Dell® PowerEdge® 1300 Systems Installation and Troubleshooting Guide

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Model MMP

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Safety Instructions: Dell® PowerEdge® 1300 Systems Installation and Troubleshooting Guide

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Overview

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 strømforsyningskabel. For at reducere risikoen for elektrisk stød, bør en professionel servicetekniker frakoble alle strømforsyningskabler, før systemet serviceres.

⚠️ VAROITUS: Tässä järjestelmässä voi olla useampi kuin yksi virtajohto. Sähköiskuvaaran pienentämiseksi ammattitaitoisen huoltohenkilön on irrotettava kaikki virtajohdot 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 støt: En erfaren servicetekniker må koble fra alle strømledninger før det utføres service på systemet.

⚠️

VARNING: 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 un-interruptible 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 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.

monitor screen at or below eye level

wrists relaxed and flat

monitor and keyboard positioned directly in front of user

arms at desk level

feet flat on the floor

When Working Inside Your Computer

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

⚠️ **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

WARNING
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](#).**

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Preface: Dell® PowerEdge® 1300 Systems Installation and Troubleshooting Guide

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About This Guide

This guide is intended for anyone who wants to upgrade or troubleshoot a Dell PowerEdge 1300 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 files are summarized as follows:

- [Introduction](#) provides a brief overview of the system's service features.
- Everyone should read [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 file 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 [Messages and Codes](#). This file 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 [Finding Software Solutions](#).
- For hardware-related problems, read [Running the Dell Diagnostics](#). [Checking the Equipment](#) and [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. [Checking Inside the Computer](#) also provides information on removing the computer covers.
- [Installing System Board Options](#) and [Installing Drives](#) and are intended for anyone who wants to install or remove internal components, such as dual in-line memory modules (DIMMs), expansion cards, and SCSI devices.
- [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. [Getting Help](#) 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 completed checklist.
- [Diagnostic Video Tests](#) discusses the tests for the Video Test Group in the Dell Diagnostics to help you test the monitor.
- [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.
- Reference [Abbreviations and Acronyms](#) for a table of the abbreviations and acronyms used throughout this guide and in other Dell documentation.

Other Documentation You May Need

Besides this Installation and Troubleshooting Guide, the following documentation is included with your system:

- The *Dell PowerEdge 1300 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 Special Edition 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 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.

Warnings, Cautions, and Notes

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

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

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

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

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)

Introduction: Dell® PowerEdge® 1300 Systems Installation and Troubleshooting Guide

Dell® PowerEdge® 1300 computer systems are high-speed servers that offer significant service and upgrade features. These systems include the following service features to make troubleshooting easy and effective:

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

The Dell PowerEdge 1300 system chassis simplifies removing and replacing computer components. The power supply enclosure rotates up out of the way to allow access to the upper system board, and the drive cage can easily be removed from the system to facilitate drive replacement.

The following upgrade options are offered for the Dell PowerEdge 1300 systems:

- An additional microprocessor
- Additional memory
- A variety of expansion-card options (including redundant arrays of independent disks [RAID] controller host adapter cards)
- Optional IDE CD-ROM drive, SCSI tape drive, and additional SCSI hard-disk drives
- A Dell Remote Assistant Card for system management

Checking the Basics: Dell® PowerEdge® 1300 Systems Installation and Troubleshooting Guide

Overview | Backing Up Files | Basic Checks | Checking Connections and Switches | Look and Listen | The System Setup Program | The Resource Configuration Utility

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Overview

If your Dell PowerEdge 1300 computer system is not working as expected, begin troubleshooting using the procedures in this file. This file guides you through some initial checks and procedures that can solve basic computer problems. It can also direct you to the appropriate section 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?

   Yes. Refer to your Dell OpenManage HIP documentation for information on the message.

   No. Go to step 2.

2. Is the computer wet or damaged?

   Yes. Go to Checking Inside the Computer.

   No. Go to step 3.

3. Perform the steps in 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.

    Did the computer system complete the boot routine?

    Yes. Go to step 5.

    No. A serious malfunction may have occurred. Go to Getting Help.

5. Did you receive a system message or beep code?

    Yes. Go to Messages and Codes.

    No. Go to step 6.

6. Verify the settings in the System Setup program.

    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 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 1, Back-Panel Features, shows the back-panel connections on the computer. Figure 2, Front-Panel Features, shows the front-panel controls and indicators on the computer.

Figure 1. Back-Panel Features

Figure 2. Front-Panel Features

power button

reset button

hard-disk drive
access indicator

power
indicator

chassis cover
release button
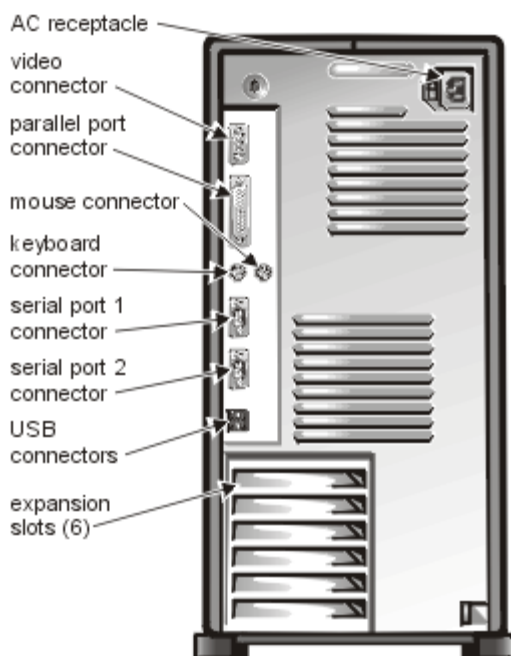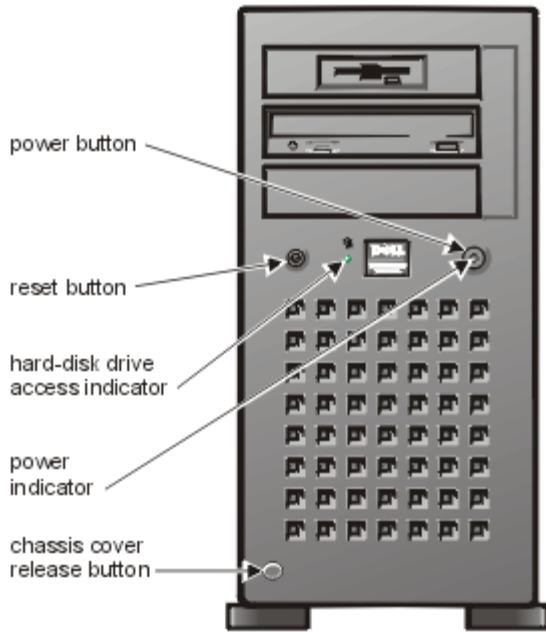
Complete the following procedure to check all the connections and switches:

1. Turn off the system, including any attached peripherals (such as the monitor, keyboard, 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](#).

8. Is the keyboard operating properly?

   Yes. Go to step 9.

   No. Go to [Troubleshooting the Keyboard](#).

9. Are the mouse and printer operating properly?

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

   No. Go to [Troubleshooting I/O Ports](#).

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 1, Boot Routine Indications](#).

Table 1. Boot Routine Indications

Look/Listen for:	Action
An error message	See [Messages and Codes](#).
Alert messages from the Dell OpenManage HIP software	The server management software has detected a problem inside the computer. See the information on alert log message in your Dell OpenManage HIP documentation.
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](#).
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](#).
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](#).
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 ® operating system, you can test the drive by opening 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](#).
A series of beeps	See [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 [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 try to access the start-up files from the hard-disk drive, the diskette drive, or the CD-ROM drive. See [Running the Dell Diagnostics](#). If the system does not boot, see [Getting Help](#).
NOTE: For the full name of an abbreviation or acronym used in this table, see [Abbreviations and Acronyms](#).	

If you have not resolved the problem after looking at and listening to the computer, continue with the instructions [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 "Using the System Setup Program" in your *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 in configuration memory until you run the RCU and save the new information. See "Using the Resource Configuration Utility" in your *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 [Running the Dell Diagnostics](#).

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Messages and Codes: Dell® PowerEdge® 1300 Systems Installation and Troubleshooting Guide

Overview

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

This file 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.

NOTE: *If you receive a system message that is not listed in the following table, 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.*

System Messages

System messages alert you to a possible operating system problem or to a conflict between the software and hardware. [Table 1, System Messages](#), lists the system messages that can occur and the probable cause for each message.

Table 1. System Messages

Message	Definition	Probable Causes
Address mark not found	BIOS found faulty disk sector or could not find particular disk sector.	Faulty diskette/tape drive subsystem or hard-disk drive subsystem (defective system board), faulty interface cable or connector.
Attachment failed to respond	Diskette drive or hard-disk drive controller cannot send data to associated drive.	Faulty diskette/tape drive subsystem or hard-disk drive subsystem (defective system board), faulty interface cable or connector.
Alert! Cover was previously removed.	Cover was previously removed.	Cover was previously removed.
Alert! Hard disk drive thermal probe	Hard-disk drive thermal probe has failed.	No hard-disk drive thermal probe installed,

`failure detected.`		defective thermal probe, or thermal cable not connected to the control panel.
`Alert! One or more of the Memory DIMMs are out of rev.`	System detected that one or more of the DIMMs are not the correct revision.	DIMMs do not meet Intel® SPD 1.2 specification or 66-MHz DIMMs are installed.
`Alert! Power supply fan failure detected.`	Power supply fan has failed.	The power supply or system board is defective.
`Alert! Previous fan failure.`	System fan failed during the previous operating session.	No fan installed, defective fan, or fan cable not connected.
`Alert! Previous hard-disk drive thermal failure.`	Hard-disk drive thermal probe failed during previous operating session.	No hard-disk drive thermal probe installed, defective thermal probe, or thermal cable not connected to the control panel.
`Alert! Previous processor thermal failure.`	The microprocessor exceeded its recommended operating temperature during the previous operating session.	Operating environment is too hot (above 35°C). The system vents may be blocked, causing the system to overheat.
`Alert! Previous voltage failure.`	System voltage exceeded or fell below an acceptable threshold.	Defective power supply.
`Alert! Primary processor is out of rev.`	System detected that the primary processor is not the correct revision. If the system contains more than 512 MB of RAM, this message will be followed by a System Halted message.	Processor is a type not supported by Dell.
`Alert! Processor thermal probe failure detected.`	Processor or system board has failed.	Faulty processor or defective system board.
`Alert! Secondary processor is out of rev.`	System detected that the secondary processor is not the correct revision. If the system contains more than 512 MB of RAM, this message will be followed by a System Halted message.	Processor is a type not supported by Dell.
`Alert! Single-bit memory error previously detected in XXXXh.`	Single-bit ECC error was detected during the previous operating session.	Faulty or improperly seated DIMMs or defective system board.
`Alert! System fan was not detected.`	System fan was not detected.	No fan installed, defective fan, or fan cable not connected.
`Alert! Unbuffered and registered SDRAM DIMMs cannot be mixed.`	Mixing of unbuffered and registered SDRAM DIMMs is not supported.	Two different types (unbuffered and registered) of SDRAM DIMMs have been installed together and may not be compatible.
`Alert! Uncorrectable memory error previously detected in XXXXh.`	Multibit ECC error was detected during the previous operating session.	Faulty or improperly seated DIMMs or defective system board.
`Auxiliary Device failure. Verify that mouse and`	System detected a mouse failure.	Faulty mouse, or faulty mouse controller or keyboard is attached to the mouse

keyboard are securely attached to connectors.		connector.
Bad command or file name	Command entered does not exist, is faulty, or is not in pathname specified.	Faulty command and syntax, or incorrect filename.
Bad error-correction code(ECC)on disk read	Diskette drive or hard-disk drive controller detected uncorrectable read error. *Indicates a fatal error.*	Faulty diskette/tape drive subsystem or hard-disk drive subsystem (defective system board).
Boot: Couldn't find NTLDR	A nonbootable diskette formatted with Windows NT was detected in the diskette drive.	A nonbootable diskette is preventing the system from booting. Remove the diskette to boot the system from the hard-disk drive or from a bootable diskette.
Controller has failed	Hard-disk drive or associated controller is defective. *Indicates a fatal error.*	Faulty hard-disk drive subsystem or defective system board.
Data error	System received unrecoverable data-read error from diskette or hard-disk drive. *Indicates a fatal error.*	Faulty diskette, diskette drive, or hard-disk drive.
Decreasing available memory	Read/write failure during POST prevents system from using available memory.	One or more DIMMs are faulty or improperly seated.
Diskette drive 0 seek failure Diskette drive 1 seek failure	Diskette/tape drive controller could not locate specific sector or track.	Faulty or improperly inserted diskette, incorrect settings in System Setup program, loose diskette/tape drive interface cable, or loose power cable.
Diskette read failure	Failure occurred while system attempted to read diskette.	Faulty diskette, faulty or improperly connected diskette/tape drive interface cable, or loose power cable.
Diskette subsystem reset failed	System could not successfully issue reset command to diskette controller.	Faulty diskette/tape drive controller (defective system board).
Diskette write protected	Diskette write-protect feature was activated.	Diskette write-protected.
Drive not ready	Diskette is missing from or is improperly inserted in diskette drive.	Missing, defective, unformatted, or improperly inserted diskette.
ECC memory error	Uncorrectable multibit ECC memory error is detected.	Faulty or improperly seated DIMMs or defective system board.
Gate A20 failure	Gate A20 of the keyboard controller malfunctioned. *Indicates a fatal error.*	Faulty keyboard controller (defective system board).
General failure	Operating system cannot execute command.	Corrupted or improperly installed operating system.
Hard disk controller failure Hard disk drive read failure Hard disk failure	Hard-disk drive failed to initialize. *Indicates a fatal error.*	Incorrect configuration settings in System Setup program, improperly connected hard-disk drive cable, faulty hard-disk controller subsystem (defective system board), or loose power cable.

`Invalid configuration information - please run SETUP program`	System Setup program contains incorrect system configuration settings.	Incorrect configuration settings in System Setup program or faulty battery.

`Keyboard clock line failure`
 	
`Keyboard failure`
 	
`Keyboard data line failure`
 	
`Keyboard stuck key failure`
	System cannot communicate with keyboard. *Indicates a fatal error.*	Keyboard cable connector loose or improperly connected, defective keyboard, or defective keyboard/mouse controller (defective system board).

`Keyboard controller failure`	Keyboard/mouse controller failed. *Indicates a fatal error.*	Defective keyboard/mouse controller (defective system board).

`Memory address line failure at address, read value expecting value`
 	
`Memory data line failure at address, read value expecting value`
 	
`Memory double word logic failure at address, read value expecting value`
 	
`Memory odd/even logic failure at address, read value expecting value`
 	
`Memory write/read failure at address, read value expecting value`
	During memory test, `value` read at `address` was incorrect.	Faulty or improperly seated DIMMs or defective system board.

`Memory allocation error`	Software in use conflicts with operating system, application program, or utility.	Faulty application program or utility.
`Memory tests terminated by keystroke`	Memory test did not complete.	POST memory test terminated by user pressing <Spacebar>.
`Network card is not present in the system.`	System does not detect NIC.	Incorrect NIC drivers installed.
`No boot device available`	System does not recognize diskette drive or hard-disk drive from which it is trying to boot.	Faulty diskette, diskette/tape drive subsystem, hard-disk drive, hard-disk drive subsystem, or no boot disk in drive A.
`No boot sector on hard-disk drive`	Incorrect configuration settings in System Setup program, or corrupted operating system.	Incorrect configuration settings in System Setup program, or no operating system on hard-disk drive.
`No timer tick interrupt`	Timer on system board malfunctioning. *Indicates a fatal error.*	Defective system board.
`Non-system disk or disk error`	Diskette in drive A or hard-disk drive does not have bootable operating system	Faulty diskette, diskette/tape drive subsystem, or hard-disk drive subsystem

	installed on it.	(defective system board).
`Not a boot diskette`	No operating system on diskette.	No operating system on diskette.
`Plug and Play Configuration Error`	System encountered a problem in trying to configure one or more expansion cards.	System resource conflict.
`Read fault`	The MS-DOS® operating system cannot read from diskette or hard-disk drive.	Faulty diskette, diskette/tape drive subsystem, or hard-disk drive subsystem (defective system board).
`Requested sector not found`	System could not find particular sector on disk, or requested sector defective.	Faulty diskette, diskette/tape drive subsystem, or hard-disk drive subsystem (defective system board).
`Reset failed`	Disk reset operation failed.	Improperly connected diskette/tape drive, hard-disk drive interface cable, or power cable.
`Sector not found`	MS-DOS is unable to locate sector on diskette or hard-disk drive.	Defective sectors on diskette or hard-disk drive.
`Seek error`	MS-DOS is unable to locate specific track on diskette or hard-disk drive.	Defective diskette or hard-disk drive.
`Seek operation failed`	System could not find particular address mark on disk.	Faulty diskette or hard-disk drive.
`Shutdown failure`	System board is faulty. *Indicates a fatal error.*	Defective system board.
`System halted`	System locked up because the microprocessor is not the correct revision.	System microprocessor is not a type supported by Dell and more than 512 MB of RAM is installed.
`Terminator/processor card not installed! System halted!`	System does not have terminator card or secondary microprocessor. *Indicates a fatal error.*	Terminator card or secondary microprocessor is improperly installed or is not installed.
`Time-of-day clock stopped`	System battery low.	Defective battery or faulty chip (defective system board).
`Time-of-day not set`	**Time** or **Date** settings in System Setup program are incorrect, or the system battery does not work.	Incorrect **Time** or **Date** setting, or defective system battery.
`Timer chip counter 2 failed`	Timer circuit on system board malfunctioning. *Indicates a fatal error.*	Defective system board.
`Unexpected interrupt in protected mode`	Keyboard/mouse controller malfunctioning, or 1 or more DIMMs improperly seated. *Indicates a fatal error.*	Improperly seated DIMMs or faulty keyboard/mouse controller chip (defective system board).
`WARNING: Dell's Disk Monitoring System has detected that drive [0/1] on the [0/1] EIDE controller is`	POST queried EIDE drive for status. Drive detected possible error conditions.	Unreliable or defective drive.

	operating outside of normal specifications. It is advisable to immediately back up your data and replace your hard-disk drive by calling your support desk or Dell Computer Corporation.		
Write fault Write fault on selected drive	MS-DOS cannot write to diskette or hard-disk drive.		Faulty diskette or hard-disk drive.

NOTE: For the full name of an abbreviation or acronym used in this table, see [Abbreviations and Acronyms](#).

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 identifies 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 [Getting Help](#), and then look it up in [Table 2, System Beep Codes](#). 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 [Running the Dell Diagnostics](#)). If you are still unable to resolve the problem, see [Getting Help](#) for instructions on obtaining technical assistance.

Table 2. System Beep Codes

Beep Code	Error	Probable Causes
1-1-3	NVRAM write/read failure	Defective system board
1-1-4	BIOS checksum failure	Faulty BIOS or defective system board
1-2-1	Programmable interval-timer failure	Defective system board
1-2-2	DMA initialization failure	Defective system board
1-2-3	DMA page register write/read failure	Defective system board
1-3-1	Main-memory refresh verification failure	Faulty or improperly seated DIMM or defective system board
1-3-2	No 100-MHz DIMM installed	No 100-MHz DIMM installed or faulty or improperly seated DIMM
1-3-3	Chip or data line failure in the first 64 KB of main memory	Faulty or improperly seated DIMM
1-3-4	Odd/even logic failure in the first 64 KB of main memory	Faulty or improperly seated DIMM

1-4-1	Address line failure in the first 64 KB of main memory	Faulty or improperly seated DIMM
1-4-2	Parity failure in the first 64 KB of main memory	Faulty or improperly seated DIMM
2-1-1 through 2-4-4	Bit failure in the first 64 KB of main memory	Faulty or improperly seated DIMM
3-1-1	Slave DMA-register failure	Defective system board
3-1-2	Master DMA-register failure	Defective system board
3-1-3	Master interrupt-mask register failure	Defective system board
3-1-4	Slave interrupt-mask register failure	Defective system board
3-2-4	Keyboard-controller test failure	Faulty keyboard controller (defective system board)
3-3-4	Screen initialization failure	Faulty video subsystem (defective graphics adapter card)
3-4-1	Screen-retrace test failure	Faulty video subsystem (defective graphics adapter card)
3-4-2	Search for video ROM failure	Faulty video subsystem (defective graphics adapter card)
4-2-1	No timer tick	Defective system board
4-2-2	Shutdown failure	Defective system board
4-2-3	Gate A20 failure	Defective system board
4-2-4	Unexpected interrupt in protected mode	Defective system board
4-3-1	Memory failure above address 0FFFFh	Faulty or improperly seated DIMMs
4-3-3	Timer-chip counter 2 failure	Defective system board
4-3-4	Time-of-day clock stopped	Bad battery or defective system board
4-4-1	Serial/parallel port test failure	Faulty I/O chip (defective system board)
NOTE: For the full name of an abbreviation or acronym used in this table, see _Abbreviations and Acronyms_.		

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 Finding Software Solutions and 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 file. Record the message on a copy of the Diagnostics Checklist found in [Getting Help](#) and then follow the instructions in that file for obtaining technical assistance.

Alert Log Messages From the Dell OpenManage™ HIP Application

The Dell OpenManage Hardware Instrumentation Package (HIP) server management application program generates alert messages that appear in the Simple Network Management Protocol (SNMP) trap log file. To see the trap log, select any enterprise under the SNMP trap log icon. (More information about the **Alert Log** window and options is provided in the Dell OpenManage HIP online help and the *HP OpenView Network Node Manager Special Edition x.x With Dell OpenManage™ HIP x.x User's Guide*.)

Alert log messages consist of information, status, warning, and failure messages for drive, temperature, fan, and power conditions. They can assist you with identifying a problem and may provide you with information to help you resolve the problem.

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Finding Software Solutions: Dell® PowerEdge® 1300 Systems Installation and Troubleshooting Guide

Overview | Installing and Configuring Software | Using Software

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Overview

Because most computer systems have several application programs installed in addition to the operating system, isolating a software problem can be confusing. Software errors can also appear to be hardware malfunctions at first.

Software problems can result from the following circumstances:

- Improper installation or configuration of a program
- Input errors
- Device drivers that may conflict with certain application programs
- Interrupt conflicts between devices

You can confirm that a computer system problem is caused by software by running the System Set Test Group as described in Running the Dell Diagnostics. If all tests in the test group are completed successfully, the error condition is most likely caused by software.

This file provides some general guidelines for analyzing software problems. For detailed troubleshooting information on a particular program, see the documentation that accompanied the software or consult the support service for the software.

Installing and Configuring Software

You should use virus-scanning software to check newly acquired programs and files for viruses before installing the programs on the computer's hard-disk drive. Viruses, which are pieces of code that can replicate themselves, can quickly use all available system memory, damage and/or destroy data stored on the hard-disk drive, and permanently affect the performance of the programs they infect. Several commercial virus-scanning programs are available for purchase, and most bulletin board services (BBSs) archive freely distributed virus-scanning programs that you can download with a modem.

Before installing a program, you should read its documentation to learn how the program works, what hardware it requires, and what its defaults are. A program usually includes installation instructions in its accompanying documentation and a software installation routine on its program diskettes.

The software installation routine assists users in transferring the appropriate program files to the computer's hard-disk drive. Installation instructions may provide details about how to configure the operating system to successfully run the program. You should always read the installation instructions before running a program's installation routine.

When you run the installation routine, you should be prepared to respond to prompts for information about how the computer's operating system is configured, what type of computer you have, and what peripherals are connected to the computer.

Using Software

The following subsections discuss errors that can occur as a result of software operation or configuration.

Error Messages

Error messages can be produced by an application program, the operating system, or the computer. Messages and Codes discusses the error messages that are generated by the computer. If you receive an error message that is not listed there, check the operating system or application program documentation.

Input Errors

If a specific key or set of keys is pressed at the wrong time, a program may give you unexpected results. See the documentation that came with the application program to make sure that the values or characters you are entering are valid.

Make sure that the operating environment is set up to accommodate the programs you use. Keep in mind that whenever you change the parameters of the computer's operating environment, you may affect the successful operation of the programs. Sometimes, after modifying the operating environment, you may need to reinstall a program that no longer runs properly.

Program Conflicts

Some programs may leave portions of their setup information behind, even though you have exited from them. As a result, other programs cannot run. Rebooting the system can confirm whether or not these programs are the cause of the problem.

There are also programs that use specialized subroutines called device drivers that can cause problems with the computer system. For example, a variation in the way the data is sent to the monitor may require a special screen driver program that expects a certain kind of video mode or monitor. In such cases, you may have to develop an alternative method of running that particular program—by creating a start-up file made especially for that program, for example. Call the support service for the software you are using to help you with this problem.

Avoiding Interrupt Assignment Conflicts

Problems can arise if two devices attempt to use the same interrupt request (IRQ) line. To avoid this type of conflict, check the documentation for the IRQ line's default for each installed expansion card. Then consult Table 1, IRQ Line Assignment Defaults, to configure the card for one of the available IRQ lines.

Table 1. IRQ Line Assignment Defaults

IRQ Line	Used By/Available
IRQ0	Used by the system timer
IRQ1	Used by the keyboard to signal that the output buffer is full
IRQ2	Used by interrupt controller 1 to enable IRQ8 through IRQ15
IRQ3	Used by serial port 2 (COM2 and COM4)
IRQ4	Used by serial port 1 (COM1 and COM3)
IRQ5	Available unless used by a secondary parallel port
IRQ6	Used by the diskette drive controller

IRQ7	Used by the primary parallel port
IRQ8	Used by the RTC
IRQ9	Used for power management functions
IRQ10	Available
IRQ11	Available
IRQ12	Used by the PS/2 mouse port unless the mouse is disabled in the System Setup program
IRQ13	Used by the math coprocessor
IRQ14	Available
IRQ15	Available
NOTE: For the full name of an abbreviation or acronym used in this table, see [Abbreviations and Acronyms](#).	

Running the Dell Diagnostics: Dell® PowerEdge® 1300 Systems Installation and Troubleshooting Guide

Overview

Unlike many diagnostic programs, the Dell Diagnostics helps you check the computer's hardware without any additional equipment and without destroying any data. By using the diagnostics, you can have confidence in the computer system's operation. If you find a problem that you cannot solve by yourself, the diagnostic tests can provide you with important information you will need when talking to Dell's technical assistance representative.

⚠️ **CAUTION: Use the Dell Diagnostics to test only Dell computer systems. Using this program with other computers may cause incorrect computer responses or result in error messages.**

Features of the Dell Diagnostics

The Dell Diagnostics provides a series of menus and options from which you choose particular test groups or subtests. You can also control the sequence in which the tests are run. The diagnostic test groups or subtests also have these helpful features:

- Options that let you run tests individually or collectively
- An option that allows you to choose the number of times a test group or subtest is repeated
- The ability to display or print test results or to save them in a file
- Options to temporarily suspend testing if an error is detected or to terminate testing when an adjustable error limit is reached
- A menu option, called **About**, that briefly describes each test and its parameters
- Status messages that inform you whether test groups or subtests are completed successfully
- Error messages that appear if any problems are detected

When to Use the Dell Diagnostics

Whenever a major component or device in the computer system does not function properly, you may have a component failure. As long as the microprocessor and the input and output components of the computer system (the monitor, keyboard, and diskette drive) are working, you can use the Dell Diagnostics. If you know what component(s) you need to test, simply select the appropriate diagnostic test group(s) or subtest(s). If you are unsure about the scope of the problem, read the rest of the information in this file.

Starting the Dell Diagnostics

You can run the Dell Diagnostics from either the utility partition on your hard-disk drive or from a diskette that you create from the *Dell OpenManage™ Server Assistant* CD.

To run the diagnostics from the utility partition, follow these steps:

1. Start the utility partition by pressing <F10> during the power-on self-test (POST).
2. From the utility partition's main menu, select the **Run System Diagnostics** option from **Run System Utilities**.

See "Utility Partition" in "Using the Dell OpenManage Server Assistant" in the *Dell PowerEdge 1300 Systems User's Guide* for additional information about the utility partition.

To run the Dell Diagnostics from a diskette, perform the following steps:

1. Create a diagnostics diskette using the *Dell OpenManage Server Assistant* CD.
   See "Utility Partiton" in "Using the Dell OpenManage Server Assistant CD" in the *User's Guide* for information on creating diskettes.
2. Boot the system from the diagnostics diskette.

If the system fails to boot, see [Getting Help](#) for instructions on obtaining technical assistance.

NOTE: Before you read the rest of this file, you may want to start the Dell Diagnostics so you can see it on your monitor screen.
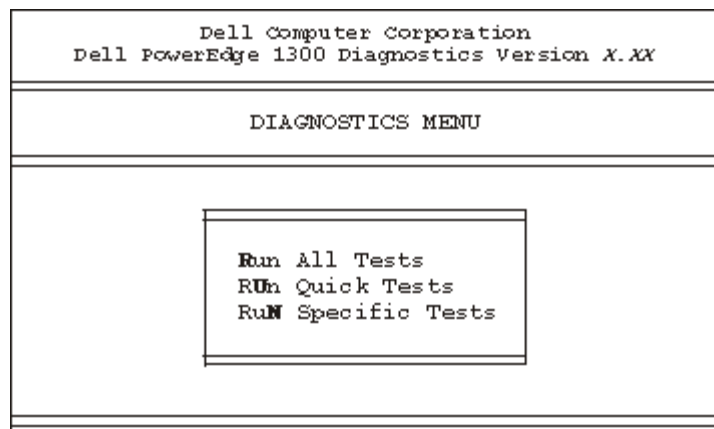
When you start the diagnostics, the Dell logo screen appears, followed by a message telling you that the diagnostics is loading. Before the diagnostics loads into memory, a program tests the random-access memory (RAM) that will be used by the diagnostics.

If no errors are found in RAM, the diagnostics loads, and the **DIAGNOSTICS** menu appears (see [Figure 1, Diagnostics Menu](#)). The menu allows you to run all or specific diagnostic tests or to exit the Dell Diagnostics.

For a quick check of the system, select **RUn Quick Tests**. This option runs only the subtests that do not require user interaction and that do not take a long time to run. Dell recommends that you choose this option first to increase the odds of tracing the source of the problem quickly. For a complete check of the system, select **Run All Tests**. To check a particular area of the system, select **RuN Specific Tests**.

To select an option from the **DIAGNOSTICS** menu, highlight the option and press <Enter>, or press the key that corresponds to the highlighted letter in the option you choose.

Figure 1. Diagnostics Menu

```
        Dell Computer Corporation
    Dell PowerEdge 1300 Diagnostics Version X.XX


            DIAGNOSTICS MENU



        Run All Tests
        RUn Quick Tests
        RuN Specific Tests
```
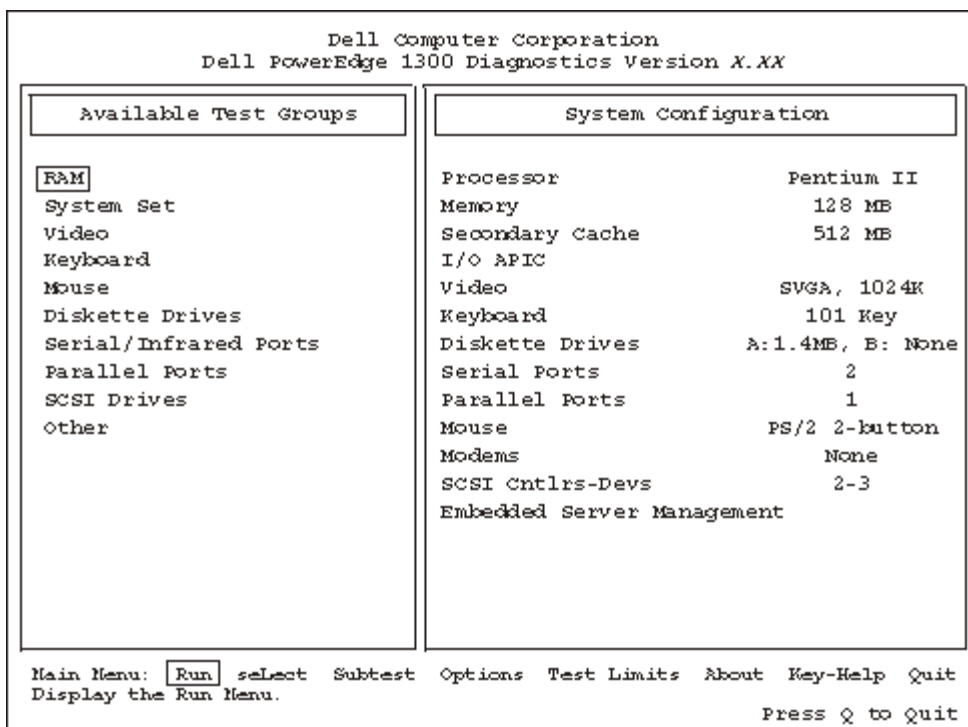
How to Use the Dell Diagnostics

When you select **RuN Specific Tests** from the **DIAGNOSTICS** menu, the main screen of the diagnostics appears. Figure 2, Dell Diagnostics Main Screen, shows a sample main screen; the actual text on your system may vary depending on your system configuration.

Information on the main screen of the diagnostics is presented in the following *four* areas:

- Two lines at the top of the main screen identify the diagnostics and give its version number.
- On the left side of the screen, the **Available Test Groups** area lists the diagnostic test groups in the order they will run if you select **All** under the **Run** submenu. Press the up- or down-arrow key to highlight a test group.
- On the right side of the screen, the **System Configuration** area lists the computer's current hardware settings.
- Two lines at the bottom of the screen make up the **Main Menu** area. The first line lists the menu options you can select; press the left- or right-arrow key to highlight an option. The second line gives information about the highlighted option.

Figure 2. Dell Diagnostics Main Screen

```
                    Dell Computer Corporation
             Dell PowerEdge 1300 Diagnostics Version X.XX

 ┌──────────────────────────────┐  ┌──────────────────────────────┐
 │    Available Test Groups     │  │      System Configuration    │
 └──────────────────────────────┘  └──────────────────────────────┘

  ┌─────┐
  │ RAM │                            Processor           Pentium II
  └─────┘                            Memory                 128 MB
   System Set                        Secondary Cache        512 MB
   Video                             I/O APIC
   Keyboard                          Video            SVGA, 1024K
   Mouse                             Keyboard             101 Key
   Diskette Drives                   Diskette Drives  A:1.4MB, B: None
   Serial/Infrared Ports             Serial Ports            2
   Parallel Ports                    Parallel Ports          1
   SCSI Drives                       Mouse           PS/2 2-button
   Other                             Modems                None
                                     SCSI Cntlrs-Devs       2-3
                                     Embedded Server Management


 Main Menu:  │ Run │  select   Subtest   Options   Test Limits   About   Key-Help   Quit
 Display the Run Menu.
                                                      Press Q to Quit
```

NOTE: *The options displayed on the screen should reflect the hardware configuration of the computer system.*

Confirming the System Configuration Information

When you boot the system from the diagnostics diskette, the Dell Diagnostics checks the system configuration information and displays it in the **System Configuration** area on the main screen.

The following sources supply this configuration information for the Dell Diagnostics:

- The system configuration information settings (stored in nonvolatile RAM [NVRAM]) that you selected while using the System Setup program
- Identification tests of the microprocessor, the video controller, the keyboard controller, and other key components
- Basic input/output system (BIOS) configuration information temporarily saved in RAM

Do not be concerned if the **System Configuration** area does not list the names of all the components or devices you

know are part of the computer system. For example, you may not see a printer listed, although you know one is attached to the computer. Instead, the printer is listed as a parallel port. The computer recognizes the parallel port as LPT1, which is an address that tells the computer where to send outgoing information and where to look for incoming information. Because the printer is a parallel communications device, the computer recognizes the printer by its LPT1 address and identifies it as a parallel port.

How to Use the Main Menu

The **Main Menu** at the bottom of the screen provides options that enable you to select and run specific diagnostic tests from the diagnostics main screen. Options on the menu are selectable using the left- and right-arrow keys. As you move from one menu option to another, a brief explanation of the highlighted option appears on the bottom line of the screen.

If you want more information about a test group or subtest, move the highlight to the **About** option and press <Enter>. After reading the information, press <Esc> to return to the previous screen.

Main Menu Options

Eight options are listed in the **Main Menu** of the diagnostics main screen: **Run**, **seLect**, **Subtest**, **Options**, **Test Limits**, **About**, **Key-Help**, and **Quit**. (An additional option, **Display the Run Menu**, returns you to the **DIAGNOSTICS** menu shown in Figure 1, Diagnostics Menu.)

> NOTE: Before running any test groups or subtests (by selecting **Run**), you should consider setting global parameters within **Options**. Global parameters offer you greater control over how the test groups or subtests are run and how results are reported.

There are two ways to select a menu option:

- Look on the screen to see which letter in the option is capitalized, and type that letter (for example, type `r` to select the **Run** option).
- Move the highlight to the option you wish to select by pressing the left- or right-arrow key, and then press <Enter>.

Whenever one of the eight options is selected, additional choices become available.

The following subsections explain the menu options as listed from left to right in the **Main Menu**.

Run

Run displays five options: **One**, **Selected**, **All**, **Key-Help**, and **Quit Menu**. If you select **One**, all the subtests within the highlighted test group are run. If you choose **Selected**, only the selected test groups or the subtests that you selected within the test groups are run. If you select **All**, all of the subtests in all of the test groups are run. (The test groups or subtests are run in the same order as they are listed.)

Key-Help displays a list of key controls available for the particular option you have chosen. The **Quit Menu** option returns you to the previous menu.

seLect

The **seLect** option allows you to select individual test groups to tailor the testing process to your particular needs. You can choose one or more test groups and run them sequentially or individually. When you choose **seLect**, five options are displayed: **All**, **One**, **Clear All**, **Key-Help**, and **Quit Menu**.

To select all the test groups, press <Enter> when **All** is highlighted in the **seLect** menu.

To select an individual test group, highlight the test group and press <Spacebar> or highlight **One** and press <Enter>. Press the up- or down-arrow key to change the highlighted test group.

To reverse a test group selection, highlight the test group and press <Spacebar>. To clear all selections, select **Clear All**.

Key-Help displays a list of key controls available for the particular option you have chosen. **Quit Menu** returns you to the previous menu.

Subtest

Most of the test groups consist of several subtests. Use the **Subtest** option to select individual subtests within the test group(s).

When you select **Subtest**, many of the same options as those on the **Main Menu** are displayed: **Run**, **Select**, **Options**, **Test Limits**, **About**, **Key-Help**, and **Quit Menu**. Each of these options is explained in the following subsections.

Run Under Subtest

Run in the **Subtest** menu displays five options: **One**, **Selected**, **All**, **Key-Help**, and **Quit Menu**. If you select **One**, only the highlighted subtest is run. If you select **Selected**, only the selected subtests are run. If you select **All**, all of the subtests listed on the screen are run. (The subtests are run in the same order as they are listed.)

The **Key-Help** option displays a list of key controls available. The **Quit Menu** option returns you to the previous menu.

Select Under Subtest

Select in the **Subtest** menu allows you to select individual subtests to tailor the testing process to your particular needs. You can choose one or more subtests from the list. When you choose **Select**, five options are displayed: **All**, **One**, **Clear All**, **Key-Help**, and **Quit Menu**.

To select all the subtests, press <Enter> when **All** is highlighted in the Select menu. To select an individual subtest, highlight the subtest and press <Spacebar> or highlight **One** and press <Enter>. Press the up- or down-arrow key to highlight a subtest to be selected.

To reverse a subtest selection, highlight the subtest and press <Spacebar>. To clear all selections, select **Clear All**.

Key-Help displays a list of key controls available. The **Quit Menu** option returns you to the previous menu.

Options Under Subtest

Options in the **Subtest** menu functions the same way as **Options** in the **Main Menu**. For information on this option, see Options.

Test Limits Under Subtest

Test Limits in the **Subtest** menu functions the same way as the **Test Limits** option in the **Main Menu**. For information on this option, see Test Limits.

About Under Subtest

About in the **Subtest** menu displays information about the highlighted subtest.

Key-Help Under Subtest

Key-Help in the **Subtest** menu displays a list of key controls available.

Quit Menu Under Subtest

Quit Menu in the **Subtest** menu returns you to the previous menu.

Options

Table 1, Options Parameters, lists all of the possible values for each global parameter of **Options**. A brief description of each parameter follows the table. To change **Options** parameters, press <Spacebar>, the left- and right-arrow keys, or the plus (+) and minus (-) keys.

Table 1. Options Parameters

Parameter	Possible Values
Number of Times to Repeat Test(s)	0001 through 9999, or 0000, which loops indefinitely until you press <Ctrl><Break>. The default is **1**.
Maximum Errors Allowed	0000 through 9999, where 0000 means that there is no error limit. The default is **1**.
Pause for User Response	**Yes, No** Allows you to decide whether tests will wait for user input. The default is **Yes** to wait for user input.
Output Device for Status Messages	**Display, Printer, File** If you have a printer attached to the computer, you can use it to print the status messages, if any, that are generated when a test runs. (The printer must be turned on and in the online mode to print.) If you select **File**, the messages are printed to a file named *result* on a diskette in drive A. The default is **Display**.
Output Device for Error Messages	**Display, Printer, File** This parameter has the same effect as the **Output Device for Status Messages** parameter, except that it pertains only to error messages. The default is **Display**.

Number of Times to Repeat Test(s)

This parameter specifies the number of times the tests run when you select **Run**. To change the default, type the desired value. If you type 0 (zero), the tests will run indefinitely.

Maximum Errors Allowed

This parameter specifies the maximum number of errors that can occur before testing is stopped. The error count begins from zero each time you run a subtest or test group individually or each time you select **All** to run all of them. To change the default, type the desired value. If you type 0 (zero), you are specifying that there be no limit on the number of errors that can occur—testing will not be stopped, regardless of the number of errors.

Pause for User Response

If this parameter value is set to **Yes**, the diagnostics pauses when one of the following events occurs:

- Your interaction is needed to verify the Video test group screens or the Keyboard test group key functions, or another type of interaction, such as inserting a diskette, is required.
- The maximum error limit is reached.

If **Pause for User Response** is set to **No**, the diagnostics ignores some subtests that require your interaction; certain subtests can run only if this option is set to **Yes** because they require user interaction. Use **Pause for User Response** in situations where you may want to prevent subtests that require user interaction from running—such as when you run the diagnostics overnight.

Output Device for Status Messages

Ordinarily, all status messages appear only on the screen. **Output Device for Status Messages** allows you to direct status messages to either a printer or a file, in addition to the screen. If you choose the **File** option, status messages are written to a file named result. This file is automatically created on a diskette in drive A when you run the diagnostics. If the result file already exists on the diskette, then new status messages are added to it.

The result file is an ordinary American Standard Code for Information Interchange (ASCII) text file. You can access the *result* file with the MS-DOS® type command as follows:

1. Select **Quit** to exit the diagnostics and return to the operating system prompt.
2. At the operating system prompt, type the following command and press <Enter>:
   ```
   type result
   ```
   The contents of the file appear on the screen.

After running particular diagnostic tests and viewing the status messages generated by the tests in the result file, you can erase the contents of the file so that it is clear for the next set of messages generated. Otherwise, the next messages are added at the end of the previous ones in the file.

Output Device for Error Messages

Ordinarily, all error messages appear only on the screen. **Output Device for Error Messages** allows you to direct error messages to either a printer or a file, in addition to the screen. If you choose the **File** option, error messages are written to the result file used for status messages. This file is automatically created on a diskette in drive A when you run the diagnostics. If the result file already exists on the diskette, then new error messages are added to it.

The result file is an ordinary ASCII text file. You can access and review the result file with the MS-DOS type command as described in the previous subsection, [Output Device for Status Messages](#).

After running particular diagnostic tests and viewing the error messages generated by the tests in the result file, you can erase the contents of the file so that it is clear for the next set of messages generated. Otherwise, the next messages are added at the end of the previous ones in the file.

Test Limits

> *NOTE: The diagnostics program sets default limits on all tests. The only reason to change the default would be to limit the amount of testing done.*

The **RAM** test group, the **Video** test group, the **Diskette Drives** test group, the **Serial/Infrared Ports** test group, the **Parallel Ports** test group, and the **SCSI Devices** test group allow you to designate limits. Whether you select **Test**

Limits for a highlighted test group (from the **Main Menu)** or a subtest (from the **Subtest** menu), you set the limits for all the subtests in that test group. When you select **Test Limits**, a new screen appears and the **Key-Help** area lists keys to use with the new screen.

How you change a value for the limits of a test group or subtest depends on the type of parameter associated with it. Different keys are used to change values for different types of parameters. For example, memory address limits specified for the **RAM** test group are changed by typing numbers over the digits of a given limit or by pressing the plus (+) or minus (-) key to increase or decrease the given limit. In contrast, to set limits for the **Serial/Infrared Ports** test group, you use the <Spacebar> to toggle between **Yes** and **No**.

After you are satisfied with the limits, return to the main screen of the diagnostics by pressing <Esc>. The values you selected under **Test Limits** remain in effect for all the test groups or subtests you run, unless you change them. However, the values are reset to their defaults when you restart the diagnostics.

About

About in the **Main Menu** lists all of the subtests for the selected test group and displays information about the subtest that is highlighted.

Key-Help

Key-Help always displays a list of key controls available for the particular option you have selected.

Quit

⚠️ **CAUTION: It is important that you quit the diagnostics program correctly because the program writes data to the computer's memory that can cause problems unless properly cleared.**

Selecting **Quit** from the **Main Menu** exits the diagnostics and returns you to your operating system environment.

Tests in the Dell Diagnostics

To troubleshoot components or devices, run the appropriate test (test group or subtest) in the diagnostics. The diagnostics exercises the functional components and devices of the computer system more vigorously and thoroughly than they are exercised during normal operation. The diagnostics is organized by components in test groups and subtests within each test group. Each subtest is designed to detect any errors that may interfere with the normal operation of a specific device of the computer.

📝 *NOTE: Some subtests requiring hardware not listed in the **System Configuration** area of the main screen appear to run, but they conclude with a status message stating* `Component not present (or disabled)`.

Table 2, Dell Diagnostics Tests, lists the diagnostic test groups, their subtests, and comments concerning their use.

Table 2. Dell Diagnostics Tests

Test Group	Subtests	Description
RAM	Quick Memory Test Comprehensive Memory Test	Tests the system RAM and microprocessor cache.

	Cache Memory Test	
System Set	CMOS Confidence Test DMA Controller Test Real-Time Clock Test System Timers Test Interrupt Controller Test APIC Test APIC MP Test System Speaker Test Coprocessor Calculation Test Coprocessor Duty Cycle Test Coprocessor Error Exception Test Multiprocessor Test	Tests the system board's support chips, DMA controller, computer timer, NVRAM, speaker controller, and cache, as appropriate. Tests the math coprocessor that is internal to the microprocessor. For systems with multiprocessors, confirms that the secondary microprocessor is operational.
Video	Video Memory Test Video Hardware Test Text Mode Character Test Text Mode Color Test Text Mode Pages Test Graphics Mode Test Color Palettes Test Solid Colors Test	Tests the video subsystem and monitor by checking various aspects of video output.
Keyboard	Keyboard Controller Test Keyboard Key	Tests the keyboard by checking the keyboard controller and by finding keys that stick or respond incorrectly.

	Sequence Test Keyboard Interactive Test Stuck Key Test External Key Pad Test	
Mouse	Mouse	Tests the electronic pointing device (bus mouse, serial mouse, trackball, or PS/2 mouse).
Diskette Drives	Change Line Test Seek Test Read Test Write Test	Tests a drive that uses removable diskettes. Also tests the associated interface.
Serial/ Infrared Ports	Serial/Infrared Baud Rate Test Serial/Infrared Interrupt Test Serial/Infrared Internal Transmission Test Serial External Transmission Test	Tests the components through which peripherals that use the serial or infrared ports, such as communications devices, send and receive data.
Parallel Ports	Parallel Internal Test Parallel External Loopback Test Parallel External Interrupt Test Parallel Printer Pattern Test	Tests the components through which peripherals that use the parallel port, such as printers and communications devices, send and receive data.
SCSI Devices	Internal Diagnostic Seek Test Read Test Write Test Audio Output Test Eject Removable Media Display Information	Tests SCSI host adapters and all the SCSI devices attached to them. Also can be used to remove CDs and tape cartridges from SCSI devices and to display information about the types of SCSI devices installed and the resources allocated to them.

NOTE: For the full name of an abbreviation or acronym used in this table, see Abbreviations and Acronyms.

Error Messages

When you run a test group or subtest in the diagnostics, error messages may result. These particular error messages are not covered in this file because the errors that generate these messages can be resolved only with Dell technical assistance. Record the messages on a copy of the Diagnostics Checklist found in Getting Help; also see Getting Help for instructions on obtaining technical assistance and informing the technical assistance representative of these messages.

RAM Test Group

The RAM test group subtests check all the directly addressable RAM.

Subtests

Three subtests are available for RAM: the Quick Memory Test, the Comprehensive Memory Test, and the Cache Memory Test. The Quick Memory Test performs an address check to determine whether the computer is properly setting and clearing individual bits in RAM and whether the RAM read and write operations are affecting more than one memory address location at one time. This subtest checks all available RAM.

The Comprehensive Memory Test performs an address check as well as the following checks:

- Data pattern checks, to look for RAM bits that are stuck high or low, short-circuited data lines, and some data pattern problems that are internal to the memory chips
- A parity check that verifies the ability of the memory subsystem to detect errors
- A refresh check, to verify that the dynamic RAM (DRAM) is being recharged properly

The Cache Memory Test confirms the functionality of the computer's cache controller chip and the cache memory.

Why Run a RAM Test?

Faulty memory can cause a variety of problems that may not appear to be happening in RAM. If the computer is displaying one or more of the following symptoms, run the subtests in the RAM test group to verify that the memory is not at fault:

- A program is not running as usual, or a proven piece of software appears to malfunction and you confirm that the software itself is not at fault. (You can confirm that the software is functioning properly by moving it to another computer and running it there.)
- The computer periodically locks up (becomes unusable and must be rebooted), especially at different places and times in different programs.
- You get a parity error (any error message that contains the word parity) at any time during operation. These errors are usually accompanied by a reference to an address—the location of the portion of memory where the error occurred—which you should record on a copy of the Diagnostics Checklist found in Getting Help.
- You receive the `Memory ECC fault detected` message from the Dell OpenManage Hardware Instrumentation Package (HIP) server management application. See Messages and Codes for more information on this program.

System Set Test Group

The subtests in the System Set test group check the computer's basic system board components and verify their related functions.

Subtests

The subtests that constitute the System Set test group and the computer functions they confirm follow:

- **CMOS Confidence Test**

  Checks the NVRAM for accessibility and reliability of data storage by performing a data pattern check and verifying the uniqueness of memory addresses.

- **DMA Controller Test**

  Tests the direct memory access (DMA) controller and verifies the correct operation of its page and channel registers by writing patterns to the registers.

- **Real-Time Clock Test**

  Confirms the functionality and accuracy of the computer's real-time clock (RTC).

- **System Timers Test**

  Checks the timers used by the microprocessor for event counting, frequency generation, and other functions. Only the functions that can be activated by software are tested.

- **Interrupt Controller Test**

  Generates an interrupt on each interrupt request (IRQ) line to verify that devices using that line can communicate with the microprocessor and that the interrupt controllers send the correct memory addresses to the microprocessor.

- **APIC Test**

  Tests that the procedure used to boot a multiprocessor system is able to properly receive interrupts from the input/output (I/O) Advanced Peripheral Interrupt Controller (APIC).

- **APIC MP Test**

  Ensures that all microprocessors are able to properly receive interrupts from the I/O APIC.

- **System Speaker Test**

  Checks the functionality of the speaker by generating eight tones.

- **Coprocessor Calculation Test**

  Checks the use of different types of numbers and the math coprocessor's ability to calculate correctly.

- **Coprocessor Error Exception Test**

  Verifies the math coprocessor's ability to handle errors and to send IRQs to the microprocessor.

- **Multiprocessor Test**

  For systems with multiprocessors, confirms that the secondary microprocessor is operational.

Why Run a System Set Test?

The **System Set** subtests double-check many system board components, such as the computer's I/O circuitry, that are tested by other test groups or subtests in the diagnostics. You should run the **System Set** test group if you are having a problem and cannot isolate the failure or malfunction to a particular system board component.

The **System Set** test group also verifies the proper operation of other computer components, such as the speaker, that are not tested elsewhere in the diagnostics.

The following symptoms usually suggest a problem with a component or subassembly that warrants running a **System Set** subtest:

- A program is not running as usual, or a proven piece of software appears to malfunction and you confirm that the software itself is not at fault. (You can confirm that the software is functioning properly by moving it to another computer and running it there.)
- An option card you previously accessed can no longer be accessed.
- You get a parity error or page fault failure—any error message that contains the word[s] parity or page fault—at any time during operation. These errors are usually accompanied by a reference to an address, which you should record on a copy of the Diagnostics Checklist found in Getting Help.
- Correcting errors in the system configuration information in the System Setup program does not resolve a problem.
- The computer's clock/calendar stops.
- The speaker no longer functions. The problem could be a failure of the system timers as well as a failure of the speaker itself. Run the **System Timers** test, followed by the **System Speaker** test.
- A peripheral device appears to malfunction. Run the Interrupt Controllers test.
- A spreadsheet program or other type of mathematical application runs abnormally slow, generates error messages concerning calculations or operations, runs incorrectly, or generates incorrect results, or a proven piece of the program appears to malfunction and you confirm that the software itself is not at fault. (You can confirm that the software is not at fault by moving the program to another computer and running it there.)
- The computer periodically locks up, especially at different places and times in different programs.
- The computer halts in the middle of performing calculations or complex mathematical operations.

Video Test Group

The subtests in the **Video** test group verify the proper operation of the video controller and the video control circuitry installed in the computer. These subtests check for the correct operation of the readable registers in the video circuitry and the controller. They write, read, and verify data patterns in the cursor registers of the controller. The **Video** test group also tests all the video memory and provides additional subtests to test the color features of a color monitor.

Subtests

The eight subtests in the **Video** test group and the video functions they test follow:

- **Video Memory Test**

  Checks the read/write capability of video memory in various video modes.

- **Video Hardware Test**

  Checks the cursor registers and the horizontal and vertical retrace bit registers in the video controller.

- **Text Mode Character Test**

  Checks the video subsystem's ability to present data in text modes.

- **Text Mode Color Test**

  Checks the video subsystem's ability to present color in text modes.

- **Text Mode Pages Test**

  Checks the video subsystem's ability to map and present all available video pages on the screen, one page at a time.

- **Graphics Mode Test**

  Checks the video subsystem's ability to present data and color in graphics modes.

- **Color Palettes Test**

  Checks the video subsystem's ability to display all of the available colors.

- **Solid Colors Test**

  Checks the video subsystem's ability to show screens full of solid colors. Allows you to check for missing color subpixels.

Many of these tests display characters or graphics on the screen for you to verify. Samples of these screens are shown in [Diagnostic Video Tests](#).

*NOTE: The default for testing super video graphics array (SVGA) modes is **No**. If you are testing an external monitor, change the default to **Yes**.*

Why Run a Video Test?

Many of the symptoms that would prompt you to run a subtest in the **Video** test group are obvious, because the monitor is the visual component of the computer system. Before you run the **Video** test group or any of its subtests, you should make sure that the problem is not in the software or caused by a hardware change. You should also try running all of the software support utilities provided for the monitor and the video subsystem.

If the following symptoms still occur, run the appropriate test(s) as follows:

- If the monitor shows a partially formed or distorted image, run all of the subtests in the **Video** test group.
- If the alignment of text or images is off, regardless of the program you are running, run the **Text Mode Character Test**, **Text Mode Pages Test**, and **Graphics Mode Test**.
- If you have a color monitor or a program that runs in color, but the color is intermittent or not displayed at all, run the **Text Mode Color Test**, **Color Palettes Test**, and **Solid Colors Test**.
- If the monitor malfunctions in one mode but works fine in another (for example, text is displayed correctly, but graphics are not), run the **Text Mode Character Test**, **Text Mode Color Test**, **Text Mode Pages Test**, and **Graphics Mode Test**.

Keyboard Test Group

The subtests in the **Keyboard** test group verify the correct operation of the keyboard and the keyboard controller chip.

Subtests

The five keyboard subtests and the functions they test follow:

- **Keyboard Controller Test**

  Confirms the ability of the keyboard controller chip to communicate with the keyboard and tests the programming of the controller chip

- **Keyboard Key Sequence Test**

  Verifies that the keys on the keyboard function correctly when you press the keys in a predefined order

- **Keyboard Interactive Test**

  Checks the internal microcode of the keyboard and the external interface of the keyboard controller chip for a malfunctioning key

- **Stuck Key Test**

  Checks the internal microcode of the keyboard and the external interface of the keyboard controller chip for a repeating-key signal

- **External Key Pad Test**

  Checks the contact beneath each key for an electrical impulse to ensure that each key is working properly

Why Run a Keyboard Test?

Keyboard problems are not always caused by the keyboard. For example, if the computer system locks up, rendering the keyboard inoperable, the problem is most likely not caused by the keyboard. There are three symptoms that are likely to be keyboard-related. Sometimes, the configuration of a program changes the function of a key or key combination. Likewise, key configuration programs can change a key's function. Because these programs are memory-resident, you should be sure to clear them out of the computer's memory before running a subtest in the **Keyboard** test group. (Clear them from memory by rebooting the computer from the diagnostics diskette.) When these possibilities have been eliminated, and if the following symptoms occur, you should run one or more of the subtests in the **Keyboard** test group:

- When you press a key, the character represented by that key appears repeatedly; the key seems to be stuck. Run the **Stuck Key Test**.
- When you press a key and the response is different from the usual response or the response you anticipated, the key contact may be damaged. Run the **Keyboard Interactive Test**.
- When a key does not work at all, run all of the subtests in the **Keyboard** test group.

Mouse Test

The **Mouse** test checks the functionality of the mouse controller (which coordinates cursor movement on the screen with corresponding movement of the mouse or touch pad) and the operation of the mouse keys/touch pad.

Subtests

There are no subtests for the **Mouse** test group.

Why Run a Mouse Test?

Mouse or touch pad problems are as likely to originate in RAM as they are to be caused by a faulty mouse or touch pad. Three sources of RAM-related problems include the configuration of a program (which changes the function of the mouse or touch pad), memory-resident programs, and failure of a device driver (the software that controls the function of the mouse or touch pad). If these possibilities have been eliminated and the following symptoms persist, run the **Mouse** test:

- When you press a mouse button or the touch pad, the function of the button (or touch pad) continues; that is, the button (or touch pad) seems to be stuck.
- When you press a mouse button or the touch pad, the response is different from the usual or anticipated response, which indicates the button (or touch pad) contact may be damaged.
- A mouse button or the touch pad does not work at all.
- The cursor does not respond on the screen in accordance with the movements you make with the mouse or touch pad.

Diskette Drives Test Group

The subtests in the **Diskette Drives** test group allow you to test 3.5-inch diskette drives of all capacities.

Subtests

The four diskette drive subtests in the **Diskette Drives** test group and the drive functions they test follow:

- **Change Line Test**

  Checks for bent pins on the diskette drive controller and for defective lines on the diskette cable

- **Seek Test**

  Checks the drive's ability to search for a specified track on the diskette and to position its read/write heads to all tracks

- **Read Test**

  Positions the read/write heads at each cylinder of the diskette for reading data and verifies that all tracks on the diskette can be read correctly

- **Write Test**

  Positions the read/write heads at each cylinder of the diskette and verifies that all tracks on the diskette can be written to correctly

Why Run a Diskette Drives Test?

Very often, a diskette drive problem may first appear to be a diskette problem. A box of defective diskettes might produce faulty-drive error messages. The test results can be confusing, so Dell suggests running the subtests in the **Diskette Drives** test group more than once using diskettes from different sources.

A command that is typed in an incorrect form (usually called a syntax error) is another possible cause of diskette drive problems. Be sure you have entered the command in the proper form.

If the diskette(s) and command syntax are eliminated as causes, the following symptoms usually suggest a drive problem and warrant running a subtest in the **Diskette Drives** test group:

- An error message appears on the screen stating that the computer cannot read from or write to a diskette.
- A diskette cannot be properly formatted, or format error messages appear on the screen.
- Data on diskettes is corrupted or lost; these problems may be intermittent.

Serial/Infrared Ports Test Group

The subtests in the **Serial/Infrared Ports** test group check the computer's interface with external devices, such as a printer and a mouse, that are connected to the computer through a serial or infrared port. The subtests in this test group are not intended as a diagnostic test for the actual peripheral attached to each port.

*NOTES: With certain modems installed, the subtests in the **Serial/Infrared Ports** test group may fail because the modem appears to the diagnostics as a serial or infrared port, but it cannot be tested as a serial or infrared port. If a modem is installed and one of the subtests in the **Serial/Infrared Ports** test group fails, remove the modem and run the diagnostic tests again.*

*If an external loopback connector is not attached to a serial or infrared port, the **Serial External Transmission Test** will fail for that port and the results of this test should be ignored. An external modem connected to the port does not substitute for an external loopback connector.*

Subtests

The four subtests in the **Serial/Infrared Ports** test group and the port functions they test follow:

- **Serial/Infrared Baud Rate Test**

  Checks the baud rate generator in each serial communications chip against the computer's clock

- **Serial/Infrared Interrupt Test**

  Checks the serial port's ability to send IRQs to the microprocessor

- **Serial/Infrared Internal Transmission Test**

  Checks several internal functions of the serial port using the internal loopback mode of the serial communications chip

- **Serial External Transmission Test**

  If a loopback device is attached, checks the line control bits of the serial port and sends a test pattern at several baud rates, checking the returned values

Why Run a Serial/Infrared Ports Test?

If the diagnostics does not recognize the computer's serial ports, enter the System Setup program and check the **Serial Port** options to see whether the port has been disabled. (See "Using the System Setup Program" in the *User's Guide* for instructions.) The subtests in the **Serial/Infrared Ports** test group cannot test a port unless it is enabled.

When a port is faulty, it may not be immediately evident that the port, and not the device connected to the port, is faulty. Instead, the peripheral might behave erratically or not operate at all. If the external device is not properly installed through the software, it also may not function properly. Try operating the peripheral from different programs or through the operating system. If it still does not work, you can eliminate the software configuration as the cause of the problem.

Another possible cause for errors is the external device. Use the documentation that came with the peripheral to

troubleshoot the device and confirm that it is working properly.

After you eliminate incorrect system configuration information settings, peripheral malfunctions, and software errors as potential causes of port problems, you can run the subtests in the **Serial/Infrared Ports** test group to check the hardware. Although the following symptoms can be caused by faulty peripherals or software errors, they might also suggest a port problem:

- If a peripheral works intermittently or produces intermittent errors, the port may be faulty.
- If the computer displays an error message that is related to the external device connected to a port but corrections to the device do not resolve the error, run the appropriate subtest in the **Serial/Infrared Ports** test group.
- If the software and the diagnostics do not recognize that you have a serial or infrared port, you should check the Serial/Infrared Port option in the System Setup program and, if necessary, run the appropriate subtest in the **Serial/Infrared Ports** test group.

Parallel Ports Test Group

The subtests in the **Parallel Ports** test group check the computer's interface with external devices, such as a printer, that are connected to the computer through a parallel port. The subtests in this test group are not intended as diagnostic tests for the actual peripheral attached to each port. (The only exception is a printer, as described in the following subsection.)

*NOTE: If an external loopback connector is not attached to the parallel port, the **Parallel External Loopback Test** will fail for that port and the results of the test should be ignored.*

Subtests

The four subtests in the **Parallel Ports** test group and the port functions they test follow:

- **Parallel Internal Test**

  Checks several internal functions of the parallel port

- **Parallel External Loopback Test**

  Tests the functionality of the control lines through an external loopback connector, if an external loopback connector is available

- **Parallel External Interrupt Test**

  Tests the parallel port's ability to generate interrupts from all possible sources, if an external loopback connector or printer is available

- **Parallel Printer Pattern Test**

  Tests a printer and tests the parallel port's ability to send a pattern to the printer, if a printer is connected

Why Run a Parallel Ports Test?

If the diagnostics does not recognize the computer's parallel port, enter the System Setup program and check the **Parallel Port** option to see if the port has been disabled. (See "Using the System Setup Program" in the *User's Guide* for instructions.) The subtests in the **Parallel Ports** test group cannot test a port unless it is enabled.

When a port is faulty, it may not be immediately evident that the port, and not the device connected to the port, is faulty.

Instead, the peripheral might behave erratically or not operate at all. If the external device is not properly installed through the software, it also may not function properly. Try operating the peripheral from different programs or through the operating system. If it still does not work, you can eliminate the software setup as the cause of the problem.

Another possible cause of errors is the external device. Use the documentation that came with the peripheral to troubleshoot the device and confirm that it is working properly. (Most printers have a self-test.)

After you eliminate incorrect system configuration information settings, peripheral malfunctions, and software errors as potential causes of port problems, you can run the subtests in the **Parallel Ports** test group to check the hardware. Although the following symptoms can be caused by faulty peripherals or software errors, they might also suggest a port problem:

- If a peripheral works intermittently or produces intermittent errors, the port may be faulty.
- If the computer displays an error message that is related to the external device connected to a port but corrections to the device do not resolve the error, run the appropriate subtest in the **Parallel Ports** test group.
- If the software and the diagnostics do not recognize that you have a parallel port, check the **Parallel Port** setting in the System Setup program and, if necessary, run the appropriate subtest in the **Parallel Ports** test group.

SCSI Devices Test Group

The subtests in the **SCSI Devices** test group check the functionality of up to four small computer system interface (SCSI) host adapters and all the SCSI devices attached to them.

*NOTES: Before conducting these subtests on CD-ROM drives, insert a CD with audio and data tracks (such as a multimedia CD) into each CD-ROM drive. All of the subtests, except for the **Audio Output Test**, require a CD with data tracks. The **Audio Output Test** requires a CD with audio tracks.*

If a CD-ROM drive is empty or if it contains a CD that does not have the required data or audio tracks (depending on the subtest[s] being conducted), the subtest(s) will fail.

Subtests

The seven subtests in the SCSI Devices test group and the drive functions they test follow:

- **Internal Diagnostic**

  Causes the device to run its internal self-test.

- **Seek Test**

  Checks the device's ability to search for a specified track on the device and to position its read/write heads to all tracks.

- **Read Test**

  Positions the read/write heads at each block of the device for reading data and verifies that all tracks on the device can be read correctly.

- **Write Test**

  Positions the read/write heads at each block of the device for writing data and verifies that all tracks on the device can be written to correctly.

- **Audio Output Test**

Causes the CD-ROM drive to begin playing the first audio track on an audio CD. To determine whether the test passed, listen to the audio output of the drive.

*NOTE: To conduct the **Audio Output Test**, you must select it individually. It will not run as part of the test group.*

- **Eject Removable Media**

  Causes a CD-ROM drive to eject its CD or a SCSI tape drive to eject its tape cartridge.

- **Display Information**

  Displays a screen of information about each SCSI host adapter in the computer, the resources allocated to each SCSI host adapter, and a list of target devices attached to the SCSI host adapter.

Why Run a SCSI Devices Test?

If you check the SCSI hard-disk drive to determine the amount of available space, the operating system will probably report problem areas. Problem areas on hard-disk drives are common, because most hard-disk drives have a small amount of space that is not usable. The hard-disk drive keeps a record of this space so that the computer will not attempt to use it. Identification of unusable disk space, unless it is an unusually large amount (over *5 percent* of the possible total), should not be regarded as a cause for testing the hard-disk drive.

These are the most common symptoms that might prompt you to test a SCSI device:

- A SCSI hard-disk drive fails during the boot routine.
- Seek errors are reported by the operating system or application programs.
- An error message stating that the computer cannot read from or write to a SCSI device appears on the screen.
- Data on a SCSI device is corrupted or lost; this problem may be intermittent. Once saved by a program, files cannot be properly recalled.

Checking the Equipment: Dell® PowerEdge® 1300 Systems Installation and Troubleshooting Guide

Overview | Troubleshooting the Monitor | Troubleshooting the Keyboard | Troubleshooting I/O Ports | Troubleshooting the Basic I/O Functions | Troubleshooting a Parallel Printer | Troubleshooting a Serial I/O Device

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Overview

This file provides troubleshooting procedures for equipment that connects directly to the input/output (I/O) panel of the computer, such as the monitor, keyboard, mouse, or printer. Before performing any of the procedures in this file, see Checking Connections and Switches. Then perform the troubleshooting procedures for the equipment that is malfunctioning.

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

Troubleshooting the Monitor

Troubleshooting video problems involves determining which of the following is the source of the problem:

- Monitor and monitor interface cable
- Video memory
- Video logic of the computer or a video expansion card

If information on the monitor screen is displayed incorrectly or not at all, complete the following steps to solve the problem:

1. Turn on the system, including any attached peripherals.
2. Adjust the switches and controls including the horizontal and vertical position and size, as specified in the monitor's documentation, to correct the video image.
   Is the problem resolved?
   Yes. You have fixed the problem
   No. Go to step 3.
3. Run the Dell Diagnostics.
   See Running the Dell Diagnostics. Is the monitor display text properly?
   Yes. Go to step 5.
   No. Go to step 4.
4. Type g and press the down-arrow key four times. Then press the plus (+) key to send all error messages to a printer. To save the error messages to a diskette, insert a blank diskette into the diskette drive and press the plus (+) key twice to save the error messages to the diskette.
   Error messages that are sent to a diskette are saved in an American Standard Code for Information Interchange (ASCII) file named results.
   Do the error messages describe a video controller failure?
   Yes. Go to step 5.
   No. Go to step 6.
5. Run the **Video** test group in the Dell Diagnostics.
   See Running the Dell Diagnostics. Most of the tests in the **Video** test group require you to respond before the diagnostics continues with the next test.

Did the tests run successfully?

Yes. You have fixed the problem, or the problem is software-related. For information about installing video drivers, see "Using the Dell OpenManage Server Assistant CD" in the *User's Guide*.

No. Go to step 6.

6. Turn off the system and disconnect it from the electrical outlet. Swap the monitor with one of the same type that is working, and reconnect the system to the electrical outlet.
7. Run the **Video** test group in the Dell Diagnostics again.

Did the tests run successfully?

Yes. The monitor must be replaced. See [Getting Help](#) for instructions on obtaining technical assistance.

No. If a video expansion card is installed in the computer, see [Troubleshooting Expansion Cards](#). If no video expansion card is installed, the built-in video controller is faulty; see [Getting Help](#) for instructions on obtaining technical assistance.

Troubleshooting the Keyboard

This procedure determines what kind of keyboard problem you have. If a system error message indicates a keyboard problem when you start the computer system or while the Dell Diagnostics is running, complete the following steps:

1. Look at the keyboard and the keyboard cable for any signs of damage. Press and release each key on the keyboard.

Do the keyboard and its cable appear to be free of physical damage, and do the keys work?

Yes. Go to step 3.

No. Go to step 2.

2. Swap the faulty keyboard with a working keyboard.

To swap a faulty keyboard, unplug the keyboard cable from the computer's back panel and plug in a working keyboard.

Is the problem resolved?

Yes. The keyboard must be replaced. See [Getting Help](#) for instructions on obtaining technical assistance.

No. Go to step 3.

3. Run the **Keyboard** test group in the Dell Diagnostics.

See [Running the Dell Diagnostics](#).

Can you use the keyboard to select the **Keyboard** test group?

Yes. Go to step 4.

No. Go to step 5.

4. Did the **Keyboard Interactive Test** run successfully?

Yes. Go to step 6.

No. Go to step 5.

5. Swap the faulty keyboard with a working keyboard.
6. Did the **Keyboard Controller Test** run successfully?

Yes. The keyboard must be replaced. See [Getting Help](#) for instructions on obtaining technical assistance.

No. The keyboard controller on the system board is faulty. See [Getting Help](#) for instructions on obtaining technical assistance.

Troubleshooting I/O Ports

This section provides a procedure for troubleshooting the ports on the computer's I/O panel and the equipment connected to them, such as a printer, scanner, or other peripheral device.

You can also use this procedure to test I/O ports on expansion cards. However, you should first complete the procedures in [Troubleshooting Expansion Cards](#) to verify that the card is configured and installed correctly.

If a system error message indicates a port problem or if equipment connected to a port seems to perform incorrectly or not at all, the problem may stem from any of the following sources:

- A faulty connection between the I/O port and the peripheral device
- A faulty cable between the I/O port and the peripheral device
- A faulty peripheral device
- Incorrect settings in the System Setup program
- Incorrect settings in the system's configuration files
- Faulty I/O port logic on the system board

*NOTE: With certain modems installed, subtests in the **Serial Port** test group may fail because the modem appears to the diagnostics as a serial port but it cannot be tested as a serial port. If you have a modem installed and you experience a serial-port test failure, remove the modem and run the diagnostic tests again.*

Troubleshooting the Basic I/O Functions

This procedure determines whether the computer's basic I/O functions are operational. If a system error message indicates an I/O port problem or the device connected to the port does not function properly, follow these steps:

1. Enter the System Setup program, and check the **Serial Port 1**, **Serial Port 2**, **Parallel Port**, and **Mouse** settings.
   Are the communications ports set to **Auto**, and is **Mouse** set to On?
   Yes. Go to step 3.
   No. Go to step 2.
2. Change the **Serial Port 1**, **Serial Port 2**, and **Parallel Por**t settings to **Auto**, and change the **Mouse** setting to **On**; then reboot the system.
   Is the problem resolved?
   Yes. You have fixed the problem.
   No. Go to step 3.
3. Check the contents of the start-up files.
   See Installing and Configuring Software.
   Are the port configuration commands correct?
   Yes. Go to step 5.
   No. Go to step 4.
4. Change the necessary statements in the start-up files.
   If the port problem is confined to a particular application, see the application's documentation for specific port configuration requirements.
   Is the problem resolved?
   Yes. You have fixed the problem.
   No. Go to step 5.
5. Reboot the system from the diagnostics diskette, and run the **Serial/Infrared Ports** test group and/or the **Parallel Ports** test group in the Dell Diagnostics.
   See Running the Dell Diagnostics.
   The **Serial/Infrared Ports** test group and the **Parallel Ports** test group test the basic functions of the system board's I/O port logic. Also, if a parallel printer is connected to the parallel port, the **Parallel Ports** test group tests the communications link between the system board's I/O port logic and the printer.
   Did the tests run successfully?
   Yes. Go to step 6.
   No. See Getting Help for instructions on obtaining technical assistance.
6. If the problem persists, go to Troubleshooting a Parallel Printer or Troubleshooting a Serial I/O Device found later in this file, depending on which device appears to be malfunctioning.

Troubleshooting a Parallel Printer

If the procedure in the preceding subsection, Troubleshooting the Basic I/O Functions, indicates that the problem is with a parallel printer, follow these steps:

1. Turn off the parallel printer and computer.
2. Swap the parallel printer interface cable with a known working cable.
3. Turn on the parallel printer and computer.
4. Attempt a print operation on the parallel printer.
   Did the print operation run successfully?
   Yes. The interface cable must be replaced. See Getting Help for instructions on obtaining technical assistance.
   No. Go to step 5.
5. Run the parallel printer's self-test.
   Did the self-test run successfully?
   Yes. Go to step 6.
   No. The printer is probably defective. If the printer was purchased from Dell, see Getting Help for instructions on obtaining technical assistance.
6. Attempt another print operation on the parallel printer.
   Did the print operation run successfully?
   Yes. You have fixed the problem.
   No. See Getting Help for instructions on obtaining technical assistance.

Troubleshooting a Serial I/O Device

If the procedure in Troubleshooting the Basic I/O Functions found earlier in this file, indicates that the problem is with a device connected to one of the serial ports, follow these steps:

1. Turn off the computer and any peripheral devices connected to the serial ports.
   Are two serial devices connected to the computer?
   Yes. Go to step 2.
   No. Go to step 4.
2. Disconnect the devices from serial ports 1 and 2, and connect the malfunctioning serial device to the opposite port.
3. Turn on the computer and the reconnected serial device.
   Is the problem resolved?
   Yes. The serial port may be defective. See Getting Help for instructions on obtaining technical assistance.
   No. Go to step 4.
4. Swap the interface cable (that connects the device to the serial port) with a known working cable.
   Is the problem resolved?
   Yes. The interface cable must be replaced. See Getting Help for instructions on obtaining technical assistance.
   No. Go to step 5.
5. Turn off the computer and the serial device, and swap the device with a comparable working device.
   For example, if the serial mouse has a problem, swap it with a serial mouse that you know is working properly.
6. Turn on the computer and the serial device.
   Is the problem resolved?
   Yes. The serial device must be replaced. See Getting Help for instructions on obtaining technical assistance.
   No. See Getting Help for instructions on obtaining technical assistance.

Checking Inside the Computer: Dell® PowerEdge® 1300 Systems Installation and Troubleshooting Guide

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Overview

Your Dell PowerEdge 1300 system supports a variety of internal options that expand system capabilities. This file prepares you to install options inside the computer. It describes how to remove and replace the computer cover and rotate the power supply away from the system board. It also familiarizes you with the internal components you may handle if you install Dell hardware options.

Before You Begin

To make working inside your computer easier, make sure you have adequate lighting and a clean work space. If you temporarily disconnect cables or remove expansion cards, note the position of the connectors and slots so that you can reassemble the system correctly.

You will use the information in this section every time you install a hardware option inside your computer. *Read this section carefully*, because the information is not repeated in such detail elsewhere in this guide.

Safety First—For You and Your Computer

Working inside your computer is safe—*if* you observe the following precautions.

⚠️ **WARNING: FOR YOUR PERSONAL SAFETY AND PROTECTION OF YOUR EQUIPMENT**

Before starting to work on your computer, perform the following steps in the sequence indicated:

1. **Turn off your computer and all peripherals.**
2. **Disconnect your computer and peripherals from their AC power sources. Also, disconnect any telephone or telecommunication lines from the computer. Doing so reduces the potential for personal injury or shock.**
3. **If you are disconnecting a peripheral from the computer or are removing a component from the system board, wait 10 to 20 seconds after disconnecting the computer from AC power before disconnecting the peripheral or removing the component to avoid possible damage to the system board.**
4. **To verify that all power has been removed from the system, make sure that the standby light-emitting diode (LED) on the system board has gone out. For the location of this LED, see [Figure 1, System Board Features, in Installing System Board Options](#).**
5. **Touch an unpainted metal surface on the computer chassis, such as the power supply, before touching anything inside your computer.**

6. **While you work, periodically touch an unpainted metal surface on the computer chassis to dissipate any static electricity that might harm internal components. Also avoid touching components or contacts on a card and avoid touching pins on a chip.**

In addition, Dell recommends that you periodically review the safety instructions at the front of this guide.

Unpacking Your Hardware Option

When you remove an option from its shipping carton, you may find it wrapped in antistatic packing material designed to protect it from electrostatic damage. Do not remove the packing material until you are ready to install the option.

⚠ **CAUTION: See Protecting Against Electrostatic Discharge.**

Removing the Computer Cover

Use the following procedure to remove the computer cover:

1. Turn off your computer and peripherals, and make sure you unplug the computer from its electrical outlet before you remove the computer cover. Observe the Warning for Your Personal Safety and Protection of Your Equipment. Also observe the safety instructions at the front of this guide.
2. If you have installed a padlock through the padlock ring on the back panel (see Figure 1, Padlock Installed), remove the padlock.

   Figure 1. Padlock Installed.

security cable slot

padlock ring
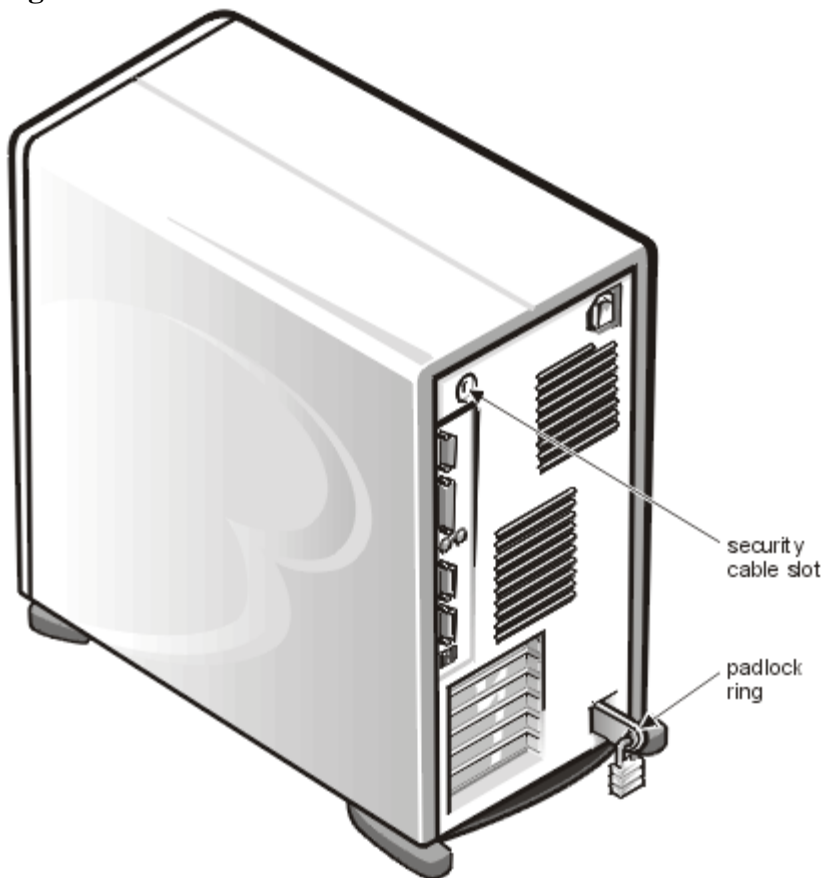
3. Remove the cover.
4. Facing the left side cover, press the release button (located at the bottom-left corner of the front bezel) and lift the bottom of the cover, allowing it to pivot up toward you (see Figure 2, Removing the Computer Cover).

Disengage the tabs that secure the cover to the top of the chassis, and lift the cover away.

Figure 2. Removing the Computer Cover

release button
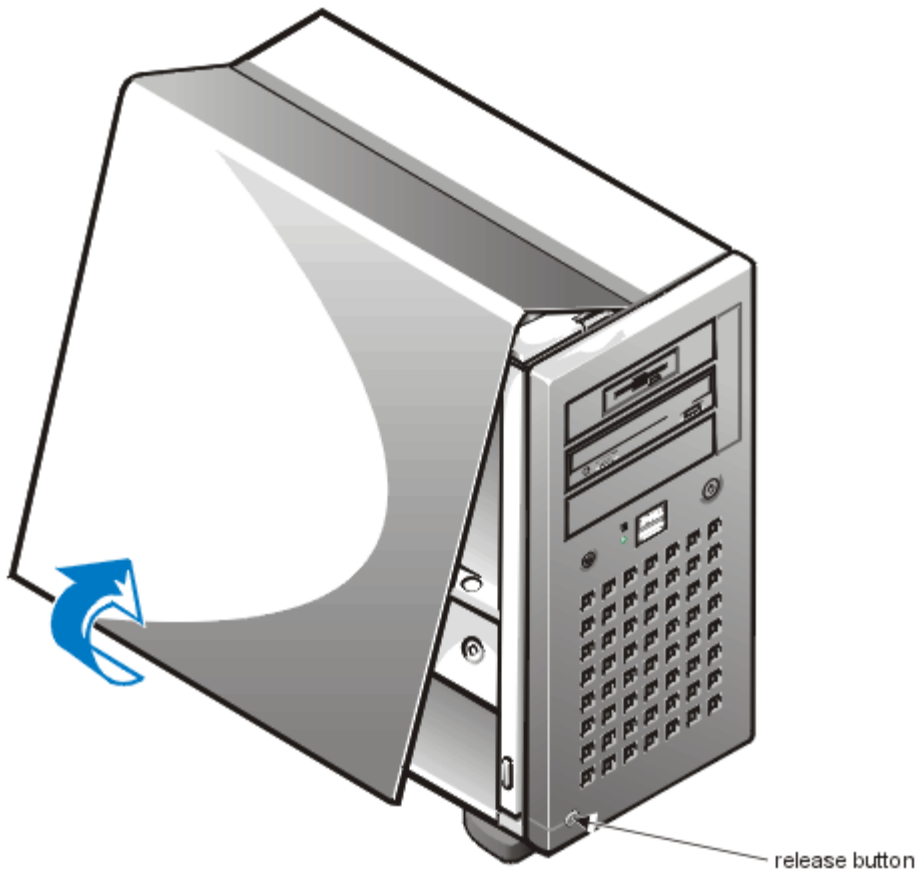
Replacing the Computer Cover

Use the following procedure to replace the computer cover:

1. Check all cable connections, especially those that might have come loose during your work. Fold cables out of the way so that they do not catch on the computer cover. Make sure cables are not routed over the drive cage—they will prevent the cover from closing properly.
2. Check to see that no tools or extra parts (including screws) are left inside the computer's chassis.
3. Replace the cover.
4. Facing the left side of the computer, hold the cover at a slight angle as shown in Figure 3, Replacing the Computer Cover, and then align the top of the cover with the top of the chassis. Hook the tabs on the cover into the recessed slots on the computer chassis so that the tabs catch the hooks inside the slots.

   Pivot the cover down toward the bottom of the chassis and into position. Make sure the securing hooks at the bottom of the cover click into place.

   Figure 3. Replacing the Computer Cover

tab (3)

recessed slot
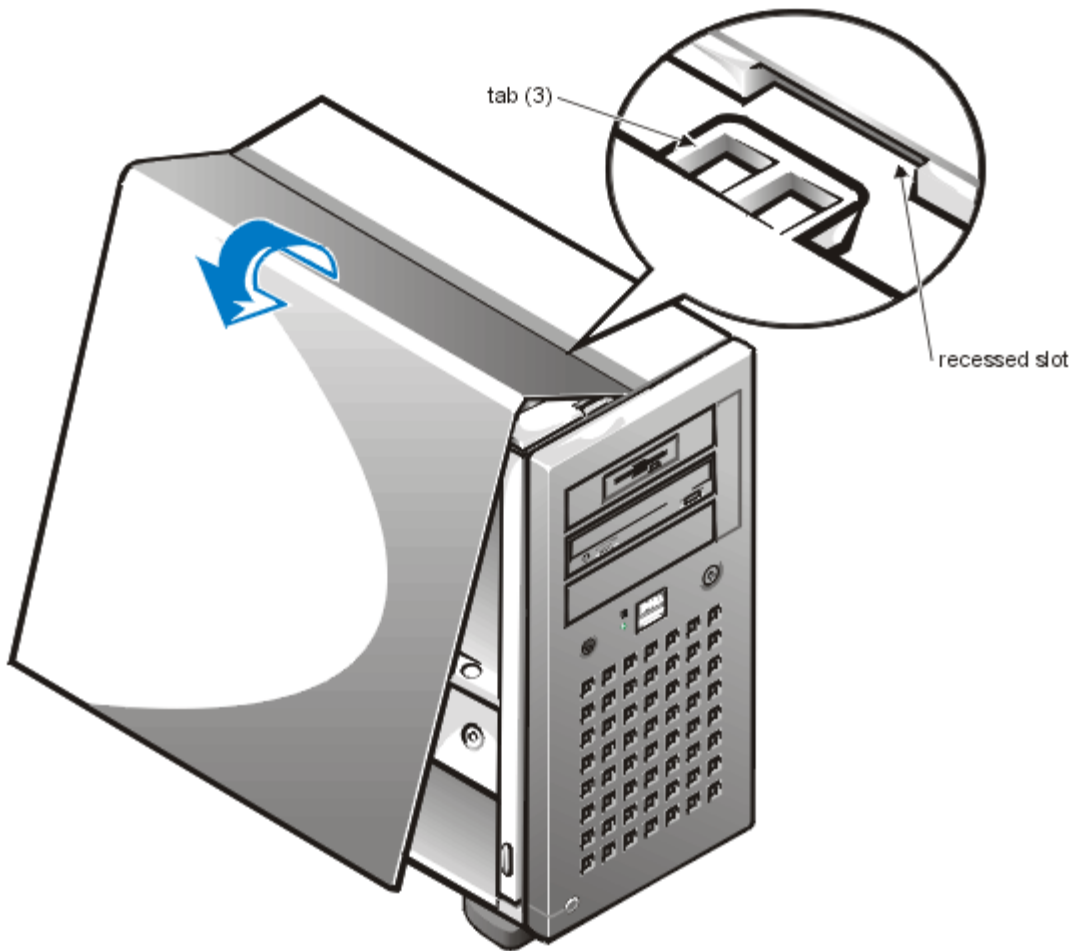
5. If you are using a padlock to secure your system, reinstall the padlock.

   NOTE: After removing and replacing the chassis, the chassis intrusion detector will cause the following message to be displayed at the next system start-up:

   ```
   ALERT! Cover was previously removed.
   ```

6. Reset the chassis intrusion detector by entering the System Setup program and setting **Chassis Intrusion** to **Not Detected**.
   See "Using the System Setup Program" in your *User's Guide* for instructions.

   NOTE: If a setup password has been assigned by someone else, contact your network administrator for information on resetting the chassis intrusion detector.

Inside Your Computer

Figure 4, Computer Orientation View, shows a side view of your computer to help you orient yourself when installing hardware options. Unless otherwise specified, locations or directions relative to the computer are as shown.

Figure 4. Computer Orientation View

back of computer

left side   right side

front of computer
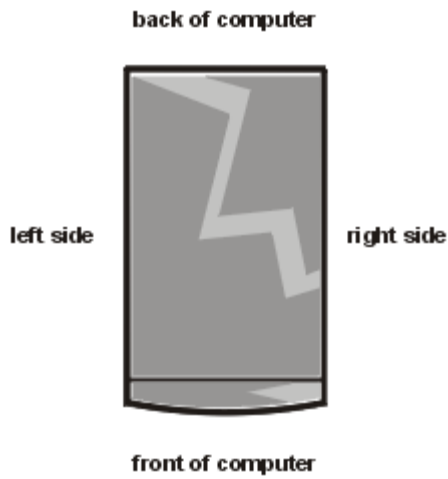
[Figure 5, Inside the Chassis](#), shows your computer with its cover removed. Refer to this illustration to locate interior features and components discussed in this guide.

Figure 5. Inside the Chassis

power supply

AC power receptacle

security cable lock

input/output (I/O) panel

expansion card slots

padlock ring

external drive bays

internal drive bays

drive interface cable

drive power cable
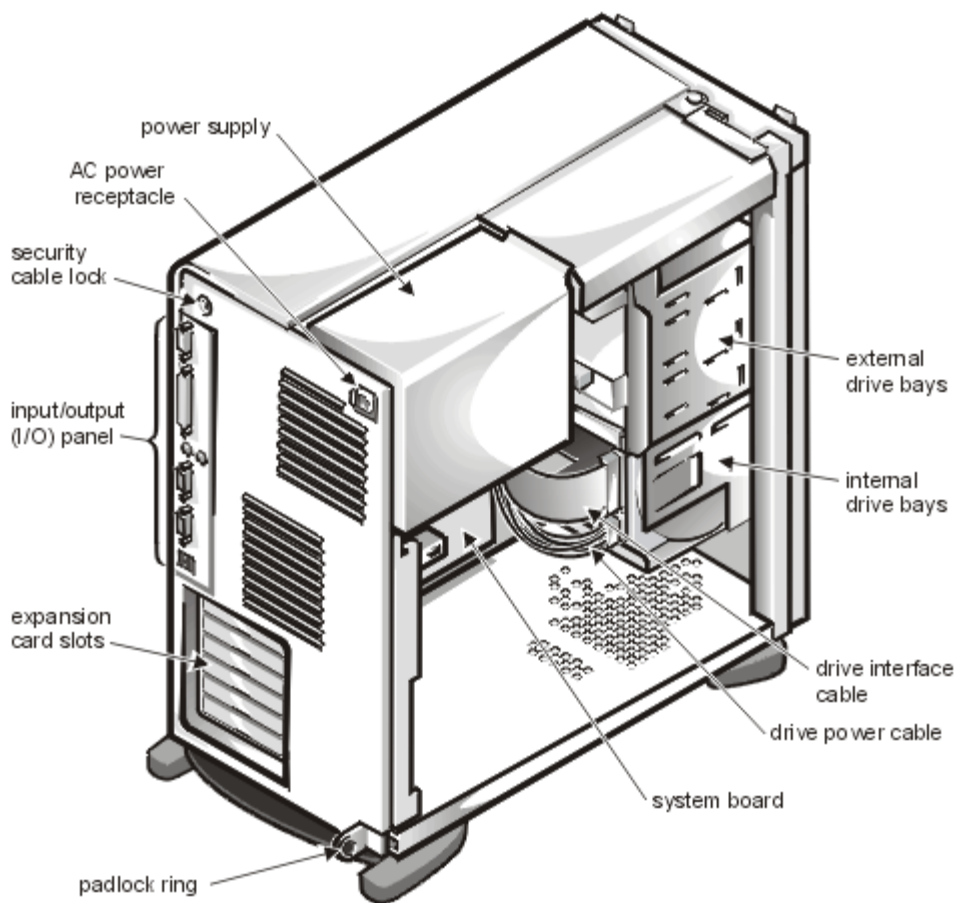
system board

The system board holds the computer's control circuitry and other electronic components. Some hardware options are installed directly on the system board. Drive support is as follows:

- The three 5.25-inch external drive bays provide space for up to three drives, including a 3.5-inch diskette drive (standard) and, typically, an optional CD-ROM drive and/or tape drive.
- The removable hard-disk drive cage provides space for up to four 1-inch or up to two 1.6-inch and up to two 1-inch small computer system interface (SCSI) hard-disk drives.

When you look inside the computer, note the DC power cables leading from the power supply. The power cables supply power to the system board, drives, and any expansion cards that connect to external peripherals.

The wide ribbon cables are the interface cables for internal drives. For non-SCSI drives such as the diskette drive, an interface cable connects each drive to an interface connector on the system board or on an expansion card. For SCSI devices, interface cables connect the devices to a SCSI host adapter either on the system board or on an expansion card. (For more information, see Installing Drives.)

During an installation or troubleshooting procedure, you may be required to change a jumper or switch setting. For information on the system board jumpers, see Jumpers, Switches, and Connectors.

Rotating the Power Supply Away From the System Board

To access some components on the system board, you may have to rotate the system power supply out of the way. Use the following procedure to rotate the power supply:

1. Remove the computer cover as instructed in Removing the Computer Cover.
2. Disconnect the AC power cable from the AC power receptacle on the back of the power supply (see Figure 6, Rotating the Power Supply).

Figure 6. Rotating the Power Supply
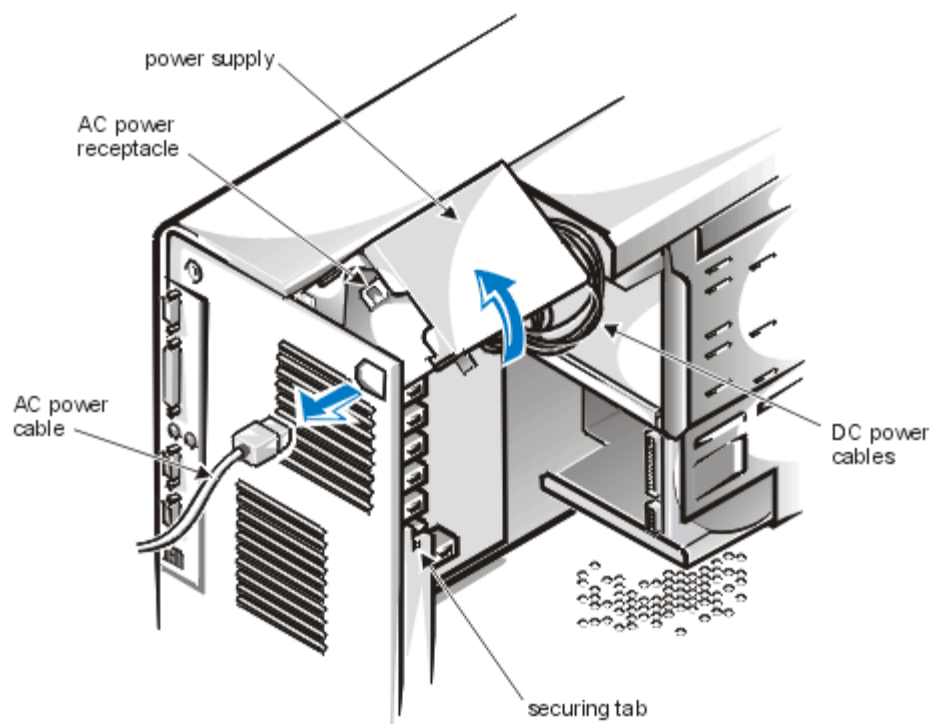
3. Free the power supply by pressing the securing tab labeled "RELEASE," then rotate the power supply upward until it locks in one of its extended positions.
4. The power supply bracket has detents to hold the power supply up in one of several extended positions, which are especially useful when the chassis is standing upright.

Removing and Replacing the Front Bezel

The bezel is secured to the front of the chassis by two tabs and two hooks. The tab release for the bezel is at the top of the computer chassis and can be accessed only with the computer cover removed (see Removing the Computer Cover). With the cover removed, release the bezel by pressing the tab release marked with the icon (see Figure 7, Removing the Front Bezel).

Figure 7. Removing the Front Bezel
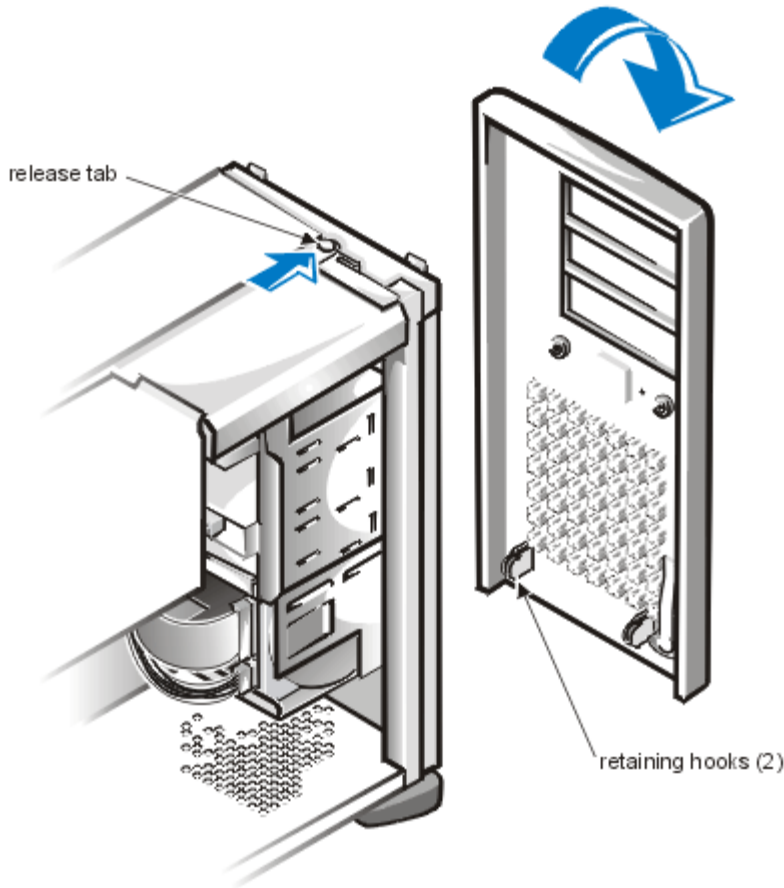
While pressing the tab release, tilt the bezel away from the chassis, disengage the two retaining hooks at the bottom of the bezel, and carefully pull the bezel away from the chassis.

To replace the bezel, fit the two retaining hooks on the bezel into their corresponding slots at the bottom of the chassis. Then rotate the top of the bezel toward the chassis until the top tabs snap into their corresponding slots on the bezel.

Removing and Replacing Front-Panel Inserts

Empty 5.25-inch drive bays contain a front-panel insert to protect the inside of the computer from dust particles and also to ensure proper airflow within the computer. Before you install a drive in an empty drive bay, you must first remove the front-panel insert (see Figure 8, Removing a Front-Panel Insert).

To remove the insert covering a drive bay, follow these steps:

1. Turn off the system, including any attached peripherals, and disconnect all the AC power cables from their power

sources.
2. Remove the computer cover as instructed in Removing the Computer Cover.
3. Remove the front bezel using the instructions in Removing and Replacing the Front Bezel.
4. With your thumbs, press in on each end of the insert until the insert snaps free of the bezel.

Figure 8. Removing a Front-Panel Insert
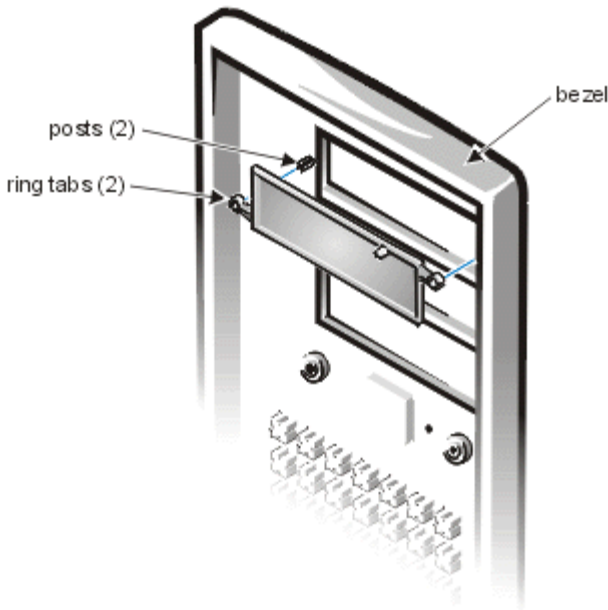
To replace a front-panel insert, work from inside the bezel. Insert the two ring-tabs (one on each end of the insert) over the posts on the inside of the bay opening, and firmly press both ends of the insert into place.

Responding to a Dell OpenManage™ HIP Alert Message

The Dell OpenManage Hardware Instrumentation Package (HIP) server management application monitors critical system voltages and temperatures, the system cooling fan, and the status of the SCSI hard-disk drives in the computer. The application generates alert messages that appear in the Simple Network Management Protocol (SNMP) trap log file. For information about the **Alert Log** window and options, see the Dell OpenManage HIP online help and the *HP OpenView Network Node Manager Special Edition x.x With Dell OpenManage™ HIP x.x User's Guide*.

Troubleshooting a Wet Computer

Liquid spills, splashes, and excessive humidity can cause damage to the system. If an external device (such as a printer or an external drive) gets wet, contact the device manufacturer for instructions. If the computer gets wet, complete the following steps.

⚠️ **CAUTION: See Protecting Against Electrostatic Discharge in the Safety Instructions.**

1. Turn off the system, including any attached peripherals, and disconnect the system from the electrical outlet. Remove the computer cover.
   See Removing the Computer Cover.
2. Let the computer dry for at least 24 hours. Make sure that it is thoroughly dry before proceeding.

3. Remove all expansion cards installed in the computer.
   See [Removing an Expansion Card](#).
4. Replace the computer cover, reconnect the system to the electrical outlet, and turn on the system.
   Does the system have power?
   Yes. Go to step 6.
   No. See [Getting Help](#) for instructions on obtaining technical assistance.
5. Turn off the system, disconnect it from the electrical outlet, remove the computer cover, and reinstall all expansion cards you removed in step 4.
   See [Installing an Expansion Card](#).
6. Replace the computer cover, and reconnect the system to the electrical outlet.
7. Run the **System Set** test group in the Dell Diagnostics.
   See [Running the Dell Diagnostics](#).
   Did the tests run successfully?
   Yes. The system is operating properly.
   No. See [Getting Help](#) for instructions on obtaining technical assistance.

Troubleshooting a Damaged Computer

If the computer was dropped or damaged while being moved, you should check the computer to see if it functions properly. If an external device attached to the computer is dropped or damaged, contact the manufacturer of the device for information on obtaining technical assistance from Dell. Follow these steps to troubleshoot a damaged computer:

1. Turn off the system, including any attached peripherals, and disconnect the system from its electrical outlet.

⚠️ **CAUTION: See [Protecting Against Electrostatic Discharge](#) in the Safety Instructions.**

2. Remove the computer cover.
   See [Removing the Computer Cover](#).
3. Check all the board and card connections in the computer.
4. Verify all internal cable and component connections.
   Make sure that all cables are properly connected and that all components are properly seated in their connectors and sockets.
5. Replace the computer cover and reconnect the system to the electrical outlet.
6. Run the **System Set** test group in the Dell Diagnostics.
   See [Running the Dell Diagnostics](#).
   Did the tests run successfully?
   Yes. The system is operating properly.
   No. See [Getting Help](#) for instructions on obtaining technical assistance.

Troubleshooting the Battery

If an error message indicates a problem with the battery, or if the System Setup program loses the system configuration information when the computer is turned off, the battery may be defective.

Follow these steps to troubleshoot the battery:

1. Turn off the system, including any attached peripherals, and disconnect the system from its electrical outlet.

⚠️ **CAUTION: See [Protecting Against Electrostatic Discharge](#) in the Safety Instructions.**

2. Remove the computer cover.

See [Removing the Computer Cover](#).

3. If an expansion card blocks your access to the battery, remove the expansion card.
   See [Removing an Expansion Card](#) for instructions.
4. Check the connection of the coin cell battery to the system board.
   Is the battery firmly installed in the battery socket on the system board?
   Yes. Go to step 6.
   No. Go to step 5.
5. Reseat the battery in its socket.
   Is the problem resolved?
   Yes. The battery was loose. You have fixed the problem.
   No. Continue with this procedure.

WARNING
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.

6. Replace the battery.
   See [Replacing the System Battery](#) for instructions on replacing the battery.
   Is the problem resolved?
   Yes. The battery's charge was low. You have fixed the problem.
   No. See [Getting Help](#) for instructions on obtaining technical assistance.
7. Reinstall the expansion cards removed in step 3, if applicable.
8. Replace the system cover, and reconnect the system to the electrical outlet.

Troubleshooting the Power Supply

The system contains one 330 watt power supply that can be rotated up to provide access to the system board (see [Figure 6, Rotating the Power Supply](#)).

Troubleshooting Power Cable Connections

Follow these steps to troubleshoot power cable connections:

1. Check the power outlet and power cable (see [Checking Connections and Switches](#)).
2. Turn off the system, including any attached peripherals, and disconnect all the power cables from the electrical outlets.

⚠️ **CAUTION: See [Protecting Against Electrostatic Discharge](#) in the Safety Instructions.**

3. Remove the computer cover.
   See [Removing the Computer Cover](#).
4. Check the power cable connection to the POWER_1 connector on the system board.

Troubleshooting the Cooling Fan

If you experience trouble with the cooling fan, make sure the fan cable is plugged into the [FAN connector on the system board](#).

Troubleshooting Expansion Cards

If an error message indicates an expansion-card problem or if an expansion card seems to perform incorrectly or not at all, the problem could be a faulty connection, a conflict with software or other hardware, or a faulty expansion card. Follow these steps to troubleshoot expansion cards:

1. Start the Resource Configuration Utility (RCU), and verify that all ISA expansion cards have been configured correctly. Save the configuration before exiting the utility.
   See "Using the Resource Configuration Utility," in the *User's Guide* for instructions.
2. Turn off the system, including any attached peripherals, and disconnect the system from the electrical outlet.

⚠ **CAUTION: See [Protecting Against Electrostatic Discharge](#) in the Safety Instructions.**

3. Remove the computer cover and verify that each expansion card is firmly seated in its connector.
   See [Removing the Computer Cover](#).
   Are the expansion cards properly seated in their connectors?
   Yes. Go to step 5.
   No. Go to step 4.
4. Reseat the expansion cards in their connectors.
   See [Removing an Expansion Card](#) and [Installing an Expansion Card](#) for instructions on removing and replacing expansion cards.
   Is the problem resolved?
   Yes. The connection was loose. You have fixed the problem.
   No. Go to step 5.
5. Verify that any appropriate cables are firmly connected to their corresponding connectors on the expansion cards.
   For instructions on which cables should be attached to specific connectors on an expansion card, see the expansion card's documentation.
   Are the appropriate cables firmly attached to their connectors?
   Yes. Go to step 7.
   No. Go to step 6.
6. Reconnect the cable connectors to the appropriate connectors on the expansion cards.
   Is the problem resolved?
   Yes. The cable connections were loose. You have fixed the problem.
   No. Go to step 7.
7. If applicable, inspect all jumpers and configuration switches on each expansion card.
   Most ISA expansion cards have configuration settings for an interrupt request (IRQ) line, a direct memory access (DMA) channel, and a base memory or basic input/output system (BIOS) address. To keep expansion cards from conflicting with each other, you need to know both the starting memory address and the amount of memory required by each card.
   For instructions on jumper and configuration settings, see the expansion card's documentation.
   Is each expansion card configured correctly?
   Yes. Go to step 9.
   No. Go to step 8.
8. Reconfigure the card according to the instructions in the card's documentation.
   Is the problem resolved?
   Yes. The memory configuration of the card was incorrect. You have fixed the problem.
   No. Go to step 9.
9. Remove all expansion cards.
   See [Removing an Expansion Card](#) for information on removing expansion cards.
10. Replace the computer cover, reconnect the system to the electrical outlet, and turn on the system.
11. Enter the System Setup program, and update the system configuration information.
    See "Using the System Setup Program" in the *User's Guide* for instructions.
    For any ISA expansion cards, run the RCU and update the configuration information. See "Using the Resource

Configuration Utility" in the *User's Guide* for instructions.
12. Run the RAM test group in the Dell Diagnostics.
    See Running the Dell Diagnostics.
    Did the tests run successfully?
    Yes. Go to step 13.
    No. See Getting Help for information on obtaining technical assistance.
13. Turn off the system, including any attached peripherals, and disconnect the system from the electrical outlet.
14. Remove the computer cover, reinstall one of the expansion cards you removed in step 9, and repeat steps 10 through 12.
15. Repeat steps 13 and 14 for each of the remaining expansion cards that you removed in step 9.
    Have you reinstalled all of the expansion cards without encountering a test failure?
    Yes. You have fixed the problem.
    No. See Getting Help for information on obtaining technical assistance.

Troubleshooting System Memory

A system memory problem can be a faulty dual in-line memory module (DIMM) or a faulty system board. If a random-access memory (RAM) error message appears, the system probably has a memory problem.

When you turn on or reboot the system, the <Caps Lock> and <Scroll Lock> indicators on the keyboard should flash momentarily and then turn off. If **Num Lock** in the System Setup program is set to **On**, the <Num Lock> indicator should flash momentarily and then remain on; otherwise, it should turn off. Abnormal operation of these indicators can result from a defective DIMM in socket DIMM_A.

Follow these steps to troubleshoot system memory:

1. Turn on the system, including any attached peripherals.
   Is there an error message indicating invalid system configuration information after the memory count is completed?
   Yes. Go to step 2.
   No. Go to step 10.
2. Enter the System Setup program and check the **System Memory** setting.
   See "Using the System Setup Program" in the *User's Guide* for instructions.
   Does the amount of memory installed match the **System Memory** setting?
   Yes. Go to step 10.
   No. Go to step 3.
3. Turn off the system, including any attached peripherals, and disconnect the power cable from the electrical outlet.

⚠️ **CAUTION: See Protecting Against Electrostatic Discharge in the Safety Instructions.**

4. Remove the computer cover.
   See Removing the Computer Cover.
5. Remove the support panel.
   Turn the two thumbscrews on the support panel and pull the tabs on the right side of the panel out of the slots in the chassis.
6. Reseat the DIMMs in their sockets.
   See Adding Memory for instructions on removing and replacing DIMMs.
7. Replace the support panel.
   Align the panel so that the two tabs are to the right. Fit the tabs into the two slots on the chassis back and swing the panel closed. Secure the panel with the two thumbscrews.
8. Replace the computer cover, reconnect the system to an electrical outlet, and turn on the system.
9. Enter the System Setup program and check the **System Memory** setting again.

Does the amount of memory installed match the **System Memory** setting?

Yes. Go to step 10.

No. Go to step 11.

10. Reboot the system, and observe the monitor screen and the <Num Lock>, <Caps Lock>, and <Scroll Lock> indicators on the keyboard.

    Does the monitor screen remain blank, and do the <Num Lock>, <Caps Lock>, and <Scroll Lock> indicators on the keyboard remain on?

    Yes. Go to step 11.

    No. Go to step 13.

11. Repeat steps 3 and 4.

12. If possible, swap the DIMM in socket DIMM_A with one of the same capacity, reboot the system, and observe the monitor screen and the indicators on the keyboard.

    Is the problem resolved?

    Yes. You have fixed the problem.

    No. Go to step 13.

13. Run the RAM test group in the Dell Diagnostics.

    See [Running the Dell Diagnostics](#).

    Did the tests run successfully?

    Yes. You have fixed the problem.

    No. See [Getting Help](#) for instructions on obtaining technical assistance.

Troubleshooting the Video Subsystem

Troubleshooting video problems involves determining which of the following is the source of the problem: the monitor, the monitor interface cable, the video memory, or the video logic of the computer. You can also have a high-resolution video expansion card installed, which overrides the video logic of the computer.

The following procedure troubleshoots problems with the video memory and video logic only. Before you begin, perform the procedure found in [Troubleshooting the Monitor](#) to determine whether or not the monitor is the source of the problem.

If you have a high-resolution video expansion card, first complete the steps in [Troubleshooting Expansion Cards](#) to verify that the card is configured and installed correctly.

Follow these steps to troubleshoot the video subsystem:

1. Run the **Video** test group in the Dell Diagnostics.

   See [Running the Dell Diagnostics](#).

   Most of the tests in the **Video** test group are interactive; that is, you must respond before the diagnostics continues with the next test.

   Did the tests run successfully?

   Yes. It is not a video hardware problem. Go to [Finding Software Solutions](#).

   No. Go to step 2.

2. Turn off the system, including any attached peripherals, and disconnect the power cable from the electrical outlet.

⚠️ **CAUTION: See [Protecting Against Electrostatic Discharge](#) in the Safety Instructions.**

3. Remove the computer cover.

   See [Removing the Computer Cover](#).

4. Determine whether a video expansion card is installed.

   Is a video expansion card installed?

   Yes. Go to step 5.

   No. The integrated video controller is faulty. See [Getting Help](#) for instructions on obtaining technical assistance.

5. Remove the video expansion card, connect the monitor interface cable to the video connector on the computer's back panel.
6. Replace the computer cover, reconnect the system to an electrical outlet, and turn on the system.
   Did the tests run successfully?
   Yes. The video expansion card is faulty. See Getting Help for instructions on obtaining technical assistance.
   No. See Getting Help for instructions on obtaining assistance.

Troubleshooting the System Board

A system board problem can result from a defective system board component, a faulty power supply, or a defective component connected to the system board. If an error message indicates a system board problem, follow these steps to troubleshoot the problem:

1. Turn off the system, including any attached peripherals, and disconnect the system from its electrical outlet.

⚠ **CAUTION: See Protecting Against Electrostatic Discharge in the Safety Instructions.**

2. Remove the computer cover.
   See Removing the Computer Cover.
3. Reseat the DIMMs in their sockets.
   See Adding Memory for instructions on removing and replacing DIMMs.
4. Replace the computer cover, reconnect the system to the electrical outlet, and turn on the system.
   Is the problem resolved?
   Yes. You have fixed the problem.
   No. Go to step 5.
5. Remove all expansion cards except the SCSI host adapter card and the video expansion card (if they are installed).
6. Replace the computer cover, reconnect the system to the electrical outlet, and turn on the system.
7. For any ISA expansion cards, run the RCU and update the configuration information.
   See "Using the Resource Configuration Utility" in the *User's Guide* for instructions.
8. Enter the System Setup program and update the system information.
   See "Using the System Setup Program" in the *User's Guide* for instructions.
9. Run the **System Set** test group in the Dell Diagnostics.
   See Running the Dell Diagnostics.
   Did the tests run successfully?
   Yes. Go to step 10.
   No. Go to step 15.
10. Repeat steps 1 and 2.
11. Reinstall one of the expansion cards you removed in step 5, repeat steps 6 through 8, and continue with step 12.
12. Run the **System Set** test group again.
    Did the tests run successfully?
    Yes. Go to step 13.
    No. Go to step 14.
13. Repeat step 11 for each of the remaining expansion cards you removed in step 5.
    Have you reinstalled all of the expansion cards without a test failure?
    Yes. Go to step 14.
    No. One of the expansion cards is faulty. See Getting Help for instructions on obtaining technical assistance.
14. Disconnect the keyboard and reboot the system.
    Does the system boot successfully to the operating system?
    Yes. Go to step 15.
    No. See Getting Help for instructions on obtaining technical assistance.
15. Swap the keyboard with a comparable working keyboard and run the **System Set** test group again.
    Did the tests run successfully?

Yes. You have fixed the problem.
No. See <u>Getting Help</u> for instructions on obtaining technical assistance.

Troubleshooting the Diskette Drive Subsystem

If the monitor displays a system error message indicating a diskette drive problem during execution of either the boot routine or the Dell Diagnostics, the problem may be caused by any of the following conditions:

- The system configuration settings do not match the physical diskette subsystem configuration.
- The diskette drive cable is not properly connected or *is* faulty.
- An expansion card is interfering with proper drive operations.
- A diskette drive may be improperly configured.
- The diskette drive is faulty.
- The computer's power supply is not providing sufficient power for the drives.
- The computer's diskette drive logic is faulty.

Follow these steps to troubleshoot the diskette drive subsystem:

1. Enter the System Setup program, and verify that the system is configured correctly for the **Diskette Drive A** setting.
   See "Using the System Setup Program" in the *User's Guide* for instructions.
2. If the system configuration settings are incorrect, make the necessary corrections in the System Setup program, and then reboot the system.
3. Run the **Diskette Drives** test group in the Dell Diagnostics to see whether the diskette drive subsystem now works correctly.
   See <u>Running the Dell Diagnostics</u> for more information.
   Did the tests run successfully?
   Yes. If you were in the middle of another procedure, continue with the next step in the procedure you were performing.
   No. Go to step 4.
4. Turn off the system, including any attached peripherals, and disconnect the system from its electrical outlet.

⚠ **CAUTION: See <u>Protecting Against Electrostatic Discharge</u> in the Safety Instructions.**

5. Remove the computer cover.
   See <u>Removing the Computer Cover</u>.
6. Check the diskette drive cabling.
   Is the diskette drive securely connected to the diskette-drive interface cable connector?
   Is the diskette-drive interface cable securely connected to the interface connector (labeled "DISKETTE") on the system board?
   Is the drive's DC power cable firmly connected to the drive?
   Yes. Go to step 8.
   No. Go to step 7.
7. Reconnect the DC power cable connector.
8. Replace the computer cover, reconnect the system to the electrical outlet, and turn on the system.
9. Run the **Diskette Drives** test group in the Dell Diagnostics to determine whether the diskette drive subsystem now works correctly.
   See <u>Running the Dell Diagnostics</u> for more information.
   Did the tests run successfully?
   Yes. You have fixed the problem.
   No. Go to step 10.
10. Repeat steps 4 and 5, and remove all expansion cards.

See Removing an Expansion Card for instructions.
11. Replace the computer cover, reconnect the system to the electrical outlet, and turn on the system.
12. Run the **Diskette Drives** test group in the Dell Diagnostics to determine whether the diskette drive subsystem now works correctly.
Did the tests run successfully?
Yes. An expansion card may be conflicting with the diskette drive logic, or you may have a faulty expansion card. Repeat steps 1, 2, and 3.
No. Go to step 13.
13. Repeat steps 4 and 5, and reinstall one of the expansion cards you removed in step 10.
See Installing an Expansion Card for instructions.
14. Replace the computer cover, reconnect the system to the electrical outlet, and turn on the system.
15. Run the **Diskette Drives** test group in the Dell Diagnostics to determine whether the diskette drive subsystem now works correctly.
Did the tests run successfully?
Yes. Go to step 16.
No. Go to step 17.
16. Repeat steps 13 through 15 until all expansion cards have been reinstalled or until one of the expansion cards prevents the system from booting from the diagnostics diskette.
17. Repeat steps 4 and 5. Verify that the drive's termination is enabled and that the drive-select jumper is set to the DS1 position.
Some diskette drives may require you to remove the drive from the computer to change the drive's termination and drive-select settings. For information on removing and replacing diskette drives, see Installing a Drive in a 5.25-Inch Drive Bay.
For information about the drive's termination and drive-select settings, refer to the documentation for the drive.
Is the drive configured correctly?
Yes. See Getting Help for instructions on obtaining technical assistance.
No. Go to step 18.
18. Correct the drive-select jumper and drive termination settings.
19. Replace the computer cover, reconnect the system to the electrical outlet, and turn on the system.
20. Run the **Diskette Drives** test group in the Dell Diagnostics to see whether the diskette drive subsystem now works correctly.
Did the tests run successfully?
Yes. You have solved the problem.
No. See Getting Help for instructions on obtaining technical assistance.

Troubleshooting a SCSI Tape Drive

A SCSI tape drive can be installed in one of the externally accessible drive bays. In the PowerEdge 1300, the SCSI tape drive can be controlled by the integrated SCSI controller or by a host adapter card installed in the computer. SCSI devices often require device drivers for the particular operating system being used by the computer system.

Tape drive problems often result from a defective tape drive, a defective tape cartridge, or software. Follow these steps to troubleshoot a SCSI tape drive:

1. Remove the tape that was in use when the problem occurred and replace it with a tape that you know is not defective.
Is the problem resolved?
Yes. The original tape was defective. Replace it with a new tape. You have fixed the problem.
No. Go to step 2.
2. Reboot the system and press <F2> to enter the System Setup program.
Is the **SCSI** option set to **On**?
Yes. Go to step 4.
No. Go to step 3.

3. Change the **SCSI** setting to **On**, and reboot the system.
   Is the problem resolved?
   Yes. You have fixed the problem.
   No. Go to step 4.
4. Verify that any required SCSI device drivers are installed on the hard-disk drive and are configured correctly.
   See "Installing and Configuring SCSI Drivers," in the *User's Guide* for instructions on installing and configuring the SCSI device drivers for the system's integrated SCSI host adapter or Dell PowerEdge Expandable RAID Controller host adapter card. For any other type of SCSI host adapter card, see the documentation that accompanied the card.
   Are the drivers installed and configured correctly?
   Yes. Go to step 5.
   No. The SCSI device drivers were installed or configured incorrectly or were corrupted. Reinstall the SCSI device drivers You have fixed the problem.
5. Reinstall the tape backup software as instructed in the tape-backup software documentation.
   Is the problem resolved?
   Yes. The tape backup software was corrupted. You have fixed the problem.
   No. Go to step 6.
6. Reboot the system and check for the presence of the tape drive during the optional ROM scan sequence.
   Is the problem resolved?
   Yes. The drive is correctly cabled and is receiving power. Go to step 12.
   No. Go to step 7.
7. Turn off the system, including any attached peripherals, and disconnect the system from its electrical outlet.
   ⚠️ **CAUTION: See Protecting Against Electrostatic Discharge in the Safety Instructions**.
8. Remove the computer cover.
   See Removing the Computer Cover.
9. Check the SCSI cable connections to the tape drive and to the SCSI host adapter connector. If the tape drive is an internal device, check the DC power cable connection to the tape drive.
   Are the cables firmly connected?
   Yes. Go to step 11.
   No. Go to step 10.
10. Reseat the cable connectors and replace the computer cover. Reconnect the system to the electrical outlet and turn it on.
    Is the problem resolved?
    Yes. You have fixed the problem.
    No. Go to step 11.
11. Turn off the system, including any attached peripherals, and disconnect the power cable from its electrical outlet. Then remove the computer cover.
12. Remove the tape drive. Then verify that the tape drive is configured for a unique SCSI ID number and that the tape drive is terminated or not terminated as appropriate.
    See the documentation for the tape drive for instructions on selecting the SCSI ID and enabling or disabling termination.
    Is the tape drive configured correctly?
    Yes. Go to step 15.
    No. Go to step 13.
13. Reconfigure the tape drive's SCSI ID and termination settings as appropriate. Reinstall the tape drive, replace the computer cover, and reconnect the system to the electrical outlet and turn it on.
    Is the problem resolved?
    Yes. The tape drive was configured incorrectly. You have fixed the problem.
    No. Go to step 14.
14. Repeat steps 7 and 8.
15. Replace the SCSI cable that connects the tape drive to the SCSI host adapter. Replace the computer cover, and then reconnect the system to the electrical outlet and turn it on.
    Is the problem resolved?

Yes. You have fixed the problem.

No. <u>Getting Help</u> for instructions on obtaining technical assistance.

Troubleshooting SCSI Hard-Disk Drives

Use the following procedure to troubleshoot a hard-disk drive problem if your system includes one or more SCSI hard-disk drives and does not contain a SCSI backplane board.

⚠️ **CAUTION: This troubleshooting procedure can destroy data stored on the hard-disk drive. Before you proceed, make sure you have backed up all the files on your hard-disk drive.**

1. Boot the system from a diskette, and enter the System Setup program.
   Refer to your system documentation for more information about the hard-disk drive categories.
   Are both of the hard-disk drive categories set to None?
   Yes. Go to step 3.
   No. Go to step 2.
2. Change both categories to **None**, and reboot the system.
   Is the problem resolved?
   Yes. The system configuration settings were set incorrectly. You have fixed the problem.
   No. Go to step 3.
3. Verify that any required SCSI device drivers are installed and configured correctly.
   If the system is using the built-in SCSI host adapter or the AHA-2940U2W SCSI controller card, see the *SCSI Device Driver Installation and Configuration Guide* to determine which drivers are required and how they should be installed and configured.
   Are the required SCSI device drivers installed and configured correctly?
   Yes. Go to step 5.
   No. Go to step 4.
4. Reinstall and/or reconfigure the required SCSI device drivers.
   Then reboot the system.
   Is the problem resolved?
   Yes. You have fixed the problem.
   No. Go to step 5.
5. Turn off the system, including any attached peripherals, and disconnect all the AC power cables from their power sources. Also, disconnect any telephone or telecommunication lines from the computer.
6. <u>Remove the computer cover</u>.

⚠️ **CAUTION: See <u>**Protecting Against Electrostatic Discharge**</u> in the Safety Instructions.**

7. Check the SCSI cable connection to the drive and to the SCSI host adapter. Check the DC power cable connection to the drive.
   Are the cables firmly connected?
   Yes. Go to step 9.
   No. Go to step 8.
8. Reseat the cable connectors, replace the computer cover, reconnect the system to AC power, reconnect any telephone or telecommunication lines to the computer, and turn it on.
   Is the problem resolved?
   Yes. The cables were loose. You have fixed the problem.
   No. Go to step 9.
9. Turn off the system, disconnect it from AC power, disconnect any telephone or telecommunication lines from the computer, and remove the computer cover.
10. Remove the hard-disk drive.
11. Verify that the hard-disk drive is configured for a unique SCSI ID and that termination is enabled or disabled as

appropriate.

See the documentation for the hard-disk drive for instructions on selecting the SCSI ID and enabling or disabling termination.

Is the hard-disk drive configured correctly?

Yes. Go to step 13.

No. Go to step 12.

12. Reconfigure the hard-disk drive's SCSI ID and termination settings as appropriate. Reinstall the hard-disk drive.

    Replace the computer cover, reconnect the system to AC power, and turn it on.

    Is the problem resolved?

    Yes. The hard-disk drive was configured incorrectly. You have fixed the problem.

    No. Go to step 13.

13. Replace the SCSI cable connecting the drive to the SCSI host adapter.

    Replace the computer cover, reconnect the system to AC power, reconnect any telephone or telecommunication lines to the computer, and turn it on.

    Is the problem resolved?

    Yes. The SCSI cable was faulty. You have fixed the problem.

    No. Go to step 14.

14. Partition and logically format the hard-disk drive.

    If possible, restore the files to the drive.

    To partition and logically format the drive, see the documentation for the computer's operating system.

    Is the problem resolved?

    Yes. The hard-disk drive's file structure was probably corrupt. You have fixed the problem.

    No. Go to step 15.

15. See Getting Help, for instructions on obtaining technical assistance.

Installing System Board Options: Dell® PowerEdge® 1300 Systems Installation and Troubleshooting Guide

[Overview](#) | [Expansion Cards](#) | [Adding Memory](#) | [Microprocessor Upgrades](#) | [Replacing the System Battery](#)

Overview

This file describes how to install the following options:

- Peripheral Component Interconnect (PCI), accelerated graphics port (AGP), and Industry-Standard Architecture (ISA) expansion cards
- System memory
- Microprocessor single-edge contact (SEC) cartridge

This file also includes instructions for replacing the system battery, if necessary.

Use [Figure 1, System Board Features](#), to locate the system board features.

Figure 1. System Board Features
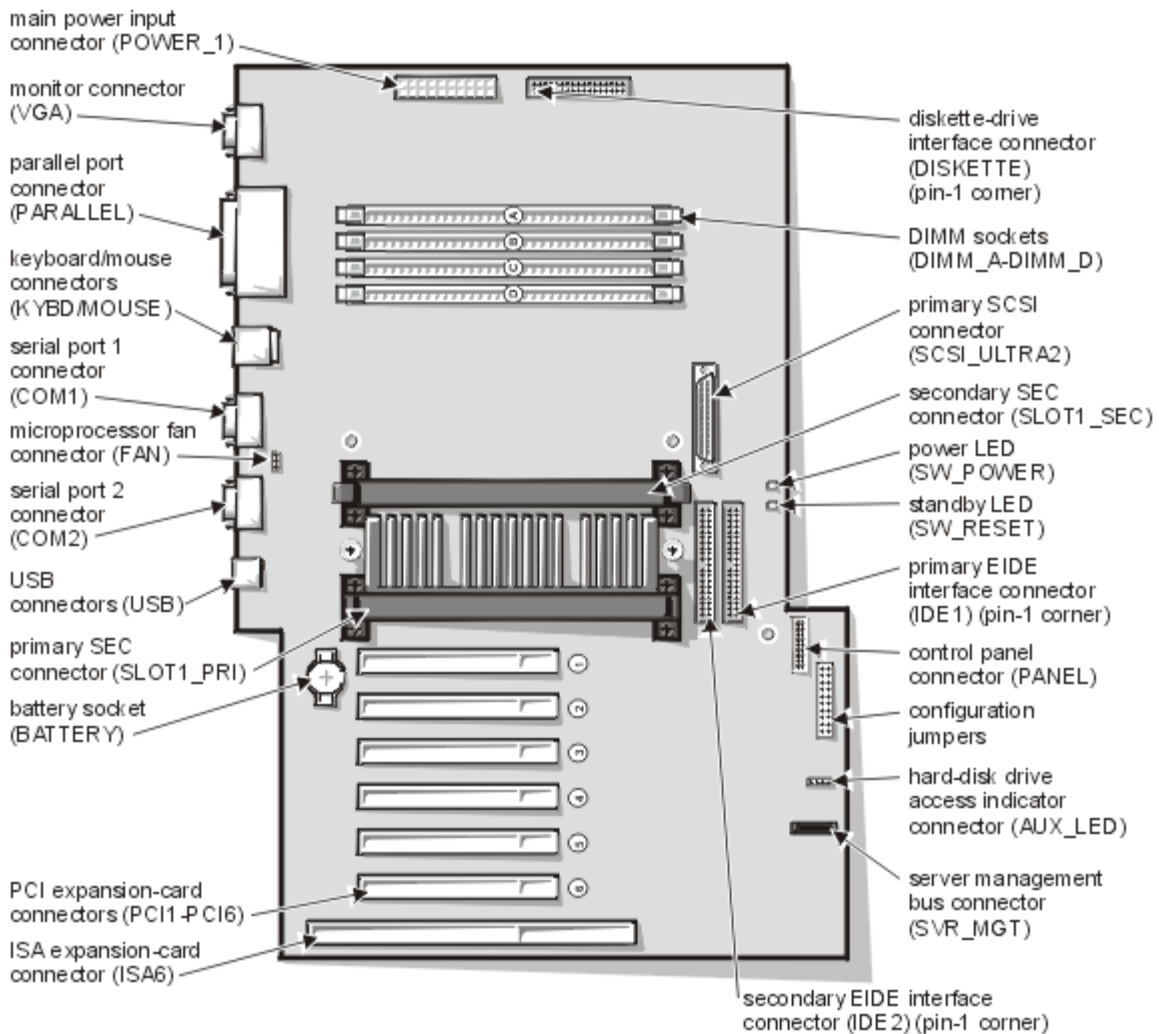
Expansion Cards

The system accommodates up to six expansion cards, including 32-bit PCI expansion cards and one 8- or 16-bit ISA expansion card (see Figure 2, Expansion Cards, for examples).

Figure 2. Expansion Cards

8-bit ISA expansion card

16-bit ISA expansion card

32-bit PCI expansion card
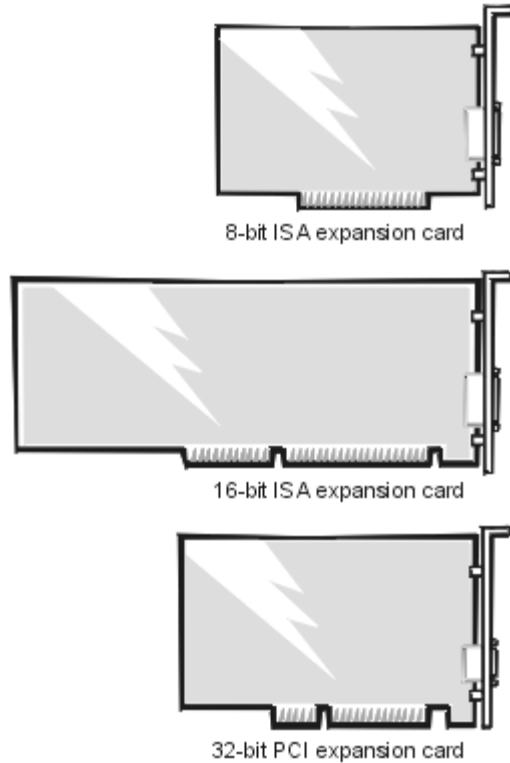
Expansion Slots

There are seven expansion-card connectors on the system board. Expansion-card connectors PCI1 through PCI6 support 32-bit PCI expansion cards; expansion-card connector ISA6 can accommodate an 8- or 16-bit ISA expansion card. The PCI1 slot is limited to a half-length card.

NOTE: Connector ISA6 shares expansion-slot space with connector PCI6. Therefore, only one card of either type can be installed in this slot.

Installing an Expansion Card

Follow this general procedure to install an expansion card:

1. If you are installing an ISA expansion card, start the Resource Configuration Utility (RCU), and add the new expansion card to the configuration information.
   See "Using the Resource Configuration Utility" in your *User's Guide* for instructions.

   ⚠ **CAUTION: You must use the RCU when you add an ISA expansion card to your computer. Failure to do so may cause resource conflicts between PCI devices (such as PCI expansion cards, the built-in video controller, or the built-in SCSI host adapter).**

2. Prepare the expansion card for installation, and remove the computer cover according to the instructions in

Removing the Computer Cover.

⚠️ **CAUTION: See Protecting Against Electrostatic Discharge.**

See the documentation that came with the expansion card for information on configuring the card, making internal connections, or otherwise customizing it for your system.

⚠️ **CAUTION: Some network cards automatically start up the system when they are connected. To guard against electrical shock, be sure to unplug your computer from its electrical outlet before installing any expansion cards.**

3. Unscrew and remove the metal filler bracket that covers the card-slot opening for the expansion slot you intend to use (see Figure 3, Removing the Filler Bracket).
Save the screw to use when installing the expansion card later in this procedure.

Figure 3. Removing the Filler Bracket

filler bracket
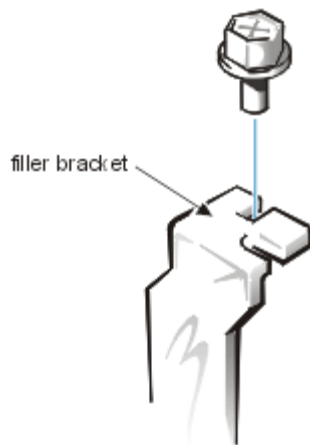
4. Insert the expansion card into the expansion-card connector.

If the expansion card is full-length, insert the front end of the card into the corresponding card guide on the inside front of the chassis as you insert the card into its connector. Insert the card's edge connector firmly into the expansion-card slot. Gently rock the card into the connector until it is fully seated (see Figure 4, Installing an Expansion Card).

Figure 4. Installing an Expansion Card

expansion card

expansion-card connector

card-edge connector
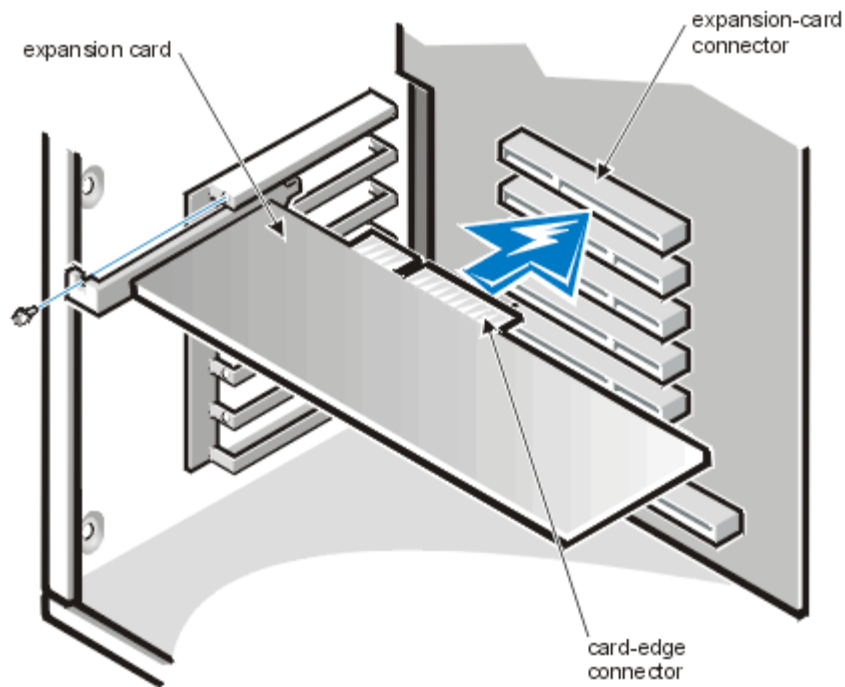
5. When the card is firmly seated in the connector, secure the card's mounting bracket to the chassis with the screw you removed in step 3.
6. Connect any cables that should be attached to the card.
   See the documentation that came with the card for information about the card's cable connections.
7. Replace the computer cover, reconnect your computer and peripherals to their power sources, and turn them on.

   NOTE: After you remove and replace the cover, the chassis intrusion detector will cause the following message to be displayed at the next system start-up:

   ```
   ALERT! Cover was previously removed.
   ```

8. To reset the chassis intrusion detector, enter the System Setup program and reset **Chassis Intrusion** to **Not Detected**.
   See "Using the System Setup Program" in your *User's Guide* for instructions.

   NOTE: If a setup password has been assigned by someone else, contact your network administrator for information on resetting the chassis intrusion detector.

Removing an Expansion Card

Follow this general procedure to remove an expansion card:

1. If you are relocating or removing an ISA expansion card, run the RCU to delete the expansion card from the configuration information.
   See "Using the Resource Configuration Utility" in your *User's Guide* for instructions.
2. Remove the computer cover according to the instructions in Removing the Computer Cover.

   CAUTION: See Protecting Against Electrostatic Discharge.

3. If necessary, disconnect any cables connected to the card.
4. Unscrew the mounting bracket of the card you want to remove.
5. Grasp the card by its outside corners, and ease it out of its connector.
6. If you are removing the card permanently, install a metal filler bracket over the empty card-slot opening.

> *NOTE: Installing filler brackets over empty card-slot openings is necessary to maintain Federal Communications Commission (FCC) certification of the system. The brackets also keep dust and dirt out of your computer.*

7. Replace the computer cover, and reconnect your computer and peripherals to their power sources and turn them on.

> *NOTE: After you remove and replace the cover, the chassis intrusion detector will cause the following message to be displayed at the next system start-up:*

   ```
   ALERT! Cover was previously removed.
   ```

8. To reset the chassis intrusion detector, enter the System Setup program and reset **Chassis Intrusion** to **Not Detected**.
   See "Using the System Setup Program" in your *User's Guide* for instructions.

> *NOTE: If a setup password has been assigned by someone else, contact your network administrator for information on resetting the chassis intrusion detector.*

Adding Memory

System memory consists of up to four dual in-line memory modules (DIMMs) installed in sockets on the system board (see Figure 5, DIMMs and DIMM Sockets). The system can use either unbuffered or registered synchronous dynamic random-access memory (SDRAM) modules that provide error checking and correction (ECC) capabilities.

By installing 64-, 128, and/or 256-MB DIMMs, you can increase system memory from its standard total of 64 megabytes (MB) up to the following memory totals:

- 512 MB, using unbuffered SDRAM DIMMs
- 1024 MB (1 gigabyte [GB]), using registered SDRAM DIMMs

Unbuffered and registered SDRAM DIMMs cannot be mixed in the system.

Figure 5. DIMMs and DIMM Sockets
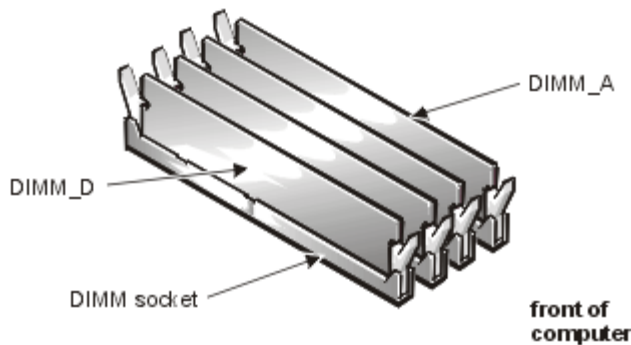
DIMM Installation Guidelines

When adding system memory, you may install DIMMs in any order. For optimum operation, Dell recommends installing the DIMMs starting with socket A (closest to the top edge of the system board) and working toward socket D, leaving no open sockets between installed DIMMs.

Table 1, Sample Unbuffered SDRAM DIMM Configuration Options, and Table 2, Sample Registered SDRAM

, list sample memory configurations.

Table 1. Sample Unbuffered SDRAM DIMM Configuration Options

Total Desired Memory	DIMM Socket			
	A	**B**	**C**	**D**
64 MB	64 MB			
128 MB	64 MB	64 MB		
192 MB	64 MB	64 MB	64 MB	
256 MB	128 MB	128 MB		
384 MB	64 MB	64 MB	128 MB	128 MB
512 MB	128 MB	128 MB	128 MB	128 MB

Table 2. Sample Registered SDRAM DIMM Configuration Options

Total Desired Memory	DIMM Socket			
	A	**B**	**C**	**D**
256 MB	256 MB			
512 MB	256 MB	256 MB		
768 MB	256 MB	256 MB	256 MB	
1024 MB	256 MB	256 MB	256 MB	256 MB

Follow this procedure to perform a memory upgrade:

1. Remove the computer cover according to the instructions in Removing the Computer Cover.

   ⚠ **CAUTION: See Protecting Against Electrostatic Discharge.**

2. To access the DIMM sockets on the system board, rotate the power supply as described in Rotating the Power Supply Away From the System Board.
3. Determine the DIMM sockets in which you will install DIMMs or replace existing DIMMs.
4. Install or replace DIMMs as necessary to reach the desired memory total.
   Follow the instructions in Installing a DIMM or Removing a DIMM, as appropriate.
5. Rotate the power supply back into position, making sure the securing tab snaps into place.
6. Replace the computer cover, and reconnect your computer and peripherals to their power sources and turn them on.

   📝 *NOTE: After you remove and replace the cover, the chassis intrusion detector will cause the following message to be displayed at the next system start-up:*

   ```
   ALERT! Cover was previously removed.
   ```

   The system detects that the new memory does not match the existing system configuration information and generates the following message:
   ```
   The amount of system memory has changed.
   ```

```
Strike the F1 key to continue, F2 to run the setup utility
```

7. Press <F2> to enter the System Setup program, and check the value for **System Memory** in the lower-right corner of Page 1.

   The system should have already changed the value of System Memory to reflect the newly installed memory. Verify the new total.

   📝 *NOTE: If the memory total is incorrect, turn off and disconnect your computer and peripherals from their power sources. Remove the computer cover, rotate the power supply, and check the installed DIMMs to make sure that they are seated properly in their sockets. Then repeat steps 5, 6, and 7.*

8. While in the System Setup program, reset the chassis intrusion detector by changing **Chassis Intrusion** to **Not Detected**.
   See "Using the System Setup Program" in your User's Guide for instructions.

   📝 *NOTE: If a setup password has been assigned by someone else, contact your network administrator for information on resetting the chassis intrusion detector.*

9. When the **System Memory** total is correct, press the <Esc> key to exit the System Setup program.
10. Run the Dell Diagnostics to verify that the DIMMs are operating properly.
    See your *Diagnostics and Troubleshooting Guide* for information on running the diagnostics and troubleshooting any problems that may occur.

Installing a DIMM

If a DIMM is already installed in the socket you want to use, you must remove it. To do so, follow the instructions in Removing a DIMM.

Use the following procedure to install a DIMM (see Figure 6, Installing a DIMM):

1. Locate the plastic securing clips at each end of the socket. Press the clips outward until they snap open.
2. Orient the DIMM so that the cutouts on the bottom edge match the crossbars in the DIMM socket slot, and press the DIMM straight into the slot until the securing tabs snap into place around the ends of the DIMM.

Figure 6. Installing a DIMM
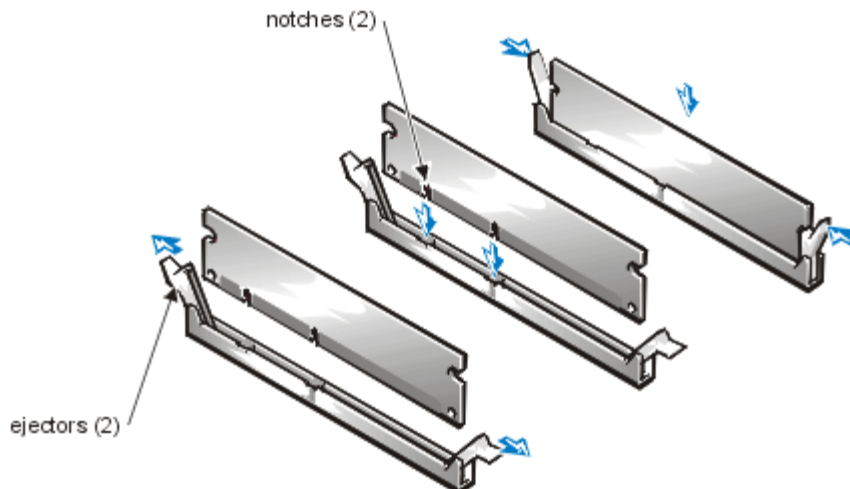
Removing a DIMM

To remove a DIMM, press the securing clips outward simultaneously until the DIMM disengages from the socket (see Figure 7, Removing a DIMM). It should pop out slightly.

Figure 7. Removing a DIMM
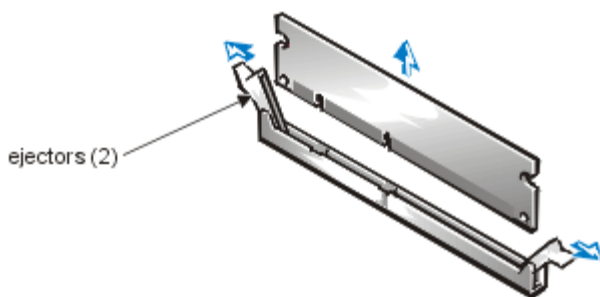
Microprocessor Upgrades

To take advantage of future options in speed and functionality, you can add a second processor or replace either the primary or secondary processor.

⚠️ **CAUTION: The second processor must be of the same type and speed as the first processor.**

Each processor and its associated L2 (level-2) cache memory are contained in an SEC cartridge that is installed in a dedicated connector on the system board. In systems with only one processor, a terminator card must be installed in the secondary processor connector. The following subsection describes how to install or replace an SEC cartridge in either the primary or secondary processor connector.

Adding or Replacing a Microprocessor

The following items are included in a microprocessor upgrade kit:

- The new processor SEC cartridge with attached heat sink
- Two heat-sink securing thumbscrews

Use the following procedure to add or replace an SEC cartridge.

📝 *NOTE: Dell recommends that only a technically knowledgeable person perform this procedure.*

1. Remove the computer cover according to the instructions in Removing the Computer Cover.

   ⚠️ **CAUTION: See Protecting Against Electrostatic Discharge.**

2. Rotate the power supply as described in Rotating the Power Supply Away From the System Board.
3. If you are adding a second processor to a single-processor system, remove the terminator card from the secondary SEC cartridge connector (labeled "SLOT1_SEC").
   Press the SEC cartridge release tabs inward until they snap into position, and pull the terminator card straight out to remove it from the connector (see Figure 8, Removing the Terminator Card.

Figure 8. Removing the Terminator Card

terminator card

notch

release tabs (2)

guide bracket
assembly

socket
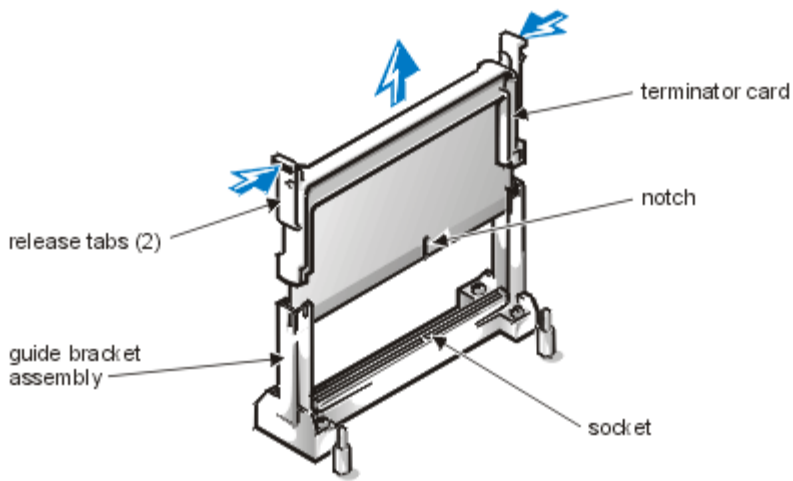
4. If you are replacing an installed processor, remove the current SEC cartridge/heat sink assembly from its connector.
Unscrew and remove the two large thumbscrew-type retention pins that secure the heat sink to the system board. Press the SEC cartridge release latches inward until they snap into position. Grasp the SEC cartridge assembly firmly, and pull it away from the guide bracket assembly (see Figure 9, SEC Cartridge/Heat Sink Assembly Removal). You must use up to 15 pounds (lb) of force to disengage the SEC cartridge from the connector.

Figure 9. SEC Cartridge/Heat Sink Assembly Removal

release latches (2)
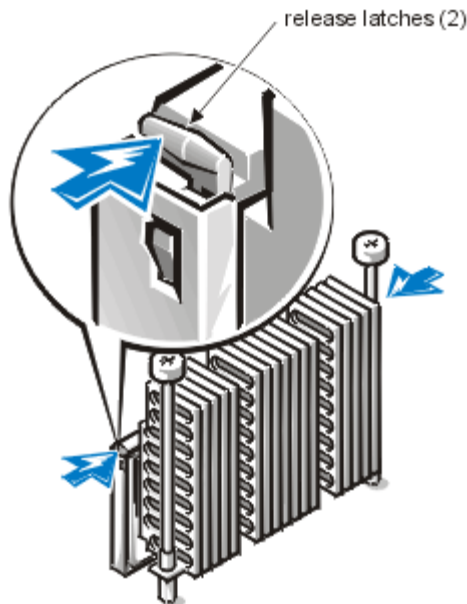
5. Insert the new SEC cartridge/heat sink assembly into the system board connector (see Figure 10, Installing the SEC Cartridge/Heat Sink Assembly).
Press the SEC cartridge firmly into its connector until it is fully seated and the latches snap into place. You must use up to 25 lb of force to fully seat the SEC cartridge in its connector. Install or replace the two large retention pins that secure the heat sink to the system board.

Figure 10. Installing the SEC Cartridge/Heat Sink Assembly

retention pins (2)

SEC cartridge

SEC cartridge
release tabs (2)

heat sink

guide bracket
assembly
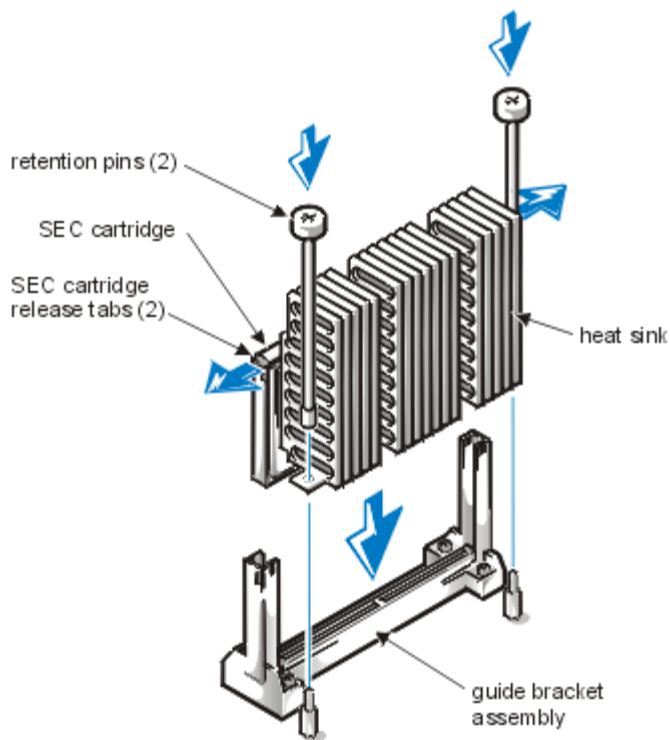
6. If necessary, change the appropriate processor speed jumper setting.

   The processor speed jumper should be set for the installed microprocessor's rated internal speed. For example, for a 400-megahertz (MHz) Intel® Pentium® II processor, a jumper plug should be installed on the pins labeled "350MHZ." (See Jumpers, Switches, and Connectors for more information on jumpers.)

7. Rotate the power supply back into position, making sure that the securing tab snaps into place.
8. Replace the computer cover, and reconnect your computer and peripherals to their power sources and turn them on.

   As the system boots, it detects the presence of the new processor and automatically changes the system configuration information in the System Setup program. If you installed a second microprocessor, the following message is displayed:

   `Second processor detected`

   📝 *NOTE: After you remove and replace the cover, the chassis intrusion detector will cause the following message to be displayed at the next system start-up:*

   `ALERT! Cover was previously removed.`

9. Enter the System Setup program, and confirm that the top line in the system data area correctly identifies the installed processor (s).
   See "Using the System Setup Program" in your *User's Guide*.
10. While in the System Setup program, reset the chassis intrusion detector by changing **Chassis Intrusion** to **Not Detected**.

    📝 *NOTE: If a setup password has been assigned by someone else, contact your network administrator for information on resetting the chassis intrusion detector.*

11. If you installed a second microprocessor and your system is running Microsoft® Windows NT® 4.0, reinstall the operating system.
    See your Windows NT documentation for instructions.
    When you reinstall Windows NT 4.0, the operating system detects the second microprocessor.

12. Run the Dell Diagnostics to verify that the new microprocessor is operating correctly.
    See Running the Dell Diagnostics for information on running the diagnostics and troubleshooting any problems that may occur.

Replacing the System Battery

A 3.0-V CR2032 coin-cell battery installed on the system board maintains system configuration, date, and time information in a special section of memory.

The operating life of the battery can extend up to 10 years. The battery may need replacing if an incorrect time or date is displayed during the boot routine along with a message such as:

```
Time-of-day not set - please run SETUP program
```

or

```
Invalid configuration information -
 please run SETUP program
```

or

```
Strike the F1 key to continue,
 F2 to run the setup utility
```

To determine whether the battery needs replacing, reenter the time and date through the System Setup program and exit the program properly to save the information. Turn off and unplug your system for a few hours, and then plug in and turn on your system. Enter the System Setup program. If the date and time are not correct in the System Setup program, replace your battery.

You can operate your system without a battery; however, without a battery, the system configuration information maintained by the battery is erased if the system is unplugged or AC power is lost. In this case, you must enter the System Setup program and reset the configuration options.

WARNING
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.

Use the following procedure to replace the system battery with another CR2032 coin-cell battery:

1. If you have not already done so, make a copy of your system configuration information in the System Setup program.
   If the settings are lost while you are replacing the battery, you can refer to your written or printed copy of the system configuration information to restore the correct settings. See "Using the System Setup Program" in your *User's Guide* for instructions.
2. Remove the computer cover according to the instructions in Removing the Computer Cover.

   ⚠️ **CAUTION: See Protecting Against Electrostatic Discharge.**

3. To access the battery on the system board, rotate the power supply as described Rotating the Power Supply Away From the System Board.

   📝 *NOTE: If an expansion card obstructs your access to the battery, you may find it helpful to remove the card temporarily while you work. See Expansion Cards for information on removing and installing expansion cards.*

4. Locate the battery and remove it.

The battery is mounted in a socket labeled "BATTERY" located to the left of the top two PCI expansion-card connectors (as you face the system board).(See Figure 1, System Board Features.)

⚠️ **CAUTION: If you pry the battery out of its socket with a blunt object, be careful not to touch the system board with the object. Make certain that the object is inserted between the battery and the socket before attempting to pry out the battery. Otherwise, you may damage the system board by prying off the socket or by breaking circuit traces on the system board.**

Pry the battery out of its socket with your fingers or with a blunt, nonconductive object, such as a plastic screwdriver (see Figure 11, System Battery and Battery Socket).

Figure 11. System Battery and Battery Socket
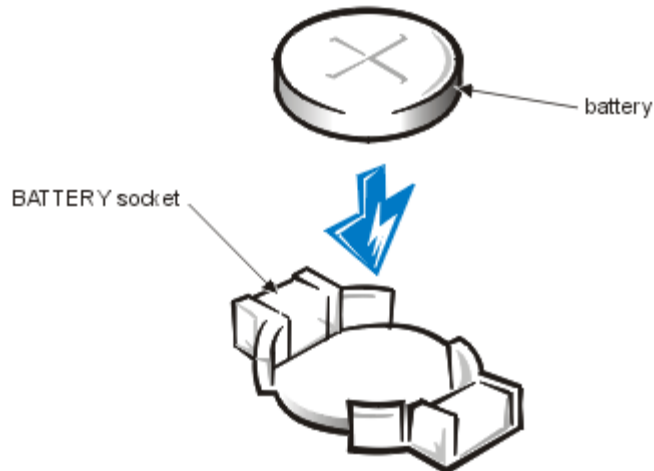
5. Install the new battery.
   Orient the battery with the side labeled "+" facing up. Then insert the battery into the socket, and snap it into place.
6. Rotate the power supply back into position, making sure that the securing tab snaps into place.
7. Replace the computer cover, and reconnect your computer and peripherals to their power sources and turn them on.

   📝 *NOTE: After you remove and replace the cover, the chassis intrusion detector will cause the following message to be displayed at the next system start-up:*

   ```
   ALERT! Cover was previously removed.
   ```
8. Enter the System Setup program, and confirm that the battery is operating properly.
   See "Using the System Setup Program" in your *User's Guide* for information on running the System Setup program.
   Enter the correct time and date through the System Setup program's **Time** and **Date** options. Also, restore the correct settings for the system configuration information using the copy made in step 1, and then exit the System Setup program.
9. While in the System Setup program, reset the chassis intrusion detector by changing **Chassis Intrusion** to **Not Detected**.

   📝 *NOTE: If a setup password has been assigned by someone else, contact your network administrator for information on resetting the chassis intrusion detector.*
10. Turn off your computer, and unplug it for at least 10 minutes.
11. After 10 minutes, plug in the computer, turn it on, and enter the System Setup program. If the time and date are still incorrect, see Getting Help for instructions on obtaining technical assistance.

Installing Drives: Dell® PowerEdge® 1300 Systems Installation and Troubleshooting Guide

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Overview

Your Dell computer has seven drive bays for installing the following types of drives (see [Figure 1, Drive Locations](#)):

- The externally accessible drive bays at the front of the computer consist of three 3.5-inch drive bays that accommodate one 3.5-inch diskette drive (standard) and two other half-height, 5.25-inch devices—typically a CD-ROM drive and a tape drive.
- The four-bay hard-disk drive cage below the externally accessible bays can hold up to four 1-inch or up to two 1-inch and two 1.6-inch small computer system interface (SCSI) hard-disk drives installed vertically.

The next section contains information that you will need in several of the installation procedures described later in the file. The remaining sections of this file cover each type of drive installation.

 *NOTE: In all of the following procedures, **left** and **right** refer to your left and right as you face the **front** of the computer.*

Figure 1. Drive Locations

externally
accessible
drive bays

four-bay hard-disk
drive housing (internal)
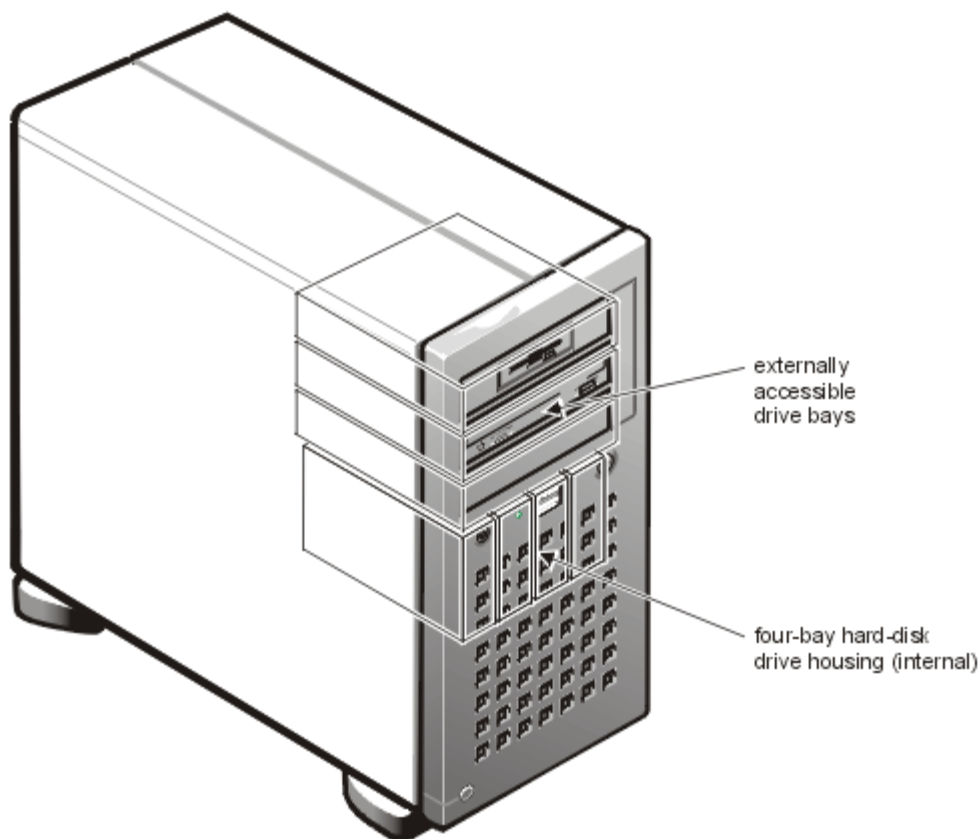
Connecting Drives

When installing a drive, you connect two cables—a DC power cable and an interface cable—to the back of the drive. Your drive's power input connector (to which you connect the DC power cable) resembles the connector shown in Figure 2, DC Power Cable Connector.

Figure 2. DC Power Cable Connector
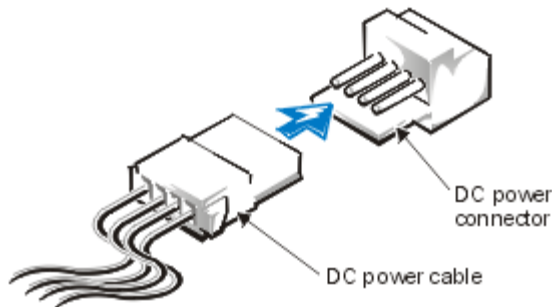
The drive's interface connector is a card-edge connector or a header connector, as shown in Figure 3, Drive Interface Connectors.

Figure 3. Drive Interface Connectors
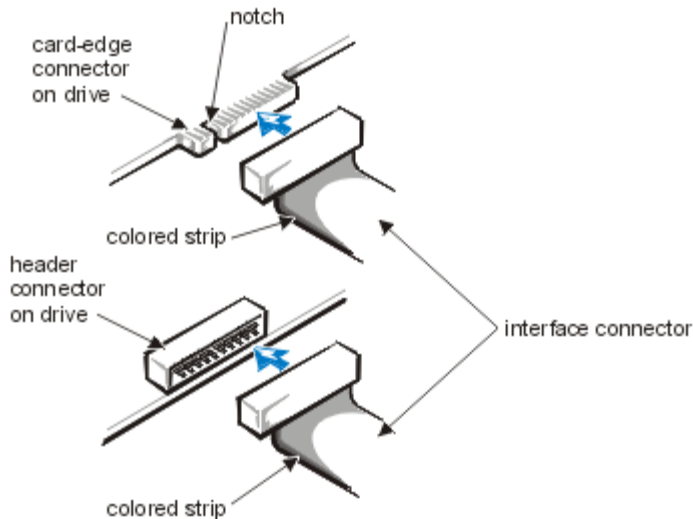
When attaching the interface cable to a drive, be sure to match the colored strip on the cable to pin 1 of the drive's interface connector. For the location of pin 1 on the drive's interface connector, see the documentation that came with the drive.

When disconnecting an interface cable from the system board, be sure to press in on the locking tabs on the cable connector (if any) before disconnecting the cable. When attaching an interface cable to the system board, be sure that the locking tabs snap into place, ensuring that the cable is firmly attached to the connector on the system board.

Most interface connectors are keyed for correct insertion; that is, a notch or a missing pin on one connector matches a tab or a filled-in hole on the other connector as shown in Figure 3, Drive Interface Connectors. Keying ensures that the pin-1 wire in the cable (indicated by the colored strip along one edge of the cable) goes to the pin-1 end of the cable.

The pin-1 end of a connector on a board or a card is usually indicated by a silk-screened "1" printed directly on the board or card.

⚠ **CAUTION: When connecting an interface cable, do not reverse the interface cable (do not place the colored strip away from pin 1 of the connector). Reversing the cable prevents the drive from operating and could damage the controller, the drive, or both.**

Installing a Drive in a 5.25-Inch Drive Bay

The 5.25-inch drive bays can accommodate any of the following types of half-height drives:

- The 3.5-inch diskette drive that comes standard with the system (encased in a 5.25-inch housing)
- A CD-ROM drive that uses the integrated EIDE controller
- A SCSI tape drive that uses either the integrated SCSI controller or an add-in SCSI adapter card
- Any 5.25-inch device that uses its own controller card

📝 *NOTE: For information on configuring, connecting, and installing SCSI drives, see [Installing SCSI Devices](#).*

To install a drive in a 5.25-inch drive bay, perform the following steps:

1. Unpack the drive and prepare it for installation.

   ⚠ **CAUTION: Ground yourself by touching an unpainted metal surface on the back of the computer.**

   Check the documentation that accompanied the drive to verify that the drive is configured for your computer system. Change any settings necessary for your configuration.
   If you are installing an EIDE CD-ROM drive, configure the drive for the cable select setting.
   If you are installing a SCSI device, make sure the device has termination disabled. See [Installing SCSI Devices](#).

2. Remove the computer cover as instructed in [Removing the Computer Cover](#).

   ⚠ **CAUTION: See [Protecting Against Electrostatic Discharge](#).**

3. Remove the front bezel according to the instructions in [Removing and Replacing the Front Bezel](#).
4. Remove the drive bracket from the bay you want to use.
   Squeeze the metal tabs that extend from each side of the drive bracket toward each other, and pull the bracket out of the bay (see [Figure 4, Removing a Drive](#)).
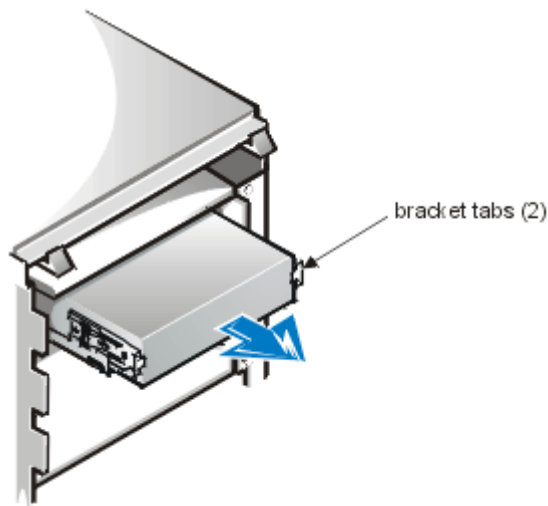   📝 *NOTE: For easier access inside the chassis, you may want to rotate the power supply out of the way temporarily. To do so, see [Rotating the Power Supply Away From the System Board](#).*

   **Figure 4. Removing a Drive**

bracket tabs (2)

If a drive is already installed in the bay and you are replacing it, be sure to disconnect the DC power cable and interface cable from the back of the drive before sliding the bracket out of the bay. To remove the old drive from the bracket, turn the drive/bracket assembly upside down and unscrew the four screws that secure the drive to the bracket (see Figure 5, Attaching the Drive Bracket to the New Drive).

5. Attach the bracket to the new drive.
    Turn the drive upside down as shown in Figure 5, and locate the four screw holes around its perimeter. Fit the bracket over the drive, and then tilt the front of the drive up so that the bracket drops down into place. To ensure proper installation, all screw holes should be aligned and the tabs on the front of the bracket should be flush with the front of the drive.

Figure 5. Attaching the Drive Bracket to the New Drive

bracket tabs (2)

bracket
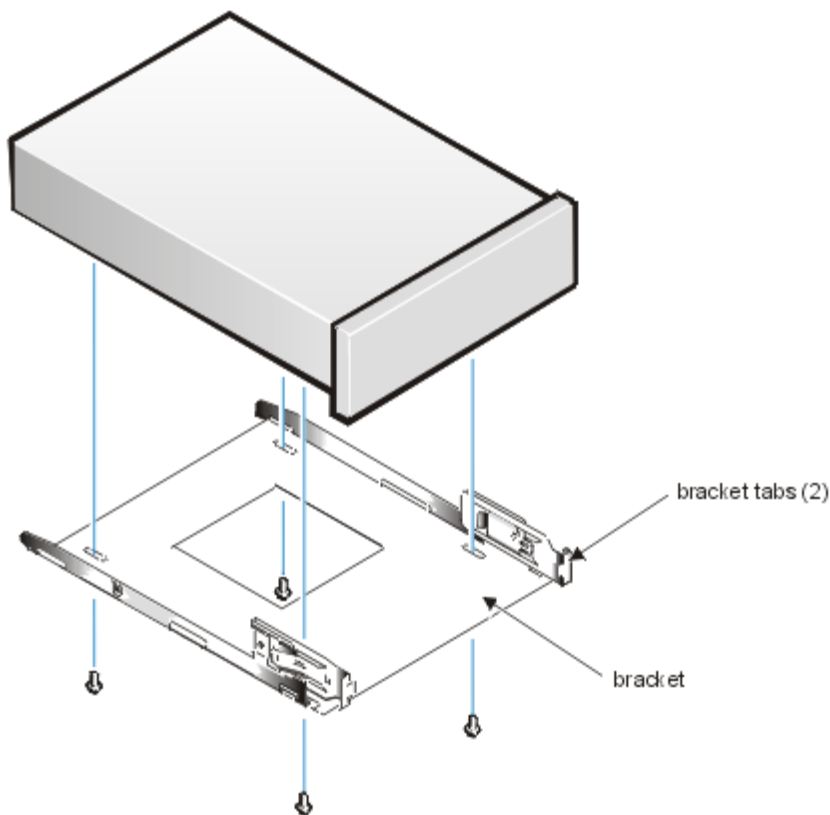
To further ensure proper positioning of the drive in the chassis, insert and tighten all four screws *in the order in which the holes are numbered* (the holes are marked "1" through "4").

6. Slide the new drive into the drive bay until it snaps securely into place (see <u>Figure 6, Inserting the New Drive Into the Drive Bay</u>).
   Make sure that both bracket tabs snap into place in the drive bay.

Figure 6. Inserting the New Drive Into the Drive Bay

5.25-inch drive
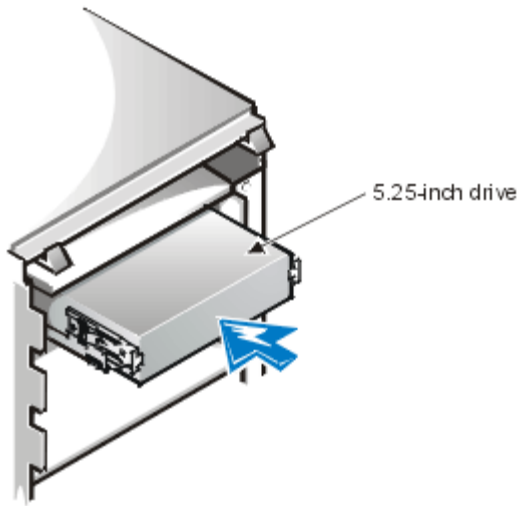
7. If you are installing a drive that has its own controller card, install the controller card in an expansion slot.
    See <u>Installing an Expansion Card</u>.
8. Connect a DC power cable to the power input connector on the back of the drive (see <u>Figure 7, Attaching EIDE CD-ROM Drive Cables</u>).

Figure 7. Attaching EIDE CD-ROM Drive Cables

interface connector

power input connector on drive

DC power cable

IDE 1 connector

IDE 2 connector
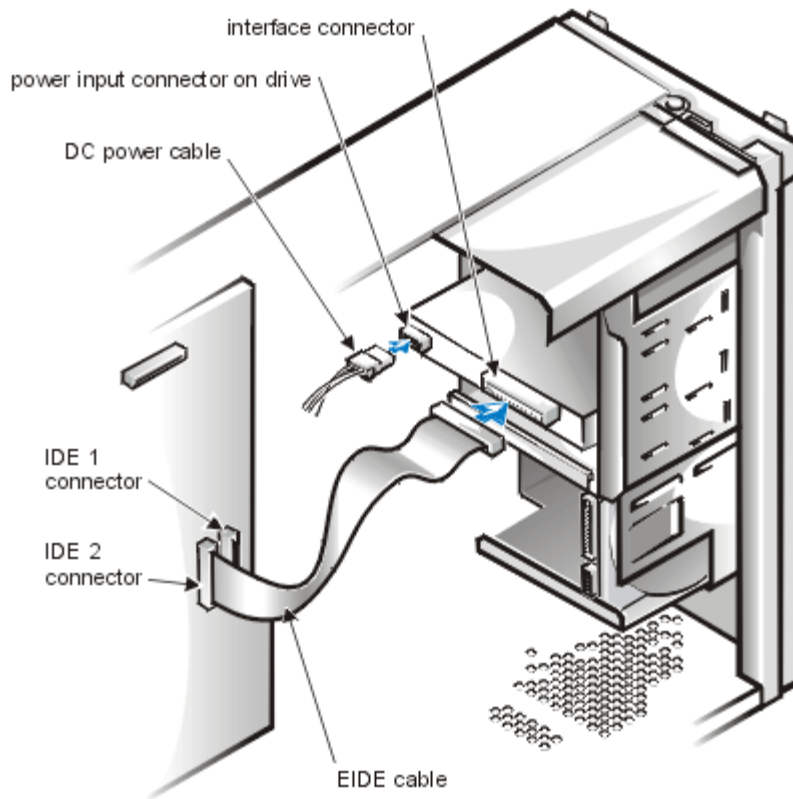
EIDE cable

9. Connect the appropriate interface cable to the interface connector on the back of the drive (see Figure 7, Attaching EIDE CD-ROM Drive Cables).
   If your system came with an EIDE CD-ROM drive, use the spare connector on the existing interface cable. Otherwise, use the EIDE or SCSI cable provided in the drive kit.

   ⚠️ **CAUTION: You must match the colored strip on the cable with pin 1 on the drive's interface connector to avoid possible damage to your system.**

10. Connect the other end of the interface cable as follows (see System Board Features to identify system board connectors).
    For an EIDE CD-ROM drive, connect the other end of the interface cable to the interface connector labeled "IDE2" on the system board.
    For a SCSI drive, connect the cable from the drive to the interface connector labeled "SCSI_ULTRA2" on the system board or to an add-in SCSI adapter.
    For a diskette drive, connect the cable from the drive to the interface connector labeled "DISKETTE" on the system board. Make sure that the end connector located closest to the twist in the cable is connected to the diskette drive.
    For a drive that comes with its own controller card, connect the other end of the interface cable to the controller card.
    Check all cable connections. Fold cables out of the way to provide airflow for the fan and cooling vents.
11. If the 5.25-inch drive bay was previously empty, remove the front-panel insert from the front bezel.
    See Removing and Replacing Front-Panel Inserts.
12. Replace the front bezel according to the instructions in Removing and Replacing the Front Bezel.
13. Replace the computer cover, and reconnect your computer and peripherals to their power sources and turn them on.
    📝 *NOTE: After you remove and replace the chassis, the chassis intrusion detector will cause the following message to be displayed at the next system start-up:*

```
ALERT! Cover was previously removed.
```

14. To reset the chassis intrusion detector, enter the System Setup program and reset **Chassis Intrusion** to **Not Detected**.
    See "Using the System Setup Program" in your *User's Guide* for instructions.

    ✏️ *NOTE: If a setup password has been assigned by someone else, contact your network administrator for information on resetting the chassis intrusion detector.*

15. Update your system configuration information.
    For a diskette drive, update the **Diskette Drive** category on Page 1 of the System Setup screens to reflect the size and capacity of your new diskette drive. (For more information, see "Using the System Setup Program" in your *User's Guide*.)
    For EIDE CD-ROM drives, set the appropriate **Drive** category (**0** or **1**) under **IDE Drives: Secondary** to **Auto**.

16. Verify that your system works correctly.
    See Running the Dell Diagnostics for troubleshooting any problems that may occur. Use the following guidelines to determine which test to use:

    - If you installed a diskette drive, test it by running all of the subtests in the **Diskette Drives Test Group** of the Dell Diagnostics.
    - If you installed a CD-ROM drive, see the documentation that came with the drive for instructions on loading device drivers and using the drive. If it is an EIDE CD-ROM drive, test it by running all of the subtests in the **IDE CD-ROM Drives Test Group** of the Dell Diagnostics.
    - If you installed a tape drive, perform a tape backup and verification test with the drive as instructed in the tape-drive software documentation that came with the tape drive.

    ✏️ *NOTE: The tape drives sold by Dell come with their own operating software and documentation. After you install a tape drive, refer to the documentation that came with the drive for instructions on installing and using the tape drive software.*

Installing a Hard-Disk Drive in the Internal Hard-Disk Drive Cage

Install a hard-disk drive in the hard-disk drive cage as follows:

1. Remove the computer cover as instructed in Removing the Computer Cover.

   ⚠️ **CAUTION: See Protecting Against Electrostatic Discharge.**

2. Remove the front bezel according to the instructions in Removing and Replacing the Front Bezel.

3. Open the drive cage door.
   If any hard-disk drives are already installed in the bracket, disconnect the DC power cable and interface cable from each drive.
   Grasp the handle of the drive bay door on the front of the chassis, and pull out and down until the arms on the drive cage door (see Figure 8, Removing the Hard-Disk Drive Cage) disengage from the tabs on the bracket. This action pulls the cage out of the drive bay about 1 to 3 inches.

   Figure 8. Removing the Hard-Disk Drive Cage

tabs on drive cage

drive bay door

drive-bay
door handle

drive bay

arms on
drive bay door
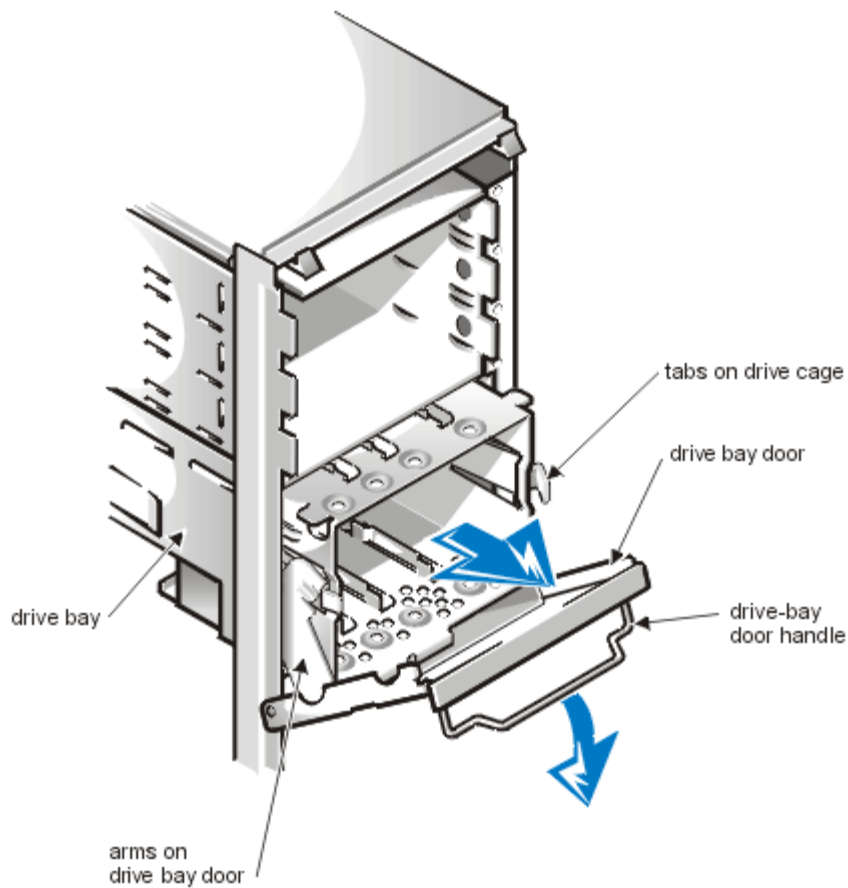
4. Remove the cage from the drive bay.
5. Slide the drive into the chosen slot in the cage, orienting it so that the connectors on the back of the drive face the inside of the chassis when the cage is reinstalled (see Figure 9, Inserting a 1-Inch Hard-Disk Drive Into the Drive Cage).
6. Align the four screw holes of the drive and cage as shown in Figure 9. Insert and tighten the screws that came with your upgrade kit.

Figure 9. Inserting a 1-Inch Hard-Disk Drive Into the Drive Cage

drive cage

tabs (2)

1-inch drive (front)

screws (4)
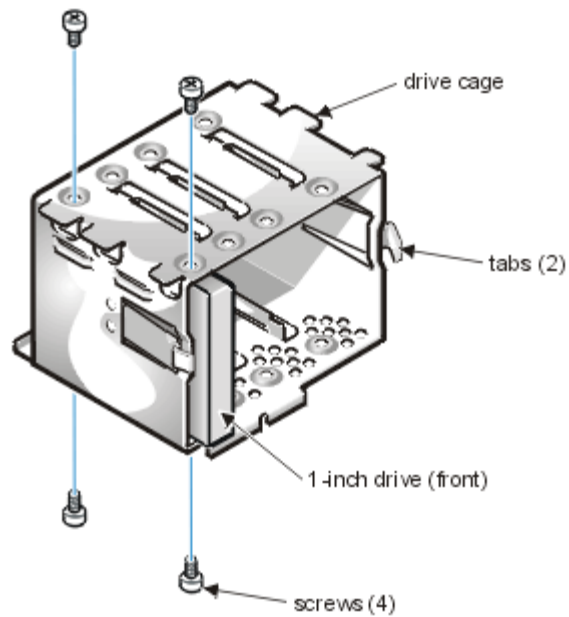
7. Reinstall the hard-disk drive cage in the chassis (see Figure 10, Inserting the Hard-Disk Drive Cage Into the Chassis).
   Insert the cage into the drive bay by sliding it in until the tabs snap into place. Rotate the drive cage door up and toward the chassis until it snaps securely into place. Be sure to fold down the drive-bay door handle (see Figure 8) so that the bezel can be replaced on the chassis.

Figure 10. Inserting the Hard-Disk Drive Cage Into the Chassis

drive bay

bracket

tabs (2)
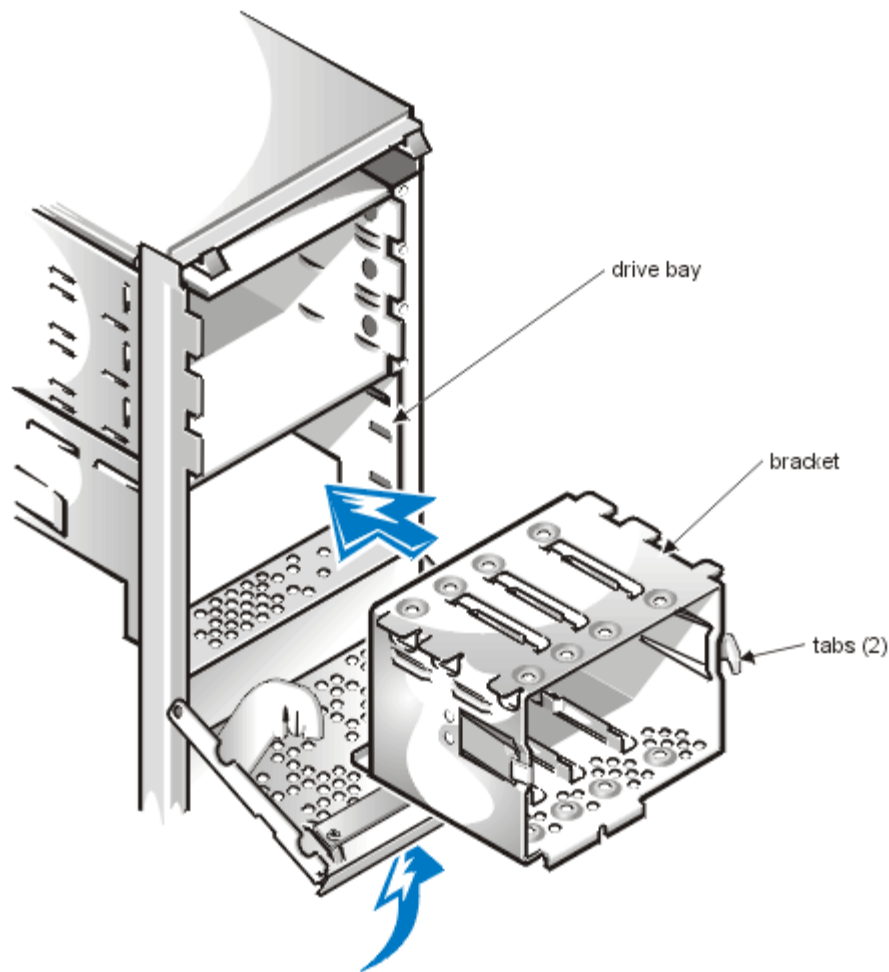
Installing SCSI Devices

This section describes how to configure and install SCSI devices in your Dell PowerEdge 1300 system.

SCSI Configuration Guidelines

Although SCSI devices are installed essentially the same way as other devices, their configuration requirements are different. For details on configuring your particular SCSI subsystem, refer to the documentation that came with your SCSI devices and/or your host adapter card. The following subsections offer some general guidelines.

SCSI ID Numbers

Internal SCSI devices attached to the integrated Adaptec 7890 Ultra2/Wide low voltage differential (LVD) controller through the 68-pin primary SCSI connector on the system board must have a unique SCSI ID number from 0 to 15.

When SCSI devices are shipped from Dell, the default SCSI ID numbers are assigned as follows:

- The integrated 7890 Ultra2/Wide LVD SCSI controller is configured through the computer's basic input/output system (BIOS) as SCSI ID 7.
- The first internal SCSI hard-disk drive is configured as SCSI ID 0. (The drive used to boot your system should always be configured as SCSI ID 0.)
- A SCSI tape drive attached to the 7890 Ultra2/Wide LVD integrated controller or the 2940U2W controller card is

normally configured as SCSI ID 6, but can be confgured to any unused SCSI ID.

NOTE: There is no requirement that SCSI ID numbers be assigned sequentially or that devices be attached to the cable in order by ID number.

SCSI devices installed by Dell are configured correctly during the manufacturing process. You do not need to set the SCSI ID for these SCSI devices.

If you attach additional optional SCSI devices, refer to the documentation that came with each device for information about setting the appropriate SCSI ID number.

CAUTION: Dell recommends that you use only SCSI cables purchased from Dell. SCSI cables purchased elsewhere are not guaranteed to work with Dell PowerEdge 1300 systems.

Device Termination

SCSI logic requires that termination be enabled for the two devices at opposite ends of the SCSI chain and disabled for all devices in between. However, because both SCSI controllers are self-terminating and because all internal SCSI cables provided by Dell have active termination at the end of the cables, any SCSI devices you install should have termination disabled on the devices.

Furthermore, when attaching external SCSI devices, you should use only external SCSI cables with active termination on the cable. When used with this type of cable, all external SCSI devices also need to have termination disabled on the devices.

See the documentation provided with any optional SCSI device you purchase for information on disabling termination on the device.
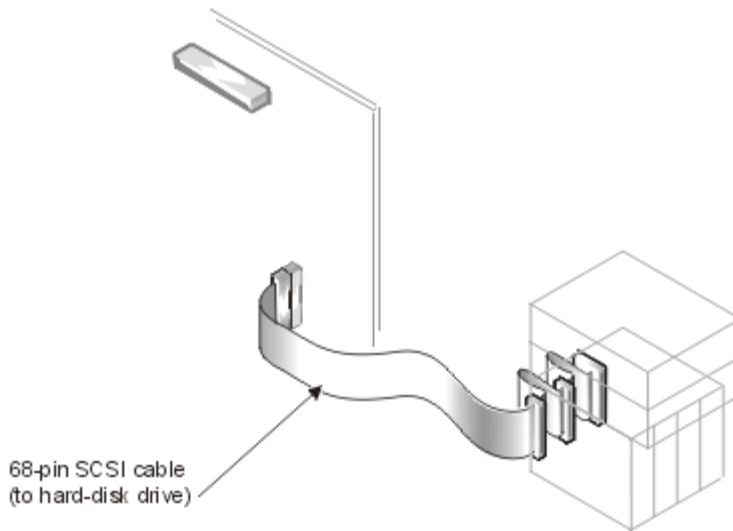
SCSI Cables

The 68-pin (internal) SCSI cable in your system connects SCSI devices (normally SCSI hard-disk drives) to the integratead 7890 Ultra2/Wide LVD controller.

- The connector at the end of the cable attaches to the Ultra2/Wide LVD primary SCSI controller connector labeled "SCSI_ULTRA2" on the system board.
- The other connectors on the cable are used for attaching up to four SCSI hard-disk drives in the internal drive bays (see Figure 11, SCSI Cable). When the integrated SCSI controller is not being used for hard-disk drives, it can be attached to a SCSI tape drive.

Refer to the documentation that came with the external SCSI device for information on how to connect the device, set its SCSI ID, and disable termination.

Figure 11. SCSI Cable

68-pin SCSI cable
(to hard-disk drive)

General Procedure for Installing SCSI Devices

Configure and install one or more SCSI devices in your computer as follows:

1. Determine which connector on the internal SCSI cable you will attach to each SCSI device.
   See SCSI Configuration Guidelines.
2. Unpack each SCSI device and prepare it for installation.

   ⚠ **CAUTION: Ground yourself by touching an unpainted metal surface on the back of the computer.**
   ⚠ **CAUTION: When you unpack the drive, do not set it on a hard surface, which may damage the drive. Instead, set the drive on a surface, such as a foam pad, that will sufficiently cushion it.**

   Configure the device for a SCSI ID number and disable termination, if necessary. For instructions, see the documentation that came with the SCSI device as well as SCSI Configuration Guidelines.

3. Install the SCSI devices as appropriate.

   - *To install a SCSI hard-disk drive*, complete the steps in Installing a Hard-Disk Drive in the Internal Hard-Disk Drive Cage. Then continue with step 4 of this procedure.
   - *To install a SCSI tape drive or DAT drive,* complete steps 2 through 6 of Installing a Drive in a 5.25-Inch Drive Bay. Then continue with step 4 of this procedure.
   - *If you are installing a SCSI host adapter card,* configure the card and install it in an empty expansion slot (see Installing an Expansion Card) If you attach any SCSI hard-disk drives to the host adapter card, connect the hard-disk drive access cable to the SCSI host adapter card and to the AUX_LED connector on the system board (see the System Board Features illustration).

4. Attach the SCSI cable to each SCSI device.
   For additional instructions on connecting SCSI devices, see SCSI Cables.
   If you are installing an internal SCSI device, firmly press the SCSI cable's header connector onto the 68-pin connector on the back of the device.

   ⚠ **CAUTION: You must match the colored strip on the cable with pin 1 on the drive's interface connector to avoid possible damage to your system.**

5. Connect a DC power cable to the power input connector on the SCSI device.
   Check all other cable connections. Fold all internal cables out of the way to provide airflow for the fan or cooling vents.
6. If you installed an externally accessible device, remove the front bezel and remove the front-panel insert for the

drive bay from the front bezel. Then replace the front bezel.
For instructions, see [Removing and Replacing the Front Bezel](#) and [Removing and Replacing Front-Panel Inserts](#).

7. Replace the computer cover. Then reconnect your computer and peripherals to their power sources, and turn them on.

> 📝 *NOTE: After you remove and replace the cover, the chassis intrusion detector will cause the following message to be displayed at the next system start-up:*

```
ALERT! Cover was previously removed.
```

8. To reset the chassis intrusion detector, enter the System Setup program and reset **Chassis Intrusion** to **Not Detected**.
See "Using the System Setup Program" in your *User's Guide* for instructions.

> 📝 *NOTE: If a setup password has been assigned by someone else, contact your network administrator for information on resetting the chassis intrusion detector.*

9. If necessary, update the drive system configuration information in the System Setup program.
For any SCSI devices, the respective category under **IDE Drives: Primary** or **IDE Drives: Secondary** should be set to **None**. For instructions, see "Using the System Setup Program" in your *User's Guide*.
10. If you installed a SCSI hard-disk drive, partition and format the drive. Then install the operating system.
For instructions, see [Partitioning and Formatting SCSI Hard-Disk Drives](#) and your operating system documentation.
11. Test the SCSI devices.
Test a SCSI hard-disk drive by running the SCSI diagnostics. See [Running the Dell Diagnostics](#) for information on running the Dell Diagnostics and troubleshooting any problems that may occur.
To test a SCSI tape drive, refer to the documentation for the tape drive software to perform a tape drive backup and verification test.

Partitioning and Formatting SCSI Hard-Disk Drives

You may need to use different programs than those provided with the operating system to partition and format SCSI hard-disk drives. Refer to the documentation that came with your SCSI software drivers for information on installing the appropriate drivers and preparing your SCSI hard-disk drive for use.

> 📝 *NOTE: When using the Windows NT operating system with the FAT 16 file system, the primary partition for each hard-disk drive can be no larger than 2 GB. Extended partitions can be larger than 2 GB, but each logical drive within an extended partition must be no larger than 2 GB.*

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Getting Help: Dell® PowerEdge® 1300 Systems Installation and Troubleshooting Guide

Overview | Technical Assistance | Help Tools | Problems With Your Order | Product Information | Returning Items for Warranty Repair or Credit | Before You Call | Dell Contact Numbers

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Overview

This file describes the tools Dell provides to help you when you have a problem with your computer. It also tells you when and how to call Dell for technical or customer assistance.

Technical Assistance

If you need assistance with a technical problem, perform the following steps:

1. Complete the troubleshooting checks in Checking the Equipment and Checking Inside the Computer.
2. Run the Dell Diagnostics as described in Running the Dell Diagnostics.
3. Make a copy of the Diagnostics Checklist and fill it out.
4. Use Dell's extensive suite of online services available at Dell's World Wide Web site (**www.dell.com**) for help with installation and troubleshooting procedures.
5. If the preceding steps have not resolved the problem and you need to talk to a Dell technician, call Dell's technical support service.

When prompted by Dell's automated telephone system, enter your Express Service Code to route the call directly to the proper support personnel. If you do not have an Express Service Code, open the **Dell Accessories** folder, double-click the **Express Service Code** icon, and follow the directions.

NOTE: Dell's Express Service Code system may not be available in all countries

For instructions on using the technical support service, refer to Technical Support Service and Before You Call.

Help Tools

Dell provides a number of tools to assist you. These tools are described in the following sections.

NOTE: Some of the following tools are not always available in all locations outside the continental U.S. Please call your local Dell representative for information on availability.

World Wide Web on the Internet

The Internet is your most powerful tool for obtaining information about your computer and other Dell products. Through the Internet, you can access most of the services described in this file, including AutoTech, TechFax, order status, technical support, and product information.

From Dell's World Wide Web home page (**www.dell.com**), click the **Support** icon, and click **Support Your Dell**. Enter your service tag number (or, if you have one, your Express Service Code) and click **Submit**. If you don't have your service tag number or Express Service Code available, you can also select support information by system.

Everything you need to know about your system is presented on the system support page, including the following tools and information:

- Technical information — Details on every aspect of your system, including hardware specifications.
- Self-diagnostic tools — A system-specific troubleshooting application for resolving many computer-related issues by following interactive flowcharts.
- Drivers, files, and utilities — The latest drivers and basic input/output system (BIOS) updates to keep your system functioning at its best.
- Component support — Technical information, documentation, and troubleshooting tips for different system components.
- Online communications center — Tool for submitting requests for both technical and nontechnical information on Dell products. Avoid telephone delays by receiving an e-mail response to your request for information if your computer is not functioning properly or if you have questions regarding your computer's hardware or operation.

Dell can be accessed electronically using the following addresses:

- World Wide Web

  www.dell.com/

www.dell.com/intl/apcc/ (for Asian/Pacific countries only)

www.euro.dell.com (for Europe only)

- Anonymous file transfer protocol (FTP)

ftp.dell.com/

Log in as `user: anonymous`, and use your e-mail address as your password.

- Electronic Support Service

support@us.dell.com

apsupport@dell.com (for Asian/Pacific countries only)

support.euro.dell.com (for Europe only)

- Electronic Quote Service

sales@dell.com

apmarketing@dell.com (for Asian/Pacific countries only)

- Electronic Information Service

info@dell.com

AutoTech Service

Dell's automated technical support service—AutoTech—provides recorded answers to the questions most frequently asked by Dell customers.

When you call AutoTech, you use your touch-tone telephone to select the subjects that correspond to your questions. You can even interrupt an AutoTech session and continue the session later. The code number that the AutoTech service gives you allows you to continue your session where you ended it.

The AutoTech service is available 24 hours a day, seven days a week. You can also access this service through the technical support service. For the telephone number to call, refer to **Dell Contact Numbers**.

TechFax Service

Dell takes full advantage of fax technology to serve you better. Twenty-four hours a day, seven days a week, you can call the Dell TechFax line toll-free for all kinds of technical information.

Using a touch-tone phone, you can select from a full directory of topics. The technical information you request is sent within minutes to the fax number you designate. For the TechFax telephone number to call, refer to **Dell Contact Numbers**.

TechConnect BBS

Use your modem to access Dell's TechConnect bulletin board service (BBS) 24 hours a day, seven days a week. The service is menu-driven and fully interactive. The protocol parameters for the BBS are 1200 to 19.2K baud, 8 data bits, no parity, 1 stop bit.

Automated Order-Status System

You can call this automated service to check on the status of any Dell products that you have ordered. A recording prompts you for the information needed to locate and report on your order. For the telephone number to call, refer to **Dell Contact Numbers**.

Technical Support Service

Dell's industry-leading hardware technical support service is available 24 hours a day, seven days a week, to answer your questions about Dell hardware.

Our technical support staff pride themselves on their track record: more than 90 percent of all problems and questions are taken care of in just one toll-free call, usually in less than 10 minutes. When you call, our experts can refer to records kept on your Dell system to better understand your particular question. Our technical support staff use computer-based diagnostics to provide fast, accurate answers to questions.

To contact Dell's technical support service, first refer to **Before You Call** and then call the number for your country as listed in **Dell Contact Numbers**.

Problems With Your Order

If you have a problem with your order, such as missing parts, wrong parts, or incorrect billing, contact Dell Computer Corporation for customer assistance. Have your invoice or packing slip handy when you call. For the telephone number to call, refer to <u>Dell Contact Numbers</u>.

Product Information

If you need information about additional products available from Dell Computer Corporation, or if you would like to place an order, visit Dell's World Wide Web site at **www.dell.com**. For the telephone number to call to speak to a sales specialist, refer to <u>Dell Contact Numbers</u>.

Returning Items for Warranty Repair or Credit

Prepare all items being returned, whether for repair or credit, as follows:

1. Call Dell to obtain an authorization number, and write it clearly and prominently on the outside of the box.
   For the telephone number to call, refer to <u>Dell Contact Numbers</u>.
2. Include a copy of the invoice and a letter describing the reason for the return.
3. Include a copy of the Diagnostics Checklist indicating the tests you have run and any error messages reported by the Dell Diagnostics.
4. Include any accessories that belong with the item(s) being returned (power cables, software diskettes, guides, and so on) if the return is for credit.
5. Pack the equipment to be returned in the original (or equivalent) packing materials.

You are responsible for paying shipping expenses. You are also responsible for insuring any product returned, and you assume the risk of loss during shipment to Dell Computer Corporation. Collect On Delivery (C.O.D.) packages are not accepted.

Returns that are missing any of the preceding requirements will be refused at our receiving dock and returned to you.

Before You Call

NOTE: Have your Express Service Code ready when you call. The code helps Dell's automated-support telephone system direct your call more efficiently.

Remember to fill out the <u>Diagnostics Checklist</u> (Figure 1). If possible, turn on your system before you call Dell for technical assistance and call from a telephone at or near the computer. You may be asked to type some commands at the keyboard, relay detailed information during operations, or try other troubleshooting steps possible only at the computer system itself. Make sure the system documentation is available.

WARNING: If you need to remove the computer covers, be sure to first disconnect the computer system's power and modem cables from all electrical outlets.

Figure 1. Diagnostics Checklist

Diagnostics Checklist

Name:_____ Date:_____

Address:_____ Phone number:_____

Service tag number (bar code on the back of the computer):_____

Express Service Code:_____

Return Materials Authorization Number (if provided by Dell support Technician):_____

Operating system and version:_____

Peripherals:_____

Expansion cards:_____

Are you connected to a network?   Yes   No

Network, version, and network card:_____

Programs and versions:_____

Refer to your operating system documentation to determine the contents of the system's start-up files. If the computer is connected to a printer, print each file. Otherwise, record the contents of each file before calling Dell.

Error message or beep code:_____

Description of problem and troubleshooting procedures you performed:_____

Dell Contact Numbers

When you need to contact Dell, use the telephone numbers, codes, and electronic addresses provided in Tables 1 and 2. Table 1, International Dialing Codes, provides the various codes required to make long-distance and international calls. Table 2, Dell Contact Numbers, provides local telephone numbers, area codes, toll-free numbers, and E-mail addresses, if applicable, for each department or service available in various countries around the world. If you are making a direct-dialed call to a location outside of your local telephone service area, determine which codes to use (if any) in Table 1 in addition to the local numbers provided in Table 2. For example, to place an international call from Paris, France to Bracknell, England, dial the international access code for France followed by the country code for the U.K., the city code for Bracknell, and then the local number as shown in the following illustration.
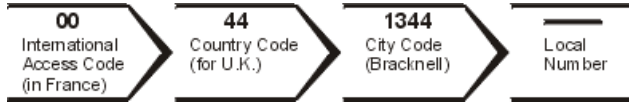
To place a long-distance call within your own country, use area codes instead of international access codes, country codes, and city codes. For example, to call Paris, France from Montpellier, France, dial the area code plus the local number as shown in the following illustration.

The codes required depend on where you are calling from as well as the destination of your call; in addition, each country has a different dialing protocol. If you need assistance in determining which codes to use, contact a local or an international operator.

NOTE: Toll-free numbers are for use only within the country for which they are listed. Area codes are most often used to call long distance within your own country (not internationally)—in other words, when your call originates in the same country you are calling.

Table 1. International Dialing Codes

Country (City)	International Access Code	Country Code	City Code
Australia (Sydney)	0011	61	2
Austria (Vienna)	900	43	1
Belgium (Brussels)	00	32	2
Brunei	—	673	—
Canada (North York, Ontario)	011	—	Not required
Chile (Santiago)	—	56	2
China (Xiamen)	—	86	592

Czech Republic (Prague)	00	420	2
Denmark (Horsholm)	009	45	Not required
Finland (Helsinki)	990	358	9
France (Paris) (Montpellier)	00	33	(1) (4)
Germany (Langen)	00	49	6103
Hong Kong	001	852	Not required
Ireland (Bray)	16	353	1
Italy (Milan)	00	39	2
Japan (Kawasaki)	001	81	44
Korea (Seoul)	001	82	2
Luxembourg	00	352	—
Macau	—	853	Not required
Malaysia (Penang)	00	60	4
Mexico (Colonia Granada)	95	52	5
Netherlands (Amsterdam)	00	31	20
New Zealand	00	64	—
Norway (Lysaker)	095	47	Not required
Poland (Warsaw)	011	48	22
Singapore (Singapore)	005	65	Not required
South Africa (Johannesburg)	09/091	27	11
Spain (Madrid)	07	34	1
Sweden (Upplands Vasby)	009	46	8
Switzerland (Geneva)	00	41	22
Taiwan	002	886	—
Thailand	001	66	—
U.K. (Bracknell)	010	44	1344
U.S.A. (Austin, Texas)	011	1	Not required

Table 2. Dell Contact Numbers

Country (City)	Area Local Number or Department Name or Service Code Toll-Free Number
Australia (Sydney)	Customer Technical Support (Dell Dimension® systems only) 1-300-65-55-33 Customer Technical Support (Other systems) toll free: 1-800-633-559 Customer Care toll free: 1-800-819-339 Corporate Sales toll free: 1-800-808-385 Transaction Sales toll free: 1-800-808-312 Fax toll free: 1-800-818-341
Austria* (Vienna)	Switchboard 491 04 0 Technical Support 0660-8779
Belgium* (Brussels)	Customer Technical Support 02 4819288 Sales toll free: 0800 16884 Switchboard 02 4819100 Fax 02 4819299 E-mail: tech_be@dell.com
Brunei *NOTE: Customers in Brunei call Malaysia for sales, customer, and technical assistance.*	Customer Technical Support (Penang, Malaysia) 810 4966 Customer Service (Penang, Malaysia) 810 4949 Transaction Sales (Penang, Malaysia) 810 4955
Canada (North York, Ontario) *NOTE: Customers in Canada call the U.S.A. for access to TechConnect BBS.*	Automated Order-Status System toll free: 1-800-433-9014 AutoTech (Automated technical support) toll free: 1-800-247-9362 Customer Care (From outside Toronto) toll free: 1-800-387-5759

	Customer Care (From within Toronto) 416 758-2400 Customer Technical Support toll free: 1-800-847-4096 Sales (Direct Sales—from outside Toronto) toll free: 1-800-387-5752 Sales (Direct Sales—from within Toronto) 416 758-2200 Sales (Federal government, education, and medical) toll free: 1-800-567-7542 Sales (Major Accounts) toll free: 1-800-387-5755 TechConnect BBS (Austin, Texas, U.S.A.) 512 728-8528 TechFax toll free: 1-800-950-1329
Chile (Santiago) *NOTE: Customers in Chile call the U.S.A for sales, customer, and technical assistance.*	Sales, Customer Support, and Technical Support toll free: 1230-020-4823
China (Xiamen)	Customer Service toll free: 800 858 2437 Sales toll free: 800 858 2222
Czech Republic* (Prague)	Technical Support 02 22 83 27 27 Fax 02 22 83 27 14 TechFax 02 22 83 27 28 Switchboard 02 22 83 27 11
Denmark* (Horsholm) *NOTE: Customers in Denmark call Sweden for fax technical support.*	Technical Support 45170182 Customer Care 45170181 Switchboard 45170100 Fax Technical Support (Upplands Vasby, Sweden) 859005594 Fax Switchboard 45170117 E-mail: den_support@dell.com
Finland* (Helsinki)	Technical Support 09 253 313 60 Customer Service 09 253 313 61 Fax 09 253 313 99 Switchboard 09 253 313 00 E-mail: fin_support@dell.com
France* (Paris/Montpellier)	Technical Support (Paris) 01 47 62 68 90 Technical Support (Montpellier) 04 67 06 62 86 Customer Care (Paris) 01 47 62 68 92 Customer Care (Montpellier) 04 67 06 61 96 TechConnect BBS (Montpellier) 04 67 22 53 04 Switchboard (Paris) 01 47 62 69 00 Switchboard (Montpellier) 04 67 06 65 51 E-mail: web_fr_tech@dell.com
Germany* (Langen)	Customer Technical Support 06103 971-200 Customer Care 06103 971-500 TechConnect BBS 06103 971-666 Switchboard 06103 971-0
Hong Kong *NOTE: Customers in Hong Kong call Malaysia for customer assistance.*	Technical Support toll free: 800 96 4107 Customer Service (Penang, Malaysia) 810 4949 Transaction Sales toll free: 800 96 4109 Corporate Sales toll free: 800 96 4108
Ireland* (Bray)	Customer Technical Support 1-850-543-543 Sales 1-850-235-235 SalesFax 01 286 2020 Fax 01 286 6848 TechConnect BBS 01 204 4711 TechFax 01 204 4708 Switchboard 01 286 0500
Italy* (Milan)	Switchboard 57782.1 Fax 57503530 Technical Support 57782.690 Sales 57782.411
Japan (Kawasaki)	Technical Support toll free: 0088-22-7890 Customer Care 044 556-4240 Direct Sales 044 556-3344 Commercial Sales 044 556-3430 556-3440 Switchboard 044 556-4300

Korea (Seoul) *NOTE: Customers in Korea call Malaysia for customer assistance.*	Technical Support toll free: 080-200-3800 Transaction Sales toll free: 080-200-3600 Corporate Sales toll free: 080-200-3900 Customer Service (Penang, Malaysia) 810 4949 Fax 394 3122 Switchboard 287 5600
Latin America *NOTE: Customers in Latin America call the U.S.A. for sales, customer, and technical assistance.*	Customer Technical Support (Austin, Texas, U.S.A.) 512 728-4093 Customer Service (Austin, Texas, U.S.A.) 512 728-3619 Fax (Technical Support and Customer Service) (Austin, Texas, U.S.A.) 512 728-3883 Sales (Austin, Texas, U.S.A.) 512 728-4397 SalesFax (Austin, Texas, U.S.A.) 512 728-4600 728-3772
Luxembourg* *NOTE: Customers in Luxembourg may call Belgium for sales, customer, and technical assistance.*	Customer Technical Support (Brussels, Belgium) 02 481 92 88 Sales (Brussels, Belgium) toll free: 080016884 Switchboard (Brussels, Belgium) 02 481 91 00 Fax (Brussels, Belgium) 02 481 92 99 E-mail: tech_be@dell.com
Macau *NOTE: Customers in Macau call Malaysia for customer assistance.*	Technical Support toll free: 0800 582 Customer Service (Penang, Malaysia) 810 4949 Transaction Sales toll free: 0800 581
Malaysia (Penang)	Technical Support toll free: 1 800 888 298 Customer Service 04 810 4949 Transaction Sales toll free: 1 800 888 202 Corporate Sales toll free: 1 800 888 213
Mexico (Colonia Granada) *NOTE: Customers in Mexico call the U.S.A. for access to the Automated Order-Status System and AutoTech.*	Automated Order-Status System (Austin, Texas, U.S.A.) 512 728-0685 AutoTech (Automated technical support) (Austin, Texas, U.S.A.) 512 728-0686 Customer Technical Support 525 228-7870 Sales 525 228-7811; toll free: 91-800-900-37; toll free: 91-800-904-49 Customer Service 525 228-7878 Main 525 228-7800
Netherlands* (Amsterdam)	Customer Technical Support 020 5818838 Direct Sales toll free: 0800-0663 Direct SalesFax 020 682 7171 Corporate Sales 020 581 8818 Corporate SalesFax 020 686 8003
New Zealand	Technical Support (Dell Dimension systems only) ($2.50 + GST per call) 0900 51010 Technical Support (Other systems) 0800 446 255 Customer Service 0800 444 617 Sales 0800 441 567 Fax 0800 441 566
Norway* (Lysaker) *NOTE: Customers in Norway call Sweden for fax technical support.*	Technical Support 671 16882 Customer Care 671 16881 Switchboard 1 16800 Fax Technical Support (Upplands Vasby, Sweden) 590 05 594 Fax Switchboard 671 16865 E-mail: nor_support@dell.com
Poland* (Warsaw)	Switchboard 60 61 999 Fax 60 61 998 E-mail: pl_support@dell.com
Singapore (Singapore) *NOTE: Customers in Singapore call Malaysia for customer assistance.*	Technical Support toll free: 800 6011 051 Customer Service (Penang, Malaysia) 04 810 4949 Transaction Sales toll free: 800 6011 054 Corporate Sales toll free: 800 6011 053
South Africa (Johannesburg)	Switchboard 011 709 7700 Technical Support 011 709 7710 Fax 011 706 0495
Southeast Asian/ Pacific Countries (excluding Australia, Brunei, China, Hong	Customer Technical Support, Customer Service, and Sales

Kong, Japan, Korea, Macau, Malaysia, New Zealand, Singapore, Taiwan, and Thailand—refer to individual listings for these countries)	(Penang, Malaysia) 60 4 810-4810
Spain* (Madrid)	Technical Support 902 100 130 Customer Service 91 329 10 80 TechConnect BBS 91 329 33 53 Sales 902 100 185 Switchboard 91 722 92 00
Sweden* (Upplands Vasby)	Technical Support 08 590 05 199 Customer Care 08 590 05 169 Fax Technical Support 08 590 05 594 Sales 08 590 05 185 E-mail: swe_support@dell.com
Switzerland* (Geneva)	Technical Support 0844 811 411 Commercial Services 022 799 01 01 Customer Service 022 799 01 50 Fax 022 799 01 90
Taiwan *NOTE: Customers in Taiwan call Malaysia for customer assistance.*	Technical Support toll free: 0080 651 226/0800 33 557 Customer Service (Penang, Malaysia) 810 4949 Transaction Sales toll free: 0080 651 228/0800 33 556 Corporate Sales toll free: 0080 651 227/0800 33 555
Thailand *NOTE: Customers in Thailand call Malaysia for customer assistance.*	Technical Support toll free: 0880 060 07 Customer Service (Penang, Malaysia) 810 4949 Sales toll free: 0880 060 06
U.K.* (Bracknell)	Technical Support Department 0870-908-0800 Customer Care 0870-906-0010 TechConnect BBS 0870-908-0610 Sales 01344 720000 AutoFax 0870-908-0510
U.S.A. (Austin, Texas)	Automated Order-Status System toll free: 1-800-433-9014 AutoTech (Automated technical support) toll free: 1-800-247-9362 **Dell Home and Small Business Group:** Customer Technical Support (Return Material Authorization Numbers) toll free: 1-800-624-9896 Customer Service (Credit Return Authorization Numbers) toll free: 1-800-624-9897 **National Accounts** (systems purchased by established Dell national accounts [have your account number handy], medical institutions, or value-added resellers [VARs]): Customer Service and Technical Support (Return Material Authorization Numbers) toll free: 1-800-822-8965 **Public Americas International** (systems purchased by governmental agencies [local, state, or federal] or educational institutions): Customer Service and Technical Support (Return Material Authorization Numbers) toll free: 1-800-234-1490 Dell Sales toll free: 1-800-289-3355 1-800-879-3355 Spare Parts Sales toll free: 1-800-357-3355 DellWare toll free: 1-800-753-7201 DellWare FaxBack Service 512 728-1681 Fee-Based Technical Support toll free: 1-800-433-9005 Sales (Catalogs) toll free: 1-800-426-5150 Fax toll free: 1-800-727-8320 TechFax toll free: 1-800-950-1329 TechConnect BBS 512 728-8528 Switchboard 512 338-4400
* For technical assistance in this country after normal working hours, use one of the following numbers: (353-1) 204 4008 or (353-1) 286 5908 (English only—the call is rerouted to the U.S.A.).	

Diagnostic Video Tests: Dell® PowerEdge® 1300 Systems Installation and Troubleshooting Guide

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Overview

The **Video** test group of the system diagnostics consists of the following eight tests, each of which verifies a particular video function or group of functions:

- **Video Memory Test** — Checks the integrity of characters generated from data in the video memory.
- **Video Hardware Test** — Checks the functions of the cursor register and the horizontal and vertical retrace bit registers.
- **Text Mode Character Test** — Checks the video subsystem's ability to present text mode data.
- **Text Mode Color Test** — Checks the video subsystem's ability to present color in text modes.
- **Text Mode Pages Test** — Checks the video subsystem's ability to map and present all available video text pages on the monitor screen, one page at a time.
- **Graphics Mode Test** — Checks the video subsystem's ability to present graphics mode data and colors.
- **Color Palettes Test** — Checks the video subsystem's ability to display all available colors.
- **Solid Colors Test** — Checks the video subsystem's ability to show screens full of solid colors. Allows you to check for missing color subpixels.

All of these tests, except the **Video Memory Test** and the **Video Hardware Test**, are interactive. These interactive tests display images on the monitor screen and require the user to respond as follows:

1. Examine a displayed image for correctness.
2. If an image is correct, type `y`.
3. If an image is incorrect, type `n`.

The following sections describe each of the tests in the **Video** test group.

Video Memory Test

The **Video Memory Test** verifies the integrity of the video memory either on the system board or on a video expansion card. As the test runs, it describes which 64-kilobyte (KB) block of video memory is being tested. When a test is complete, a message indicates whether the video memory has passed or failed the test. This test does not require any interaction on your part.

Video Hardware Test

The **Video Hardware Test** verifies the operation of the cursor registers and the horizontal and vertical retrace bit registers. When a test is complete, a message indicates whether these registers have passed or failed the test. This test does not require any interaction on your part.

Text Mode Character Test

The **Text Mode Character Test** consists of a group of subtests that display printable characters and character attributes. The subtests check character quality and the monitor's ability to display the characters correctly on its screen. A prompt at the bottom of each screen asks the user to decide whether the display is satisfactory and to respond by typing `y` or `n`.

If you respond affirmatively to each subtest, the **Text Mode Character Test** passes. A negative response to any subtest causes the test to fail.

The following subsections describe the subtests of the **Text Mode Character Test** in the order in which they appear.

Character Attributes Subtest (80 x 25)

The 80-column x 25-line character attributes subtest displays four lines of text that demonstrate normal-intensity video, reverse video, intensified video, and blinking video.

Character Set Subtest (80 x 25)

The 80-column x 25-line character set subtest displays all 256 characters in the American Standard Code for Information Interchange (ASCII) character set in 80-column by 25-line text mode.

Character Attributes Subtest (40 x 25)

The 40-column x 25-line character attributes subtest displays four lines of text in 40-column by 25-line (double-wide) text mode that demonstrate normal-intensity video, reverse video, intensified video, and blinking video.

Character Set Subtest (40 x 25)

The 40-column x 25-line character set subtest displays all 256 characters in the ASCII character set in 40-column by 25-line (double-wide) text mode.

Text Mode Color Test

The **Text Mode Color Test** contains three subtests that check the video subsystem's ability to present color in text modes. The following subsections describe these subtests.

📝 *NOTE: These subtests are valid for color monitors only.*

Color Attributes Subtest (80 x 25)

The 80-column x 25-line color attributes subtest displays a pattern of 16 rows and 16 columns in 80-column by 25-line text mode. Each row has a hexadecimal number in a unique foreground color and each column has a unique background color. Where the same foreground and background color intersect, the hexadecimal number is not visible. Type `y` if each character is displayed correctly; otherwise, type `n`. Table 1, Color Attributes, indicates the color in each of the rows and columns.

Table 1. Color Attributes

Row or Column	Foreground Color	Background Color
0	black	black

1	blue	blue
2	green	green
3	cyan	cyan
4	red	red
5	magenta	magenta
6	brown	brown
7	white	white
8	dark gray*	black
9	light blue*	blue
A	light green*	green
B	light cyan*	cyan
C	light red*	red
D	light magenta*	magenta
E	yellow*	brown
F	intense white*	white
These colors blink during the test.		

Color Attributes Subtest (40 x 25)

The 40-column x 25-line color attributes subtest is the same as the previous subtest except that the characters are displayed in 40-column by 25-line (double-wide) text mode. Type `y` if each character is displayed correctly; otherwise, type `n`.

Color Bars Subtest

The **Color Bars Subtest** displays 16 bars in different colors with background intensity enabled. Under each bar is the name of the color that should be displayed. Type `y` if each color bar is displayed correctly; otherwise, type `n`.

Text Mode Pages Test

The **Text Mode Pages Test** checks the video subsystem's ability to map and present all available video pages on the monitor screen, one page at a time. The test displays eight successive screens, the first of which contains 21 lines of 77 zeros. The remaining seven screens are identical to the first, except that each screen substitutes a different numeral (1 through 7) for the zeros.

Type `y` if all the rows of numbers on each screen are displayed correctly; otherwise, type `n`.

Graphics Mode Test

The **Graphics Mode Test** checks the video subsystem's ability to present graphics mode data and colors. Each screen in this test allows you to check some aspect of graphics mode data and colors. The following subsections describe **Graphics Mode Test** screens in the order in which they appear.

NOTE: Some of the following tests may not appear if your system does not support the video mode being tested.

320 x 200 Graphics Mode Screens

The **Graphics Mode Test** displays two successive 320- x 200-pixel graphics mode screens. The first screen displays three pyramids in red, green, and yellow; the second screen displays three pyramids in magenta, cyan, and white. Type y if all the pyramids are the correct colors; otherwise, type n.

640 x 200 Black/White Graphics Mode Screen

The 640- x 200-pixel black/white graphics mode screen displays a black rectangle and a white rectangle on a gray background. Type y if the boxes are displayed correctly; otherwise, type n.

640 x 480 Monochrome Graphics Mode Screen

The 640- x 480-pixel monochrome graphics mode screen displays three chess pieces. Type y if all the chess pieces are identical and displayed correctly; otherwise, type n.

320 x 200 16-Color Graphics Mode Screen

The 320- x 200-pixel 16-color graphics mode screen displays a series of Xs in 16 different colors with the name of the color beneath each X. Type y if all the Xs are the correct colors; otherwise, type n.

640 x 200 16-Color Graphics Mode Screen

The 640- x 200-pixel 16-color graphics mode screen displays a series of hexagons in 16 different colors with the name of the color beneath each hexagon. Type y if all the hexagons are the correct colors; otherwise, type n.

640 x 350 16-Color Graphics Mode Screen

The 640 x 350 16-color graphics mode screen displays a series of octagons in 16 different colors with the name of the color displayed beneath each octagon. Type y if all the octagons are the correct colors; otherwise, type n.

640 x 480 2-Color Graphics Mode Screen

The 640- x 480-pixel 2-color graphics mode screen displays three chess pieces. Type y if all the chess pieces are identical and displayed correctly; otherwise, type n.

640 x 480 16-Color Graphics Mode Screen

The 640- x 480-pixel 16-color graphics mode screen displays a series of stars in 16 different colors with the name of the color beneath each star. Type y if all the stars are the correct colors; otherwise, type n.

320 x 200 256-Color Graphics Mode Screen

The 320- x 200-pixel 256-color graphics mode screen displays a series of squares in 256 different color hues and intensities. Type y if all the squares are the correct colors; otherwise, type n.

640 x 480 256-Color Graphics Mode Screen

The 640- x 480-pixel 256-color graphics mode screen displays a series of squares with two colors in each square. Type y if all the squares appear to be correct; otherwise, type n.

800 x 600 16-Color Graphics Mode Screen

The 800- x 600-pixel 16-color graphics mode screen displays a series of pyramids in 16 different colors. Type `y` if all the pyramids appear to be correct; otherwise, type `n`.

800 x 600 256-Color Graphics Mode Screen

The 800- x 600-pixel 256-color graphics mode screen displays a series of squares with four colors in each square. Type `y` if all the squares appear to be correct; otherwise, type `n`.

1024 x 768 16-Color Graphics Mode Screen

The 1024- x 768-pixel 16-color graphics mode screen displays a series of hourglasses in 16 different colors. Type `y` if all the hourglasses appear to be correct; otherwise, type `n`.

1024 x 768 256-Color Graphics Mode Screen

The 1024- x 768-pixel 256-color graphics mode screen displays a series of asterisks with four colors in each asterisk. Type `y` if all the asterisks appear to be correct; otherwise, type `n`.

Color Palettes Test

The **Color Palettes Test** checks the video subsystem's ability to display all available colors. The test displays two screens that allow you to check the quality of different shades of the basic colors and to test the monitor's ability to vary the intensity of these colors.

The first screen contains four sets of 64 squares, one for gray and one for each of the three basic colors (red, green, and blue). Each square contains a different shade of its associated color, ranging from very light to very dark. Type `y` if all the squares are the correct colors; otherwise type `n`.

The second screen is the red/green/blue (RGB) color combination screen. This screen allows you to test the monitor's ability to increase or decrease the intensity of the three basic colors.

The RGB color combination screen displays an RGB box in the top center of the screen with individual red, green, and blue boxes beneath it. Underneath the individual color boxes are three lines that show the intensity of each color. Type `r`, `g`, or `b` to adjust the intensity of the corresponding color; then press the right-arrow key to increase the color intensity, or press the left-arrow key to decrease the intensity. The RGB box should be able to display 262,144 different colors when you adjust the intensity levels of red, green, and blue. Type `y` if all the squares are the correct colors; otherwise type `n`.

Solid Colors Test

The **Solid Colors Test** checks whether the video subsystem is displaying the correct colors. This test also lets you check for missing pixels. When this test is running, four screens appear sequentially—a red screen, a green screen, a blue screen, and a white screen. Check each screen for missing pixels, and verify that the correct color is being displayed.

When the test is complete, a message asks if you are satisfied with the quality of the colors. Type `y` if all the pixels were present and if the correct colors were displayed; otherwise, type `n`.

Jumpers, Switches, and Connectors: Dell® PowerEdge® 1300 Systems Installation and Troubleshooting Guide

Overview

This file provides specific information about the jumpers on your system board and the input/output (I/O) ports and connectors on the back panel of your computer. It also provides some basic information on jumpers and switches, a listing of interrupt request (IRQ) assignments, and memory maps.

Jumpers and Switches

Jumpers and switches provide a convenient and reversible way of reconfiguring the circuitry on a printed circuit board. When reconfiguring your system, you may need to change jumper settings on your system board; you may also need to change jumper and/or switch settings on expansion cards or drives.

Jumpers

Jumpers are small blocks on a circuit board with two or more pins emerging from them. Plastic plugs containing a wire fit down over the pins. The wire connects the pins and creates a circuit.
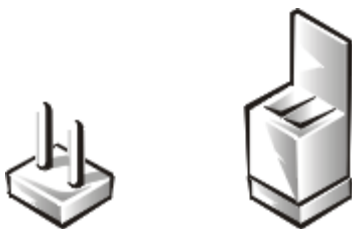
To change a jumper setting, pull the plug off its pin(s) and carefully fit it down onto the pin(s) indicated.

⚠ **CAUTION: Make sure your system is turned off before you change a jumper setting. Otherwise, damage to your system or unpredictable results may occur.**

A jumper is referred to as *open* or *unjumpered* when the plug is pushed down over only one pin or if there is no plug at all. When the plug is pushed down over two pins, the jumper is referred to as *jumpered*. The jumper setting is often shown in text as two numbers, such as *1-2*. The number *1* is printed on the circuit board so that you can identify each pin number based on the location of pin 1.

Figure 1, System Board Jumpers, shows the location and default settings of the jumper blocks on your system board. See Table 1, System-Board Jumper Settings, for the designations, default settings, and functions of your system's jumpers.

Switches

Switches control various circuits or functions in your computer system. The switches you are most likely to encounter

are dual in-line package (DIP) switches, which are normally packaged in groups of two or more switches in a plastic case. Two common types of DIP switches are *slide* switches and *rocker* switches (see the following illustration).

slide switches   rocker switches
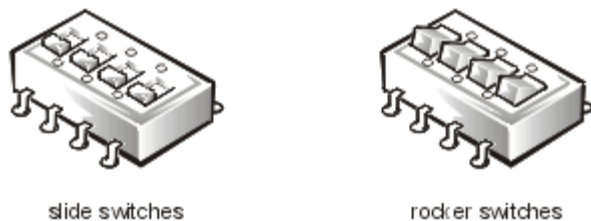
Each of these switches has two positions, or *settings* (usually *on* and *off*). To change the setting of a slide switch, use a small, pointed object such as a small screwdriver or a straightened paper clip to slide the switch to the proper position. To change the setting of a rocker switch, use the screwdriver or paper clip to press down on the appropriate side of the switch. In either case, do not use a pen, pencil, or other object that might leave a residue on the switch.

System Board Jumpers

Figure 1, System Board Jumpers, and Table 1, System-Board Jumper Settings, describe jumpers on the system board. Disabling a Forgotten Password decribes how to use the PASSWD jumper to clear an unknown system password.

Figure 1. System Board Jumpers
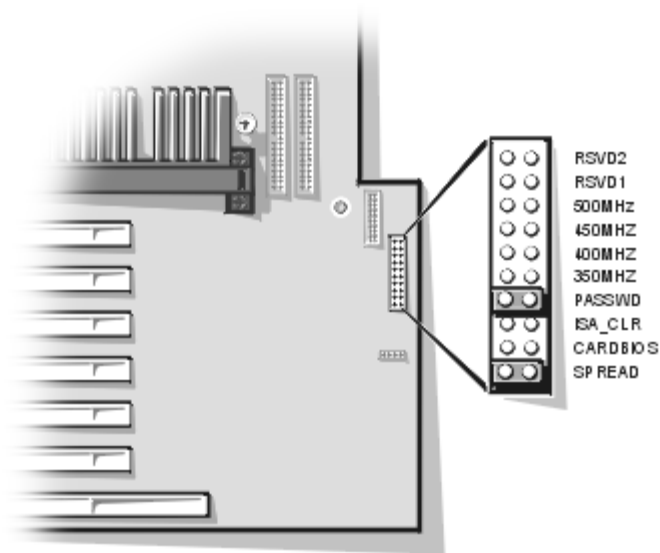
Table 1. System-Board Jumper Settings

Jumper	Setting	Description
SPREAD		Reserved (*do not remove jumper plug*).
CARDBIOS		Reserved (*do not install jumper plug*).
ISA_CLR	(default)	The ISA configuration settings are retained at system boot.

		The ISA configuration settings are cleared at next system boot. (If the ISA configuration settings become corrupted to the point where the system won't boot, install the jumper plug and boot the system. Remove the jumper before restoring the ISA configuration information.)
PASSWD	(default)	The password feature is enabled.
		The password feature is disabled.
350MHZ*		Jumpered when the microprocessor's internal speed is 350 MHz.
400MHZ*		Jumpered when the microprocessor's internal speed is 400 MHz.
450MHZ*		Jumpered when the microprocessor's internal speed is 450 MHz.
500MHZ		Reserved (*do not install jumper plug*).
RSVD1		Reserved (*do not install jumper plug*).
RSVD2	(default)	Reserved (*do not install jumper plug*).

* *One set of the speed jumper pins must have a jumper plug installed; otherwise, the system will operate at an undetermined speed.*

NOTE: For the full name of an abbreviation or acronym used in this table, see Abbreviations and Acronyms.

 jumpered   *unjumpered*

Disabling a Forgotten Password

The computer's software security features include a system password and a setup password, which are discussed in detail in "Using the System Setup Program," in the *User's Guide*. A password jumper on the system board enables or disables the password features and clears any password(s) currently in use.

To disable a forgotten system or setup password, perform the following steps.

 CAUTION: See Protecting Against Electrostatic Discharge in the Safety Instructions.

1. Remove the computer cover.
   See Removing the Computer Cover for instructions.
2. Refer to System Board Jumpers for information on the password jumper (labeled "PASSWD") on the system board.
3. Remove the jumper plug from the PASSWD jumper.
4. Replace the computer cover, and then reconnect the computer to an electrical outlet and turn it on.
   The existing passwords are not disabled (erased) until the system boots with the PASSWD jumper plug removed. However, before you assign a new system and/or user password, you must reinstall the jumper plug.

 NOTE: If you assign a new system and/or setup password with the jumper plug still removed, the system disables the new password(s) the next time it boots.

5. Repeat step 1.

6. Reinstall the jumper plug on the PASSWD jumper.
7. Replace the computer cover, and then reconnect the computer and peripherals to electrical outlets and turn them on.
8. Assign a new system or setup password.

To assign a new system password using the System Setup program, see "Assigning a System Password" in your *User's Guide*. To assign a new setup password using the System Setup program, see "Assigning a Setup Password" in the *User's Guide*.

System Board Labels

Table 2, System Board Connectors and Sockets, lists the labels for connectors and sockets on your system board and gives a brief description of their functions.

Table 2. System Board Connectors and Sockets

Connector or Socket	Description
SVR_MGT	Server management bus connector (for the Dell Remote Assistant Card)
AUX_LED	Hard-disk drive access indicator connector
BATTERY	Battery socket
COM*n*	Serial port connectors
DIMM_*x*	DIMM socket
DISKETTE	Diskette drive interface connector
FAN	Microprocessor fan connector
IDE*n*	EIDE interface connector
ISA6*	ISA expansion-card connector
KYBD/MOUSE	Keyboard connector and mouse connector (stacked)
PANEL	Control panel connector
PARALLEL	Parallel port connector (sometimes referred to as *LPT1*)
PCI*n**	PCI expansion-card connectors
POWER_1	Main power input connector
SCSI_ULTRA2	SCSI connector
SLOT1_PRI	Primary Intel® Pentium® II processor SEC cartridge connector
SLOT1_SEC	Secondary Pentium II processor SEC cartridge connector
USB	USB connectors
VGA	video connector

* *The connector pair ISA6/PCI6 share a single card-slot opening so that only one connector of the pair can be*

used.

NOTE: For the full name of an abbreviation or acronym used in this table, see [*Abbreviations and Acronyms*](#)*.*

Abbreviations and Acronyms: Dell® PowerEdge® 1300 Systems Installation and Troubleshooting Guide

The following list defines or identifies technical terms, abbreviations, and acronyms used in Dell documents.

A

ampere(s)

AC

alternating current

ADC

analog-to-digital converter

ADI

Autodesk Device Interface

AI

artificial intelligence

ANSI

American National Standards Institute

APIC

Advanced Peripheral Interrupt Controller

ASCII

American Standard Code for Information Interchange

ASIC

application-specific integrated circuit

BASIC

Beginner's All-Purpose Symbolic Instruction Code

BBS

bulletin board service

BIOS

basic input/output system

bpi

bits per inch

bps

bits per second

BTU

British thermal unit

C

Celsius

CCFT

cold cathode fluorescent tube

CD

compact disc

CD-ROM

compact disc read-only memory

CGA

color graphics adapter

cm

centimeter(s)

CMOS

complementary metal-oxide semiconductor

C.O.D.

collect on delivery

cpi

characters per inch

cpl

characters per line

CPU

central processing unit

DAC

digital-to-analog converter

DASH

Dell Advanced SCSI Host

DAT

digital audio tape

dB

decibel(s)

dBA

adjusted decibel(s)

DC

direct current

DIMM

dual in-line memory module

DIN

Deutsche Industrie Norm

DIP

dual in-line package

DMA

direct memory access

DOC

Department of Communications (in Canada)

dpi

dots per inch

DRAM

dynamic random-access memory

DS/DD

double-sided double-density

DS/HD

double-sided high-density

DSA

Dell SCSI Array

ECC

error checking and correction

EDO

extended-data out

EGA

enhanced graphics adapter

EIDE

enhanced integrated drive electronics

EISA

Extended Industry-Standard Architecture

EMI

electromagnetic interference

EMM

expanded memory manager

EMS

Expanded Memory Specification

EPP

Enhanced Parallel Port

EPROM

erasable programmable read-only memory

ESD

electrostatic discharge

ESDI

enhanced small-device interface

ESM

embedded server management

F

Fahrenheit

FAT

file allocation table

FCC

Federal Communications Commission

FIFO

first-in first-out

ft

feet

---

g

gram(s)

G

gravities

GB

gigabyte(s)

GUI

graphical user interface

---

h

hexadecimal

HIP

Hardware Instrumentation Package

HMA

high memory area

HPFS

High Performance File System

Hz

hertz

I/O

input/output

ID

identification

IDE

integrated drive electronics

IRQ

interrupt request

ISA

Industry-Standard Architecture

JEIDA

Japanese Electronic Industry Development Association

K

kilo- (1024)

KB

kilobyte(s)

KB/sec

kilobyte(s) per second

Kb

kilobit(s)

Kbps

kilobit(s) per second

kg

kilogram(s)

kHz

kilohertz

LAN

local area network

lb

pound(s)

LCD

liquid crystal display

LED

light-emitting diode

LIF

low insertion force

LN

load number

lpi

lines per inch

LVD

low voltage differential

---

m

meter(s)

mA

milliampere(s)

mAh

milliampere-hour(s)

MB

megabyte(s)

Mb

megabit(s)

Mbps

megabit(s) per second

MBR

master boot record

MDA

monochrome display adapter

MGA

monochrome graphics adapter

MHz

megahertz

MMX

MultiMedia eXtensions

mm

millimeter(s)

ms

millisecond(s)

MS-DOS

Microsoft® Disk Operating System

MTBF

mean time between failures

mV

millivolt(s)

NIC

network interface controller

NiCad

nickel cadmium

NiMH

nickel-metal hydride

NMI

nonmaskable interrupt

ns

nanosecond(s)

NTFS

NT File System

NVRAM

nonvolatile random-access memory

OS/2®

Operating System/2

OTP

one-time programmable

PAL

programmable array logic

PCI

Peripheral Component Interconnect

PCMCIA

Personal Computer Memory Card International Association

PGA

pin grid array

POST

power-on self-test

ppm

pages per minute

PQFP

plastic quad flat pack

PS/2

Personal System/2

PVC

polyvinyl chloride

QIC

quarter-inch cartridge

RAID

redundant arrays of independent disks

RAM

random-access memory

RAMDAC

random-access memory digital-to-analog converter

RCU

Resource Configuration Utility

REN

ringer equivalence number

RFI

radio frequency interference

RGB

red/green/blue

ROM

read-only memory

rpm

revolutions per minute

RTC

real-time clock

SCA

Single Controller Architecture

SCSI

small computer system interface

SDS

Scalable Disk System

sec

second(s)

SEC

single-edge contact

SDRAM

synchronous dynamic random-access memory

SIMM

single in-line memory module

SMB

server management bus

SNMP

Simple Network Management Protocol

SRAM

static random-access memory

SVGA

super video graphics array

TFT

thin film transistor

tpi

tracks per inch

TSR

terminate-and-stay-resident

UMB

upper memory block

UPS

uninterruptible power supply

USOC

Universal Service Ordering Code

V

volt(s)

VAC

volt(s) alternating current

VDC

volt(s) direct current

VESA®

Video Electronics Standards Association

VGA

video graphics array

VLSI

very-large-scale integration

VRAM

video random-access memory

W

watt(s)

WH

watt-hour(s)

XMM

extended memory manager

XMS

eXtended Memory Specification

ZIF

zero insertion force