Dell™ Dimension™ L*xxx*c Systems

REFERENCE AND TROUBLESHOOTING GUIDE

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Safety Instructions

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

When Using Your Computer System

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

CAUTION: Do not operate your computer system with any cover(s) (including computer covers, bezels, filler brackets, front-panel inserts, and so on) removed.

- To help avoid damaging your computer, be sure the voltage selection switch on the power supply is set to match the AC power available at your location:
  - 115 volts (V)/60 hertz (Hz) in most of North and South America and some Far Eastern countries such as South Korea and Taiwan
  - 100 V/50 Hz in eastern Japan and 100 V/60 Hz in western Japan
  - 230 V/50 Hz in most of Europe, the Middle East, and the Far East

  Also be sure your monitor and attached devices are electrically rated to operate with the AC power available in your location.
- Before working inside the computer, unplug the system to help prevent electric shock or system board damage. Certain system board components continue to receive power any time the computer is connected to AC power.
- To help avoid possible damage to the system board, wait 5 seconds after turning off the system before disconnecting a device from the computer.
- To help prevent electric shock, plug the computer and device power cables into properly grounded power sources. These cables are equipped with three-prong plugs to help ensure proper grounding. Do not use adapter plugs or remove the grounding prong from a cable. If you must use an extension cable, use a three-wire cable with properly grounded plugs.
- To help protect your computer system from sudden, transient increases and decreases in electrical power, use a surge suppressor, line conditioner, or uninterruptible power supply (UPS).

- Be sure nothing rests on your computer system's cables and that the cables are not located where they can be stepped on or tripped over.
- Do not spill food or liquids on your computer. If the computer gets wet, refer to "If Your Computer Gets Wet" in Chapter 6.
- 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. Avoid placing loose papers underneath your computer; do not place your computer in a closed-in wall unit or on a bed, sofa, or rug.

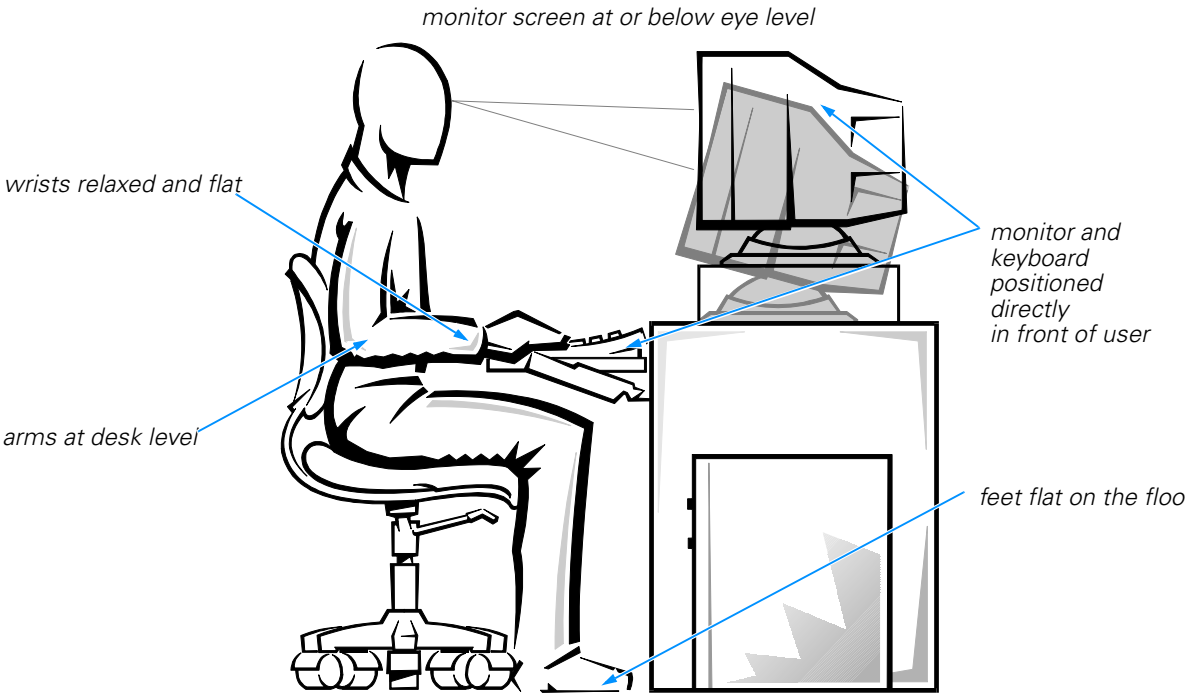
Ergonomic Computing Habits

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

CAUTION: Viewing the monitor screen for extended periods of time may result in eye strain.

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

- Position your system so that the monitor and keyboard are directly in front of you as you work. Special shelves are available (from Dell and other sources) to help you correctly position your keyboard.
- Set the monitor at a comfortable viewing distance (usually 510 to 610 millimeters [20 to 24 inches] from your eyes).
- Make sure the monitor screen is at eye level or slightly lower when you are sitting in front of the monitor.
- Adjust the tilt of the monitor, its contrast and brightness settings, and the lighting around you (such as overhead lights, desk lamps, and the curtains or blinds on nearby windows) to minimize reflections and glare on the monitor screen.
- Use a chair that provides good lower back support.
- Keep your forearms horizontal with your wrists in a neutral, comfortable position while using the keyboard or mouse.
- Always leave space to rest your hands while using the keyboard or mouse.
- Let your upper arms hang naturally at your sides.
- Sit erect, with your feet resting on the floor and your thighs level.
- When sitting, make sure the weight of your legs is on your feet and not on the front of your chair seat. Adjust your chair's height or use a footrest, if necessary, to maintain proper posture.
- Vary your work activities. Try to organize your work so that you do not have to type for extended periods of time. When you stop typing, try to do things that use both hands.



When Working Inside Your Computer

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

NOTICE: 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.

NOTICE: To help avoid possible damage to the system board, wait 20 seconds after turning off the system before disconnecting or removing a component from the system board.

1. Turn off your computer and any devices.
2. Ground yourself by touching 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.

3. Disconnect your computer and devices 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.

CAUTION: 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.

Preface

About This Guide

This guide is intended for anyone who uses a Dell Dimension L*xxx*c system. It can be used by both first-time and experienced computer users who want to learn about the features and operation of the systems or who want to upgrade their computers. The chapters and appendixes are summarized as follows:

- Chapter 1, "Introduction," provides an overview of the system features and information on preventive maintenance to protect the computer.
- Chapter 2, "Installing Upgrades on the System Board," provides information on performing various upgrades, such as installing additional memory. The chapter includes a basic orientation to internal features of the computer.
- Chapter 3, "Installing Drives," provides instructions on how to install and remove drives.
- Chapter 4, "Basic Troubleshooting," contains checklists to use before calling Dell for technical assistance.
- Chapter 5, "Software Solutions," has information on using audio utilities and reinstalling software.
- Chapter 6, "Checking Inside Your Computer," presents troubleshooting procedures for system components such as expansion cards, memory, and drives.
- Chapter 7, "Getting Help," provides information on obtaining technical assistance. Users who have been unable to resolve problems using the troubleshooting information provided in this guide can refer to this chapter.
- Appendix A, "System Specifications," is supplemental reference material.
- Appendix B, "System Setup Program," describes the system setup program used for checking and changing system configuration data.
- Appendix C, "Diagnostic Codes, Beep Codes, and System Messages," documents status and error messages generated during system start-up. Included are possible causes and corrective actions.
- Appendix D, "Regulatory Notices," provides regulatory information on the system.
- Appendix E, "Warranty, Return Policy, and Year 2000 Statement of Compliance," describes the warranty for your Dell system and the "Total Satisfaction" Return Policy.

Warranty and Return Policy Information

Dell Computer Corporation ("Dell") manufactures its hardware products from parts and components that are new or equivalent to new in accordance with industry-standard practices. For information about the Dell warranty for your system, see Appendix E, "Warranty, Return Policy, and Year 2000 Statement of Compliance."

Other Documents You May Need

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

- The *Getting Started* sheet provides step-by-step instructions for setting up your computer system.
- The *Dell Dimension Systems Setup Guide* describes how to configure your operating system and connect a printer.
- The *Dell Dimension Lxxxc Systems Help* is an HTML Help file that describes your system's features, explains how to use software and hardware, and provides answers to frequently asked questions. To access the *Help*, click the **Start** button, point to **Programs—> Dell Documents**, and then click **Dell Dimension Lxxxc Systems Help**. You may also double-click the **Dell Documentation** icon on the Windows desktop, click **System Documentation**, and then click **Dell Dimension Lxxxc Systems Help**.
- The *Dell Dimension Lxxxc Systems Reference* is an HTML Reference file that provides technical information about your system, such as interrupt request (IRQ) assignments, system board connector designations, and error message descriptions. To open the *Reference*, click the **Start** button, point to **Programs—> Dell Documents**, and then click **Dell Dimension Lxxxc Systems Reference**. You may also double-click the **Dell Documentation** icon on the Windows desktop, click **System Documentation**, and then click **Dell Dimension Lxxxc Systems Reference**.

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

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

- Operating system documentation is included.
- Documentation is included with any options you purchase separately from your system. The documentation contains configuration information and supplements the installation instructions provided in this guide.
- Technical information files—sometimes called "readme" files—may be installed on your hard-disk drive to provide last-minute updates about technical changes to your system or reference material intended for experienced users.

Notational Conventions

The following subsections describe notational conventions used in this document.

Notes, Notices, and Cautions

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

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

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

CAUTION: A CAUTION indicates a potentially hazardous situation which, if not avoided, may result in minor or moderate injury.

Typographical Conventions

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

- *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* are labels that appear on the keys on a keyboard. They 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**

- *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:\programs` 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)

Contents

Tables

CHAPTER 1
Introduction

Dell™ Dimension™ L*xxx*c computer systems are high-speed personal computers that include an Intel® Celeron™ processor with MMX™ technology. These systems incorporate a high-performance Peripheral Component Interconnect (PCI) design, allowing a wide range of initial configurations and upgrade possibilities.

This chapter provides information about the following:

- Major hardware and software features of your computer
- Available upgrades for your computer
- Preventive maintenance procedures to protect your investment and extend the life of your computer.

Hardware Features

Your Dell computer offers the following hardware features:

- An Intel Celeron microprocessor with MMX technology.

  The **Main** screen of the system setup program lists the speed of your system's processor. For information on accessing this program, refer to Appendix B, "System Setup Program."

- Cache memory that enhances the speed of many microprocessor operations by storing the most-recently accessed contents of system memory:

  — The L1 cache consists of an integrated 32-KB instruction and data cache.

  — The L2 cache consists of 128 KB of synchronous dynamic random-access memory (SDRAM) that resides in the processor core. The L2 cache runs at the processor's internal speed.

- Memory that can be increased up to 512 megabytes (MB) by installing 32-, 64-, 128- or 256-MB SDRAM dual in-line memory modules (DIMMs) in the two DIMM sockets on the system board.

NOTE: The system memory value reported by the operating system is 1 or 2 MB less than the memory installed because that memory is reserved for video functions. For example, if the computer has 32 MB of system memory, the operating system may report 30 or 31 MB.

The system board includes the following built-in features:

- Integrated Intel 810 video controller with Dynamic Video Memory and 4 MB of video SDRAM.
- Four three-quarter–length 32-bit PCI expansion slots for connecting PCI devices to the PCI bus.
- An integrated diskette drive interface that supports a single diskette drive without the need for a controller card.
- Two enhanced integrated drive electronics (EIDE) interfaces on the PCI bus that support Advanced Technology Attachment (ATA)-33/66 Ultra direct memory access (DMA) hard-disk drives, CD-ROM, DVD-ROM, Zip, and tape drives.

NOTE: Inconsistencies in the manufacturing of CD-ROM media may cause some higher-speed CD-ROM drives to vibrate more than others. Such vibration and associated noise does not indicate a defect in the drive or the CD.

- One serial port and one bidirectional parallel port for connecting external devices.
- For systems running Windows 98, the two high-performance Universal Serial Bus (USB) ports provide a single connection point for multiple USB-compliant devices. These devices can be connected and disconnected while the system is running.

NOTE: If you attach a USB device that was not included in your original system configuration, you may need to install a specific driver for that device to obtain its full functionality. Contact the USB device manufacturer for more information.

- A personal system/2 (PS/2)–style keyboard port and a PS/2-compatible mouse port.
- For systems with integrated network capabilities, a 10/100–megabit-per-second (Mbps) Intel Pro 82559 network interface controller (NIC) provides all the functions of a separate network card with Wakeup on LAN technology. The NIC supports both the 10BASE-T and 100BASE-TX Ethernet standards.
- For systems with integrated audio capabilities, a Creative Sound Blaster audio PCI controller with 64-voice wavetable synthesis.

Software Features

The following software is included with your Dell computer system:

- The Microsoft® Windows® 98 or Windows NT® 4.0 operating system is installed on your hard-disk drive. For more information, refer to your operating system documentation.
- Virus-scanning software for Windows 98.
- Video drivers provided with your computer for supporting video resolutions greater than 640 x 480 pixels. Before changing the resolution, check the monitor documentation to determine the supported resolutions and refresh rates.
- Dell Diagnostics for evaluating the computer's components and devices (refer to "Running the Dell Diagnostics" in Chapter 4).

- Audio utilities for systems with integrated audio capabilities.
- Network drivers for systems with the integrated NIC.
- The system setup program for viewing and changing system configuration information (refer to Appendix B, "System Setup Program").
- The optional Intel LANDesk® Client Manager allows a network administrator to manage and troubleshoot personal computers from one or more systems. For additional information about LANDesk, refer to the documentation that accompanied the software.
- Wakeup On LAN (PCI 2.2) capability for systems with the integrated NIC or with a Wakeup On LAN-capable network card installed. This feature, when enabled in the system setup program, allows the system to be started up from a server management console. Wakeup On LAN capability also allows remote computer setup, BIOS upgrades, software downloading and installation, file updates, and asset tracking after hours and on weekends when local area network (LAN) traffic is at a minimum.

Available Upgrades

The upgrades Dell offers undergo rigorous testing to ensure proper operation with your computer. You should review "PCI Expansion Card Upgrades" in Chapter 2 or Chapter 3, "Installing Drives," to be sure you have the necessary slots or resources available before purchasing such an upgrade.

Dell offers a variety of expansion cards to increase system functionality:

- Fax/modem cards with telephony support
- PCI sound cards and multimedia speakers
- 10- and 100-Mbps network cards

You can expand your system's memory up to 512 MB by installing additional 168-pin, 100-megahertz (MHz) non-error checking and correction (non-ECC) SDRAM DIMMs in the DIMM sockets on the system board. Purchasing memory upgrades from Dell Spare Parts ensures system compatibility; these upgrades are also covered under your system warranty. Refer to "Adding Memory" in Chapter 2 before purchasing a memory upgrade.

Dell offers a wide variety of drives that can be installed in your system, including the following options:

- ATA-33/66 Ultra DMA hard-disk drives (4.3 gigabytes [GB] or larger)
- EIDE tape drives that can store up to 10 GB (20 GB compressed)
- Iomega 250-MB Zip drives with removable media

To order any of these upgrades, call Dell.

Preventive Maintenance

The following sections contain maintenance procedures that you should perform regularly to keep the system in top operating condition.

Preserving Data

Everyone inadvertently deletes files at one time or another, viruses can corrupt files, and hard-disk drives can fail after extended use. To avoid data loss, regularly back up the data files on the hard-disk drive. If you should lose the contents of your hard-disk drive, you can reinstall programs, but your data files will be lost if you do not have a backup.

Your Dell-installed drivers and online documentation are preserved on the *Dell Dimension ResourceCD*. Use this CD if you ever need to restore the drivers and documentation that came on your Dell-installed hard-disk drive.

NOTE: In case of warranty replacement of your hard-disk drive, you will receive a blank, formatted drive from Dell. You must reinstall application programs and restore data files.

Scheduling Backups

Dell recommends that you back up the hard-disk drive at least once a week, with a daily backup of those files that have been changed. Following these guidelines ensures the loss of no more than a day's work. As further insurance against data loss, keep duplicate copies of the weekly and monthly backups at an off-site location. Doing so ensures that you lose no more than a week's work, even if one of the on-site backups becomes corrupted.

Backup Devices

Tape and Zip drives are convenient and affordable devices that can back up data at rates of up to 2 megabytes per second (MB/sec) and can often run unattended. Dell recommends these drives and their associated backup software for use as system backup devices. Depending on how many data files you have, you can also use diskettes as backup devices.

Virus-Scanning Software and Data Transfers

With thousands of known viruses and with the prevalence of data transfers over telecommunications lines, Dell recommends that you use virus-scanning software to protect your computer. Regularly update your virus-scanning software as described in the software documentation and load updates immediately.

Use the virus-scanning software before installing any software from unlicensed sources, either downloaded from the Internet or on diskettes. Making regular backups as discussed in the previous section provides insurance in case a virus does infect your system.

Cleaning System Components

As it draws in air to cool the computer, the power supply fan also draws dust and other particles into the computer. This contaminant buildup increases the system's internal temperature and interferes with component operation.

To minimize these conditions, Dell recommends keeping your work environment clean. In particular, you should regularly clean your computer system. You may also want to purchase monitor and keyboard covers to protect against dust and debris.

Recommended Tools and Accessories

Use the following tools and accessories for cleaning the computer system:

- Wrist grounding strap to reduce the effects of electrostatic discharge (ESD)
- Liquid dishwashing detergent
- Isopropyl (rubbing) alcohol
- Soft, lint-free cleaning cloth
- Nonabrasive diskette-drive head-cleaning kit that contains pretreated diskettes in individually sealed packages
- Small vacuum cleaner with a brush attachment

Cleaning the Computer, Monitor, and Keyboard Exteriors

To clean the exterior of the computer, monitor, and keyboard, perform the following steps:

1. Place the strap around your wrist and attach the other end to an unpainted metal surface on the back of the chassis.
2. Turn off the computer, monitor, and any other attached devices, and disconnect them from their power sources.
3. Use the vacuum cleaner to remove any dust from the slots and holes on the computer and between the keys on the keyboard.
4. Moisten a soft cleaning cloth with a solution of three parts water and one part liquid dishwashing detergent.

   Do not soak the cloth in the solution; you must not let the solution drip inside the computer or keyboard.

NOTICE: Do not wipe the monitor screen with this solution. Doing so may damage the antiglare coating on your monitor screen.

5. Use the moistened cloth to wipe the computer cover, the keyboard, and the exterior of the monitor.

Cleaning the Mouse

If the screen cursor skips or moves abnormally, clean your mouse by performing the following steps:

1. Turn the retainer ring counterclockwise to remove the ball.
2. Wipe the ball with a clean, lint-free cloth.
3. Blow carefully into the ball cage to dislodge dust and lint.
4. Look for a buildup of dirt on the rollers inside the ball cage. This buildup usually appears as a stripe running around the middle of the roller.
5. If dirty, clean the rollers using a cotton swab moistened lightly with isopropyl alcohol.

   After cleaning, make sure the rollers are still centered in their channels. Make sure that fluff from the swab is not left on the rollers.
6. Replace the ball and retainer ring.

Cleaning Diskette Drives

You can clean a diskette drive using a commercially available cleaning kit. These kits contain pretreated diskettes to remove contaminants that accumulate during normal operation.

If the kit does not contain instructions, insert a pretreated diskette into the drive and turn on the system. After 20 or 30 seconds, remove the diskette from the drive.

NOTICE: Do not attempt to clean drive heads with a swab. You may accidentally misalign the heads, rendering the drive inoperable.

Power Protection Devices

A number of devices are available that protect against power problems, such as power surges, transients, and power failures.

Surge Protectors

Surge protectors prevent voltage spikes, which occur during electrical storms or following power interruptions, from entering a system through the electrical outlet. There are various types, and they usually provide a level of protection commensurate with their cost. Some also provide warranty coverage for certain types of damage. Compare joule ratings to determine the relative effectiveness of different devices. Most surge protectors do not protect against lightning strikes, so you should disconnect your computer when lightning is near.

Modems can also be damaged by power surges on telephone lines and should be disconnected during electrical storms. Many surge protectors have a phone jack for modem protection. *Network connections cannot be protected by surge protectors. Therefore, always disconnect the network cable from the network connector during electrical storms.*

Surge protectors do not offer protection against brownouts, which occur when the voltage drops more than 20 percent below the normal AC line voltage level.

Line Conditioners

Line conditioners keep a computer's AC power source voltage at a fairly constant level and, therefore, can handle brownouts. Because of this added protection, line conditioners cost more than surge protectors—up to several hundred dollars. However, these devices cannot protect against a complete loss of power.

Uninterruptible Power Supply

A power loss while your computer is writing to your hard-disk drive can result in loss of data and file corruption. Worst case, your operating system could be corrupted. An uninterruptible power supply (UPS) offers the most complete protection against variations in power because it uses battery power to keep the system running when AC power is lost. AC power, while available, charges the battery; when AC power is lost, the battery provides power to the system for a limited amount of time—from 15 minutes to an hour or so—depending on the UPS system.

NOTE: Use a UPS to protect your computer only. Connect other devices, such as a printer, to a separate power strip providing surge protection. The length of time that the battery can supply power following an AC power loss decreases with additional hardware.

UPS systems can cost a few hundred dollars to several thousand dollars, depending on the operating time they provide when AC power is lost. UPS systems with 5 minutes of battery power let you conduct an orderly shutdown of the system, but are not intended to provide continued operation. A UPS system should be Underwriters Laboratories (UL) safety-approved.

CHAPTER 2
Installing Upgrades on the System Board

This chapter describes how to install expansion cards and system memory as well as replace the system battery (if necessary). It also tells you how to remove and replace the computer cover and familiarizes you with internal components.

Safety First—For You and Your Computer

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

CAUTION FOR YOUR PERSONAL SAFETY AND PROTECTION OF YOUR EQUIPMENT

Before working on your computer, perform the following steps:

1. **Turn off your computer and all devices.**
2. **Disconnect your computer and devices from their electrical outlets to reduce the potential for personal injury or shock. Also, disconnect any telephone or telecommunication lines from the computer.**
3. **Ground yourself by touching 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.
4. **Wait 20 seconds after turning off the computer before disconnecting or removing devices from the system board to avoid possible damage to the system board.**

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

Installation Guidelines

Keep a static-sensitive component in its antistatic packing material until you are ready to install the component in the computer. Just before unwrapping the antistatic packaging, discharge static electricity from your body.

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. Also note the extra connectors available for upgrades.

Removing and Replacing the Computer Cover

To remove the computer cover, perform the following steps:

1. Observe the "Caution for Your Personal Safety and Protection of Your Equipment" found earlier in this chapter. Also, observe the safety instructions at the front of this guide.

NOTICE: To avoid inadvertently damaging the system board, be sure you disconnect the computer's power cable from the electrical outlet and from the back of the chassis before removing the computer cover. The system board continues to receive a small amount of power when the system is turned off and attached to an electrical outlet (the system-board power indicator light [see Figure 2-5] is on when power is detected.)

2. Face the front of the chassis. Place your left hand on the left side of the chassis. Push back the release latch at the top back edge of the chassis (see Figure 2-1) to release the computer cover into your left hand.

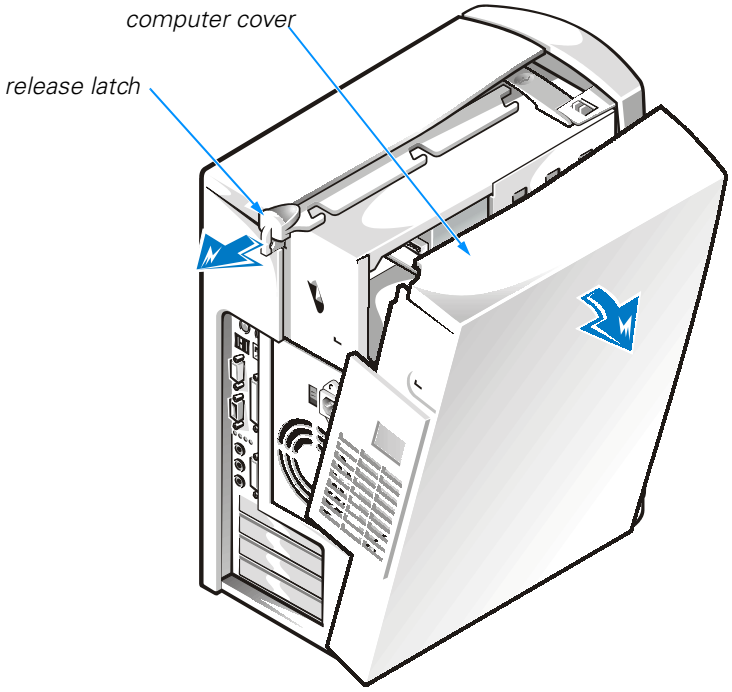


Figure 2-1. Removing the Computer Cover

CAUTION: To prevent cuts, keep your hands clear of the metal edges on the chassis.

3. Lift the cover out from the curves at the bottom of the chassis.

Replace the computer cover as follows:

1. Check all cable connections, especially those that might have come loose during your work. Fold cables and unused connectors out of the way so that they do not catch on the computer cover or interfere with airflow inside the computer.
2. Check to see that no tools or extra parts (including screws) are left inside the computer.
3. Place the chassis upright with the front facing you. Align the computer cover so its bottom hooks fit in the chassis curves.
4. Lift up the cover, making sure to keep the bottom hooks aligned with the curves in the chassis.
5. Gently squeeze the right and left sides of the computer together until the cover clicks into position.

Rotating the Power Supply Away From the System Board

To access components on the system board, you must rotate the power supply out of the way by performing the following steps:

1. Remove the computer cover as instructed in the previous section, "Removing and Replacing the Computer Cover."
2. Lay the computer on its side as shown in Figure 2-2.
3. Press the release latch (see Figure 2-2) while lifting the power supply. Rotate the power supply out of the chassis while keeping the power cables clear.

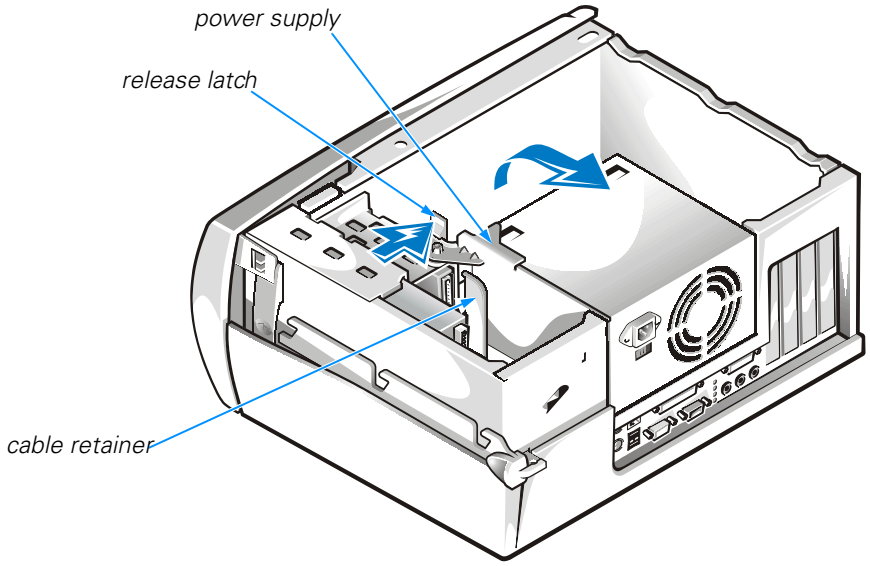


Figure 2-2. Rotating the Power Supply

When you rotate the power supply back into the chassis, gently lift the cable retainer and hold the drive cables out of the way. Rotate the power supply into position until its release latch clicks. Wrap the drive cables along the top of the latch in the retainers as shown in Figure 2-3.

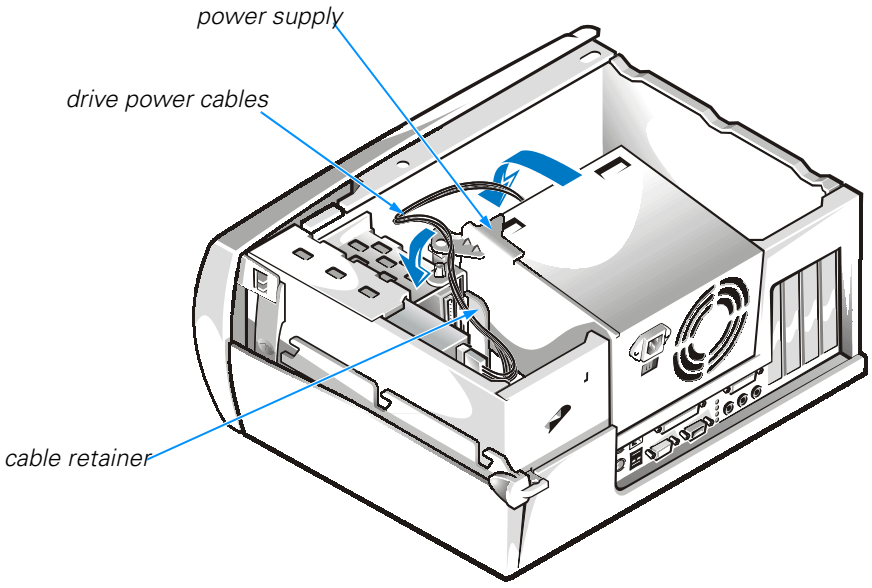


Figure 2-3. Cable Placement

Inside Your Computer

Figure 2-4 shows the computer with its cover removed as an aid in locating internal features and components.

When you look inside your computer, note the *DC power cables* coming from the power supply. These cables supply power to the system board and to internal drives.

The flat ribbon cables are the *interface cables* for internal drives. An interface cable connects a drive to an interface connector on the system board.

The *system board*—the large printed circuit board secured to the right side of the chassis—holds the computer's control circuitry and other electronic components. Some hardware options are installed directly onto the system board.

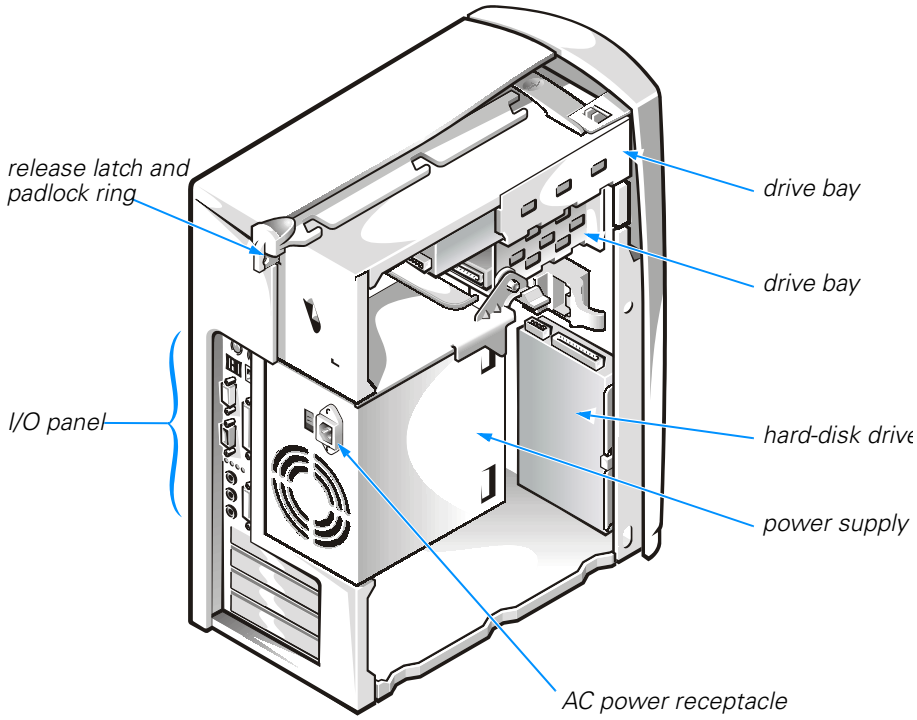


Figure 2-4. Inside the Chassis

System Board

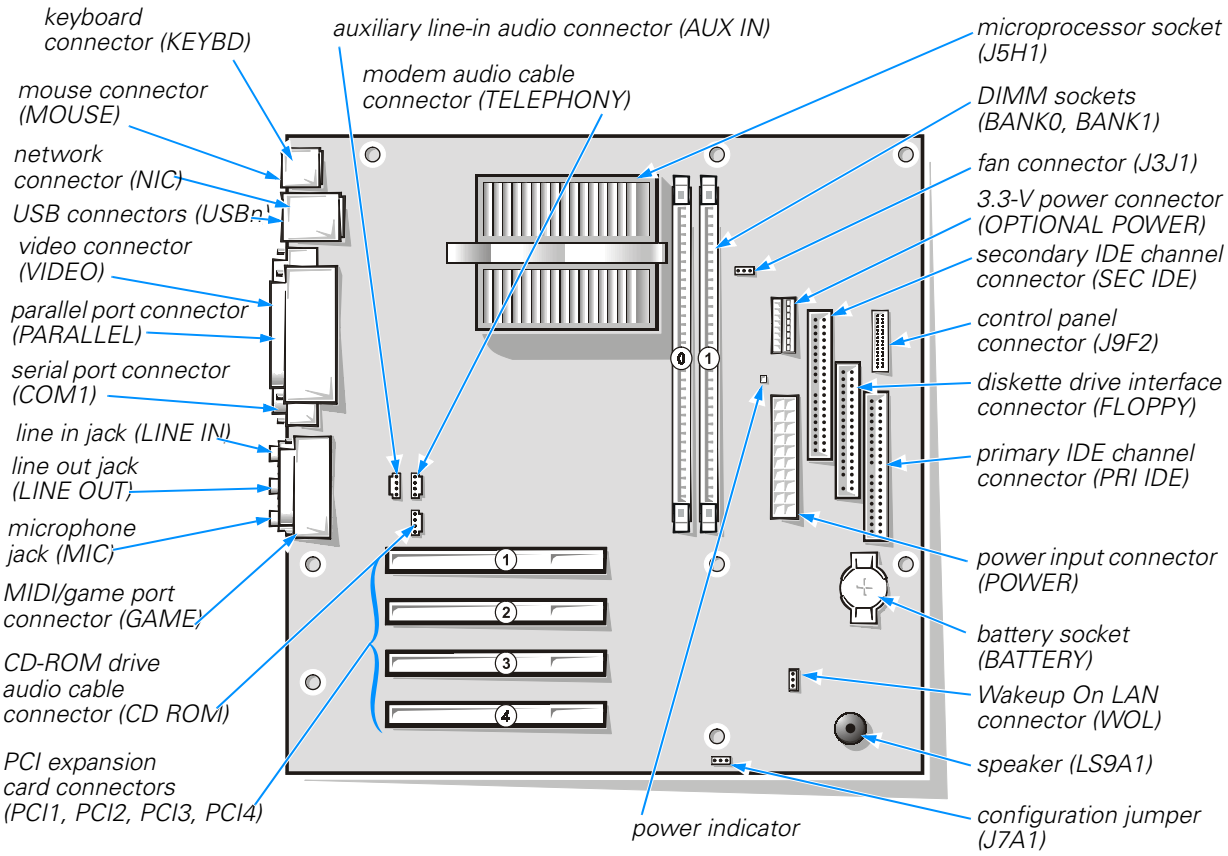


Figure 2-5. System Board Features

Table 2-1. System Board Connectors and Sockets

Connector or Socket	Description
AUX IN	Auxiliary line-in audio connector (for systems with integrated audio; natural color)
BANK*n*	DIMM sockets for memory
BATTERY	Battery socket
CD ROM	CD-ROM drive audio cable connector (for systems with integrated audio; black color)
FLOPPY	Diskette-drive interface connector
GAME	MIDI/game port connector (for systems with integrated audio)
J3J1	Fan connector
J5H1	Microprocessor socket
J7A1	Configuration jumper
J9F2	Control panel connector
KEYBD	Keyboard connector
LINE IN	Line-in jack (for systems with integrated audio)
LINE OUT	Line-out jack (for systems with integrated audio)
LS9A1	Speaker
MIC	Microphone jack (for systems with integrated audio)
MOUSE	Mouse connector
NIC	Network connector
OPTIONAL POWER	3.3-V 6-pin power input connector

NOTE: The Glossary in the system Help defines abbreviations and acronyms.

Table 2-1. System Board Connectors and Sockets (continued)

Connector or Socket	Description
PARALLEL	Parallel port connector; sometimes referred to as *LPT1*
PCI*n*	PCI expansion-card connectors (natural color)
POWER	Power input connector
PRI IDE	Primary EIDE channel connector
SEC IDE	Secondary EIDE channel connector
SERIAL	Serial port connector
TELEPHONY	Modem audio cable connector (for using integrated audio system as a speaker phone; green color)
USB*n*	USB connectors
VIDEO	Video connector

NOTE: The Glossary in the system Help defines abbreviations and acronyms.

Jumpers

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

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 2-5 shows the location of the system-board configuration jumper in your computer. Table 2-2 describes the settings and functions of the configuration jumper.

Table 2-2. Configuration Jumper Settings

Jumper Settings*	Description
Normal mode 	In Normal mode (jumper on pins 1–2), system setup settings and installed password(s) are retained when the system boots. In this mode, an automatic recovery is attempted if the BIOS detects that any of its main blocks are corrupted.
Maintenance mode 	Starting the system in Maintenance mode (jumper on pins 2–3) automatically starts the system setup program, adds the **Maintenance** option to the menu bar, and displays the **Maintenance** screen. The **Maintenance** screen provides the **Clear All Passwords** option, which allows you to disable a forgotten password (refer to "Disabling a Forgotten Password" in Appendix B). **NOTICE: Entering Maintenance mode returns all settings in the system setup program to their defaults. Dell strongly recommends that you record or print all current settings before entering Maintenance mode so that you can correct them when the system is reset to Normal mode.**

* ● *indicates pin 1*

NOTE: The Glossary in the system Help defines abbreviations and acronyms.

PCI Expansion Card Upgrades

NOTE: This system does not support older expansion card technologies, such as Industry-Standard Architecture (ISA) cards.

The system board accommodates up to four 32-bit Peripheral Component Interconnect (PCI) expansion cards. Figure 2-5 shows the four PCI expansion-card connectors (PCI1, PCI2, PCI3, and PCI4). Figure 2-6 shows an example of a PCI expansion card.

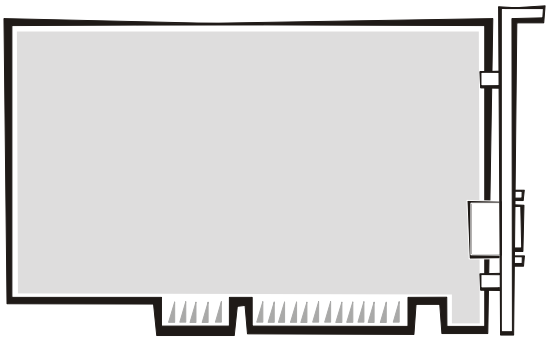


Figure 2-6. PCI Expansion Card

Make sure you have a slot available for the card you are installing. Also check the Windows 98 Device Manager or Windows NT Diagnostics for an available interrupt request (IRQ) line that is supported by the card.

To check Windows 98 resources, perform the following steps:

1. Click the **Start** button, point to **Settings**, and click **Control Panel**.
2. Double-click the **System** icon.
3. Click the **Device Manager** tab.
4. Double-click the **Computer** icon to open the **Computer Properties** window and view the **View Resources** tab.

To check Windows NT resources, start the **Windows NT Diagnostics** in the **Administrative Tools (Common)** folder and view the **Resources** tab.

NOTE: If an IRQ supported by your card is not available, try reassigning resources used by other devices or disabling unused devices.

Installing Expansion Cards

To install an expansion card, perform the following steps:

1. Prepare the expansion card for installation as instructed in the documentation that came with the expansion card.

   Check the documentation to make sure the card is configured to work with other devices already installed in your computer.
2. Remove the computer cover according to the instructions in "Removing and Replacing the Computer Cover" found earlier in this chapter.
3. Rotate the power supply according to the instructions in "Rotating the Power Supply Away From the System Board" found earlier in this chapter.
4. Choose an expansion-card connector for the card.

5. Unscrew and remove the metal filler bracket that covers the card-slot opening for the expansion slot you intend to use (see Figure 2-7).

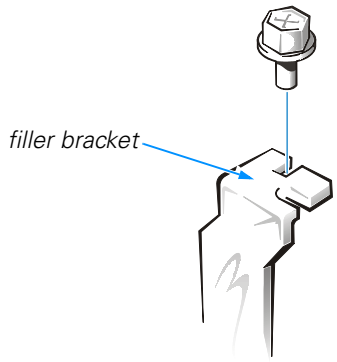


Figure 2-7. Removing the Filler Bracket

6. Insert the expansion card firmly into the expansion-card connector.

   Cutouts in the card-edge connector align with crossbars in the expansion-card connector. Gently rock the card into the connector until it is fully seated (see Figure 2-8).

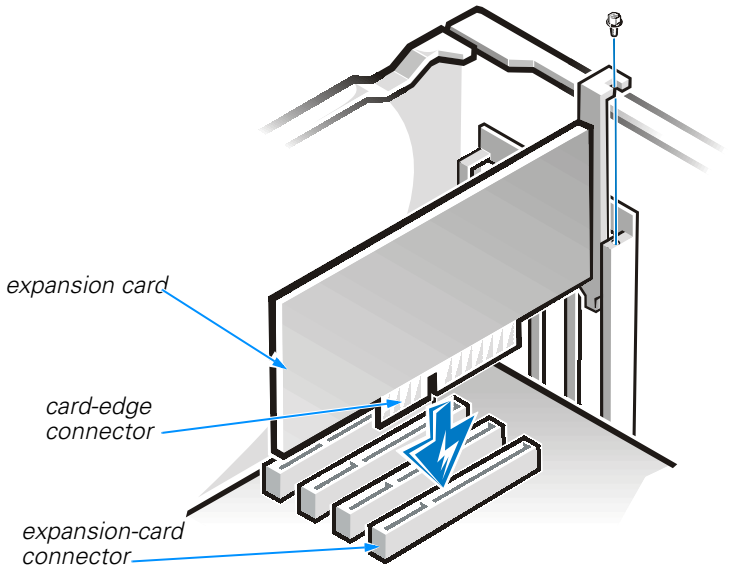


Figure 2-8. Installing an Expansion Card

7. When the card is firmly seated in the connector, secure the card-mounting bracket with the screw you removed in step 5.

   Make sure the front of the card-edge connector is completely seated in the expansion-card connector. The bottom of the card-mounting bracket must be inside the card-slot opening, and the top of the bracket must be flush against the chassis with the notch aligned with the screw hole in the chassis (see Figure 2-9). "Expansion Cards" in Chapter 6 provides more information on correctly seating an expansion card.

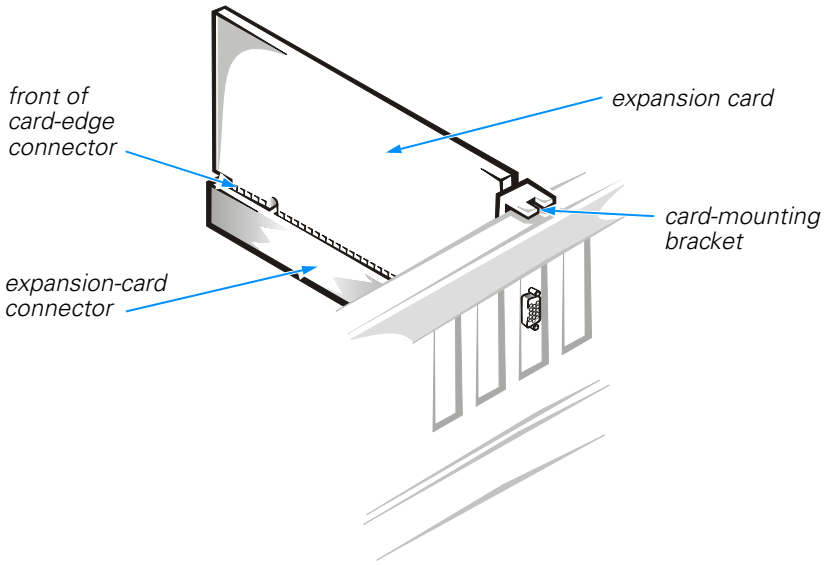


Figure 2-9. Correctly Installed Expansion Card

8. Connect any cables required for the card as described in the documentation that came with the card.

9. Rotate the power supply back into place, replace the computer cover, and reconnect your computer and devices to their electrical outlets and turn them on.

10. Refer to the documentation that came with the expansion card for information on installing any required drivers for your operating system.

Removing Expansion Cards

To remove an expansion card, perform the following steps:

1. Remove the computer cover according to the instructions in "Removing and Replacing the Computer Cover" found earlier in this chapter.

2. Rotate the power supply according to the instructions in "Rotating the Power Supply Away From the System Board" found earlier in this chapter.

3. If necessary, disconnect any cables connected to the card.
4. Remove the screw from the card-mounting bracket.
5. Grasp the card by its top 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 in the chassis.

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. Rotate the power supply back into place, replace the computer cover, and reconnect your computer and devices to their electrical outlets and turn them on.

Adding Memory

Memory can be increased to a maximum of 512 megabytes (MB) by installing combinations of 3.3-volt (V) 32-, 64-, 128-, and 256-MB dual in-line memory modules (DIMMs) in the two DIMM sockets on the system board. Only non-error checking and correction (non-ECC), 100-megahertz (MHz) DIMMs are supported. Purchasing memory upgrades from Dell Spare Parts ensures system compatibility; these upgrades are also covered under your system warranty.

NOTE: Your computer is designed for peak performance with specific DIMMs that are validated through rigorous testing. The system may not recognize other synchronous dynamic random-access memory (SDRAM) DIMMs and may fail power-on self-test (POST).

Installing a DIMM

To install a DIMM, perform the following steps:

1. Remove the computer cover according to the instructions in "Removing and Replacing the Computer Cover" found earlier in this chapter.
2. Rotate the power supply according to the instructions in "Rotating the Power Supply Away From the System Board" found earlier in this chapter.
3. Press outward on the plastic securing clips at each end of the DIMM socket to release the clips as shown in step 1 of Figure 2-10.
4. Orient the DIMM so that the cutouts on its edge connector align with the crossbars in the central groove of the socket.

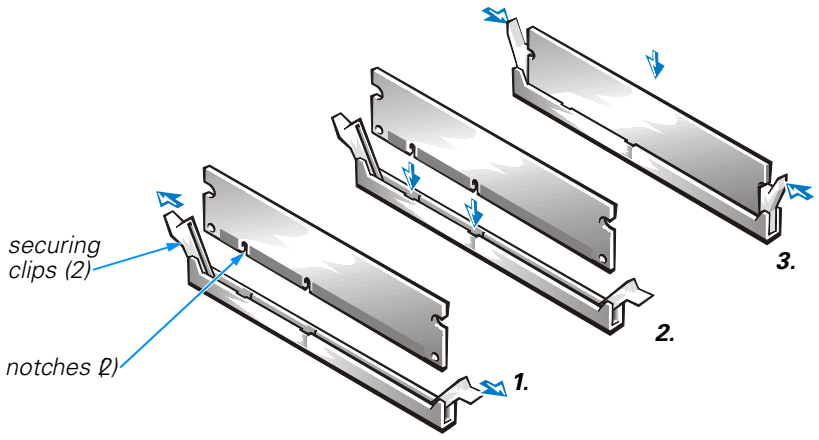


Figure 2-10. Installing a DIMM

NOTICE: Do not press near the middle of the DIMM. Doing so could break the module.

5. Insert the DIMM straight down into the socket, making sure it fits into the vertical guides at each end of the socket. Press firmly at each end until the DIMM snaps into place.

   If you inserted the DIMM correctly, the securing clips snap into the cutouts at each end of the DIMM (see step 3 of Figure 2-10).

6. Rotate the power supply back into place, replace the computer cover, and re-connect your computer and devices to their electrical outlets and turn them on.

7. Reboot the computer system, and press <Del> when the blue Dell logo screen appears to enter the system setup program. Verify that the amount displayed for **Total Memory** on the **Main** screen is correct.

   If the memory total is incorrect, turn off the system, remove the computer cover, rotate the power supply, and reseat the DIMMs in their sockets. Then repeat steps 6 and 7.

NOTE: The system memory value reported by the operating system is 1 or 2 MB less than the memory installed because that memory is reserved for video functions. For example, if the computer has 32 MB of system memory, the operating system reports 30 or 31 MB.

Removing a DIMM

To remove a DIMM, perform the following steps:

1. Remove the computer cover according to the instructions in "Removing and Replacing the Computer Cover" found earlier in this chapter.

2. Rotate the power supply according to the instructions in "Rotating the Power Supply Away From the System Board" found earlier in this chapter.

3. Press outward on the plastic securing clips at each end of the DIMM socket until the DIMM disengages from the socket.

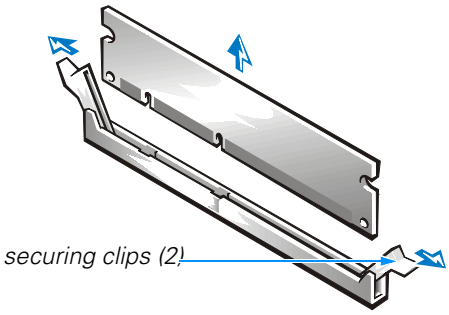


Figure 2-11. Removing a DIMM

4. Rotate the power supply back into place, replace the computer cover, and reconnect your computer and devices to their electrical outlets and turn them on.

5. Reboot the computer system, and press <Del> when the blue Dell logo screen appears to enter the system setup program. Verify that the amount displayed for **Total Memory** on the **Main** screen is correct.

Replacing the System Battery

A 3.0-V CR2032 coin-cell battery mounted in a system board socket (see Figure 2-5) maintains system configuration, date, and time information. The battery can last several years.

NOTE: Leave your power strip turned on when the computer is turned off to extend battery life.

If the battery expires, the system loses the system configuration information whenever it is disconnected from power. If you have to repeatedly reset this information after turning on the system, replace the battery.

To replace the system battery with another CR2032 coin-cell battery, perform the following steps.

CAUTION: 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.

1. Make a copy of the screens in the system setup program.

   You will need a written or printed copy of the system configuration information to restore the correct settings later. Refer to Appendix B, "System Setup Program," for instructions.

2. Remove the computer cover according to the instructions in "Removing and Replacing the Computer Cover" found earlier in this chapter.

3. Rotate the power supply according to the instructions in "Rotating the Power Supply Away From the System Board" found earlier in this chapter.

NOTICE: If you pry out the battery with a blunt object, insert the object between the battery and the socket. Otherwise, you may damage the system board by prying off the socket or by breaking circuit traces on the system board.

4. Locate the battery (see Figure 2-5) and pry it out of its socket with your fingers or with a blunt, nonconductive object, such as a plastic screwdriver.

5. Insert the battery into the socket with the side labeled "+" facing up (see Figure 2-12).

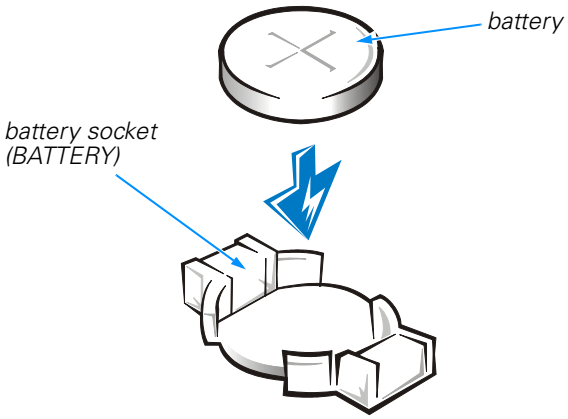


Figure 2-12. System Battery and Battery Socket

6. Rotate the power supply back into place, replace the computer cover, and reconnect your computer and devices to their electrical outlets and turn them on.

7. Reboot the computer system, press <Del> when the blue Dell logo screen appears to enter the system setup program, and restore the correct settings.

   Refer to Appendix B, "System Setup Program," for instructions.

CHAPTER 3
Installing Drives

This chapter provides instructions for removing and replacing the bezel and front-panel inserts, configuring drives, and connecting cables to them. These procedures may be required for a drive installation. The remainder of the chapter covers the installation of different types of drives.

The upper drive cage in the computer holds the externally accessible half-height 5.25-inch drive. The lower drive cage holds two 3.5-inch devices. In addition to the externally accessible drive bays, your computer has one internal bay that holds an enhanced integrated design electronics (EIDE) hard-disk drive.

Removing and Replacing the Bezel

To remove the bezel, perform the following steps:

1. Remove the computer cover as described in "Removing and Replacing the Computer Cover" in Chapter 2.
2. While facing the front of the computer, press the bezel release tab on the top of the chassis as shown in Figure 3-1.

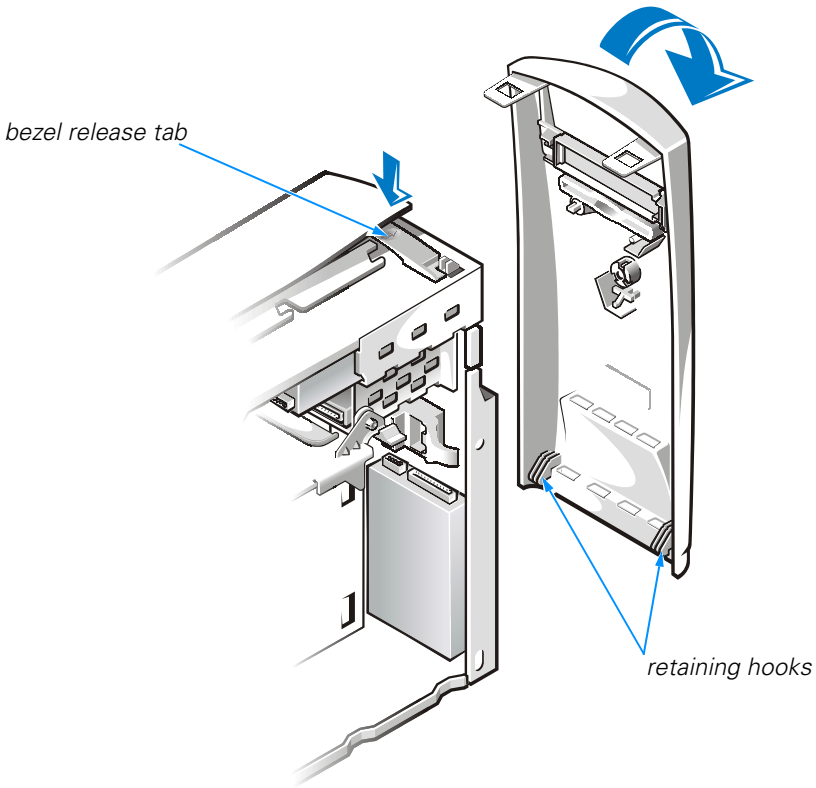


Figure 3-1. Removing the Bezel

3. Swing the bezel away from the chassis, disengage the two retaining hooks on the bezel, and carefully pull it away from the chassis.

To replace the bezel, fit the bezel's two retaining hooks into their corresponding slots on the chassis. Rotate the bezel toward the chassis until the bezel latches into position.

Removing and Replacing a 3.5-Inch Front-Panel Insert

Empty drive bays in the drive cage are covered by a front-panel insert. The insert for a 3.5-inch drive bay is mounted to the inside of the bezel.

After you have removed the bezel, remove the front-panel insert for the bay you plan to use. From the back of the bezel, as shown in Figure 3-2, press the release tab to the side. Then rotate the insert toward you, and remove it from the bezel.

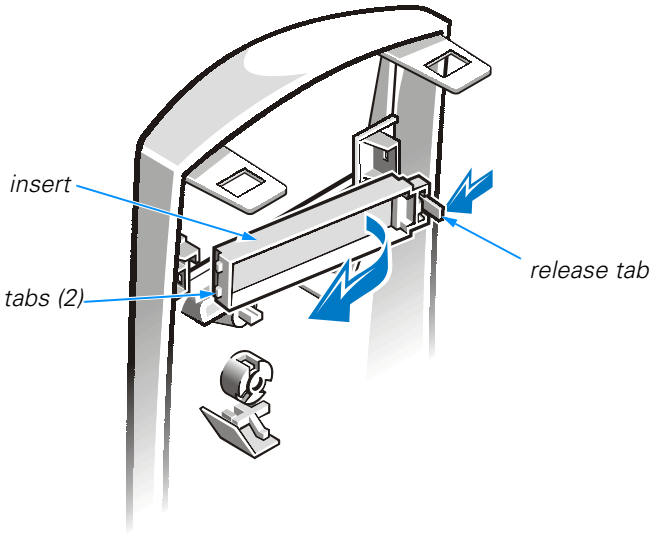


Figure 3-2. Removing a 3.5-Inch Insert

If you permanently remove a drive from the drive cage, replace the front-panel insert by inserting its two tabs into the slot in the bezel and rotating the insert forward until it snaps into place.

Configuring Drives

Before you install your drive, check the documentation that came with the drive to make sure that it is configured to work with other drives already installed in your computer. You may need to change jumper or switch settings on the new drive to avoid conflicts with drives already installed.

NOTE: If you are installing a tape drive, configure the drive for device address DS4 rather than DS2 or DS3 as may be indicated in the drive documentation.

All EIDE devices should be configured for the Cable Select jumper position, which assigns master and slave status to devices by their position on the interface cable. In this configuration, the drive attached to the last connector on the interface cable is the master or boot drive (drive 0) and the drive attached to the middle connector on the interface cable is the slave drive (drive 1). Refer to the drive's documentation for instructions on setting the Cable Select jumper position.

Connecting Drive Cables

When installing a drive, you connect two cables—a DC power cable and an interface cable—to the back of the drive.

The DC power cable comes from the power supply and contains a 4-pin connector that is keyed to avoid incorrect insertion. Do not force two connectors together if they do not fit properly. Your drive's power input connector (to which you connect the DC power cable) resembles the connector shown in Figure 3-3.

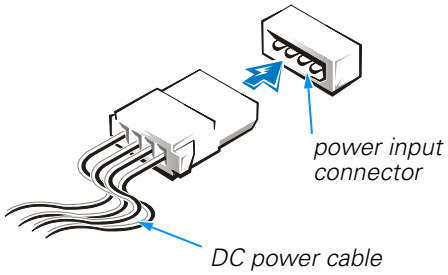


Figure 3-3. DC Power Cable Connector

The interface cable is attached to an interface connector either on the system board or on a controller card. The system board contains a diskette-drive interface connector (labeled "FLOPPY") and two EIDE interface connectors (a primary one labeled "PRI IDE" and a secondary one labeled "SEC IDE"). The EIDE hard-disk drive connects to the primary connector; EIDE devices such as CD-ROM drives, Zip drives, or tape drives connect to the secondary connector.

The connector on the interface cable is a header connector, as shown in Figure 3-4. This connector is keyed for correct insertion. A blocked hole on the cable connector matches a missing pin on the drive connector.

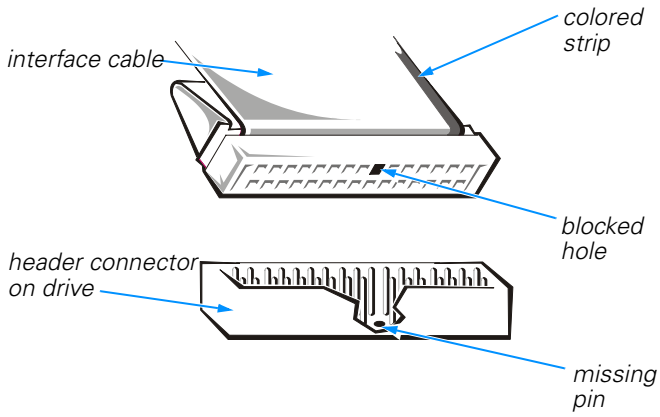


Figure 3-4. Drive Interface Connector

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, look for a silk-screened "1" next to the interface connector or refer to the documentation that came with the drive.

NOTICE: When connecting an interface cable, do not place the colored strip on the cable away from pin 1 on the interface connector. Doing so prevents drive operation and could damage the controller, the drive, or both.

Installing Externally Accessible Drives

The drive cages typically hold diskette drives, Zip drives, tape drives, DVD-ROM and CD-ROM drives—up to one half-height, 5.25-inch device and two 3.5-inch devices.

5.25-Inch Drive

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

1. Prepare the new drive for installation as described in "Configuring Drives" found earlier in this chapter.
2. Remove the bezel according to the instructions in "Removing and Replacing the Bezel" found earlier in this chapter.
3. Rotate the power supply according to the instructions in "Rotating the Power Supply Away From the System Board" in Chapter 2. While holding the power supply, stand the computer up.
4. Remove the existing drive from the bay by disconnecting the power cable and interface cable, squeezing the rail tabs at the front of the drive, and sliding the drive from the bay.

5. Remove the rails from each side of the existing drive and install them on each side of the new drive.

6. Slide the new drive into the drive bay.

7. If you are installing a controller card, configure and install it in an expansion slot now (refer to "PCI Expansion Card Upgrades" in Chapter 2 for instructions).

   Install the card as close as possible to the drive cage.

NOTICE: Dell does not recommend routing cables over cards because the cables can restrict airflow, cause cooling problems, and interfere with removing and replacing the computer cover. If you must route cables over cards, be extremely cautious when removing and replacing the computer cover.

8. Connect a DC power cable to the drive as described earlier in "Connecting Drive Cables."

NOTICE: Match the colored strip on the cable with pin 1 on the interface connector.

9. Attach the appropriate interface cable to the drive. If you installed a controller card in step 7, attach the other end of the interface cable to the controller card rather than the system board.

10. Replace the bezel.

11. Make sure that no cable connections were loosened during the procedure. Arrange cables so that they will not interfere with replacing the power supply and computer cover.

12. Rotate the power supply back into place, and replace the computer cover.

13. Reconnect your computer and devices to their electrical outlets, and turn them on.

14. If you installed a drive that requires device drivers, such as a CD-ROM drive, refer to the drive's documentation for driver installation instructions.

15. Verify the correct operation of the drive by running the Dell Diagnostics (refer to "Running the Dell Diagnostics" in Chapter 4).

3.5-Inch Drives

The computer has two 3.5-inch drive bays.

Upper 3.5-Inch Bay

To install a drive in the upper 3.5-inch bay, perform the following steps:

1. Prepare the drive for installation as described in "Configuring Drives" found earlier in this chapter.

2. Remove the bezel according to the instructions in "Removing and Replacing the Bezel" found earlier in this chapter.

3. Remove the plastic insert from the bezel as described in "Removing and Replacing a 3.5-Inch Front-Panel Insert" found earlier in this chapter.

4. Rotate the power supply according to the instructions in "Rotating the Power Supply Away From the System Board" in Chapter 2. While holding the power supply, stand the computer up.

5. Remove the metal plate covering the bay as shown in Figure 3-5. Using a screwdriver, pop out the metal plate from the left or right side of the chassis.

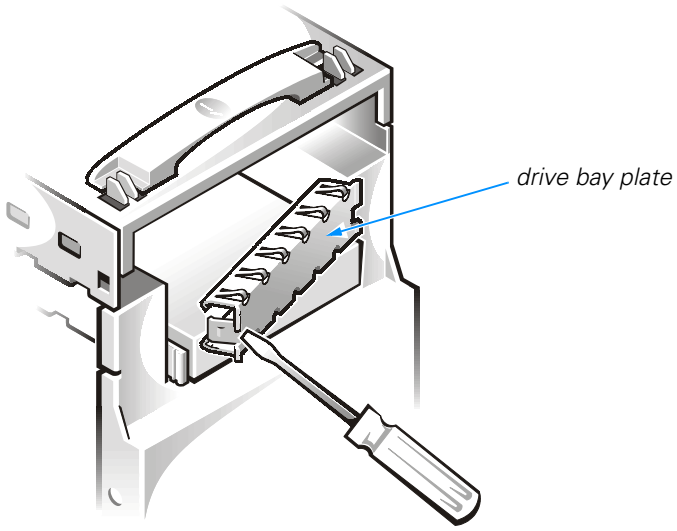


Figure 3-5. Removing a 3.5-Inch Drive Bay Plate

6. Remove the extra rails (see Figure 3-6) from the inside of the front of the chassis. Install the rail marked "L" on the left side of the drive and the rail marked "R" on the right side of the drive.

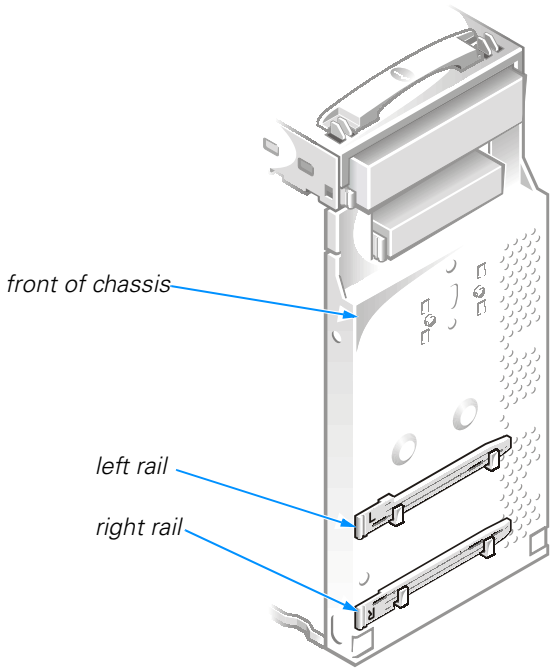


Figure 3-6. Locating Rails for the Upper 3.5-Inch Drive Bay

7. Slide the drive assembly into the drive bay.
8. If you are installing a controller card, configure and install it in an expansion slot now (refer to "PCI Expansion Card Upgrades" in Chapter 2 for instructions).

   Install the card as close as possible to the drive cage.

NOTICE: Dell does not recommend routing cables over cards because the cables can restrict airflow, cause cooling problems, and interfere with removing and replacing the computer cover. If you must route cables over cards, be extremely cautious when removing and replacing the computer cover.

9. Connect a DC power cable to the drive as described earlier in "Connecting Drive Cables."

NOTICE: Match the colored strip on the cable with pin 1 on the interface connector.

10. Attach the appropriate interface cable to the drive. If you installed a controller card in step 8, attach the other end of the interface cable to the controller card rather than the system board.
11. Replace the bezel.

12. Make sure that no cable connections were loosened during the procedure. Arrange cables so that they will not interfere with replacing the power supply and computer cover.

13. Rotate the power supply back into place, and replace the computer cover.

14. Reconnect your computer and devices to their electrical outlets, and turn them on.

15. If you installed a drive that requires device drivers, refer to the drive's documentation for driver installation instructions.

16. Verify the correct operation of the drive by running the Dell Diagnostics (refer to "Running the Dell Diagnostics" in Chapter 4).

Lower 3.5-Inch Bay

To upgrade the drive in the lower 3.5-inch bay, perform the following steps:

1. Prepare the new drive for installation as described in "Configuring Drives" found earlier in this chapter.

2. Remove the bezel according to the instructions in "Removing and Replacing the Bezel" found earlier in this chapter.

3. Rotate the power supply according to the instructions in "Rotating the Power Supply Away From the System Board" in Chapter 2. While holding the power supply, stand the computer up.

4. Remove the existing drive from the bay by disconnecting the power cable and interface cable, squeezing the rail tabs at the front of the drive, and sliding the drive from the bay.

5. Remove the rails from each side of the existing drive and install them on each side of the new drive.

6. Slide the new drive into the drive bay.

7. If you are installing a controller card, configure and install it in an expansion slot now (refer to "PCI Expansion Card Upgrades" in Chapter 2 for instructions).

   Install the card as close as possible to the drive cage.

NOTICE: Dell does not recommend routing cables over cards because the cables can restrict airflow, cause cooling problems, and interfere with removing and replacing the computer cover. If you must route cables over cards, be extremely cautious when removing and replacing the computer cover.

8. Connect a DC power cable to the drive as described earlier in "Connecting Drive Cables."

NOTICE: Match the colored strip on the cable with pin 1 on the interface connector.

9. Attach the appropriate interface cable to the drive. If you installed a controller card in step 7, attach the other end of the interface cable to the controller card rather than the system board.

10. Replace the bezel.

11. Make sure that no cable connections were loosened during the procedure. Arrange cables so that they will not interfere with replacing the power supply and computer cover.

12. Rotate the power supply back into place, and replace the computer cover.

13. Reconnect your computer and devices to their electrical outlets, and turn them on.

14. If you installed a drive that requires device drivers, refer to the drive's documentation for driver installation instructions.

15. Verify the correct operation of the drive by running the Dell Diagnostics (refer to "Running the Dell Diagnostics" in Chapter 4).

Upgrading the EIDE Hard-Disk Drive

In addition to the externally accessible drive bays, your computer has one internal bay for a 1-inch–high hard-disk drive. This bay is occupied with your Dell-installed EIDE hard-disk drive. Use the procedures in this section to upgrade your hard-disk drive.

Replacing the Hard-Disk Drive

To replace a drive in the hard-disk drive bay, perform the following steps:

1. Prepare the new drive for installation as described in "Configuring Drives" found earlier in this chapter.

2. Remove the bezel according to the instructions in "Removing and Replacing the Bezel" found earlier in this chapter.

3. Rotate the power supply according to the instructions in "Rotating the Power Supply Away From the System Board" in Chapter 2. While holding the power supply, stand the computer up.

4. Remove the existing drive from the bay.

   Remove the two screws securing the hard-disk drive to the front of the chassis (see Figure 3-7). Release the clip that secures the drive to the chassis and rotate the drive out of the chassis. Disconnect any cables attached to the drive.

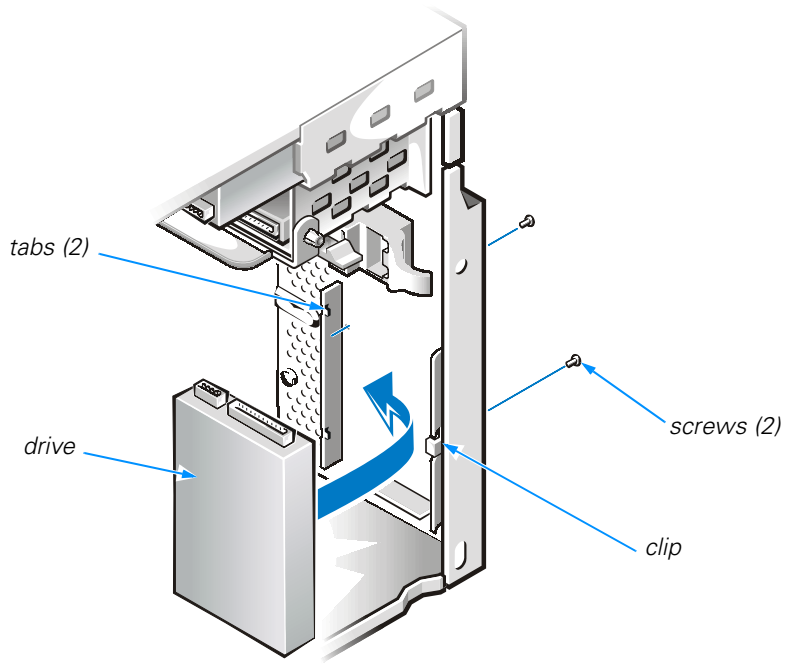


Figure 3-7. Installing the Hard-Disk Drive

5. Install the new drive in the bay.

   Orient the new drive with its circuit board facing the front of the chassis. Press the drive between the two brackets until the drive is secured by the clip. Secure the drive to the front of the chassis with the two screws you removed in step 4.

NOTICE: Match the colored strip on the interface cable with pin 1 on the drive's interface connector.

6. Connect a DC power cable and the EIDE cable to the new drive as described earlier in "Connecting Drive Cables."

7. If necessary, connect the EIDE cable to the PRI IDE connector on the system board.

8. Replace the bezel.

9. Make sure that no cable connections were loosened during the procedure. Arrange cables so that they will not interfere with replacing the power supply and computer cover.

10. Rotate the power supply back into place, and replace the computer cover.

11. Reconnect your computer and devices to their electrical outlets, and turn them on.

12. Verify the correct operation of the drive by running the Dell Diagnostics (refer to "Running the Dell Diagnostics" in Chapter 4).

Partitioning and Logically Formatting an EIDE Hard-Disk Drive

EIDE hard-disk drives must be physically formatted, partitioned, and logically formatted before they can be used to store data. Every hard-disk drive purchased from Dell is physically formatted before it is sent to you.

For the Windows 98 operating system, all drives use a single partition with the 32-bit file allocation table (FAT32) file system. For the Windows NT operating system, all drives have a 2-gigabyte (GB) primary partition that uses a 16-bit file allocation table (FAT16) file system and a secondary partition formatted in the Windows NT file system (NTFS).

If you ever have to partition and logically format an EIDE hard-disk drive, use the program(s) provided by the operating system.

CHAPTER 4
Basic Troubleshooting

This chapter guides you through some initial checks and procedures that can solve basic computer problems. It can also direct you to the appropriate chapter in this guide for detailed troubleshooting information and procedures to solve more complex problems. You should complete the checks in this chapter before calling Dell for technical assistance; even if these checks do not provide an immediate solution, they can help support technicians diagnose and fix the problem.

NOTE: If your computer is wet or damaged, refer to "If Your Computer Gets Wet" or "If Your Computer Is Damaged" in Chapter 6.

Backing Up Data Files

You can lose data when a system failure occurs. If your system is behaving erratically, back up your data files immediately (refer to "Preserving Data" in Chapter 1).

There is no need to back up Dell-installed driver files for Dell-installed devices. The driver files are preserved on the *Dell Dimension ResourceCD*.

NOTE: In case of warranty replacement of your hard-disk drive, you will receive a blank formatted drive from Dell. You must reinstall application programs and restore data files.

Installing Additional Hardware and Software

If the problem you are experiencing began after making a change to your computer, such as installing new hardware or software, undo the change if possible.

If the problem is resolved, check any documentation that came with the hardware or software you attempted to install or that describes the change you made. In particular, read any text files (such as **readme.txt**) included with the software package or hardware product; such files contain information updating or supplementing the documentation for the software or hardware. Typically, readme files provide installation information, describe new product enhancements or corrections that have not yet been documented, and list known problems.

If you were trying to install new hardware, double-check configuration settings and available system resources (refer to "Resolving Software and Hardware Incompatibilities" in Chapter 5). Also make sure you changed the appropriate settings in the system setup program for the system's new hardware configuration (refer to Appendix B, "System Setup Program").

If you need additional technical assistance on the installation of hardware or software, contact the product manufacturer or the company from whom you purchased the product.

DellWare℠ Support

DellWare products are supported by the item's manufacturer. To receive product support information, call 1-800-753-7201.

Checking the Basics

Use the following sections to perform an initial check of your computer system or to isolate a problem.

External Connections

Improperly set switches and controls, loose cables, and improperly connected cables are the most likely sources of problems for your computer system. A quick check of all the switches, controls, and cable connections can easily solve these problems. Usually reseating (disconnecting and then reconnecting) the cables corrects these problems.

NOTE: See the "System Features" section of the Dell Dimension Lxxxc Systems Help for the location of your computer's external connectors and controls.

To check computer connections, perform the following steps:

1. Turn off the computer, the monitor, and all attached devices.
2. Reseat all power cables connected to the computer, the monitor and devices, and their electrical outlets.
3. Reseat the keyboard (purple) and mouse (green) interface cable connectors to the proper connectors on the back of the computer.
4. Reseat any devices attached to the serial port, parallel port, and Universal Serial Bus (USB) connectors.

   Each of the serial, parallel, and USB interface cable connectors must be firmly attached to an appropriate connector on the back of the computer as well as to the interface connector on the device. The captive screws on the serial and parallel interface cable connectors must be secure enough to ensure a firm connection.

5. Reseat the video-interface cable connectors (blue) to the video connector on the back of the computer and to the connector on the back of the monitor.

NOTE: On some monitors, the video interface cable is permanently attached.

6. If the system has an integrated network interface controller (NIC), verify the network connections as instructed in "Network" found later in this chapter.

7. Turn on the computer, the monitor, and all attached devices.

Power

If you are experiencing problems with power to your computer, perform the following tasks:

- Check the computer's and monitor's power indicators. When lit or flashing, the power indicator verifies that the power supply is operating. Whenever the power is on, the fan on the power supply should also spin. If the fan does not spin, refer to "System Board" in Chapter 6 for further troubleshooting information.
- Plug a device such as a lamp that you know works into the electrical outlet to make sure the power source is OK.
- Plug the computer directly into that known good electrical outlet, bypassing any power protection devices, power strips, and extension cables to verify that the system turns on.
- Turn off the computer and any attached devices, and disconnect them from their electrical outlets. Disconnect any devices attached to the computer except for the mouse and the monitor. Reseat the power cable at the back of the computer; then reconnect the computer and monitor to an electrical outlet, making sure that all connections fit tightly together. Turn on the computer system. If the computer boots (starts), turn it off again and reconnect devices one at a time, turning on the system each time to see if the problem returns.
- Turn off the system, and swap the monitor and computer power cables.

Start-Up Routine

NOTE: Most of the checks in Table 4-1 require observation of computer functions and indications, some of which can occur simultaneously. It may be necessary to restart the computer several times to complete all these checks.

Table 4-1. Start-Up Routine Indications

Indication	Action
A message is displayed on the monitor.	Refer to Table C-3.
You hear a series of beeps.	Refer to Appendix C.
The diagnostic lights on the back of the computer are not all green.	Refer to Table C-1.

Environmental Factors

A number of external factors, including temperature extremes and humidity, magnetic influences, sources of electromagnetic interference (EMI), and poor input power or signal quality, can interfere with the performance of your computer and attached devices. Monitors are especially susceptible to these environmental factors. The following items can adversely affect the performance of a computer system:

- Inadequate ventilation from operating the computer in a confined space, such as a desk enclosure
- Direct sunlight causing the computer to overheat
- Line noise or power drops and surges from electrical outlets due to poor wiring
- Line noises or surges through telephone lines
- High-voltage electrical appliances on the same circuit or operating in close proximity to the computer
- Speakers, especially the subwoofer, or telephone too close to the monitor, generating magnetic fields that distort the display image
- Fluorescent lights or halogen lamps causing display flickering or distortion
- Electrical extension cords and keyboard and mouse extension cables
- Too many devices on a power strip or multiple power strips from one electrical outlet
- Electrical conduits in an adjoining wall or elevators on the other side of the wall
- Large metal beams inside the wall behind the system
- Dust accumulation near the fan or power supply

If removing potential sources of problems does not help, try moving the computer and the monitor.

Monitor

This section lists some basic checks you can do for most monitors. Check the documentation that came with the monitor for fault indications and troubleshooting procedures specific to your monitor. If you purchased the monitor from Dell, you can also find troubleshooting information on Dell's World Wide Web site (**http://support.dell.com**).

If you have no picture, try the following checks:

- Make sure that the computer is turned on.
- Make sure the monitor's power button is completely depressed.
- If the monitor's power indicator is lit, adjust contrast and brightness to their maximum settings.
- Verify the power source by plugging in an appliance that you know works.

- If you have not already done so, plug the monitor directly into an electrical outlet, bypassing any power protection devices, power strips, and extension cables to verify that the system turns on.
- If the power indicator is not lit, check for a bad power cable by turning off the system and swapping the monitor and computer power cables.
- Perform the monitor self-test as described in the documentation that came with the monitor.

If the picture quality is poor, perform these checks:

- Rotate the monitor to face a different direction. If the picture changes, refer to "Environmental Factors" found earlier in this chapter. Monitors are particularly susceptible to EMI, which causes colors to fade and blend.
- If the orientation of the computer affects the display geometry, check the documentation that came with the monitor for information on adjustments.
- Degauss (demagnetize) the monitor as described in the documentation that came with the monitor.
- If you changed the resolution or refresh rate settings of the monitor, return the monitor to its manufacturer's recommended settings (refer to the monitor documentation).
- Turn off the computer system, and examine the video-interface cable connector for bent, pushed in, broken, or missing pins. Check the documentation that came with your monitor for additional information.

NOTE: Some missing pins may be normal for your monitor; check the documentation that came with the monitor.

- Remove any video extension cables, reseat the monitor's video-interface cable connector, and securely tighten the captive screws. Then reboot the computer system.
- Perform the monitor self-test as described in the documentation that came with the monitor.
- If another monitor or computer is available, try swapping monitors between systems.
- Move the computer and the monitor to another room.

If you completed the basic monitor checks and suspect a problem with the video, perform the following checks:

- Click the **Start** button, point to **Settings**, and click **Control Panel**. Double-click the **Display** icon, and click the **Settings** tab. Try different **Color Palette** and **Screen area** (Windows 98) or **Desktop Area** (Windows NT) settings.
- Change the display type to standard video graphics array (VGA) as follows: Restart the system. For Windows 98, press <F8> when you see the `Starting Windows 98` message, and then select **Safe Mode** from the boot manager screen. For Windows NT, select **Windows NT Workstation 4.0 [VGA Mode]** from the boot manager screen.
- Reinstall the video drivers (refer to "Video Drivers" in Chapter 5).

Speakers

Perform the following checks for speaker problems:

- Ensure that the speakers are properly connected as shown on the *Getting Started* sheet or as described in the documentation that came with the speakers.
- Reseat all speaker connections and make sure they are inserted fully. Verify that the audio jacks are not bent or broken.
- Verify that the speakers and/or subwoofer are turned on and are connected to a known good power source.
- Turn up the volume knob on the speakers. If the audio is distorted, make sure that the volume is not turned to its maximum setting. Adjust the treble and/or bass if the sound distorts.
- Turn up the volume by clicking the yellow speaker icon in the Windows 98 or Windows NT taskbar and adjusting the volume setting.
- Turn off the monitor and such devices as fans, fluorescent lights, or halogen lamps to check for interference from those devices.
- Plug the speakers into the headphone jack of the CD-ROM or DVD-ROM drive, make sure the headphone volume control is turned up, and play a music CD.
- If your system has integrated audio, check for conflicts as described in "Resolving Software and Hardware Incompatibilities" in Chapter 5. Then reinstall the audio drivers (refer to "Audio Drivers" in Chapter 5).
- If your system has a sound card, refer to "Sound Cards" in Chapter 6 for further troubleshooting information.

Modem

NOTICE: Connect the modem to an analog line only. Using a nonanalog line, such as a digital or private branch exchange (PBX) line, will damage the modem.

NOTE: If your modem can dial and connect to one Internet service provider (ISP) or to a fax machine, your modem is functioning properly. For assistance, contact the ISP to which you cannot connect.

If you are experiencing problems with a modem, perform the following checks.

- If you have any other telephone devices plugged into this line, such as answering machines, dedicated fax machines, surge protectors or line splitters, then bypass them and plug the modem cable directly into the telephone connector on the wall.
- Disconnect the cable from the modem and plug it directly into a telephone. Listen for a dial tone.
- Check that the modem cable is connected to the line jack (the jack with a connector-shaped icon) on the modem. Reseat the cable connections.
- Plug a telephone cable into the telephone jack (the jack with a telephone icon) on the modem and listen for a dial tone.

- Try a different cable; if you are using a cable that is 10 feet or more in length, try a shorter one.
- Low connection speeds can be caused by line noise. If you have persistent problems, contact your telephone company to check for data noise and imbalanced lines.
- Refer to "Modem" in Chapter 6 for further troubleshooting information.

Diskette Drives

If you have diskette drive problems, perform the following checks:

- Make sure the diskette is not write-protected if you are trying to copy data to it.
- Try a different diskette in the drive. If the new diskette works, the original one may be defective.
- Check the settings on the **Diskette Configuration** submenu of the system setup program as described in Appendix B, "System Setup Program."
- Run the **Diskette** device group as described in "Running the Dell Diagnostics" found later in this chapter.
- Refer to "Drives" in Chapter 6 for further troubleshooting information.

CD-ROM or DVD-ROM Drives

If you have CD-ROM or DVD-ROM drive problems, perform the following checks.

NOTE: Inconsistencies in the recording of CD-ROM media may cause some higher-speed CD-ROM drives to vibrate more than others. Such vibration and associated noise do not indicate a defect in the drive or the CD. It should be noted that not all media can be read by all drives.

- Double-click **My Computer** and check to see if the drive is recognized by the system. Most of the common boot sector viruses cause the CD-ROM or DVD-ROM drive to "disappear." Use virus-scanning software (if Dell installed Windows 98 on your system, you should already have virus-scanning software) to check for and remove any viruses.
- Clean the disc with a soft, lint-free cloth and isopropyl alcohol.
- Try another CD or DVD title.

NOTE: Because of different conventions currently used in the industry, not all DVD titles work in all DVD-ROM drives.

- Enter the system setup program as described in Appendix B, "System Setup Program," and verify that **Type** is set to **Auto** for the appropriate IDE drive option.
- Run the appropriate tests under the **IDE Devices** device group as described in "Running the Dell Diagnostics" found later in this chapter.
- Refer to "CD-ROM and DVD-ROM Drives" in Chapter 6 for further troubleshooting information.

Hard-Disk Drives

If you have hard-disk drive problems, perform the following checks:

- For Windows 98, run the **ScanDisk** utility by clicking the **Start** button, pointing to **Programs—> Accessories—> System Tools**, and clicking **ScanDisk**.
- For Windows NT, run the error-checking utility by opening the property sheet of the affected volume(s) and clicking **Check Now** in the **Error-checking** section of the **Tools** tab.
- Run the appropriate tests under the **IDE Devices** device group as described in "Running the Dell Diagnostics" found later in this chapter.
- Check the settings on the **IDE Configuration** submenu of the system setup program as described in Appendix B, "System Setup Program."
- Refer to "Hard-Disk Drive" in Chapter 6 for further troubleshooting information.

Network

If you have network problems, perform the following steps:

1. Check the two status indicators on the computer's back panel for activity.
   - The green indicator lights when the system is connected to a 100–megabit-per-second (Mbps) network.
   - The yellow indicator flashes brightly when activity occurs on either a 100- or 10-Mbps network connection. The green indicator turns off when the system is connected to a 10-Mbps network.

NOTE: If you can connect to the network but are having problems accessing network resources, contact your network administrator.

2. Check the network connections.
   a. Check the network connector for physical damage.
   b. Ensure that both ends of the network cable are inserted properly.

      Press one end of the unshielded twisted pair (UTP) Ethernet cable into the network connector until the cable snaps securely into place. Connect the other end of the cable to an RJ45 jack wall plate or to an RJ45 port on a UTP concentrator or hub, depending on your network configuration.

   c. Replace the patch cable or network cable from the wall jack to the computer.
   d. If replacing the patch cable or network cable does not solve the problem, try moving the computer to a known working location on the network.
3. Reinstall the network drivers that came with your system (see "Network Drivers" in Chapter 5).

4. If your computer has an integrated network interface controller (NIC), run the NIC diagnostics.

   Double-click the **PROset** icon in the **Control Panel**.

   Click the **Help** button for instructions on how to use the diagnostics.

   If the integrated NIC is not detected, refer to "Integrated NIC" in Chapter 6.

   If the integrated NIC does not pass all the tests, refer to Chapter 7, "Getting Help," for instructions on obtaining technical assistance.

5. If your computer has a Dell-supported network card installed, run the **Network Interface** test group as described in "Running the Dell Diagnostics" found later in this chapter.

   If the network card is not detected, refer to the documentation that came with the card.

   If the network card does not pass all the tests, refer to Chapter 7, "Getting Help," for instructions on obtaining technical assistance.

Network Cable Requirements

NOTICE: To avoid line interference, voice and data lines must be in separate sheaths.

Observe the following cabling restrictions for 10BASE-T and 100BASE-TX networks:

- For 10BASE-T networks, use Category 3 or Category 5 wiring and connectors.
- For 100BASE-TX networks, use Category 5 wiring and connectors.
- The maximum cable run length (from a computer system to a concentrator or hub) is 100 meters (m) (328 feet [ft]).
- The maximum number of systems (not counting concentrators or hubs) on a network is 1024.
- For 10BASE-T networks, the maximum number of daisy-chained concentrators or hubs on one network segment is four.

Check with your network administrator for specific information about your network.

Running the Dell Diagnostics

Whenever a major component or device in your computer system does not function properly, run the Dell Diagnostics provided on the *Dell Dimension ResourceCD* to check your computer's hardware. If you find a problem you cannot solve by yourself, the diagnostic tests can provide you with important information you will need when talking to Dell's service and support personnel.

NOTICE: Use the Dell Diagnostics to test only your Dell computer system. Using this program with other computers may cause incorrect computer responses or result in error messages.

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 out 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 **Devices** menu category that briefly describes each test and its parameters
- A **Config** menu category that describes the configuration of the devices in the selected device group
- Status messages that inform you whether test groups or subtests were completed successfully
- Error messages that appear if any problems are detected

As long as the microprocessor and the input and output components of your computer system (the monitor, keyboard, CD-ROM/DVD-ROM drive, and diskette drive) are working, you can use the Dell Diagnostics. If you are experienced with computers and know what component(s) you need to test, simply select the appropriate diagnostic test group(s) or subtest(s). If you are unsure about how to begin diagnosing a problem, read the rest of this section.

Starting the Dell Diagnostics

To start the diagnostics, perform the following steps:

1. Turn off the computer.

NOTICE: Before using the *Microsoft Windows 98 Boot Disk*, make sure to write-protect the diskette.

2. Insert the *Microsoft Windows 98 Boot Disk* into the diskette drive.

NOTE: For systems running Windows NT, use the Hard Disk Drive and Utilities diskette included with your computer system or any MS-DOS® bootable diskette.

3. Insert the *Dell Dimension ResourceCD* into the CD-ROM or DVD-ROM drive.
4. Turn on the computer.
5. When the boot screen appears, select **2 Start Computer with CD-ROM Support** (Windows 98) or **1 EIDE Support** (Windows NT).

6. At the `a:\` prompt, type *`x:`* (where *`x`* is the drive letter for the CD-ROM or DVD-ROM drive, which is displayed on the line above the `a:\` prompt). Press <Enter>.

   For example, if your CD-ROM drive is drive D, type `d:` and press <Enter>.

7. Type `diags32` and press <Enter>.

   The **DIAGNOSTICS MENU** appears (see Figure 4-1). The menu allows you to run all or specific diagnostic tests or to exit to the MS-DOS prompt.

NOTE: Before you read the rest of this section, you may want to start the Dell Diagnostics so that you can see it on the screen of your monitor.

For a quick check of your system, select **Quickly Test All Devices**. 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 thorough check of your system, select **Fully Test All Devices**. To check a particular area of your system, select **Select Devices to Test**.

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

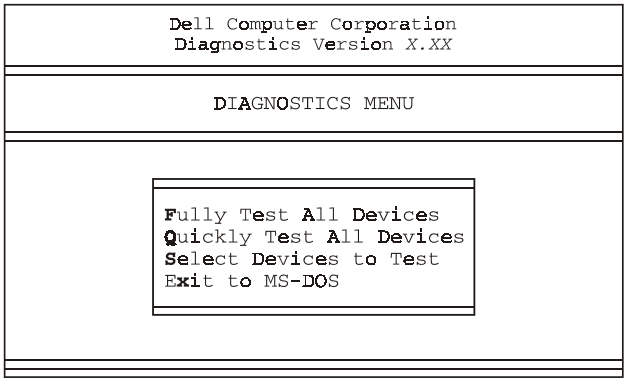


Figure 4-1. Diagnostics Menu

Dell Diagnostics Main Screen

When you select **Select Devices to Test** from the **DIAGNOSTICS MENU**, the main screen of the diagnostics appears (see Figure 4-2). The main screen lists the diagnostic test device groups, lists the devices of the selected device group, and allows you to select options from a menu. From this screen, you can enter two other types of screens.

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

- Two lines at the top of the screen identify the version number of the Dell Diagnostics.
- On the left side of the screen, the **Device Groups** area lists the diagnostic test groups in the order they will run if you select **All** from the **Run Tests** menu. Press the up- or down-arrow key to highlight a device group.
- On the right side of the screen, the **Devices for Highlighted Group** area lists the devices to be tested for the selected device group.
- Two lines at the bottom of the screen are the menu area. The first line lists the menu options you can select; press the left- or right-arrow key to highlight a menu option. The second line gives information about the option currently highlighted.

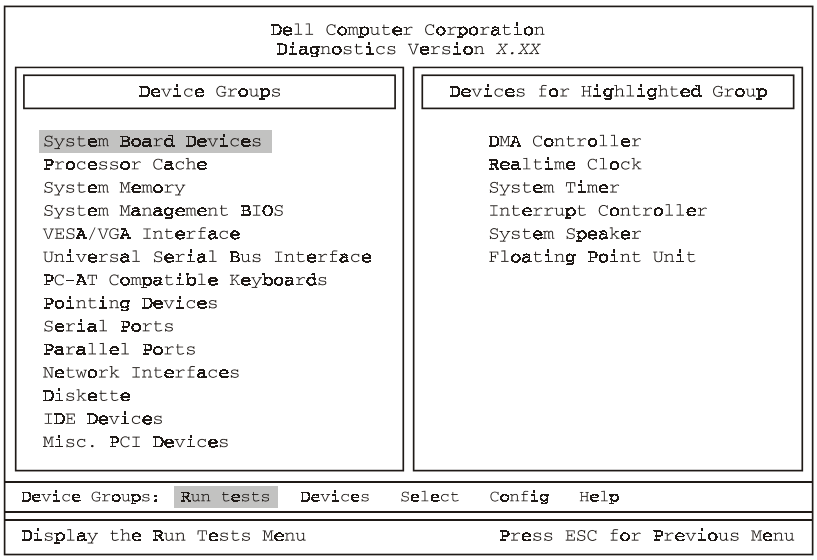


Figure 4-2. Dell Diagnostics Main Screen

Do not be concerned if the **Device Groups** area does not list the names of all the components or devices you know are part of your computer system. For example, you will not see a mouse listed, although you know one is attached to your computer. If you select the **Pointing Devices** device group, **Mouse** is listed under **Devices for Highlighted Group**. Similarly, you can test your printer connection through the **Parallel Ports** device group.

Using the Dell Diagnostics

The online Help in the Dell Diagnostics provides instructions on how to use the program and explains each menu item, test group, subtest, and test and error result. To enter the Help menu, perform the following steps:

1. Highlight **Select Devices to Test** in the **DIAGNOSTICS MENU**.
2. Press <Enter>.
3. Press <H>.

The **Help** menu options are **Menu**, **Keys**, **Device group**, **Device**, **Test**, and **Versions**. The online Help also provides detailed descriptions of the devices that you are testing. The **Help** options are explained in the following subsections.

Menu

Menu describes the main menu screen area, the device groups, and the different diagnostic menus and commands and provides instructions on how to use them.

Keys

Keys explains the functions of all the keystrokes that can be used in the Dell Diagnostics.

Device Group

Device Group describes the test group that is presently highlighted in the **Device Groups** list on the main menu screen. It also provides reasoning for using some tests.

Device

Device is the educational section of the online Help. It describes the function and purpose of the highlighted device in the **Device Groups** area. For example, the following information appears when you select **Device** for **Diskette** in the **Device Groups** list:

```
Diskette drive A:

The diskette disk drive device reads and writes data to and from
diskettes. Diskettes are flexible recording media, sometimes
contained in hard shells. Diskette recording capacities are
small and access times are slow relative to hard disk drives,
but they provide a convenient means of storing and transferring
data.
```

Test

Test provides a thorough explanation of the subtest highlighted for a selected device group. For example, the following description is provided for the **Diskette Drive Seek Test**:

```
Diskette drive A: - Diskette Drive Seek Test

This test verifies the drive's ability to position its read/
write heads. The test operates in two passes: first, seeking
from the beginning to ending cylinders inclusively, and second,
seeking alternately from the beginning to ending cylinders with
convergence towards the middle.
```

Versions

Versions lists the version numbers of the subtests that are used by the Dell Diagnostics.

CHAPTER 5
Software Solutions

This chapter describes software procedures, such as using audio utilities and reinstalling drivers, that can often solve problems with your computer system.

Using Audio Utilities

For systems with integrated audio, the Audio Configuration program enables you to add and control a variety of sound enhancements.

NOTE: The Windows NT operating system does not provide an audio configuration program for the integrated audio functions.

Enabling the Audio Configuration Program in Windows 98

This section explains how to enable the Audio Configuration program for the Microsoft Windows 98 operating system and briefly describes its controls and features.

To enable the Audio Configuration program in Windows 98, perform the following steps:

1. Click the **Start** button, point to **Settings**, and click **Control Panel**.
2. In the **Control Panel**, double-click **System**.
3. Click the **Device Manager** tab.
4. In the **Device Manager** list, click **Sound, Video, and Games** and select the **Creative Sound Blaster AudioPCI 64V Properties**. The **General** tab displays the status of the device as shown in Figure 5-1.

Figure 5-1. Audio Configuration Window for Windows 98

Settings Tab

The **Settings** tab provides information about the **MIDI Synthesizer Waveset** and the **Configuration**.

About Tab

The **About** tab provides the version of the Audio Configuration program.

3D Audio Tab

The **3D Audio** tab allows you to enable the stereo speakers and headphones.

Driver Tab

The **Driver** tab allows you to check **Driver File Details** or **Update Drivers**.

Resources Tab

The **Resources** tab displays information about the audio resources and any conflicting devices. Enable **Use automatic settings**.

Adjusting Volume Control

To adjust the volume control, perform the following steps:

1. Click the yellow speaker icon in the Windows 98 or Windows NT taskbar to display the **Volume Control** window (see Figure 5-2).

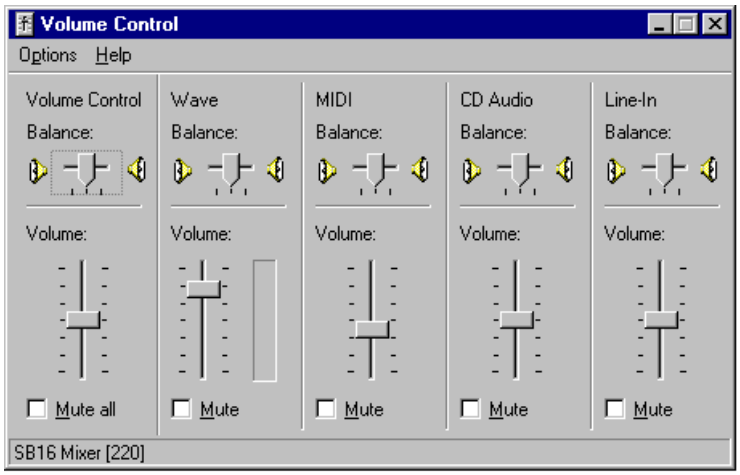


Figure 5-2. Sample Volume Control Window

2. Increase or decrease the stereo sound by moving the slide switches up or down, respectively.

Using Windows 98 Power Management Features

When you run Windows 98, the power management features of your Dell system can be set through the **Power Management Properties** window. If you press <Del> when the computer restarts, your computer's power management features can be set through the system setup program.

To set the power management features through Windows 98, perform the following steps:

1. Click the **Start** button, point to **Settings**, and click **Control Panel**.
2. Double-click the **Power Management** icon.
3. Set the power management features in the **Power Management Properties** window.

The **Power Schemes** tab allows you to select the power scheme (**Always On**, **Home/Office Desktop**, and **Portable/Laptop**) and power mode settings for your computer. The following power mode settings are available:

- **System standby** — Turns off the monitor, stops the hard-disk drive, and turns off other internal devices so that the computer uses less power. When the system resumes from standby mode, the Windows desktop is restored exactly as it appeared prior to entering standby mode.
- **Turn off monitor** — Turns off the monitor so that the system uses less power. You can press any key to turn on the monitor. The Windows desktop is restored exactly as it appeared before the monitor was turned off.

Turn off hard-disk — Turns off the hard-disk drive so that the system uses less power. The power light on the computer control panel flashes when the hard disk drive is turned off. Press any key on the keyboard to turn on the hard drive. The Windows desktop is restored exactly as it appeared before the hard-disk drive was turned off.

The **Advanced** tab allows you to display the **Power Meter** on the Windows 98 taskbar and to display a password prompt when the system resumes from standby mode.

NOTE: Windows 98 may take several seconds to resume the system from the power scheme settings.

Reinstalling Drivers

All of your system's drivers for Dell-installed devices are operative when you receive the system—no further installation or configuration is needed. However, if you ever need to reinstall any of these drivers, the driver files are provided on the *Dell Dimension ResourceCD*. For instructions on reinstalling a particular driver, refer to the appropriate subsection.

Often device problems can be corrected by reinstalling the appropriate drivers. Also, hardware manufacturers frequently provide updated drivers that support feature enhancements or that correct problems. Obtain updated drivers for products purchased from Dell from the support section of the Dell World Wide Web site (**http://support.dell.com**).

NOTICE: Drivers available on the Dell Web site have been validated for correct operation on Dell systems. Installing drivers obtained from other sources may cause errors or performance degradation.

Video Drivers

Your system's video drivers are operative when you receive the system—no further installation or configuration is needed. If you ever need to reinstall these drivers, refer to the appropriate procedure in the following subsections.

Video Driver for Windows 98

To reinstall the video driver for Windows 98, perform the following steps:

1. Start the Windows 98 operating system.
2. Insert the *Dell Dimension ResourceCD* into the CD-ROM drive. The **Dell Dimension ResourceCD** screen appears. Click the right-arrow button.
3. The first time that you use the *Dell Dimension ResourceCD*, you are prompted to select a language. Select the language of your choice and click **OK**.
4. In the **All Folders** list, click the **drivers** folder. An alert message appears, informing you that only knowledgeable users should install drivers. Click **OK** to continue.
5. In the **All Folders** list, click the **win98** folder.
6. In the **Description** list, click **Dimension Lxxxc: Intel 810 Video Driver**.
7. In the **All Files** list, double-click **setup.exe**.
8. Click **Next** to start the driver installation or click **Quit** to exit the installation process.
9. When prompted to restart your system to complete the installation, remove the *Dell Dimension ResourceCD* from the CD-ROM drive, and then click **Finish**.

Video Driver for Windows NT

To reinstall the video driver for Windows NT, perform the following steps:

1. Start the Windows NT operating system.
2. Insert the *Dell Dimension ResourceCD* into the CD-ROM drive. The **Dell Dimension ResourceCD** screen appears. Click the right-arrow button.
3. The first time that you use the *Dell Dimension ResourceCD*, you are prompted to select a language. Select the language of your choice and click **OK**.
4. In the **All Folders** list, double-click the **drivers** folder. An alert message appears, informing you that only knowledgeable users should install drivers. Click **OK** to continue.
5. In the **All Folders** list, click the **winnt** folder.
6. In the **Description** list, click **Dimension Lxxc: Intel 810 Video Driver**.
7. In the **All Files** list, double-click **setup.exe**. The drivers are automatically loaded onto the system.
8. When the **Welcome** window appears, click **Next** and follow any installation prompts.
9. When prompted to restart your system to complete the installation, remove the *Dell Dimension ResourceCD* from the CD-ROM drive, and then click **Finish.**

Audio Drivers

Your system's audio drivers are operative when you receive the system—no further installation or configuration is needed. If you ever need to reinstall these drivers for systems with integrated audio, refer to the appropriate procedure in the following subsections.

NOTE: If your system includes a sound card, refer to the documentation for the sound card for instructions on reinstalling audio drivers.

Audio Driver for Windows 98

To reinstall the audio driver for Windows 98, perform the following steps:

1. Start the Windows 98 operating system.
2. Insert the *Dell Dimension ResourceCD* into the CD-ROM drive. The **Dell Dimension ResourceCD** screen appears. Click the right-arrow button.
3. The first time that you use the *Dell Dimension ResourceCD*, you are prompted to select a language. Select the language of your choice and click **OK**.
4. In the **All Folders** list, click the **drivers** folder. An alert message appears, informing you that only knowledgeable users should install drivers. Click **OK** to continue.
5. In the **All Folders** list, click the **win98** folder.
6. In the **Description** list, click **Dimension Lxxxc: Creative Labs Audio Driver**.
7. In the **All Files** list, double-click **setup.exe**.
8. Click **Next** to start the driver installation or click **Quit** to exit the installation process.
9. When prompted to restart your system to complete the installation, remove the *Dell Dimension ResourceCD* from the CD-ROM drive, and then click **Finish**.

Audio Driver for Windows NT

To reinstall the audio driver for Windows NT, perform the following steps:

1. Start the Windows NT operating system.
2. Insert the *Dell Dimension ResourceCD* into the CD-ROM drive. The **Dell Dimension ResourceCD** screen appears. Click the right-arrow button.
3. The first time that you use the *Dell Dimension ResourceCD*, you are prompted to select a language. Select the language of your choice and click **OK**.
4. In the **All Folders** list, double-click the **drivers** folder. An alert message appears, informing you that only knowledgeable users should install drivers. Click **OK** to continue.
5. In the **All Folders** list, click the **winnt** folder.
6. In the **Description** list, click **Dimension Lxxxc: Creative Labs Audio Driver**.

7. In the **All Files** list, double-click **setup.exe**. The drivers are automatically loaded onto the system.

8. When the **Welcome** window appears, click **Next** and follow any installation prompts.

9. When prompted to restart your system to complete the installation, remove the *Dell Dimension ResourceCD* from the CD-ROM drive, and then click **Finish.**

Intel 810 Chip Set Driver for Windows 98

Your system's Intel 810 chip set driver is operative when you receive the system—no further installation or configuration is needed. If you ever need to reinstall this driver, perform the following steps:

1. Start the Windows 98 operating system.

2. Insert the *Dell Dimension ResourceCD* into the CD-ROM drive. The **Dell Dimension ResourceCD** screen appears. Click the right-arrow button.

3. The first time that you use the *Dell Dimension ResourceCD*, you are prompted to select a language. Select the language of your choice and click **OK**.

4. In the **All Folders** list, click the **drivers** folder. An alert message appears, informing you that only knowledgeable users should install drivers. Click **OK** to continue.

5. In the **All Folders** list, click the **win98** folder.

6. In the **Description** list, click **Dimension Lxxxc: Intel 810 Chip Set Driver**.

7. In the **All Files** list, double-click **setup.exe**.

8. Click **Next** to start the driver installation or click **Quit** to exit the installation process.

9. When prompted to restart your system to complete the installation, remove the *Dell Dimension ResourceCD* from the CD-ROM drive, and then click **Finish**.

NIC Drivers

Your system's network interface controller (NIC) drivers are operative when you receive the system—no further installation or configuration is needed. If you ever need to reinstall these drivers for systems with an integrated NIC, refer to the appropriate procedure in the following subsections.

NIC Driver for Windows 98

To reinstall the NIC driver for Windows 98, perform the following steps:

1. Start the Windows 98 operating system.

2. Insert the *Dell Dimension ResourceCD* into the CD-ROM drive. The **Dell Dimension ResourceCD** screen appears. Select **Exit**.

3. From the Windows desktop, right-click **My Computer** and click **Properties**.

4. Click **Device Manager**.
5. Click **Network Adapters** and then **Driver**.
6. Double-click **Update Driver**.

   The **Update Device Driver Wizard** window opens.
7. Click the **Browse** button and browse to `x:\drivers\win98\0148r` where *x* is the CD-ROM drive.
8. Select the recommended driver.
9. Click **OK** and **Next** to complete the driver installation. Follow the instructions on the screen.

NIC Driver for Windows NT

To reinstall the NIC driver for Windows NT, perform the following steps:

1. Start the Windows NT operating system.
2. Insert the *Dell Dimension ResourceCD* into the CD-ROM drive. The **Dell Dimension ResourceCD** screen appears. Select Exit.
3. From the Windows desktop, right-click **Network Neighborhood** and click **Properties**.

   The **Network** window opens.
4. Click the **Adapters** tab and click **Add**.
5. In the **Select Network Adapter** window, click **Have Disk**.
6. From the **Insert Disk** window, type `x:\drivers\winnt\0148r` where *x* is the CD-ROM drive. Click **OK**.
7. From the **Select OEM Options** window, highlight **Intel PRO Adapter**. Click **OK** to begin the driver installation.
8. From the **Network** window, click the **Adapters** tab and verify that the **Intel 82559 Fast Ethernet LAN on Motherboard** was installed. Click **Close**.
9. When prompted to restart the computer, click **Yes**.

Using the SnapRestore Program

SnapRestore captures an image of all data on the hard-disk drive to a partition on that drive. These images can be used to restore your system to a previous software configuration. For example, if you install new software which does not operate as expected or causes problems, use SnapRestore to return your system to the previous configuration. These images or "snapshots" consume hard-disk drive space each time the SnapRestore utility is used.

To use SnapRestore, click the **SnapRestore** icon on the desktop. The **SnapRestore** window opens with a graphical representation of how the hard-disk drive space is allocated. Up to seven "snapshots" of the data on the hard-disk drive can be captured. SnapRestore provides the following features:

- **Create** creates a named image of the hard-disk drive.
- **Restore** selects a snapshot to overwrite the operating system, data, and files on the hard-disk drive.
- **Delete** removes a snapshot to regain hard-disk drive space.

NOTE: SnapRestore should not be used as a substitute for a system backup (see "Preserving Data" in Chapter 1). Because the disk image is stored on the hard-disk drive itself, a drive failure would mean that the disk image could not be restored.

Reinstalling the McAfee VirusScan Program

Dell installed the McAfee VirusScan program on your system's hard-disk drive and provided a copy of McAfee VirusScan on CD. If you need to reinstall McAfee VirusScan, perform the following steps:

1. Turn on your system.
2. Insert the VirusScan CD into your CD-ROM or DVD-ROM drive.
3. Double-click the **My Computer** icon, and then double-click the **CD-ROM drive** icon.
4. Double-click the **setup.exe** icon.
5. In the **Welcome to Setup** window, click **Next>**.
6. Read the software license agreement, and click **Yes** if you accept the agreement.
7. In the **Setup Type** window, click one of the following setup types:
   - **Typical** — Performs a complete installation of VirusScan.
   - **Compact** — Installs VirusScan with the minimum required options.
   - **Custom** — Installs VirusScan with user-definable options (you are prompted to select the components you want to install).
8. Select a destination directory for VirusScan. Click **Browse** to find the directory you want or click **Next>** to accept the default.
9. In the **Confirming Installation Settings** window, review the new settings and click **Next>**.

   Your system copies the appropriate files, and VirusScan performs a scan of your system.

   When the scan is finished, the **Scan Complete** window appears.

10. Click **OK**.

    The **McAfee Emergency Disk Creation Utility** dialog box appears. (You will use the emergency diskette if VirusScan finds a virus on your computer.)

11. To make an emergency diskette, insert a blank diskette into your diskette drive and click **Next**.

    If you do not want to make an emergency diskette at this time, click **Cancel**. (You may create this diskette at another time.)

12. In the **What's New in VirusScan** dialog box, click **Yes** to read the **whatsnew.txt** file or click **No** to continue.

    The **Changes Made** window appears and tells you what files were changed on your system by **VirusScan Setup**.

13. Click **Next>**.

14. In the **Installation complete, finalizing configuration** window, click **Finish** to restart your system.

Temporarily Disabling McAfee VirusScan Program

When you install commercially available software, you may be prompted to temporarily disable any virus-scanning program running on your system. To temporarily disable the McAfee VirusScan program, perform the following steps.

NOTICE: When the McAfee VirusScan program is disabled, viruses are not detected on your system.

1. Locate the McAfee VirusScan program icon in the Windows taskbar.

2. Right-click the icon and click **Enable**. Click each option (**System Scan**, **Email Scan**, **Download Scan**, or **Internet Filter**) to disable the option. Figure 5-3 shows how the icon appears when the McAfee VirusScan program is disabled.

Figure 5-3. Disabled McAfee VirusScan Program Icon

3. Install the software package according to the manufacturer's instructions.

4. Right-click the McAfee VirusScan program icon and click **Enable**. Click each option (**System Scan**, **Email Scan**, **Download Scan**, or **Internet Filter**) to enable the option.

5. Run the McAfee VirusScan program to check for viruses.

Resolving Software and Hardware Incompatibilities

Windows 98 interrupt request (IRQ) conflicts occur if a device either is not detected during the Windows 98 Plug and Play setup or is detected but incorrectly configured. To check for conflicts, perform the following steps:

1. Click the **Start** button, point to **Settings**, and click **Control Panel**.
2. In the **Control Panel**, double-click **System**.
3. Click the **Device Manager** tab.
4. In the **Device Manager** list, check for conflicts with the other devices.

   Conflicts are indicated by a yellow exclamation point (!) beside the conflicting device or a red X if the device has been disabled.
5. Double-click any conflicting device listed to bring up the **Properties** window so you can determine what needs to be reconfigured or removed from the **Device Manager**. Resolve these conflicts before checking specific devices.
6. Double-click the malfunctioning device type in the **Device Manager** list.
7. Double-click the icon for the specific device in the expanded list.

   The **Properties** window appears.
8. If there is an IRQ conflict, the **Device status** area in the **Properties** window reports what expansion cards or devices are sharing the device's IRQ. Resolve the IRQ conflicts.

You can also use the Windows 98 Hardware Conflict Troubleshooter. Click **Help** from the **Start** menu, double-click **Troubleshooting** on the **Contents** tab, and then double-click **If you have a hardware conflict**.

If you suspect a resource conflict using Windows NT, open the **Event Viewer** in the **Administrative Tools (Common)** folder and check for any relevant event log messages. Start the **Windows NT Diagnostics** from the **Administrative Tools (Common)** folder and check current resource assignments on the **Resources** tab. Then click the **Services** tab and view the state of **Services and Devices**.

Reinstalling Windows 98

If Dell installed the Windows 98 operating system on your computer, under normal circumstances you should never need to reinstall the operating system.

NOTICE: Dell recommends against reinstalling the Windows operating system over your currently installed Windows operating system. If advised by a Dell technical support representative to reinstall Windows 98, perform the following steps *in the order listed.*

NOTE: The instructions in this section apply only to reinstalling a Dell-installed Windows 98 operating system.

1. Turn on the system.
2. Insert the *Microsoft Windows 98 Boot Disk* into the diskette drive and the *Microsoft Windows 98* CD into the CD-ROM or DVD-ROM drive.
3. Reboot the computer.
4. When the **Microsoft Windows 98 Startup Menu** appears, ensure that the **1. Start Windows 98 Setup CD-ROM** option is highlighted and press <Enter>.
5. When the **Microsoft Windows 98 Setup** window appears, press <Enter>.
6. If you see a message prompting you to reinstall Windows 98 over your current operating system, use the down-arrow key to highlight **Continue setup and replace your current operating system**. Then press <Enter>.
7. If you see a message stating that Windows 98 is about to prepare the system for installing the operating system, press <Enter>.

   ScanDisk checks your system files.
8. When a message appears to alert you that ScanDisk has finished checking the system drive(s), type `x` if prompted.
9. When the **Windows 98 Setup** window appears, click **Continue**.

   Windows 98 checks your hard-disk drive and prepares your system for installing the operating system.

   If prompted, enter the Windows Product Key, which is printed on the front cover of the *Getting Started/Microsoft Windows 98* document.
10. When prompted for the directory to install the Windows 98 files, ensure that **c:\windows** is selected and click **Next>**.

    The **Windows 98 Setup** wizard appears and checks your system for available hard-disk drive space.
11. When the **Establish Your Location** window appears, select your regional location and click **Next>**.

    This setting tells Windows 98 how to display Internet content.
12. When prompted to create the start-up diskette, remove the boot diskette from the diskette drive and click **Next>**.
13. Label a blank diskette as instructed, insert the diskette into the diskette drive, and click **OK**.

    If a dialog box instructs you to format the diskette, click **Format**.
14. After you have created the start-up diskette, remove the diskette from the diskette drive and click **OK**.

15. When the **Start copying files** window appears, click **Next>**.

    The **Welcome to Microsoft Windows 98** window appears and displays information about the operating system while the files are copied to your hard-disk drive.

    NOTE: This step may take several minutes to complete. The approximate time is displayed on the Windows 98 status bar.

    When the files have been copied to the hard-disk drive, Windows 98 restarts the system. A series of windows appears to inform you that Windows 98 is setting up hardware, initializing drivers, and detecting hardware and Plug and Play devices.

    The system may reboot a second time.

    Windows 98 restarts the system and detects additional hardware settings.

    The **Windows 98 Setup** window appears and lists which items Windows 98 is setting up.

    Windows 98 updates the system settings and restarts the system.

    The **Welcome to Windows 98** screen appears.

16. Reinstall any necessary drivers.

CHAPTER 6
Checking Inside Your Computer

This chapter describes troubleshooting procedures for expansion cards, memory, drives, and the system board. Some procedures require you to access the inside of the computer and remove and reinstall components. Procedures are also included for checking a wet or damaged computer.

CAUTION: Before completing any of the procedures in this chapter, be sure to follow the procedures in Chapter 2, "Safety First—For You and Your Computer."

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. If software problems and conflicts have been eliminated, perform the following general steps to troubleshoot expansion cards:

1. Remove the computer cover and rotate the power supply as described in "Removing and Replacing the Computer Cover" and "Rotating the Power Supply Away From the System Board" in Chapter 2.
2. Remove all of the internal and external cables attached to the expansion cards.
3. Remove the expansion cards as described in "Removing Expansion Cards" in Chapter 2. Then, reinstall the expansion cards, fully seating the cards in their connectors.

   Figure 6-1 illustrates a correctly seated expansion card, and Figure 6-2 illustrates incorrect expansion-card installations.
4. Reconnect the cable connectors to the appropriate connectors on the expansion cards.
5. Rotate the power supply back into position, replace the computer cover, connect all external cables, and turn on the system.

The following subsections provide troubleshooting procedures for some specific types of expansion cards.

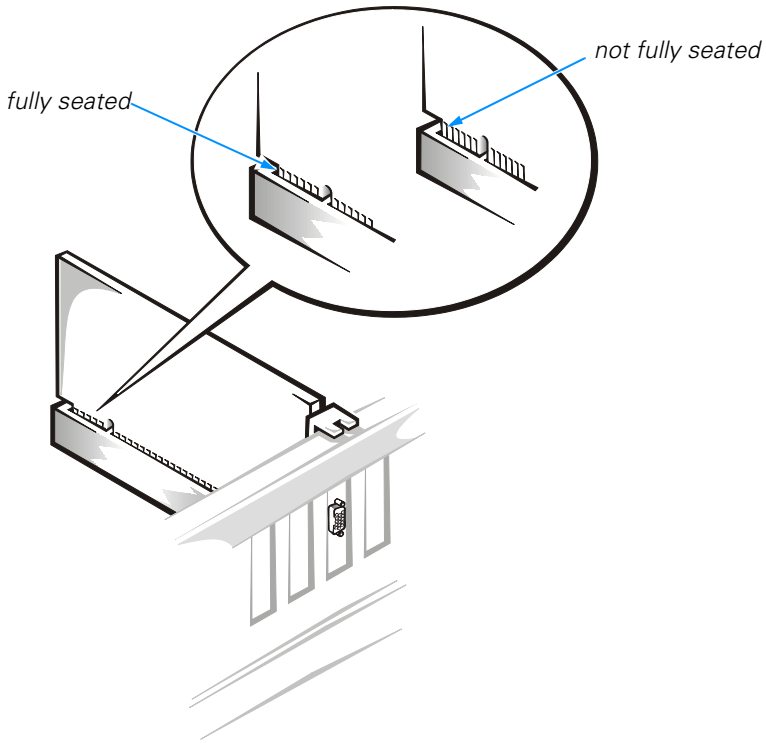


Figure 6-1. Expansion-Card Installation

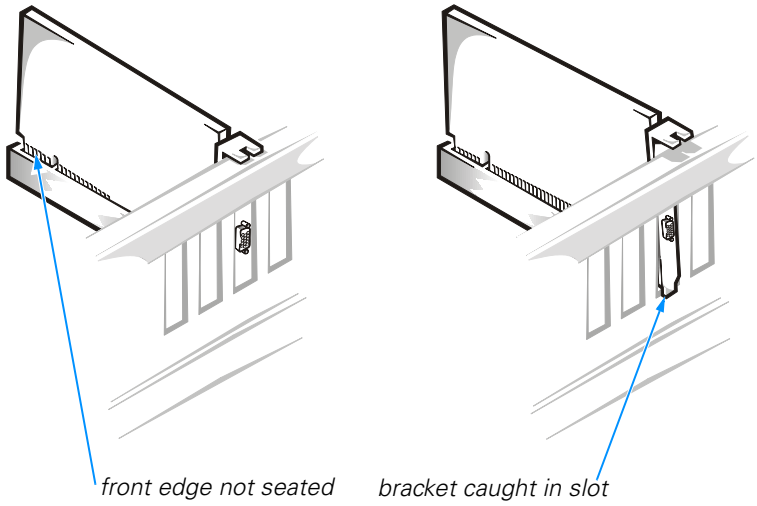


Figure 6-2. Incorrect Expansion-Card Installations

Modem

In general, modem malfunctions may be caused by any of the following problems:

- Incorrectly seated modem in the Peripheral Component Interconnect (PCI) slot
- Interrupt request (IRQ) conflicts
- Incorrect drivers installed
- Incorrect software configuration

To troubleshoot a modem card, perform the following steps:

1. Check for modem IRQ conflicts.

   Refer to "Resolving Software and Hardware Incompatibilities" in Chapter 5. Resolve any modem IRQ conflicts and restart the computer system.

2. Verify the modem configuration.

   a. Click the **Start** button, point to **Settings**, and click **Control Panel**.

   b. In the **Control Panel**, double-click **Modems**. If there are multiple entries for the same modem, remove those entries and restart the computer. If there are modems listed that are not part of the system configuration, remove them from the list. If you are using Windows NT, check the modem properties and then proceed to step 3.

   c. Click the **Diagnostics** tab.

   d. Highlight the COM port that the modem is using.

   e. Click **More Info** to verify that the system can communicate with the modem. If the modem reports information to the system, the modem is operating properly.

3. Remove the computer cover and rotate the power supply as described in "Removing and Replacing the Computer Cover" and "Rotating the Power Supply Away From the System Board" in Chapter 2.

4. Remove and reinstall the modem, fully seating the card in its connector (see Figure 6-1).

5. Rotate the power supply back into position, replace the computer cover, connect all external cables, and turn on the system. Enter the system setup program as described in Appendix B, "System Setup Program," and verify that **Serial port A** on the **Peripheral Configuration** submenu is set to **Auto**.

NOTE: If you have persistent problems with low connection speeds, contact your telephone company to check for data noise and imbalanced lines or your Internet service provider (ISP) for information about their service.

Sound Cards

If you completed the basic speaker checks (refer to "Speakers" in Chapter 4) and suspect a problem with a sound card, perform the following checks:

- Check for conflicts as described in "Resolving Software and Hardware Incompatibilities" in Chapter 5.
- Reinstall the audio drivers that came with the sound card.
- Perform the expansion-card checks described in "Expansion Cards" at the beginning of this chapter.

Network Cards

In general, network malfunctions may be caused by the following problems:

- Wrong or incorrectly installed network interface controller (NIC) drivers
- IRQ conflicts
- Damaged RJ45 connector or patch cable
- Bad hub port connection
- Incorrectly installed or malfunctioning network card

NOTE: If you can connect to the network but are having problems accessing network resources, contact your network administrator.

To troubleshoot a network card, perform the following steps:

1. Run the diagnostics for your network card as described in the documentation that came with the card.

   If the network card is not detected, go to step 3.

   If the network card does not pass all the tests, refer to Chapter 7, "Getting Help," for instructions on obtaining technical assistance.

2. Remove the computer cover and rotate the power supply as described in "Removing and Replacing the Computer Cover" and "Rotating the Power Supply Away From the System Board" in Chapter 2.

3. Remove all expansion cards installed in the computer (refer to "Removing Expansion Cards" in Chapter 2) except the network card to prevent a card that is incorrectly configured from causing an interrupt or input/output (I/O) port resource conflict.

4. Rotate the power supply back into position, replace the computer cover, connect all external cables, and turn on the system.

5. Clear nonvolatile random-access memory (NVRAM) as described in "Clearing NVRAM" in Appendix B.

6. Check the network connections if the network hardware is functional.

   a. Check the network card connector for physical damage.

   b. Ensure that the cable is inserted properly.

   c. Replace the patch cable or network cable from the wall jack to the computer.

   d. If replacing the patch cable or network cable does not solve the problem, try moving the computer to known good location on the network.

   e. If you still cannot connect to the network, ensure that the right drivers are being used.

If the network card is still not detected, refer to Chapter 7, "Getting Help," for information on obtaining technical assistance. If the network card is detected, repeat step 1.

Integrated NIC

If you completed the basic network checks (refer to "Network" in Chapter 4) and suspect a problem with the integrated NIC, check for conflicts as described in "Resolving Software and Hardware Incompatibilities" in Chapter 5. If the problem persists, clear NVRAM as described in "Clearing NVRAM" in Appendix B.

If these actions do not resolve the problem, refer to Chapter 7, "Getting Help," for information on obtaining technical assistance.

System Memory

If a random-access memory (RAM) error message appears, troubleshoot the memory by performing the following steps:

1. Turn on the computer and monitor.

2. If you hear a beep code or if you see a diagnostic code, refer to Appendix C, "Diagnostic Codes, Beep Codes, and System Messages."

3. If you received an error message after making changes in the system setup program, restore the original values and restart the system.

4. Enter the system setup program as described in Appendix B, "System Setup Program," and verify **Total Memory** on the **Main** screen.

   If the memory amount displayed does not match the computer's configuration, reseat the dual in-line memory modules (DIMMs) as described in the next subsection.

NOTE: The system memory value reported by the operating system is 1 or 2 MB less than the memory installed because that memory is reserved for video functions. For example, if the computer has 32 MB of system memory, the operating system may report 30 or 31 MB.

Reseating DIMMs

1. Remove the computer cover and rotate the power supply as described in "Removing and Replacing the Computer Cover" and "Rotating the Power Supply Away From the System Board" in Chapter 2.
2. Remove the DIMMs as described in "Removing a DIMM" in Chapter 2.
3. Check the DIMMs and DIMM sockets for broken tabs and damaged connectors.

   If a module is damaged, replace it. If a DIMM socket is damaged, refer to Chapter 7, "Getting Help," for instructions on obtaining technical assistance.
4. Reinstall the DIMMs as described in "Installing a DIMM" in Chapter 2.
5. Rotate the power supply back into position, replace the computer cover, reconnect the system to an electrical outlet, and turn on the system.
6. Enter the system setup program, and verify **Total Memory** on the **Main** screen again.

   If the problem still exists and you have a single DIMM, repeat the preceding steps, installing the DIMM in a different socket. If you have more than one DIMM, try installing one at a time.
7. If the problem persists, refer to Chapter 7, "Getting Help," for instructions on obtaining technical assistance.

Drives

If an error message indicates a drive problem or if a drive seems to perform incorrectly or not at all, the problem could be a loose connection, a system setup problem, a misconfigured operating system, or a conflict with other hardware. If system setup problems and conflicts have been eliminated, perform the following general steps to troubleshoot drives.

NOTE: Many viruses can cause drive problems. Use virus-scanning software to check for and remove any viruses before completing the following steps.

1. Remove the computer cover and rotate the power supply as described in "Removing and Replacing the Computer Cover" and "Rotating the Power Supply Away From the System Board" in Chapter 2.
2. Remove the interface cable and the DC power connector from the malfunctioning drive, and inspect them for damage.
3. Reconnect the interface and DC power connectors to the appropriate connectors on the drive, making sure they are firmly seated.
4. Rotate the power supply back into position, replace the computer cover, connect all external cables, and turn on the system.
5. If the problem persists, refer to Chapter 7, "Getting Help," for instructions on obtaining technical assistance.

The following subsections provide troubleshooting checks for some specific types of drives.

CD-ROM and DVD-ROM Drives

If you completed the basic drive checks (refer to "Drives" in Chapter 4 and this chapter) and suspect a problem with a CD-ROM or DVD-ROM drive, perform the following checks:

- Check for hardware conflicts as described in "Resolving Software and Hardware Incompatibilities" in Chapter 5.
- If your system is running Windows 98, double-click the **System** icon in the **Control Panel** and check the **Performance** tab for any system messages regarding compatibility.
- Clear NVRAM as described in "Clearing NVRAM" in Appendix B.

Hard-Disk Drive

If you completed the basic drive checks (refer to "Drives" in Chapter 4 and this chapter) and suspect a problem with a hard-disk drive, clear NVRAM as described in "Clearing NVRAM" in Appendix B.

System Board

If an error message indicates a system board problem, the boot routine does not complete (refer to "Start-Up Routine" in Chapter 4), or if the power supply fan does not spin when power is on, perform the following steps:

1. Verify that the electrical outlet to which the computer is connected is properly functioning. Test the electrical outlet with another electrical device, such as a lamp.
2. Remove the computer cover and rotate the power supply as described in "Removing and Replacing the Computer Cover" and "Rotating the Power Supply Away From the System Board" in Chapter 2.
3. Remove all expansion cards as described in "Removing Expansion Cards" in Chapter 2.
4. If the system does not boot, check connections and perform the following steps:
    a. Reseat the control panel cable and power cable connectors from the power supply to the system board (see Figure 2-5 for connector locations).
    b. Remove the hard-disk drive as described in step 4 of "Replacing the Hard-Disk Drive" in Chapter 3. Disconnect the DC power cable connectors to all other drives *except* for the 3.5-inch diskette drive and the CD-ROM/DVD-ROM drive.

c. Disconnect all devices attached to the computer except the monitor and the keyboard.

5. Rotate the power supply back into position, replace the computer cover, and reconnect the system to an electrical outlet.

6. Insert the *Microsoft Windows 98 Boot Disk* into the diskette drive.

NOTE: For systems running Windows NT, use the Hard Disk Drive and Utilities diskette included with your computer system or any MS-DOS bootable diskette.

7. Insert the *Dell Dimension ResourceCD* into the CD-ROM/DVD-ROM drive.

8. Turn on the computer system.

   If the system does not start, refer to Chapter 7, "Getting Help," for instructions on obtaining technical assistance.

NOTE: System start-up time is extended if you removed the hard-disk drive in step 4. Ignore any error messages received in this situation.

9. When the boot screen appears, select **2 Start Computer with CD-ROM Support.**

10. At the `a:\` prompt, type *`x:`* (where *`x`* is the drive letter for the CD-ROM or DVD-ROM drive, which is displayed on the line above the `a:\` prompt.) Press <Enter>.

11. Type `diags32` and press <Enter>.

    The **DIAGNOSTICS MENU** appears.

12. Type `q` to quickly test your computer system.

    If the tests complete successfully, proceed to the next step. Otherwise, refer to Chapter 7, "Getting Help," for instructions on obtaining technical assistance.

13. Remove the boot diskette from the diskette drive and the CD from the CD-ROM or DVD-ROM drive, turn off the system, and disconnect it from the electrical outlet. Remove the computer cover and rotate the power supply.

14. If you removed the hard-disk drive in step 4, reinstall it as described in steps 5 through 7 of "Replacing the Hard-Disk Drive" in Chapter 3.

15. One at a time, reconnect the DC power connectors to other drives (if you performed step 4) and reinstall each of the expansion cards you removed in step 3. Repeat steps 6 through 11 after each reinstallation.

16. If the problem returns after you reconnect a drive not obtained from Dell, remove it and contact the manufacturer of that drive. Otherwise, refer to Chapter 7, "Getting Help," for instructions on obtaining technical assistance.

    If the problem returns when an expansion card is reinstalled, go to the next step.

17. Try the expansion card in a different slot.

    If reseating the cards does not correct the problem, and if the problem is caused by a card not obtained from Dell, contact the manufacturer of that card. Otherwise, refer to Chapter 7, "Getting Help," for instructions on obtaining technical assistance.

If Your Computer Gets Wet

Liquids from spills, splashes, and excessive humidity can damage your computer. If an external device (such as a printer) gets wet, contact the manufacturer of that device for instructions. If your computer gets wet, perform the following steps:

1. Immediately unplug the computer from the electrical outlet.
2. Remove the computer cover and rotate the power supply as described in "Removing and Replacing the Computer Cover" and "Rotating the Power Supply Away From the System Board" in Chapter 2.
3. Let the computer dry for at least 24 hours.

NOTICE: Make sure that the computer is thoroughly dry before proceeding.

4. Remove all expansion cards installed in the computer (refer to "Removing Expansion Cards" in Chapter 2).
5. Rotate the power supply back into position, replace the computer cover, reconnect the system to an electrical outlet, and turn on the computer system.

   If the system does not have power, refer to Chapter 7, "Getting Help," for instructions on obtaining technical assistance.
6. Turn off the system and disconnect it from the electrical outlet. Remove the computer cover and rotate the power supply. Then reinstall all the expansion cards you removed in step 4.

   Refer to "Installing Expansion Cards" in Chapter 2 for instructions.
7. Insert the *Microsoft Windows 98 Boot Disk* into the diskette drive.

NOTE: For systems running Windows NT, use the Hard Disk Drive and Utilities diskette included with your computer system or any MS-DOS bootable diskette.

8. Insert the *Dell Dimension ResourceCD* into the CD-ROM or DVD-ROM drive.
9. Turn on the computer system.

   If the system does not start, refer to Chapter 7, "Getting Help," for instructions on obtaining technical assistance.
10. When the boot screen appears, select **2 Start Computer with CD-ROM Support.**

11. At the `a:\` prompt, type *`x:`* (where *x* is the drive letter for the CD-ROM or DVD-ROM drive, which is displayed on the line above the `a:\` prompt.) Press <Enter>.

12. Type `diags32` and press <Enter>.

    The **DIAGNOSTICS MENU** appears.

13. Type `q` to quickly test your computer system.

    If the tests do not complete successfully, refer to Chapter 7, "Getting Help," for instructions on obtaining technical assistance.

If Your Computer Is Damaged

If your computer is dropped or damaged, check it to make sure it still functions properly. If a device attached to the computer is dropped or damaged, contact the manufacturer for technical assistance. To troubleshoot a damaged computer, perform the following steps:

1. Remove the computer cover and rotate the power supply as described in "Removing and Replacing the Computer Cover" and "Rotating the Power Supply Away From the System Board" in Chapter 2.

2. Check the connections in the computer.

   Check all power and interface cable connections for the drives. Make sure all cables are securely and properly connected to the system board. Verify that all expansion cards are firmly seated as shown in Figure 6-1 and that all components are properly seated in their connectors and sockets.

3. Rotate the power supply back into position, replace the computer cover, and reconnect the system to an electrical outlet.

4. Insert the *Microsoft Windows 98 Boot Disk* into the diskette drive.

NOTE: For systems running Windows NT, use the Hard Disk Drive and Utilities diskette included with your computer system or any MS-DOS bootable diskette.

5. Insert the *Dell Dimension ResourceCD* into the CD-ROM or DVD-ROM drive.

6. Turn on the computer system.

   If the system does not start, refer to Chapter 7, "Getting Help," for instructions on obtaining technical assistance.

7. When the boot screen appears, select **2 Start Computer with CD-ROM Support.**

8. At the `a:\` prompt, type *`x:`* (where *x* is the drive letter for the CD-ROM or DVD-ROM drive, which is displayed on the line above the `a:\` prompt.) Press <Enter>.

9. Type `diags32` and press <Enter>.

   The **DIAGNOSTICS MENU** appears.

10. Type `q` to quickly test your computer system.

    If the tests do not complete successfully, refer to Chapter 7, "Getting Help," for instructions on obtaining technical assistance.

CHAPTER 7
Getting Help

This chapter 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 basic troubleshooting checks described in "Checking the Basics" in Chapter 4.
2. Run the Dell Diagnostics as described in "Running the Dell Diagnostics" in Chapter 4.
3. Make a copy of the Diagnostics Checklist (found later in this chapter), and fill it out.
4. Use Dell's extensive suite of online support services available at Dell's World Wide Web site (**http://support.dell.com**) for help with installation and troubleshooting procedures.

   For more information, refer to "World Wide Web on the Internet" found later in this chapter.
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.

   The system information label provides your system's five-character service tag sequence and your Express Service Code (if applicable). The label is located on the upper-left corner of the computer.

   When prompted by Dell's automated telephone system, enter your Express Service Code to route the call directly to the proper support personnel.

   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" found later in this chapter.

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

The Internet is your most powerful tool for obtaining information about your computer and other Dell products. From Dell's World Wide Web home page (**http://www.dell.com**), you can access product information and order status. Dell's World Wide Web technical support page (**http://support.dell.com**) includes AutoTech, TechFax, and technical support.

From Dell's technical support page (**http://support.dell.com**), click one of the following:

- **Support Your Dell** — Enter your service tag (or, if you have one, your Express Service Code) and then click **Submit**. The service tag sequence and Express Service code are listed on the system information label.

  From this page you can access a number of tools and information such as system documentation, drivers and BIOS updates, and self-diagnostic tools for resolving many computer-related issues by following interactive flowcharts.

- **Ask Dudley** — Enter a question about your computer or about software. This tool searches the Dell Knowledge Base and Dell Support for answers and related topics.

- **Communicate with Dell** — Use Dell Talk Forum, a public discussion moderated by Dell technical support specialists, to obtain technical information or submit requests via e-mail to Dell Support.

Dell can be accessed electronically using the following addresses:

- World Wide Web

  http://www.dell.com/

  http://www.dell.com/ap/ (for Asian/Pacific countries only)

  http://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

  http://support@us.dell.com

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

  http://support.euro.dell.com (for Europe only)

- Electronic Quote Service

  http://sales@dell.com

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

- Electronic Information Service

  http://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" found later in this chapter.

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" found later in this chapter.

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" found later in this chapter.

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 the section titled "Before You Call" and then call the number for your country as listed in "Dell Contact Numbers" found later in this chapter.

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 "Dell Contact Numbers" found later in this chapter.

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 **http://www.dell.com/**. For the telephone number to call to speak to a sales specialist, refer to "Dell Contact Numbers" found later in this chapter.

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 "Dell Contact Numbers" found later in this chapter.

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 Diagnostics Checklist (Figure 7-1). 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.

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

Diagnostics Checklist

Name: _____Date: _____

Address: _____Phone number: _____

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

Express Service Code: _____

Return Material Authorization Number (if provided by Dell support technician):_____

Operating system and version: _____

Devices: _____

_____

_____

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, beep code, or diagnostic code: _____

Description of problem and troubleshooting procedures you performed:_____

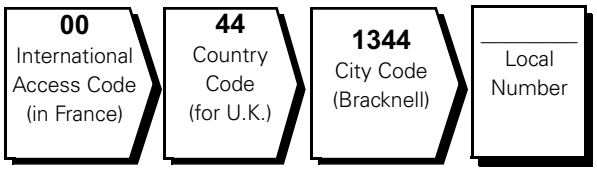
_____

_____

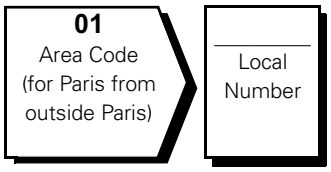
Figure 7-1. Diagnostics Checklist

Dell Contact Numbers

When you need to contact Dell, use the telephone numbers, codes, and electronic addresses provided in Tables 7-1 and 7-2. Table 7-1 provides the various codes required to make long-distance and international calls. Table 7-2 provides local telephone numbers, area codes, toll-free numbers, Web site 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 7-1 in addition to the local numbers provided in Table 7-2. 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 7-1. 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	91

Table 7-1. International Dialing Codes (continued)

Country (City)	International Access Code	Country Code	City Code
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 7-2. Dell Contact Numbers

Country (City)	Department Name or Service	Area Code	Local Number or 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) *NOTE: Customers in Austria call Langen, Germany for Technical Support and Customer Care.*	Home/Small Business Sales	01	795 567602
	Home/Small Business Fax	01	795 67605
	Home/Small Business Customer Care	01	795 67603
	Preferred Accounts/Corporate Customer Care		0660 8056
	Home/Small Business Technical Support	01	795 67604
	Preferred Accounts/Corporate Technical Support		0660 8779
	Switchboard	01	491 04 0
	Web site: **support.euro.dell.com/at**		
	E-mail: **tech_support_germany@dell.com**		

Table 7-2. Dell Contact Numbers *(continued)*

Country (City)	Department Name or Service	Area Code	Local Number or Toll-Free Number
Belgium (Brussels)	Technical Support	02	481 92 88
	Customer Care	02	481 91 19
	Home/Small Business Sales		toll free: 0800 16884
	Corporate Sales	02	481 91 00
	Fax	02	481 92 99
	Switchboard	02	481 91 00
	Web site: **support.euro.dell.com/be**		
	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

Table 7-2. Dell Contact Numbers *(continued)*

Country (City)	Department Name or Service	Area Code	Local Number or Toll-Free Number
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
	Customer Care	02	22 83 27 11
	Fax	02	22 83 27 14
	TechFax	02	22 83 27 28
	Switchboard	02	22 83 27 11
	Web site: **support.euro.dell.com/cz**		
	E-mail: **czech_dell@dell.com**		
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
	Web site: **support.euro.dell.com/dk**		
	E-mail: **den_support@dell.com**		
Finland (Helsinki)	Technical Support	09	253 313 60
	Technical Support Fax	09	253 313 81
	Customer Care	09	253 313 61
	Fax	09	253 313 99
	Switchboard	09	253 313 00
	Web site: **support.euro.dell.com/fi**		
	E-mail: **fin_support@dell.com**		

Table 7-2. Dell Contact Numbers *(continued)*

Country (City)	Department Name or Service	Area Code	Local Number or Toll-Free Number
France (Paris/Montpellier)	Technical Support	0803	.387 270
	Customer Care (Paris)	01	.47 62 68 92
	Customer Care (Montpellier)	04	.67 06 61 96
	TechConnect BBS (Montpellier)	04	.67 22 53 04
	Fax (Montpellier)	04	.67 06 60 07
	Switchboard (Paris)	01	.47 62 69 00
	Switchboard (Montpellier)	04	.67 06 60 00
	Web site: **support.euro.dell.com/fr**		
	E-mail: **web_fr_tech@dell.com**		
Germany (Langen)	Technical Support	06103	.971-200
	Technical Support Fax	06103	.971-222
	Home/Small Business Customer Care	06103	.971-530
	Preferred Accounts Customer Care	06103	.971-420
	TechConnect BBS	06103	.971-666
	Switchboard	06103	.971-0
	Corporate Customer Care	06103	.971-560
	Web site: **http://www.dell.de/support**		
	E-mail: **tech_support_germany@dell.com**		
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

Table 7-2. Dell Contact Numbers *(continued)*

Country (City)	Department Name or Service	Area Code	Local Number or Toll-Free Number
Ireland (Bray) *NOTE: Customers in Ireland call the U.K. for Home/Small Business customer assistance.*	Technical Support		1-850-543-543
	Customer Care	01	204 4026
	Home/Small Business Customer Care (Bracknell, U.K.)		0870 906 0010
	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
	Web site: **support.euro.dell.com/ie**		
	E-mail: **dell_direct_support@dell.com**		
Italy (Milan)	Technical Support	2	57782.690
	Customer Care	2	57782.555
	Sales	2	57782.411
	Fax	2	57503530
	Switchboard	2	57782.1
	Web site: **support.euro.dell.com/it**		
	E-mail: **support_italy@dell.com**		
Japan (Kawasaki)	Technical Support		toll free: 0088-22-7890
	Technical Support		toll free: 0120-1982-56
	Y2K Support	044	556-4298
	Customer Care	044	556-4240
	Direct Sales	044	556-3344
	Commercial Sales	044	556-3430 556-3440
	Faxbox Service		03-5972-5840
	Switchboard	044	556-4300

Table 7-2. Dell Contact Numbers *(continued)*

Country (City)	Department Name or Service	Area Code	Local Number or Toll-Free Number
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 call Belgium for sales, customer, and technical assistance.*	Technical Support (Brussels, Belgium)	02	481 92 88
	Home/Small Business Sales (Brussels, Belgium)		toll free: 080016884
	Corporate Sales (Brussels, Belgium)	02	481 91 00
	Customer Care (Brussels, Belgium)	02	481 91 19
	Fax (Brussels, Belgium)	02	481 92 99
	Switchboard (Brussels, Belgium)	02	481 91 00
	Web site: **support.euro.dell.com/be** 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

Table 7-2. Dell Contact Numbers *(continued)*

Country (City)	Department Name or Service	Area Code	Local Number or Toll-Free Number
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)	Technical Support	020	5818838
	Customer Care	020	581 8740
	Home/Small Business Sales		toll free: 0800-0663
	Home/Small Business SalesFax	020	682 7171
	Corporate Sales	020	581 8818
	Corporate SalesFax	020	686 8003
	Fax	020	686 8003
	Switchboard	020	581 8818
	Web site: **support.euro.dell.com/nl**		
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	67	1 16800
	Fax Technical Support (Upplands Vasby, Sweden)		590 05 594
	Fax Switchboard		671 16865
	Web site: **support.euro.dell.com/no**		
	E-mail: **nor_support@dell.com**		

Table 7-2. Dell Contact Numbers *(continued)*

Country (City)	Department Name or Service	Area Code	Local Number or Toll-Free Number
Poland (Warsaw)	Technical Support	22	60 61 999
	Customer Care	22	60 61 999
	Sales	22	60 61 999
	Fax	22	60 61 998
	Switchboard	22	60 61 999
	Web site: **support.euro.dell.com/pl**		
	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)	Technical Support	011	709 7710
	Customer Care	011	709 7710
	Sales	011	706 7700
	Fax	011	709 0495
	Switchboard	011	709 7700
	Web site: **support.euro.dell.com/za**		
	E-mail: **dell_za_support@dell.com**		
Southeast Asian/ Pacific Countries (excluding Australia, Brunei, China, Hong Kong, Japan, Korea, Macau, Malaysia, New Zealand, Singapore, Taiwan, and Thailand—refer to individual listings for these countries)	Customer Technical Support, Customer Service, and Sales (Penang, Malaysia)		60 4 810-4810

Table 7-2. Dell Contact Numbers *(continued)*

Country (City)	Department Name or Service	Area Code	Local Number or Toll-Free Number
Spain (Madrid)	Technical Support		902 100 130
	Corporate Customer Care		902 118 546
	Home/Small Business Customer Care		902 118 540
	TechConnect BBS	91	329 33 53
	Corporate Sales		902 100 185
	Home/Small Business Sales		902 118 541
	Switchboard	91	722 92 00
	Web site: **support.euro.dell.com/es**		
	E-mail: **es_support@dell.com**		
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
	Web site: **support.euro.dell.com/se**		
	E-mail: **swe_support@dell.com**		
Switzerland (Geneva)	Technical Support		0844 811 411
	Customer Care		0848 802 802
	Fax	022	799 01 90
	Switchboard	022	799 01 01
	Web site: **support.euro.dell.com/ch**		
	E-mail: **swisstech@dell.com**		
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

Table 7-2. Dell Contact Numbers *(continued)*

Country (City)	Department Name or Service	Area Code	Local Number or Toll-Free Number
U.K. (Bracknell)	Technical Support		0870-908-0800
	Corporate Customer Care	01344	720206
	Home/Small Business Customer Care		0870-906-0010
	TechConnect BBS		0870-908-0610
	Sales	01344	720000
	AutoFax		0870-908-0510
	Web site: **support.euro.dell.com/uk**		
	E-mail: **dell_direct_support@dell.com**		

Table 7-2. Dell Contact Numbers (continued)

Country (City)	Department Name or Service	Area Code	Local Number or Toll-Free Number
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 (Home sales purchased via **http://www.dell.com**)		toll free: 1-877-576-3355
	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
			toll free: 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
	Dell Services for the Deaf, Hard-of-Hearing, or Speech-Impaired		toll free: 1-877-DELLTTY (1-877-335-5889)
	Switchboard	512	338-4400

APPENDIX A
System Specifications

Table A-1. Technical Specifications

Microprocessor	
Microprocessor type	Intel Celeron microprocessor
L1 cache	32-KB instruction and data cache
L2 cache	128-KB SRAM
Math coprocessor	internal to microprocessor
System Information	
System chip set	Intel 810 chip set
Data bus width	64 bits
Address bus width	32 bits
DMA channels	two
Interrupt levels	15
System BIOS chip	4 Mb (512 KB)
Expansion Bus	
Bus type	PCI (version 2.2)
Bus speed	33 MHz
Expansion-card connectors	four three-quarter–length
Expansion-card connector size	120 pins
Expansion-card connector data width (maximum)	32 bits
System Clock	
System clock	66 MHz (matches external processor speed)

NOTE: The Glossary in the system Help defines abbreviations and acronyms.

Table A-1. Technical Specifications (continued)

Memory	
Architecture	non-ECC SDRAM 168-pin modules
DIMM sockets	two; gold contacts
DIMM capacities	32, 64, 128, and 256 MB
Minimum RAM	32 MB (64 MB for Windows NT systems)
Maximum RAM	512 MB
Frequency	100 MHz
Clock cycle	10 ns (supports 4 clocks only)
CAS latency	three
SPD revision	1.2
Buffering	unbuffered
Voltage	3.3 V
Data bus width	64 bits
BIOS address	F0000h
Drives	
Externally accessible	one 5.25-inch bay and two 3.5-inch bays
Internally accessible	one bay for 1-inch–high EIDE hard-disk drive
Ports and Connectors	
Externally accessible:	
Serial (DTE)	one 9-pin connector; 16550C-compatible
Parallel	one 25-pin connector (bidirectional)
Video	one 15-pin connector
PS/2-style keyboard	6-hole mini-DIN connector
PS/2-compatible mouse	6-hole mini-DIN connector

NOTE: The Glossary in the system Help defines abbreviations and acronyms.

Table A-1. Technical Specifications (continued)

Ports and Connectors *(continued)*	
Externally accessible:	
MIDI/game[1]	one 15-pin connector
USB	two USB-compliant connectors
Audio[1]	three miniature jacks for line in, line out, and microphone
Network[1]	RJ45 jack
Internally accessible:	
Primary EIDE channel	40-pin connector on PCI bus
Secondary EIDE channel	40-pin connector on PCI bus
Diskette drive	34-pin connector
Video	
Video controller	Intel 810 chipset with Dynamic Video Memory and 4-MB display cache
Audio[1]	
Audio controller	Creative SoundBlaster Audio PCI chip with 64-voice wavetable synthesis
Network[1]	
NIC	Intel Pro 10/100-Mbps 82559 chip
Controls and Indicators	
Power control	push button
Power indicator	green
Hard-disk drive access indicator	green
Network indicators[1]	green and yellow
Diagnostic code indicators	four bicolor (yellow and green) located on back panel

[1] *Present only on systems with integrated audio and network capabilities.*

NOTE: The Glossary in the system Help defines abbreviations and acronyms.

Table A-1. Technical Specifications (continued)

Power	
DC power supply:	
Wattage	145 W
Heat dissipation	700 BTU (fully loaded system without monitor)
Voltage (switch-selectable on back panel)	90 to 135 V at 60 Hz; 180 to 265 V at 50 Hz; 100 V at 50–60 Hz for Japanese systems
Backup battery	3-V CR2032 coin cell
Physical	
Height	39 cm (15.375 inches)
Width	16.8 cm (6.5 inches)
Depth	34 cm (13.375 inches)
Weight	9.9 Kg (22 lb)
Environmental	
Temperature:	
Operating	10° to 35°C[2] (50° to 95°F)
Storage	–40° to 65°C (–40° to 149°F)
Relative humidity	20% to 80% (noncondensing)
Maximum vibration:	
Operating	0.25 G at 3 to 200 Hz at 1/2 octave/min
Storage	0.5 G at 3 to 200 Hz at 1/2 octave/min
Maximum shock:	
Operating	bottom half-sine pulse with a change in velocity of 50.8 cm/sec (20 inches/sec)
Storage	27-G faired-square wave with a velocity change of 508 cm/sec (200 inches/sec)

[2] *At 35°C (95°F), the maximum operating altitude is 914 m (3000 ft).*

NOTE: The Glossary in the system Help defines abbreviations and acronyms.

Table A-1. Technical Specifications (continued)

Environmental *(continued)*	
Altitude:	
Operating	–16 to 3048 m[2] (–50 to 10,000 ft)
Storage	–16 to 10,600 m (–50 to 35,000 ft)

[2] *At 35°C (95°F), the maximum operating altitude is 914 m (3000 ft).*

NOTE: The Glossary in the system Help defines abbreviations and acronyms.

APPENDIX B
System Setup Program

This appendix describes the system setup program, which you can use to configure your computer system as well as enable and disable your system's password features.

Each time you turn on or restart your computer system, the system compares the hardware installed in the system to the hardware listed in the configuration information stored in nonvolatile random-access memory (NVRAM) on the system board. If the system detects a discrepancy between the two, it generates error messages that identify the incorrect configuration settings. The system then prompts you to enter the system setup program to correct the setting.

You can use the system setup program as follows:

- To change the system configuration information after you add, change, or remove any hardware in your system
- To set or change user-selectable options—for example, the user password

Dell recommends that you print the system setup program screens (by pressing <Print Screen>) or write down the information for future reference.

Entering the System Setup Program

Enter the system setup program as follows:

1. Turn on (or restart) your system.
2. When the blue Dell logo appears, press <Del>.

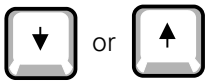
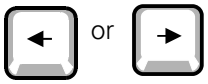
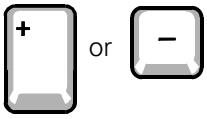
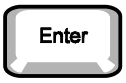
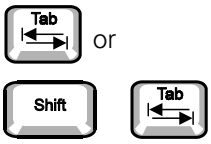
   If you wait too long and the operating system begins to load into memory, *let the system complete the load operation*. Then shut down the system and try again.

You can also enter the system setup program by responding to certain error messages.

Using the System Setup Program

Table B-1 lists the keys you use to view or change information on the system setup screens and to exit the program.

Table B-1. System Setup Navigation Keys

Keys	Action
	Returns to the parent menu; from a parent menu, exits without saving changes.
	Moves the cursor up or down to select an item.
	Moves the cursor to the previous or next menu option.
	Increases or decreases the current value in the selected field or cycles through settings for the selected option.
	Selects the submenu for the current option (if there is one) or, on the **Exit** menu, performs the current command. For **System Time** and **System Date**, pressing <Enter> moves the cursor to the next field.
	Reverts all settings to the initial defaults.
	Saves changes and exits the program.
	For **System Time** and **System Date**, moves the cursor to the next or previous field.

System Setup Screens and Options

The system setup screens are organized as follows:

- At the top is a menu bar for accessing the main program screens.
- The box on the left side of each screen lists options that define the installed hardware in your system.

  Fields beside the options contain settings or values. You can change those that are enclosed in brackets. Values that are grayed out contain status information reported by the system.
- The box on the right side of each screen displays help information for the option with a currently highlighted field.
- The bottom area lists keys and their functions for the currently displayed screen.

The menu bar provides access to the following screens:

- **Main** screen — Provides settings for the basic system configuration
- **Advanced** screen — Provides detailed settings for some system features
- **Security** screen — Provides indications and settings for system password and setup password
- **Boot** screen — Provides information about which device boots the system
- **Exit** screen — Provides selections for saving and loading the configurations and options

In addition to these screens, options identified by a right arrow (see Figure B-2 for an example) provide access to submenus.

Main Screen

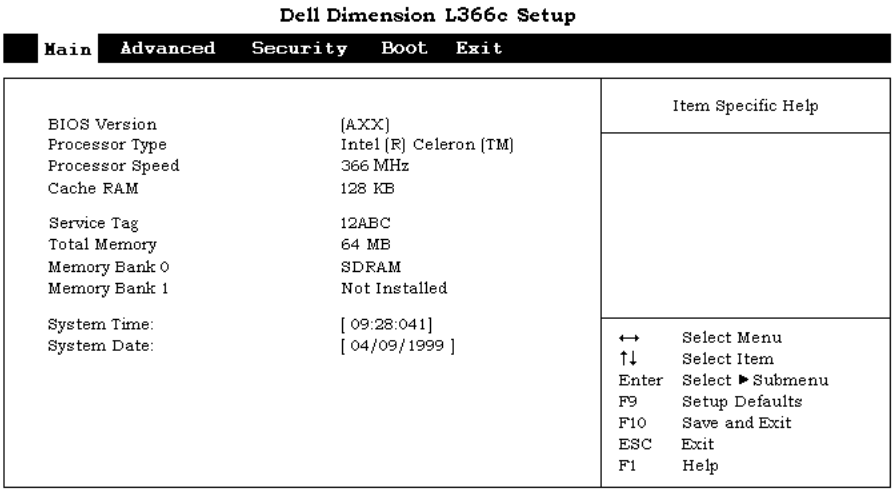


Figure B-1. Main Screen Menu

Table B-2. Main Screen Menu Options

Option	Function
BIOS Version	Displays the version of the BIOS being used.
Processor Type	Displays the type of microprocessor installed.
Processor Speed	Displays the internal speed of the microprocessor.
Cache RAM	Displays the RAM in the cache.
Service Tag	Displays the service tag for the computer.
Total Memory	Displays the total system memory.
Memory Bank 0	Displays the memory in memory bank 0.
Memory Bank 1	Displays the memory in memory bank 1.
System Time	Resets the time on the system's internal clock.
System Date	Resets the date on the system's internal calendar.

NOTE: The Glossary in the system Help defines abbreviations and acronyms.

Advanced Screen

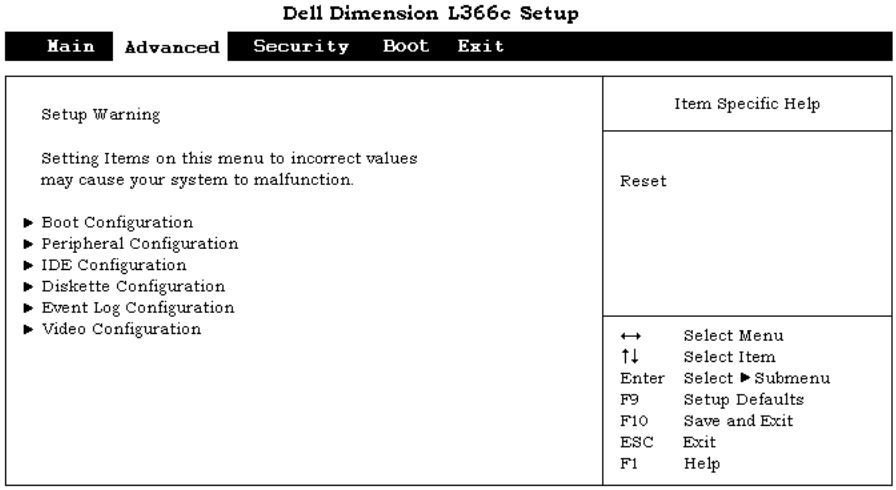


Figure B-2. Advanced Screen Menu

Table B-3. Advanced Screen Menu Options

Option	Function
Boot Configuration	Displays the **Boot Configuration** submenu. Refer to the "Boot Configuration Submenu" found later in this appendix.
Peripheral Configuration	Displays the **Peripheral Configuration** submenu. Refer to "Peripheral Configuration Submenu" found later in this appendix.
IDE Configuration	Displays the **IDE Configuration** submenu. Refer to "IDE Configuration Submenu" found later in this appendix.
Diskette Configuration	Displays the **Diskette Configuration** submenu. Refer to "Diskette Configuration Submenu" found later in this appendix.
Event Log Configuration	Displays the **Event Log Configuration** submenu. Refer to "Event Log Configuration Submenu" found later in this appendix.
Video Configuration	Displays the **Video Configuration** submenu. Refer to "Video Configuration Submenu" found later in this appendix.

NOTE: The Glossary in the system Help defines abbreviations and acronyms.

Boot Configuration Submenu

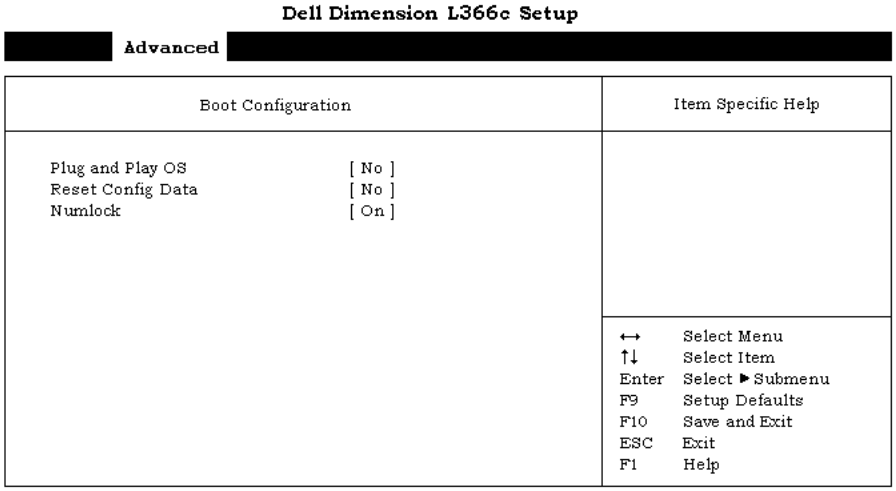


Figure B-3. Boot Configuration Submenu

Table B-4. Boot Configuration Submenu Options

Option	Function
Plug & Play O/S	Determines whether the system is configured to support Plug and Play devices from the operating system or from the system BIOS. Leave this option set to **No** so the BIOS handles all Plug and Play operation. *NOTE: Be sure this option is set to **No** before running the Dell Diagnostics. Otherwise, some diagnostics tests may incorrectly fail.*
Reset Config Data	Permits resetting Plug and Play configuration data to default values. **Yes** resets the data; **No** (default) retains the current Plug and Play settings. If set to **Yes**, configuration data reverts to default values the next time the system boots. This option automatically reverts back to the **No** setting.
Numlock	Selects power-on state for **Numlock.**

NOTE: The Glossary in the system Help defines abbreviations and acronyms.

Peripheral Configuration Submenu

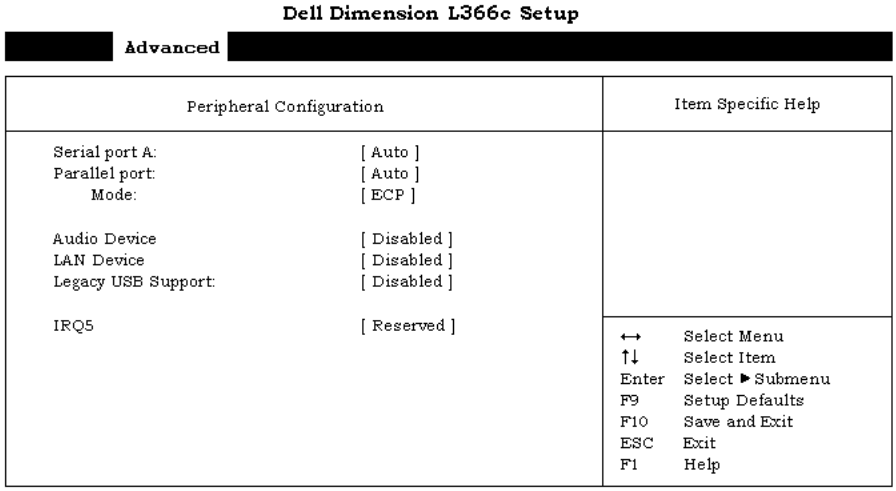


Figure B-4. Peripheral Configuration Submenu

Table B-5. Peripheral Configuration Submenu Options

Option	Function
Serial port A	Configures the serial port. Set this option to **Auto** (default), **Enabled**, or **Disabled**. If set to **Enabled**, you can set the following additional options:
Base I/O Address	Available I/O addresses are **3F8**, **3E8**, **2F8**, and **2E8**.
Interrupt	Available interrupts are **IRQ3** and **IRQ4**.
Parallel port	Configures the parallel port. Set this option to **Auto** (default), **Enabled**, or **Disabled**. Depending on the port setting, you can set the following additional options:
Mode	If port is set to **Auto** or **Enabled**, available modes are **Output Only**, **Bi-Directional**, **ECP** (default), and **EPP**. *NOTE: Refer to the device manufacturer's documentation for information on which mode to use before changing this setting.*
Base I/O Address	If port is set to **Enabled**, available I/O addresses are **378** (default), **278**, and **228**.
Interrupt	If port is set to **Enabled**, available interrupts are **7** and **5**.

NOTE: The Glossary in the system Help defines abbreviations and acronyms.

Table B-5. Peripheral Configuration Submenu Options *(continued)*

Option	Function
Audio Device	*NOTE: This option is available in integrated audio systems only.* Determines if integrated audio controller is **Enabled** (default) or **Disabled**. Set this option to **Disabled** if you are using a sound card instead of the integrated audio controller or if the resources used by the controller are needed.
LAN Device	*NOTE: This option is available in integrated NIC systems only.* Determines if integrated NIC is **Enabled** (default) or **Disabled**. Set this option to **Disabled** if you are using a network card instead of the integrated NIC or if the resources used by the controller are needed.
Legacy USB Support	Set to **Disabled** if legacy USB support is not desired. **Auto** (default) and **Enabled** allow support for legacy USB devices.
IRQ5	**Reserved** (default) indicates the IRQ is reserved for use by legacy systems. **Available** indicates that a specific IRQ is available on the system.

NOTE: The Glossary in the system Help defines abbreviations and acronyms.

IDE Configuration Submenu

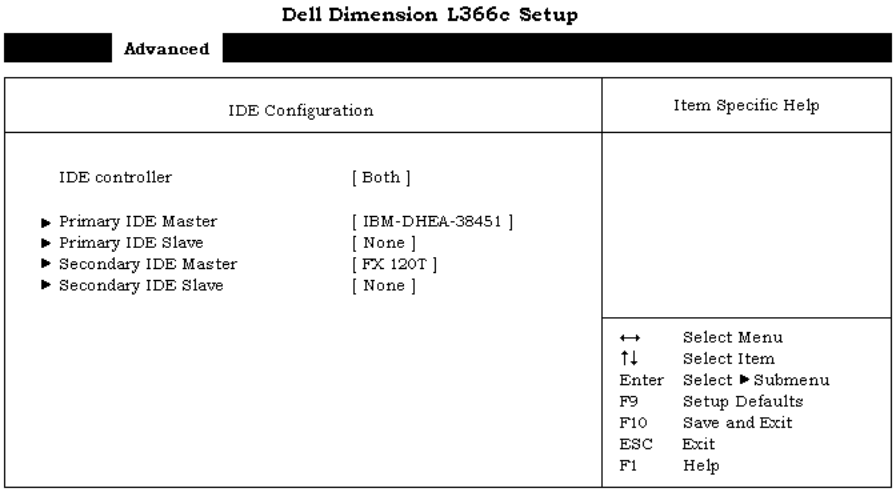


Figure B-5. IDE Configuration Submenu

Table B-6. IDE Configuration Submenu Options

Option	Function
IDE controller	Configures the integrated primary and secondary EIDE controllers and detects the types of drives attached to them. If set to **Primary**, **Secondary**, or **Both**, the designated controller(s) are enabled, and the types of drives attached are displayed. If set to either **Primary** or **Secondary**, the other controller is not enabled and the IRQ it normally uses becomes available. If set to **Disabled**, the system cannot detect any drives attached to the controllers and displays **None** for all four IDE drive options.
Primary IDE Master	Identifies the first drive attached to the primary EIDE interface, usually the boot hard-disk drive. Refer to "Primary IDE Master Submenu" found later in this appendix.
Primary IDE Slave	Identifies the second drive attached to the primary EIDE interface, if there is one. The format of this submenu is the same as the one described in "Primary IDE Master Submenu" found later in this appendix.
Secondary IDE Master	Identifies the first drive attached to the secondary EIDE interface, usually a CD-ROM or DVD-ROM drive. The format of this submenu is the same as the one described in "Primary IDE Master Submenu" found later in this appendix.
Secondary IDE Slave	Identifies the second drive attached to the secondary EIDE interface, usually a Zip or tape drive. The format of this submenu is the same as the one described in "Primary IDE Master Submenu" found later in this appendix.

NOTE: The Glossary in the system Help defines abbreviations and acronyms.

Primary IDE Master Submenu

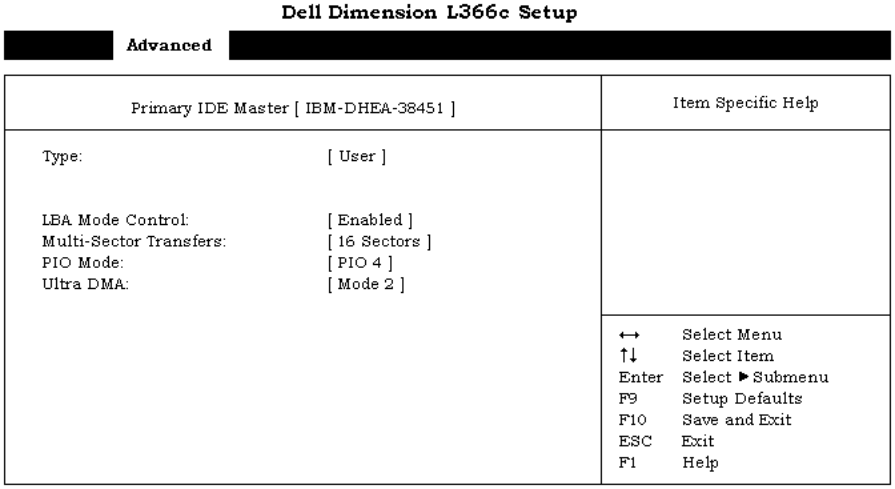


Figure B-6. Primary IDE Master Submenu

Table B-7. Primary IDE Master Submenu Options

Option	Function
Type	Specifies the type of hard-disk drive. Selections are **User**, **Auto**, **CD-ROM**, **ATAPI Removable**, **Other ATAPI**, **IDE Removable**, and **None**.
LBA Mode Control	Determines LBA mode control. Set to **Enabled** (default) unless directed to change it by a Dell technical support representative.
Multi-Sector Transfers	Determines the number of sectors per block during multiple-sector transfers. If **Type** is set to **User**, available settings for **Multi-sector Transfers** are **2 Sectors**, **4 Sectors**, **8 Sectors**, **16 Sectors**, or **Disabled** (turns off the feature).
PIO Mode	Selects method of moving data to and from the EIDE drive. The PIO modes can improve the performance of a hard-disk drive. (The higher the PIO number, the faster the transfer; most newer drives support **PIO 4**.) For the optimum transfer mode, set **Type** to **Auto**.
Ultra DMA	Sets the Ultra DMA mode for the drive. Options are **Disabled** (default), **Mode 0**, **Mode 1**, **Mode 2**, **Mode 3**, or **Mode 4**.

NOTE: The Glossary in the system Help defines abbreviations and acronyms.

Diskette Configuration Submenu

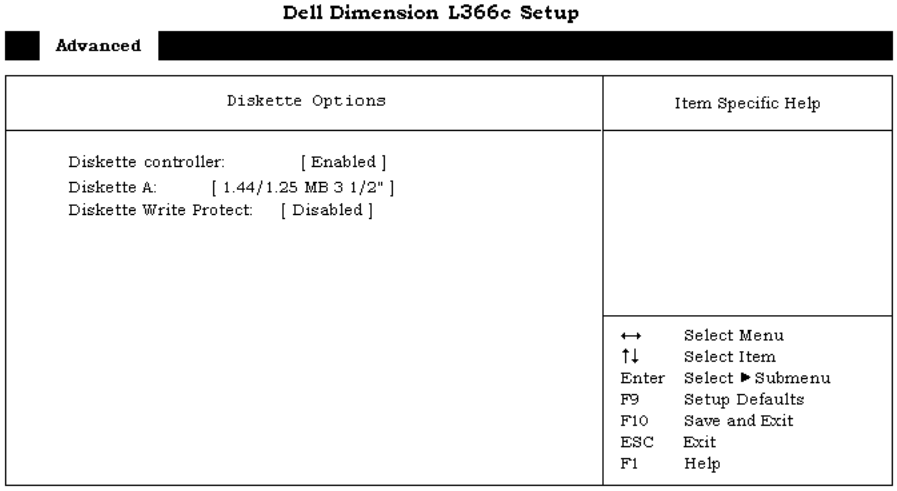


Figure B-7. Diskette Configuration Submenu

Table B-8. Diskette Configuration Submenu Options

Option	Function
Diskette controller	Configures the diskette drive interface. Options are **Enabled** (default) and **Disabled**.
Diskette A	Selects the diskette type from **Not Installed**, **360 KB 5 1/4**, **1.2 MB 5 1/4**, **720 KB 3 1/2**, **1.44/1.25 MB 3 1/2**, or **2.88 MB 3 1/2**.
Diskette Write Protect	Protects a diskette from being written to when set to **Enabled**. When this option is set to **Disabled** (default), the diskette is not protected unless the write-protect tab is in place.

NOTE: The Glossary in the system Help defines abbreviations and acronyms.

Event Log Configuration Submenu

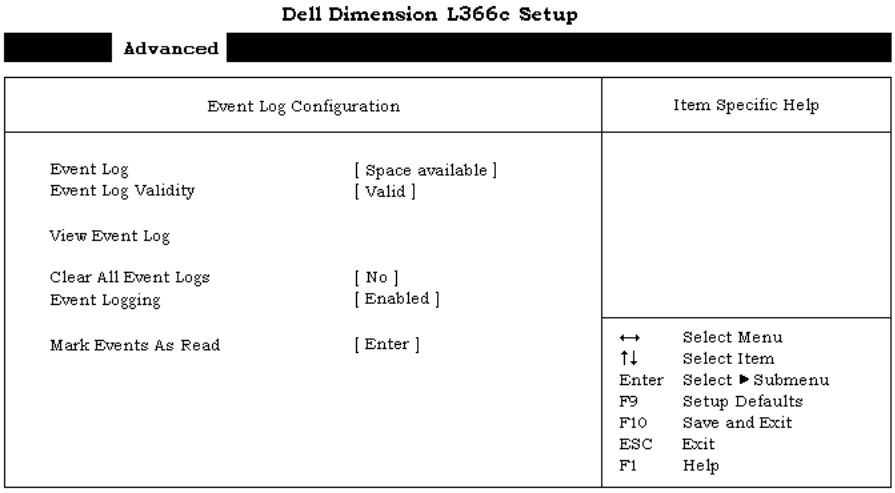


Figure B-8. Event Log Configuration Submenu

Table B-9. Event Log Configuration Submenu Options

Option	Function
Event Log	Indicates **Space Available** or **No Space Available**.
Event Log Validity	Displays the validity of the event log (**Valid** or **Invalid**).
View Event Log	Press <Enter> to view the log.
Clear All Event Logs	Clears all event logs when the system restarts if set to **Yes**. Retains event log information if set to **No** (default).
Event Logging	Enables or disables event logging.
Mark Events As Read	Press <Enter>, and then select **Yes** or **No** to mark DMI events as either read or unread.

NOTE: The Glossary in the system Help defines abbreviations and acronyms.

Video Configuration Submenu

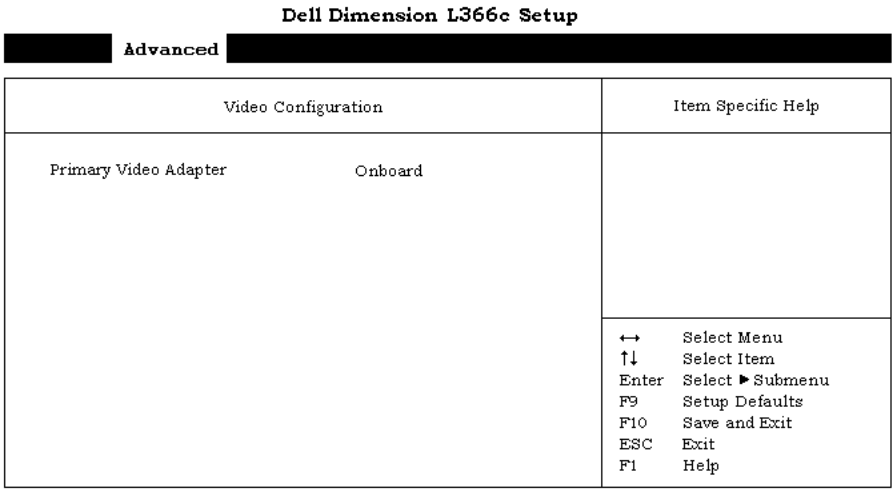


Figure B-9. Video Configuration

Table B-10. Video Configuration Submenu Option

Option	Function
Primary Video Adapter	Selects **Onboard** or **PCI** as the active video controller when the system boots.

NOTE: The Glossary in the system Help defines abbreviations and acronyms.

Security Screen

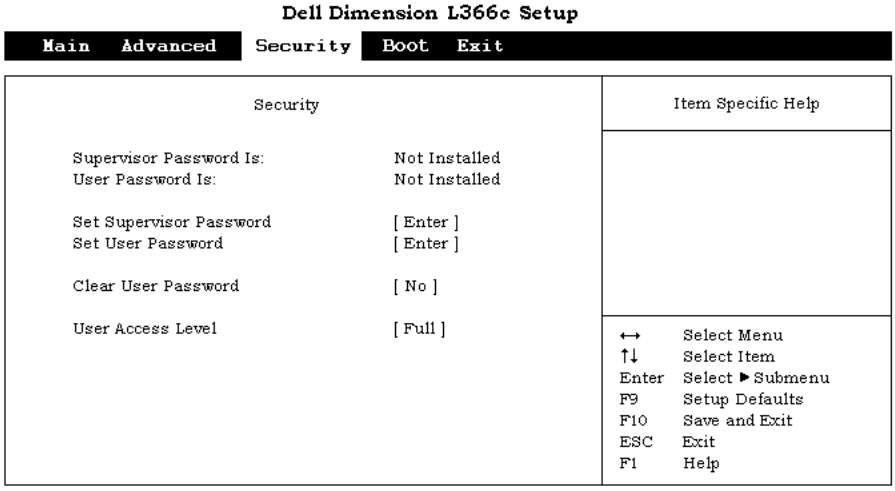


Figure B-10. Security Screen Menu

Table B-11. Security Screen Menu Options

Option	Function
Supervisor Password Is	Indicates whether a supervisor password has been assigned.
User Password Is	Indicates whether a user password has been assigned.
Set Supervisor Password	Sets and confirms a supervisor password.
Set User Password	Sets and confirms a user password.
Clear User Password	Clears user password. Settings for this option are **Yes** or **No** (default).
User Access Level	If the user password is assigned, the settings for this option are displayed. **Limited** allows the user to change a limited number of options in the setup program. **No Access** prohibits user access to the setup program. **View Only** allows the user to view the setup screens but changes cannot be made. **Full** (default) allows the user to change all setup options.

NOTE: The Glossary in the system Help defines abbreviations and acronyms.

Boot Screen

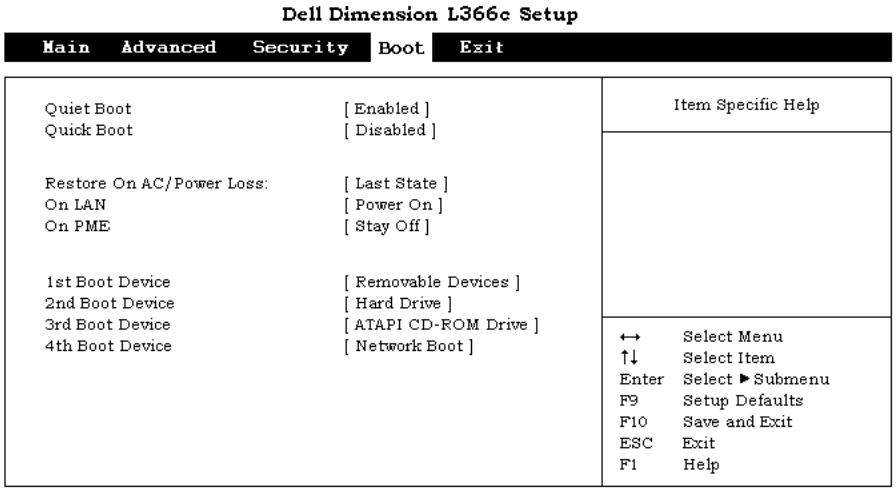


Figure B-11. Boot Screen Menu

Table B-12. Boot Screen Menu Options

Option	Function
Quiet Boot	**Enabled** (default) displays the Dell logo. **Disabled** displays the normal POST messages.
Quick Boot	When set to **Enabled**, this option shortens POST by eliminating some tests. If set to **Disabled** (default), all POST tests occur.
Restore on AC/ Power Loss	Determines what state the system enters when AC power is restored after a power loss. Settings are as follows: • **Last State** (default) — System returns to the state it was in when power was lost. • **Stays Off** — System stays off when power is restored; you must press the power button to restore power. • **Power On** — System turns on when power is restored.
On LAN	This option controls how the system responds to a Wakeup On LAN event. The selections are **Power On** (default) or **Stays Off**.
On PME	This option controls how the system responds to a PCI power management enabled (PME) wakeup event. The selections are **Power On** or **Stays Off** (default).

NOTE: The Glossary in the system Help defines abbreviations and acronyms.

Table B-12. Boot Screen Menu Options *(continued)*

Option	Function
1st Boot Device	Determines which device the system tries to boot from first. Use the up- or down-arrow key to highlight one of the following settings: • **Disabled** • **1st IDE-HDD through 4th IDE-HDD** • **Floppy** • **ARMD FDD** • **ARMD HDD** • **ATAPI CD-ROM** • **SCSI** • **NETWORK**
2nd Boot Device	Determines which device the system tries to boot from if it cannot boot from the device selected for **1st Boot Device**. Settings for this option are the same as for **1st Boot Device** except for **NETWORK**.
3rd Boot Device	Determines which device the system tries to boot from if it cannot boot from the devices selected for **1st Boot Device** or **2nd Boot Device**. Settings for this option are the same as for **1st Boot Device** except for **NETWORK** and **SCSI**.
4th Boot Device	Determines which device the system tries to boot from if it cannot boot from the devices selected for **1st Boot Device**, **2nd Boot Device**, and **3rd Boot Device**. Settings for this option are the same as for **1st Boot Device** except for **NETWORK** and **SCSI**.

NOTE: The Glossary in the system Help defines abbreviations and acronyms.

Exit Screen

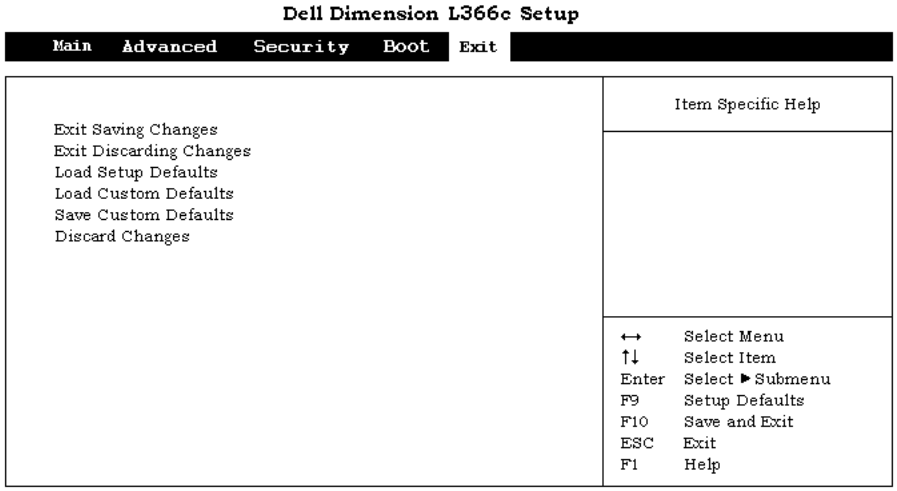


Figure B-12. Exit Screen Menu

Table B-13. Exit Screen Menu Options

Option	Function
Exit Saving Changes	Saves any changes you have made, exits the system setup program, and restarts the system.
Exit Discarding Changes	Discards any changes you have made, exits the system setup program, and restarts the system.
Load Setup Defaults	Discards any changes you have made and reverts all options to their original default settings, but does not exit the system setup program.
Load Custom Defaults	Loads settings saved using **Save Custom Defaults** option. After highlighting this option, press <Enter>. Then press the spacebar to select **Yes** or **No** at the confirmation pop-up menu, and press <Enter> again.
Save Custom Defaults	Saves any changes you have made, but does not exit the system setup program.
Discard Changes	Discards any changes you have made and reverts all options to their last saved settings, but does not exit the system setup program.

NOTE: The Glossary in the system Help defines abbreviations and acronyms.

Disabling a Forgotten Password

If you forget your user or setup password, you will be unable to operate your system or change settings in the system setup program, respectively, until you disable the existing password(s). Disabling the password(s) involves removing the computer cover and changing a jumper setting (twice) on the system board.

NOTE: You disable both user and setup passwords at the same time.

NOTICE: This procedure requires entering Maintenance mode, which returns all options in the system setup program to their default settings. Dell strongly recommends that you record or print all current settings before entering Maintenance mode so that you can correct them when the system is reset to Normal mode.

To disable a forgotten password, perform the following steps:

1. Remove the computer cover and rotate the power supply as described in "Removing and Replacing the Computer Cover" and "Rotating the Power Supply Away From the System Board" in Chapter 2.
2. Refer to Figure 2-5 and Table 2-2 for the location and settings of the configuration jumper (J7A1) on the system board.
3. Move the jumper plug to the Maintenance mode setting (pins 2 and 3 jumpered).
4. Rotate the power supply back into position and replace the computer cover; reconnect your computer system to an electrical outlet and turn it on.

   The system boots directly into the **Maintenance** screen of the system setup program.
5. At the **Maintenance** screen, press <Enter> and then click **Yes** to erase all existing passwords.
6. Press <F10> to save your changes and exit the system setup program.
7. Repeat step 1.
8. Move the jumper plug back to the Normal mode setting (pins 1 and 2 jumpered).
9. Repeat step 4.
10. Assign a new user and/or setup password on the **Security** screen of the system setup program.

    For information on assigning a new user and/or setup password, refer to Table B-11.

Clearing NVRAM

To clear NVRAM for all devices and restart the system, perform the following steps:

1. Enter the system setup program as described at the beginning of this appendix.
2. Press the right-arrow key to move to the **Advanced** menu.
3. Select the **Boot Configuration** submenu by pressing <Enter>.
4. Press the down-arrow key to highlight **Reset Config Data**. Then press the plus (+) key to change the setting to **Yes** (refer to Table B-4).
5. Press <F10> to exit the program and restart the system.

APPENDIX C

Diagnostic Codes, Beep Codes, and System Messages

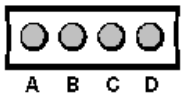
Your application programs, the operating system, and the computer itself can provide you with diagnostic, error, and status information in the form of indicators that display diagnostic codes, beep codes that sound through the computer's speaker, or messages that appear on the monitor screen. This appendix documents the diagnostic and beep codes and system messages generated by the system basic input/output system (BIOS). For other messages, refer to the documentation for your application program or operating system.

Diagnostic Codes

Your system is equipped with four diagnostic code indicators, which are labeled "A," "B," "C," and "D" on the back of the computer. Each of the four indicators can be yellow or green. When the computer is turned on or restarted and the system is functioning normally, the indicators flash during POST. After the system boots, all four of the indicators become green to signify normal system operation.

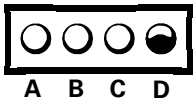
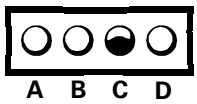
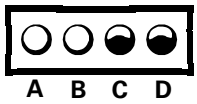
If a malfunction is detected and the computer fails to boot, the indicators display a code that identifies the problem. In this situation, write down the diagnostic code displayed and look it up in Table C-1.

Table C-1. Diagnostic Codes

Diagnostic Code	Definition	Corrective Action
	Power up default.	Make sure that the system is connected to an electrical outlet, and then check whether the power indicator is on or off. If the power indicator is off, refer to "Power" in Chapter 4. If the problem persists, remove all expansion cards as described in "Expansion Cards" in Chapter 6. If the system still does not start, refer to Chapter 7, "Getting Help," for instructions on obtaining technical assistance.
	System board is receiving power, but the BIOS is not executing.	Set the configuration jumper to Maintenance mode (see Table 2-2) and restart the system. Exit and save changes in the system setup program. Turn off the computer and reset the configuration jumper to Normal mode, and then restart the system. Remove all expansion cards and restart the system to determine if a resource conflict exists. If a conflict exists, resolve the conflict as described in "Resolving Software and Hardware Incompatibilities" in Chapter 5. If the problem persists, refer to Chapter 7, "Getting Help," for instructions on obtaining technical assistance.

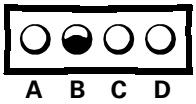
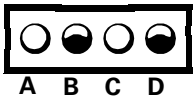
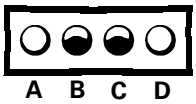
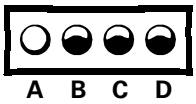
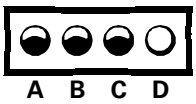
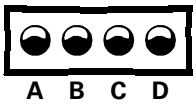
NOTE: The Glossary in the system Help defines abbreviations and acronyms.

Table C-1. Diagnostic Codes (continued)

Diagnostic Code	Definition	Corrective Action
	Recovery mode from BIOS failure.	Set the configuration jumper to Maintenance mode (see Table 2-2) and restart the system. Exit and save changes in the system setup program. Turn off the computer and reset the configuration jumper to Normal mode, and then restart the system. Remove all expansion cards and restart the system to determine if a resource conflict exists. If a conflict exists, resolve the conflict as described in "Resolving Software and Hardware Incompatibilities" in Chapter 5. If the problem persists, refer to Chapter 7, "Getting Help," for instructions on obtaining technical assistance.
	Microprocessor has failed a BIOS test.	Refer to Chapter 7, "Getting Help," for instructions on obtaining technical assistance.
	Memory failed to be sized or enabled.	Reseat the DIMMs as described in "Reseating DIMMs" in Chapter 6. If the problem persists, refer to Chapter 7, "Getting Help," for instructions on obtaining technical assistance.

NOTE: The Glossary in the system Help defines abbreviations and acronyms.

Table C-1. Diagnostic Codes *(continued)*

Diagnostic Code	Definition	Corrective Action
	A PCI bus failure has occurred.	Remove all expansion cards and restart the system to determine if a resource conflict exists. If a conflict exists, resolve the conflict as described in "Resolving Software and Hardware Incompatibilities" in Chapter 5. If the problem still persists, refer to Chapter 7, "Getting Help," for instructions on obtaining technical assistance.
	The video controller failed to initialize or respond.	Refer to Chapter 7, "Getting Help," for instructions on obtaining technical assistance.
	An IDE bus failure has occurred.	Reseat the EIDE cables. If the problem persists, refer to Chapter 7, "Getting Help," for instructions on obtaining technical assistance.
	The USB port or a device connected to it has failed initialization.	Disconnect the device from the USB port. If the problem persists, refer to Chapter 7, "Getting Help," for instructions on obtaining technical assistance.
	Other failure.	Refer to Chapter 7, "Getting Help," for instructions on obtaining technical assistance.
	System has started and turned over control to the operating system.	No action is necessary.

NOTE: The Glossary in the system Help defines abbreviations and acronyms.

POST Beep Codes

If the monitor cannot display errors or problems, during power-on self-test (POST) the computer may emit a series of beeps, or *beep code*, that identifies the problem.

If your computer beeps 1, 2, or 3 times, reseat the DIMMs as described in "Reseating DIMMs" in Chapter 6. If your computer beeps four times or more, refer to Chapter 7, "Getting Help," for instructions on obtaining technical assistance.

System Messages

The first column in Table C-2 lists system messages that may appear on the screen during the start-up routine or during normal system operation. The second column in the table lists probable causes of the messages, and the third column either provides a corrective action or refers you to a source for resolving the problem.

Table C-2. System Messages

Message	Possible Cause	Corrective Action
`8042 Gate-A20 Error`	The keyboard controller failed its test.	If you receive this message after making changes in the system setup program, enter the program and restore the original value(s). If the problem persists, you may have to replace the keyboard or system board. Refer to Chapter 7, "Getting Help," for instructions on obtaining technical assistance.
`Address Line Short!`	Error in the address decoding circuitry in the memory.	Reseat the DIMMs as described in "Reseating DIMMs" in Chapter 6. Make sure that there is no contamination in the DIMM socket. If the problem persists, refer to Chapter 7, "Getting Help," for instructions on obtaining technical assistance.

`C: Drive Error`
 	
`C: Drive Failure`
	The hard-disk drive is not working or is not configured correctly.	Refer to "Drives" in Chapter 6. If the problem persists, refer to Chapter 7, "Getting Help," for instructions on obtaining technical assistance.

NOTE: The Glossary in the system Help defines abbreviations and acronyms.

Table C-2. System Messages *(continued)*

Message	Possible Cause	Corrective Action
Cache Memory Bad, Do Not Enable Cache!	Cache RAM is not operating.	Refer to Chapter 7, "Getting Help," for instructions on obtaining technical assistance.
CH-2 Timer Error	A timer error on the system board is occurring.	Refer to Chapter 7, "Getting Help," for instructions on obtaining technical assistance.
CMOS Battery State Low CMOS Checksum Failure CMOS System Options Not Set CMOS Display Type Mismatch CMOS Memory Size Mismatch CMOS Time and Date Not Set	The system configuration information in the system setup program is incorrect, or the battery charge may be low.	Enter the system setup program, and verify the system configuration information; then restart the computer. If the problem persists, refer to "Replacing the System Battery" in Chapter 2. If neither action provides a solution, refer to Chapter 7, "Getting Help," for instructions on obtaining technical assistance.
Diskette Boot Failure	Drive A or B is present but has failed the BIOS POST.	Refer to "Drives" in Chapter 6. If the problem persists, refer to "Getting Help" in Chapter 7.
DMA Error DMA 1 Error DMA 2 Error	Error in the DMA controller or DMA channel on the system board.	Refer to Chapter 7, "Getting Help," for instructions on obtaining technical assistance.
FDD Controller Failure	BIOS cannot communicate with the diskette drive controller.	Refer to "Drives" in Chapter 6. If the problem persists, refer to "Getting Help" in Chapter 7.
HDD Controller Failure	BIOS cannot communicate with the hard-disk drive controller.	Refer to "Drives" in Chapter 6. If the problem persists, refer to "Getting Help" in Chapter 7.
INTR1 Error INTR2 Error	An interrupt channel on the system board failed POST.	Refer to Chapter 7, "Getting Help," for instructions on obtaining technical assistance.

NOTE: The Glossary in the system Help defines abbreviations and acronyms.

Table C-2. System Messages *(continued)*

Message	Possible Cause	Corrective Action
`Invalid Boot Diskette`	The operating system cannot be located on drive A or drive C.	Enter the system setup program and confirm that drive A or drive C is properly identified.
`Keyboard error`	The BIOS has detected a stuck key.	Make sure nothing is resting on the keyboard; if a key appears to be stuck, carefully try to pry it up. If the problem persists and/or you cannot locate the stuck key, you may need to replace your keyboard. Refer to Chapter 7, "Getting Help," for instructions on obtaining technical assistance.
`KB/Interface Error`	An error occurred with the keyboard connector.	Reseat the keyboard connector. If the problem persists, you may have to replace the keyboard or system board. Refer to Chapter 7, "Getting Help," for instructions on obtaining technical assistance.
`No ROM BASIC`	The operating system cannot be located on drive A or drive C.	Enter the system setup program and confirm that drive A or drive C is properly identified.

NOTE: The Glossary in the system Help defines abbreviations and acronyms.

APPENDIX D
Regulatory Notices

Electromagnetic Interference (EMI) is any signal or emission, radiated in free space or conducted along power or signal leads, that endangers the functioning of a radio navigation or other safety service or seriously degrades, obstructs, or repeatedly interrupts a licensed radio communications service. Radio communications services include but are not limited to AM/FM commercial broadcast, television, cellular services, radar, air-traffic control, pager, and Personal Communication Services (PCS). These licensed services, along with unintentional radiators such as digital devices, including computer systems, contribute to the electromagnetic environment.

Electromagnetic Compatibility (EMC) is the ability of items of electronic equipment to function properly together in the electronic environment. While this computer system has been designed and determined to be compliant with regulatory agency limits for EMI, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause interference with radio communications services, which can be determined by turning the equipment off and on, you are encouraged to try to correct the interference by one or more of the following measures:

- Reorient the receiving antenna.
- Relocate the computer with respect to the receiver.
- Move the computer away from the receiver.
- Plug the computer into a different outlet so that the computer and the receiver are on different branch circuits.

If necessary, consult a Regulatory EMC representative of Dell Computer Corporation or an experienced radio/television technician for additional suggestions. You may find the *FCC Interference Handbook, 1986*, to be helpful. It is available from the U.S. Government Printing Office, Washington, DC 20402, Stock No. 004-000-00450-7 or on the World Wide Web at **http://www.fcc.gov/Bureaus/Compliance/WWW/tvibook.html**.

Dell computer systems are designed, tested, and classified for their intended electromagnetic environment. These electromagnetic environment classifications generally refer to the following harmonized definitions:

- Class A is for business or industrial environments.
- Class B is for residential environments.

Information Technology Equipment (ITE), including peripherals, expansion cards, printers, input/output (I/O) devices, monitors, and so on, that are integrated into or connected to the system should match the electromagnetic environment classification of the computer system.

A Notice About Shielded Signal Cables: Use only shielded cables for connecting peripherals to any Dell device to reduce the possibility of interference with radio communications services. Using shielded cables ensures that you maintain the appropriate EMC classification for the intended environment. For parallel printers, a cable is available from Dell Computer Corporation. If you prefer, you can order a cable from Dell Computer Corporation on the World Wide Web at http://www.dell.com/products/dellware/index.htm.

Most Dell computer systems are classified for Class B environments. To determine the electromagnetic classification for your system or device, refer to the following sections specific for each regulatory agency. Each section provides country-specific EMC/EMI or product safety information.

FCC Notices (U.S. Only)

Most Dell computer systems are classified by the Federal Communications Commission (FCC) as Class B digital devices. However, the inclusion of certain options can change the rating of some configurations to Class A. To determine which classification applies to your computer system, examine all FCC registration labels located on the bottom or back panel of your computer, on card-mounting brackets, and on the cards themselves. If any one of the labels carries a Class A rating, your entire system is considered to be a Class A digital device. If *all* labels carry either the Class B rating distinguished by either an FCC ID number or the FCC logo, (FC), your system is considered to be a Class B digital device.

Once you have determined your system's FCC classification, read the appropriate FCC notice. Note that FCC regulations provide that changes or modifications not expressly approved by Dell Computer Corporation could void your authority to operate this equipment.

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions:

- This device may not cause harmful interference.
- This device must accept any interference received, including interference that may cause undesired operation.

Class A

This equipment has been tested and found to comply with the limits for a Class A digital device pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the manufacturer's

instruction manual, may cause harmful interference with radio communications. Operation of this equipment in a residential area is likely to cause harmful interference, in which case you will be required to correct the interference at your own expense.

Class B

This equipment has been tested and found to comply with the limits for a Class B digital device pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the manufacturer's instruction manual, may cause interference with radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, you are encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and the receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/television technician for help.

The following information is provided on the device or devices covered in this document in compliance with FCC regulations:

- Product name: Dell Dimension L*xxx*c
- Model number: MCM
- Company name: Dell Computer Corporation
  EMC Engineering Department
  One Dell Way
  Round Rock, Texas 78682 USA
  512-338-4400

IC Notice (Canada Only)

Most Dell computer systems (and other Dell digital apparatus) are classified by the Industry Canada (IC) Interference-Causing Equipment Standard #3 (ICES-003) as Class B digital devices. To determine which classification (Class A or B) applies to your computer system (or other Dell digital apparatus), examine all registration labels located on the bottom or the back panel of your computer (or other digital apparatus). A statement in the form of "IC Class A ICES-3" or "IC Class B ICES-3" will be located on one of these labels. Note that Industry Canada regulations provide that changes or

modifications not expressly approved by Dell Computer Corporation could void your authority to operate this equipment.

This Class B (or Class A, if so indicated on the registration label) digital apparatus meets the requirements of the Canadian Interference-Causing Equipment Regulations.

Cet appareil numérique de la Classe B (ou Classe A, si ainsi indiqué sur l'étiquette d'enregistration) respecte toutes les exigences du Reglement sur le Materiel Brouilleur du Canada.

CE Notice (European Union)

Marking by the symbol CE indicates compliance of this Dell system to the EMC Directive and the Low Voltage Directive of the European Union. Such marking is indicative that this Dell system meets the following technical standards:

- EN 55022 — "Limits and Methods of Measurement of Radio Interference Characteristics of Information Technology Equipment."
- EN 50082-1: 1992 — "Electromagnetic compatibility—Generic immunity standard Part 1: Residential, commercial, and light industry."
- EN 60950 — "Safety of Information Technology Equipment."

NOTE: EN 55022 emissions requirements provide for two classifications:

- Class A is for typical commercial areas.
- Class B is for typical domestic areas.

This Dell device is classified for use in a typical Class B domestic environment.

A "Declaration of Conformity" in accordance with the preceding directives and standards has been made and is on file at Dell Products Europe BV, Limerick, Ireland.

Battery Disposal

Your computer system uses a lithium-ion battery. The lithium-ion battery is a long-life battery, and it is very possible that you will never need to replace it. However, should you need to replace it, refer to "Replacing the System Battery" in Chapter 2 for instructions.

Do not dispose of the battery along with household waste. Contact your local waste disposal agency for the address of the nearest battery deposit site.

EN 55022 Compliance (Czech Republic Only)

This device belongs to Class B devices as described in EN 55022, unless it is specifically stated that it is a Class A device on the specification label. The following applies to devices in Class A of EN 55022 (radius of protection up to 30 meters). The user of the device is obliged to take all steps necessary to remove sources of interference to telecommunication or other devices.

Pokud není na typovém štitku počítače uvedeno, že spadá do třídy A podle EN 55022, spadá automaticky do třídy B podle EN 55022. Pro zařízení zařazená do třídy A (ochranné pásmo 30m) podle EN 55022 platí následující. Dojde-li k rušení telekomunikačních nebo jinych zařízení, je uživatel povinen provést taková opatření, aby rušení odstranil.

VCCI Notice (Japan Only)

Most Dell computer systems are classified by the Voluntary Control Council for Interference (VCCI) as Class B information technology equipment (ITE). However, the inclusion of certain options can change the rating of some configurations to Class A. ITE, including peripherals, expansion cards, printers, input/output (I/O) devices, monitors, and so on, integrated into or connected to the system, should match the electromagnetic environment classification (Class A or B) of the computer system.

To determine which classification applies to your computer system, examine the regulatory labels/markings (see Figures D-1 and D-2) located on the bottom or back panel of your computer. Once you have determined your system's VCCI classification, read the appropriate VCCI notice.

Class A ITE

この装置は、情報処理装置等電波障害自主規制協議会（VCCI）の基準に基づくクラスA情報技術装置です。この装置を家庭環境で使用すると電波妨害を引き起こすことがあります。この場合には使用者が適切な対策を講ずるよう要求されることがあります。

This is a Class A product based on the standard of the Voluntary Control Council for Interference (VCCI) for information technology equipment. If this equipment is used in a domestic environment, radio disturbance may arise. When such trouble occurs, the user may be required to take corrective actions.

VCCI-A

Figure D-1. VCCI Class A ITE Regulatory Mark

Class B ITE

この装置は、情報処理装置等電波障害自主規制協議会 (VCCI) の基準に基づくクラス B 情報技術装置です。この装置は家庭環境で使用することを目的としていますが、この装置がラジオやテレビジョン受信機に近接して使用させると、受信障害を引き起こすことがあります。
取扱説明書に従って正しい取り扱いをして下さい。

This is a Class B product based on the standard of the Voluntary Control Council for Interference (VCCI) for information technology equipment. If this equipment is used near a radio or television receiver in a domestic environment, it may cause radio interference. Install and use the equipment according to the instruction manual.

Figure D-2. VCCI Class B ITE Regulatory Mark

NOM Information (Mexico Only)

The following information is provided on the device(s) described in this document in compliance with the requirements of the official Mexican standards (NOM):

Exporter:	Dell Computer Corporation One Dell Way Round Rock, TX 78682
Importer:	Dell Computer de México, S.A. de C.V. Rio Lerma No. 302 - 4° Piso Col. Cuauhtemoc 16500 México, D.F.
Ship to:	Dell Computer de México, S.A. de C.V. al Cuidado de Kuehne & Nagel de México S. de R.I. Avenida Soles No. 55 Col. Peñon de los Baños 15520 México, D.F.
Supply voltage:	115/230 VAC
Frequency:	60/50 Hz
Input current rating:	6.0/3.0 A or 4.0/2.0 A

Información para NOM (únicamente para México)

La información siguiente se proporciona en el dispositivo o en los dispositivos descritos en este documento, en cumplimiento con los requisitos de la Norma Oficial Mexicana (NOM):

Exportador:	Dell Computer Corporation One Dell Way Round Rock, TX 78682
Importador:	Dell Computer de México, S.A. de C.V. Rio Lerma No. 302 - 4° Piso Col. Cuauhtemoc 16500 México, D.F.
Embarcar a:	Dell Computer de México, S.A. de C.V. al Cuidado de Kuehne & Nagel de México S. de R.I. Avenida Soles No. 55 Col. Peñon de los Baños 15520 México, D.F.
Tensión alimentación:	115/230 VAC
Frecuencia:	60/50 Hz
Consumo de corriente:	6.0/3.0 A ó 4.0/2.0 A

APPENDIX E

Warranty, Return Policy, and Year 2000 Statement of Compliance

Limited Three-Year Warranty (U.S. Only)

Dell Computer Corporation ("Dell") manufactures its hardware products from parts and components that are new or equivalent to new in accordance with industry-standard practices. Dell warrants that the hardware products it manufactures will be free from defects in materials and workmanship. The warranty term is three years beginning on the date of invoice, as described in the following text.

Damage due to shipping the products to you is covered under this warranty. Otherwise, this warranty does not cover damage due to external causes, including accident, abuse, misuse, problems with electrical power, servicing not authorized by Dell, usage not in accordance with product instructions, failure to perform required preventive maintenance, and problems caused by use of parts and components not supplied by Dell.

This warranty does not cover any items that are in one or more of the following categories: software; external devices (except as specifically noted); accessories or parts added to a Dell system after the system is shipped from Dell; accessories or parts added to a Dell system through Dell's system integration department; accessories or parts that are not installed in the Dell factory; or DellWare℠ products. Monitors, keyboards, and mice that are Dell-branded or that are included on Dell's standard price list are covered under this warranty; all other monitors, keyboards, and mice (including those sold through the DellWare program) are not covered. Batteries for portable computers are covered only during the initial one-year period of this warranty.

Coverage During Year One

During the one-year period beginning on the invoice date, Dell will repair or replace products covered under this limited warranty that are returned to Dell's facility. To request warranty service, you must call Dell's Customer Technical Support within the warranty period. Refer to Chapter 7, "Getting Help," to find the appropriate telephone number for obtaining customer assistance. If warranty service is required, Dell will issue a Return Material Authorization Number. You must ship the products back to Dell in their original or equivalent packaging, prepay shipping charges, and insure the shipment or accept the risk of loss or damage during shipment. Dell will ship the repaired or replacement products to you freight prepaid if you use an address in the

continental U.S., where applicable. Shipments to other locations will be made freight collect.

NOTE: Before you ship the product(s) to Dell, back up the data on the hard-disk drive(s) and any other storage device(s) in the product(s). Remove any removable media, such as diskettes, CDs, or PC Cards. Dell does not accept liability for lost data or software.

Dell owns all parts removed from repaired products. Dell uses new and reconditioned parts made by various manufacturers in performing warranty repairs and building replacement products. If Dell repairs or replaces a product, its warranty term is not extended.

Coverage During Years Two and Three

During the second and third years of this limited warranty, Dell will provide, on an exchange basis and subject to Dell's Exchange Policy in effect on the date of the exchange, replacement parts for the Dell hardware product(s) covered under this limited warranty when a part requires replacement. You must report each instance of hardware failure to Dell's Customer Technical Support in advance to obtain Dell's concurrence that a part should be replaced and to have Dell ship the replacement part. Dell will ship parts (freight prepaid) if you use an address in the continental U.S. or Canada, where applicable. Shipments to other locations will be made freight collect. Dell will include a prepaid shipping container with each replacement part for your use in returning the replaced part to Dell. Replacement parts are new or reconditioned. Dell may provide replacement parts made by various manufacturers when supplying parts to you. The warranty term for a replacement part is the remainder of the limited warranty term.

You will pay Dell for replacement parts if the replaced part is not returned to Dell. The process for returning replaced parts, and your obligation to pay for replacement parts if you do not return the replaced parts to Dell, will be in accordance with Dell's Exchange Policy in effect on the date of the exchange.

You accept full responsibility for your software and data. Dell is not required to advise or remind you of appropriate backup and other procedures.

General Provisions

THIS WARRANTY GIVES YOU SPECIFIC LEGAL RIGHTS WHICH VARY FROM STATE TO STATE (OR JURISDICTION TO JURISDICTION). DELL'S RESPONSIBILITY FOR MALFUNCTIONS AND DEFECTS IN HARDWARE IS LIMITED TO REPAIR AND REPLACEMENT AS SET FORTH IN THIS WARRANTY STATEMENT. ALL EXPRESS AND IMPLIED WARRANTIES FOR THE PRODUCT, INCLUDING BUT NOT LIMITED TO ANY IMPLIED WARRANTIES OF AND CONDITIONS OF MERCHANTIBILITY AND FITNESS FOR A PARTICULAR PURPOSE, ARE LIMITED IN DURATION TO THE WARRANTY PERIOD SET FORTH ABOVE AND NO WARRANTIES, WHETHER EXPRESS OR IMPLIED, WILL APPLY AFTER SUCH PERIOD.

SOME STATES (OR JURISDICTIONS) DO NOT ALLOW LIMITATIONS ON HOW LONG AN IMPLIED WARRANTY LASTS, SO THE PRECEDING LIMITATION MAY NOT APPLY TO YOU.

DELL DOES NOT ACCEPT LIABILITY BEYOND THE REMEDIES SET FORTH IN THIS WARRANTY STATEMENT OR LIABILITY FOR INCIDENTAL OR CONSEQUENTIAL DAMAGES, INCLUDING WITHOUT LIMITATION ANY LIABILITY FOR PRODUCTS NOT BEING AVAILABLE FOR USE OR FOR LOST DATA OR SOFTWARE.

SOME STATES (OR JURISDICTIONS) DO NOT ALLOW THE EXCLUSION OR LIMITATION OF INCIDENTAL OR CONSEQUENTIAL DAMAGES, SO THE PRECEDING EXCLUSION OR LIMITATION MAY NOT APPLY TO YOU.

These provisions apply to Dell's limited three-year warranty only. For provisions of any service contract covering your system, refer to your invoice or the separate service contract that you will receive.

If Dell elects to exchange a system or component, the exchange will be made in accordance with Dell's Exchange Policy in effect on the date of the exchange. In any instance in which Dell issues a Return Material Authorization Number, Dell must receive the product(s) for repair prior to the expiration of the warranty period in order for the repair(s) to be covered by the warranty.

NOTE: If you chose one of the available warranty and service options in place of the standard limited three-year warranty described in the preceding text, the option you chose will be listed on your invoice.

Limited Three-Year Warranty (Canada Only)

Dell Computer Corporation ("Dell") manufactures its hardware products from parts and components that are new or equivalent to new in accordance with industry-standard practices. Dell warrants that the hardware products it manufactures will be free from defects in materials and workmanship. The warranty term is three years beginning on the date of invoice, as described in the following text.

Damage due to shipping the products to you is covered under this warranty. Otherwise, this warranty does not cover damage due to external causes, including accident, abuse, misuse, problems with electrical power, servicing not authorized by Dell, usage not in accordance with product instructions, failure to perform required preventive maintenance, and problems caused by use of parts and components not supplied by Dell.

This warranty does not cover any items that are in one or more of the following categories: software; external devices (except as specifically noted); accessories or parts added to a Dell system after the system is shipped from Dell; accessories or parts added to a Dell system through Dell's system integration department; accessories or parts that are not installed in the Dell factory; or DellWare products. Monitors, keyboards, and mice that are Dell-branded or that are included on Dell's standard price list are covered under this warranty; all other monitors, keyboards, and mice (including those sold through the DellWare program) are not covered. Batteries for portable computers are covered only during the initial one-year period of this warranty.

Coverage During Year One

During the one-year period beginning on the invoice date, Dell will repair or replace products covered under this limited warranty that are returned to Dell's facility. To request warranty service, you must call Dell's Customer Technical Support within the warranty period. Refer to Chapter 7, "Getting Help," to find the appropriate telephone number for obtaining customer assistance. If warranty service is required, Dell will issue a Return Material Authorization Number. You must ship the products back to Dell in their original or equivalent packaging, prepay shipping charges, and insure the shipment or accept the risk of loss or damage during shipment. Dell will ship the repaired or replacement products to you freight prepaid if you use an address in Canada, where applicable. Shipments to other locations will be made freight collect.

NOTE: Before you ship the product(s) to Dell, back up the data on the hard-disk drive(s) and any other storage device(s) in the product(s). Remove any removable media, such as diskettes, CDs, or PC Cards. Dell does not accept liability for lost data or software.

Dell owns all parts removed from repaired products. Dell uses new and reconditioned parts made by various manufacturers in performing warranty repairs and building replacement products. If Dell repairs or replaces a product, its warranty term is not extended.

Coverage During Years Two and Three

During the second and third years of this limited warranty, Dell will provide, on an exchange basis and subject to Dell's Exchange Policy in effect on the date of the exchange, replacement parts for the Dell hardware product(s) covered under this limited warranty when a part requires replacement. You must report each instance of hardware failure to Dell's Customer Technical Support in advance to obtain Dell's concurrence that a part should be replaced and to have Dell ship the replacement part. Dell will ship parts (freight prepaid) if you use an address in the continental U.S. or Canada, where applicable. Shipments to other locations will be made freight collect. Dell will include a prepaid shipping container with each replacement part for your use in returning the replaced part to Dell. Replacement parts are new or reconditioned. Dell may provide replacement parts made by various manufacturers when supplying parts to you. The warranty term for a replacement part is the remainder of the limited warranty term.

You will pay Dell for replacement parts if the replaced part is not returned to Dell. The process for returning replaced parts, and your obligation to pay for replacement parts if you do not return the replaced parts to Dell, will be in accordance with Dell's Exchange Policy in effect on the date of the exchange.

You accept full responsibility for your software and data. Dell is not required to advise or remind you of appropriate backup and other procedures.

General Provisions

DELL MAKES NO EXPRESS WARRANTIES OR CONDITIONS BEYOND THOSE STATED IN THIS WARRANTY STATEMENT. DELL DISCLAIMS ALL OTHER WARRANTIES AND CONDITIONS, EXPRESS OR IMPLIED, INCLUDING WITHOUT

LIMITATION IMPLIED WARRANTIES AND CONDITIONS OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. SOME STATES (OR JURISDICTIONS) DO NOT ALLOW LIMITATIONS ON IMPLIED WARRANTIES OR CONDITIONS, SO THIS LIMITATION MAY NOT APPLY TO YOU.

DELL'S RESPONSIBILITY FOR MALFUNCTIONS AND DEFECTS IN HARDWARE IS LIMITED TO REPAIR AND REPLACEMENT AS SET FORTH IN THIS WARRANTY STATEMENT. THESE WARRANTIES GIVE YOU SPECIFIC LEGAL RIGHTS, AND YOU MAY ALSO HAVE OTHER RIGHTS, WHICH VARY FROM STATE TO STATE (OR JURISDICTION TO JURISDICTION).

DELL DOES NOT ACCEPT LIABILITY BEYOND THE REMEDIES SET FORTH IN THIS WARRANTY STATEMENT OR LIABILITY FOR INCIDENTAL OR CONSEQUENTIAL DAMAGES, INCLUDING WITHOUT LIMITATION ANY LIABILITY FOR PRODUCTS NOT BEING AVAILABLE FOR USE OR FOR LOST DATA OR SOFTWARE.

SOME STATES (OR JURISDICTIONS) DO NOT ALLOW THE EXCLUSION OR LIMITATION OF INCIDENTAL OR CONSEQUENTIAL DAMAGES, SO THE PRECEDING EXCLUSION OR LIMITATION MAY NOT APPLY TO YOU.

These provisions apply to Dell's limited three-year warranty only. For provisions of any service contract covering your system, refer to your invoice or the separate service contract that you will receive.

If Dell elects to exchange a system or component, the exchange will be made in accordance with Dell's Exchange Policy in effect on the date of the exchange. In any instance in which Dell issues a Return Material Authorization Number, Dell must receive the product(s) for repair prior to the expiration of the warranty period in order for the repair(s) to be covered by the warranty.

NOTE: If you chose one of the available warranty and service options in place of the standard limited three-year warranty described in the preceding text, the option you chose will be listed on your invoice.

"Total Satisfaction" Return Policy (U.S. and Canada Only)

If you are an end-user customer who bought new products directly from a Dell company, you may return them to Dell within 30 days of the date of invoice for a refund or credit of the product purchase price. If you are an end-user customer who bought reconditioned or refurbished products from a Dell company, you may return them to Dell within 14 days of the date of invoice for a refund or credit of the product purchase price. In either case, the refund or credit will not include any shipping and handling charges shown on your invoice. If you are an organization that bought the products under a written agreement with Dell, the agreement may contain different terms for the return of products than specified by this policy.

To return products, you must call Dell Customer Service to receive a Credit Return Authorization Number. Refer to the chapter titled "Getting Help" in your system's troubleshooting documentation or, for some systems, the section titled "Contacting Dell" in your system's online guide to find the appropriate telephone number for

obtaining customer assistance. To expedite the processing of your refund or credit, Dell expects you to return the products to Dell in their original packaging within five days of the date that Dell issues the Credit Return Authorization Number. You must also prepay shipping charges and insure the shipment or accept the risk of loss or damage during shipment. You may return software for refund or credit only if the sealed package containing the diskette(s) or CD(s) is unopened. Returned products must be in as-new condition, and all of the manuals, diskette(s), CD(s), power cables, and other items included with a product must be returned with it. For customers who want to return, for refund or credit only, either applications software or an operating system that has been installed by Dell, the whole system must be returned, along with any media and documentation that may have been included in the original shipment.

This "Total Satisfaction" Return Policy does not apply to DellWare products, which may be returned under DellWare's then-current return policy. In addition, reconditioned parts purchased through Dell Spare Parts Sales in Canada are nonreturnable.

Year 2000 Statement of Compliance for Dell-Branded Hardware Products

Dell-branded hardware products shipped on or after January 1, 1997, are eligible to carry the "NSTL Hardware Tested Year 2000 Compliant" logo by virtue of formal testing with, and successful completion of, the National Software Testing Laboratories (NSTL) YMARK2000 test.* Dell will treat a failure to pass the YMARK2000 test as a covered event under Dell's warranty for the product, subject to the normal warranty limitations.** For a complete copy of Dell's warranty, see the product's documentation. Dell-branded hardware products will also recognize the year 2000 as a leap year.

*The YMARK2000 standard tests the ability of system hardware and firmware to support the transition to the year 2000 (and to recognize leap years, when appropriate, for years 2000 through 2009 inclusive) and not that of options, operating systems, or applications software. Dell-branded hardware products that pass the YMARK2000 test conform to BSI-DISC PD 2000-1.

** Except for this clarification of Dell's warranty for NSTL logo hardware, all other warranties, conditions and remedies, express or implied, relating to year 2000 readiness or compliance are disclaimed. To make a claim under this warranty for NSTL logo hardware, customers must contact Dell prior to January 1, 2001. To make a claim, write to:

Dell Computer Corporation
P.O. Box 149258
Austin, Texas 78714-9258
Attention: Year 2000

Despite a system's ability to pass the YMARK2000 test, actual rollover results in specific operating environments may vary depending on other factors including, but not limited to, other hardware, operating systems, and applications software.

Previous Products

For Dell-branded hardware products shipped prior to January 1, 1997, that have an upgradable basic input/output system (BIOS), Dell makes available a BIOS upgrade. Although these products may not have been tested under the YMARK2000 test, Dell believes that the hardware would pass the YMARK2000 test, provided the appropriate BIOS upgrade is properly loaded.

For Dell-branded hardware products that do not have an upgradable BIOS, Dell has made available, as a convenience to customers, the Dell Program Patch, a software utility designed to assist customers in managing the year 2000 rollover.

Software

Dell specifically excludes all non-Dell-developed software from this compliance statement. All software run on Dell-branded hardware products should be independently verified by customers to be year 2000-compliant.

Additional Information

For additional information on year 2000 compliance of Dell-branded hardware products, refer to Dell's Year 2000 Web site at **http://www.dell.com/year2000** or contact a Dell customer service representative in your area.

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Dell Information Development

Postscript Imaging and Printing Specs

JOB TITLE:	Dell Demension LxxxcSystems Reference and Troubleshooting Guide (s:\systems\columbus\ref\3558p\A01)
LANGUAGES:	English
PART NUMBER:	3558P Rev. A01 Checked in EMPACT: Currently X00
PREPARED BY:	Gloria Salinas
CONTACT:	Donna Moore 512-728-3439 Sue Farr 512-728-3932
EMAIL ADDRESS:	Donna_Moore@dell.com Sue_Farr@dell.com
VENDOR:	IPC/EMF/APCC
DATE:	06/21/99

COMPUTER SOURCE:	Dell PC
APPLICATION SOFTWARE:	FrameMaker Version 5.5.2
POSTSCRIPT FILES:	Yes/Yes/Yes
POSTCRIPT DRIVER USED:	Body: Linotronic 330 Full Cover: HP LaserJet 4V/4MV PostScript
COLOR SEPARATED FILES:	No
COMPRESSED & TESTED:	Yes/Yes/Yes
PAGE SIZE:	7.5 x 9 inches
PAGE ORIENTATION:	Portrait
LINE SCREEN:	133 lpi
TRANSPORT MEDIA:	FTP/FTP/FTP
HALFTONES/SCREENS/	No
DUOTONES:	Yes Black and PMS 286
COLOR(S):	Cover - Black, Pantone 130CV, Pantone 286CV (duotone: Black and PMS 286) Text - Black, PMS 300CV
COLOR MARKUP PROVIDED:	No

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For questions or problems with files contact:
Donna Moore - Graphic Development
Dell Computer Corporation (512) 728-3439

Dell Information Development

Postscript Imaging and Printing Specs

FILE NAME(S) & PAGE COUNT:	Section	Filename	Page Count	Page Number
	Title Page	3558Ptp1.ps	2	(incl. blank inside)
	Safety	3558Psi1.ps	4	v-viii
	Preface	3558Ppr1.ps	4	ix-xii
	TOC	3558Ptc1.ps	8	xiii-xx
	Chapter 1	3558Pc11.ps	8	1-1 - 1-8
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	Appendix D	3558Pad1.ps	8	d-1 - d-8
	Appendix E	3558Pae1.ps	8	e-1 - e-8
	Index	3558Pix1.ps	6	1-6
	AMF Full Cover	3558Pam1.ps	2	(incl. blank inside)
	Or	or		
	EMF Full Cover	3558Pem1.ps		
	APCC Full Cover	3558Pap1.ps		
TOTAL PAGE COUNT:			174	

SPECIAL INSTRUCTIONS:	Add blank pages needed to complete signatures.

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Dell Computer Corporation (512) 728-3439