



Dell® PowerEdge® 4350 Systems

**INSTALLATION AND
TROUBLESHOOTING
GUIDE**

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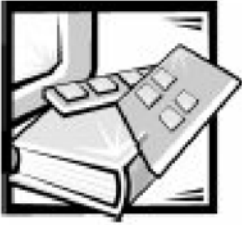
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Safety Instructions

Use the following safety guidelines to help protect your computer system from potential damage and to ensure your own personal safety.

Observe the following warnings while servicing this system:



WARNING: The power supplies in this computer system produce high voltages and energy hazards, which can cause bodily harm. Only trained service technicians are authorized to remove the computer covers and access any of the components inside the computer.



WARNING: This system may have more than one power supply cable. To reduce the risk of electrical shock, a trained service technician must disconnect all power supply cables before servicing the system.



DŮLEŽITÉ UPOZORNĚNÍ: Tento systém může mít více napájecích kabelů. Ke snížení rizika úrazu elektrickým proudem je nutné, aby školený servisní technik před prováděním servisu systému odpojil všechny napájecí kabely.



ADVARSEL: Dette system kan have mere end et strømforlyningskabel. For at reducere risikoen for elektrisk stød, bør en professionel servicetekniker frakoble alle strømforlyningskabler, før systemet serviceres.



VAROITUS: Tässä järjestelmässä voi olla useampi kuin yksi virtajohto. Sähköiskuvaaran pienentämiseksi ammattitaitoisen huoltohenkilön on irrotettava kaikki virtajohtot ennen järjestelmän huoltamista.



ПРЕДУПРЕЖДЕНИЕ: Данная система может иметь несколько кабелей электропитания. Во избежание электрического удара квалифицированный техник должен отключить все кабели электропитания прежде, чем приступить к обслуживанию системы.



OSTRZEŻENIE: System ten może mieć więcej niż jeden kabel zasilania. Aby zmniejszyć ryzyko porażenia prądem, przed naprawą lub konserwacją systemu wszystkie kable zasilania powinny być odłączone przez przeszkolonego technika obsługi.



ADVARSEL! Det er mulig at dette systemet har mer enn én strømledning. Unngå fare for stød: En erfaren servicetekniker må koble fra alle strømledninger før det utføres service på systemet.



WARNING: Detta system kan ha flera nätkablar. En behörig servicetekniker måste koppla loss alla nätkablar innan service utförs för att minska risken för elektriska stötar.

When Using Your Computer System

As you use your computer system, observe the following safety guidelines:

- Be sure your computer, monitor, and attached peripherals are electrically rated to operate with the AC power available in your location.
- To help avoid possible damage to the system board, wait 5 seconds after turning off the system before removing a component from the system board or disconnecting a peripheral device from the computer.
- To help prevent electric shock, plug the computer and peripheral power cables into properly grounded electrical outlets. These cables are equipped with three-prong plugs to help ensure proper grounding. Do not use adapter plugs or remove the grounding prong from a cable. If you must use an extension cable, use a three-wire cable with properly grounded plugs.
- To help protect your computer system from sudden, transient increases and decreases in electrical power, use a surge suppressor, line conditioner, or uninterruptible power supply (UPS).
- Be sure nothing rests on your computer system's cables and that the cables are not located where they can be stepped on or tripped over.
- Do not spill food or liquids on your computer. If the computer gets wet, consult Chapter 7, "Checking Inside the Computer."
- Do not push any objects into the openings of your computer. Doing so can cause fire or electric shock by shorting out interior components.
- Keep your computer away from radiators and heat sources. Also, do not block cooling vents.

Ergonomic Computing Habits



WARNING: Improper or prolonged keyboard use may result in injury.

For comfort and efficiency, observe the following ergonomic guidelines when setting up and using your computer system:

- Position your system so that the monitor and keyboard are directly in front of you as you work. Special shelves are available (from Dell and other sources) to help you correctly position your keyboard.
- Set the monitor at a comfortable viewing distance (usually 510 to 610 millimeters [20 to 24 inches] from your eyes).
- Make sure the monitor screen is at eye level or slightly lower when you are sitting in front of the monitor.

- Adjust the tilt of the monitor, its contrast and brightness settings, and the lighting around you (such as overhead lights, desk lamps, and the curtains or blinds on nearby windows) to minimize reflections and glare on the monitor screen.
- Use a chair that provides good lower back support.
- Keep your forearms horizontal with your wrists in a neutral, comfortable position while using the keyboard or mouse.
- Always leave space to rest your hands while using the keyboard or mouse.
- Let your upper arms hang naturally at your sides.
- Sit erect, with your feet resting on the floor and your thighs level.
- When sitting, make sure the weight of your legs is on your feet and not on the front of your chair seat. Adjust your chair's height or use a footrest, if necessary, to maintain proper posture.
- Vary your work activities. Try to organize your work so that you do not have to type for extended periods of time. When you stop typing, try to do things that use both hands.

When Working Inside Your Computer

Before you remove the computer covers, perform the following steps in the sequence indicated.



WARNING: Before working inside the computer, unplug the system to help prevent electric shock or system board damage. Certain system board components continue to receive power any time the computer is connected to an electrical outlet.



CAUTION: Do not attempt to service the computer system yourself, except as explained in this guide and elsewhere in Dell documentation. Always follow installation and service instructions closely.



CAUTION: To help avoid possible damage to the system board, wait 5 seconds after turning off the system before removing a component from the system board or disconnecting a peripheral device from the computer.

1. Touch an unpainted metal surface on the chassis, such as the metal around the card-slot openings at the back of the computer, before touching anything inside your computer.

While you work, periodically touch an unpainted metal surface on the computer chassis to dissipate any static electricity that might harm internal components.

2. Turn off your computer and any peripherals.
3. Disconnect your computer and peripherals from their power sources. Also, disconnect any telephone or telecommunication lines from the computer.

Doing so reduces the potential for personal injury or shock.

In addition, take note of these safety guidelines when appropriate:

- When you disconnect a cable, pull on its connector or on its strain-relief loop, not on the cable itself. Some cables have a connector with locking tabs; if you are disconnecting this type of cable, press in on the locking tabs before disconnecting the cable. As you pull connectors apart, keep them evenly aligned to avoid bending any connector pins. Also, before you connect a cable, make sure both connectors are correctly oriented and aligned.
- Handle components and cards with care. Don't touch the components or contacts on a card. Hold a card by its edges or by its metal mounting bracket. Hold a component such as a microprocessor chip by its edges, not by its pins.

There is a danger of a new battery exploding if it is incorrectly installed. Replace the battery only with the same or equivalent type recommended by the manufacturer. Discard used batteries according to the manufacturer's instructions.

Protecting Against Electrostatic Discharge

Static electricity can harm delicate components inside your computer. To prevent static damage, discharge static electricity from your body before you touch any of your computer's electronic components, such as the microprocessor. You can do so by touching an unpainted metal surface on the computer chassis.

As you continue to work inside the computer, periodically touch an unpainted metal surface to remove any static charge your body may have accumulated.

You can also take the following steps to prevent damage from electrostatic discharge (ESD):

- When unpacking a static-sensitive component from its shipping carton, do not remove the component from the antistatic packing material until you are ready to install the component in your computer. Just before unwrapping the antistatic packaging, be sure to discharge static electricity from your body.
- When transporting a sensitive component, first place it in an antistatic container or packaging.
- Handle all sensitive components in a static-safe area. If possible, use antistatic floor pads and workbench pads.

The following caution may appear throughout this document to remind you of these precautions:



CAUTION: See "Protecting Against Electrostatic Discharge" in the safety instructions at the front of this guide.



Preface

About This Guide

This guide is intended for trained service personnel who need to upgrade or troubleshoot their Dell PowerEdge 4350 computer system. Before calling Dell for technical assistance, follow the recommended procedure(s) in this guide to solve most hardware and software problems yourself. The chapters and appendixes are summarized as follows:

- Chapter 1, "Introduction," provides a brief overview of the system's service features.
- Everyone should read Chapter 2, "Checking the Basics," for some initial checks and procedures that you can use to solve basic computer problems. It also directs you to the appropriate chapter in this guide for more detailed troubleshooting information and procedures to solve more complex problems.
- Whenever you receive an error message or code, you should read Chapter 3, "Messages and Codes." This chapter discusses system messages, system beep codes, warning messages, diagnostics messages, alert log messages, and small computer system interface (SCSI) hard-disk drive indicator codes.
- If you suspect that the problems are software-related, or you are still having problems after testing the computer's hardware, read Chapter 4, "Finding Software Solutions."
- For hardware-related problems, read Chapter 5, "Running the Dell Diagnostics." Chapter 6, "Checking the Equipment," and Chapter 7, "Checking Inside the Computer," provide troubleshooting procedures for equipment connected to the input/output (I/O) panel of the computer and components inside the computer, respectively.
- Chapter 8, "Installing System Board Options," Chapter 9, "Installing the Diskette and CD-ROM Drives," and Chapter 10, "Installing Hard-Disk Drives," are intended for anyone who wants to install or remove components inside the computer, such as dual in-line memory modules (DIMMs), expansion cards, or SCSI devices.
- Chapter 11, "Rack Installation," describes how to install the Dell PowerEdge 4350 system in a rack.
- Chapter 12, "Getting Help," describes the help tools Dell provides to assist you should you have a problem with the computer. It also explains how and when to

call Dell for technical assistance. Chapter 12 also includes a Diagnostics Checklist that you can copy and fill out as you perform the troubleshooting procedures. If you need to call Dell for technical assistance, use the completed checklist to tell the Dell technical support representative what procedures you performed to better help the representative give you assistance. If you must return a piece of hardware to Dell, include a filled-out checklist.

- Appendix A, “Diagnostic Video Tests,” discusses the tests for the Video Test Group in the Dell Diagnostics to help you test the monitor.
- Appendix B, “Jumpers, Switches, and Connectors,” is intended for anyone who is troubleshooting the system or is adding internal options and needs to change jumper or switch settings.
- A table of the abbreviations and acronyms used throughout this guide and in other Dell documentation for the system precedes the Index.

Other Documentation You May Need

In addition to this *Installation and Troubleshooting Guide*, the following documentation is included with your system:

- The *Dell PowerEdge 4350 Systems User's Guide*, which describes system features and technical specifications, video and SCSI device drivers, the System Setup program, software support utilities, and the Resource Configuration Utility.
- The *HP OpenView Network Node Manager (NNM) Special Edition (SE) x.x With Dell OpenManage HIP x.x User's Guide*, which describes the features, requirements, installation, and basic operation of the server management software. Refer to the software's online help for information about the alert messages issued by the software.

You may also have one or more of the following documents.



*NOTE: Documentation updates are sometimes included with the system to describe changes to the system or software. Always read these updates **before** consulting any other documentation because the updates often contain information that supersedes the information in the other documents.*

- Operating system documentation is included with the system if you ordered the operating system software from Dell. This documentation describes how to install (if necessary), configure, and use the operating system software.
- Documentation is included with any options you purchase separately from the system. This documentation includes information that you need to configure and install these options in your Dell computer.
- Technical information files—sometimes called “readme” files—may be installed on the hard-disk drive or media included with your system to provide last-minute updates about technical changes to the system or advanced technical reference material intended for experienced users or technicians.

Notational Conventions

The following subsections describe notational conventions used in this document.

Notes, Cautions, and Warnings

Throughout this guide, blocks of text may be accompanied by an icon and printed in bold type or in italic type. These blocks are notes, cautions, and warnings, and they are used as follows:



NOTE: A NOTE indicates important information that helps you make better use of your computer system.



CAUTION: A CAUTION indicates either potential damage to hardware or loss of data and tells you how to avoid the problem.



WARNING: A WARNING indicates the potential for bodily harm and tells you how to avoid the problem.

Some warnings may appear in alternate formats and may be unaccompanied by an icon. In such cases, the specific presentation of the warning is mandated by regulatory authority.

Typographical Conventions

The following list defines (where appropriate) specific elements of text and illustrates the typographical conventions used throughout this document as visual cues for those elements:

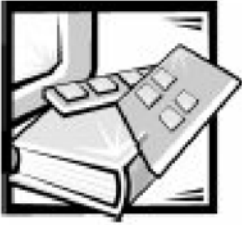
- *Interface components* are window titles, button and icon names, menu names and selections, and other options that appear on the monitor screen or display. They are presented in bold.
Example: Click **OK**.
- *Keycaps*, the labeling that appears on the keys on a keyboard, are enclosed in angle brackets.
Example: <Enter>
- *Key combinations* are series of keys to be pressed simultaneously (unless otherwise indicated) to perform a single function.
Example: <Ctrl><Alt><Enter>
- *Commands* presented in lowercase bold are for reference purposes only and are not intended to be typed when referenced.
Example: "Use the **format** command to . . ."

In contrast, commands presented in the Courier New font are part of an instruction and intended to be typed.

Example: "Type `format a:` to format the diskette in drive A."

- *Filenames and directory names* are presented in lowercase bold.
Examples: **autoexec.bat** and **c:\windows**
- *Syntax lines* consist of a command and all its possible parameters. Commands are presented in lowercase bold; variable parameters (those for which you substitute a value) are presented in lowercase italics; constant parameters are presented in lowercase bold. The brackets indicate items that are optional.
Example: **del** [*drive:*] [*path*] *filename* [**/p**]
- *Command lines* consist of a command and may include one or more of the command's possible parameters. Command lines are presented in the Courier New font.
Example: del c:\myfile.doc
- *Screen text* is a message or text that you are instructed to type as part of a command (referred to as a *command line*). Screen text is presented in the Courier New font.
Example: The following message appears on your screen:

No boot device available
Example: "Type md c:\dos and press <Enter>."
- *Variables* are placeholders for which you substitute a value. They are presented in italics.
Example: DIMM *x* (where *x* represents the DIMM socket designation)



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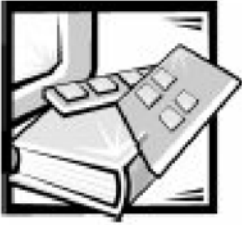
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CHAPTER 1

Introduction

Dell® PowerEdge® 4350 computer systems are high-speed servers that offer significant service and upgrade features.

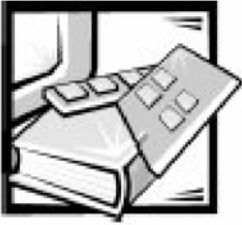
The Dell PowerEdge 4350 systems include the following service features to make troubleshooting easy and effective:

- The Dell Diagnostics program that checks for hardware problems (if the system can boot)
- Embedded server management hardware that monitors temperatures and voltages throughout the system and notifies you if the system overheats or if a system cooling fan malfunctions

The Dell PowerEdge 4350 system chassis simplifies removing and replacing computer components. The two panel doors on top of the chassis allow easy access to the system board for performing processor and memory upgrades. The Dell-designed small computer system interface (SCSI) backplane board and hard-disk drive carriers eliminate the extensive cabling and drive configuration usually required for a SCSI subsystem. The drive rails attached to the CD-ROM drive allow you to remove the device without removing a single screw.

Many upgrade options are offered for the Dell PowerEdge 4350 systems, including the following items:

- An additional microprocessor
- Additional memory
- A variety of expansion-card options (including redundant arrays of independent disks [RAID] controller host adapter cards)
- Additional hard-disk drives
- A Dell Remote Assistant Card (DRAC) for system management
- Redundant power supplies



CHAPTER 2

Checking the Basics

If your Dell PowerEdge 4350 computer system is not working as expected, begin troubleshooting with the procedures in this chapter. This chapter guides you through some initial checks and procedures that can solve basic computer problems. It can also direct you to the appropriate chapter in this guide for detailed troubleshooting information and procedures to solve more complex problems.



NOTE: When you see the question “Is the problem resolved?” in a troubleshooting procedure, perform the operation that caused the problem.

Backing Up Files

If the system is behaving erratically, back up the files immediately. See the documentation that came with the operating system for instructions on how to back up the files.

Basic Checks

The following procedure leads you through the checks necessary to solve some basic computer problems:

1. Was an alert message issued by the Dell OpenManage™ Hardware Instrumentation Package (HIP) server management application program?

Yes. Refer to the online help for HP OpenView Network Node Manager (NNM) Special Edition (SE) for a description of the alert message and for instructions on taking corrective actions.

No. Go to step 2.

2. Is the computer wet or damaged?

Yes. Go to Chapter 7, “Checking Inside the Computer.”

No. Go to step 3.

3. Perform the steps in the next section, "Checking Connections and Switches."
Is the problem resolved?
Yes. The power to the computer system was faulty, or the connections to the computer system were loose. You have fixed the problem.
No. Go to step 4.
4. Follow the procedures described in "Look and Listen" found later in this chapter.
Did the computer system complete the boot routine?
Yes. Go to step 5.
No. A serious malfunction may have occurred. Go to Chapter 12, "Getting Help."
5. Did you receive a system message or beep code?
Yes. Go to Chapter 3, "Messages and Codes."
No. Go to step 6.
6. Verify the settings in the System Setup program as explained in "The System Setup Program" found later in this chapter.
Is the problem resolved?
Yes. The system configuration information was incorrect. You have fixed the problem.
No. Go to step 7.
7. Run the Dell Diagnostics as described in Chapter 5, "Running the Dell Diagnostics."

Checking Connections and Switches

Improperly set switches and controls and loose or improperly connected cables are the most likely source of problems for the computer, monitor, or other peripherals (such as a printer, keyboard, mouse, or other external equipment). A quick check of all the switches, controls, and cable connections can easily solve these problems.

Figure 2-1 shows the back-panel connections on the computer. Figure 2-2 identifies the indicators on the front of the computer. Figure 2-3 shows the lock access panel and the controls inside the computer's bezel door.

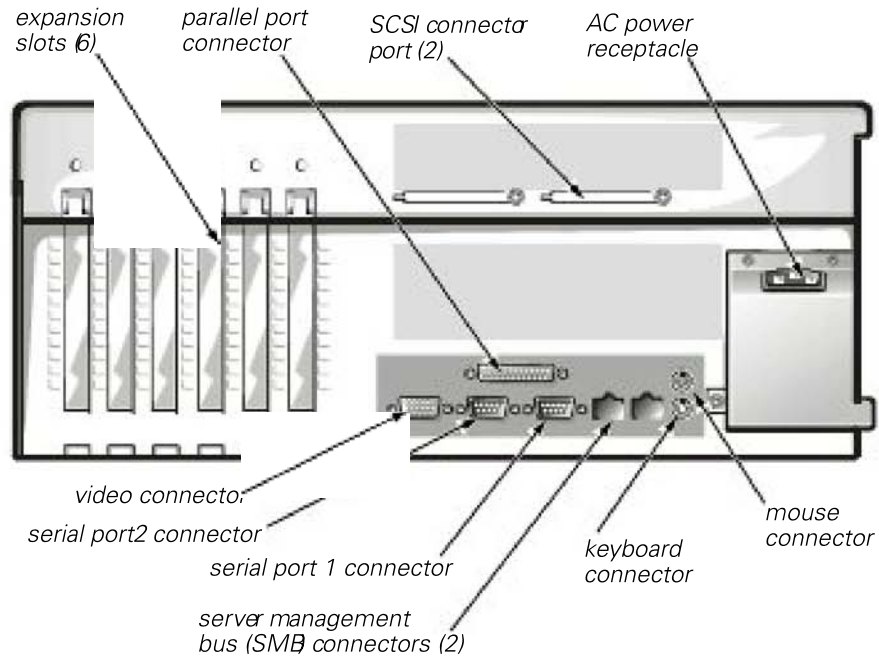


Figure 2-1. Back-Panel Features

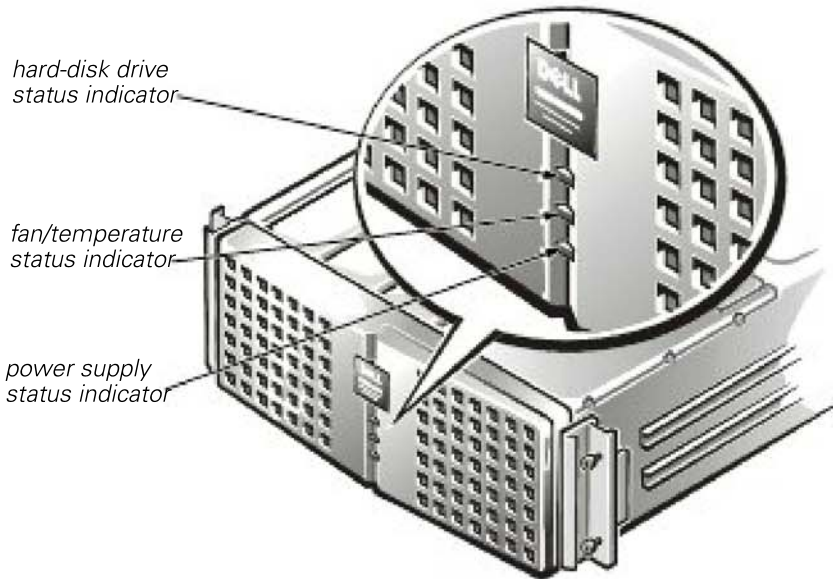


Figure 2-2. Front-Panel Indicators

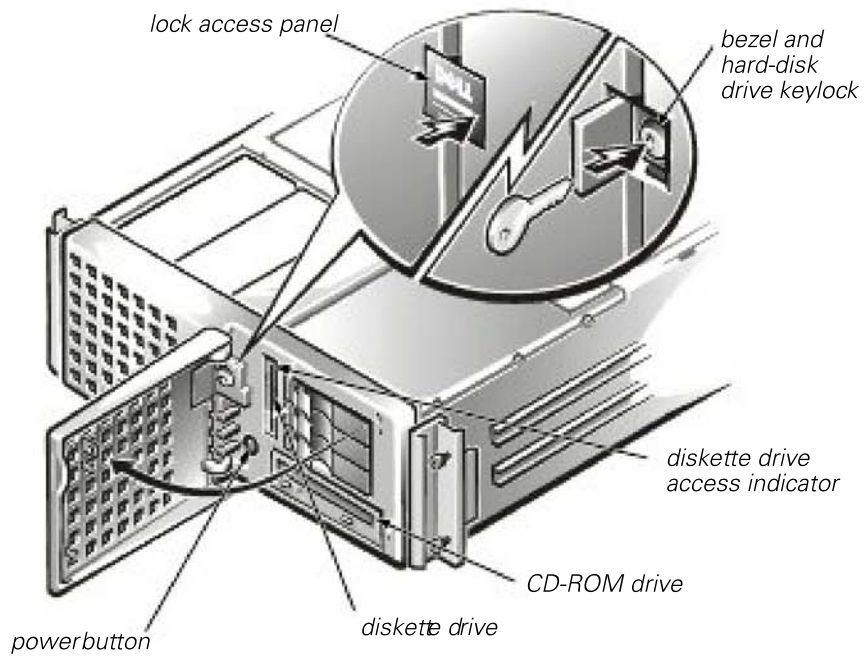


Figure 2-3. Front-Panel Features

Complete the following procedure to check all the connections and switches:

1. Turn off the system, including any attached peripherals (such as the monitor, printer, external drives, scanners, and plotters). Disconnect all the AC power cables from their electrical outlets.
2. If the computer is connected to a power strip, turn the power strip off and then on again.

Is the power strip receiving power?

Yes. Go to step 5.

No. Go to step 3.
3. Plug the power strip into another electrical outlet.

Is the power strip receiving power?

Yes. The original electrical outlet probably does not function. Use a different electrical outlet.

No. Go to step 4.
4. Plug a lamp that you know works into the electrical outlet.

Does the lamp receive power?

Yes. The power strip is probably not functioning properly. Use another power strip.

No. Go to step 5.
5. Reconnect the system to the electrical outlet or power strip.

Make sure that all connections fit tightly together.
6. Turn on the system.

Is the problem resolved?

Yes. The connections were loose. You have fixed the problem.

No. Go to step 7.
7. Is the monitor operating properly?

Yes. Go to step 8.

No. Go to "Troubleshooting the Monitor" in Chapter 6.
8. Is the keyboard operating properly?

Yes. Go to step 9.

No. Go to "Troubleshooting the Keyboard" in Chapter 6.

9. Is the mouse or printer operating properly?

Yes. Continue with the next section, "Look and Listen."

No. Go to "Troubleshooting I/O Ports" in Chapter 6.

Look and Listen

Looking at and listening to the system is important in determining the source of a problem. Look and listen for the indications described in Table 2-1.

Table 2-1. Boot Routine Indications

Look/Listen for:	Action
An error message	See Chapter 3, "Messages and Codes."
Alert messages from the Dell OpenManage HIP software	The server management software has detected a problem inside the computer. Refer to the online help for HP OpenView NNM SE for a description of the alert message and for instructions on taking corrective actions.
The monitor's power indicator	Most monitors have a power indicator (usually on the front bezel). If the monitor's power indicator does not come on, see "Troubleshooting the Monitor" in Chapter 6.
The keyboard indicators	Most keyboards have one or more indicators (usually in the upper-right corner). Press the <Num Lock> key, the <Caps Lock> key, or the <Scroll Lock> key to toggle their respective keyboard indicators on and off. If the indicators do not light up, see "Troubleshooting the Keyboard" in Chapter 6.
The diskette-drive access indicator	The diskette-drive access indicator should quickly flash on and off when you access data on the diskette drive. If the diskette-drive access indicator does not light up, see "Troubleshooting the Diskette Drive Subsystem" in Chapter 7.

NOTE: For the full name of an abbreviation or acronym used in this table, see the abbreviation and acronym list that precedes the Index.

Table 2-1. Boot Routine Indications (continued)

Look/Listen for:	Action
The hard-disk drive activity indicators	The hard-disk drive activity indicators should quickly flash on and off when you access data on the hard-disk drives. On a system running the Microsoft® Windows NT® Server operating system, you can test the drive by opening Microsoft Windows® Explorer and clicking the icon for drive C. If the hard-disk drive access indicator does not come on, see "Troubleshooting SCSI Hard-Disk Drives" in Chapter 7.
A series of beeps	See Chapter 3, "Messages and Codes."
An unfamiliar constant scraping or grinding sound when you access a drive	Make sure the sound is not caused by the application program you are running. The sound could be caused by a hardware malfunction. See Chapter 12, "Getting Help," for instructions on obtaining technical assistance from Dell.
The absence of a familiar sound	When you turn on the system, you should hear the hard-disk drives spin up, and the system trying to access the boot files from the hard-disk drive, the diskette drive, or the CD-ROM drive. See Chapter 5, "Running the Dell Diagnostics." If the system does not boot, see Chapter 12, "Getting Help."

NOTE: For the full name of an abbreviation or acronym used in this table, see the abbreviation and acronym list that precedes the Index.

If you have not resolved the problem after looking at and listening to the computer, continue with the instructions in the next section, "The System Setup Program."

The System Setup Program

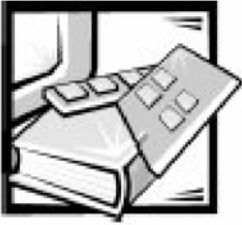
You can easily correct certain system problems by verifying the correct settings in the System Setup program. When you boot the system, the system checks the system configuration information and compares it with the current hardware configuration. If the system hardware configuration does not match the information recorded by the System Setup program, an error message may appear on the screen.

This problem can happen if you changed the system's hardware configuration and forgot to run the System Setup program. To correct this problem, enter the System Setup program, correct the corresponding System Setup setting, and reboot the system. See Chapter 4, "Using the System Setup Program," in the system *User's Guide* for detailed instructions on using the System Setup program.

The Resource Configuration Utility

If you are experiencing problems with the system, you may have a conflict between the information stored by the System Setup program and the Resource Configuration Utility (RCU). Although the RCU can read changes from the System Setup program, changes are not recorded into configuration memory until you run the RCU and save the new information. See Chapter 5, "Using the Resource Configuration Utility," in the system *User's Guide* for detailed instructions on using the RCU and saving new information.

If after using the RCU you have not resolved the problem, see Chapter 5, "Running the Dell Diagnostics."



CHAPTER 3

Messages and Codes

Application programs, operating systems, and the computer itself are capable of identifying problems and alerting you to them. When a problem occurs, a message may appear on the monitor screen or a beep code may sound.

Several different types of messages can indicate when the system is not functioning properly:

- System messages
- System beep codes
- Warning messages
- Diagnostics messages
- Alert messages
- Small computer system interface (SCSI) hard-disk drive indicator codes

This chapter describes each type of message and lists the possible causes and actions you can take to resolve any problems indicated by a message. To determine what type of message you have received, read the following sections.

System Messages

System messages alert you to a possible operating system problem or to a conflict between the software and hardware. Table 3-1 lists the system messages that can occur and the probable cause for each message.



NOTE: If you receive a system message that is not listed in Table 3-1, check the documentation for the application program that is running when the message appears and/or the operating system documentation for an explanation of the message and recommended action.

Table 3-1. System Messages

Message	Cause	Corrective Action
Address mark not found	Faulty diskette drive subsystem or hard-disk drive subsystem (defective system board)	Replace the system board. See Chapter 12, "Getting Help," for instructions on obtaining technical assistance.
Alert! Unbuffered and registered DIMMs cannot be mixed	Combination of unbuffered and registered DIMMs installed	Replace one or more DIMMs so that all DIMMs are the same type. See "Installing DIMMs" and "Removing DIMMs" in Chapter 8.
Attachment failed to respond	Diskette drive or hard-disk drive controller cannot send data to associated drive	Replace the drive's interface cable.
Auxiliary device failure	Loose or improperly connected mouse cable connector or defective mouse	Check the mouse cable connection. If the problem persists, replace the mouse.
Bad error-correction code (ECC) on disk read	Faulty diskette subsystem or hard-disk drive subsystem (defective system board)	Replace the system board. See Chapter 12, "Getting Help," for instructions on obtaining technical assistance.
Controller has failed		
Data error	Faulty diskette, diskette drive, or hard-disk drive	Replace the diskette, diskette drive, or hard-disk drive.
Decreasing available memory	Faulty or improperly seated DIMMs	Remove and reseat the DIMMs. See "Installing DIMMs" and "Removing DIMMs" in Chapter 8. If the problem persists, replace the DIMMs.
Diskette drive 0 seek failure Diskette drive 1 seek failure	Faulty or improperly inserted diskette, incorrect configuration settings in System Setup program, loose diskette drive interface cable, or loose power cable	Replace the diskette. Run the System Setup program to correct the diskette drive type. See Chapter 4, "Using the System Setup Program," in the system <i>User's Guide</i> for instructions. Check the diskette drive-interface cable and power cable connections to the drive.

NOTE: For the full name of an abbreviation or acronym used in this table, see the abbreviation and acronym list that precedes the Index

Table 3-1. System Messages (continued)

Message	Cause	Corrective Action
Diskette read failure	Faulty diskette, faulty or improperly connected diskette drive interface cable, or loose power cable	Check the diskette drive interface cable and power cable connections to the drive. See Chapter 9, "Installing the Diskette and CD-ROM Drives." Replace the diskette drive interface cable.
Diskette subsystem reset failed	Faulty diskette drive controller (defective system board)	Replace the system board. See Chapter 12, "Getting Help," for instructions on obtaining technical assistance.
Diskette write protected	Diskette write-protect feature activated	Move the write-protect tab on the diskette.
Drive not ready	Diskette missing from or improperly inserted in diskette drive	Reinsert or replace the diskette.
Embedded server management error	Embedded server management memory may be temporarily corrupted	Shut down the system to clear the memory, and then restart the system. If the problem persists, see Chapter 12, "Getting Help," for instructions on obtaining technical assistance.
Embedded server management is not present		
Gate A20 failure	Faulty keyboard controller (defective system board)	Replace the system board. See Chapter 12, "Getting Help," for instructions on obtaining technical assistance.
General failure	Operating system corrupted or not installed properly	Reinstall the operating system.
Hard disk controller failure	Incorrect configuration settings in System Setup program, improperly connected hard-disk drive, faulty hard-disk drive controller subsystem (defective system board), or loose power cable	Check the hard-disk drive configuration settings in the System Setup program. See Chapter 4, "Using the System Setup Program," in the system <i>User's Guide</i> for instructions. Reinstall the hard-disk drive. Check the interface cable and power cable connections to the backplane board. See Chapter 10, "Installing Hard-Disk Drives."
Hard disk drive read failure		
Hard disk failure		

NOTE: For the full name of an abbreviation or acronym used in this table, see the abbreviation and acronym list that precedes the Index

Table 3-1. System Messages (continued)

Message	Cause	Corrective Action
Invalid configuration information - please run SETUP program	Incorrect ISA_CLR jumper configuration, incorrect configuration settings in System Setup program, or faulty battery	Remove the plug from the ISA_CLR jumper. See Appendix B, "Jumpers, Switches, and Connectors," for instructions. Check the System Setup configuration settings. See Chapter 4, "Using the System Setup Program," in the system <i>User's Guide</i> for instructions. Replace the battery. See Chapter 8, "Installing System Board Options."
Invalid CPU speed detected - check jumpers	Incorrect microprocessor jumper configuration	Check the microprocessor speed jumper. See Appendix B, "Jumpers, Switches, and Connectors."
Invalid NVRAM configuration, resource reallocated	System detected and corrected a resource conflict when system resources were allocated using the RCU	No action is required.
I/O parity interrupt at address	Expansion card improperly installed or faulty	Reinstall the expansion cards (see Chapter 8, "Installing System Board Options"). If the problem persists, replace the expansion card.
Keyboard clock line failure Keyboard failure	Keyboard cable connector loose or improperly connected, defective keyboard, or defective keyboard/mouse controller (defective system board)	Check the keyboard cable connection. Replace the keyboard. If the problem persists, replace the system board. See Chapter 12, "Getting Help," for instructions on obtaining technical assistance.
Keyboard controller failure	Defective keyboard/mouse controller (defective system board)	Replace the system board. See Chapter 12, "Getting Help," for instructions on obtaining technical assistance.
Keyboard data line failure Keyboard stuck key failure	Keyboard cable connector loose or improperly connected, defective keyboard, or defective keyboard/mouse controller (defective system board)	Check the keyboard cable connection. Replace the keyboard. If the problem persists, replace the system board. See Chapter 12, "Getting Help," for instructions on obtaining technical assistance.

NOTE: For the full name of an abbreviation or acronym used in this table, see the abbreviation and acronym list that precedes the Index

Table 3-1. System Messages (continued)

Message	Cause	Corrective Action
Memory address line failure at <i>address</i> , read value expecting <i>value</i>	Faulty or improperly seated DIMM	Remove and reseal the DIMMs. If the problem persists, replace the DIMMs. See "Adding Memory" in Chapter 8 for instructions on installing or removing DIMMs. If the problem still persists, replace the system board. See Chapter 12, "Getting Help," for instructions on obtaining technical assistance.
Memory double word logic failure at <i>address</i> , read value expecting <i>value</i>		
Memory odd/even logic failure at <i>address</i> , read value expecting <i>value</i>		
Memory write/read failure at <i>address</i> , read value expecting <i>value</i>		
Memory allocation error	Faulty application program	Restart the application program.
Memory parity interrupt at <i>address</i>	Faulty or improperly seated DIMM	Remove and reseal the DIMMs. If the problem persists, replace the DIMMs. See "Adding Memory" in Chapter 8 for instructions on installing or removing DIMMs.
Memory tests terminated by keystroke	POST memory test terminated by pressing the spacebar	No action is required.
No boot device available	Faulty diskette, diskette drive subsystem, hard-disk drive, hard-disk drive subsystem, or no boot disk in drive A	Replace the diskette or hard-disk drive. If the problem persists, replace the system board. See Chapter 12, "Getting Help," for instructions on obtaining technical assistance.

NOTE: For the full name of an abbreviation or acronym used in this table, see the abbreviation and acronym list that precedes the Index

Table 3-1. System Messages (continued)

Message	Cause	Corrective Action
No boot sector on hard-disk drive	Incorrect configuration settings in System Setup program, or no operating system on hard-disk drive	Check the hard-disk drive configuration settings in the System Setup program. See Chapter 4, "Using the System Setup Program," in the system <i>User's Guide</i> for instructions.
No timer tick interrupt	Defective system board	Replace the system board. See Chapter 12, "Getting Help," for instructions on obtaining technical assistance.
Non-system disk or disk error	Faulty diskette, diskette drive subsystem, or hard-disk drive subsystem	Replace the diskette or hard-disk drive. If the problem persists, replace the system board. See Chapter 12, "Getting Help," for instructions on obtaining technical assistance.
Not a boot diskette	No operating system on diskette	Use a bootable diskette.
Not more than 512 MB of memory is allowed with one power supply!	Additional power supplies are required for current system configuration	Reduce amount of memory in system, or upgrade the system by adding a PSPB and additional power supplies.
Only one microprocessor is allowed with one power supply!	Additional power supplies are required for current system configuration	Remove the secondary microprocessor, or upgrade the system by adding a PSPB and additional power supplies.
Only one RAID controller is allowed with one power supply!	Additional power supplies are required for current system configuration	Remove all but one RAID cards in the system, or upgrade the system by adding a PSPB and additional power supplies.
Processor or terminator card not installed!	No microprocessor or terminator card installed in one or more of the microprocessor connectors	Ensure that each microprocessor connector has either a terminator card or a microprocessor installed. See Chapter 8, "Installing System Board Options," for instructions.

NOTE: For the full name of an abbreviation or acronym used in this table, see the abbreviation and acronym list that precedes the Index

Table 3-1. System Messages (continued)

Message	Cause	Corrective Action
Read fault	Faulty diskette, diskette drive subsystem, or hard-disk drive subsystem (defective system board)	Replace the diskette or hard-disk drive. If the problem persists, replace the system board. See Chapter 12, "Getting Help," for instructions on obtaining technical assistance.
Requested sector not found		
Reset failed	Improperly connected diskette drive, hard-disk drive, or power cable	Check the diskette drive interface cable and power cable connections to the diskette drive. See Chapter 9, "Installing the Diskette and CD-ROM Drives." Replace the diskette drive interface cable. Reinstall the hard-disk drive. Check the interface cable and power cable connections to the backplane board. See Chapter 10, "Installing Hard-Disk Drives."
ROM bad checksum = address	Expansion card improperly installed or faulty	Reinstall the expansion cards (see Chapter 8, "Installing System Board Options"). If the problem persists, replace the expansion card.
Sector not found	Defective sectors on diskette or hard-disk drive	Replace the diskette or hard-disk drive.
Seek error	Defective sectors on diskette or hard-disk drive	Replace the diskette or hard-disk drive.
Seek operation failed	Faulty diskette or hard-disk drive	Replace the diskette or hard-disk drive.
Shutdown failure	Defective battery	Replace the battery. See Chapter 8, "Installing System Board Options."
Time-of-day clock stopped	Defective battery or faulty chip (defective system board)	Replace the battery. See Chapter 8, "Installing System Board Options." If the problem persists, replace the system board. See Chapter 12, "Getting Help," for instructions on obtaining technical assistance.

NOTE: For the full name of an abbreviation or acronym used in this table, see the abbreviation and acronym list that precedes the Index

Table 3-1. System Messages (continued)

Message	Cause	Corrective Action
Time-of-day not set	Incorrect Time or Date settings or defective system battery	Check the Time and Date settings. See Chapter 4, "Using the System Setup Program," in the system <i>User's Guide</i> for instructions. If the problem persists, replace the battery as instructed in Chapter 8, "Installing System Board Options."
Timer chip counter 2 failed	Defective system board	Replace the system board. See Chapter 12, "Getting Help," for instructions on obtaining technical assistance.
Unexpected interrupt in protected mode	Faulty or improperly seated DIMM, or defective system board	Remove and reseat the DIMMs. If the problem persists, replace the DIMMs. See "Adding Memory" in Chapter 8 for instructions on installing or removing DIMMs. If the problem still persists, replace the system board. See Chapter 12, "Getting Help," for instructions on obtaining technical assistance.
Unsupported CPU detected in SLOT <i>n</i>	Microprocessor not supported by system	Install a correct version of the microprocessor in the specified microprocessor connector. See Chapter 8, "Installing System Board Options," for instructions.
Unsupported CPU speed in CMOS	Microprocessor not supported by BIOS	Upgrade the BIOS. See Chapter 4, "Using the System Setup Program," in the system <i>User's Guide</i> for instructions.
Write fault Write fault on selected drive	Faulty diskette or hard-disk drive	Replace the diskette or hard-disk drive.

NOTE: For the full name of an abbreviation or acronym used in this table, see the abbreviation and acronym list that precedes the Index

System Beep Codes

When an error that cannot be reported on the monitor occurs during a boot routine, the computer may emit a series of beeps that identify the problem. The *beep code* is a pattern of sounds; for example, one beep followed by a second beep and then a burst of three beeps (code 1-1-3) means that the computer was unable to read the data in nonvolatile random-access memory (NVRAM). This information is valuable to the Dell technical support representative if you need to call for technical assistance.

When a beep code is emitted, write it down on a copy of the Diagnostics Checklist found in Chapter 12, "Getting Help," and then look it up in Table 3-2. If you are unable to resolve the problem by looking up the meaning of the beep code, use the Dell Diagnostics to identify a more serious cause (see Chapter 5, "Running the Dell Diagnostics"). If you are still unable to resolve the problem, see Chapter 12, "Getting Help," for instructions on obtaining technical assistance.

Table 3-2. System Beep Codes

Code	Cause	Corrective Action
1-1-3	NVRAM write/read failure	Replace the system board. See Chapter 12, "Getting Help," for instructions on obtaining technical assistance.
1-1-4	BIOS checksum failure	This fatal error usually requires that you replace the BIOS firmware. See Chapter 12, "Getting Help," for instructions on obtaining technical assistance.
1-2-1	Programmable interval-timer failure	Replace the system board. See Chapter 12, "Getting Help," for instructions on obtaining technical assistance.
1-2-2	DMA initialization failure	
1-2-3	DMA page register write/read failure	
1-3-1	Main-memory refresh verification failure	Remove and reseal the DIMMs. If the problem persists, replace the DIMMs. See "Adding Memory" in Chapter 8 for instructions on installing or removing DIMMs. If the problem still persists, replace the system board. See Chapter 12, "Getting Help," for instructions on obtaining technical assistance.

NOTE: For the full name of an abbreviation or acronym used in this table, see the abbreviation and acronym list that precedes the Index.

Table 3-2. System Beep Codes (continued)

Code	Cause	Corrective Action
1-3-2	No memory installed	Remove and reseal the DIMMs. If the problem persists, replace the DIMMs. See "Adding Memory" in Chapter 8 for instructions on installing or removing DIMMs. If the problem still persists, replace the system board. See Chapter 12, "Getting Help," for instructions on obtaining technical assistance.
1-3-3	Chip or data line failure in the first 64 KB of main memory	
1-3-4	Odd/even logic failure in the first 64 KB of main memory	
1-4-1	Address line failure in the first 64 KB of main memory	
1-4-2	Parity failure in the first 64 KB of main memory	Replace the system board. See Chapter 12, "Getting Help," for instructions on obtaining technical assistance.
2-1-1 through 2-4-4	Bit failure in the first 64 KB of main memory	
3-1-1	Slave DMA-register failure	
3-1-2	Master DMA-register failure	
3-1-3	Master interrupt-mask register failure	Check the keyboard cable and connector for proper connection. If the problem persists, run the Keyboard Test Group in the Dell Diagnostics to determine whether the keyboard or keyboard controller is faulty. See Chapter 5, "Running the Dell Diagnostics." If the keyboard controller is faulty, replace the system board. See Chapter 12, "Getting Help," for instructions on obtaining technical assistance.
3-1-4	Slave interrupt-mask register failure	
3-2-4	Keyboard-controller test failure	
3-3-1	CMOS failure	

NOTE: For the full name of an abbreviation or acronym used in this table, see the abbreviation and acronym list that precedes the Index.

Table 3-2. System Beep Codes (continued)

Code	Cause	Corrective Action
3-3-2	System configuration check failure	Replace the system board. See Chapter 12, "Getting Help," for instructions on obtaining technical assistance.
3-3-3	Keyboard controller not detected	Replace the system board. See Chapter 12, "Getting Help," for instructions on obtaining technical assistance.
3-3-4	Screen initialization failure	Run the Video Test Group in the Dell Diagnostics. See Chapter 5, "Running the Dell Diagnostics."
3-4-1	Screen-retrace test failure	
3-4-2	Search for video ROM failure	
4-2-1	No timer tick	Replace the system board. See Chapter 12, "Getting Help," for instructions on obtaining technical assistance.
4-2-2	Shutdown failure	
4-2-3	Gate A20 failure	Replace the system board. See Chapter 12, "Getting Help," for instructions on obtaining technical assistance.
4-2-4	Unexpected interrupt in protected mode	Ensure that all expansion cards are properly seated, and then reboot the system.
4-3-1	Faulty or improperly seated DIMM	Remove and reseat the DIMMs. If the problem persists, replace the DIMMs. See "Adding Memory" in Chapter 8 for instructions on installing or removing DIMMs.
4-3-3	Defective system board	Replace the system board. See Chapter 12, "Getting Help," for instructions on obtaining technical assistance.
4-3-4	Time-of-day clock stopped	Replace the battery (see Chapter 8, "Installing System Board Options"). If the problem persists, replace the system board. See Chapter 12, "Getting Help," for instructions on obtaining technical assistance.
4-4-1	Super I/O controller failure	Replace the system board. See Chapter 12, "Getting Help," for instructions on obtaining technical assistance.
4-4-2	Parallel-port test failure (defective system board)	Replace the system board. See Chapter 12, "Getting Help," for instructions on obtaining technical assistance.

NOTE: For the full name of an abbreviation or acronym used in this table, see the abbreviation and acronym list that precedes the Index.

Table 3-2. System Beep Codes (continued)

Code	Cause	Corrective Action
4-4-3	Math coprocessor failure (defective microprocessor)	Replace the microprocessor. See Chapter 8, "Installing System Board Options," for instructions.
4-4-4	Cache test failure (defective microprocessor)	Replace the microprocessor. See Chapter 8, "Installing System Board Options," for instructions.

NOTE: For the full name of an abbreviation or acronym used in this table, see the abbreviation and acronym list that precedes the Index.

Warning Messages

A warning message alerts you to a possible problem and asks you to take corrective action before the system continues a task. For example, before you format a diskette, a message may warn you that you may lose all data on the diskette, as a way to protect against inadvertently erasing or writing over the data. These warning messages usually interrupt the procedure and require you to respond by typing *y* (yes) or *n* (no).



NOTE: Warning messages are generated by either the application program or the operating system. See the documentation that accompanied the operating system and application program for more information on warning messages.

Diagnostics Messages

When you run a test group or subtest in the Dell Diagnostics, an error message may result. These particular error messages are not covered in this chapter. Record the message on a copy of the Diagnostics Checklist found in Chapter 12, "Getting Help," and then follow the instructions in that chapter for obtaining technical assistance.

Front-Panel Indicators

The following indicators are on the system's front panel (see Figure 3-1):

- The *hard-disk drive status indicator* is a steady green when the hard-disk drive is functioning properly, but blinks amber when a hard-disk drive failure is detected.
- The *fan/temperature status indicator* is a steady green when the fan status and system temperature are within bounds, but blinks amber when a fan failure is detected or temperature is out of bounds.
- The *power supply output status indicator* is a steady green when the electrical current output of the power supply is normal, but blinks amber if the power supply output ceases.