
1202, **1206**, **1208**, **1209**, **12XX**	1. **Dual Async Adapter/A** 2. System Board 3. Any Serial Device
1207	1. **Communications Cable** 2. Dual Async Adapter/A
13XX	1. **Game Adapter**
1402 Printer not ready.	Information only
1403 No paper error, or interrupt failure.	Information only
1404 System board timeout failure.	1. **Run Advanced Diagnostics**
1405 Parallel adapter error.	1. **Run Advanced Diagnostics**
1406 Presence test error.	1. **Run Advanced Diagnostics**

POST Error Code	FRU/Action
14XX Not listed above. Check printer before replacing system board.	1. **Printer** 2. System Board
15XX	1. **SDLC Adapter**
1692 Boot sequence error.	1. **Run FDISK to ensure** **at least one active** **partition is set active.**
16XX	1. **36/38 Workstation** **Adapter**
1762 Hard disk drive configuration error.	1. **Run Configuration**
178X Hard disk drive test failed	1. **See "Power supply"** **on page 59.** 2. Hard Disk Drive 3. System Board 4. Hard Disk Cable 5. Power Supply
180X, 188X PCI configuration or resource error.	1. **Run Setup and verify** **PCI/ISA configuration** **settings.** 2. If necessary, set ISA adapters to "Not available" to allow PCI adapters to properly configure. 3. Remove any suspect ISA adapters. 4. Rerun diagnostics. 5. PCI Adapter
1962 Boot sequence error.	1. **Run** **Configuration/Setup,** **check Boot Sequence** 2. Check cable connections 3. Run Diagnostics 4. Hard Disk Drive 5. System Board
209X	1. **Diskette Drive** 2. Diskette Cable 3. 16-bit AT Fast SCSI Adapter
20XX Not listed above	1. **BSC Adapter**
21XX	1. **SCSI Device** 2. 16-bit AT Fast SCSI Adapter 3. Alternate BSC Adapter
2401, 2402 If screen colors change.	1. **Display**

POST Error Code	FRU/Action
2401, 2402 If screen colors are OK.	1. **System Board** 2. Display
2409	1. **Display**
2410	1. **System Board** 2. Display
2462 Video memory configuration error.	1. **Check cable connections**. 2. Run Setup and verify video configuration settings. 3. Video Memory Modules 4. Video Adapter (if installed) 5. System Board
3015, 3040 Check for missing wrap or terminator plug on the adapter.	1. **Network Attached?** 2. LF Translator 3. Cable Problem 4. PC Network Adapter
30XX	1. **PC Network Adapter** 2. LF Translator 3. Cable Problem?
3115, 3140	1. **Network Attached?** 2. LF Translator 3. Alternate PC Network-Adapter 4. Cable Problem
31XX	1. **Alternate PC Network Adapter** 2. LF Translator 3. Cable Problem?
36XX	1. **GPIB Adapter**
38XX	1. **DAC Adapter**
4611, **4630**	1. **Multiport/2 Interface Board** 2. Multiport/2 Adapter
4612, **4613 4640, 4641**	1. **Memory Module Package** 2. Multiport/2 Adapter
4650	1. **Multiport Interface Cable**
46XX Not listed above.	1. **Multiport/2 Adapter** 2. Multiport/2 Interface Board 3. Memory Module
5600	1. **Financial System Controller Adapter**

POST Error Code	FRU/Action
5962 An IDE device (other than hard drive) configuration error.	1. **Run Configuration** 2. CD-ROM Drive 3. CD-ROM Adapter 4. ZIP or other ATAPI device 5. System Board
62XX	1. **1st Store Loop Adapter** 2. Adapter Cable
63XX	1. **2nd Store Loop Adapter** 2. Adapter Cable
64XX	1. **Network Adapter**
71XX	1. **Voice Adapter**
74XX	1. **Video Adapter** (if installed)
76XX	1. **Page Printer Adapter**
78XX	1. **High Speed Adapter**
79XX	1. **3117 Adapter**
80XX	1. **PCMCIA Adapter**
84XX	1. **Speech Adapter** 2. Speech Control Assy.
8601, **8602**	1. **Pointing Device** (Mouse) 2. System Board
8603, **8604**	1. **System Board** 2. Pointing Device (Mouse)
86XX Not listed above	1. **Mouse** 2. System Board
89XX	1. **PC Music Adapter** 2. MIDI Adapter Unit
91XX	1. **Optical Drive** 2. Adapter
96XX	1. **SCSI Adapter** 2. Any SCSI Device 3. System Board
10101, **10102**, **10104** **10105**, **10106**, **10107** **10108**, **10109**, **10111** **10112**, **10113**, **10114** **10115**, **10116**	1. **Have customer verify correct operating system device drivers are installed and operational.** 2. Modem
10103, **10110**, **101171**	1. **System Board** 2. Data/Fax Modem

POST Error Code	FRU/Action
10117 Not listed above.	1. **Check system speaker** 2. Check PSTN cable 3. External DAA (if installed) 4. Modem
10118	1. **Run Diagnostics and verify the correct operation of the modem slot** 2. Modem
10119	1. **Diagnostics detected a non-IBM modem** 2. Modem
10120	1. **Check PSTN Cable** 2. External DAA (if installed) 3. Modem
10132, **10133**, **10134** **10135**, **10136**, **10137** **10138**, **10139**, **10140** **10141**, **10142**, **10143** **10144**, **10145**, **10146** **10147**, **10148**, **10149** **10150**, **10151**, **10152**	1. **Modem**
10153	1. **Data/Fax Modem** 2. System Board
101XX Not listed above.	1. **Modem Adapter/A** 2. Data/Fax Modem 3. System Board
10450, **10451**, **10490** **10491**, **10492**, **10499** Read/write error.	1. **Run Advanced Diagnostics** 2. Hard Disk Drive 3. System Board
10452 Seek test error.	1. **Run Advanced Diagnostics**
10453 Wrong drive type?	Information only
10454 Sector buffer test error.	1. **Run Advanced Diagnostics**
10455, **10456** Controller error.	1. **Run Advanced Diagnostics**
10459 Drive diagnostic command error.	Information only
10461 Drive format error	1. **Run Advanced Diagnostics**
10462 Controller seek error.	1. **Run Advanced Diagnostics**
10464 Hard Drive read error.	1. **Run Advanced Diagnostics**

POST Error Code	FRU/Action
10467 Drive non fatal seek error.	1. **Run Advanced Diagnostics**
10468 Drive fatal seek error.	1. **Run Advanced Diagnostics**
10469 Drive soft error count exceeded.	1. **Run Advanced Diagnostics**
10470, **10471**, **10472** Controller wrap error.	1. **Run Advanced Diagnostics**
10473 Corrupt data. Low level format might be required.	Information only
10480	1. **Hard Disk Drive (ESDI)** 2. Drive Cable 3. System Board
10481 ESDI drive D seek error.	1. **Run Advanced Diagnostics**
10482 Drive select acknowledgement bad.	1. **Run Advanced Diagnostics**
106X1	1. **Check Configuration** 2. Ethernet Adapter
10635	1. **Power-off computer, wait ten seconds; then power-on the computer.** 2. Ethernet Adapter
10651, 10660	1. **Check Cables** 2. Ethernet Adapter
106XX Not listed above.	1. **Ethernet Adapter**
107XX	1. **5.25-inch External Diskette Drive** 2. 5.25-inch Diskette Drive Adapter/A
109XX Check the adapter cables.	1. **ActionMedia Adapter/A** 2. System Board
112XX This adapter does not have cache.	1. **SCSI Adapter** 2. Any SCSI Device 3. System Board
119XX	1. **3119 Adapter**
121XX	1. **Modem Adapter** 2. Any Serial Device 3. System Board
136XX	1. **ISDN Primary Rate Adapter** 2. System Board
137XX	1. **System Board**

POST Error Code	FRU/Action
141XX	1. **Realtime Interface Coprocessor Portmaster™ Adapter/A**
143XX	1. **Japanese Display Adapter** 2. System Board
14710, 14711	1. **System Board Video Adapter** 2. Adapter Video Memory
148XX	1. **Video Adapter**
14901, 14902 1491X, 14922	1. **Video Adapter** (if installed) 2. System Board 3. Display (any type)
14932	1. **External Display** 2. Video Adapter
161XX	1. **FaxConcentrator™ Adapter**
164XX	1. **120 MB Internal Tape Drive** 2. Diskette Cable 3. System Board
16500	1. **6157 Tape Attachment Adapter**
16520, 16540	1. **6157 Streaming Tape Drive** 2. 6157 Tape Attachment Adapter
166XX, 167XX	1. **Token Ring Adapter** 2. System Board
18001 to 18029	1. **Wizard Adapter** 2. Wizard Adapter Memory
18031 to 18039	1. **Wizard Adapter Cable**
185XXXX	1. **DBCS Japanese Display Adapter/A** 2. System Board
20001 to 20003	1. **Image Adapter/A Image-I Adapter/A** 2. Memory Module DRAM, VRAM
20004	1. **Memory Module DRAM, VRAM** 2. Image Adapter/A Image-I Adapter/A
20005 to 20010	1. **Image Adapter/A Image-I Adapter/A** 2. Memory Module DRAM, VRAM

POST Error Code	FRU/Action

200XX
Not listed above.
	1. **Image Adapter/A**
	   Image-I Adapter/A
	2. Memory Module
	   DRAM, VRAM
	3. System Board

20101 to **20103**	1. **Printer/Scanner**
	   Option
	2. Image Adapter/A
	3. Memory Module
	   DRAM, VRAM

20104	1. **Memory Module** **DRAM, VRAM** 2. Printer/Scanner Option 3. Image Adapter/A

20105 to **20110**	1. **Printer/Scanner**
	   Option
	2. Image Adapter/A
	3. Memory Module
	   DRAM, VRAM

Image Adapter/A
Memory Test failure
indicated by graphic
of adapter.
	1. **Replace memory**
	   module (shown in
	   graphic.)

206XX	1. **SCSI-2 Adapter** 2. Any SCSI Device 3. System Board
208XX Verify there are no duplicate SCSI ID settings on the same bus.	1. **Any SCSI Device**

210XXXX
Internal bus, size unknown.
210XXX1
External bus, size unknown.
	1. **SCSI Hard Disk Drive**
	2. SCSI Adapter or
	   System Board
	3. SCSI Cable
	4. SCSI ID Switch
	   (on some models)

Tape Drive amber LED **remains on.**	1. **Tape Drive** 2. SCSI Cable (internal) 3. SCSI Adapter or System Board

Tape Drive green "in use"
LED fails to come on.
	1. **Tape Drive**
	2. SCSI Adapter or
	   System Board
	3. SCSI Cable (internal)
	   SCSI Cable (external)

Tape automatically ejected **from drive.**	1. **Tape Cassette** 2. Drive
SCSI ID on rotary switch **does not match SCSI ID** **set in configuration.** **Verify drive switches** **inside cover are set to** **zero.**	1. **Rotary Switch Circuit** **Board** 2. Circuit Board Cable 3. Tape Drive

POST Error Code	FRU/Action
Tape sticks/breaks in drive. Verify that the tapes used meet ANSI standard X3B5.	1. **Tape Cassette**
212XX	1. **SCSI Printer** 2. Printer Cable
213XX	1. **SCSI Processor**
214XX	1. **WORM Drive**

215XXXC
215XXXD
215XXXE
215XXXU
If an external device, and power-on LED is off, check external voltages.
	1. **CD-ROM Drive I**
	   CD-ROM Drive II
	   Enhanced CD-ROM
	   Drive II
	   Any CD-ROM Drive
	2. SCSI Cable
	3. SCSI Adapter or
	   System Board

216XX	1. **Scanner**

217XX
If an external device, and power-on LED is off, check external voltages.
	1. **Rewritable Optical**
	   Drive
	2. SCSI Adapter or
	   System Board
	3. SCSI Cable

218XX Check for multi CD tray, or juke box.	1. **Changer**

219XX	1. **SCSI**
	   Communications
	   Device

24201Y0, **24210**Y0
Be sure wrap plug is attached.
	1. **ISDN/2 Adapter**
	2. ISDN/2 Wrap Plug
	3. ISDN/2
	   Communications
	   Cable

273XX	1. **1 Mbps Micro**
	   Channel Infrared LAN
	   Adapter

27501, **27503** **27506**, **27507**	1. **ServerGuard Adapter** 2. System Board
27502, **27504**, **27510** **27511**, **27533**, **27534** **27536**, **27537**	1. **ServerGuard Adapter**

27509	1. **Remove redundant**
	   adapters, run Auto
	   Configuration
	   program, then retest.

27512	1. **WMSELF.DGS**
	   diagnostics file
	   missing.
	2. WMSELF.DGS
	   diagnostics file
	   incorrect.

POST Error Code	FRU/Action
27535	1. **3V Lithium Backup Battery** 2. ServerGuard Adapter
27554	1. **Internal Temperature out of range** 2. ServerGuard Adapter
27555, **27556**	1. **ServerGuard Adapter** 2. Power Supply
27558, **27559** **27560**, **27561**	1. **PCMCIA Type II Modem** 2. ServerGuard Adapter
27562	1. **External Power Control not connected** 2. External Power Control 3. ServerGuard Adapter
27563, **27564**	1. **External Power Control** 2. ServerGuard Adapter
275XX	1. **Update Diagnostic Software**
27801 to **27879**	1. **Personal Dictation System Adapter** 2. System Board
27880 to **27889**	1. **External FRU** (Speaker, Microphone)
I**99903**0X Hard disk reset failure.	**Possible hard disk drive problem**

Error messages

Error Message/Symptom	FRU/Action
Address Exceeds the Size of Your Memory An invalid memory address was entered. Diagnostics Tests display this message during the Locate Bad Chips option.	1. **Enter the correct address.** 2. Memory Module 3. System Board
Arithmetic Functions Failed An error was detected during the CPU Test.	1. **Microprocessor** 2. System Board
Base Memory Test Failed An error was detected in base memory.	1. **Memory Module** 2. System Board
Boot Sector Unreadable A boot sector read error was detected on the hard disk drive.	1. **Hard Disk Drive** 2. Hard Disk Drive Cable 3. Hard Disk Drive Adapter (if installed) 4. System Board
Bus Noise Test Failed RAM Test detected an error in the memory bus.	1. **Memory Module** 2. System Board
Butterfly Cylinder Access Test Failed Hard Disk Drive Test detected mismatch between the data read and the data stored on the drive.	1. **Hard Disk Drive** 2. Hard Disk Drive Cable 3. Hard Disk Drive Adapter (if installed) 4. System Board
Clock Stopped Real-time clock has stopped working.	1. **Real-Time Clock Assembly** 2. System Board
CMOS Clock Test Failed Time and Date Settings for CMOS and DOS **do not** Match.	1. **Real-Time Clock Assembly** 2. System Board
Controller Diagnostic Test Failed An error was detected while testing the Hard Disk Controller (Adapter).	1. **Hard Disk Drive Adapter** (if installed) 2. Hard Disk Drive 3. System Board
Cylinder 0 errors Test detected an error reading the first cylinder of the hard disk drive.	1. **Hard Disk Drive** 2. Hard Disk Drive Adapter (if installed) 3. System Board

Device is Not Ready
  Ready the Device...
       or
Press Any Key
	1. **Ensure the device is powered-on.**
	2. Replace failing device
	3. Device Adapter (if installed)
	4. System Board

Error Message/Symptom	FRU/Action
Disk Error Encountered Opening Output File Press Any Key To Continue.	1. **Hard Disk Drive** 2. Hard Disk Drive Adapter (if installed) 3. System Board
DMA #X Failed Main Components Test detected an error while testing the DMA controller.	1. **System Board**
DMA Page Register Failed DMA page register error	1. **System Board**
Drive (x) Media (y) Mismatch FAT ID mismatch with installed drive.	1. **Check diskette and diskette drive capacity.** 2. Diskette Drive 3. System Board
Error in video buffer. Bad bits. Video memory test error.	1. **Video Adapter** (if installed) 2. System Board 3. Display
Exception Interrupt In Protected Mode Diags Cannot Continue Server error, remove one adapter at a time until the symptom goes away.	1. **Any Adapter** 2. System Board 3. Processor
Extended Memory Test Failed Extended memory error.	1. **Memory Module** 2. System Board
Floppy Drive Failed Diskette drive(s) failed.	1. **Diskette Drive** 2. System Board 3. Diskette Drive Cable
General Function Failed Remove one adapter at a time until the symptom goes away.	1. **Any Adapter** 2. System Board 3. Processor
Hard Drives Failed Hard Disk Drive test error.	1. **Hard Disk Drive** 2. Hard Disk Drive Adapter (if installed) 3. System Board
Incorrect DOS version	1. **Ensure you are using DOS version 3.0 or higher.**
INT Mask Register Failed INT Mask Register error.	1. **Microprocessor** 2. System Board
Invalid Date Clock/DOS date mismatch.	1. **Real-Time Clock Assembly** 2. System Board

Error Message/Symptom	FRU/Action
Invalid Time Clock/DOS time mismatch. Back-up clock and DOS time of day settings do not match.	1. **Real-Time Clock Assembly** 2. System Board
Linear Cylinder Access Test Failed Hard disk drive error.	1. **Hard Disk Drive** 2. Hard Disk Drive Cable 3. Hard Disk Drive Adapter (if installed) 4. System Board
Logic Function Failed CPU Logic test error.	1. **Microprocessor** 2. System Board
Loopback Error COM Port Test or Parallel Port error. A wrap plug must be installed to successfully complete these tests.	1. **System Board** 2. Wrap Plug
Main Components Failed System board error.	1. **System Board** 2. Processor
Memory test cannot run at this location in memory Not enough free memory available to start the memory test.	1. **Memory Module** 2. System Board
Missing QAPlus/PRO Files(s) One or more diagnostic support files are missing.	1. **Diagnostic Diskette**
NO LOOP-BACK PLUG. Skipping External loopback test No wrap plug installed.	1. **Install wrap plug on the serial port, rerun test.** 2. System Board
Not ready Printer not on-line or not ready.	1. **Ready Printer** 2. Printer 3. Printer Cable 4. System Board
No 'type-amatic' repeat At least one repeat key must be tested during this test or an error will occur. Type-amatic test error.	1. **Keyboard** 2. System Board
Not used by any standard device IRQ is not currently being used by a non-standard device.	1. **System Board**
Numeric Proc Failed NPU test error.	1. **Microprocessor** 2. System Board

Error Message/Symptom	FRU/Action
Parallel Ports Failed Test Report Summary message.	1. **System Board**
Pass (N): ** Errors ** Drive (X) Failed Diskette drive read/write test error.	1. **Diskette Drive** 2. System Board 3. Diskette Drive Cable
Pass (N) Drive Not Ready Diskette drive door is open or defective.	1. **Ensure diskette drive is ready.** 2. Diskette Drive 3. System Board 4. Diskette Drive Cable
Pass (N): Drive (X) Write Protected or Unformatted	1. **Insert a non-write protected, formatted diskette into the diskette drive; then rerun the test.** 2. Diskette Drive 3. System Board 4. Diskette Drive Cable
Pass (N): Unknown Media Drive (X) Diskette Drive Test error.	1. **Diskette** 2. Diskette Drive 3. System Board 4. Diskette Drive Cable
Place Hi-density Media in Drive Media/drive mismatch.	1. **Diskette** 2. Diskette Drive 3. System Board 4. Diskette Drive Cable
Printer Failed Printer powered-on and ready?	1. **Printer** 2. Printer Cable 3. System Board
Printer Fault Printer powered-on and ready?	1. **Printer** 2. Printer Cable 3. System Board
Printer Not Selected Ensure the printer is powered-on and ready.	1. **Printer** 2. Printer Cable 3. System Board
Program or File Not Found Press Any Key Diagnostics cannot find the USER(N).COM file.	1. **Diagnostic Diskette** 2. Diskette Drive 3. System Board
Program Too Big To Fit In Memory Too many Terminate and Stay Resident programs in memory.	1. **Reboot the system from the Diagnostic Diskette.**

Error Message/Symptom	FRU/Action
QAPlus/PRO Cannot Be Re-run Because Of Error In Relocating Program Diagnostics failed to relocate the Diagnostics Test programs so the memory space it resides in was not tested.	1. **Diagnostic Diskette** 2. Memory Module 3. System Board
RAM Memory Error in Block n. Bad bits n Memory error.	1. **Memory Module** 2. System Board
RAM Test Failed Memory error.	1. **Memory Module** 2. System Board
Read error on cylinder n Hard disk drive format error.	1. **Hard Disk Drive** 2. Hard Disk Drive Adapter (if installed) 3. System Board
Read Errors Diskette drive read error.	1. **Diskette** 2. Diskette Drive 3. System Board 4. Diskette Drive Cable
Receive Error Serial Port loopback test error.	1. **Serial Port Cable** 2. System Board
Refresh Failure Diagnostics Test detected an error while testing the DMA controller's RAM refresh cycle.	1. **Memory Module** 2. System Board
RTC Interrupt Failure Diagnostics Test cannot detect the Real-Time clock interrupt.	1. **Real-Time Clock Assembly** 2. System Board
Serial Chip Error COM Port error, general.	1. **Serial Port Cable** 2. System Board
Serial Compare Error COM Port error, information transmitted is not the same as information received.	1. **Serial Port Cable** 2. System Board
Serial Time-out Error COM Port error, time interval is too long between transmitted and received data.	1. **Serial Port Cable** 2. System Board
Serious Memory Error — Diags Cannot Continue Memory Test error.	1. **Memory Module** 2. System Board
Sorry You Need A Mouse Mouse or mouse driver was not detected.	1. **Mouse** 2. System Board

Error Message/Symptom	FRU/Action
System Hangs Go to "Undetermined problem" on page 189.	1. **Any device** 2. Any adapter 3. System Board
The Address Exceeds The Size Of Your Memory An invalid memory address was entered. The Diagnostics Tests display this message during the Locate Bad Chips option under the interact menu if an invalid memory address was entered at the "Enter Memory Address Of Bad Chip" prompt.	1. **Enter correct address** 2. Memory Module 3. System Board
That Number is Out Of Range An invalid bit number was entered. Diagnostics Tests display this message during the Locate Bad Chips option.	1. **Enter the correct number.** 2. Memory Module 3. System Board
Too Many Errors — Test Aborted Too many errors, the Diagnostics Test cannot continue.	1. **Microprocessor** 2. System Board
Transmit Error Internal or external serial port loopback test failure.	1. **Serial Port Cable** 2. System Board
Video Adapter Failed Test Result Summary, displayed if "Fail" was at the Quit/Fail/Pass menu of any video test.	1. **Video Adapter** (if installed) 2. System Board 3. Display
Write error on cylinder n Hard disk drive write error.	1. **Hard Disk Drive** 2. Hard Disk Drive Adapter (if installed)
Write Errors Diskette drive write error.	1. **Diskette** 2. Diskette Drive 3. System Board 4. Diskette Drive Cable
Write Protected or Unformatted Diskette is Write Protected or not formatted.	1. **Insert a non-write protected, formatted diskette into the diskette drive; then rerun the test.** 2. Diskette Drive 3. System Board 4. Diskette Drive Cable

Error Message/Symptom	FRU/Action
You Cannot Delete the Motherboard "Remove Board" option was selected. The Diagnostics Tests display this message during the Locate Bad Chips option.	1. **Make the correct selection.** 2. Memory Module 3. System Board 4. Processor

Diagnostic error codes

In the following index, "X" can represent any number.

Diagnostic Error Code	FRU/Action
000-000-XXX BIOS Test Passed	1. **No action**
000-002-XXX BIOS Timeout	1. **Flash the system** 2. System board
000-024-XXX BIOS Addressing test failure	1. **Flash the system** 2. System board
000-025-XXX BIOS Checksum Value error	1. **Flash the system** 2. Boot block 3. System board
000-026-XXX FLASH data error	1. **Flash the system** 2. Boot block 3. System board
000-027-XXX BIOS Configuration/Setup error	1. **Run Setup** 2. Flash the system 3. Boot block 4. System board
000-034-XXX BIOS Buffer Allocation failure	1. **Reboot the system** 2. Flash the system 3. Run memory test 4. System board
000-035-XXX BIOS Reset Condition detected	1. **Flash the system** 2. System board
000-036-XXX BIOS Register error	1. **Flash the system** 2. Boot block 3. System board
000-038-XXX BIOS Extension failure	1. **Flash the system** 2. Adapter card 3. System board
000-039-XXX BIOS DMI data error	1. **Flash the system** 2. System board
000-195-XXX BIOS Test aborted by user	1. **Information** 2. Re-start the test, if need to
000-196-XXX BIOS test halt, error threshold exceeded	1. **Depress F3 to review the log file.** 2. **Re-start the test to reset the log file.**
000-197-XXX BIOS test warning	1. **Make sure component that is called out is enabled and/or connected** 2. Re-run test 3. Component that is called out in warning statement 4. Component under test

Diagnostic Error Code	FRU/Action
000-198-XXX BIOS test aborted	1. **If a component is called out, make sure it is enabled and/or connected** 2. Flash the system and re-test 3. Go to "Undetermined problem" on page 189
000-199-XXX BIOS test failed, cause unknown	1. **Go to "Undetermined problem" on page 189.** 2. Flash the system and re-test 3. Replace component under function test.
000-250-XXX BIOS APM failure	1. **Flash the system** 2. System board
000-270-XXX BIOS ACPI failure	1. **Flash the system** 2. System board
001-000-XXX System Test Passed	1. **No action**
001-00X-XXX System Error	1. **System board**
001-01X-XXX System Error	1. **System board**
001-024-XXX System Addressing test failure	1. **System board**
001-025-XXX System Checksum Value error	1. **Flash the system** 2. System board
001-026-XXX System FLASH data error	1. **Flash the system** 2. System board
001-027-XXX System Configuration/Setup error	1. **Run Setup** 2. Flash the system 3. System board
001-032-XXX System Device Controller failure	1. **System board**
001-034-XXX System Device Buffer Allocation failure	1. **Reboot the system** 2. Flash the system 3. Run memory test 4. System board
001-035-XXX System Device Reset condition detected	1. **System board**
001-036-XXX System Register error	1. **System board**
001-038-XXX System Extension failure	1. **Adapter card** 2. System board

Diagnostic Error Code	FRU/Action
001-039-XXX System DMI data structure error	1. **Flash the system** 2. System board
001-040-XXX System IRQ failure	1. **Power-off/on system and re-test** 2. System board
001-041-XXX System DMA failure	1. **Power-off/on system and re-test** 2. System board
001-195-XXX System Test aborted by user	1. **Information** 2. Re-start the test, if need to
001-196-XXX System test halt, error threshold exceeded	1. **Depress F3 to review the log file.** 2. **Re-start the test to reset the log file.**
001-197-XXX System test warning	1. **Make sure component that is called out is enabled and/or connected** 2. Re-run test 3. Component that is called out in warning statement 4. Component under test
001-198-XXX System test aborted	1. **If a component is called out, make sure it is enabled and/or connected** 2. Flash the system and re-test 3. Go to "Undetermined problem" on page 189
001-199-XXX System test failed, cause unknown	1. **Go to "Undetermined problem" on page 189.** 2. Flash the system and re-test 3. Replace component under function test.
001-250-XXX System ECC error	1. **System board**
001-254-XXX **001-255-XXX** **001-256-XXX** **001-257-XXX** System DMA error	1. **System board**
001-260-XXX **001-264-XXX** System IRQ error	1. **System board**
001-268-XXX System IRQ1 failure	1. **device on IRQ1** 2. System board

Diagnostic Error Code	FRU/Action
001-269-XXX System IRQ2 failure	1. **device on IRQ2** 2. System board
001-270-XXX System IRQ3 failure	1. **device on IRQ3** 2. System board
001-271-XXX System IRQ4 failure	1. **device on IRQ4** 2. System board
001-272-XXX System IRQ5 failure	1. **device on IRQ5** 2. System board
001-273-XXX System IRQ6 (diskette drive) failure	1. **Diskette Cable** 2. Diskette drive 3. System board
001-274-XXX System IRQ7 failure	1. **device on IRQ7** 2. System board
001-275-XXX System IRQ8 failure	1. **device on IRQ8** 2. System board
001-276-XXX System IRQ9 failure	1. **device on IRQ9** 2. System board
001-277-XXX System IRQ10 failure	1. **device on IRQ10** 2. System board
001-278-XXX System IRQ11 failure	1. **device on IRQ11** 2. System board
001-279-XXX System IRQ12 failure	1. **device on IRQ12** 2. System board
001-280-XXX System IRQ13 failure	1. **device on IRQ13** 2. System board
001-281-XXX System IRQ14 (hard disk drive) failure	1. **Hard disk drive Cable** 2. Hard disk drive 3. System board
001-282-XXX System IRQ15 failure	1. **device on IRQ15** 2. System board
001-286-XXX **001-287-XXX** **001-288-XXX** System Timer failure	1. **System board**
001-292-XXX System CMOS RAM error	1. **Run Setup and** **re-test** 2. System board
001-293-XXX System CMOS Battery	1. **Battery** 2. System board
001-298-XXX System RTC date/time update failure	1. **Flash the system** 2. System board
001-299-XXX System RTC periodic interrupt failure	1. **System board**
001-300-XXX System RTC Alarm failure	1. **System board**
001-301-XXX System RTC Century byte error	1. **Flash the system** 2. System board

Diagnostic Error Code	FRU/Action
005-000-XXX Video Test Passed	1. **No action**
005-00X-XXX Video error	1. **Video card, if installed** 2. System board
005-010-XXX **005-011-XXX** **005-012-XXX** **005-013-XXX** Video Signal failure	1. **Video card, if installed** 2. System board
005-016-XXX Video Simple Pattern test failure	1. **Video Ram** 2. Video card, if installed 3. System board
005-024-XXX Video Addressing test failure	1. **Video card, if installed** 2. System board
005-025-XXX Video Checksum Value error	1. **Video card, if installed** 2. System board
005-027-XXX Video Configuration/Setup error	1. **Run Setup** 2. Video drivers update 3. Video card, if installed 4. System board
005-031-XXX Video Device Cable failure	1. **Video cable** 2. Monitor 3. Video card, if installed 4. System board
005-032-XXX Video Device Controller failure	1. **Video card, if installed** 2. System board
005-036-XXX Video Register error	1. **Video card, if installed** 2. System board
005-038-XXX System BIOS extension failure	1. **Video card, if installed** 2. System board
005-040-XXX Video IRQ failure	1. **Video card, if installed** 2. System board
005-195-XXX Video Test aborted by user	1. **Information** 2. Re-start the test, if need to
005-196-XXX Video test halt, error threshold exceeded	1. **Depress F3 to review the log file.** 2. **Re-start the test to reset the log file.**

Diagnostic Error Code	FRU/Action
005-197-XXX Video test warning	1. **Make sure component that is called out is enabled and/or connected** 2. Re-run test 3. Component that is called out in warning statement 4. Component under test
005-198-XXX Video test aborted	1. **If a component is called out, make sure it is enabled and/or connected** 2. Flash the system and re-test 3. Go to "Undetermined problem" on page 189
005-199-XXX Video test failed, cause unknown	1. **Go to "Undetermined problem" on page 189.** 2. Flash the system and re-test 3. Replace component under function test.
005-2XX-XXX **005-3XX-XXX** Video subsystem error	1. **Video card, if installed** 2. System board
006-000-XXX Diskette interface Test Passed	1. **No action**
006-0XX-XXX Diskette interface error	1. **Diskette drive Cable** 2. Diskette drive 3. System board
006-195-XXX Diskette interface Test aborted by user	1. **Information** 2. Re-start the test, if need to
006-196-XXX Diskette interface test halt, error threshold exceeded	1. **Depress F3 to review the log file.** 2. **Re-start the test to reset the log file.**
006-197-XXX Diskette interface test warning	1. **Make sure component that is called out is enabled and/or connected** 2. Re-run test 3. Component that is called out in warning statement 4. Component under test

Diagnostic Error Code	FRU/Action
006-198-XXX Diskette interface test aborted	1. **If a component is called out, make sure it is enabled and/or connected** 2. Flash the system and re-test 3. Go to "Undetermined problem" on page 189
006-199-XXX Diskette interface test failed, cause unknown	1. **Go to "Undetermined problem" on page 189.** 2. Flash the system and re-test 3. Replace component under function test.
006-25X-XXX Diskette interface Error	1. **Diskette drive Cable** 2. Diskette drive 3. System board
011-000-XXX Serial port Interface Test Passed	1. **No action**
011-001-XXX Serial port Presence	1. **Remove external serial device, if present** 2. Run setup, enable port 3. System board
011-002-XXX **011-003-XXX** Serial port Timeout/Parity error	1. **System board**
011-013-XXX **011-014-XXX** Serial port Control Signal/Loopback test failure	1. **System board**
011-015-XXX Serial port External Loopback failure	1. **Wrap plug** 2. System board
011-027-XXX Serial port Configuration/Setup error	1. **Run Setup, enable port** 2. Flash the system 3. System board
011-03X-XXX **011-04X-XXX** Serial port failure	1. **System board**
011-195-XXX Serial port Test aborted by user	1. **Information** 2. Re-start the test, if need to
011-196-XXX Serial port test halt, error threshold exceeded	1. **Depress F3 to review the log file.** 2. **Re-start the test to reset the log file.**

Diagnostic Error Code	FRU/Action
011-197-XXX Serial port test warning	1. **Make sure component that is called out is enabled and/or connected** 2. Re-run test 3. Component that is called out in warning statement 4. Component under test
011-198-XXX Serial port test aborted	1. **If a component is called out, make sure it is enabled and/or connected** 2. Flash the system and re-test 3. Go to "Undetermined problem" on page 189
011-199-XXX Serial port test failed, cause unknown	1. **Go to "Undetermined problem" on page 189.** 2. Flash the system and re-test 3. Replace component under function test.
011-2XX-XXX Serial port signal failure	1. **External serial device** 2. System board
014-000-XXX Parallel port Interface Test Passed	1. **No action**
014-001-XXX Parallel port Presence	1. **Remove external parallel device, if present** 2. Run setup, enable port 3. System board
014-002-XXX **014-003-XXX** Parallel port Timeout/Parity error	1. **System board**
014-013-XXX **014-014-XXX** Parallel port Control Signal/Loopback test failure	1. **System board**
014-015-XXX Parallel port External Loopback failure	1. **Wrap plug** 2. System board
014-027-XXX Parallel port Configuration/Setup error	1. **Run Setup, enable port** 2. Flash the system 3. System board
014-03X-XXX **014-04X-XXX** Parallel port failure	1. **System board**

Diagnostic Error Code	FRU/Action
014-195-XXX Parallel port Test aborted by user	1. **Information** 2. Re-start the test, if need to
014-196-XXX Parallel port test halt, error threshold exceeded	1. **Depress F3 to review the log file.** 2. **Re-start the test to reset the log file.**
014-197-XXX Parallel port test warning	1. **Make sure component that is called out is enabled and/or connected** 2. Re-run test 3. Component that is called out in warning statement 4. Component under test
014-198-XXX Parallel port test aborted	1. **If a component is called out, make sure it is enabled and/or connected** 2. Flash the system and re-test 3. Go to "Undetermined problem" on page 189
014-199-XXX Parallel port test failed, cause unknown	1. **Go to "Undetermined problem" on page 189.** 2. Flash the system and re-test 3. Replace component under function test.
014-2XX-XXX **014-3XX-XXX** Parallel port failure	1. **External parallel device** 2. System board
015-000-XXX USB port Interface Test Passed	1. **No action**
015-001-XXX USB port Presence	1. **Remove USB Device(s) and re-test** 2. System board
015-002-XXX USB port Timeout	1. **Remove USB Device(s) and re-test** 2. System board
015-015-XXX USB port External Loopback failure	1. **Remove USB Device(s) and re-test** 2. System board
015-027-XXX USB port Configuration/Setup error	1. **Flash the system** 2. System board
015-032-XXX USB port Device Controller failure	1. **System board**

Diagnostic Error Code	FRU/Action
015-034-XXX USB port buffer allocation failure	1. **Reboot the system** 2. Flash the system 3. Run memory test 4. System board
015-035-XXX USB port Reset condition detected	1. **Remove USB Device(s) and re-test** 2. System board
015-036-XXX USB port Register error	1. **System board**
015-040-XXX USB port IRQ failure	1. **Run setup and check for conflicts** 2. Flash the system 3. System board
015-195-XXX USB port Test aborted by user	1. **Information** 2. Re-start the test, if need to
015-196-XXX USB port test halt, error threshold exceeded	1. **Depress F3 to review the log file.** 2. **Re-start the test to reset the log file.**
015-197-XXX USB port test warning	1. **Make sure component that is called out is enabled and/or connected** 2. Re-run test 3. Component that is called out in warning statement 4. Component under test
015-198-XXX USB port test aborted	1. **If a component is called out, make sure it is enabled and/or connected** 2. Flash the system and re-test 3. Go to "Undetermined problem" on page 189
015-199-XXX USB port test failed, cause unknown	1. **Go to "Undetermined problem" on page 189.** 2. Flash the system and re-test 3. Replace component under function test.
018-000-XXX PCI Card Test Passed	1. **No action**
018-0XX-XXX PCI Card Failure	1. **PCI card** 2. System board
018-195-XXX PCI Card Test aborted by user	1. **Information** 2. Re-start the test, if need to

Diagnostic Error Code	FRU/Action
018-196-XXX PCI Card test halt, error threshold exceeded	1. **Depress F3 to review the log file.** 2. **Re-start the test to reset the log file.**
018-197-XXX PCI Card test warning	1. **Make sure component that is called out is enabled and/or connected** 2. Re-run test 3. Component that is called out in warning statement 4. Component under test
018-198-XXX PCI Card test aborted	1. **If a component is called out, make sure it is enabled and/or connected** 2. Flash the system and re-test 3. Go to "Undetermined problem" on page 189
018-199-XXX PCI Card test failed, cause unknown	1. **Go to "Undetermined problem" on page 189.** 2. Flash the system and re-test 3. Replace component under function test.
018-250-XXX PCI Card Services error	1. **PCI card** 2. System board
020-000-XXX PCI Interface Test Passed	1. **No action**
020-0XX-XXX PCI Interface error	1. **PCI card** 2. System board
020-195-XXX PCI Test aborted by user	1. **Information** 2. Re-start the test, if need to
020-196-XXX PCI test halt, error threshold exceeded	1. **Depress F3 to review the log file.** 2. **Re-start the test to reset the log file.**
020-197-XXX PCI test warning	1. **Make sure component that is called out is enabled and/or connected** 2. Re-run test 3. Component that is called out in warning statement 4. Component under test

Diagnostic Error Code	FRU/Action
020-198-XXX PCI test aborted	1. **If a component is called out, make sure it is enabled and/or connected** 2. Flash the system and re-test 3. Go to "Undetermined problem" on page 189
020-199-XXX PCI test failed, cause unknown	1. **Go to "Undetermined problem" on page 189.** 2. Flash the system and re-test 3. Replace component under function test.
020-262-XXX PCI system error	1. **PCI card** 2. System board
025-000-XXX IDE interface Test Passed	1. **No action**
025-00X-XXX **025-01X-XXX** IDE interface failure	1. **IDE signal cable** 2. Check power supply 3. IDE device 4. System board
025-027-XXX IDE interface Configuration/Setup error	1. **IDE signal cable** 2. Flash the system 3. IDE device 4. System board
025-02X-XXX **025-03X-XXX** **025-04X-XXX** IDE Interface failure	1. **IDE signal cable** 2. Check power supply 3. IDE device 4. System board
025-195-XXX IDE interface Test aborted by user	1. **Information** 2. Re-start the test, if need to
025-196-XXX IDE interface test halt, error threshold exceeded	1. **Depress F3 to review the log file.** 2. **Re-start the test to reset the log file.**
025-197-XXX IDE interface test warning	1. **Make sure component that is called out is enabled and/or connected** 2. Re-run test 3. Component that is called out in warning statement 4. Component under test

Diagnostic Error Code	FRU/Action
025-198-XXX IDE interface test aborted	1. **If a component is called out, make sure it is enabled and/or connected** 2. Flash the system and re-test 3. Go to "Undetermined problem" on page 189
025-199-XXX IDE interface test failed, cause unknown	1. **Go to "Undetermined problem" on page 189.** 2. Flash the system and re-test 3. Replace component under function test.
030-000-XXX SCSI interface Test Passed	1. **No action**
030-00X-XXX **030-01X-XXX** SCSI interface failure	1. **SCSI signal cable** 2. Check power supply 3. SCSI device 4. SCSI adapter card, if installed 5. System board
030-027-XXX SCSI interface Configuration/Setup error	1. **SCSI signal cable** 2. Flash the system 3. SCSI device 4. SCSI adapter card, if installed 5. System board
030-03X-XXX **030-04X-XXX** SCSI interface error	1. **SCSI signal cable** 2. Check power supply 3. SCSI device 4. SCSI adapter card, if installed 5. System board
030-195-XXX SCSI interface Test aborted by user	1. **Information** 2. Re-start the test, if need to
030-196-XXX SCSI interface test halt, error threshold exceeded	1. **Depress F3 to review the log file.** 2. **Re-start the test to reset the log file.**
030-197-XXX SCSI interface test warning	1. **Make sure component that is called out is enabled and/or connected** 2. Re-run test 3. Component that is called out in warning statement 4. Component under test

Diagnostic Error Code	FRU/Action
030-198-XXX SCSI interface test aborted	1. **If a component is called out, make sure it is enabled and/or connected** 2. Flash the system and re-test 3. Go to "Undetermined problem" on page 189
030-199-XXX SCSI interface test failed, cause unknown	1. **Go to "Undetermined problem" on page 189.** 2. Flash the system and re-test 3. Replace component under function test.
035-000-XXX RAID interface Test Passed	1. **No action**
035-0XX-XXX RAID interface Failure	1. **RAID signal cable** 2. RAID device 3. RAID adapter card, if installed 4. System board
035-195-XXX RAID interface Test aborted by user	1. **Information** 2. Re-start the test, if need to
035-196-XXX RAID interface test halt, error threshold exceeded	1. **Depress F3 to review the log file.** 2. **Re-start the test to reset the log file.**
035-197-XXX RAID interface test warning	1. **Make sure component that is called out is enabled and/or connected** 2. Re-run test 3. Component that is called out in warning statement 4. Component under test
035-198-XXX RAID interface test aborted	1. **If a component is called out, make sure it is enabled and/or connected** 2. Flash the system and re-test 3. Go to "Undetermined problem" on page 189
035-199-XXX RAID interface test failed, cause unknown	1. **Go to "Undetermined problem" on page 189.** 2. Flash the system and re-test 3. Replace component under function test.

Diagnostic Error Code	FRU/Action
071-000-XXX Audio port Interface Test Passed	1. **No action**
071-00X-XXX **071-01X-XXX** **071-02X-XXX** **Audio port error**	1. **Run Setup** 2. Flash the system 3. System board
071-03X-XXX Audio port failure	1. **Speakers** 2. Microphone 3. Audio card, if installed 4. System board
071-04X-XXX Audio port failure	1. **Run Setup** 2. Audio card, if installed 3. System board
071-195-XXX Audio port Test aborted by user	1. **Information** 2. Re-start the test, if need to
071-196-XXX Audio port test halt, error threshold exceeded	1. **Depress F3 to review the log file.** 2. **Re-start the test to reset the log file.**
071-197-XXX Audio port test warning	1. **Make sure component that is called out is enabled and/or connected** 2. Re-run test 3. Component that is called out in warning statement 4. Component under test
071-198-XXX Audio port test aborted	1. **If a component is called out, make sure it is enabled and/or connected** 2. Flash the system and re-test 3. Go to "Undetermined problem" on page 189
071-199-XXX Audio port test failed, cause unknown	1. **Go to "Undetermined problem" on page 189.** 2. Flash the system and re-test 3. Replace component under function test.
071-25X-XXX Audio port failure	1. **Speakers** 2. Audio card, if installed 3. System board
080-000-XXX Game Port interface Test Passed	1. **No action**
080-XXX-XXX Game Port interface Error	1. **Remove the game port device and re-test the system**

Diagnostic Error Code	FRU/Action
080-195-XXX Game Port interface Test aborted by user	1. **Information** 2. Re-start the test, if need to
080-196-XXX Game Port interface test halt, error threshold exceeded	1. **Depress F3 to review the log file.** 2. **Re-start the test to reset the log file.**
080-197-XXX Game Port interface test warning	1. **Make sure component that is called out is enabled and/or connected** 2. Re-run test 3. Component that is called out in warning statement 4. Component under test
080-198-XXX Game Port interface test aborted	1. **If a component is called out, make sure it is enabled and/or connected** 2. Flash the system and re-test 3. Go to "Undetermined problem" on page 189
080-199-XXX Game Port interface test failed, cause unknown	1. **Go to "Undetermined problem" on page 189.** 2. Flash the system and re-test 3. Replace component under function test.
086-000-XXX Mouse Port interface Test Passed	1. **No action**
086-001-XXX Mouse Port interface Presence	1. **Mouse** 2. System board
086-032-XXX Mouse Port interface Device controller failure	1. **Mouse** 2. System board
086-035-XXX Mouse Port interface Reset	1. **Mouse** 2. System board
086-040-XXX Mouse Port interface IRQ failure	1. **Run Setup** 2. Mouse 3. System board
086-195-XXX Mouse Port interface Test aborted by user	1. **Information** 2. Re-start the test, if need to
086-196-XXX Mouse Port interface test halt, error threshold exceeded	1. **Depress F3 to review the log file.** 2. **Re-start the test to reset the log file.**

Diagnostic Error Code	FRU/Action
086-197-XXX Mouse Port interface test warning	1. **Make sure component that is called out is enabled and/or connected** 2. Re-run test 3. Component that is called out in warning statement 4. Component under test
086-198-XXX Mouse Port interface test aborted	1. **If a component is called out, make sure it is enabled and/or connected** 2. Flash the system and re-test 3. Go to "Undetermined problem" on page 189
086-199-XXX Mouse Port interface test failed, cause unknown	1. **Go to "Undetermined problem" on page 189.** 2. Flash the system and re-test 3. Replace component under function test.
089-000-XXX Microprocessor Test Passed	1. **No action**
089-XXX-XXX Microprocessor failure	1. **Microprocessor(s)** 2. System board
089-195-XXX Microprocessor Test aborted by user	1. **Information** 2. Re-start the test, if need to
089-196-XXX Microprocessor test halt, error threshold exceeded	1. **Depress F3 to review the log file.** 2. **Re-start the test to reset the log file.**
089-197-XXX Microprocessor test warning	1. **Make sure component that is called out is enabled and/or connected** 2. Re-run test 3. Component that is called out in warning statement 4. Component under test
089-198-XXX Microprocessor test aborted	1. **If a component is called out, make sure it is enabled and/or connected** 2. Flash the system and re-test 3. Go to "Undetermined problem" on page 189

Diagnostic Error Code	FRU/Action
089-199-XXX Microprocessor test failed, cause unknown	1. **Go to "Undetermined problem" on page 189.** 2. Flash the system and re-test 3. Replace component under function test.
170-000-XXX Voltage Sensor(s) Test Passed	1. **No action**
170-0XX-XXX Voltage Sensor(s) failure	1. **Flash system** 2. System board
170-195-XXX Voltage Sensor(s) Test aborted by user	1. **Information** 2. Re-start the test, if need to
170-196-XXX Voltage Sensor(s) test halt, error threshold exceeded	1. **Depress F3 to review the log file.** 2. **Re-start the test to reset the log file.**
170-197-XXX Voltage Sensor(s) test warning	1. **Make sure component that is called out is enabled and/or connected** 2. Re-run test 3. Component that is called out in warning statement 4. Component under test
170-198-XXX Voltage Sensor(s) test aborted	1. **If a component is called out, make sure it is enabled and/or connected** 2. Flash the system and re-test 3. Go to "Undetermined problem" on page 189
170-199-XXX Voltage Sensor(s) test failed, cause unknown	1. **Go to "Undetermined problem" on page 189.** 2. Flash the system and re-test 3. Replace component under function test.
170-250-XXX **170-251-XXX** Voltage Sensor(s) Voltage limit error	1. **Power supply** 2. System board
170-254-XXX Voltage Sensor(s) Voltage Regulator Module error	1. **Voltage Regulator Module (VRM)** 2. Microprocessor 3. System board
175-000-XXX Thermal Sensor(s) Test Passed	1. **No action**

Diagnostic Error Code	FRU/Action
175-0XX-XXX Thermal Sensor(s) failure	1. **Flash system** 2. System board
175-195-XXX Thermal Sensor(s) Test aborted by user	1. **Information** 2. Re-start the test, if need to
175-196-XXX Thermal Sensor(s) test halt, error threshold exceeded	1. **Depress F3 to review the log file.** 2. **Re-start the test to reset the log file.**
175-197-XXX Thermal Sensor(s) test warning	1. **Make sure component that is called out is enabled and/or connected** 2. Re-run test 3. Component that is called out in warning statement 4. Component under test
175-198-XXX Thermal Sensor(s) test aborted	1. **If a component is called out, make sure it is enabled and/or connected** 2. Flash the system and re-test 3. Go to "Undetermined problem" on page 189
175-199-XXX Thermal Sensor(s) test failed, cause unknown	1. **Go to "Undetermined problem" on page 189.** 2. Flash the system and re-test 3. Replace component under function test.
175-250-XXX **175-251-XXX** Thermal Sensor(s) limit error	1. **Check fans** 2. Check Power supply 3. Microprocessor 4. System board
185-000-XXX Asset Security Test Passed	1. **No action**
185-XXX-XXX Asset Security failure	1. **Assure Asset Security Enabled** 2. Flash system 3. System board
185-278-XXX Asset Security Chassis Intrusion	1. **C2 Cover Switch** 2. System board
201-000-XXX System Memory Test Passed	1. **No action**
201-XXX-XXX System Memory error	1. **Replace the memory module called out by the test** 2. System board

Diagnostic Error Code	FRU/Action
202-000-XXX System Cache Test Passed	1. **No action**
202-XXX-XXX System Cache error	1. **Cache, if removable** 2. System board 3. Microprocessor
206-000-XXX Diskette Drive Test Passed	1. **No action**
206-XXX-XXX Diskette Drive error	1. **Diskette Drive Cable** 2. Check power supply voltages 3. Diskette drive 4. System board
215-000-XXX CD-ROM Drive Test Passed	1. **No action**
215-XXX-XXX CD-ROM Drive error	1. **CD-ROM Drive Cable** 2. Check power supply voltages 3. CD-ROM drive 4. System board
217-000-XXX Hard Disk Drive Test Passed	1. **No action**
217-25X-XXX **217-26X-XXX** Hard Disk Drive (IDE) error	1. **Hard Disk Drive Cable** 2. Check power supply voltages 3. Hard Disk drive (IDE) 4. System board
217-28X-XXX **217-29X-XXX** Hard Disk Drive (SCSI) error	1. **Hard Disk Drive Cable** 2. Check power supply voltages 3. Hard Disk drive (SCSI) 4. SCSI adapter card 5. System board
220-000-XXX Hi-Capacity Cartridge Drive Test Passed	1. **No action**
220-XXX-XXX Hi-Capacity Cartridge Drive error	1. **Remove the Hi-Capacity Cartridge Drive and re-test the system**
301-000-XXX Keyboard Test Passed	1. **No action**
301-XXX-XXX Keyboard error	1. **Keyboard** 2. Check and test Mouse 3. System board
302-000-XXX Mouse Test Passed	1. **No action**

Diagnostic Error Code	FRU/Action
302-XXX-XXX Mouse error	1. **Mouse** 2. Check and test Keyboard 3. System board
303-000-XXX Joystick Test Passed	1. **No action**
303-XXX-XXX Joystick error	1. **Remove the Joystick and re-test the system**
305-000-XXX Monitor DDC Test Passed	1. **No action**
305-250-XXX Monitor DDC self test failure	1. **Run Setup to enable DDC** 2. Cable 3. Monitor 4. Video card 5. System board
415-000-XXX Modem Test Passed	1. **No action**
415-XXX-XXX Modem error	1. **Remove the Modem and re-test the system**

Miscellaneous error messages

Message/Symptom	FRU/Action
CMOS Backup Battery inaccurate.	1. **CMOS Backup Battery See page "Safety Information" on page 196.** 2. System Board
Changing colors.	1. **Display**
Computer will **not** power-off. See "Power supply" on page 59.	1. **Power Switch** 2. System Board
Computer will **not** RPL from server	1. **Ensure Network is in startup sequence as first device or first device after diskette.** 2. Ensure Network adapter is enabled for RPL. 3. Network adapter (Advise network administrator of new MAC address)
Computer will **not** Wake On LAN™	1. **Check power supply and signal cable connections to network adapter.** 2. Ensure Wake On LAN feature is enabled in Setup/Configuration. 3. Ensure network administrator is using correct MAC address. 4. Ensure no interrupt or I/O address conflicts. 5. Network adapter (Advise network administrator of new MAC address)
Dead computer. See "Power supply" on page 59.	1. **Power Switch** 2. Power Supply 3. System Board
Diskette drive in-use light remains on or does not light when drive is active.	1. **Diskette Drive** 2. System Board 3. Diskette Drive Cable
Flashing cursor with an otherwise blank display.	1. **System Board** 2. Primary Hard Disk Drive 3. Hard Disk Drive Cable
Incorrect memory size during POST.	1. **Run the Memory tests.** 2. Memory Module 3. System Board

Message/Symptom	FRU/Action
"Insert a Diskette" icon appears with a known-good diagnostics diskette in the first 3.5-inch diskette drive.	1. **Diskette Drive** 2. System Board 3. Diskette Drive Cable 4. Network Adapter
Intensity or color varies from left to right of characters and color bars.	1. **Display** 2. System Board
No power, or fan not running.	1. **See "Power supply" on page 59.**
Nonsystem disk or disk error-type message with a known-good diagnostic diskette.	1. **Diskette Drive** 2. System Board 3. Diskette Drive Cable
Other display symptoms not listed above (including blank or illegible display).	1. System Board 2. Display
Power-on indicator or hard disk drive in-use light not on, but computer works correctly.	1. **Power Supply** 2. System Board 3. LED Cables
Program loads from the hard disk with a known-good diagnostics diskette in the first 3.5-inch diskette drive.	1. **Run Setup** 2. Diskette Drive 3. Diskette Drive Cable 4. System Board 5. Power Supply
RPL computer cannot access programs from its own hard disk.	1. **If network admin. is using LCCM Hybrid RPL, check startup sequence: First device: network; Second device: hard disk** 2. Hard disk drive
RPL computer does not RPL from server.	1. **Check startup sequence**
Serial or parallel port device failure (system board port).	1. **External Device Self-Test OK?** 2. External Device 3. Cable 4. System Board
Serial or parallel port device failure (adapter port).	1. **External Device Self-Test OK?** 2. External Device 3. Cable 4. Alternate Adapter 5. System Board
Some or all keys on the keyboard do not work.	1. **Keyboard** 2. Keyboard Cable 3. System Board

Undetermined problem

Check the power supply voltages. See "Power supply" on page 59. If the voltages are correct, return here and continue with the following steps.

1. Power-off the computer.
2. Remove or disconnect the following, one at a time:
   a. Non-IBM devices
   b. External devices (modem, printer, or mouse)
   c. Any adapters
   d. Memory modules ((Minimum requirement = 1 bank of 64 MB DIMMs)

   > **Note**
   >
   > Minimum operating requirements vary for each computer.

   e. Extended video memory
   f. External Cache
   g. External Cache RAM
   h. Hard disk drive
   i. Diskette drive
3. Power-on the computer to re-test the system.
4. Repeat steps 1 through 3 until you find the failing device or adapter.

If all devices and adapters have been removed, and the problem continues, replace the system board. Vedio

Parts listing
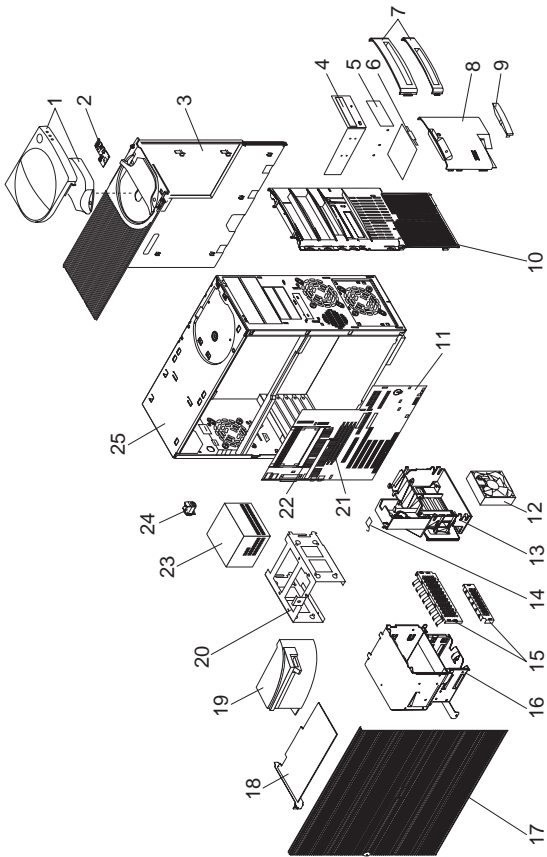
System

Index	System (Netfinity 3500-M10 Type 8655)	FRU No.
1	Handle/Cap Assembly (Models 11Y, 12Y, 21Y, 22Y, 31Y, 32Y)	12J5547
2	Power Switch/LED Cable Assembly (Models 11Y, 12Y, 21Y, 22Y, 31Y, 32Y)	12J4510
3	Top/Side Cover Assembly (Models 11Y, 12Y, 21Y, 22Y, 31Y, 32Y)	01K1637
4	CD-ROM Drive 40X Max (Models 11Y, 12Y, 21Y, 22Y, 31Y, 32Y)	36L8757
5	9.1 GB SCSI Hard Disk Drive (Models 12Y, 22Y, 32Y)	36L8648
6	3.5-In. 1.44 MB Diskette Drive (Models 11Y, 12Y, 21Y, 22Y, 31Y, 32Y)	75H9550
7	Blank Louver Bezels (Models 11Y, 12Y, 21Y, 22Y, 31Y, 32Y) (3.5-In. and 5.25-In.)	01K1888
	Miscellaneous Optional Blank Bezels (Models 11Y, 12Y, 21Y, 22Y, 31Y, 32Y)	12J5551
	CD-ROM Picture Frame Bezel (Models 11Y, 12Y, 21Y, 22Y, 31Y, 32Y)	12J6473
8	3.5-In. Bezel Assembly (Models 11Y, 12Y, 21Y, 22Y, 31Y, 32Y)	12J5549
9	Model Plate (Models 11Y, 12Y, 21Y, 22Y, 31Y, 32Y)	00N8814
10	Front Bezel (Models 11Y, 12Y, 21Y, 22Y, 31Y, 32Y)	12J5548
11	System Board without Memory or Processor (Models 11Y, 12Y, 21Y, 22Y, 31Y, 32Y)	00N8818
12	Fan Assembly 92 mm (Models 11Y, 12Y, 21Y, 22Y, 31Y, 32Y)	02K2861
13	Card Guide (Models 11Y, 12Y, 21Y, 22Y, 31Y, 32Y)	10L5607
14	C2 Switch Assembly (Models 11Y, 12Y, 21Y, 22Y, 31Y, 32Y)	01K1495
15	EMC Kit (Models 11Y, 12Y, 21Y, 22Y, 31Y, 32Y)	12J4508
16	3.5/5.25-In. Hard Disk Bracket (Models 11Y, 12Y, 21Y, 22Y, 31Y, 32Y)	12J4501
17	Access Cover Assembly (Models 11Y, 12Y, 21Y, 22Y, 31Y, 32Y)	12J5546
18	Video Card (Models 11Y, 12Y, 21Y, 22Y, 31Y, 32Y)	00N9276
19	Air Baffle (Models 11Y, 12Y, 21Y, 22Y, 31Y, 32Y)	00N3597
20	3.5-In. Hard Disk Bracket (Models 11Y, 12Y, 21Y, 22Y, 31Y, 32Y)	12J4516
21	64 MB ECC DIMM Memory (Model 11Y)	01K1140
21	128 MB ECC DIMM Memory (Models 12Y, 21Y, 22Y, 31Y, 32Y)	01K1141
22	Processor Pentium III 500 MHz (Models 11Y, 12Y)	33L1615
22	Processor Pentium III 550 MHz (Models 21Y, 22Y)	37L5603
22	Processor Pentium III 600 MHz (Models 31Y, 32Y)	01N2037

Index	System (Netfinity 3500-M10 Type 8655)	FRU No.
	Terminator Card, Processor (Models 11Y, 12Y, 21Y, 22Y, 31Y, 32Y)	01K7349
	Processor Mounting Bracket (Models 11Y, 12Y, 21Y, 22Y, 31Y, 32Y)	33L4520
	Processor Retainer Support Bracket Assembly (Models 11Y, 12Y, 21Y, 22Y, 31Y, 32Y)	02K2903
23	Power Supply 330 Watt (Models 11Y, 12Y, 21Y, 22Y, 31Y, 32Y)	01K9866
24	Keylock Assembly (Models 11Y, 12Y, 21Y, 22Y, 31Y, 32Y)	12J5102
25	Chassis Assembly (Models 11Y, 12Y, 21Y, 22Y, 31Y, 32Y)	12J4515
	Bracket (Models 11Y, 12Y, 21Y, 22Y, 31Y, 32Y)	12J3065
	Cable - Audio CD-ROM (Models 11Y, 12Y, 21Y, 22Y, 31Y, 32Y)	75H9219
	Cable - CD-ROM IDE (Models 11Y, 12Y, 21Y, 22Y, 31Y, 32Y)	01K1483
	Cable - Diskette Drive (Models 11Y, 12Y, 21Y, 22Y, 31Y, 32Y)	01K1541
	Cable - Hard Disk IDE (Models 11Y, 12Y, 21Y, 22Y, 31Y, 32Y)	01K1553
	Cable - SCSI 2 Drop (Models 11Y, 12Y, 21Y, 22Y, 31Y, 32Y)	01K1485
	Foot (Qty 4) (Models 11Y, 12Y, 21Y, 22Y, 31Y, 32Y)	12J4506
	Miscellaneous Hardware Kit (Models 11Y, 12Y, 21Y, 22Y, 31Y, 32Y)	12J4503
	Miscellaneous Hardware Kit (Models 11Y, 12Y, 21Y, 22Y, 31Y, 32Y)	10L5600
	Mouse (Models 11Y, 12Y, 21Y, 22Y, 31Y, 32Y)	76H0889
	Picture Frame Bezels, 3.5-Inch and 5.25-Inch (1 each) (Models 11Y, 12Y, 21Y, 22Y, 31Y, 32Y)	00N5245
	Retention Module (RM) adapter (Models 11Y, 12Y, 21Y, 22Y, 31Y, 32Y)	33L4320
	System Board EMC Shield (Models 11Y, 12Y, 21Y, 22Y, 31Y, 32Y)	01K1855
	VELCRO Packet (Models 11Y, 12Y, 21Y, 22Y, 31Y, 32Y) • VELCRO brand patch • VELCRO brand strip	00N9312

Keyboards (101/102 Key)

Keyboards (101/102 Key)	FRU No.
Arabic	37L2555
Belgian/French	37L2556
Belgian/UK	37L2557
Bulgarian	37L2558
Chinese/US	37L2585
Czech	37L2559
Danish	37L2560
Dutch	37L2561
French	37L2562
French Canadian-ID 058	37L0913
French Canadian-ID 445	37L2552
German	37L2563
Greek	37L2564
Hebrew	37L2565
Hungarian	37L2566
Icelandic	37L2567
Italian	37L2568
Korean	02K0901
Latin/Spanish	37L2553
Norwegian	37L2569
Polish	37L2570
Portugese	37L2571
Romanian	37L2572
Russian	37L2573
Serbian/Cyrilic)	37L2574
Slovak	37L2575
Spanish	37L2576
Swed/Finn	37L2577
Swiss French/German	37L2578
Thailand	37L2587
Turkish (179)	37L2579
Turkish (440)	37L2580
UK English	37L2581
US English	37L2551
US English-EMEA	37L2583
Yugoslavia/Lithuania	37L2582

Power Cords

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

Related Service Information

> **Important**
>
> 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 generators

  and similar units. (This practice ensures correct grounding of the units.)
- If an electrical accident occurs:
  – **Use caution; do not become a victim yourself.**
  – **Switch off power.**
  – **Send another person to get medical aid.**

Safety Inspection Guide

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

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

Consider these conditions and the safety hazards they present:

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

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

Checklist:

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

Handling Electrostatic Discharge-Sensitive Devices

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

Notes:

1. Use product-specific ESD procedures when they exceed the requirements noted here.

2. Make sure that the ESD protective devices you use have been certified (ISO 9000) as fully effective.

When handling ESD-sensitive parts:

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

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

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

Grounding Requirements

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

Laser compliance statement

Some IBM Personal Computer models are equipped from the factory with a CD-ROM drive. CD-ROM drives are also sold separately as options. The CD-ROM drive is a laser product. The CD-ROM drive is certified in the U.S. to conform to the requirements of the Department of Health and Human Services 21 Code of Federal Regulations (DHHS 21 CFR) Subchapter J for Class 1 laser products. Elsewhere, the drive is certified to conform to the requirements of the International Electrotechnical Commission (IEC) 825 and CENELEC EN 60 825 for Class 1 laser products.

When a CD-ROM drive is installed, note the following.

CAUTION:

Use of controls or adjustments or performance of procedures other than those specified herein might result in hazardous radiation exposure.

O uso de controles, ajustes ou desempenho de procedimentos diferentes daqueles aqui especificados pode resultar em perigosa exposição à radiação.

凡未在这里指明的任何控制用法、调整、行为，

都会导致严重后果。

Pour éviter tout risque d'exposition au rayon laser, respectez les consignes de réglage et d'utilisation des commandes, ainsi que les procédures décrites.

Werden Steuer- und Einstellelemente anders als hier festgesetzt verwendet, kann gefährliche Laserstrahlung auftreten.

Az itt előírt eljárásoktól, beállításoktól és vezérlésektől eltérni a lézersugárzás veszélye miatt kockázatos !

L'utilizzo di controlli, regolazioni o l'esecuzione di procedure diverse da quelle specificate possono provocare l'esposizione a

Использование элементов настройки и выполнение процедур иных, чем указано здесь, может привести к опасному радиационному облучению.

Použitie kontrôl, úprav alebo iných vykonaní od iných
výrobcov, ako je v tomto špecifikované, mohlo by mať
za následok nebezpečenstvo vystavenia sa vyžiarovaniu.

**El uso de controles o ajustes o la ejecución de
procedimientos distintos de los aquí especificados
puede provocar la exposición a radiaciones
peligrosas.**

Opening the CD-ROM drive could result in exposure to
hazardous laser radiation. There are no serviceable parts
inside the CD-ROM drive. **Do not open.**

Some CD-ROM drives contain an embedded Class 3A or
Class 3B laser diode. Note the following.

DANGER:

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

**Radiação por raio laser ao abrir. Não olhe fixo no feixe
de luz, não olhe diretamente por meio de instrumentos
óticos e evite exposição direta com o feixe de luz.**

开启时会有激光发射时，请勿盯视激光光束，请勿直接查看
视觉仪器，并且避免直接接触在激光光束之中。

**Rayonnement laser si carter ouvert. Évitez de fixer le
faisceau, de le regarder directement avec des
instruments optiques, ou de vous exposer au rayon.**

**Laserstrahlung bei geöffnetem Gerät. Nicht direkt oder
über optische Instrumente in den Laserstrahl sehen
und den Strahlungsbereich meiden.**

**Kinyitáskor lézersugár ! Ne nézzen bele se szabad
szemmel, se optikai eszközökkel. Kerülje a
sugárnyalábbal való érintkezést !**

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

Открывая, берегитесь лазерного излучения.
Не смотрите на луч, не разглядывайте его
с помощью оптических инструментов, а также
избегайте прямого воздействия лазерного луча.

Keď je laserová jednotka otvorená. Vyhnite sa priamemu
pohľadu a nehľadte priamo s optickými nástrojmi do lúča
a vyhnite sa priamemu vystaveniu lúčov.

**Radiación láser al abrir. No mire fijamente ni examine
con instrumental óptico el haz de luz. Evite la
exposición directa al haz.**

DANGER

> **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.**
>
> **To avoid shock hazard:**
>
> - **The power cord must be connected to a properly wired and grounded receptacle.**
> - **Any equipment to which this product will be attached must also be connected to properly wired receptacles.**
>
> **When possible, use one hand to connect or disconnect signal cables to prevent a possible shock from touching two surfaces with different electrical potentials.**
>
> **Electrical current from power, telephone, and communications cables is hazardous. To avoid shock hazard, connect and disconnect cables as described following when installing, moving, or opening covers of 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 cord(s) from outlet.
3. Attach signal cables to receptacles.	3. Remove signal cables from receptacles.
4. Attach power cord(s) to outlet.	4. Remove all cables from devices.
5. Turn device ON.	

NOTE: In the UK, by law, the telephone cable must be connected after the power cord.	NOTE: In the UK, the power cord must be disconnected after the telephone cable.

Caution:
When replacing the 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.

Caution:
When a CD-ROM drive is installed, note the following.

Use of controls or adjustments or performance of procedures other than those specified herein might result in hazardous radiation exposure.

Removing the covers of the CD-ROM drive could result in exposure to hazardous laser radiation. There are no serviceable parts inside the CD-ROM drive. Do not remove the CD-ROM drive covers.

DANGER

> **Some CD-ROM drives 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.**

≥32 kg (70.5 lbs)   ≥55 kg (121.2 lbs)
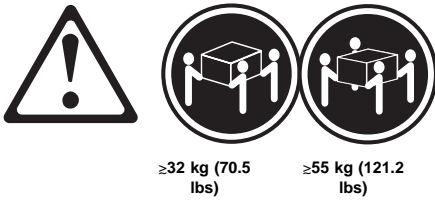
Caution:
Use safe lifting practices when lifting your machine.

Caution:
The Power Control button on the front of the server does not turn off the electrical current supplied to the server. The server also might have more than one power cord. To remove all electrical current from the server, ensure that all power cords are disconnected from the power source.

Caution:
When the power cord bracket option is installed on the power cord, the server must be plugged to a power source that is easily accessible.

Caution:
When unlocked, the server door will not support the weight of the server. To avoid personal injury, be sure to remove or lock the server door before moving or lifting the server.

Caution:
Never remove the cover on a power supply or any part (power backplane and AC box) that has the following label attached.

Hazardous voltage, current, and energy levels are present inside the power supplies, power backplane, and AC box. There are no serviceable parts inside the power supplies, power backplane, or AC box. If you suspect a problem with one of these parts, contact an IBM service technician.

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

Caution:
The power cable to the fan should be disconnected whenever the fan assembly is not installed in the server; otherwise, the fan might start turning while you are holding it and the fan blades could injure your fingers.
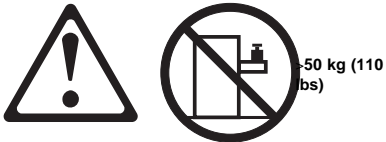
Caution:
Do not place any object weighing more than 50 kg (110 lbs) on top of the rack model of the server.

⚠ **PERIGO**

Para evitar choques elétricos, não conecte ou desconecte nenhum cabo, nem efetue instalação, manutenção ou reconfiguração deste produto durante uma tempestade com raios.

Para evitar choques elétricos:

- **O cabo de alimentação deve ser conectado a um receptáculo corretamente instalado e aterrado.**

- **Todos os equipamentos aos quais este produto será conectado devem também ser conectados a receptáculos corretamente instalados.**

Quando possível, utilize uma das mãos para conectar ou desconectar cabos de sinal, para evitar um possível choque ao tocar duas superfícies com potenciais elétricos diferentes.

A corrente elétrica proveniente de cabos de alimentação, de telefone e de comunicação é perigosa. Para evitar choques elétricos, conecte e desconecte os cabos conforme descrito a seguir, ao instalar, movimentar ou abrir tampas deste produto ou de dispositivos conectados.

Para Conectar	**Para Desconectar**
1. DESLIGUE tudo.	1. DESLIGUE tudo.
2. Conecte primeiro todos os cabos nos dispositivos.	2. Remova primeiro o(s) cabo(s) de alimentação das tomadas.
3. Conecte os cabos de sinal nos receptáculos.	3. Remova os cabos de sinal dos receptáculos.
4. Conecte o(s) cabo(s) de alimentação nas tomadas.	4. Remova todos os cabos dos dispositivos.
5. LIGUE o dispositivo.	

cuidado:
Ao substituir a bateria, utilize apenas o Número de Peça IBM 33F8354 ou um tipo de bateria equivalente recomendado pelo fabricante. Se seu sistema possuir um módulo com uma bateria de lítio, substitua-o apenas pelo mesmo tipo de módulo, produzido pelo mesmo fabricante. A bateria contém lítio e pode explodir se não for utilizada, manuseada e descartada de forma adequada.

Não:

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

Descarte a bateria conforme requerido pelas disposições e regulamentações locais.

cuidado:
Quando uma unidade de CD-ROM estiver instalada, observe o seguinte.

A utilização de controles ou ajustes ou a execução de procedimentos diferentes daqueles especificados nesta publicação pode resultar em exposição perigosa à radiação.

A remoção das tampas da unidade de CD-ROM pode resultar em exposição a radiação perigosa de laser. Não existem peças que possam ser consertadas no interior da unidade de CD-ROM. Não remova as tampas da unidade de CD-ROM.

PERIGO

> **Algumas unidades de CD-ROM contém um diodo de laser da Classe 3A ou da Classe 3B. Observe o seguinte.**
>
> **Radiação de laser quando aberto. Não olhe diretamente para o feixe de laser, não olhe diretamente com instrumentos óticos, e evite exposição direta ao raio.**
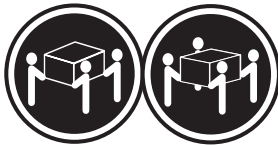
≥32 kg (70,5 lbs) **≥55 kg (121,2 lbs)**

cuidado:
Utilize práticas seguras para levantamento de peso ao levantar sua máquina.

cuidado:
O botão de Controle de Energia na parte frontal do servidor não desliga a corrente elétrica fornecida ao servidor. O servidor pode também possuir mais que um cabo de alimentação. Para remover tda a corrente elétrica do servidor, assegure que todos os cabos de alimentação estejam desconectados da fonte de energia.

cuidado:
Quando o suporte do cabo de alimentação estiver instalado no cabo de alimentação, o servidor deve estar conectado a uma fonte de energia de fácil acesso.

cuidado:
Quando destravada, a porta do servidor não suporta o peso do servidor. Para evitar ferimentos pessoais, certifique-se de remover ou travar a porta do servidor antes de mover ou levantar o servidor.

cuidado:
Nunca remova a tampa de uma fonte de alimentação
ou qualquer peça (painel traseiro de força ou AC box)
que contenha a seguinte etiqueta.

Níveis perigosos de tensão, corrente e energia estão
presentes no interior das fontes de alimentação, painel
traseiro de força ou AC box. Não existem peças que
possam ser consertadas no interior da fonte de
alimentação, painel traseiro de força ou AC box. Se
suspeitar de problemas em uma dessas peças, entre
em contato com um representante técnico IBM.

cuidado:
A corrente elétrica proveniente de cabos de
alimentação, de telefone e de comunicação é perigosa.
Para evitar ferimentos pessoais ou danos aos
equipamentos, desconecte os cabos de alimentação,
sistemas de telecomunicação, redes e modems antes
de abrir as tampas do servidor, a menos que receba
outras instruções nos procedimentos de instalação e
configuração.

cuidado:
O cabo de energia do ventilador deve permanecer
desconectado sempre que o conjunto do ventilador
não estiver instalado no servidor; caso contrário, o
ventilador pode começar a girar enquanto estiver em
suas mãos, e as lâminas do ventilador podem ferir
seus dedos.
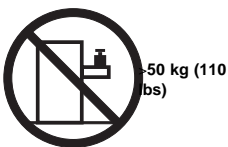
cuidado:
Não coloque qualquer objeto com peso superior a 50
kg (110 lbs) sobre o modelo de gaveta do servidor.

声明 1

⚠

危险！

为避免电击危险，请不要在暴风雨期间连接或断开任何电缆，
或是进行此产品的安装、维护或重新配置操作。

为避免电击危险：

– 电源线必须连接到适当的电线及接地插座。

– 此产品将要连接的所有设备也必须连接到正确接线的插座上。

如果可能，请使用一只手连接或断开连接信号电缆，以避免在
接触两个具有不同电势的表面时遭到电击。

电源线、电话线以及通信电缆中的电流非常危险。为避免电击，
请在安装、移动或打开本产品或连接设备的外盖时，按照下述
步骤连接或断开电缆。

要连接电缆	要断开电缆
1. 关闭所有设备。	1. 关闭所有设备。
2. 首先将所有电缆与设备连接。	2. 首先从电源插座拔下电源线。
3. 将信号线连接到插座。	3. 从插座拔下信号电缆。
4. 将电源线连接到电源插座。	4. 从设备上拔下所有电缆。
5. 打开设备。	

声明 2

⚠

注意！

当更换电池时，仅可使用 IBM 部件号为 33F8354 的产品或由制造商
推荐的同等电池。如果系统中有包含锂电池的模块，则只能使用由相
同制造商制造的相同类型模块更换。该电池含有锂，如果使用、操作
或处理不当会发生爆炸。

不要：

– 将其投入或浸于水中

– 加热超过100 °C （212 °F）

– 修理或拆卸

应按照当地法规和条例对此电池进行处理。

声明 3

⚠

注意 ！

在已安装 CD-ROM 驱动器的情况下，请注意下面的内容。

不遵循此处指定的控制、调整、或操作过程的操作将可能导致危险
的辐射泄漏。

取下 CD-ROM 驱动器的外盖会导致危险的激光辐射泄漏。CD-ROM 驱
动器内没有可以使用的部件。请不要取下 CD-ROM 驱动器的外盖。

Related Service Information **211**

声明 4

危险！

一些 CD-ROM 驱动器中包含内置的 3A 类或 3B 类激光二极管。
请注意下述内容。

打开驱动器会产生激光辐射。请不要凝视激光束，请不要使用光学仪器
直接观看激光束，同时也要避免人体直接暴露在激光束下。

声明 5

32 kg (70.5 磅)　　**55 kg (121.2 磅)**

注意！

搬运机器时，请进行安全搬运操作。

声明 6

注意！

关闭服务器前端的电源控制按钮并不能完全切断供给服务器的电流。
服务器可能有多条电源线。为从服务器断开所有电流，应确保断开
所有电源线与电源的连接。

声明 7

注意！

当电源线上安装有电源线固定夹选件时，服务器必须插在容易接近
的电源上。

声明 8

注意！

在未锁定时，服务器的门不能支撑服务器的重量。为避免人身伤害，
请在移动或搬运服务器前取下或锁住服务器的门。

声明 9

注意！

切勿取下电源或任何贴有下列标签的部件（电源后挡板和交流电源盒）
上的盖板。

电源、电源后挡板和交流电源盒内存在危险的电压、电流和能级。
电源、电源后挡板和交流电源盒的内部没有可以维护和调整的部
件。如果怀疑这些部件之一有问题，请与 IBM 服务技术人员联系。

声明 10

注意！

电源线、电话线以及通信电缆中的电流非常危险。为避免人身伤害或
设备损坏，除非在安装和配置过程中特别指明，请在打开服务器外盖
前断开已连接的全部电源线、电信系统、网络及调制解调器。

声明 11

注意！

在将风扇装置安装到服务器上之前，应该断开连接风扇的电源线；
否则，可能在您拿起风扇时它就开始旋转，扇叶可能会伤及您的
手指。

声明 12

>50 kg (110 磅)

注意！

请不要将任何重量超过 50 kg(1101 磅)的物体放在抽屉型服务器的
顶部。

• 聲明 1

危險

為了避免雷擊，在閃電期間，請勿連接或拔掉本裝置上的任
何電纜線，或請勿安裝、維修或重新架構本產品。

為了避免雷擊：

- 電源線必須連接到接線及接地正確的插座。
- 本產品所連接的設備也必須連接到接線正確的插座。

儘可能使用單手來連接或拔掉信號電纜，以避免因接觸兩不
同電位的平面，而受到電擊。

電源、電話及通信電纜上均有電流流通。為了避免電擊，在
安裝、移動本產品，或開啟本產品的蓋子或與本產品連接之
裝置的蓋子時，請依照下列「連接」及「拔掉」電纜線的步
驟操作。

連接	拔掉
1. 關掉所有開關。	1. 關掉所有開關。
2. 首先，將所有電纜線連接到裝置。	2. 首先，自電源插座拔掉電源線。
3. 將信號電纜連接到信號插座。	3. 拔掉信號插座上的所有信號電纜。
4. 將電源線連接到電源插座。	4. 拔掉裝置上的所有電纜線。
5. 開啟裝置電源。	

- 聲明 2

注意:
更換電池時,只可使用 IBM 零件編號 33F8354 的電池,或廠商建議
的相當類型的電池。如您系統中的模組含有鋰電池,更換時,請使
用相同廠商製造的相同模組類型。如未正常使用、處理或捨棄含有
鋰的電池時,可能會造成爆炸。

嚴禁:.

- 丟入或浸入水中
- 加熱超過攝氏100 度(華氏 212 度)
- 修補或拆解

處理廢棄電池時,請遵照當地法令規章處理。

- 聲明 3

注意:
安裝光碟機時,請注意下列事項:

不依此處所指示的控制、調整或處理步驟,恐有遭致輻射之虞。

移開光碟機蓋子,恐有遭致雷射輻射之虞。光碟機中沒有需要維修
的部分。請勿移開光碟機的蓋子。

- 聲明 4

危險

光碟機含有內嵌式 Class 3A 或 Class 3B 雷射二極體時,請
注意下列事項:

開啟時會產生雷射輻射。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 5

>= 32 公斤(70.5 磅)   >= 55 公斤(121.2 磅)

注意:
提昇機器時,請使用安全提昇措施。

- 聲明 6

注意:
伺服器前面的電源控制按鈕無法關閉供應伺服器的電流。本伺服器
可能有一條以上的電源線。如要移除伺服器上的所有電流,請確認
所有電源線已與電源分離。

- 聲明 7

注意:
如電源線上安裝了電源線托架裝置,則所使用的電源必須是伺服器
容易使用為原則。

- 聲明 8

注意：
如未上鎖，伺服器的門無法支撐伺服器的重量。為了避免人員受傷，移動或提昇伺服器之前，請確認已移除或鎖上伺服器的門。

- 聲明 9

注意：
嚴禁移除電源供應器的蓋子，或任何貼有下列標籤的部分(電源背面及交流電配電箱)。

電源供應器、電源背面及交流電配電箱內有危險的電壓、電流及能源。電源供應器、電源背面及交流電配電箱內並無需要維修的部分。如您查覺問題出在上述部分，則請洽詢 IBM 服務人員。

- 聲明 10

注意：
電源、電話及通信電纜上均有電流流通。在安裝及架構之時，若非專家指導，為了避免人員受傷、設備受損，在開啟伺服器蓋子之前，請切斷電源線、電信系統、網路及數據機。

- 聲明 11

注意：
伺服器上未裝妥風扇時，請切斷接至風扇的電纜線；否則，當您手握風扇，而風扇突然啟動時，扇葉可能會傷到您的手指。

- 聲明 12

  >50 公斤(110 磅)

注意：
請勿將任何重量超過 50 公斤(110 磅) 的東西置於伺服器的抽屜上方。

DANGER

> **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.**
>
> **Pour éviter tout risque de choc électrique :**
>
> - **Les cordons d'alimentation du présent produit et de tous les appareils qui lui sont connectés doivent être branchés sur des socles de prise de courant correctement câblés et mis à la terre.**
>
> **Afin d'éviter tout risque de choc électrique provenant d'une différence de potentiel de terre, n'utilisez qu'une main, lorsque cela est possible, pour connecter ou déconnecter les cordons d'interface.**
>
> **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, 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. Commencez pas débrancher les cordons alimentation des socles de prise de courant.
3. Branchez les câbles d'interface sur les prises.	3. Débranchez les câbles d'interface des prises.
4. Branchez les cordons d'alimentation sur un socle de prise de courant.	4. Débranchez tous les câbles des unités.
5. Mettez les unités sous tension.	

attention:
Remplacez la pile 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.

attention:
Si une unité de CD-ROM est installée, prenez
connaissance des informations suivantes :

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.

Pour éviter une exposition directe au rayon laser,
n'ouvrez pas l'unité de CD-ROM. Vous ne pouvez
effectuer aucune opération de maintenance à
l'intérieur.

DANGER

> Certaines unités de CD-ROM 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.

≥32 kg   **≥55 kg**

attention:
Ce produit pèse un poids considérable. Faites-vous aider pour le soulever.

attention:
Le bouton de mise sous tension/hors tension situé sur la face avant du serveur ne coupe pas l'arrivée de courant électrique à l'inérieur de la machine. Il se peut que votre serveur dispose de plusieurs cordons d'alimentation. Pour isoler totalement le serveur du réseau électrique, débranchez tous les cordons d'alimentation des socle de prise de courant.

attention:
Lorsqu'une patte de fixation du cordon d'alimentation est installée branchez le serveur sur une prise de courant électrique facile d'accès.

attention:
Une fois déverrouillé, le volet du serveur ne supporte pas le poids de ce dernier. Pour éviter tout accident, retirez ou verrouillez le volet du serveur avant de déplacer ou de soulever ce dernier.

attention:
N'ouvrez jamais le bloc d'alimentation ou tout élément (fond de panier du bloc ou boîtier d'alimentation en courant alternatif) sur lequel est apposé l'étiquette ci-dessous.

Des tensions et des courants dangereux sont présents à l'intérieur des blocs d'alimentation, de leurs fonds de panier et du boîtier d'alimentation en courant alternatif. Ces éléments ne peuvent pas être réparés. Si vous pensez qu'ils peuvent être à l'origine d'un incident, prenez contact avec un technicien de maintenance IBM.

attention:
Le courant électrique circulant dans les câbles de communication et les cordons téléphoniques et d'alimentation peut être dangereux. Pour votre sécurité et celle de l'équipement, avant de retirer les carters du serveur, mettez celui-ci hors tension et déconnectez ses cordons d'alimentation, ainsi que les câbles qui le relient aux réseaux, aux systèmes de télécommunication et aux modems (sauf instruction contraire mentionnée dans les procédures d'installation et de configuration).

attention:
Vous devez débrancher le cordon d'alimentation du ventilateur avant d'installer ce dernier dans le serveur, sinon le ventilateur peut se mettre en route et vous risquez de vous blesser.
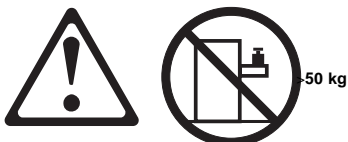
attention:
Ne posez pas d'objet dont le poids dépasse 50 kg sur les modèles tiroir de serveur.

VORSICHT

Aus Sicherheitsgründen bei Gewitter an diesem Gerät keine Kabel anschließen oder lösen. Ferner keine Installations-, Wartungs- oder Rekonfigurationsarbeiten durchführen.

Aus Sicherheitsgründen:

- **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, um einen Stromschlag durch Berühren von Oberflächen mit unterschiedlichem elektrischem Potential zu vermeiden.

Elektrische Spannungen von Netz-, Telefon- und Datenübertragungsleitungen sind gefährlich. Um einen Stromschlag zu vermeiden, nur nach den Anweisungen arbeiten, die für Installation, Transport oder Öffnen von Gehäusen dieses Produkts 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.	

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.

achtung:
Wenn ein CD-ROM-Laufwerk installiert ist, beachten Sie folgendes. Steuer- und Einstellelemente sowie Verfahren nur entsprechend den Anweisungen im vorliegenden Handbuch einsetzen. Andernfalls kann gefährliche Laserstrahlung auftreten.

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.

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.**

≥32 kg   **≥55 kg**
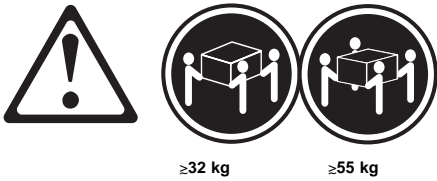
achtung:
Beim Anheben der Maschine die vorgeschriebenen
Sicherheitsbestimmungen beachten.

achtung:
Mit dem Betriebsspannungsschalter an der Vorderseite
des Servers wird die Stromversorgung für den Server
nicht unterbrochen. Der Server könnte auch mehr als
ein Netzkabel auweisen. Um die gesamte
Stromversorgung des Servers auszuschalten, muß
sicherestellt werden, daß alle Netzkabel aus den
Netzsteckdosen herausgezogen wurdn.

achtung:
Wenn am Netzkabel eine Kabelhalterung angebracht
ist, uß der Server an eine leicht zugängliche
tzsteckdose angeschlosen rden.

achtung:
Bei geöffneter Tür kann die Servertür nicht das
Gewicht des Servers tragen. Zur Vermeidung von
Verletzungsgefahren vor dem Transportieren oder
Anheben des Servers die Servertür abnehmen oder
verschließen.

achtung:
Die Abdeckung oder eine Komponente eines Netzteils
(Rückwandplatine oder Netzspannungsgehäuse), die
wie nachfolgend aufgeführt gekennzeichnet ist, darf
keinesfalls entfernt werden.

In Netzteilen, Rückwandplatinen und
Netzspannungsgehäusen können gefährliche
Spannungen anliegen. In Netzteilen,
Rückwandplatinen oder Netzspannungsgehäusen sind
keine Teile vorhanden, die vom Benutzer gewartet
werden müssen. Besteht der Verdacht, daß an einem
dieser Teile ein Fehler aufgetreten ist, ist ein IBM
Kundendiensttechniker zu verständigen.

achtung:
An Netz-, Telefon- und Datenleitungen können
gefährliche elektrische Spannungen anliegen. Um eine
Gefährdung des Benutzers oder Beschädigung des
Geräts zu vermeiden, ist der Server auszuschalten. Die
Verbindung zu den angeschlossenen Netzkabeln,
Telekommunikationssystemen, Netzwerken und
Modems ist vor dem Öffnen des Servergehäuses zu
unterbrechen (sofern in Installations- und
Konfigurationsanweisungen nicht anders angegeben).

achtung:
Das Netzkabel des Lüfters sollte herausgezogen sein,
wenn der Lüfter nicht in den Server eingebaut ist.
Andernfalls könnte der Lüfter zu drehen beginnen,
solange Sie ihn in der Hand halten. Hierbei kann es zu
Verletzungen durch die Ventilatorblätter kommen.

achtung:
Legen Sie keine Gegenstände, die mehr als 50 kg
wiegen, auf das Einschubmodell des Servers.

PERICOLO

> **Per evitare il pericolo di scosse elettriche durante i temporali, non collegare o scollegare cavi, non effettuare l'installazione, la manutenzione o la riconfigurazione di questo prodotto.**
>
> **Per evitare il pericolo di scosse elettriche:**
>
> - **collegare il cavo 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 per evitare il rischio di scosse derivanti dal contatto con due superfici a diverso potenziale elettrico.**
>
> **La corrente elettrica circolante nei cavi di alimentazione, del telefono e di segnale è pericolosa. Per evitare scosse elettriche, collegare e scollegare i cavi come descritto quando si effettuano l'installazione, la rimozione o l'apertura dei coperchi di questo prodotto o durante il collegamento delle unità.**

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 il(i) cavo(i) di alimentazione dalla presa elettrica.
3. Collegare i cavi di segnale alle prese.	3. Rimuovere i cavi di segnale dalle prese.
4. Collegare il(i) cavo(i) di alimentazione alla presa elettrica.	4. Rimuovere tutti i cavi dalle unità.
5. ACCENDERE le unità.	

ATTENZIONE:
Quando si sostituisce la batteria, utilizzare solo una batteria IBM 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 smaltirla**

Smaltire secondo la normativa in vigore (D.Lgs 22 del 5/2/97) e successive disposizioni nazionali e locali.

ATTENZIONE:
Quando è installata un'unità CD-ROM, notare quanto segue:

L'utilizzo di controlli, regolazioni o l'esecuzione di procedure non descritti nel presente manuale possono provocare l'esposizione a radiazioni pericolose.

L'apertura di un'unità CD-ROM può determinare l'esposizione a radiazioni laser pericolose. All'interno dell'unità CD-ROM non vi sono parti su cui effettuare l'assistenza tecnica. Non rimuovere i coperchi dell'unità CD-ROM.

PERICOLO

> **Alcune unità CD-ROM 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.**

≥32 kg **≥55 kg**
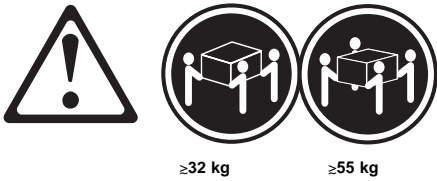
ATTENZIONE:
Durante il sollevamento della macchina seguire delle norme di di sicurezza.

ATTENZIONE:
Il pulsante del controllo dell'alimentazione situato nella parte anteriore del servente non disattiva la corrente elettrica fornita al servente. Il servente potrebbe anche avere più di un cavo di alimentazione. Per disattivare la corrente elettrica del servente, assicurarsi che tutti i cavi di alimentazione siano scollegati dalla sorgente di alimentazione.

ATTENZIONE:
Quando sul cavo di alimentazione è installata l'opzione di sostegno del cavo, il servente deve essere collocato in prossimità di una presa elettrica facilmente accessibile.

ATTENZIONE:
Se aperto, lo sportello del servente non supporta il peso del servente. Per evitare danni alle persone, assicurarsi di rimuovere o chiudere tale sportello prima di spostare o sollevare il servente.

ATTENZIONE:
Non togliere mai il coperchio di un alimentatore o qualsiasi parte (power backplane e ac box) su cui è apposta la seguente etichetta.

Tensioni pericolose, corrente e livelli di energia sono presenti all'interno degli alimentatori, del power backplane e dell'ac box. All'interno degli alimentatori, del power backplane e dell'ac box non ci sono parti soggette a manutenzione. Se si sospetta un problema in una di queste parti, rivolgersi ad un tecnico di manutenzione IBM.

ATTENZIONE:
La corrente circolante nei cavi di alimentazione, del telefono e di segnale è pericolosa. Per evitare situazioni pericolose per le persone o danneggiamenti all'apparecchiatura, scollegare i cavi di alimentazione, i sistemi di telecomunicazioni, le reti e ed i modem prima di aprire i coperchi del servente se non diversamente indicato nelle procedure di installazione e configurazione.

ATTENZIONE:
Il cavo di alimentazione collegato alla ventola dovrebbe essere scollegato ogni volta che l'assieme ventola non sia installato nel servente; diversamente la ventola si potrebbe attivare mentre la si sta maneggiando e le pale potrebbero provocare ferite le dita.
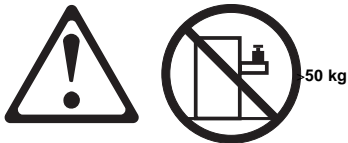
ATTENZIONE:
Non poggiare oggetti che pesano più di 50 kg sulla parte superiore del servente.

위험

전기 충격을 피하려면 날씨가 나쁠 때(예: 눈 또는 비가 오거나 천둥 번개가 칠 때)는 케이블을 연결하거나 끊지 않도록 하고 이 제품의 설치, 유지보수 또는 재구성 등의 작업을 수행하지 않도록 하십시오.

전기 충격을 피하려면 다음과 같아야 합니다.

– 고압선은 적절한 배선 및 접지 상태의 콘센트로 연결되어야 합니다.

– 이 제품이 접속될 모든 장비도 적절한 배서 상태의 콘센트로 연결되어야 합니다.

다른 전위를 가진 두 표면을 만졌을 때 발생할 수 있는 전기 충격을 피하려면 한 손으로 신호선을 연결하거나 끊으십시오.

전원, 전화 및 통신 케이블로부터 흘러 나오는 전류는 위험합니다. 전기 충격을 피하려면 이 제품이나 접속 장치를 설치, 이동 및 덮개를 열 때 다음 설명에 따라 케이블을 연결하고 끊도록 하십시오.

연결하려면	연결해제하려면
1. 모든 스위치를 켠다.	1. 모든 스위치를 끈다.
2. 먼저 모든 케이블을 장치에 연결한다.	2. 먼저 모든 케이블을 장치에 제거한다.
3. 신호선을 콘센트에 연결한다.	3. 신호선을 콘센트에서 제거한다.
4. 전원을 콘센트에 연결한다.	4. 장치에서 모든 케이블을 제거한다.
5. 장치 스위치를 켠다.	

주의:
배터리를 교체할 때는 IBM 부품 번호 &PN. 또는 제조업체에서 추천하는 동등한 유형의 배터리를 사용하십시오. 시스템에 리튬 배터리를 포함하는 모듈이 있으면 이것은 동일한 제조업체에서 생산된 동일한 모듈 유형으로만 교체하십시오. 배터리에는 리튬이 포함되어 있으므로 제대로 사용, 처리 또는 처분하지 않으면 폭발할 수 있습니다.

다음을 주의하십시오.

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

지역 법령이나 규정의 요구에 따라 배터리를 처분하십시오.

주의:
CD-ROM 드라이브가 설치되어 있으면 다음 사항을 명심하십시오.

여기에서 지정하지 않은 방식으로 CD-ROM 드라이브를 제어 또는 조절하거나 다른 절차로 사용하면 위험한 방사능 노출이 발생할 수 있습니다.

CD-ROM 드라이브의 덮개를 제거하면 위험한 레이저 방사능이 노출될 수 있습니다. CD-ROM 드라이브 내에는 정비할 수 있는 부품이 없습니다. CD-ROM 드라이브 덮개를 제거하지 않도록 하십시오.

경고문 4

위험

> 일부 CD-ROM 드라이브에는 클래스 3A 또는 3B 레이저 2극
> 진공관(다이오드)이 들어 있습니다. 다음 사항을 명심하십시오.
>
> 열면 레이저 방사능이 노출됩니다. 광선을 주시하거나 광학 기계를
> 직접 쳐다보지 않도록 하고 광선에 노출되지 않도록 하십시오.

경고문 5

32kg(70.5 파운드)   55kg(121.2 파운드)

주의:
기계를 들 때는 안전하게 들어 올리십시오.

경고문 6

주의:
서버 앞쪽의 전원 제어 버튼을 꺼도 서버로 공급되는 전류가 차단되지 않습니다.
또한 서버에 둘 이상의 전선이 연결되어 있는 경우가 있습니다. 서버에서 모든
전류를 차단하려면 모든 전선이 전원으로부터 차단되어 있는지 확인하십시오.

경고문 7

주의:
전선 브래킷 옵션이 전선에 설치되어 있으면 서버는 쉽게 액세스할 수 있는 전원으로
연결되어야 합니다.

경고문 8

주의:
서버 도어가 잠겨 있지 않으면 서버의 무게를 지지하지 못합니다. 다치지 않으려면
서버를 이동하거나 들어 올리기 전에 서버 도어를 제거하거나 잠그십시오.

경고문 9

주의:
다음 레이블이 붙어 있는 전원 공급장치나 부품(케이스 뒷면 및 AC 상자)의 덮개는
제거하지 않도록 하십시오.

전원 공급장치, 케이스 뒷면 및 AC 상자 내부에는 위험한 전압, 전류 및 에너지 수준
이 존재합니다. 전원 공급장치, 케이스 뒷면 또는 AC 상자 내부에는 정비할 수 있는
부품이 없습니다. 이들 부품에 문제가 발생했다고 여겨지면 IBM 서비스 기술자에게
문의하십시오.

경고문 10

주의:
전원, 전화 및 통신 케이블로부터 흘러 나오는 전류는 위험합니다. 설치 및 구성 절차에 다른 지시가 없으면, 다치거나 장비 손상이 생기지 않게 하기 위해 서버 덮개를 열기 전에 접속된 전선, 원격 통신 시스템, 네트워크 및 모뎀의 연결을 끊으십시오.

경고문 11

주의:
팬에 연결된 전선은 팬 부품이 서버에 설치되어 있지 않을 때에는 연결이 끊어져야 합니다. 그렇지 않으면 팬을 잡고 있는 중에 팬이 회전하여 손가락에 상처를 줄 수 있습니다.

경고문 12

      50kg(110 파운드) 이상

주의:
서랍형 모델의 서버 상단에는 50kg(110 파운드)이 넘는 물체를 올려 놓지 않도록 하십시오.

PELIGRO

> **Para evitar una posible descarga eléctrica, no conecte ni desconecte los cables ni lleve a cabo ninguna operación de instalación, de mantenimiento o de reconfiguración de este producto durante una tormenta eléctrica.**
>
> **Para evitar una posible descarga:**
>
> - **El cable de alimentación debe conectarse a un receptáculo con una instalación eléctrica correcta y con toma de tierra.**
>
> - **Los aparatos a los que se conecte este producto también deben estar conectados a receptáculos con la debida instalación eléctrica.**
>
> **Cuando sea posible, utilice una sola mano para conectar o desconectar los cables de señal a fin de evitar una posible descarga al tocar dos superficies con distinto potencial eléctrico.**
>
> **La corriente eléctrica de los cables de comunicaciones, teléfono y alimentación puede resultar peligrosa. Para evitar una posible descarga, siga las indicaciones de conexión y desconexión de los cables siempre que tenga que instalar, mover o abrir las cubiertas de este producto o de los dispositivos acoplados.**

Instrucciones de conexión	Instrucciones de desconexión
1. Apague todos los componentes (OFF).	1. Encienda todos los componentes (ON).
2. En primer lugar, conecte todos los cables a los dispositivos.	2. En primer lugar, retire los cables de alimentación de las tomas.
3. Conecte los cables de señal a los receptáculos.	3. Retire los cables de señal de los receptáculos.
4. Conecte los cables de alimentación a las tomas.	4. Retire todos los cables de los dispositivos.
5. Encienda el dispositivo (ON).	

percaución:

Al cambiar la batería, utilice únicamente la batería IBM Número de pieza 33F8354 o un tipo de batería equivalente recomendado por el fabricante. Si el sistema tiene un módulo que contiene una batería de litio, sustitúyalo únicamente por el mismo tipo de módulo del mismo fabricante. La batería contiene litio y puede explotar si no se utiliza, manipula o desecha correctamente.

Lo que no debe hacer

- **Tirar o sumergir el producto en agua.**
- **Exponer el producto a una temperatura superior a 100°C.**
- **Reparar o desmontar el producto.**

Cuando quiera desechar la batería, siga las disposiciones y reglamentaciones locales.

percaución:
Cuando instale una unidad de CD-ROM, tenga en cuenta la siguiente información.

Si se llevan a cabo controles o ajustes o se utilizan métodos que no se atengan a lo aquí especificado, se puede producir una exposición peligrosa a las radiaciones.

Si se retiran las cubiertas de la unidad de CD-ROM, se puede producir una peligrosa exposición a radiaciones de láser. Dentro de la unidad de CD-ROM no existen piezas reparables. No retire las cubiertas de la unidad de CD-ROM.

PELIGRO

> **Algunas unidades de CD-ROM tienen incorporado un diodo de láser de Clase 3A o de Clase 3B Tenga en cuenta la siguiente información.**
>
> **Cuando la unidad está abierta se generan emisiones de rayos láser. No dirija la mirada al haz, no lo observe directamente con instrumentos ópticos y evite la exposición directa.**
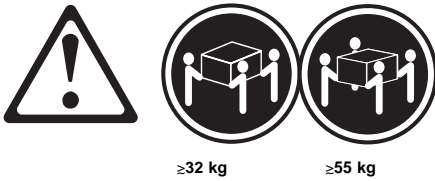
percaución:
Alce la máquina con cuidado; el sobrepeso podría causar alguna lesión.

percaución:
El botón de control de alimentación del panel frontal del servido no apaga la corriente eléctrica suministrada al servidor. Puede sucede que el servidor tenga más de un cable de alimentación. Para elimiar por completo la corriente eléctrica del servidor, asegúrese de desconectar todos los cables de alimentación del suministro de alimentación.

percaución:
Cuando la opción de soporte del cable de alimentación está insalada en el cable de alimentación, el servidor debe estar conectado a un suministro de alimentación de fácil acceso.

percaución:
Si no está cerrada, la puerta del servidor no soportará el peso del mismo. A fin de evitar lesiones, antes de alzar el servidor o cambiarlo de sitio, extraiga la puerta o ciérrela bien.

percaución:
**No retire nunca la cubierta de una caja de
alimentacion ni de ninguna otra pieza (como el cajetín
de corriente alterna o la placa posterior de
alimentación) que tenga la siguiente etiqueta.**

**Las cajas de alimentación, las placas posteriores de
suministro y los cajetines de CA contienen niveles
peligrosos de voltaje, de corriente y de energía.
Ninguna de las piezas internas de las cajas de
alimentación, de la placa posterior o del cajetín de CA
son reparables por el usuario. Si detecta algún
problema con alguna de esas piezas, póngase en
contacto con un técnico de IBM.**

percaución:
**La corriente eléctrica de los cables de
comunicaciones, de teléfono y de alimentación puede
resultar peligrosa. Para evitar posibles lesiones o
daños del aparato, desconecte los cables de
alimentación, los sistemas de telecomunicaciones, las
redes y los módems antes de abrir las cubiertas del
servidor, salvo que se indique lo contrario en las
instrucciones de las operaciones de instalación y
configuración.**

percaución:
**Si el dispositivo de ventilación no está instalado en el
servidor, debe desconectar el cable de alimentación
que va a parar al ventilador; de lo contrario, podría
empezar a funcionar mientras lo sostiene y las hojas
podrían causarle alguna lesión.**
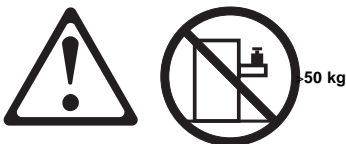
percaución:
**No coloque ningún objeto cuyo peso sea superior a
los 50 kilos sobr la bandeja modelo del servidor.**

Send Us Your Comments!

We want to know your opinion about this manual (part number 09N1017). 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?

   _____

   _____

   _____

   _____

Thanks in advance 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 Diskette Version
    - Type and version level
- Hardware configuration
    - Print (print screen) configuration currently in use
    - BIOS level
- Operating system software
    - Type and version level

Important

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.

Phone Numbers, U.S. and Canada

> **Note**
>
> EMEA customers should contact their Dealer or IBM Service organization.

Before you place a call to the Support Center, refer to "Problem Determination Tips" on page 236.

Authorized Dealers or Servicers

Number	Information
919-517-0001	Bulletin Board Service - PC Company
800-528-7705	Bulletin Board Service - TSS Only
800-937-3737	IBM Business Partner Education
800-426-2472	IBM Customer Engineer Technical Support
800-IBM-DEAL	IBM Dealer Support Center
800-342-6672	IBM Direct Desktop Software Sales
303-924-4015	IBM Part Number ID and Look Up
800-426-7763	IBM PC HelpCenter
800-237-5511	IBM Software Defect Support (CSDs)
800-327-5711	IBM Software Ordering (Publications)
800-426-1484	IBM Supplies Technical Hotline
800-388-7080	IBM Warranty Parts Claims Center

U.S. Customers and Helpware Subscribers

Number	Information
919-517-0001	Bulletin Board Service - PC Company
800-426-8322	Customer Education Business Unit
800-999-0052	Customized Operational Services
800-237-4824	EduQuest (Educational Computers)
800-964-8523	End User HelpDesk Support
800-742-2493	IBM Anti-Virus Services
800-447-4700	IBM Authorized Dealer Referrals
800-426-2468	IBM Dealer Referral
800-426-3333	IBM Information Referral Service
800-IBM-SERV	IBM Service
800-772-2227	IBM PC HelpCenter and HelpDesk
800-426-7282	IBM Technical Manuals
800-426-9402 (Ext. 150)	Multimedia Information Center
800-241-1620	Multimedia HelpCenter
800-342-6672	OS/2 Information Line
800-237-5511	OS/2 Support Services
800-284-5933	Prodigy
914-962-0310	Prodigy User Questions
800-547-1283	Technical Coordinator Program SystemXtra for Personal Systems LAN Automated Distribution/2 OS/2 Bulletin Board OS/2 Application Assistance Center
800-551-2832	Technical Solutions Magazine

IBM Canada Customer and Servicer Support

Number	Information
800-661-PSMT	Business Partner Marketing Support
905-316-5556	Business Partner Marketing Support - Toronto
514-938-6048	Business Partner Marketing Support - French
800-465-4YOU	Customer Relations
800-IBM-SERV	Customer Service Dispatch
800-263-2769	Customer Service Parts
800-465-2222	Customer Support Center (ISC)
416-443-5701	Customer Service Repair Centre
800-505-1855	Dealer Support Group (DSG)
800-465-7999	HelpClub Registration / IBM Direct
800-465-3299	HelpFax
905-316-3299	HelpFax - Toronto
800-565-3344	HelpPC
905-513-3355	IBM Certification Administrator Mail to: 50 Acadia Drive Markham, Ontario L3R 0B3
800-661-2131	IBM Education (A+ Course)
800-268-3100	IBM Information Network Support
800-387-8343	IBM PC Service Partners
800-487-7426	International Warranty Registration
800-663-7662	Lexmark Product Information
800-IBM-9990	PartnerLine
800-263-2769	Parts Orders, Exchange or Emergency
416-443-5808 (Fax)	Parts Regular Orders, Exchange
416-443-5755	Parts Orders, Inquiries
514-938-3022	PC Co Bulletin Board - Montreal
905-316-4255	PC Co Bulletin Board - Markham
604-664-6464	PC Co Bulletin Board - Vancouver
204-934-2735	PC Co Bulletin Board - Winnepeg
800-661-7768	PS Marketing Support (PSMT)
800-565-3344	PS/1 Warranty Customer Helpline
800-387-8483	PS/1 Warranty Service (DOAs)
800-465-1234	Publications Ordering
905-316-4148	Service Management Support
905-316-4100 (Fax)	Service Management Support
905-316-4150	Service (Warranty) Manager
905-316-4100 (Fax)	Service (Warranty) Manager
905-316-4872	Service Quality Programs
905-316-4100 (Fax)	Service Quality Programs
800-661-2131	Skill Dynamics (Education)
800-565-3344	ThinkPad EasyServe
416-443-5835 (Fax)	Warranty Claim Fulfillment
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