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## Chapter 5. Installing the server in and removing the server from the rack enclosure

This chapter provides instructions for installing the Netfinity 8500R server in the rack enclosure and removing the server from the rack enclosure.

### Notes:

1. The illustrations in this chapter might differ slightly from your hardware.
2. The top cover is in place during normal operation. If the server is on, do not leave the top cover off for more than 30 minutes at a time.

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Your Netfinity 8500R server comes with all the rack installation hardware. Review the preinstallation information in “Before you begin”; then, continue with “Installing the server in the rack enclosure” on page 104.

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### Before you begin

Before you install your server in the rack enclosure, thoroughly review the information in this section.

- Ensure that your rack enclosure can accommodate the Netfinity 8500R server.
 

To install the Netfinity 8500R in a rack enclosure, the enclosure must have a minimum clearance of 203.2 mm (8 in.) between the rear of the chassis and the surface of the rear door when the door is closed.

**Note:** To accommodate the Netfinity 8500R, a *Rack Extension Option* can be installed on the IBM rack enclosure.
- Review the safety and handling guidelines specified under “Safety Information” on page vii, and “Electrical safety” on page 43. These guidelines will help you work safely while working with your server and options.
- Review the documentation that comes with your rack enclosure for safety or cabling considerations. Ensure that your planned installation is within the rack enclosure guidelines for heat generation, electrical requirements, air flow, and mechanical loading.
- Verify that the rack enclosure can meet the operating parameters, as detailed in “Specifications” on page 181.
- Plan the installation of servers in the rack enclosure starting from the bottom. This will ensure rack stability. For more information, refer to the IBM Netfinity Rack Configuration program that comes with the ServerGuide CDs.
- Be aware that some of the installation procedures require four people.

## Installing the server in the rack enclosure

- Have following items available:
  - An assortment of small screwdrivers
  - An 8-inch adjustable wrench or pliers

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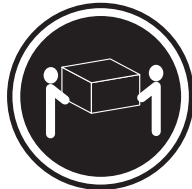
## Installing the server in the rack enclosure

During the installation procedure, you must install parts on the rack enclosure and the server. This process can be divided into two parts:

- Preparing the rack enclosure
- Installing the server

**Attention:** To ensure rack stability, plan the installation of servers in the rack enclosure starting from the bottom.

4



≥18 kg (37 lbs)



≥32 kg (70.5 lbs)



≥55 kg (121.2 lbs)

**CAUTION:**  
Use safe practices when lifting.

## Preparing the rack enclosure

In this section, you will use the following components:

- IBM installation template
- Four lift handles
- Two slide-rail-latch assemblies (left and right)
- Two latch brackets (used with the slide-rail-latch assemblies)
- Two slide-rail assemblies
- One cable-management-arm assembly, consisting of:
  - One bracket
  - Two rigid arms (upper and lower)
  - One flexible shaft
  - Four hinge pins
  - Five cable-retainer straps
- Various screws and nuts consisting of:
  - Eight screws and eight cage nuts or clip nuts (for attaching the slide-rail-assembly to the rack)
  - Two screws and two cage nuts or clip nuts (for attaching the cable-management-arm-bracket to the rack)

- Two screws and two cage nuts or clip nuts (for attaching the slide-rail-latch assemblies)
- 12 screws (for attaching the server-to-slide-rail-assembly)
- Three power cords (cables)

### Notes:

1. The two slide-rail-latch assemblies (left and right) come preinstalled on the server.
2. The illustrations in this chapter might differ slightly from your hardware or the installation template.

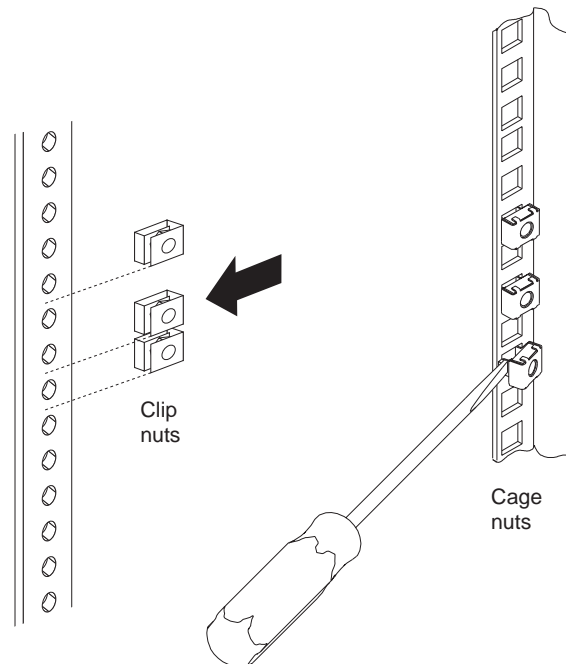
To attach the mounting hardware to the rack:

1. Refer to the rack enclosure documentation to gain front and rear access.
2. Mark the positions of the slide-rail assemblies, slide-rail-latch assemblies, and the cable-management arm on the rack mounting rails:
  - a. Position the installation template on the front mounting rails.
  - b. Mark the location of all the holes on the front of the server (for the slide-rail assemblies and slide-rail-latch assemblies).
  - c. Move the template to the same level at the rear of the server.
  - d. Mark the location of all the holes on the rear of the server (for the slide-rail assemblies and the cable-management-arm attachment bracket).

## Installing the server in the rack enclosure

**Note:** Some racks come with cage nuts for the mounting rails, whereas other racks come with clip nuts for the mounting rails. To determine the type of mounting hardware that comes with your rack, refer to your rack documentation. The illustrations in this chapter show how to install cage nuts. If your rack comes with clip nuts, manually slide them onto the mounting rails, as shown in the following illustration.

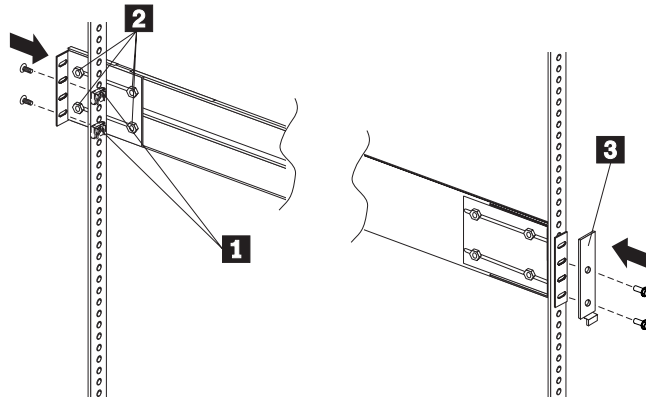
- e. Install eight of the cage nuts or clip nuts in the mounting rails at the locations marked for the slide-rail assemblies. See the following illustration.
- f. Install two of the cage nuts or clip nuts in the mounting rails at the location marked for the cable-management-arm bracket.
- g. Install two of the cage nuts or clip nuts at the bottom of the front mounting rails at the location marked for the slide-rail-latch assemblies.



### 3. Attach the slide-rail assemblies to the rack:

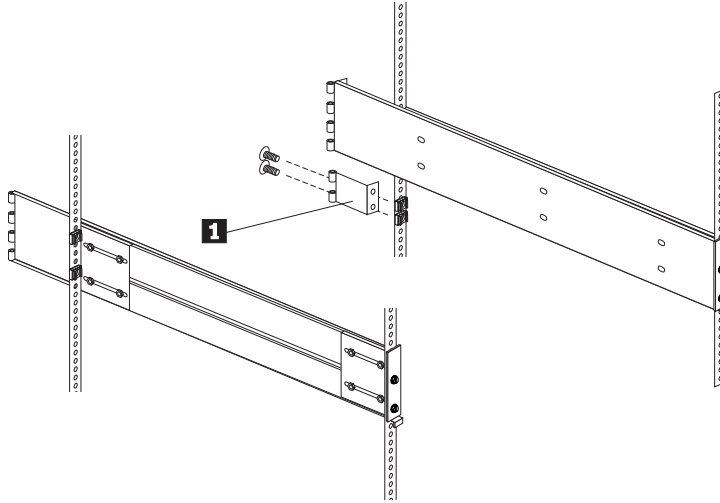
**Note:** The slide-rail assemblies are interchangeable. They contain a small amount of grease to lubricate the ball bearings.

- a. At the rear of the rack, position the slide-rail assembly on the mounting rail and align it over the cage nuts or clip nuts **1**.
  - For the left slide-rail assembly, align the holes marked **L** (for left) over the cage nuts or clip nuts.
  - For the right slide-rail assembly, align the holes marked **R** (for right) over the cage nuts or clip nuts.
- b. If required, loosen the nuts **2** on the rear section of the assembly and adjust the slide-rail assembly to fit over the front and rear mounting rails. After the adjustment is made, tighten the nuts.
- c. Install two screws through the slide-rail assembly and into the cage nuts or clip nuts. Do not tighten these screws.
- d. Make sure the slide-rail assembly mounting holes are over the cage nuts or clip nuts in the front mounting rail.
- e. With the latch tab pointing down, position the latch bracket **3** in front of the slide-rail assembly.
  - The latch bracket for the left slide-rail assembly is labeled **L**.
  - The latch bracket for the right slide-rail assembly is labeled **R**.
- f. Install two screws through the latch bracket and the slide-rail assembly and into the cage nuts or clip nuts. Do not tighten the screws.
- g. Attach the other slide-rail assembly to the rack as described in steps 3a through 3f.
- h. Press the slide-rail assemblies toward the mounting rails and tighten all screws.

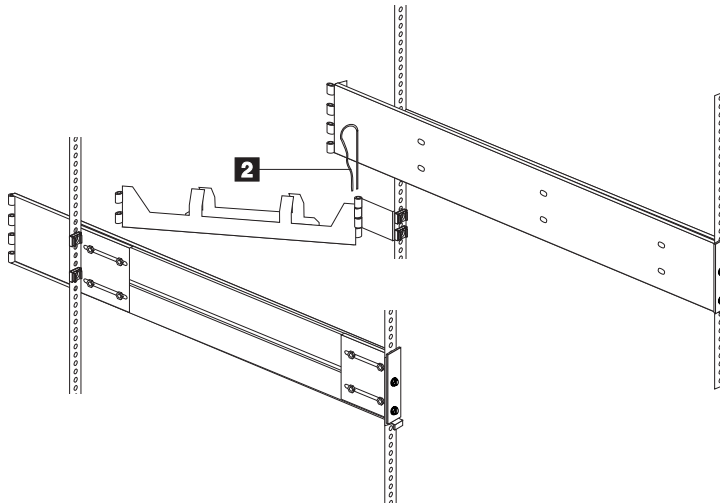


## Installing the server in the rack enclosure

4. Attach the cable-management arms (upper and lower):
  - a. Position the cable-management-arm bracket **1** on the rear mounting rail and over the cage nuts or clip nuts for the bracket.
  - b. Install two screws through the cable-management-arm bracket and into the cage nuts or clip nuts. Tighten the screws.

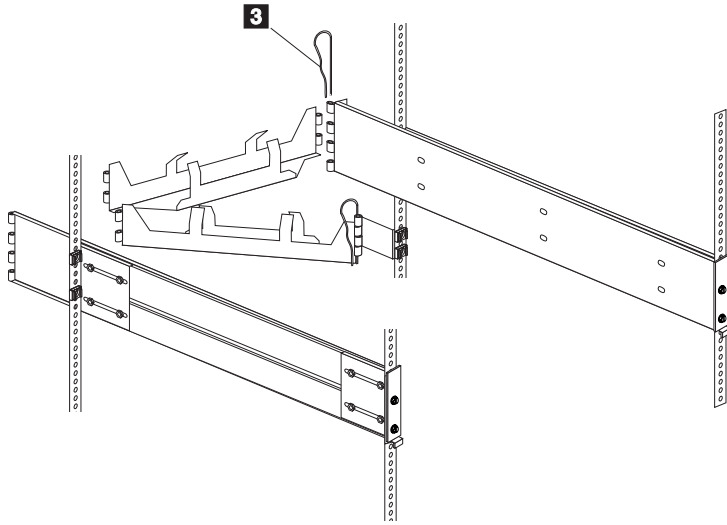


- c. Attach the lower rigid cable-management arm to the bracket using one of the hinge pins **2**.

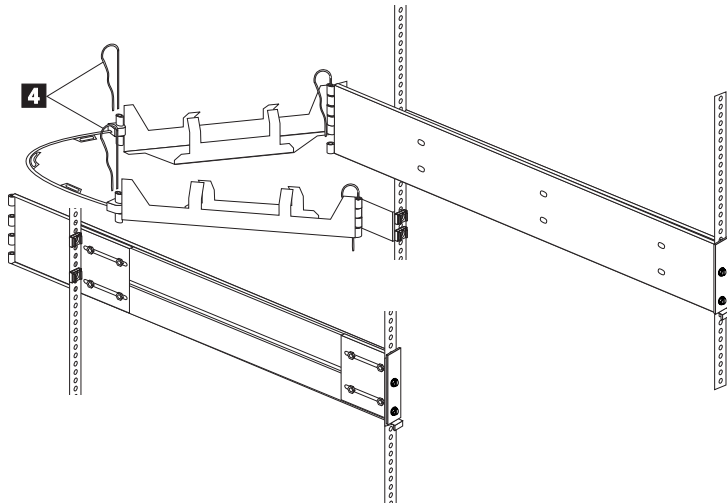


## Installing the server in the rack enclosure

- d. Attach the upper rigid cable-management arm to the slide-rail assembly using one of the hinge pins **3**.



- e. Connect the two rigid cable-management arms with the flexible shaft using one of the hinge pins **4**.



## Installing the server in the rack enclosure

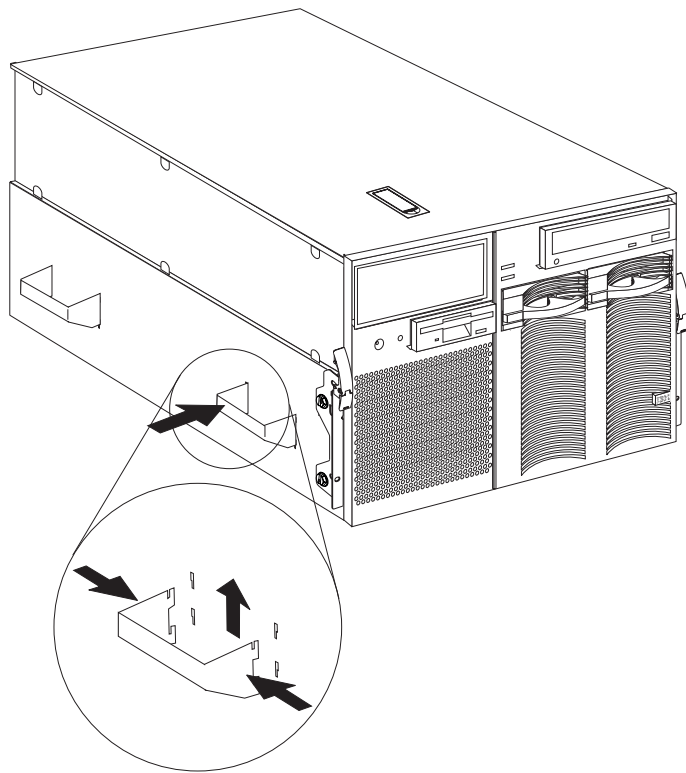
### Installing the server

**CAUTION:**

**Four persons are required to install the server in the rack.**

To install the server in the rack:

1. If the four lift handles are already not installed on the server, install the handles now.
  - a. Press in on the sides of the lift handle near the tabs and insert the handle tabs into the slots on the sides of the server.
  - b. Move the handle up in the slots until the hooked part of each tab is inside the server.
  - c. Release the pressure on the sides of the handle.





4



≥18 kg (37 lbs)



≥32 kg (70.5 lbs)



≥55 kg (121.2 lbs)

**CAUTION:**  
Use safe practices when lifting.

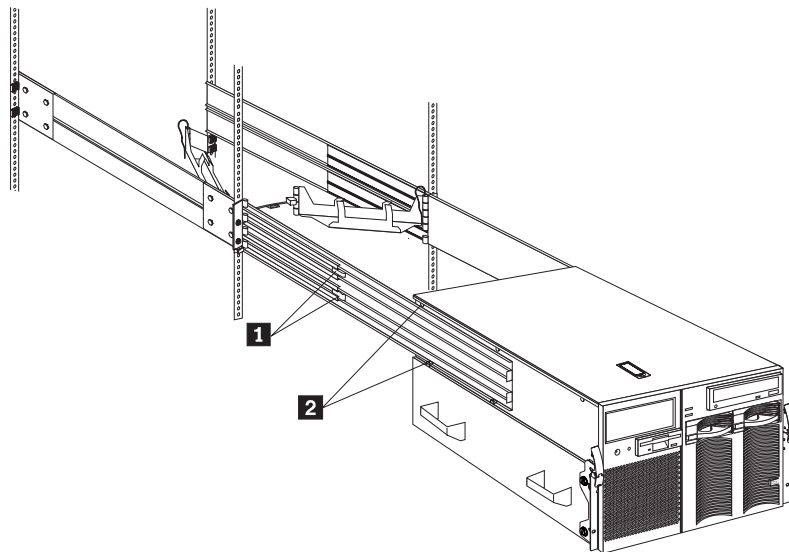
2. Move the slide-rail assemblies to the fully extended and locked position (all the way out of the rack).

**Note:** When the slide-rail assemblies are moved all the way out (fully extended), safety latches **1** lock the rails in place. To release the safety latches, press them in toward the server.

3. Lift the server and move it over the **left** slide-rail assembly first. Make sure that the slide-rail assembly is under the tabs **2**.

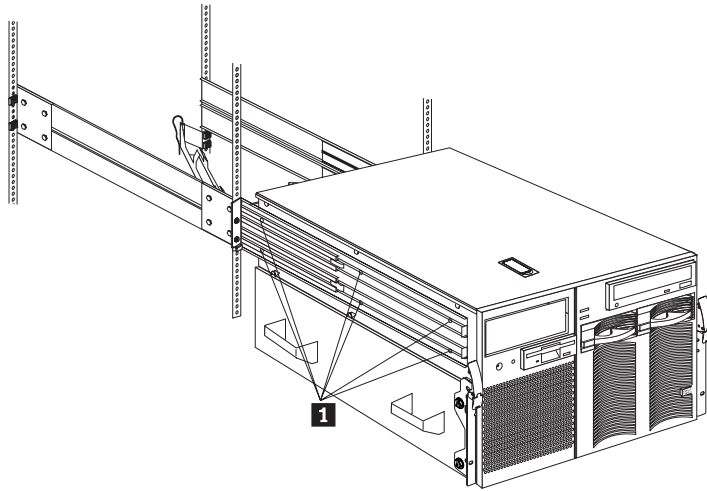
The tabs are farther from the edge on the right side of the server to allow you to maneuver the slide-rail assembly under the right-side tabs **after** you have the slide-rail assembly under the left-side tabs.

4. Next, move the server over the **right** slide-rail assembly. Make sure that the slide-rail assembly is under the tabs.



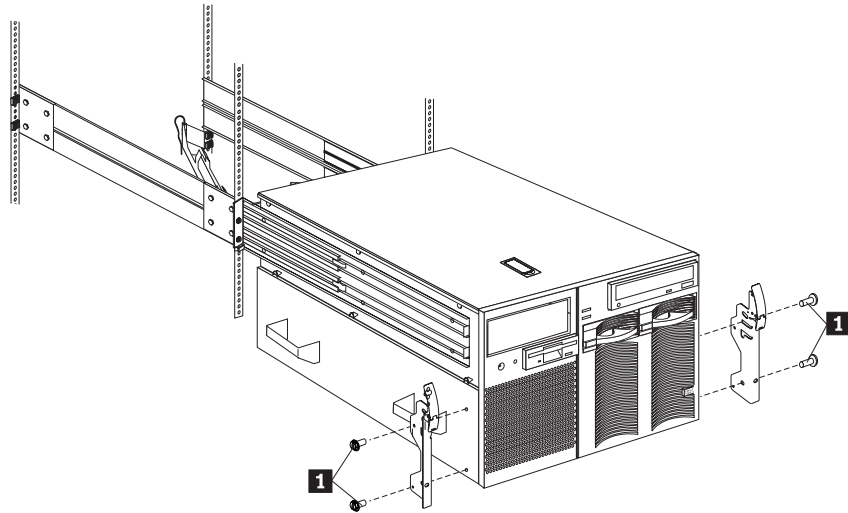
## Installing the server in the rack enclosure

5. Once the server is on both slide-rail assemblies, move it toward the rack.
6. Align the six holes **1** on the left slide-rail assembly with the matching holes on the left side of the server.
7. Install six screws through the left slide-rail assembly and into the server side. Tighten the screws.
8. Repeat steps 6 and 7 for the right slide-rail assembly. This secures the server.
9. Remove the lift handles from the server and store them in a safe place.



**Note:** Although the left and right slide-rail-latch assemblies come preinstalled on the server, they are detachable. If you ever remove them and need to reattach them, you must perform step 10.

10. Attach the left and right slide-rail-latch assemblies **1** to the server using two screws for each assembly.



11. Press the safety latches and slide the server about halfway into the rack enclosure.
12. Insert and route the cables on the lower cable-management arm first; then, on the upper cable-management arm.

**Note:** Your server comes with three 220 V ac power cords for connection to the rack power distribution unit (PDU) in a 200–240 V ac environment. Refer to *IBM Netfinity Rack Power Distribution Unit (PDU) Installation Instructions* for additional information on installing the PDU.

13. Attach the power cord, monitor, keyboard, and mouse cables to the corresponding connectors on the server.

**Attention:** When power cords are attached to the rack power distribution unit (PDU), ensure that the cords are not pinched or chafed by any part of the rack enclosure.

14. Use the cable-retainer straps to secure the cables to the two cable-management arms.

## Installing the server in the rack enclosure

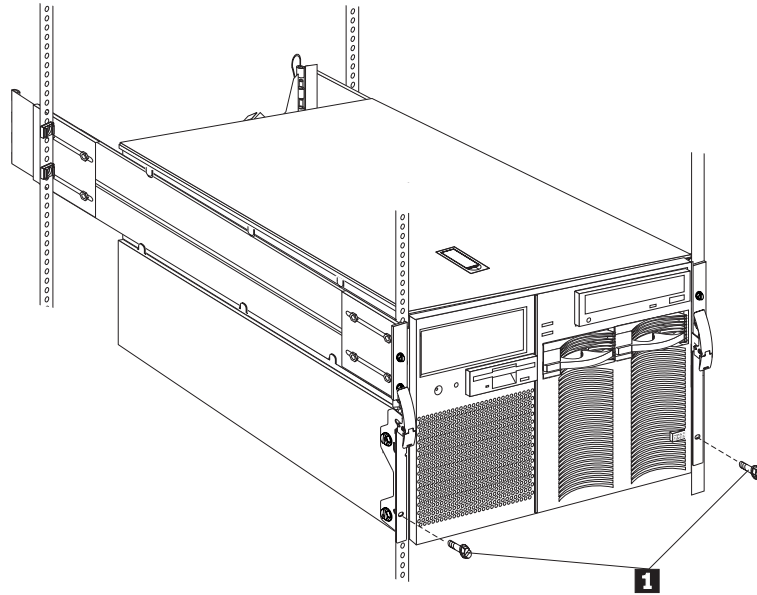
15. Secure the server in the rack:

- a. Slide the server into the rack until each slide-rail-latch assembly locks.

**CAUTION:**

**If you are located in an area where earthquakes occur, or if you plan to move the server, you *must* perform the following step.**

- b. Install a retaining screw **1** through the hole at the bottom of each of the slide-rail-latch assemblies and tighten it.



16. To complete the installation, refer to the documentation that comes with the rack enclosure.

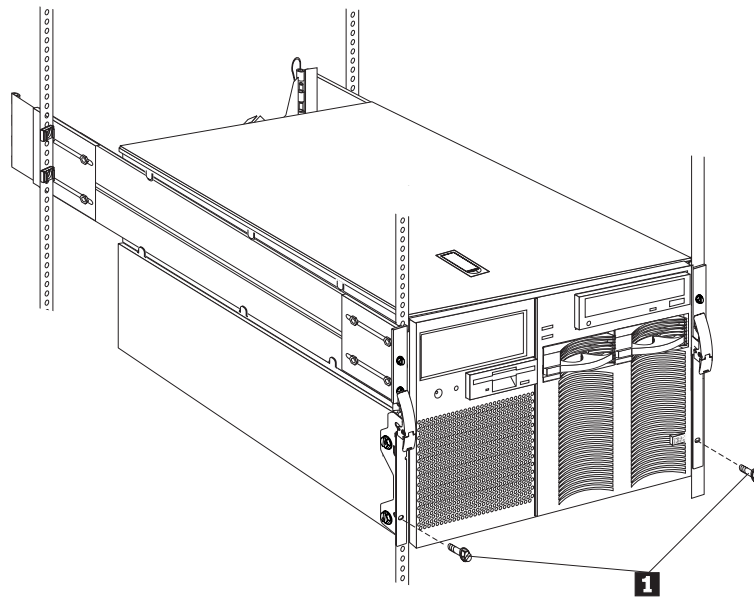
## Removing the server from the rack enclosure

**Before you begin:**

- Read “Electrical safety” on page 43 and “Handling static-sensitive devices” on page 44.
- Follow any additional installation and safety instructions that come with the rack enclosure.

To remove the server from the rack enclosure:

1. Refer to the rack enclosure documentation to gain front and rear access.
2. Shut down the server operating system and remove all media (diskettes, CDs, optical discs, or tapes) from the drives.
3. Turn off the server and any attached devices.
4. Disconnect all power cords (cables) from the rack enclosure, the server, and electrical outlets.
5. Disconnect all communication cables from external receptacles.
6. Note the location of the remaining cables; then, disconnect all cables from the back of the server.
7. If the retaining screw **1** is installed on your server, remove it.

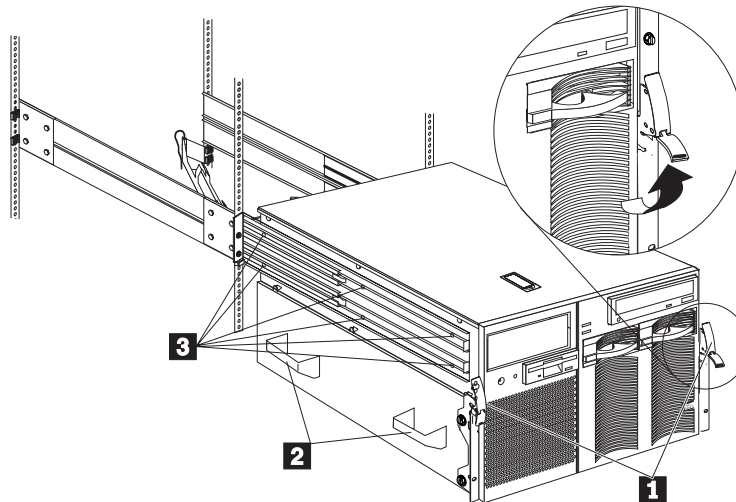


## Removing the server from the rack enclosure

8. Release the left and right slide-latches **1** and move the server all the way out of the rack until both slide-rail assemblies lock.

**Note:** When the server is moved all the way out so that the slide-rail assemblies are fully extended, safety latches lock the rails in place. To release the safety latches, press them in toward the server. See step 2 on page 111 for the location of the safety latches.

9. Locate the four server lift handles **2** that come with your server and attach two lift handles to each side of the server. Make sure that the handles lock into place.
  - a. Press in on the sides of the lift handle near the tabs and insert the handle tabs into the slots on the side of the server.
  - b. Move the handle up in the slots until the hooked part of each tab is inside the server.
  - c. Release the pressure on the sides of the handle.
10. Remove the screws **3** that attach the server to each slide-rail assembly.



4



≥18 kg (37 lbs)



≥32 kg (70.5 lbs)



≥55 kg (121.2 lbs)

**CAUTION:**

**Use safe practices when lifting.**

11. Carefully move the server away from the rack and off the slide-rail assemblies.

**Note:** Refer to *IBM Netfinity Rack-to-Tower Conversion Kit Installation Instructions* for additional information on converting a rack model server to the optional tower configuration.

## Removing the server from the rack enclosure



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## Chapter 6. Solving problems

Server problems can be caused by hardware, software, or a user error. An example of a user error is pressing the wrong key on the keyboard. You can check server hardware by using the diagnostic programs and other information in this chapter.

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

### This chapter contains:

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### Diagnostic tools overview

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

- EEPROM-based diagnostics
- Power-on self-test (POST)
- POST beep codes
- Error messages
- Troubleshooting charts
- System error log
- Option diskettes

### Diagnostic programs

The Diagnostics Utility program contains several server diagnostic programs. These diagnostic programs are stored on electrically erasable programmable read-only memory (EEPROM). These programs are the primary method of testing the major components of your server and some external devices.

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

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

### Power-on self-test (POST)

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

POST does the following:

- Checks the operation of some basic I/O function card, processor daughterboard, and I/O board operations
- Checks the memory
- Compares the current server configuration with the stored server configuration information
- Configures PCI adapters
- Starts the video operation
- Verifies that drives (such as the diskette, CD-ROM, and hard disk drives) are connected properly

If you have a power-on password or administrator password set, you must type the password and press Enter before POST will continue.

While the memory is being tested, the amount of available memory appears on the screen. These numbers advance as the server progresses through POST and the final number that appears on the screen represents the total amount of memory available. If POST finishes without detecting any problems, a single beep sounds and the first screen of your operating system or application program appears.

If POST detects a problem, more than one beep sounds, or an error message appears on your screen.

**Note:** A single problem might cause several error messages. When this occurs, work to correct the cause of the first error message. After the cause of the first error message is corrected, the other error messages usually will not occur the next time you run the test.

### POST beep codes

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

- One beep indicates the successful completion of POST.
- No beep indicates that a irrecoverable error occurred during POST.
- More than one beep indicates that POST detected a problem. For more information, see “Power-on self-test (POST) beep codes” on page 133.

### Error messages

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

Hardware error messages that occur can be text, numeric, or both. Messages generated by your software generally are text messages, but they also can be numeric.

#### POST error messages

POST error messages occur during startup when POST finds a problem with the hardware or detects a change in the hardware configuration. For more information, see “Viewing the test log” on page 124.

#### System-monitoring messages

System-monitoring messages occur as the Advanced System Management PCI Adapter monitors critical system functions. For more information, see “System-monitoring messages” on page 150.

#### Diagnostic error messages

Diagnostic error messages occur when a diagnostic test finds a problem with the server hardware. These error messages are alphanumeric and they are saved in the test log. For more information, see “Viewing the test log” on page 124.

#### Software-Generated error messages

These messages occur if a problem or conflict is found by an application program, the operating system, or both. Messages are generally text messages, but they also can be numeric. For information on these error messages, refer to the documentation that comes with your software.

## Diagnostic programs

### Troubleshooting charts

The charts under “Troubleshooting” on page 152 list symptoms of problems (for example, a symptom might be “The mouse or pointing device does not work.”), along with steps to correct the problems.

### POST error log

The POST error log contains a maximum of three error and warning messages issued during POST and all system status messages from the Advanced System Management PCI Adapter (service processor). See “POST error log” on page 32 for information on how to view the POST error log.

### System error log

The system error log contains all error and warning messages issued during POST, all system status messages from the Advanced System Management PCI Adapter (service processor), and all error messages issued during diagnostic testing. See “System error log” on page 32 for information on how to view the system error log.

### Option diskettes

An optional device or adapter can come with an Option Diskette. Option Diskettes usually contain option-specific diagnostic test programs or configuration files.

If your optional device or adapter comes with an Option Diskette, follow the instructions that come with the option. Different instructions apply depending on whether or not the Option Diskette is startable.

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## Diagnostic programs

This section includes useful information on running the diagnostic programs. These programs are designed to test the IBM Netfinity 8500R server. If you want to test a non-IBM product, refer to the information that comes with that product.

#### Notes:

1. When you run the diagnostic programs, a single problem might cause several error messages. When this occurs, work to correct the cause of the first error message. After the cause of the first error message is corrected, the other error messages usually will not appear the next time that you run the test.
2. You can also run the diagnostic programs remotely with the Advanced System Management PCI Adapter in conjunction with the Advanced System Management service capabilities of Netfinity Manager, a terminal program, or a Web browser. Refer to the “Advanced System Management Information” section of this *Server Library* for more information.

### Running the diagnostic programs

While you are running the diagnostic programs, pressing **F1** displays help information. Pressing **F1** from within a help screen provides a help index from which you can select different categories. Pressing **Esc** closes the Help window and returns to running the diagnostic programs.

### Notes:

1. To run the diagnostic programs, you must start the server with the highest level password.  
  
That is, if you enter the power-on password and an administrator password is set, you cannot run the programs. You can only view the error messages in the Test Log.  
  
You must enter the administrator password to run the diagnostic programs.
2. If the server stops during testing and you cannot continue, restart the server and try running the diagnostic programs again. If the problem persists, have the system serviced.
3. If the diagnostic tests do not find a problem, but the problem persists during normal operations, see “Troubleshooting” on page 152 and look for the problem symptom.
4. You might have to install a wrap connector on your active parallel or serial port to obtain accurate test results for these ports. If you do not have a wrap connector, contact your IBM reseller or IBM marketing representative.
5. You might need a scratch diskette to obtain accurate test results when testing the diskette drive.
6. The keyboard and mouse (pointing device) tests assume that a keyboard and mouse are attached to the server.

### Starting the diagnostic programs

To start the diagnostic programs:

1. Ensure that there is no diskette in the diskette drive. If the diskette drive contains a diskette, remove it.
2. Turn on the server and watch for the IBM logo screen.  
  
If the server is turned on already, shut down your operating system and restart the server.
3. After you start the server, several prompts appear on the IBM logo screen. When the prompt **Press F2 for Diagnostics** appears, press F2.  
  
If a power-on password or administrator password is set, the server prompts you for it. Type in the appropriate password; then, press Enter.  
  
The Diagnostics Utility program window appears.
4. Select either **Extended** or **Basic** from the top of the screen.
5. Select the test that you want to run from the list that appears; then, follow the instructions on the screen.  
  
When the tests have completed, you can view the Test Log by selecting **Utility** from the top of the screen.  
  
Also, you can view server configuration information (such as system configuration, memory contents, interrupt request (IRQ) use, direct memory access (DMA) use, device drivers, and so on) by selecting **Hardware Info** from the top of the screen.
6. When you are finished running the tests or viewing information in the Diagnostics Utility program, select **Quit** from the top of the screen.

## Diagnostic programs

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

After you start the Diagnostics Utility program, the following menu headings will appear at the top of the screen:

- **Extended**
- **Basic**
- **Utility**
- **Hardware Info**
- **Quit**

1. Use the cursor control keys (arrow keys) to scroll across the menu headings.
2. Press Enter to view the selections under the main headings.
3. Use the Up Arrow (↑) and Down Arrow (↓) keys to scroll down to the test that you want to run, and press Enter.

**Note:** If you select Run Normal Test or Run Quick Test from the **Extended** test menu, omit steps 4 and 5.

4. Select the test components that you want to run.
5. Use these keys to tailor your selection:
  - Space = Select a test component
  - F1 = Help
  - F2 = Options (a pop-up window appears)
  - F3 = Test log
  - F5 = Run all tests
  - F10 = Deselect all
  - Esc = Exit
  - Enter = Run highlighted tests
  - CTRL+Enter = Run tests in view

### Using the Online Manual

To obtain detailed descriptions of the available tests, press F1 twice to gain access to the Diagnostics Utility program *Online Manual*. The *Online Manual* also describes:

- The error messages that the diagnostic tests generate
- The menu structure and options
- The function keys

In addition, the *Online Manual* contains a glossary of terms.

## Viewing the test log

If you are already running the diagnostic programs, continue with step 1 in this procedure. If you have not run the diagnostic programs, follow the instructions in “Starting the diagnostic programs” on page 123; then, return here.

To view the Test Log:

1. Select **Utility** from the top of the screen.

2. Select **View Test Log** from the list that appears; then, follow the instructions on the screen.

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## Diagnostic error message tables

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

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

**Note:** In addition to the actions given for the messages, see “Troubleshooting” on page 152 for general troubleshooting activities.

The following pages contain the error codes that you might receive in the diagnostic program detailed test log and summary log when running the diagnostic programs for your Netfinity 8500R server. These messages might appear on your screen, in the system error log, or in the test log.

The format for the codes is:

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

where:

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

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

**iii** is the three-digit device ID.

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

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

**text message** is a message that the diagnostic program generates that indicates the reason for the problem. More information on the text message follows.

### Text messages

The text message format is:

Function Name: Result (test-specific string)

where:

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

**Result** can be one of the following:

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

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

**Aborted** This result occurs when the user ends the diagnostic test before it is complete.

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

**Test-specific string** is additional information that can be used to analyze the diagnostic problem.



## Failed diagnostic messages

The following tables display the primary hardware failure messages that the diagnostic programs might display.

### Function: core system messages (001)

Result	Test-specific string
Failed	Processor daughterboard, I/O function card, or I/O board. <b>Action:</b> Have the system serviced.

### Function: video system messages (005)

Result	Test-specific string
Failed	Processor daughterboard, I/O function card, or I/O board. <b>Action:</b> Have the system serviced.

### Function: serial port messages (011)

Result	Test-specific string
Failed	Built-in serial port on I/O function card. <b>Action:</b> Have the system serviced.

### Function: parallel port messages (014)

Result	Test-specific string
Failed	Built-in parallel port on I/O function card. <b>Action:</b> Have the system serviced.

### Function: USB port interface messages (015)

Result	Test-specific string
Failed	I/O function card or I/O board. <b>Action:</b> Have the system serviced.

### Function: PCI interface messages (020)

Result	Test-specific string
Failed	Tab on PCI Hot Swap slot #xx has failed. Where xx represents a hot-plug PCI slot number. <b>Action:</b> Make sure that the tab and latch on the hot-plug PCI slot xx are closed correctly. <b>Note:</b> For normal operation, when a hot-plug PCI slot is enabled and a hot-plug PCI adapter is installed, the Power LED for the hot-plug PCI slot will be on and the Attention LEDs will be off. If the problem persists, have the system serviced.
Failed	I/O function card or I/O board. <b>Action:</b> Have the system serviced.

## Function: SCSI interface messages (030)

Result	Test-specific string
Failed	Internal SCSI interface. <b>Action:</b> Have the system serviced.

## Function: RAID messages (035)

Result	Test-specific string
Failed	RAID adapter. <b>Action:</b> Have the system serviced.
Failed	RAID adapter; indicates POST error. <b>Action:</b> Have the system serviced.
Failed	RAID adapter; testing drive in bay #1, SCSI ID 0. <b>Action:</b> Have the system serviced.
Failed	RAID adapter; testing drive in bay #2, SCSI ID 1. <b>Action:</b> Have the system serviced.

## Function: power supply messages (075)

Result	Test-specific string
Failed	Voltage sensed by the system is out of range. <b>Action:</b> Have the system serviced.

## Function: processor error messages (089)

Result	Test-specific string
Failed	Processor in socket number xx. Where xx represents a processor socket. <b>Action:</b> <ol style="list-style-type: none"><li>1. Reseat the processor.</li><li>2. If the problem persists, replace the processor.</li></ol> If the problem persists, have the system serviced.

## Function: Advanced System Management PCI adapter messages (165)

Result	Test-specific string
Failed	Advanced System Management PCI adapter. <b>Action:</b> Have the system serviced.

## Function: thermal system messages (175)

Result	Test-specific string
Failed	Fan #1 <b>Action:</b> Replace fan 1. If the problem persists, have the system serviced.
Failed	Fan #2 <b>Action:</b> Replace fan 2. If the problem persists, have the system serviced.
Failed	Fan #3 <b>Action:</b> Replace fan 3. If the problem persists, have the system serviced.
Failed	Fan #4 <b>Action:</b> Replace fan 4. If the problem persists, have the system serviced.
Failed	Fan #5 <b>Action:</b> Replace fan 5. If the problem persists, have the system serviced.
Failed	Fan #6 <b>Action:</b> Replace fan 6. If the problem persists, have the system serviced.
Failed	Temperature sensed on processor daughterboard is out of range. <b>Action:</b> If one of the fans has failed, replace the fan. If the problem persists, have the system serviced.

## Function: status display messages (180)

Result	Test-specific string
Failed	Information panel. <b>Action:</b> Have the system serviced.
Failed	LED on I/O board. <b>Action:</b> Have the system serviced.
Failed	LED on processor daughterboard. <b>Action:</b> Have the system serviced.
Failed	LED on hot-swap SCSI backplane. <b>Action:</b> Have the system serviced.

## Function: system memory messages (201)

Result	Test-specific string
Failed	DIMM location Jxx Where xx represents a DIMM socket. <b>Action:</b> <ol style="list-style-type: none"><li>1. Reseat the DIMM in DIMM socket Jxx.</li><li>2. If the problem persists, replace the DIMM.</li></ol> If the problem persists, have the system serviced.

## Function: system cache messages (202)

Result	Test-specific string
Failed	Processor in socket number xx. Where xx represents a processor socket. <b>Action:</b> <ol style="list-style-type: none"><li>1. Reseat the processor.</li><li>2. If the problem persists, replace the processor.</li></ol> If the problem persists, have the system serviced.

## Function: diskette drive messages (206)

Result	Test-specific string
Failed	Internal diskette drive bay. <b>Action:</b> Have the system serviced.

## Function: CD-ROM messages (215)

Result	Test-specific string
Failed	I/O function card or I/O board. <b>Action:</b> Have the system serviced.

## Function: hard disk drive messages (217)

Result	Test-specific string
Failed	BIOS bay #1. <b>Action:</b> Have the system serviced.
Failed	BIOS bay #2. <b>Action:</b> Have the system serviced.

## Function: keyboard messages (301)

Result	Test-specific string
Failed	An I/O function card keyboard test failed. <b>Action:</b> <ol style="list-style-type: none"><li>1. Replace the keyboard.</li><li>2. If the problem persists, replace the keyboard cable.</li></ol> If the problem persists, have the system serviced.

## Function: pointing device (mouse) messages (302)

Result	Test-specific string
Failed	An I/O function card pointing device test failed. <b>Action:</b> Replace the pointing device (mouse). If the problem persists, have the system serviced.

## Failed diagnostic messages

The following tables display failures that occur during diagnostic testing that prevent proper testing of the hardware.

### Function: processor messages (089)

Result	Test-specific string
Failed	<p>Test setup error: Processor in socket number <i>xx</i> is installed but not functioning; check system error log.</p> <p>Where <i>xx</i> represents a processor socket.</p> <p><b>Action:</b></p> <ol style="list-style-type: none"><li>1. Update the BIOS. Refer to the “Getting Help, Service, and Information” section of this <i>Server Library</i> for information about obtaining updates.</li><li>2. If the problem persists, replace the processor and run the processor diagnostic program again.</li></ol> <p>If the problem persists, have the system serviced.</p>
Failed	<p>Test setup error: Invalid processor in socket number <i>xx</i> or BIOS setup problem.</p> <p>Where <i>xx</i> represents a processor socket.</p> <p><b>Action:</b></p> <ol style="list-style-type: none"><li>1. Update the BIOS. Refer to the “Getting Help, Service, and Information” section of this <i>Server Library</i> for information about obtaining updates.</li><li>2. If the problem persists, replace the processor and run the processor diagnostic program again.</li></ol> <p>If the problem persists, have the system serviced.</p>
Warning	<p>Test setup error: Processor not installed in socket number <i>xx</i> or BIOS setup problem.</p> <p>Where <i>xx</i> represents a processor socket.</p> <p><b>Action:</b></p> <ol style="list-style-type: none"><li>1. Verify that the processor is installed and seated correctly.</li><li>2. If the problem persists, update the BIOS. Refer to the “Getting Help, Service, and Information” section of this <i>Server Library</i> for information on obtaining updates.</li><li>3. If the problem persists, replace the processor and run the processor diagnostic program again.</li></ol> <p>If the problem persists, have the system serviced.</p>

### Function: system memory messages (201)

Result	Test-specific string
Failed	<p>Test setup error: Damaged DMI BIOS, information in BIOS is not as expected.</p> <p><b>Action:</b> Update the BIOS. Refer to the “Getting Help, Service, and Information” section of this <i>Server Library</i> for information about obtaining updates.</p> <p>If the problem persists, have the system serviced.</p>
Failed	<p>Test setup error: Unknown hardware problem associated with processor in socket number <i>xx</i>.</p> <p>Where <i>xx</i> represents a processor socket.</p> <p><b>Action:</b></p> <ol style="list-style-type: none"><li>1. Update the BIOS and run the diagnostic program again. Refer to the “Getting Help, Service, and Information” section of this <i>Server Library</i> for information on obtaining updates.</li><li>2. If the problem persists, replace the processor.</li></ol> <p>If the problem persists, have the system serviced.</p>

Result	Test-specific string
Failed	<p>Test setup error: Damaged BIOS in ROM.</p> <p><b>Action:</b> Update the BIOS. Refer to the “Getting Help, Service, and Information” section of this <i>Server Library</i> for information about obtaining updates.</p> <p>If the problem persists, have the system serviced.</p>

## Function: system cache messages (202)

Result	Test-specific string
Failed	<p>Test setup error: No L2 cache detected on processor socket xx or BIOS setup problem.</p> <p>Where xx represents a processor socket.</p> <p><b>Action:</b></p> <ol style="list-style-type: none"> <li>1. Update the BIOS and run the diagnostic program again. Refer to the “Getting Help, Service, and Information” section of this <i>Server Library</i> for information on obtaining updates.</li> <li>2. If the problem persists, replace the processor.</li> </ol> <p>If the problem persists, have the system serviced.</p>
Warning	<p>Test setup error: Cache is disabled. Use system setup to enable before retrying the test.</p> <p><b>Action:</b> Use the <b>Cache Control</b> selection in the Advanced Setup menu of the Configuration/Setup Utility program to enable the cache. (See “Advanced setup” on page 29.)</p> <p>If the problem persists, have the system serviced.</p>
Failed	<p>Test setup error: Damaged DMI BIOS. Information in BIOS is not as expected.</p> <p><b>Action:</b> Update the BIOS. Refer to the “Getting Help, Service, and Information” section of this <i>Server Library</i> for information about obtaining updates.</p> <p>If the problem persists, have the system serviced.</p>
Failed	<p>Test setup error: BIOS cannot access VPD information.</p> <p><b>Action:</b> Update the BIOS. Refer to the “Getting Help, Service, and Information” section of this <i>Server Library</i> for information about obtaining updates.</p> <p>If the problem persists, have the system serviced.</p>
Failed	<p>Test setup error: Unknown hardware problem associated with processor in socket number xx.</p> <p>Where xx represents a processor socket.</p> <p><b>Action:</b></p> <ol style="list-style-type: none"> <li>1. Update the BIOS. Refer to the “Getting Help, Service, and Information” section of this <i>Server Library</i> for information about obtaining updates.</li> <li>2. If the problem persists, replace the processor and run the diagnostic program again.</li> </ol> <p>If the problem persists, have the system serviced.</p>
Failed	<p>Test setup error: Cannot allocate memory due to unknown memory problem.</p> <p><b>Action:</b> Have the system serviced.</p>

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## Power-on self-test (POST) beep codes

The successful completion of POST is indicated by one beep and the appearance of the first screen of your operating system or application program. More than one beep indicates that POST detected an error.

Beep codes are sounded in a series of beeps. For example, a 1–2–4 beep code sounds like one beep, a pause, two consecutive beeps, another pause, and four more consecutive beeps.

## POST beep code descriptions

The following list contains more detailed descriptions of the possible types of beeps that your server might emit.

### No beeps

If no beep occurs, have the system serviced.

### Continuous beep

This indicates that your startup processor has failed, or the I/O function card, processor daughterboard, I/O board, or speaker subsystem might contain a failing component. If the system continues through POST with no errors, have the system serviced. If no video appears, the startup processor has failed; replace the startup processor.

### One short beep

If one beep occurs after your server successfully completes POST (that is, after the System POST Complete (OK) light on the information panel is illuminated), then POST has no configuration or functional errors to report. One beep also occurs after your server completes POST if you enter an incorrect power-on password.

### Two short beeps

This beep combination indicates that POST encountered an error. The Configuration/Setup Utility program will display additional information; follow the instructions displayed. See “Viewing the test log” on page 124 for explanations of any POST error messages.

### Three short beeps

This beep combination indicates a system memory error. This combination occurs only if the video BIOS cannot display the error message. Replace the failing DIMM.

### Repeating short beeps

This beep combination indicates that your I/O function card, processor daughterboard, or I/O board might contain a failing component; your keyboard might be defective; or a key on the keyboard might be stuck. Ensure that:

1. Nothing is resting on the keyboard and pressing a key.
2. No key is stuck.
3. The keyboard cable is connected correctly to the keyboard and to the correct connector on the server.

## POST beep codes

Running the diagnostic tests can isolate the server component that failed, but you must have your system serviced. If the beep code repeats, have the keyboard, cable, and system serviced.

**Note:** If you have just connected a new mouse or other pointing device, turn off the server and disconnect that device. Wait at least five seconds, and then, turn on the server. If the beep code repeats, replace the device.

### **One long and one short beep**

This beep combination indicates that POST encountered an error on a video adapter. Have the system serviced if the integrated video adapter on the I/O function card is being used. If an optional video adapter is being used, replace the failing video adapter.

### **One long and two short beeps**

This beep combination indicates that a video I/O adapter ROM is not readable, or the video subsystem is defective. If you hear this beep combination twice, both the I/O function card and an optional video adapter have failed the test. This beep combination might also indicate that the I/O function card, processor daughterboard, or I/O board contains a failing component.

### **One long and three short beeps**

This beep combination indicates that the video subsystem has not detected a monitor connection to the server. Ensure that the monitor is connected to the server. If the problem persists, replace the monitor.

### **Two long and two short beeps**

This beep combination indicates that POST does not support the optional video adapter. This beep combination occurs when you install a video adapter that is incompatible with your server. Replace the optional video adapter with one that is supported by the server, or use the integrated video controller on the I/O function card.



## POST beep code table

Beep Code	Description
1-1-2	Processor register test has failed.
1-1-3	Complementary metal oxide semiconductor (CMOS) write/read test has failed.
1-1-4	BIOS flash EEPROM checksum has failed.
1-2-1	Programmable-interval-timer test has failed.
1-2-2	DMA initialization has failed.
1-2-3	DMA page register write/read test has failed.
2-1-1	Secondary DMA register test has failed.
2-1-2	Primary DMA register test has failed.
2-1-3	Primary interrupt-mask register test has failed.
2-1-4	Secondary interrupt-mask register test has failed.
2-2-1	Interrupt vector loading test has failed.
2-2-2	Keyboard controller test has failed.
2-2-3	CMOS power failure and checksum checks have failed.
2-2-4	CMOS configuration information validation has failed.
2-3-1	Screen initialization has failed.
2-3-2	Screen memory test has failed.
2-3-3	Screen retrace tests have failed.
2-3-4	Search for video ROM has failed.
2-4-1	Screen test indicates the screen is inoperable.
3-1-1	Timer tick interrupt test has failed.
3-1-2	Interval timer channel 2 test has failed.
3-1-3	RAM test has failed above address hex 0FFFF.
3-1-4	Time-of-day clock test has failed.
3-2-1	Serial port test has failed.
3-2-2	Parallel port test has failed.
3-2-3	Math coprocessor test has failed.
3-2-4	Comparison of CMOS memory size against actual has failed.
<b>Action:</b> Have the system serviced.	
1-2-4	RAM refresh verification has failed.
1-3-1	First 64 KB RAM test has failed.
1-3-2	First 64 KB RAM parity test has failed.
3-3-1	A memory size mismatch has occurred.
<b>Action:</b> Reseat the DIMMs.	
If the problem persists, have the system serviced.	
3-3-2	Critical System Management bus error.
<b>Action:</b> Disconnect the server from all electrical sources, wait for 30 seconds, and reconnect the server to the electrical sources. If the processor error LED on the Advanced System Management PCI adapter lights continuously, have your system serviced. (See "Advanced System Management PCI adapter component locations" on page 187 for the location of the Processor Error LED.)	

## POST error codes and messages

The following table shows the error messages that can appear on the screen during the power-on self-test (POST).

### Notes:

1. In addition to the actions given for the messages, see "Troubleshooting" on page 152 for general troubleshooting activities.
2. The actions for some of the messages require you to run the Configuration/Setup Utility program. For information on using the Configuration/Setup Utility program, see "Using the Configuration/Setup Utility main menu" on page 22.

## POST error codes and messages

3. If a password prompt appears with a POST message, type the administrator or power-on password; then, press Enter.

POST message	Description
062	<p>The server failed to load the operating system on three consecutive attempts.</p> <p>All caches are disabled. This can be caused by repeatedly turning the server on and then off or resetting the server.</p> <p><b>Action:</b> Start the Configuration/Setup Utility program and verify that all settings are correct. (See Chapter 3, "Configuring your server" on page 19.) Use the <b>Cache Control</b> selection in the Advanced Setup menu of the Configuration/Setup Utility program to enable the caches. (See "Advanced setup" on page 29.)</p> <p>If the problem persists, have the system serviced. When the problem is corrected, make sure to enable the caches.</p>
101 102	<p>An error occurred during the I/O function card, I/O board, and processor test.</p> <p><b>Action:</b> Have the system serviced.</p>
106	<p>An error occurred during the I/O function card and processor test.</p> <p><b>Action:</b> Have the system serviced.</p>
114	<p>An adapter read-only memory (ROM) error occurred.</p> <p><b>Action:</b> Remove the adapters. If you can start the server without the adapters installed, reinstall each adapter one at a time, and retest after each is reinstalled. When an adapter fails, replace it.</p> <p>If you cannot isolate and correct the problem, have the system serviced.</p>
129	<p>An error was detected in the L1 cache of a processor.</p> <p><b>Action:</b></p> <ol style="list-style-type: none"><li>1. If you just installed a processor, verify that the processor is installed and seated correctly.</li><li>2. If the problem persists, run the diagnostic program for the processors.<ul style="list-style-type: none"><li>• If the processor tests fail, replace the processor.</li><li>• If the processor tests do not fail, have the system serviced.</li></ul></li><li>3. Review the error logs in the Configuration/Setup Utility program for information on the processor error.</li></ol> <p>If the problem persists, have the system serviced.</p>
151	<p>A real-time clock (RTC) error occurred.</p> <p><b>Action:</b> Have the system serviced.</p>
161	<p>The real-time clock battery has failed.</p> <p><b>Action:</b> Have the system serviced, or replace the battery yourself. For additional information, see "Replacing the battery" on page 164 and "Lithium battery notice" on page ix <i>before</i> you attempt to change the battery.</p> <p>You can use the server until you replace the battery. However, you must run the Configuration/Setup Utility program and set the time and date and other custom settings each time you turn on the server.</p>

POST message	Description
162	<p>A change in device configuration occurred. This error occurs under one or more of the following conditions:</p> <ul style="list-style-type: none"> <li>• A new device has been installed.</li> <li>• A device has been moved to a different location or cable connection.</li> <li>• A device has been removed or disconnected from a cable.</li> <li>• A device is failing and is no longer recognized by the server as being installed.</li> <li>• An external device is not turned on.</li> <li>• An invalid checksum is detected in the battery-backed memory.</li> </ul> <p><b>Action:</b> Verify that all external devices are turned on. You must turn on external devices before turning on the server.</p> <p>If you did not add, remove, or change the location of a device, a device is probably failing. Running the diagnostic test programs might isolate the failing device, but you must have the system serviced.</p>
163	<p>The date and time are incorrect.</p> <p><b>Action:</b> Set the correct date and time. If the date and time are set correctly and saved, but the 163 error message reappears, have the system serviced.</p> <p>The server can be used until the system is serviced, but any application programs that use the date and time will be affected.</p>
164	<p>A change in the memory configuration occurred. This message might appear after you add or remove memory.</p> <p><b>Note:</b> The server can be used with decreased memory capacity.</p> <p><b>Action:</b></p> <ol style="list-style-type: none"> <li>1. If POST error message 289 also occurred, follow the instructions for that error message first.</li> <li>2. If you have installed or removed memory, run the Configuration/Setup Utility program; then, exit, saving the new configuration settings. For information on using the Configuration/Setup Utility program, see “Using the Configuration/Setup Utility main menu” on page 22.</li> </ol> <p>If the message appears again, shut down the server, reseat the DIMMs, and restart the server.</p> <ol style="list-style-type: none"> <li>3. Review the error logs in the Configuration/Setup Utility program for information on the memory error.</li> </ol> <p>If the problem persists, have the system serviced.</p>
173	<p>A system CMOS checksum error occurred.</p> <p><b>Action:</b> Verify the system configuration in the Configuration/Setup Utility program.</p> <p>If the problem persists, have the system serviced.</p>
175	<p>A vital product data (VPD) error occurred.</p> <p><b>Action:</b> Check to see if the error logs in the Configuration/Setup Utility program provide additional information on the error.</p> <p>If the problem persists, have the system serviced.</p>
176 177 178	<p>A security hardware error occurred.</p> <p><b>Action:</b> Check for indications that someone has tampered with the server. If no one has tampered with the server, have the system serviced.</p>
184	<p>The power-on password information stored in your server has been removed.</p> <p><b>Action:</b> You must reset the power-on password. From the Configuration/Setup Utility main menu, select <b>System Security</b>; then, follow the instructions on the screen. For information on using the Configuration/Setup Utility program, see “Using the Configuration/Setup Utility main menu” on page 22.</p> <p>If this information cannot be restored, have the system serviced.</p>

## POST error codes and messages

POST message	Description
185	<p>A power failure damaged the stored information on the drive-startup sequence.</p> <p><b>Action:</b> You must reset the drive-startup sequence. From the Configuration/Setup Utility main menu, select <b>Start Options</b>; then, follow the instructions on the screen. For information on using the Configuration/Setup Utility program, see “Using the Configuration/Setup Utility main menu” on page 22.</p> <p>If this information cannot be restored, have the system serviced.</p>
186	<p>An I/O function card, I/O board, or hardware error occurred.</p> <p><b>Action:</b> Check to see if the error logs in the Configuration/Setup Utility program provide additional information on the error.</p> <p>If the problem persists, have the system serviced.</p>
187	<p>The VPD serial number is not set.</p> <p><b>Action:</b> The system serial number is set in the VPD EEPROM at the time of manufacturing. If the I/O function card has been replaced, the system serial number will be invalid and must be set. From the main menu of the Configuration/Setup Utility program, select <b>System Information</b>; then, select <b>Product Data</b>. If the problem persists, have the system serviced.</p>
188	<p>A vital product data (VPD) error occurred.</p> <p><b>Action:</b> Check to see if the error logs in the Configuration/Setup Utility program provide additional information on the error.</p> <p>If the problem persists, have the system serviced.</p>
189	<p>An attempt has been made to access the server with invalid passwords. After three incorrect attempts, the server locks up; that is, the log-on data fields are no longer available to the user.</p>
201	<p>An error occurred during the memory controller test. This error can be caused by:</p> <ul style="list-style-type: none"><li>• Incorrectly installed memory</li><li>• A failing DIMM</li><li>• A Processor controller board problem</li><li>• An I/O function card problem</li><li>• An I/O board problem</li></ul> <p><b>Action:</b></p> <ol style="list-style-type: none"><li>1. If you just installed memory, see “Installing DIMMs and memory boards” on page 54 to verify that the new memory is correct for your server. Verify that the DIMMs are seated correctly and installed using the DIMM population sequence described in “Installing DIMMs and memory boards” on page 54.</li><li>2. If the problem persists, check to see if the system has isolated the problem to a DIMM:<ul style="list-style-type: none"><li>• Check the memory fail LEDs on the LED card (see “LED card (processor and DIMM) LEDs” on page 161). If a memory fail LED is on, run the diagnostic program for the DIMM indicated by the LED.</li><li>• If the tests fail, replace the DIMM. If the problem persists after you replace the DIMM, have the system serviced.</li><li>• If the memory tests do not fail, have the system serviced.</li></ul></li><li>3. Review the error logs in the Configuration/Setup Utility program for information on the memory error.</li></ol> <p>If the problem persists, have the system serviced.</p>

POST message	Description
229	<p>An error was detected in the L2 cache of one of the processors. This error can be caused by:</p> <ul style="list-style-type: none"> <li>• An incorrectly installed processor</li> <li>• A failing processor</li> <li>• A processor controller board problem</li> <li>• A processor daughterboard problem</li> </ul> <p><b>Action:</b></p> <ol style="list-style-type: none"> <li>1. If you just installed a processor, see “Working with the processor housing assembly” on page 58 to verify that the new processor is correct for your server. Verify that the processors are seated correctly and installed using the processor population sequence described in “Working with the processor housing assembly” on page 58.</li> <li>2. If the problem persists, check to see if the system has isolated the problem to a processor: <ul style="list-style-type: none"> <li>• Check the processor fail LEDs on the LED card (see “LED card (processor and DIMM) LEDs” on page 161). If a processor status LED is on, run the diagnostic program for the processor indicated by the LED.</li> <li>• Run the diagnostic program for the processors. If the tests fail, replace the processor (see “Installing or replacing a processor” on page 62).</li> <li>• If the processor tests do not fail: <ul style="list-style-type: none"> <li>– Run the diagnostic program for the processor daughterboard. If the tests fail, replace the processor daughterboard (see “Installing or replacing a processor daughterboard” on page 64).</li> <li>– If the processor daughterboard tests do not fail, have the system serviced.</li> </ul> </li> <li>• Review the error logs in the Configuration/Setup Utility program for information on the processor error.</li> </ul> </li> </ol> <p>If the problem persists, have the system serviced.</p>
262	<p>A DRAM parity configuration error occurred.</p> <p><b>Action:</b></p> <ol style="list-style-type: none"> <li>1. If you just installed a processor, see “Working with the processor housing assembly” on page 58 to verify that the new processor is correct for your server. Verify that the processors are seated correctly and installed using the processor population sequence described in “Working with the processor housing assembly” on page 58.</li> <li>2. If the problem persists, check to see if the system has isolated the problem to a processor: <ul style="list-style-type: none"> <li>• Check the processor fail LEDs on the LED card (see “LED card (processor and DIMM) LEDs” on page 161). If a processor status LED is on, run the diagnostic program for the processor indicated by the LED.</li> <li>• Run the diagnostic program for the processors. If the tests fail, replace the processor.</li> <li>• If the processor tests do not fail, have the system serviced.</li> <li>• Review the error logs in the Configuration/Setup Utility program for information on the processor error.</li> </ul> </li> </ol> <p>If the problem persists, have the system serviced.</p>

## POST error codes and messages

POST message	Description
289	<p>An error occurred during POST memory tests and a failing DIMM was disabled.</p> <p><b>Note:</b> The server can be used with decreased memory.</p> <p><b>Action:</b></p> <ol style="list-style-type: none"><li>1. If you just installed memory, see “Installing DIMMs and memory boards” on page 54 to verify that the new memory is correct for your server. Verify that the DIMMs are installed and seated correctly.</li><li>2. Check to see if the error logs in the Configuration/Setup Utility program provide additional information on the error.</li><li>3. If the problem persists, replace the failing DIMM.</li></ol> <p>If the problem persists, have the system serviced.</p>
301 303	<p>An error occurred during the keyboard and keyboard controller test. These error messages also might be accompanied by continuous beeping.</p> <p><b>Action:</b></p> <ol style="list-style-type: none"><li>1. If you have just connected a new mouse or other pointing device, turn off the server and disconnect that device. Wait at least five seconds, and then turn on the server. If the error message goes away, replace the device.</li><li>2. Ensure that:<ol style="list-style-type: none"><li>a. Nothing is resting on the keyboard and pressing a key.</li><li>b. No key is stuck.</li><li>c. The keyboard cable is connected correctly to the keyboard and to the correct connector on the server.</li></ol></li><li>3. Attach another keyboard to the keyboard connector.</li><li>4. Running the diagnostic tests can isolate the server component that failed, but you must have your system serviced. If the error message remains, have the keyboard, cable, and system serviced.</li></ol>
602	<p>The diskette has an invalid startup (boot) record.</p> <p><b>Action:</b></p> <ol style="list-style-type: none"><li>1. Verify that the Configuration/Setup Utility program correctly reflects the type of diskette drive that you have installed.</li><li>2. Verify that the diskette is a startable (bootable) diskette.</li><li>3. Remove the diskette from the diskette drive, and install a different startable (bootable) diskette.</li><li>4. Run the diagnostic tests on the diskette drive.</li></ol> <p>If the diagnostic tests fail, have the system serviced.</p>
604	<p>An error occurred during a diskette drive test.</p> <p><b>Action:</b></p> <ol style="list-style-type: none"><li>1. Verify that the Configuration/Setup Utility program correctly reflects the type of diskette drive that you have installed.</li><li>2. Run the diagnostic tests on the diskette drive.</li></ol> <p>If the diagnostic tests fail, have the system serviced.</p>
605	<p>A diskette unlock error occurred.</p> <p><b>Action:</b> Run the diagnostic tests on the diskette drive.</p> <p>If the diagnostic tests fail, have the system serviced.</p>
662	<p>A diskette drive configuration error occurred.</p> <p><b>Action:</b> If you removed a diskette drive, make sure that the diskette drive setting is correct in the Configuration/Setup Utility program. If the setting is not correct, change it. For information on using the Configuration/Setup Utility program, see “Using the Configuration/Setup Utility main menu” on page 22.</p> <p>If the problem persists, have the system serviced.</p>

POST message	Description
762	<p>A math coprocessor configuration error occurred.</p> <p><b>Action:</b> Run the diagnostic program for the processors.</p> <p>If the diagnostic tests fail, have the system serviced.</p>
962	<p>A parallel port configuration error occurred.</p> <p><b>Action:</b> If you changed a hardware option, make sure that the parallel port setting is correct in the Configuration/Setup Utility program. If the setting is not correct, change it. For information on using the Configuration/Setup Utility program, see "Using the Configuration/Setup Utility main menu" on page 22.</p> <p>If the problem persists, have the system serviced.</p>
11xx	<p>An error occurred during the I/O function card, I/O board, and serial port test.</p> <p><b>Action:</b> If you have a modem, serial printer, or other serial device attached to your server, verify that the serial cable is connected correctly. If it is, use the following procedure:</p> <ol style="list-style-type: none"> <li>1. Turn off the server.</li> <li>2. Disconnect the serial cable from the serial port.</li> <li>3. Wait five seconds; then, turn on the server.</li> </ol> <p>If the POST error message does not reappear, either the serial cable or the device is probably failing. See the documentation that comes with the serial device for additional testing information.</p> <p>If the POST error message reappears, have the system serviced.</p>
1162	<p>The serial port configuration conflicts with another device in the system.</p> <p><b>Action:</b></p> <ol style="list-style-type: none"> <li>1. Make sure the IRQ and I/O port assignments needed by the serial port are available. (See Chapter 3, "Configuring your server" on page 19.)</li> <li>2. If all interrupts are being used by adapters, you might need to remove an adapter to make an interrupt available to the serial port, or force other adapters to share an interrupt. For information on removing adapters, see "Working with adapters" on page 70. For information about setting interrupts, see Chapter 3, "Configuring your server."</li> </ol>
1600	<p>POST is unable to communicate with the service processor.</p> <p><b>Action:</b></p> <ol style="list-style-type: none"> <li>1. Turn off the server.</li> <li>2. Disconnect the server from all electrical sources.</li> <li>3. Remove ac power from all power supplies for at least 30 seconds.</li> <li>4. Reconnect the ac power cables to the power supplies, reconnect the server to the electrical sources, and wait for 30 seconds.</li> <li>5. Turn on and restart the server.</li> <li>6. If the error still occurs, run the diagnostic programs on the service processor. (See "Diagnostic programs" on page 120 for information on running the diagnostic programs that come with your server.)</li> </ol> <p>If the diagnostic tests fail, or if the problem persists, have the system serviced.</p>

## POST error codes and messages

POST message	Description
1762	<p>A hard disk configuration error occurred.</p> <p><b>Action:</b></p> <ol style="list-style-type: none"><li>1. Verify that the Configuration/Setup Utility program correctly reflects the number of hard disk drives that you have installed. If the drive information is not correct, change it. (For instructions on using the Configuration/Setup Utility program, see "Using the Configuration/Setup Utility main menu" on page 22.)</li><li>2. If you added or removed a hard disk drive, you must save the new configuration in the Configuration/Setup Utility program. See "Using the Configuration/Setup Utility main menu" on page 22 for additional information and instructions on saving the configuration.</li><li>3. Run the diagnostic programs on the hard disk. (See "Diagnostic programs" on page 120 for information on running the diagnostic programs that come with your server.)</li></ol> <p>If the diagnostic tests fail, or if the problem cannot be isolated and corrected, have the system serviced.</p>
178X	<p>A hard disk error or failure occurred during testing of the hard disk drive.</p> <p><b>Action:</b></p> <ol style="list-style-type: none"><li>1. Run the diagnostic programs on the hard disk. (See "Diagnostic programs" on page 120 for information on running the diagnostic programs that come with your server.)</li><li>2. If the diagnostic programs detect a failure, replace the defective hard disk drive.</li></ol> <p>If the diagnostic tests fail, or if the problem cannot be isolated and corrected, have the system serviced.</p>
1800	<p>A PCI adapter has requested a hardware interrupt that is not available.</p> <p><b>Action:</b></p> <ol style="list-style-type: none"><li>1. Make sure that the resource settings for the PCI adapter and all other adapters are set correctly in the Configuration/Setup Utility program. If the interrupt resource settings are not correct, change the settings. For information on using the Configuration/Setup Utility program, see "Using the Configuration/Setup Utility main menu" on page 22.</li><li>2. If all interrupts are being used by other adapters, you might need to remove an adapter to make an interrupt available to the PCI adapter, or force other adapters to share an interrupt. For information on removing adapters, see "Working with adapters" on page 70. For information on setting interrupts, see "PCI slot/device information" on page 30.</li></ol>
1801	<p>A PCI adapter has requested memory resources that are not available.</p> <p><b>Action:</b></p> <ol style="list-style-type: none"><li>1. Make sure that the resource settings for the PCI adapter and all other adapters are set correctly in the Configuration/Setup Utility program. If the memory resource settings are not correct, change the settings. For information on using the Configuration/Setup Utility program, see "Using the Configuration/Setup Utility main menu" on page 22.</li><li>2. If all memory resources are being used, you might need to remove an adapter to make memory available to the PCI adapter. For information on removing adapters, see "Working with adapters" on page 70. Disabling the adapter BIOS on the adapter might correct the error. Refer to the documentation that comes with the adapter.</li></ol>



POST message	Description
1802	<p>A PCI adapter has requested an I/O address that is not available, or the PCI adapter might be defective.</p> <p><b>Action:</b></p> <ol style="list-style-type: none"> <li>1. Make sure that the I/O addresses for the PCI adapter and all other adapters are set correctly in the Configuration/Setup Utility program. For information on using the Configuration/Setup Utility program, see "Using the Configuration/Setup Utility main menu" on page 22.</li> <li>2. If the I/O port resource settings are correct, the PCI adapter might be defective. Have the system serviced.</li> </ol>
1803	<p>A PCI adapter has requested a memory address that is not available, or the PCI adapter might be defective.</p> <p><b>Action:</b></p> <ol style="list-style-type: none"> <li>1. Make sure that the memory addresses for all other adapters are set correctly in the Configuration/Setup Utility program. If the memory resource settings are not correct, change the settings. For information on using the Configuration/Setup Utility program, see "Using the Configuration/Setup Utility main menu" on page 22.</li> <li>2. If the memory resource settings are correct, the PCI adapter might be defective. Have the system serviced.</li> </ol>
1804	<p>A PCI adapter has requested a memory address that is not available.</p> <p><b>Action:</b> If all memory addresses are being used, you might need to remove an adapter to make memory address space available to the PCI adapter. For information on removing adapters, see "Working with adapters" on page 70. Disabling the adapter BIOS on the adapter might correct the error. Refer to the documentation that comes with the adapter.</p>
1805	<p>A PCI adapter ROM error occurred.</p> <p><b>Action:</b> Remove the PCI adapters. If you can start the server without the adapters, reinstall each adapter one at a time and retest after each is reinstalled. When an adapter fails, replace it.</p> <p>If you cannot isolate and correct the problem, have the system serviced.</p>
1806	<p>A PCI-to-PCI bridge error occurred. More than one PCI bus tried to access memory below 1 MB.</p> <p><b>Action:</b> Remove the PCI adapter that has the PCI bridge. If you can start the server without the adapter, reinstall and retest the adapter. If the adapter fails, replace it.</p> <p>If you cannot isolate and correct the problem, have the system serviced.</p>
1808	<p>An unsupported PCI device is installed.</p> <p>The latch on a hot-plug PCI slot might have been opened while the slot was active or the optical switch for the slot might be defective.</p> <p><b>Action:</b> Shut down the server, ensure the latches on the hot-plug PCI slots are closed and locked; then, restart the server.</p> <p>If the problem persists, have the system serviced.</p>

## POST error codes and messages

POST message	Description
1962	<p>No valid startup devices were found. The system cannot find the startup drive or operating system.</p> <p><b>Action:</b> Be sure that the drive you want to start from is in the startup sequence.</p> <ol style="list-style-type: none"><li>1. Select <b>Start Options</b> from the Configuration/Setup Utility main menu. (See Chapter 3, "Configuring your server" on page 19.) If you are unable to set the startup sequence, have the system serviced.</li><li>2. Check the list of startup devices in the <b>Startup device</b> data fields. Is the drive that you want to start from in the startup sequence?</li></ol> <p><b>Yes</b> Exit from this screen; then, select <b>Exit Setup</b> to exit the Configuration/Setup Utility main menu. Go to step 3.</p> <p><b>No</b> Follow the instructions on the screen to add the drive; then, save the changes and exit the Configuration/Setup Utility main menu. Restart the server.</p> <ol style="list-style-type: none"><li>3. Is an operating system installed?</li></ol> <p><b>Yes</b> Turn off the server. Go to step 4.</p> <p><b>No</b> Install the operating system; follow your operating system instructions to shut down and restart the server.</p> <ol style="list-style-type: none"><li>4. During server startup, watch for messages indicating a hardware problem.</li></ol> <p>If the same error message appears, have the system serviced.</p>
2400	<p>An error occurred during the video controller test. This error can be caused by a failing monitor, a failing I/O function card, or, if a video adapter is installed, a failing video adapter.</p> <p><b>Action:</b> Verify that the monitor is connected correctly to the video connector. If the monitor is connected correctly, have the system serviced.</p>
2462	<p>A video memory configuration error occurred.</p> <p><b>Action:</b></p> <ol style="list-style-type: none"><li>1. Make sure that the monitor cables are correctly and securely connected to the server.</li><li>2. If the problem persists, have the system serviced.</li></ol>
5962	<p>An IDE CD-ROM configuration error occurred.</p> <p><b>Action:</b> Check the signal and power cable connections to the CD-ROM drive. See "I/O board component locations" on page 188 for the locations of the cable connectors.</p> <p>If the problem persists, have the system serviced.</p>
8603	<p>An error occurred during the mouse (pointing device) and mouse (pointing device) controller test. This error can be caused by the addition or removal of a mouse, or by a failing I/O function card.</p> <p><b>Note:</b> This error also can occur if electrical power was lost for a very brief period and then restored. In this case, turn off the server for at least five seconds, and then turn it back on.</p> <p><b>Action:</b> Ensure that the keyboard and mouse (pointing device) are attached to the correct connectors. (See "Input/output connectors and expansion slots" on page 12.) If they are connected correctly, use the following procedure:</p> <ol style="list-style-type: none"><li>1. Turn off the server.</li><li>2. Disconnect the mouse from the server.</li><li>3. Turn on the server.</li></ol> <p>If the POST error message does not reappear, the mouse is probably failing. See the documentation that comes with the mouse for additional testing information. If the problem remains, have the mouse (pointing device) serviced.</p> <p>If the POST error message reappears, run the diagnostic tests to isolate the problem. If the diagnostic tests do not find a problem and the POST error message remains, have the system serviced.</p>

POST message	Description
000195A01	Processor A01 is not functioning. <b>Action:</b> Replace the processor. If the problem persists, have the system serviced.
000195A02	Processor A02 is not functioning. <b>Action:</b> Replace the processor. If the problem persists, have the system serviced.
000195A03	Processor A03 is not functioning. <b>Action:</b> Replace the processor. If the problem persists, have the system serviced.
000195A04	Processor A04 is not functioning. <b>Action:</b> Replace the processor. If the problem persists, have the system serviced.
000195B01	Processor B01 is not functioning. <b>Action:</b> Replace the processor. If the problem persists, have the system serviced.
000195B02	Processor B02 is not functioning. <b>Action:</b> Replace the processor. If the problem persists, have the system serviced.
000195B03	Processor B03 is not functioning. <b>Action:</b> Replace the processor. If the problem persists, have the system serviced.
000195B04	Processor B04 is not functioning. <b>Action:</b> Replace the processor. If the problem persists, have the system serviced.
000197A01	Processor A01 failed the built-in self-test. <b>Action:</b> Replace the processor. If the problem persists, have the system serviced.
000197A02	Processor A02 failed the built-in self-test. <b>Action:</b> Replace the processor. If the problem persists, have the system serviced.
000197A03	Processor A03 failed the built-in self-test. <b>Action:</b> Replace the processor. If the problem persists, have the system serviced.
000197A04	Processor A04 failed the built-in self-test. <b>Action:</b> Replace the processor. If the problem persists, have the system serviced.
000197B01	Processor B01 failed the built-in self-test. <b>Action:</b> Replace the processor. If the problem persists, have the system serviced.
000197B02	Processor B02 failed the built-in self-test. <b>Action:</b> Replace the processor. If the problem persists, have the system serviced.
000197B03	Processor B03 failed the built-in self-test. <b>Action:</b> Replace the processor. If the problem persists, have the system serviced.

## POST error codes and messages

POST message	Description
000197B04	<p>Processor B04 failed the built-in self-test.</p> <p><b>Action:</b> Replace the processor.</p> <p>If the problem persists, have the system serviced.</p>
0001980A01	<p>The BIOS does not support the current stepping level of processor A01.</p> <p><b>Action:</b> Update the system BIOS to a level that supports the processors installed in the server. Refer to the “Getting Help, Service, and Information” section of this <i>Server Library</i> for information on obtaining updates from the World Wide Web.</p> <p>If the problem persists, have the system serviced.</p>
0001980A02	<p>The BIOS does not support the current stepping level of processor A02.</p> <p><b>Action:</b> Update the system BIOS to a level that supports the processors installed in the server. Refer to the “Getting Help, Service, and Information” section of this <i>Server Library</i> for information on obtaining updates from the World Wide Web.</p> <p>If the problem persists, have the system serviced.</p>
0001980A03	<p>The BIOS does not support the current stepping level of processor A03.</p> <p><b>Action:</b> Update the system BIOS to a level that supports the processors installed in the server. Refer to the “Getting Help, Service, and Information” section of this <i>Server Library</i> for information on obtaining updates from the World Wide Web.</p> <p>If the problem persists, have the system serviced.</p>
0001980A04	<p>The BIOS does not support the current stepping level of processor A04.</p> <p><b>Action:</b> Update the system BIOS to a level that supports the processors installed in the server. Refer to the “Getting Help, Service, and Information” section of this <i>Server Library</i> for information on obtaining updates from the World Wide Web.</p> <p>If the problem persists, have the system serviced.</p>
0001980B01	<p>The BIOS does not support the current stepping level of processor B01.</p> <p><b>Action:</b> Update the system BIOS to a level that supports the processors installed in the server. Refer to the “Getting Help, Service, and Information” section of this <i>Server Library</i> for information on obtaining updates from the World Wide Web.</p> <p>If the problem persists, have the system serviced.</p>
0001980B02	<p>The BIOS does not support the current stepping level of processor B02.</p> <p><b>Action:</b> Update the system BIOS to a level that supports the processors installed in the server. Refer to the “Getting Help, Service, and Information” section of this <i>Server Library</i> for information on obtaining updates from the World Wide Web.</p> <p>If the problem persists, have the system serviced.</p>
0001980B03	<p>The BIOS does not support the current stepping level of processor B03.</p> <p><b>Action:</b> Update the system BIOS to a level that supports the processors installed in the server. Refer to the “Getting Help, Service, and Information” section of this <i>Server Library</i> for information on obtaining updates from the World Wide Web.</p> <p>If the problem persists, have the system serviced.</p>
0001980B04	<p>The BIOS does not support the current stepping level of processor B04.</p> <p><b>Action:</b> Update the system BIOS to a level that supports the processors installed in the server. Refer to the “Getting Help, Service, and Information” section of this <i>Server Library</i> for information on obtaining updates from the World Wide Web.</p> <p>If the problem persists, have the system serviced.</p>
0001981A01	<p>Unable to apply the microcode update for processor A01.</p> <p><b>Action:</b> The processor might be downlevel. Verify that the current stepping level is supported. If so, the BIOS might be downlevel. In that case, update the system BIOS to a level that supports the processors installed in the server. Refer to the “Getting Help, Service, and Information” section of this <i>Server Library</i> for information on obtaining updates from the World Wide Web.</p> <p>If the problem persists, have the system serviced.</p>

POST message	Description
0001981A02	<p>Unable to apply the microcode update for processor A02.</p> <p><b>Action:</b> The processor might be downlevel. Verify that the current stepping level is supported. If so, the BIOS might be downlevel. In that case, update the system BIOS to a level that supports the processors installed in the server. Refer to the “Getting Help, Service, and Information” section of this <i>Server Library</i> for information on obtaining updates from the World Wide Web.</p> <p>If the problem persists, have the system serviced.</p>
0001981A03	<p>Unable to apply the microcode update for processor A03.</p> <p><b>Action:</b> The processor might be downlevel. Verify that the current stepping level is supported. If so, the BIOS might be downlevel. In that case, update the system BIOS to a level that supports the processors installed in the server. Refer to the “Getting Help, Service, and Information” section of this <i>Server Library</i> for information on obtaining updates from the World Wide Web.</p> <p>If the problem persists, have the system serviced.</p>
0001981A04	<p>Unable to apply the microcode update for processor A04.</p> <p><b>Action:</b> The processor might be downlevel. Verify that the current stepping level is supported. If so, the BIOS might be downlevel. In that case, update the system BIOS to a level that supports the processors installed in the server. Refer to the “Getting Help, Service, and Information” section of this <i>Server Library</i> for information on obtaining updates from the World Wide Web.</p> <p>If the problem persists, have the system serviced.</p>
0001981B01	<p>Unable to apply the microcode update for processor B01.</p> <p><b>Action:</b> The processor might be downlevel. Verify that the current stepping level is supported. If so, the BIOS might be downlevel. In that case, update the system BIOS to a level that supports the processors installed in the server. Refer to the “Getting Help, Service, and Information” section of this <i>Server Library</i> for information on obtaining updates from the World Wide Web.</p> <p>If the problem persists, have the system serviced.</p>
0001981B02	<p>Unable to apply the microcode update for processor B02.</p> <p><b>Action:</b> The processor might be downlevel. Verify that the current stepping level is supported. If so, the BIOS might be downlevel. In that case, update the system BIOS to a level that supports the processors installed in the server. Refer to the “Getting Help, Service, and Information” section of this <i>Server Library</i> for information on obtaining updates from the World Wide Web.</p> <p>If the problem persists, have the system serviced.</p>
0001981B03	<p>Unable to apply the microcode update for processor B03.</p> <p><b>Action:</b> The processor might be downlevel. Verify that the current stepping level is supported. If so, the BIOS might be downlevel. In that case, update the system BIOS to a level that supports the processors installed in the server. Refer to the “Getting Help, Service, and Information” section of this <i>Server Library</i> for information on obtaining updates from the World Wide Web.</p> <p>If the problem persists, have the system serviced.</p>
0001981B04	<p>Unable to apply the microcode update for processor B04.</p> <p><b>Action:</b> The processor might be downlevel. Verify that the current stepping level is supported. If so, the BIOS might be downlevel. In that case, update the system BIOS to a level that supports the processors installed in the server. Refer to the “Getting Help, Service, and Information” section of this <i>Server Library</i> for information on obtaining updates from the World Wide Web.</p> <p>If the problem persists, have the system serviced.</p>
000199900A	<p>Processor bus A is disabled.</p> <p><b>Action:</b> Replace the cache coherency filter cards. They might be missing or defective.</p> <p>If the problem persists, have the system serviced.</p>

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POST message	Description
000199900B	<p>Processor bus B is disabled.</p> <p><b>Action:</b> Replace the cache coherency filter cards. They might be missing or defective.</p> <p>If the problem persists, have the system serviced.</p>
01298001	<p>No update data for processor B01.</p> <p><b>Action:</b> Update the system BIOS to a level that supports the processors installed in the server. Refer to the “Getting Help, Service, and Information” section of this <i>Server Library</i> for information on obtaining updates from the World Wide Web.</p>
01298002	<p>No update data for processor B02.</p> <p><b>Action:</b> Update the system BIOS to a level that supports the processors installed in the server. Refer to the “Getting Help, Service, and Information” section of this <i>Server Library</i> for information on obtaining updates from the World Wide Web.</p>
01298003	<p>No update data for processor B03.</p> <p><b>Action:</b> Update the system BIOS to a level that supports the processors installed in the server. Refer to the “Getting Help, Service, and Information” section of this <i>Server Library</i> for information on obtaining updates from the World Wide Web.</p>
01298004	<p>No update data for processor B04.</p> <p><b>Action:</b> Update the system BIOS to a level that supports the processors installed in the server. Refer to the “Getting Help, Service, and Information” section of this <i>Server Library</i> for information on obtaining updates from the World Wide Web.</p>
01298A01	<p>No update data for processor A01.</p> <p><b>Action:</b> Update the system BIOS to a level that supports the processors installed in the server. Refer to the “Getting Help, Service, and Information” section of this <i>Server Library</i> for information on obtaining updates from the World Wide Web.</p>
01298A02	<p>No update data for processor A02.</p> <p><b>Action:</b> Update the system BIOS to a level that supports the processors installed in the server. Refer to the “Getting Help, Service, and Information” section of this <i>Server Library</i> for information on obtaining updates from the World Wide Web.</p>
01298A03	<p>No update data for processor A03.</p> <p><b>Action:</b> Update the system BIOS to a level that supports the processors installed in the server. Refer to the “Getting Help, Service, and Information” section of this <i>Server Library</i> for information on obtaining updates from the World Wide Web.</p>
01298A04	<p>No update data for processor A04.</p> <p><b>Action:</b> Update the system BIOS to a level that supports the processors installed in the server. Refer to the “Getting Help, Service, and Information” section of this <i>Server Library</i> for information on obtaining updates from the World Wide Web.</p>
01298B01	<p>Invalid update data for processor B01.</p> <p><b>Action:</b> Update the system BIOS to a level that supports the processors installed in the server. Refer to the “Getting Help, Service, and Information” section of this <i>Server Library</i> for information on obtaining updates from the World Wide Web.</p>
01298B02	<p>Invalid update data for processor B02.</p> <p><b>Action:</b> Update the system BIOS to a level that supports the processors installed in the server. Refer to the “Getting Help, Service, and Information” section of this <i>Server Library</i> for information on obtaining updates from the World Wide Web.</p>
01298B03	<p>Invalid update data for processor B03.</p> <p><b>Action:</b> Update the system BIOS to a level that supports the processors installed in the server. Refer to the “Getting Help, Service, and Information” section of this <i>Server Library</i> for information on obtaining updates from the World Wide Web.</p>
01298B04	<p>Invalid update data for processor B04.</p> <p><b>Action:</b> Update the system BIOS to a level that supports the processors installed in the server. Refer to the “Getting Help, Service, and Information” section of this <i>Server Library</i> for information on obtaining updates from the World Wide Web.</p>

POST message	Description
01298105	<p>Invalid update data for processor A01.</p> <p><b>Action:</b> Update the system BIOS to a level that supports the processors installed in the server. Refer to the “Getting Help, Service, and Information” section of this <i>Server Library</i> for information on obtaining updates from the World Wide Web.</p>
01298106	<p>Invalid update data for processor A02.</p> <p><b>Action:</b> Update the system BIOS to a level that supports the processors installed in the server. Refer to the “Getting Help, Service, and Information” section of this <i>Server Library</i> for information on obtaining updates from the World Wide Web.</p>
01298107	<p>Invalid update data for processor A03.</p> <p><b>Action:</b> Update the system BIOS to a level that supports the processors installed in the server. Refer to the “Getting Help, Service, and Information” section of this <i>Server Library</i> for information on obtaining updates from the World Wide Web.</p>
01298108	<p>Invalid update data for processor A04.</p> <p><b>Action:</b> Update the system BIOS to a level that supports the processors installed in the server. Refer to the “Getting Help, Service, and Information” section of this <i>Server Library</i> for information on obtaining updates from the World Wide Web.</p>
I9990301	<p>A hard disk drive error occurred.</p> <p><b>Action:</b> Have the system serviced.</p>
I9990305	<p>POST could not find an operating system.</p> <p><b>Action:</b></p> <ol style="list-style-type: none"> <li>1. Install an operating system.</li> <li>2. If you have already installed the operating system, check the drive startup sequence (see “Start options” on page 28).</li> <li>3. If the drive sequence is correct, run the diagnostic tests to verify that the hard disk drive is functioning correctly.</li> <li>4. If there is a problem with the hard disk drive (such as a defective sector), you might have to reinstall the operating system.</li> </ol> <p>If you cannot reinstall the operating system, have the system serviced.</p>
I9990605	<p>AC power has been restored.</p> <p><b>Action:</b> No action is required. This message occurs each time ac power is restored to the server after an ac power loss.</p>
Other Numbers	<p>POST found an error.</p> <p><b>Action:</b> Follow the instructions on the screen.</p>

### System-monitoring messages

The following table shows the system-monitoring messages that can appear on the information panel. The Advanced System Management PCI adapter monitors critical system functions and generates the messages.

**Notes:**

1. In addition to the actions given for the messages, see “Troubleshooting” on page 152 for general troubleshooting activities that might help you resolve an error.
2. Refer to the “Advanced System Management Information” section of this *Server Library* for information on the system-monitoring functions of the Advanced System Management PCI adapter.

Code	Message	Description
None	Device Not Inst	A card or cable must be installed. <b>Action:</b> 1. Review the event log for more information regarding which device is not installed. 2. Install the specified device.
00	Post Fail	Errors were detected that prevent the system from successfully completing POST. <b>Action:</b> Review the error logs in the Configuration/Setup Utility program for information on the error.
01	Post Warn	Errors were detected in POST that allow the system to complete POST (for example, a memory sizing configuration error). <b>Action:</b> Review the error logs in the Configuration/Setup Utility program for information on the error.
08	App Fail	An application has failed. <b>Action:</b> Review the error logs in the Configuration/Setup Utility program for information on the error.
09	App Warning	An application has issued a warning message. <b>Action:</b> Review the error logs in the Configuration/Setup Utility program for information on the error.
10	Boot Fail	The network operating system failed to load. <b>Action:</b> Restart the server. If the problem persists, review the error logs in the Configuration/Setup Utility program for information on the error.
18	OS Hang	A network operating system error occurred. <b>Action:</b> Restart the server.
20	Log Full	The system error log is full. <b>Action:</b> Review the error logs in the Configuration/Setup Utility program and clear the error logs.



Code	Message	Description
30	CPU Fail	<p>A processor has encountered an error, and will be taken offline.</p> <p><b>Action:</b></p> <ol style="list-style-type: none"> <li>1. Review the error log for more information regarding the failure. If you enabled the dialout feature through the Advanced System Management PCI adapter, a dialout alert will also occur.</li> <li>2. Replace the processor or the processor daughterboard that contains the processor. <ol style="list-style-type: none"> <li>a. First, determine whether the processor indicated by the processor error LED on the LED card is defective. Perform the test described in step 5 on page 63.</li> <li>b. If the processor is defective, replace it as described in "Installing or replacing a processor" on page 62.</li> <li>c. If the processor is not defective, run the diagnostic programs on the processor daughterboard. (See "Diagnostic programs" on page 120 for information on running the diagnostic programs that come with your server.)</li> <li>d. If the processor daughterboard is defective, replace it as described in "Installing or replacing a processor daughterboard" on page 64.</li> <li>e. If the processor daughterboard is not defective, have the system serviced.</li> </ol> </li> </ol>
70	VRM Fail	<p>A VRM has failed.</p> <p><b>Action:</b></p> <ol style="list-style-type: none"> <li>1. Review the event log for more information regarding the failure.</li> <li>2. Replace the VRM or the circuit board that contains the VRM.</li> </ol>
80	Over Temp	<p>A monitored temperature is above the normal range.</p> <p><b>Action:</b></p> <ol style="list-style-type: none"> <li>1. Make sure all four fans are functioning properly and air intakes are clear.</li> <li>2. Make sure the room temperature is within normal limits.</li> <li>3. If the problem persists, have the system serviced.</li> </ol>
85	Over Volt	<p>A monitored power source exceeds the threshold value.</p> <p><b>Action:</b> Review the error logs in the Configuration/Setup Utility program for information on the error.</p>
86	Under Volt	<p>A monitored power source is below the threshold value.</p> <p><b>Action:</b> Review the error logs in the Configuration/Setup Utility program for information on the error.</p>
9x	Power	<p>A power supply has failed; x is the power supply identifier.</p> <p><b>Action:</b> Replace the power supply.</p>
98	Power Fail	<p>A failure occurred in the power supply system.</p> <p><b>Action:</b> Review the error logs in the Configuration/Setup Utility program for information on the error.</p>
99	Nonredundant	<p>This is a warning to the system operator. The load on the power subsystem is large enough that the power subsystem is no longer operating with redundancy. If one power supply fails, the remaining power supplies might not be able to reliably power the system.</p> <p><b>Action:</b> If possible, install an additional power supply, or reduce the load on the power subsystem.</p>
A0	Fan x Fail	<p>A fan has failed; x is the fan identifier.</p> <p><b>Action:</b> Replace the fan.</p>

## Troubleshooting

Code	Message	Description
B0	Intrusion	The intrusion-detection switches have been set. <b>Action:</b> Check that the covers are attached correctly. Then, verify that there has been an intrusion.
B8	Display Fail	The information panel has failed. <b>Action:</b> Check the cable connections to the front panel.
C0	SMI Error	A critical error has occurred. <b>Action:</b> Review the error logs in the Configuration/Setup Utility program for information on the error.
C1	Memory Fail	A double-bit ECC system memory error has occurred. <b>Action:</b> Review the error logs in the Configuration/Setup Utility program for information on the error.

**Note:** Critical temperature and voltage messages are accompanied by a system shutdown. You can override the shutdown by subsequently turning on the server. Be aware that if you shut down and restart the server, no further messages will be generated even though the faulty condition might still exist. To re-enable message generation, remove all server ac power cords, wait 30 seconds, and then reconnect the server ac power cords.

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## Troubleshooting

You can use the troubleshooting charts in this section to find solutions to problems that have definite symptoms.

Do the following before using the troubleshooting charts:

1. Check to make sure that all cables and cords are securely connected to the rear of the server and to attached options.
2. Remove any software or device that you just installed.
3. Run any diagnostic tests that come with the options that you have installed.
4. Run the server diagnostic tests.
5. Check to see if the system error logs in the Configuration/Setup Utility program provide additional information on the error.
6. Reinstall the new software or new device.
7. Refer to <http://www3.ibm.com/pc/support> on the World Wide Web for answers to frequently asked questions, technical updates, BIOS updates, updates to device drivers, and many other sources of technical support.
8. If the error persists, use the troubleshooting charts. Look for the symptom in the left column of the chart. Instructions and probable solutions to the problem are in the right column.

**Note:** If you cannot find the problem in the troubleshooting charts, continue with "Running the diagnostic programs" on page 122 to test the server. If you have run the diagnostic test programs or if running the tests does not reveal the problem, have the system serviced.

<b>CD-ROM drive problems</b>	<b>Action</b>
The CD is not working properly.	<p>Clean the CD by wiping it with a soft, lint-free cloth, from the center of the CD to the outer edge. Do not clean in a circular pattern. This can cause loss of data.</p> <p>If this does not correct the problem, clean the optical-head lens. Discs for cleaning the lens are available from your place of purchase.</p>
The CD-ROM drive tray is not working.	The server must be turned on. If the system is on and the tray does not eject, insert the end of a paper clip into the small hole (to the left of the tray eject/load button) on the front of the CD-ROM drive, and push in approximately 25.4 mm (1 in.).
The server programs do not recognize the CD-ROM drive.	Use the Configuration/Setup Utility program to verify that the CD-ROM drive is enabled.
<b>Diskette drive problems</b>	<b>Action</b>
Diskette Drive In-Use light stays on, or the system bypasses the diskette drive.	<p>If there is a diskette in the drive, verify that:</p> <ol style="list-style-type: none"> <li>1. The diskette is good and not damaged. (Try another diskette, if you have one.)</li> <li>2. The diskette is inserted correctly (label up and metal-shutter end first) in the drive.</li> <li>3. The diskette contains the necessary files to start the system.</li> <li>4. The system is not in unattended-start mode (see "System security" on page 25).</li> <li>5. The diskette drive is enabled. Check the drive startup sequence setting in the Configuration/Setup Utility program (see "Start options" on page 28).</li> <li>6. Your software program is OK (see the <b>Software problems</b> troubleshooting chart provided later in this section).</li> <li>7. Your drive startup sequence is set correctly (see "Start options" on page 28).</li> </ol> <p>If the Diskette Drive In-Use light stays on, or the system continues to bypass the diskette drive, have the system serviced.</p>
<b>Monitor self-tests</b>	<b>Action</b>
	<p>Some IBM monitors have their own self-tests. If you suspect a problem with your monitor, refer to the information that comes with the monitor for adjusting and testing instructions.</p> <p>If you still cannot find the problem, have the monitor and system serviced.</p>

<b>Monitor problems</b>	<b>Action</b>
Wavy, unreadable, rolling, distorted screen, or screen jitter.	<p>Verify that the correct device driver is properly installed.</p> <p>If the monitor self-tests show that the monitor is OK, consider the location of the monitor. Magnetic fields around other devices (such as transformers, appliances, fluorescent lights, and other monitors) can cause screen jitter or wavy, unreadable, rolling, or distorted screen images. If this happens, turn off the monitor. (Moving a color monitor while it is turned on might cause screen discoloration.) Then, move the device and the monitor at least 305 mm (12 in.) apart. Turn on the monitor.</p> <p><b>Notes:</b></p> <ol style="list-style-type: none"> <li>1. The distance between monitors and diskette drives should be at least 76 mm (3 in.) to prevent diskette drive read/write errors.</li> <li>2. Non-IBM monitor cables might cause unpredictable problems.</li> <li>3. An enhanced monitor cable with additional shielding is available for the 9521 and 9527 monitors. See your IBM reseller or IBM marketing representative for information on the enhanced monitor cable.</li> </ol> <p>If the problem recurs, have the monitor and system serviced.</p>
The monitor works when you turn on the system, but goes blank when you start some application programs.	<p>Verify that the primary monitor cable is connected to the video port.</p> <p>Be sure that you installed the necessary drivers for the application.</p>
Blank screen	<p>Verify that:</p> <ol style="list-style-type: none"> <li>1. The server power cord is plugged into the server and a working electrical outlet.</li> <li>2. The monitor power cord is plugged into the monitor and a working electrical outlet.</li> <li>3. The monitor is turned on and the Brightness and Contrast controls are adjusted correctly.</li> <li>4. The monitor signal cable is connected to the correct connector on the system.</li> </ol> <p>If the items above are correct and the screen remains blank, have the system serviced.</p>
Only the cursor appears.	Have the system serviced.
Wrong characters appear on the screen.	Have the system serviced.
<b>General problems</b>	<b>Action</b>
problems such as indicator lights not working.	Have the system serviced.
System continuously restarts.	Run the diagnostic programs. If the problem recurs, have the system serviced.
Server does not respond to the Power On or Reset button.	<p>Unattended-start mode might be enabled; enter the user password to disable unattended-start mode and try again (see "System security" on page 25).</p> <p>If the server still does not respond, have the system serviced.</p>

<b>Intermittent problems</b>	<b>Action</b>
A problem occurs only occasionally and is difficult to detect.	<p>Verify that:</p> <ol style="list-style-type: none"> <li>1. All cables and cords are securely connected to the rear of the system and to attached options.</li> <li>2. The last external device in each SCSI chain is terminated correctly. (See "Hard disk drives" on page 82 for more information on SCSI termination.)</li> </ol> <p>If the items above are correct, have the system serviced.</p>
<hr/>	
<b>Keyboard, mouse, or pointing-device problems</b>	<b>Action</b>
All or some keys on the keyboard do not work.	<p>Do the following:</p> <ol style="list-style-type: none"> <li>1. Verify that the keyboard cable is properly connected to the system and that the system and the monitor are turned on.</li> <li>2. Attach another keyboard to the keyboard connector.</li> </ol> <p>If the problem persists, have the system serviced.</p>
The mouse or pointing device does not work.	<p>Do the following:</p> <ol style="list-style-type: none"> <li>1. Verify that the mouse or pointing-device cable is securely connected.</li> <li>2. Verify that the device drivers are installed correctly.</li> <li>3. Attach another mouse or pointing device to the pointing-device port.</li> </ol> <p><b>Note:</b> The pointing-device port is also known as the auxiliary-device port or mouse port.</p> <p>If the problem recurs, have the system and the device serviced.</p>
<hr/>	
<b>Memory problems</b>	<b>Action</b>
The amount of memory displayed is less than the amount of memory installed.	<p>Verify that:</p> <ol style="list-style-type: none"> <li>1. The memory modules and memory boards are seated properly.</li> <li>2. You have installed the correct type of memory (see "Installing DIMMs and memory boards" on page 54).</li> <li>3. If you changed the memory, you must update the configuration by running the Configuration/Setup Utility program (see "Using the Configuration/Setup Utility main menu" on page 22).</li> </ol> <p>If the above items are correct, run the memory diagnostic program. The system might have detected a defective memory module and automatically reallocated memory to enable you to continue to operate. If the memory tests fail, have the system serviced or replace the failing DIMM.</p>
<hr/>	
<b>Option problems</b>	<b>Action</b>
An IBM option that was just installed does not work.	<p>Verify that:</p> <ol style="list-style-type: none"> <li>1. The option is designed for your server. For a list of supported options, refer to <a href="http://www.ibm.com/pc/us/compat/">http://www.ibm.com/pc/us/compat/</a> on the World Wide Web.</li> <li>2. You followed the installation instructions that were supplied with the option.</li> <li>3. The option is installed correctly.</li> <li>4. You have not loosened any other installed options or cables.</li> <li>5. You updated the configuration information. Whenever you change the memory or an option, you must update the configuration by running the Configuration/Setup Utility program (see "Using the Configuration/Setup Utility main menu" on page 22).</li> </ol> <p>If all of the above items are correct, start the diagnostic programs. If the diagnostic programs find no problem, have the system and the option serviced.</p>

Option problems	Action
An IBM option that used to work does not work now.	<p>Verify that all of the option hardware and cable connections are secure.</p> <p>If the option comes with its own test instructions, use those instructions to test the option.</p> <p>If the items above are correct and the test programs found no problem, have the system and the option serviced.</p> <p>If the failing option is a SCSI option, verify that:</p> <ol style="list-style-type: none"> <li>1. The cables for all external SCSI options are connected correctly.</li> <li>2. The last option in each SCSI chain, or the end of the SCSI cable, is terminated correctly. (See "Termination" on page 83 for more information on SCSI termination.)</li> <li>3. All external SCSI options are turned on. External SCSI options must be turned on before the system is turned on.</li> </ol> <p>If the problem recurs, have the system serviced.</p>
Parallel port problems	Action
The number of parallel ports displayed is less than the number of parallel ports installed.	<p>Verify that:</p> <ol style="list-style-type: none"> <li>1. Each port is assigned a unique address.</li> <li>2. The parallel-port adapter, if you installed one, is seated properly.</li> </ol> <p>If the items above are correct, have the system serviced.</p>
Serial port problems	Action
The number of serial ports displayed is less than the number of serial ports installed.	<p>Verify that:</p> <ol style="list-style-type: none"> <li>1. Each port is assigned a unique address.</li> <li>2. The serial-port adapter, if you installed one, is seated properly.</li> </ol> <p>If the items above are correct, have the system serviced.</p>
Universal Serial Bus (USB) port problems	Action
The number of serial buses displayed is less than the number of serial buses installed.	<p>Verify that:</p> <ol style="list-style-type: none"> <li>1. Each bus is assigned a unique address.</li> <li>2. The serial-port adapter, if you installed one, is seated properly.</li> </ol> <p>If the items above are correct, have the system serviced.</p>
A USB device does not work.	<p>Verify that:</p> <ol style="list-style-type: none"> <li>1. You are not trying to use a USB device during POST if you have a standard (non-USB) keyboard attached to the keyboard port. <ul style="list-style-type: none"> <li><b>Note:</b> If a standard (non-USB) keyboard is attached to the keyboard port, then the USB is disabled and no USB device will work during POST.</li> </ul> </li> <li>2. The correct USB device driver is installed.</li> </ol> <p>If the problem still persists, have the system serviced.</p>

Printer problems	Action
The printer does not work.	<p>Verify that:</p> <ol style="list-style-type: none"> <li>1. The printer is turned on and is online.</li> <li>2. The printer signal cable is connected to the correct serial or parallel port on the system. (For the location of the serial and parallel ports, see "Input/output connectors and expansion slots" on page 12.)</li> </ol> <p><b>Note:</b> Non-IBM printer cables might cause unpredictable problems.</p> <ol style="list-style-type: none"> <li>3. You have assigned the printer port correctly in your operating system or application program.</li> <li>4. You have assigned the printer port correctly using the Configuration/Setup Utility program.</li> </ol> <p>If the items above are correct and the printer still does not work, run the tests described in the manual that comes with your printer. If the tests show the printer is OK, have the system serviced.</p>
Expansion enclosure problems	Action
The SCSI expansion enclosure used to work, but does not now work.	<p>Verify that all of the SCSI expansion enclosure hardware and cable connections are secure.</p> <p>Verify that:</p> <ol style="list-style-type: none"> <li>1. The cables for all external SCSI options are connected correctly.</li> <li>2. The last option in each SCSI chain, or the end of the SCSI cable, is terminated correctly. (See "Termination" on page 83 for more information on SCSI termination.)</li> <li>3. Any external SCSI option is turned on. You must turn on an external SCSI option before turning on the server.</li> </ol> <p>For more information, see your SCSI and expansion enclosure documentation.</p> <p>If the SCSI expansion enclosure comes with its own test instructions, use those instructions to test it. In addition, test the power supply.</p> <p>If the items above are correct and the test programs found no problem, have the server and SCSI expansion enclosure serviced.</p>
Software problem	Action
Suspected software problem	<p>To determine if problems are caused by the software, verify that:</p> <ol style="list-style-type: none"> <li>1. Your system has the minimum memory requirements needed to use the software. Refer to the information supplied with the software to verify memory requirements.</li> </ol> <p><b>Note:</b> If you have just installed an adapter or memory, you might have a memory address conflict (see "Resolving configuration conflicts" on page 34).</p> <ol style="list-style-type: none"> <li>2. The software is designed to operate on your system.</li> <li>3. Other software works on your system.</li> <li>4. The software you are using works on another system.</li> </ol> <p>If you received any error messages when using the software program, refer to the information supplied with the software for a description of the messages and solutions to the problem.</p> <p>If the items above are correct and the problem remains, contact your place of purchase or service technician for help.</p>

## SCSI messages

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<b>Advanced System Management PCI Adapter problems</b>	<b>Action</b>
The Advanced System Management PCI adapter is not working properly	Disconnect the server from all electrical sources, wait for 30 seconds, and reconnect the server to the electrical sources. If the processor error LED (CR2 top) lights continuously, have your system serviced. (See “Advanced System Management PCI adapter component locations” on page 187 for the location of the processor error LED.)

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## SCSI messages

The following table lists messages that reflect problems with the SCSI controller or a SCSI device.

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

You will get these messages only when running the SCSISelect Utility. For more information, see the documentation that comes with the SCSISelect Utility.

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<b>SCSI messages</b>	<b>Description</b>
All	<p>One or more of the following might be causing the problem.</p> <ul style="list-style-type: none"><li>• A failing SCSI device (adapter, drive, controller)</li><li>• An improper SCSI configuration</li><li>• Duplicate SCSI IDs in the same SCSI chain</li><li>• An improperly installed SCSI terminator</li><li>• A defective SCSI terminator</li><li>• An improperly installed cable</li><li>• A defective cable</li></ul> <p><b>Action:</b></p> <p>Verify that:</p> <ul style="list-style-type: none"><li>• The external SCSI devices are turned on. External SCSI devices must be turned on before the system.</li><li>• The cables for all external SCSI devices are connected correctly.</li><li>• The last device in each SCSI chain is terminated correctly. (See “Hard disk drives” on page 82 for more SCSI chain information.)</li><li>• The SCSI devices are configured correctly.</li></ul> <p>If the above are correct, run the diagnostic programs for additional information on the failing device. If the error recurs, have the system serviced.</p>

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### Resolving configuration conflicts

The Configuration/Setup Utility program configures only the server hardware. It does not consider the requirements of the operating system or the application programs. For these reasons, memory-address configuration conflicts might occur.

### Changing the software configuration setup

The best way to resolve memory-address conflicts is to change the software configuration by changing the addresses that the EMS device driver defined. The SVGA video memory occupies 32 Kb (1 Kb = approximately 1000 bits) of space in the hex C0000 to C7FFF EMS memory area. EMS device drivers must use addresses different from those assigned to video read-only memory (ROM). You can use the Configuration/Setup Utility program to view or change the current setting for video ROM. For information on using the Configuration/Setup Utility program, see “Using the Configuration/Setup Utility main menu” on page 22.

### Changing the hardware configuration setup

An alternative way to resolve memory-address conflicts is to change the address of the conflicting hardware option.

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## Identifying problems through status indicators

Your server has status indicators to help you identify problems with some server components. Status indicators are located on the following components:

- Front panel  
For more information, see “Controls and indicators” on page 8 and “Front panel” on page 11.
- Rear panel  
For more information, see “Input/output connectors and expansion slots” on page 12.
- Power supplies  
For more information, see “Power supply LEDs” on page 160.
- LED card (processor and memory)  
For more information, see “LED card (processor and DIMM) LEDs” on page 161.
- PCI slots  
For more information, see “PCI slot LEDs” on page 161.
- I/O board  
For more information, see “I/O board VRM LEDs” on page 162 and “Installing a hot-plug PCI adapter” on page 73.
- Advanced System Management PCI Adapter  
For more information, see “Advanced System Management PCI adapter LEDs” on page 162.
- Hard disk drives

## Identifying problems through status indicators

For more information, see “LEDs for Internal hard disk drives in a ServerRAID environment” on page 162 and “Controls and indicators” on page 8.

### Power supply LEDs

The ac and dc power LEDs on the power supplies provide status information on the power supplies. See “Power supplies” on page 14 for the location of the LEDs.

The following table describes the ac and dc power LEDs.

AC power LED	DC power LED	Description and action
On	On	The power supply is on and operating correctly.
On	Off	<p>There is a dc power problem.</p> <p>Possible causes:</p> <ol style="list-style-type: none"><li>1. The power control button on the front of the server is in the Off position (the dc power LEDs on all the power supplies are off). <b>Action:</b> Press the power control button to start the server.</li><li>2. The power supply has failed (the dc power LED on at least one of the power supplies is off). <b>Action:</b> Replace the power supply. <b>Note:</b> If the the dc power LEDs on all three power supplies are off, have the system serviced.</li><li>3. The power supply is not fully seated in the power supply connector. <b>Action:</b> Reinstall the power supply.</li></ol> <p>If the problem persists, have the system serviced.</p>
Off	Off	<p>There is an ac power problem.</p> <p>Possible causes:</p> <ol style="list-style-type: none"><li>1. There is no ac power to the power supply. <b>Action:</b> Verify that:<ul style="list-style-type: none"><li>• The power cord is properly connected to the server.</li><li>• The electrical outlet functions properly.</li></ul></li><li>2. The power supply has failed. <b>Action:</b> Replace the power supply.</li></ol> <p>If the problem persists, have the system serviced.</p>

## System component status indicators

Status indicators on the LED card behind the processor housing assembly latches, I/O board, and the Advanced System Management PCI Adapter can help identify problems. The indicators are lit during POST to ensure that the indicators operate. After POST completes, the indicators show the status of the component.

For the location of the status indicators, see “Removing the processor housing assembly” on page 60, “I/O board component locations” on page 188, and “Advanced System Management PCI adapter component locations” on page 187.

### LED card (processor and DIMM) LEDs

The eight processor error LEDs and the 16 DIMM error LEDs are located on the LED card, behind the processor housing assembly latches.

1. To locate these LEDs, remove the processor housing assembly (see “Removing the processor housing assembly” on page 60) and open the processor housing assembly latches.
2. To verify which processor is faulty, see step 5 on page 63 and the following table.
3. To verify which DIMM is faulty, see the following table.
4. Reinstall the processor housing assembly (see “Reinstalling the processor housing assembly” on page 69) and restart the server to clear the processor error LEDs or DIMM error LEDs.

#### Notes:

1. The LED card is not a user-removable component. If the LED card requires service, contact your IBM service technician, IBM reseller, or IBM marketing representative.
2. For an illustration that contains the LED card, see “Removing the processor housing assembly” on page 60.
3. For information about replacing processors, see “Installing or replacing a processor” on page 62.
4. For information about replacing DIMMs, see “Installing DIMMs and memory boards” on page 54.

Indicator	Description
Processor fail LED	If a processor is present and has failed, the indicator for the connector (A1–A4 or B1–B4) is on.
Memory fail LED	If a DIMM is present and has failed or is disabled, the indicator for the slot (A1/J1–A16/J16 or B1/J1–B16/J16) is on.

### PCI slot LEDs

The following table describes the PCI slot LEDs on the I/O board.

## Identifying problems through status indicators

Indicator	Description
Power On LED	<p>If a PCI slot is active and power to the slot is present, the indicator for the slot is on. Do not add or remove an adapter from the PCI slot when the Power On LED is on.</p> <p>When this LED is off, the PCI slot is inactive and has no power applied. You can install or remove an adapter when the Power On LED is off. Refer to your operating-system documentation to determine if your operating system supports hot-plug PCI adapters.</p>
Attention/Fail LED	<p>This is a bicolor LED. When an Attention/Fail LED flashes green, it indicates the PCI Hot-Plug Attention function. The meaning of the Attention LED is defined by your operating system. Refer to your operating-system documentation to determine if your operating system supports hot-plug PCI adapters and, if so, what the Attention/Fail LED indicates. When this LED is solid amber, it indicates a failure on the PCI adapter installed in the slot.</p>

### I/O board VRM LEDs

The following table describes the VRM status LED on the I/O board.

Indicator	Description
I/O board VRM status LED	<p>If an I/O board voltage regulator module (VRM) is present and has failed, the indicator for the slot is on.</p>

### Advanced System Management PCI adapter LEDs

The following table describes the LEDs on the Advanced System Management PCI adapter.

Indicator	Description
Power on LED	<p>If power to the Advanced System Management PCI adapter is present, the indicator is on.</p>
Processor error LED	<p>If the processor on the Advanced System Management PCI adapter has failed, the indicator is on.</p>
Ethernet activity LED	<p>If the Ethernet controller on the Advanced System Management PCI adapter is transmitting data or receiving data, the indicator is on.</p>
Ethernet link LED	<p>If an active link to the Ethernet controller on the Advanced System Management PCI adapter is present, the indicator is on.</p>

**Note:** See “Advanced System Management PCI adapter component locations” on page 187 for an illustration of the Advanced System Management PCI adapter LED locations.

### LEDs for Internal hard disk drives in a ServeRAID environment

**Note:** See “Controls and indicators” on page 8 for an illustration of the hard disk drive indicator locations.

Indicator	Description
Hard disk status LED (amber)	<ul style="list-style-type: none"><li>• When this LED is on continuously, the drive has failed.</li><li>• When this LED flashes slowly (one flash per second), the drive is being rebuilt.</li><li>• When this LED flashes rapidly (three flashes per second), the ServeRAID controller is identifying the drive.</li><li>• When this LED is off, the hard disk drive is operating correctly.</li></ul>

---

## Checking the system for damage

This section provides instructions on what to do if your server might be damaged.

### After dropping it

Look for loose cables and obvious damage. If any cables are loose, reconnect them securely. If there is obvious damage to the server, have it serviced.

If you see no damage, turn on the server. If it works correctly, the server probably did not suffer any damage.

**Attention:** Observe all electrostatic precautions listed in this book to avoid damage to your server.

If the server does not work correctly, turn it off and check the adapters and memory modules to ensure that they are connected correctly. Continue with “Electrical safety” on page 43 and follow the instructions for opening your server; then, reseal all adapters and memory modules.

If the server still does not work correctly, run the diagnostic tests from diagnostic utility menu. For information on running tests, see “Running the diagnostic programs” on page 122.

### After spilling liquid on it

If liquid gets on the keyboard:

1. Turn off the server.
2. Unplug the keyboard from the back of the server.
3. Turn the keyboard upside down to drain excess liquid.
4. Dry off the keyboard with a lint-free cloth.

After the keyboard is completely dry, plug it in and turn on the server. If it does not work correctly, have the keyboard serviced.

If liquid gets inside the monitor:

1. Turn off the monitor.
2. Turn off the server.
3. Unplug the monitor from the server and the electrical outlet.
4. Have the monitor serviced immediately.

If liquid gets inside the server:

1. Turn off the server and all attached devices.
2. Unplug the server from the electrical outlet and all attached devices.
3. Have the server serviced immediately.

---

## Replacing the battery

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

### 2



**CAUTION:**

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

***Do not:***

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

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

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

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

To order replacement batteries, call 1-800-388-7080 within the United States, and 1-800-465-7999 or 1-800-465-6666 within Canada. Outside the U.S. and Canada, call your IBM reseller or IBM marketing representative.

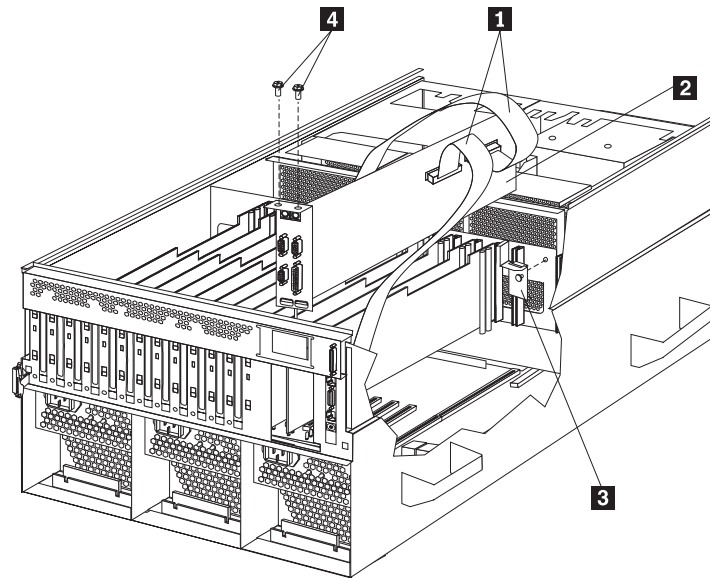
**Before you begin, be sure you have:**

- Read “Electrical safety” on page 43 and “Handling static-sensitive devices” on page 44.
- Followed any special handling and installation instructions supplied with the replacement battery.

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

To replace the battery:

1. Turn off the server and peripheral devices, and disconnect all external cables and power cords (see “Preparing to install options” on page 49); then, remove the top cover (see “Removing the top cover” on page 51).
2. Remove the I/O function card from the server:
  - a. Refer to the following illustration while you perform the steps in this procedure.

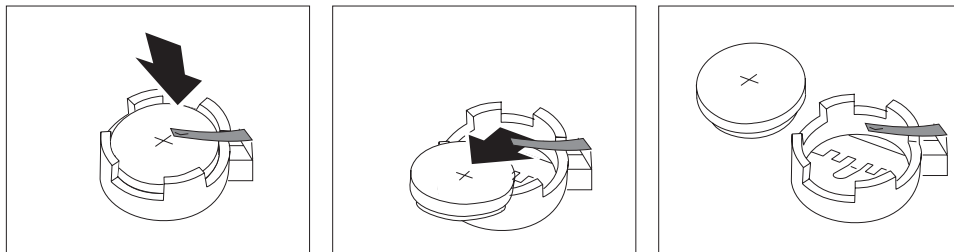


- b. Disconnect all cables **1** from the I/O function card **2**. Note carefully where each cable is connected before you remove it. See “I/O function card component locations” on page 189 for the connector locations on the I/O function card.
    - c. Remove the two screws **4** located on the metal connector plate inside the server.
    - d. Remove the I/O function card retention bracket **3** on the right side of the card by pulling out the fastener on the bracket.
    - e. Carefully grasp the I/O function card by its top edge and pull the I/O function card out of the server.
    - f. Place the I/O function card connector-side up on a flat, static-protective surface.
3. Locate the battery on the I/O function card (see “I/O function card component locations” on page 189).

## Replacing the battery

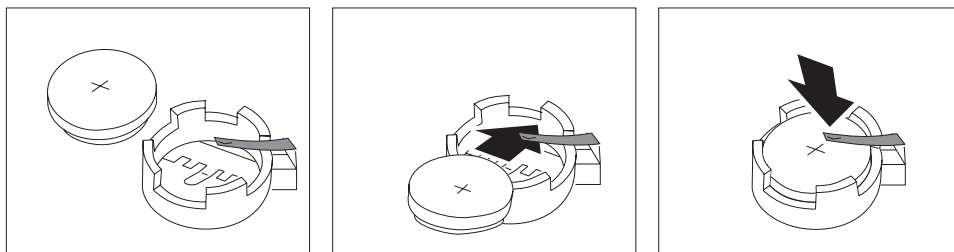
### 4. Remove the battery:

- a. Use one finger to lift the battery clip over the battery.
- b. Use one finger to slightly slide the battery toward the rear of the I/O function card. The spring mechanism behind the battery will push it out toward you as you slide it forward.
- c. Use your thumb and index finger to pull the battery from under the battery clip.
- d. Ensure that the battery clip is touching the base of the battery socket by pressing gently on the clip.



### 5. Insert the new battery:

- a. Tilt the battery so that you can insert it into the front of the socket, under the battery clip.
- b. As you slide it under the battery clip, press the battery down into the socket.



### 6. Install the I/O function card:

- a. Refer to the illustration in step 2a on page 165 while you perform the steps in this procedure.
- b. Carefully grasp the I/O function card by its top edge, and insert the tabs on the bottom edge of the metal connector plate in the matching openings on the server back panel.
- c. Align the I/O function card with the guide on the opposite end of the adapter and the slot on the I/O board.
- d. Press the I/O function card *firmly* into the slot.  
**Attention:** When you install the I/O function card in the server, be sure that it is completely and correctly seated. Incomplete insertion might cause damage to server components.
- e. Reinstall the I/O function card retention bracket that you removed in step 2d on page 165 by pressing in the fastener on the bracket.
- f. Insert the two screws that you removed in step 2c on page 165.



- g. Connect the cables that you disconnected in step 2b on page 165. See “I/O function card component locations” on page 189 for the connector locations on the I/O function card.
7. Reinstall the top cover and complete the installation (see “Completing the installation” on page 92).  
**Note:** You will have to wait approximately 20 seconds after you plug the power cord of your server into an electrical outlet for the Power Control button to become active.
8. Start the Configuration/Setup Utility program and reset configuration parameters as needed.
  - To reset the system date and time, continue with “Date and time” on page 24.
  - To reset the power-on password, continue with “Using the power-on password menu” on page 26.
  - To reconfigure your server, follow the instructions given in “The Configuration/Setup Utility program” on page 21 (all models).

## Replacing the battery

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## Chapter 7. Server records and specifications

Whenever you add options to your server, be sure to update the information in this chapter. Accurate, up-to-date records make it easier to add other options and, if the need should arise, to report a hardware problem.

In addition to server records, this chapter contains specifications. These specifications include product dimensions, environmental operating requirements, component layouts, and jumper settings.

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

### This chapter contains:

Recording the identification numbers . . . . .	170
Recording installed devices . . . . .	170
Specifications . . . . .	181
Changing jumper settings . . . . .	183
Advanced System Management PCI adapter component locations . . . . .	187
I/O board component locations . . . . .	188
I/O function card component locations . . . . .	189
I/O function card jumpers . . . . .	190
Memory board component locations . . . . .	191
Processor-controller board component locations . . . . .	193
Processor-controller board jumpers . . . . .	194
Processor-daughterboard component locations . . . . .	196
SCSI backplane component locations . . . . .	197
Additional server boards . . . . .	197

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### Recording the identification numbers

Record and retain the following information.

<i>Table 13. IBM Netfinity 8500R server identification numbers</i>	
Product Name	IBM Netfinity 8500R server
Machine Type	8681
Model	_____
Serial Number	_____
Key Serial Number	_____

The server serial number and other identification numbers are located on a label at the front of the Netfinity 8500R server, behind the front bezel.

---

### Recording installed devices

Use the following tables to keep a record of the options installed in, or attached to, your system. You can also record your system default configuration settings. This information can be helpful when you install additional options in your server or if you ever need to have your server serviced. Copy these tables before recording information in them, in case you need extra space to write new values later, when you update your system configuration.

**Attention:** Maintaining a record of your configuration information is especially important if you need to move the Clear CMOS register contents jumper, which erases all configuration information (see “I/O function card jumpers” on page 190 for details).

**Note:** If you need to identify system components, refer to the board layouts contained in this chapter.

*Table 14. Internal drives and devices*

Location	Drive or device description
Diskette Drive Bay	_____
CD-ROM Drive Bay	_____
Bay 1	_____
Bay 2	_____

*Table 15. External drives and devices*

SCSI ID	Drive or device description
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____

## Recording installed devices

Table 16 (Page 1 of 7). Configuration/Setup Utility program defaults and changes

Option	Default value	New value	Additional information
<b>System Summary</b>			
Processor A1 <sup>1</sup>	Intel Pentium III Xeon	_____	_____
Processor A2 <sup>1</sup>	_____	_____	_____
Processor A3 <sup>1</sup>	_____	_____	_____
Processor A4 <sup>1</sup>	_____	_____	_____
Processor B1 <sup>1</sup>	_____	_____	_____
Processor B2 <sup>1</sup>	_____	_____	_____
Processor B3 <sup>1</sup>	_____	_____	_____
Processor B4 <sup>1</sup>	_____	_____	_____
Processor Speed	550 MHz	_____	_____
Math Coprocessor	Internal	_____	_____
System Memory		_____	_____
Processor A1 Cache Size		_____	_____
Processor A2 Cache Size	_____	_____	_____
Processor A3 Cache Size	_____	_____	_____
Processor A4 Cache Size	_____	_____	_____
Processor B1 Cache Size	_____	_____	_____
Processor B2 Cache Size	_____	_____	_____
Processor B3 Cache Size	_____	_____	_____
Processor B4 Cache Size	_____	_____	_____
System ROM	F000h — FFFFh	_____	_____
Diskette Drive A	1.44 MB 3.5-inch diskette drive	_____	_____
Primary Master Device	[ CD-ROM ]	_____	_____
Mouse	[ Installed ]	_____	_____
System Memory Type	[ Registered SDRAM ]	_____	_____
<sup>1</sup> Values for these processors vary by model.			
All processors must have the same cache size and type, and the same clock speed.			
<b>System Information</b>			
Product Data			
Machine Type/Model	_____	_____	_____
Flash EEPROM Revision Level	_____	_____	_____
System Board Identifier	_____	_____	_____
System Serial Number	_____	_____	_____
BIOS Date	_____	_____	_____
BIOS Revision Number	_____	_____	_____
SP ROM Build Level	_____	_____	_____
SP ROM Date	_____	_____	_____
SP ROM Revision Level	_____	_____	_____
Diagnostics Revision Level	_____	_____	_____
Diagnostics Date	_____	_____	_____
Diagnostics Version	_____	_____	_____
Change VPD Machine/Model	_____	_____	_____
Type	_____	_____	_____
System Card Data			
Model	_____	_____	_____
Submodel	_____	_____	_____
System Serial	_____	_____	_____
Processor A1			
FRU Number	_____	_____	_____
Unique Number	_____	_____	_____
Mfg ID	_____	_____	_____
Slot Number	_____	_____	_____

Table 16 (Page 2 of 7). Configuration/Setup Utility program defaults and changes

Option	Default value	New value	Additional information
Processor A2			
FRU Number	_____	_____	_____
Unique Number	_____	_____	_____
Mfg ID	_____	_____	_____
Slot Number	_____	_____	_____
Processor A3			
FRU Number	_____	_____	_____
Unique Number	_____	_____	_____
Mfg ID	_____	_____	_____
Slot Number	_____	_____	_____
Processor A4			
FRU Number	_____	_____	_____
Unique Number	_____	_____	_____
Mfg ID	_____	_____	_____
Slot Number	_____	_____	_____
Processor B1			
FRU Number	_____	_____	_____
Unique Number	_____	_____	_____
Mfg ID	_____	_____	_____
Slot Number	_____	_____	_____
Processor B2			
FRU Number	_____	_____	_____
Unique Number	_____	_____	_____
Mfg ID	_____	_____	_____
Slot Number	_____	_____	_____
Processor B3			
FRU Number	_____	_____	_____
Unique Number	_____	_____	_____
Mfg ID	_____	_____	_____
Slot Number	_____	_____	_____
Processor B4			
FRU Number	_____	_____	_____
Unique Number	_____	_____	_____
Mfg ID	_____	_____	_____
Slot Number	_____	_____	_____
Memory Card A			
FRU Number	_____	_____	_____
Unique Number	_____	_____	_____
Mfg ID	_____	_____	_____
Slot Number	_____	_____	_____
Memory Card B			
FRU Number	_____	_____	_____
Unique Number	_____	_____	_____
Mfg ID	_____	_____	_____
Slot Number	_____	_____	_____
Power Supply #1			
FRU Number	_____	_____	_____
Unique Number	_____	_____	_____
Mfg ID	_____	_____	_____
Slot Number	_____	_____	_____
Power Supply #2			
FRU Number	_____	_____	_____
Unique Number	_____	_____	_____
Mfg ID	_____	_____	_____
Slot Number	_____	_____	_____
Power Supply #3			
FRU Number	_____	_____	_____
Unique Number	_____	_____	_____
Mfg ID	_____	_____	_____
Slot Number	_____	_____	_____

## Recording installed devices

Table 16 (Page 3 of 7). Configuration/Setup Utility program defaults and changes

Option	Default value	New value	Additional information
Power Controller			
FRU Number	_____	_____	_____
Unique Number	_____	_____	_____
Mfg ID	_____	_____	_____
Slot Number	_____	_____	_____
Front Panel			
FRU Number	_____	_____	_____
Unique Number	_____	_____	_____
Mfg ID	_____	_____	_____
Slot Number	_____	_____	_____
I/O Board			
FRU Number	_____	_____	_____
Unique Number	_____	_____	_____
Mfg ID	_____	_____	_____
Slot Number	_____	_____	_____
I/O Function Card			
FRU Number	_____	_____	_____
Unique Number	_____	_____	_____
Mfg ID	_____	_____	_____
Slot Number	_____	_____	_____
SCSI Backplane			
FRU Number	_____	_____	_____
Unique Number	_____	_____	_____
Mfg ID	_____	_____	_____
Slot Number	_____	_____	_____
System Management			
FRU Number	_____	_____	_____
Unique Number	_____	_____	_____
Mfg ID	_____	_____	_____
Slot Number	_____	_____	_____
LED Card			
FRU Number	_____	_____	_____
Unique Number	_____	_____	_____
Mfg ID	_____	_____	_____
Slot Number	_____	_____	_____
Midplane			
FRU Number	_____	_____	_____
Unique Number	_____	_____	_____
Mfg ID	_____	_____	_____
Slot Number	_____	_____	_____
Processor Controller Board			
FRU Number	_____	_____	_____
Unique Number	_____	_____	_____
Mfg ID	_____	_____	_____
Slot Number	_____	_____	_____
Processor-daughterboard A			
FRU Number	_____	_____	_____
Unique Number	_____	_____	_____
Mfg ID	_____	_____	_____
Slot Number	_____	_____	_____
Processor-daughterboard B			
FRU Number	_____	_____	_____
Unique Number	_____	_____	_____
Mfg ID	_____	_____	_____
Slot Number	_____	_____	_____
Cache Coherency Filter Card A			
FRU Number	_____	_____	_____
Unique Number	_____	_____	_____
Mfg ID	_____	_____	_____
Slot Number	_____	_____	_____



Table 16 (Page 4 of 7). Configuration/Setup Utility program defaults and changes

Option	Default value	New value	Additional information
Cache Coherency Filter Card B	_____	_____	_____
FRU Number	_____	_____	_____
Unique Number	_____	_____	_____
Mfg ID	_____	_____	_____
Slot Number	_____	_____	_____
<b>Devices and I/O Ports</b>			
Serial Port A	[ Port 3F8, IRQ 4 ]	_____	_____
Serial Port B	[ Port 2F8, IRQ 3 ]	_____	_____
Parallel Port	[ Port 378 ]	_____	_____
Parallel Port Mode	[ Standard ]	_____	_____
Parallel Port IRQ	[ IRQ 7 ]	_____	_____
Parallel Port DMA	None	_____	_____
Mouse	[ Installed ]	_____	_____
Diskette Controller	[ Enabled ]	_____	_____
Diskette Drive A	1.44 MB 3.5-inch	_____	_____
Video			
Video Controller	S3 Incorporated Trio3D	_____	_____
Video Memory	4096 KB	_____	_____
IDE Configuration Menu			
Primary IDE Channel	[ Enabled ]	_____	_____
Primary Master Device			
Device Type	CD-ROM	_____	_____
Size	650 MB	_____	_____
Transfer Selection	Autoconfigure	_____	_____
Transfer mode	PIO Mode 3	_____	_____
LBA mode <sup>2</sup>	Supported	_____	_____
<sup>2</sup> LBA = logical block access			
<b>Date and Time</b>			
Time	[ Hour:Minute:Second ]	_____	_____
Date	[ MM/DD/YYYY ]	_____	_____
<b>System Security</b>			
Power-On Password		_____	_____
Allow for unattended boot with password	[ On ]	_____	_____
Administrator Password		_____	_____
Power-on password changeable by user	[ No ]	_____	_____
<b>Start Options</b>			
Keyboard NumLock State	[ On ]	_____	_____
Keyboard Speed	[ Fast ]	_____	_____
Disketteless Operation	[ Disabled ]	_____	_____
Displayless Operation	[ Disabled ]	_____	_____
Keyboardless Operation Mode	[ Disabled ]	_____	_____
First Startup Device	[ CD-ROM ]	_____	_____
Second Startup Device	[ Diskette Drive 0 ]	_____	_____
Third Startup Device	[ Hard Disk 0 ]	_____	_____
Fourth Startup Device	[ Network ]	_____	_____
Power On Self Test	[ Quick ]	_____	_____
Virus Detection <sup>3</sup>	[ Enabled ]	_____	_____
<sup>3</sup> The Virus Detection test checks for changes to the boot sector.			

## Recording installed devices

Table 16 (Page 5 of 7). Configuration/Setup Utility program defaults and changes

Option	Default value	New value	Additional information
<b>Advanced Setup</b>			
Processor Serial Number Access	[ Disabled ]		
PCI Slot/Device Information <sup>4</sup>			
Slot 0 <sup>5</sup>			
Bus	00		
Dev	02		
Function	00		
Device Type	Bridge Device		
Slot 1			
Bus	Empty Slot		
Dev			
Function			
Device Type			
Slot 2			
Bus	Empty Slot		
Dev			
Function			
Device Type			
Slot 3			
Bus	Empty Slot		
Dev			
Function			
Device Type			
Slot 4			
Bus	Empty Slot		
Dev			
Function			
Device Type			
Slot 5			
Bus	Empty Slot		
Dev			
Function			
Device Type			
Slot 6			
Bus	Empty Slot		
Dev			
Function			
Device Type			
Slot 7			
Bus	Empty Slot		
Dev			
Function			
Device Type			
Slot 8			
Bus	Empty Slot		
Dev			
Function			
Device Type			
Slot 9			
Bus	Empty Slot		
Dev			
Function			
Device Type			
<p><sup>4</sup>Before setting values, review "Resolving configuration conflicts" on page 34 and follow the instructions for avoiding configuration conflicts.</p> <p><sup>5</sup>Slot 0 contains information about all of the on-board devices (built-in functions in the server) as well as the Advanced System Management PCI adapter. These on-board devices include video, USB, SCSI, and so on.</p>			

Table 16 (Page 6 of 7). Configuration/Setup Utility program defaults and changes

Option	Default value	New value	Additional information
Slot 10	Empty Slot	_____	_____
Bus	_____	_____	_____
Dev	_____	_____	_____
Function	_____	_____	_____
Device Type	_____	_____	_____
Slot 11	Empty Slot	_____	_____
Bus	_____	_____	_____
Dev	_____	_____	_____
Function	_____	_____	_____
Device Type	_____	_____	_____
Slot 12	Empty Slot	_____	_____
Bus	_____	_____	_____
Dev	_____	_____	_____
Function	_____	_____	_____
Device Type	_____	_____	_____
Cache Control			
Processor Cache Type	[ Write-back ]	_____	_____
Processor Cache State	[ Enabled ]	_____	_____
Processor A1 Cache Size	1024 KB	_____	_____
Processor A2 Cache Size	0 KB	_____	_____
Processor A3 Cache Size	0 KB	_____	_____
Processor A4 Cache Size	0 KB	_____	_____
Processor B1 Cache Size	0 KB	_____	_____
Processor B2 Cache Size	0 KB	_____	_____
Processor B3 Cache Size	0 KB	_____	_____
Processor B4 Cache Size	0 KB	_____	_____
Memory Settings			
DIMM Slot A1	[ DIMM is Enabled ]	_____	_____
DIMM Slot A2	[ Slot is Empty ]	_____	_____
DIMM Slot A3	[ Slot is Empty ]	_____	_____
DIMM Slot A4	[ Slot is Empty ]	_____	_____
DIMM Slot A5	[ DIMM is Enabled ]	_____	_____
DIMM Slot A6	[ Slot is Empty ]	_____	_____
DIMM Slot A7	[ Slot is Empty ]	_____	_____
DIMM Slot A8	[ Slot is Empty ]	_____	_____
DIMM Slot A9	[ Slot is Empty ]	_____	_____
DIMM Slot A10	[ Slot is Empty ]	_____	_____
DIMM Slot A11	[ Slot is Empty ]	_____	_____
DIMM Slot A12	[ Slot is Empty ]	_____	_____
DIMM Slot A13	[ Slot is Empty ]	_____	_____
DIMM Slot A14	[ Slot is Empty ]	_____	_____
DIMM Slot A15	[ Slot is Empty ]	_____	_____
DIMM Slot A16	[ Slot is Empty ]	_____	_____

## Recording installed devices

Table 16 (Page 7 of 7). Configuration/Setup Utility program defaults and changes

Option	Default value	New value	Additional information
DIMM Slot B1 <sup>6</sup>	[ Slot is Empty ]	_____	_____
DIMM Slot B2 <sup>6</sup>	[ Slot is Empty ]	_____	_____
DIMM Slot B3 <sup>6</sup>	[ Slot is Empty ]	_____	_____
DIMM Slot B4 <sup>6</sup>	[ Slot is Empty ]	_____	_____
DIMM Slot B5 <sup>6</sup>	[ Slot is Empty ]	_____	_____
DIMM Slot B6 <sup>6</sup>	[ Slot is Empty ]	_____	_____
DIMM Slot B7 <sup>6</sup>	[ Slot is Empty ]	_____	_____
DIMM Slot B8 <sup>6</sup>	[ Slot is Empty ]	_____	_____
DIMM Slot B9 <sup>6</sup>	[ Slot is Empty ]	_____	_____
DIMM Slot B10 <sup>6</sup>	[ Slot is Empty ]	_____	_____
DIMM Slot B11 <sup>6</sup>	[ Slot is Empty ]	_____	_____
DIMM Slot B12 <sup>6</sup>	[ Slot is Empty ]	_____	_____
DIMM Slot B13 <sup>6</sup>	[ Slot is Empty ]	_____	_____
DIMM Slot B14 <sup>6</sup>	[ Slot is Empty ]	_____	_____
DIMM Slot B15 <sup>6</sup>	[ Slot is Empty ]	_____	_____
DIMM Slot B16 <sup>6</sup>	[ Slot is Empty ]	_____	_____
<sup>6</sup> Available only with an optional memory board (B) installed. Enabled DIMMs vary by model.			
Processor Settings			
Processor Slot A1	[ Enabled ]	_____	_____
Processor Slot A2	[ Slot Empty ]	_____	_____
Processor Slot A3	[ Slot Empty ]	_____	_____
Processor Slot A4	[ Slot Empty ]	_____	_____
Processor Slot B1 <sup>7</sup>	[ Slot Empty ]	_____	_____
Processor Slot B2 <sup>7</sup>	[ Slot Empty ]	_____	_____
Processor Slot B3 <sup>7</sup>	[ Slot Empty ]	_____	_____
Processor Slot B4 <sup>7</sup>	[ Slot Empty ]	_____	_____
<sup>7</sup> Available only with an optional processor daughterboard (B) installed. Enabled processors vary by model.			
MPS Version	[ 1.4 ]	_____	_____
Modify Front Panel Text			
First line of text	[ IBM Netfinity ]	_____	_____
Second line of text	[ 8500R ]	_____	_____
Save front panel text changes	_____	_____	_____
Set front panel text to default	_____	_____	_____
Error Logs			
POST Error Log	_____	_____	_____
System Error Log	_____	_____	_____
<b>Note:</b> See "Using the Configuration/Setup Utility main menu" on page 22 for a description of the <b>Save Settings</b> , <b>Restore Settings</b> , <b>Load Default Settings</b> , and <b>Exit Setup</b> menu items, and for more information about the Configuration/Setup Utility options that are listed in this table.			

Record the system memory (DIMMs) installed in your server in the following table.

<i>Table 17 (Page 1 of 2). System memory</i>				
Memory connector	DIMM size			Additional information
DIMM A1 (J1) <sup>1</sup>	128 MB <input type="checkbox"/>	256 MB <input type="checkbox"/>	512 MB <input type="checkbox"/>	_____
DIMM A2 (J2)	128 MB <input type="checkbox"/>	256 MB <input type="checkbox"/>	512 MB <input type="checkbox"/>	_____
DIMM A3 (J3)	128 MB <input type="checkbox"/>	256 MB <input type="checkbox"/>	512 MB <input type="checkbox"/>	_____
DIMM A4 (J4)	128 MB <input type="checkbox"/>	256 MB <input type="checkbox"/>	512 MB <input type="checkbox"/>	_____
DIMM A5 (J5)	128 MB <input type="checkbox"/>	256 MB <input type="checkbox"/>	512 MB <input type="checkbox"/>	_____
DIMM A6 (J6)	128 MB <input type="checkbox"/>	256 MB <input type="checkbox"/>	512 MB <input type="checkbox"/>	_____
DIMM A7 (J7)	128 MB <input type="checkbox"/>	256 MB <input type="checkbox"/>	512 MB <input type="checkbox"/>	_____
DIMM A8 (J8)	128 MB <input type="checkbox"/>	256 MB <input type="checkbox"/>	512 MB <input type="checkbox"/>	_____
DIMM A9 (J9)	128 MB <input type="checkbox"/>	256 MB <input type="checkbox"/>	512 MB <input type="checkbox"/>	_____
DIMM A10 (J10)	128 MB <input type="checkbox"/>	256 MB <input type="checkbox"/>	512 MB <input type="checkbox"/>	_____
DIMM A11 (J11)	128 MB <input type="checkbox"/>	256 MB <input type="checkbox"/>	512 MB <input type="checkbox"/>	_____
DIMM A12 (J12)	128 MB <input type="checkbox"/>	256 MB <input type="checkbox"/>	512 MB <input type="checkbox"/>	_____
DIMM A13 (J13)	128 MB <input type="checkbox"/>	256 MB <input type="checkbox"/>	512 MB <input type="checkbox"/>	_____
DIMM A14 (J14)	128 MB <input type="checkbox"/>	256 MB <input type="checkbox"/>	512 MB <input type="checkbox"/>	_____
DIMM A15 (J15)	128 MB <input type="checkbox"/>	256 MB <input type="checkbox"/>	512 MB <input type="checkbox"/>	_____
DIMM A16 (J16)	128 MB <input type="checkbox"/>	256 MB <input type="checkbox"/>	512 MB <input type="checkbox"/>	_____
DIMM B1 <sup>2</sup> (J1) <sup>1</sup>	128 MB <input type="checkbox"/>	256 MB <input type="checkbox"/>	512 MB <input type="checkbox"/>	_____
DIMM B2 <sup>2</sup> (J2)	128 MB <input type="checkbox"/>	256 MB <input type="checkbox"/>	512 MB <input type="checkbox"/>	_____
DIMM B3 <sup>2</sup> (J3)	128 MB <input type="checkbox"/>	256 MB <input type="checkbox"/>	512 MB <input type="checkbox"/>	_____
DIMM B4 <sup>2</sup> (J4)	128 MB <input type="checkbox"/>	256 MB <input type="checkbox"/>	512 MB <input type="checkbox"/>	_____
DIMM B5 <sup>2</sup> (J5)	128 MB <input type="checkbox"/>	256 MB <input type="checkbox"/>	512 MB <input type="checkbox"/>	_____

<sup>1</sup>The connector identifiers on both the standard and the optional memory boards are J1–J16. To distinguish the two memory boards, the system label refers to the connector identifiers as A1–A16 on the standard memory board (A), and B1–B16 on the optional memory board (B).

<sup>2</sup>Available only with an optional memory board (B) installed.

## Recording installed devices

Table 17 (Page 2 of 2). System memory

Memory connector	DIMM size	Additional information
DIMM B6 <sup>2</sup> (J6) <sup>1</sup>	128 MB <input type="checkbox"/> 256 MB <input type="checkbox"/> 512 MB <input type="checkbox"/>	_____
DIMM B7 <sup>2</sup> (J7)	128 MB <input type="checkbox"/> 256 MB <input type="checkbox"/> 512 MB <input type="checkbox"/>	_____
DIMM B8 <sup>2</sup> (J8)	128 MB <input type="checkbox"/> 256 MB <input type="checkbox"/> 512 MB <input type="checkbox"/>	_____
DIMM B9 <sup>2</sup> (J9)	128 MB <input type="checkbox"/> 256 MB <input type="checkbox"/> 512 MB <input type="checkbox"/>	_____
DIMM B10 <sup>2</sup> (J10)	128 MB <input type="checkbox"/> 256 MB <input type="checkbox"/> 512 MB <input type="checkbox"/>	_____
DIMM B11 <sup>2</sup> (J11)	128 MB <input type="checkbox"/> 256 MB <input type="checkbox"/> 512 MB <input type="checkbox"/>	_____
DIMM B12 <sup>2</sup> (J12)	128 MB <input type="checkbox"/> 256 MB <input type="checkbox"/> 512 MB <input type="checkbox"/>	_____
DIMM B13 <sup>2</sup> (J13)	128 MB <input type="checkbox"/> 256 MB <input type="checkbox"/> 512 MB <input type="checkbox"/>	_____
DIMM B14 <sup>2</sup> (J14)	128 MB <input type="checkbox"/> 256 MB <input type="checkbox"/> 512 MB <input type="checkbox"/>	_____
DIMM B15 <sup>2</sup> (J15)	128 MB <input type="checkbox"/> 256 MB <input type="checkbox"/> 512 MB <input type="checkbox"/>	_____
DIMM B16 <sup>2</sup> (J16)	128 MB <input type="checkbox"/> 256 MB <input type="checkbox"/> 512 MB <input type="checkbox"/>	_____
Total Memory	_____	

<sup>1</sup>The connector identifiers on both the standard and the optional memory boards are J1–J16. To distinguish the two memory boards, use the labels provided on the processor housing assembly. These labels refer to the connector identifiers as A1–A16 on the standard memory board (A), and B1–B16 on the optional memory board (B).

<sup>2</sup>Available only with an optional memory board (B) installed.

## Specifications

Table 18 and Table 19 on page 182 contain the specifications for the Netfinity 8500R server.

<i>Table 18. System specifications</i>		
<p><b>Size</b></p> <ul style="list-style-type: none"> <li>• Depth: 747 mm (29.4 in.)</li> <li>• Height: 356 mm (14 in.) (8 U)</li> <li>• Width: 440 mm (17.3 in.)</li> </ul> <p><b>Weight</b></p> <ul style="list-style-type: none"> <li>• Unpacked, minimum configuration: 67 kg (147 lb.)</li> <li>• Unpacked, maximum configuration: 77.5 kg (170 lb.)</li> </ul> <p><b>Electrical input</b></p> <ul style="list-style-type: none"> <li>• Sine-wave input (50± or 60± Hz) is required</li> <li>• Input voltage           <ul style="list-style-type: none"> <li>– Low range               <ul style="list-style-type: none"> <li>- Minimum: 90 V ac</li> <li>- Maximum: 137 V ac</li> </ul> </li> <li>– High range               <ul style="list-style-type: none"> <li>- Minimum: 180 V ac</li> <li>- Maximum: 265 V ac</li> </ul> </li> <li>– Input kilovolt-amperes (KVA) approximately               <ul style="list-style-type: none"> <li>- Minimum configuration as shipped: 0.5 KVA</li> <li>- Maximum configuration: 2.1 KVA</li> </ul> </li> </ul> </li> </ul>	<p><b>Environment</b></p> <ul style="list-style-type: none"> <li>• Air temperature           <ul style="list-style-type: none"> <li>– System on: 10° to 35° C (50° to 95° F) Altitude: 0 to 914 m (3000 ft.)</li> <li>– System on: 10° to 32° C (50° to 89.6° F) Altitude: 0 to 2133 m (7000 ft.)</li> <li>– System off: 10° to 43° C (50° to 110° F)</li> </ul> </li> <li>• Humidity           <ul style="list-style-type: none"> <li>– System on: 8% to 80%; maximum wet-bulb 23° C (73.4° F)</li> <li>– System off: 8% to 80%; maximum wet-bulb 27° C (80.6° F)</li> </ul> </li> </ul> <p><b>Electrostatic discharge</b></p> <ul style="list-style-type: none"> <li>• Tested to 20 KV</li> </ul> <p><b>Immunity</b></p> <ul style="list-style-type: none"> <li>• Verified to comply with EN 50082-2</li> </ul>	<p><b>Acoustical noise emission values</b></p> <p>See Table 19 on page 182.</p> <p><b>Heat output</b></p> <ul style="list-style-type: none"> <li>• Approximate heat output in British thermal units (Btu) per hour:           <ul style="list-style-type: none"> <li>– Minimum configuration: 1700 Btu/hr.</li> <li>– Maximum configuration: 7000 Btu/hr.</li> </ul> </li> </ul> <p><b>Safety standards</b></p> <ul style="list-style-type: none"> <li>• UL 1950, Third Edition</li> <li>• CSA C22.2 No. 950-95</li> <li>• EN 60950 and countries deviations</li> <li>• IEC 950</li> <li>• NOM-019</li> </ul>

*Table 19. Acoustical noise emission values*

Declared (upper limit) sound power levels	Mean value of the A-weighted sound pressure levels at the operator position (if any)	Mean value of the A-weighted sound pressure levels at the bystander (1 meter) position
<ul style="list-style-type: none"> <li>• Netfinity 8500R server (rack server)                             <ul style="list-style-type: none"> <li>– 6.1 bels operating</li> <li>– 6.1 bels idle</li> </ul> </li> <li>• Netfinity 8500T server (tower option)                             <ul style="list-style-type: none"> <li>– 6.2 bels operating</li> <li>– 6.2 bels idle</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>• Netfinity 8500R server (rack server)                             <ul style="list-style-type: none"> <li>– dB operating — Not applicable</li> <li>– dB idle — Not applicable</li> </ul> </li> <li>• Netfinity 8500T server (tower option)                             <ul style="list-style-type: none"> <li>– dB operating — Not applicable</li> <li>– dB idle — Not applicable</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>• Netfinity 8500R server (rack server)                             <ul style="list-style-type: none"> <li>– 45.0 dB operating</li> <li>– 45.0 dB idle</li> </ul> </li> <li>• Netfinity 8500T server (tower option)                             <ul style="list-style-type: none"> <li>– 43.5 dB operating</li> <li>– 43.0 dB idle</li> </ul> </li> </ul>
<p><b>Notes:</b></p> <ol style="list-style-type: none"> <li>1. These levels are measured in controlled acoustical environments according to ISO 7779, and are reported in accordance with ISO 9296. The declared sound power levels indicate an upper limit, below which a large portion of machines operate.</li> <li>2. These values apply to a random sample of machines.</li> <li>3. There is no impulsive noise, and there are no prominent tones.</li> <li>4. For additional information on the Netfinity 8500T server (tower option), refer to <i>IBM Netfinity Rack-to-Tower Conversion Kit Installation Instructions</i>.</li> </ol>		



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## Changing jumper settings

Jumpers located on the I/O function card and processor controller board help you to customize the way your server operates.

Your processor controller board and I/O function card contain two-pin jumper blocks and three-pin jumper blocks, respectively. In some cases, groups of jumpers might combine to define a function.

### Before you begin:

Read “Electrical safety” on page 43 and “Handling static-sensitive devices” on page 44.

To change a jumper setting:

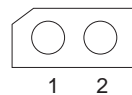
1. Remove the server top cover or front bezel, depending on the location of the jumper (see “Preparing to install options” on page 49).
2. Locate the jumper whose setting you want to change:
  - To change a two-pin jumper block, continue with “Two-pin jumper blocks.”
  - To change a three-pin jumper block, continue with “Three-Pin jumper blocks” on page 184.

### Two-pin jumper blocks

Two-pin jumper blocks are located on the processor controller board.

Covering both pins with a jumper defines one function of the jumper block. To change the function of the jumper block, cover one pin only or remove the jumper entirely.

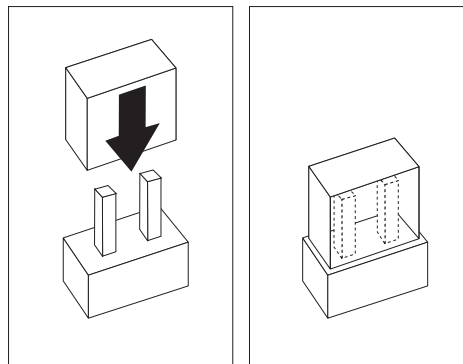
The following illustration identifies pins 1 and 2 on a two-pin jumper block.



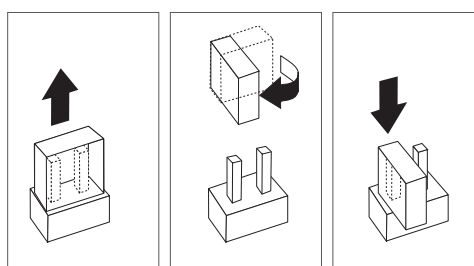
To change the jumper setting on a two-pin jumper block:

1. Lift the jumper straight off the block; then, do one of the following:
  - Align the holes in the bottom of the jumper with the two pins on the pin block, and then slide the jumper carefully onto these pins.

## Changing jumper settings



- Align one of the holes in the bottom of the jumper with one of the pins on the pin block, and then slide the jumper carefully onto that pin only.



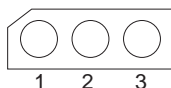
2. Reinstall the server top cover or front access cover and connect the cables (see “Completing the installation” on page 92).

### Three-Pin jumper blocks

Three-pin jumper blocks are located on the I/O function card.

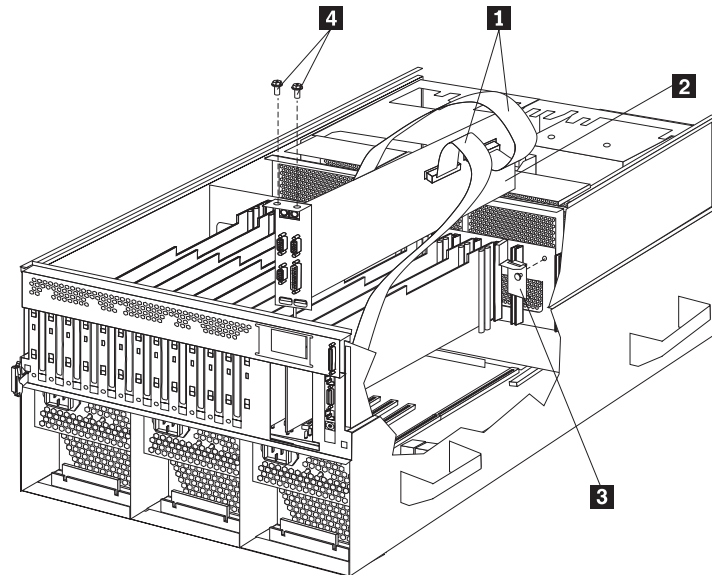
With the three-pin jumper blocks, each jumper covers two of the three pins on a pin block. You can position the jumper to fit over the center pin and either of the other two pins.

The following illustration identifies pins 1, 2, and 3 on the three-pin jumper blocks that are described in this chapter:

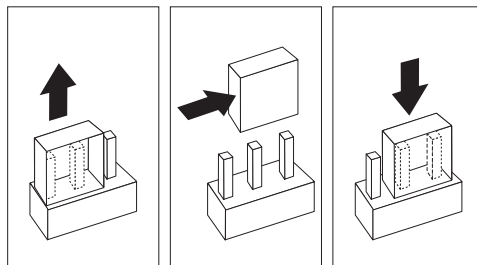


To change the jumper setting on a three-pin jumper block:

1. Remove the I/O function card from the server:
  - a. Refer to the following illustration while you perform the steps in this procedure.



- b. Disconnect all cables **1** from the I/O function card **2**. Note carefully where each cable is connected before you remove it. See “I/O function card component locations” on page 189 for the connector locations on the I/O function card.
  - c. Remove the two screws **4** located on the metal connector plate inside the server.
  - d. Remove the I/O function card retention bracket **3** on the right side of the card by pulling out the fastener on the bracket.
  - e. Carefully grasp the I/O function card by its top edge and pull the I/O function card out of the server.
  - f. Place the I/O function card connector-side up on a flat, static-protective surface.
2. Lift the jumper straight off the pin block.
  3. Align the holes in the bottom of the jumper with the center pin and the pin that was not covered previously.



4. Slide the jumper fully onto these pins.

## Changing jumper settings

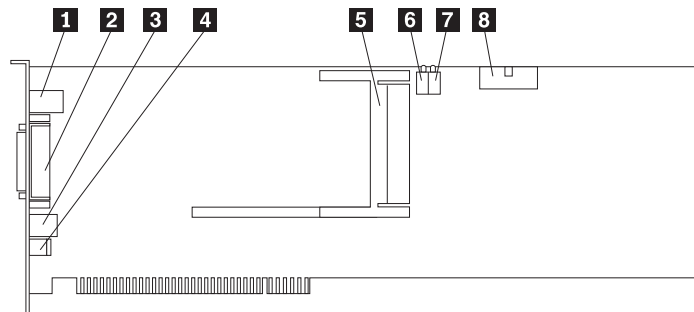
5. Reinstall the I/O function card:
  - a. Refer to the illustration in step 1a on page 184 while you perform the steps in this procedure.
  - b. Carefully grasp the I/O function card by its top edge, and insert the tabs on the bottom edge of the metal connector plate into the matching openings on the server back panel.
  - c. Align the I/O function card with the guide on the opposite end of the adapter and the slot on the I/O board.
  - d. Press the I/O function card *firmly* into the slot.

**Attention:** When you install the I/O function card in the server, be sure that it is completely and correctly seated. Incomplete insertion might cause damage to server components.
  - e. Reinstall the I/O function card retention bracket that you removed in step 1d on page 185 by pressing in the fastener on the bracket.
  - f. Insert the two screws that you removed in step 1c on page 185.
  - g. Connect the cables that you disconnected in step 1b on page 185. See “I/O function card component locations” on page 189 for the connector locations on the I/O function card.
6. Reinstall the server top cover or front access cover and connect the cables (see “Completing the installation” on page 92).

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## Advanced System Management PCI adapter component locations

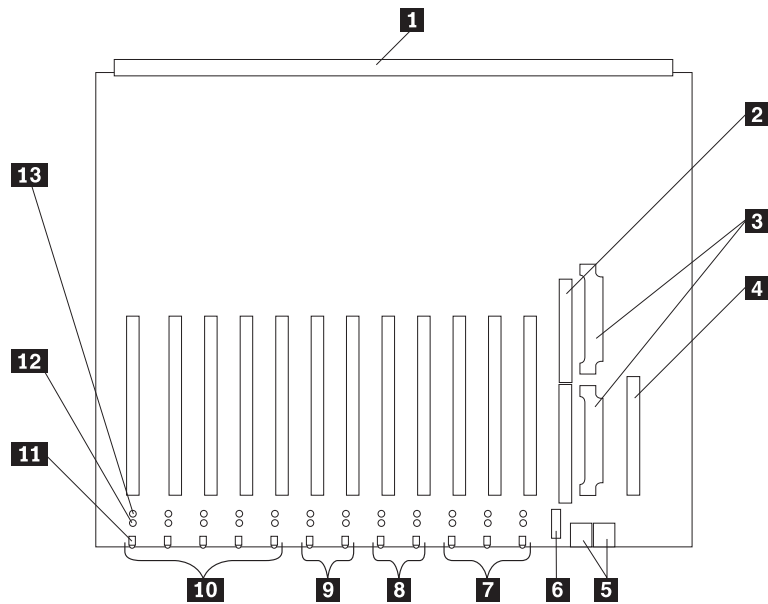
The following simplified layout of the Advanced System Management PCI adapter identifies the components.



- 1** 10/100 Mbps Ethernet port connector (J8)
- 2** Dual serial port connector (J11)
- 3** Advanced System Management Interconnect (formerly RS 485) bus connector (J16)
- 4** External power supply connector (12 V dc jack J19, not used)
- 5** Personal Computer Memory Card International Association (PCMCIA) token-ring connector (J2)
- 6** Power on LED (CR2 bottom, green) and processor error LED (CR2 top, amber)
- 7** Ethernet activity LED (CR3 bottom, amber) and Ethernet link LED (CR3 top, green)
- 8** I/O function card connector (J4)

## I/O board component locations

A simplified layout of the I/O board is shown in the following illustration.

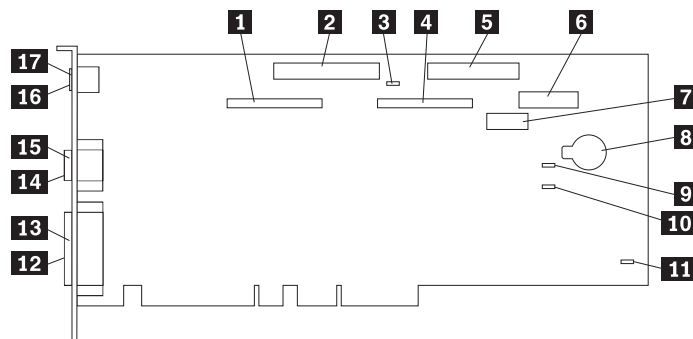


- 1** Midplane connector
- 2** I/O function card slot
- 3** Voltage regulator module (VRM) connectors
- 4** Advanced System Management PCI adapter slot
- 5** USB 1 and USB 2 port connectors
- 6** PCI switch card connector
- 7** Hot-plug, 64-bit, PCI slots 10–12 (bus A, 33 MHz)
- 8** Hot-plug, 64-bit, PCI slots 8–9 (bus B, 66 MHz)
- 9** Hot-plug, 64-bit, PCI slots 6–7 (bus C, 66 MHz)
- 10** Hot-plug, 64-bit, PCI slots 1–5 (bus D, 33 MHz)
- 11** Hot-plug external attention/fail LED for PCI slot (green blink = attention, amber = defective PCI adapter)
- 12** Hot-plug internal attention/fail LED for PCI slot (green blink = attention, amber = defective PCI adapter)
- 13** Hot-plug power LED for PCI slot (green solid, on)

---

## I/O function card component locations

The following simplified layout of the I/O function card identifies the components.



- 1** External SCSI connector (channel A)
- 2** CD-ROM drive connector
- 3** SCSI B detect jumper (J19)
- 4** Internal SCSI connector (channel B)
- 5** Diskette drive connector
- 6** Front panel connector
- 7** Advanced System Management PCI adapter connector
- 8** Battery
- 9** Flash page swap jumper (J13)
- 10** Power-on password override jumper (J14)
- 11** Clear CMOS register contents jumper (J15)
- 12** Video port connector (note 1)
- 13** Parallel port connector
- 14** Serial port A connector
- 15** Serial port B connector
- 16** Keyboard connector (note 2)
- 17** Mouse connector

### Notes:

1. The video port connector is a 15-pin, D-shell connector behind the parallel port connector.
2. The keyboard connector is behind the mouse connector, and is closer to the circuit side of the board.

## I/O function card jumpers

Table 20 describes the jumpers on the I/O function card. The highlighted numbers in the table correspond to the highlighted numbers on the illustration in “I/O function card component locations” on page 189. See “Three-Pin jumper blocks” on page 184 for instructions and an illustration on changing the I/O function card jumper settings.

**Note:** Turn off the server, and disconnect the power cord before moving any jumpers.

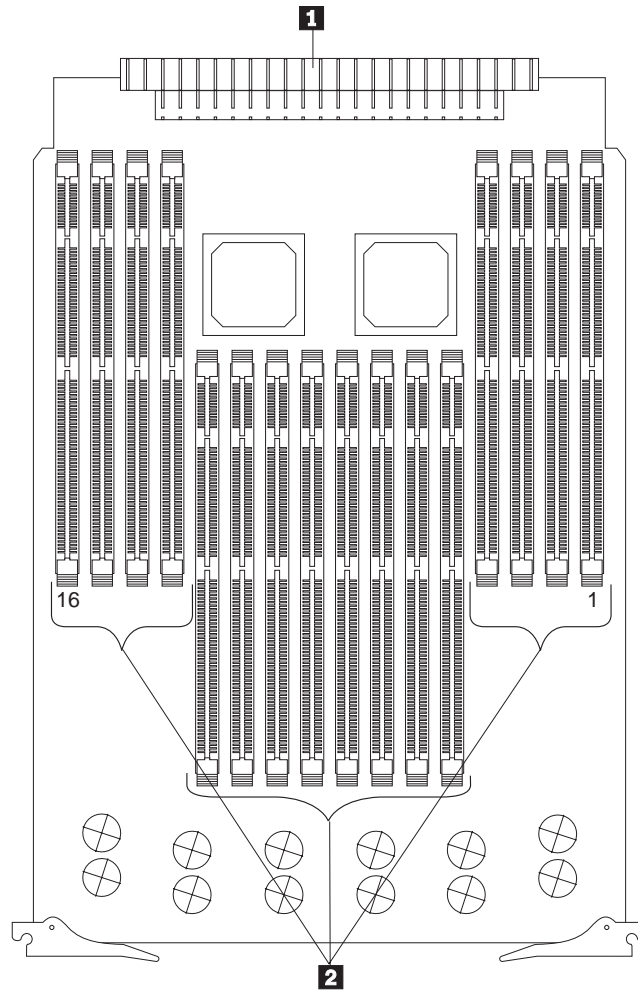
Table 20. I/O function card jumpers	
Jumper name	Description
<b>3</b> J19 SCSI B detect jumper	The default position is a jumper installed on pins 1 and 2. Change the position of this jumper after you disconnect the SCSI cable from the internal SCSI port B and connect the cable to a ServeRAID adapter. See “Cabling internal hard disk drives to a ServeRAID adapter (optional)” on page 78 for additional information.
<b>9</b> J13 Flash page swap	The default position is a jumper installed on pins 2 and 3. Changing the position of this jumper will change which of the two pages of flash ROM is used when the system starts.
<b>10</b> J14 Power-on password override	Changing the position of this jumper bypasses the power-on password check. You do not need to move the jumper back to the default position after the password is overridden.  Changing the position of this jumper does not affect the administrator password check if an administrator password is set.
<b>11</b> J15 Clear CMOS register contents jumper	If you need to <i>erase</i> configuration information, you must move this jumper. The default position is a jumper installed on pins 1 and 2. When you change the position of this jumper, you must remove the battery (see “Replacing the battery” on page 164) on the I/O function card, and then move the jumper to pins 2 and 3. After removing the battery and moving the jumper, wait at least 5 minutes.  Changing the position of this jumper erases all configuration and setup information, including the power-on and administrator passwords. Therefore, you must reconfigure the server after clearing CMOS memory (see “Reconfiguring the server and updating server records” on page 95). If possible, record your server configuration information <i>before</i> moving the Clear CMOS register contents jumper.  After you clear the CMOS register contents, move the jumper back to its normal position (pins 1 and 2); then, reinstall the battery on the I/O function card (see “Replacing the battery” on page 164).



## Memory board component locations

The following simplified layout of a memory board identifies the components. Your server supports two memory boards.

**Note:** Your memory board might look slightly different, depending on the hardware that comes with your server.



- 1** Midplane connector
- 2** DIMM connectors (J1–J16)

See “LED card (processor and DIMM) LEDs” on page 161 for details about the DIMM error LEDs.

See “Installing DIMMs and memory boards” on page 54 for instructions on installing a DIMM on a memory board, and installing a memory board in the server.

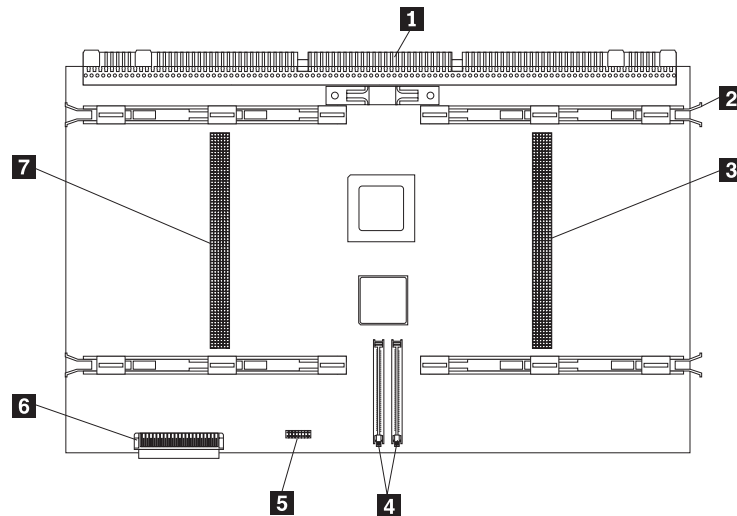
**Notes:**

1. The 100 MHz DIMMs support the registered mode of operation.
2. Install DIMMs with a maximum height of 4.32 cm (1.7 inches).
3. Your server comes with one standard memory board (A), and one or more DIMMs installed on this memory board. You can install an optional memory board (B). Both the standard memory board (A) and the optional memory board (B) contain 16 DIMM connectors (J1–J16).
4. When you install DIMMs in both the standard memory board (A) and the optional memory board (B), you must install them in matching pairs with the same part number, in the same slot on each memory board; for example, J1/J1, J5/J5, J9/J9, and so on.
5. The connector identifiers located on both the standard (A) and the optional (B) memory boards are J1–J16. To distinguish the two memory boards, use the labels provided on the processor housing assembly. These labels refer to the connector identifiers as A1–A16 on the standard memory board, and B1–B16 on the optional memory board.
6. Your server comes with a system label on the server cover. The numbers located to the right of the memory boards on the system label do not indicate DIMM connector identifiers. These numbers indicate the DIMMs; for example, **1** means the first DIMM that you install, **9** means the ninth DIMM that you install, and so on.

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## Processor-controller board component locations

A simplified layout of the processor controller board is shown in the following illustration.



- 1** Midplane connector
- 2** Processor-cage release latches (four)
- 3** Processor-daughterboard slot B connector (secondary slot)
- 4** Cache coherency filter card connectors
- 5** Processor-core-frequency-selection jumper block
- 6** LED card connector
- 7** Processor-daughterboard slot A connector (primary slot)

---

### Processor-controller board jumpers

Table 21 on page 195 describes the jumper on the processor controller board. The highlighted number in the table corresponds to the highlighted number on the illustration in “Processor-controller board component locations” on page 193.

#### Notes:

1. Turn off the server, and disconnect the power cord before moving any jumpers.
2. Be sure the processor bus-to-core ratio is set correctly. For example, if you have a 550 MHz processor installed and the system bus speed is 100 MHz (the default), be sure that the jumpers are set to a bus-to-core ratio of 5.5 (550/100). See Table 21 on page 195.
3. Be sure to set the processor-core-frequency-selection jumper block for the slowest speed processor installed in your server. For example, if your server has a 550 MHz processor installed and you install three 600 MHz processors, set the processor-core-frequency-selection jumper block for the 550 MHz processor.

MHz denotes internal clock speed of the processor only; other factors also affect application performance.

4. For jumper settings for other speed processors, refer to the label on the inside top cover of your server.
5. If you plan to use the processor serial-number security feature, you must change the setting of the **Processor Serial Number** menu choice in the Advanced Setup menu of the Configuration/Setup Utility program. The default value is **Disabled**; change this value to **Enabled**, as described in “Processor serial number access” on page 29.

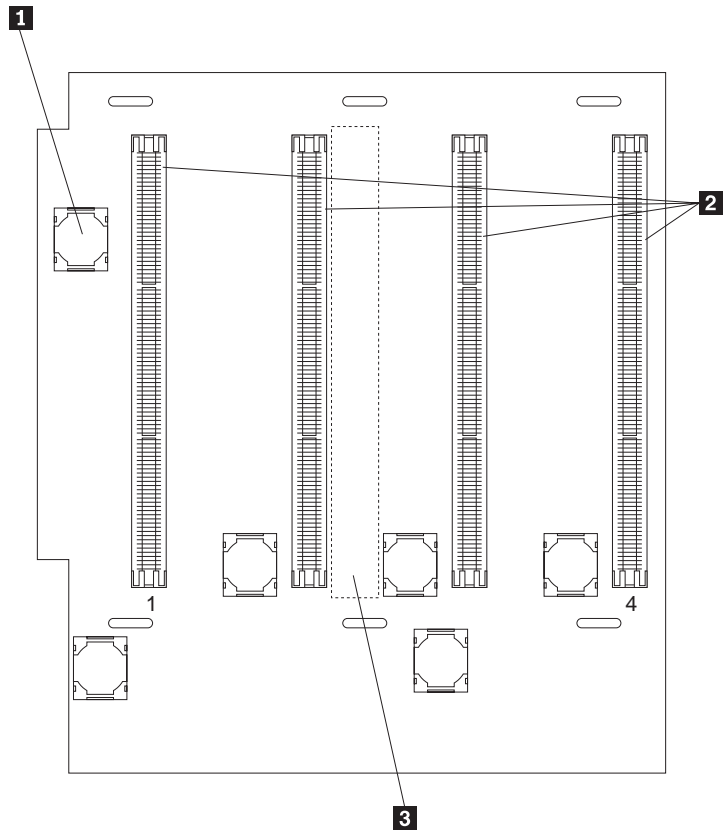
**Attention:** Be sure that the processor bus-to-core ratio jumper is properly set. If the processor bus-to-core ratio does not match the processor speed in your server, your server might operate with a degraded performance or not at all.

Processors listed in Table 21 are not necessarily available or planned for your model. If a processor becomes available for your model, use these switch settings.

<i>Table 21. Processor-controller board jumper</i>	
<b>Jumper name</b>	<b>Description</b>
<b>3</b> Processor-core-frequency-selection	<p>The default core/bus fraction is 5.5 (550/100 MHz). Pins 9/10, 11/12, and 13/14 are closed. Pins 15/16 are open.</p> <p>For the core/bus fraction 6.0 (600/100 MHz), pins 9/10, 11/12, and 13/14 are open. Pins 15/16 are closed.</p> <p>For the core/bus fraction 6.5 (650/100 MHz), pins 9/10 and 15/16 are closed. Pins 11/12 and 13/14 are open.</p> <p>For the core/bus fraction 7.0 (700/100 MHz), pins 9/10 and 11/12 are open. Pins 13/14 and 15/16 are closed.</p> <p>For the core/bus fraction 7.5 (750/100 MHz), pins 9/10, 13/14, and 15/16 are closed. Pins 11/12 are open.</p>
<b>Note:</b>	
Open = No jumper is present.	
Closed = A jumper is present.	

## Processor-daughterboard component locations

A simplified layout of a processor daughterboard is shown in the following illustration. Your server supports two processor daughterboards.

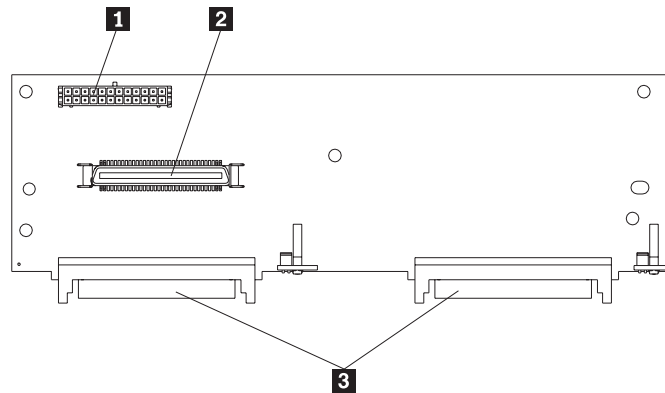


- 1** Voltage regulator modules (VRMs) (six)
- 2** Processor or processor terminator card connectors (A1–A4 or B1–B4)
- 3** Processor-controller board connector (on opposite side of processor daughterboard)

---

## SCSI backplane component locations

The following simplified layout of the SCSI backplane identifies the components. See “SCSI IDs” on page 82 for information on SCSI IDs.



- 1** Media power connector
- 2** Wide (16-bit) SCSI connector
- 3** SCSI hot-swap drive connectors (on opposite side of backplane)

---

## Additional server boards

For details about other server boards, for example, the power control card, refer to the *IBM Netfinity 8500R Server Hardware Maintenance Manual*, part number 37L5123, which is available for purchase. This manual is described in “Related publications” on page xii.





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