Dell™ Inspiron™ 2000 System

REFERENCE AND TROUBLESHOOTING GUIDE

Safety Instructions

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

⚠️ **CAUTION: Do not allow your portable computer to operate with the base resting directly on exposed skin. With extended operation, heat can potentially build up in the base. Allowing sustained contact with the skin could cause discomfort or, eventually, a burn.**

- Do not attempt to service the computer yourself. Always follow installation instructions closely.

- Do not carry a battery pack in your pocket, purse, or other container where metal objects (such as car keys) could short-circuit the battery terminals. The resulting excessive current flow can cause extremely high temperatures and may result in damage from burns.

- Be sure that nothing rests on your AC adapter's power cable and that the cable is not located where it can be tripped over or stepped on.

- Place the AC adapter in a ventilated area, such as a desk top or on the floor, when you use it to run the computer or to charge the battery. Do not cover the AC adapter with papers or other items that will reduce cooling; also, do not use the AC adapter inside a carrying case.

- Do not use your computer in a wet environment, for example, near a bathtub, sink, or swimming pool or in a wet basement.

- Do not push objects into air vents or openings of your computer. Doing so can cause fire or electric shock by shorting out interior components.

- Use only the AC adapter and batteries that are approved for use with this computer as indicated in this document. Use of another type of battery pack or AC adapter may risk fire or explosion.

- Before you connect the computer to a power source, ensure that the voltage rating of the AC adapter matches that of the available power source:

    — 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

- To help prevent electric shock, plug the AC adapter and peripheral power cables into properly grounded power sources. These cables are equipped with 3-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 3-wire cable with properly grounded plugs.

- If you use an extension cable with your AC adapter, ensure that the total ampere rating of the products plugged in to the extension cable does not exceed the ampere rating of the extension cable.

- To remove power from the computer, turn it off, remove the battery pack, and disconnect the AC adapter from the electrical outlet.

- If your computer includes an integrated or optional (PC Card) modem, disconnect the modem cable during an electrical storm to avoid the remote risk of electric shock from lightning via the telephone line.

   NOTICE: Do not connect an analog telephone line to the network interface controller (NIC) connector. Doing so will damage the computer.

- To help avoid the potential hazard of electric shock, do not connect or disconnect any cables or perform maintenance or reconfiguration of this product during an electrical storm.

- PC Cards may become very warm during normal operation. Use care when removing PC Cards after their continuous operation.

- Do not dispose of battery packs in a fire. They may explode. Check with local authorities for disposal instructions.

- When traveling, do not check the computer as baggage. You can put your computer through an X-ray security machine, but *never* put your computer through a metal detector. If you have the computer checked by hand, be sure to have a charged battery available in case you are asked to turn on the computer.

- When traveling with the hard-disk drive removed from the computer, wrap the drive in a nonconducting material, such as cloth or paper. If you have the drive checked by hand, be ready to install the drive in the computer. You can put the hard-disk drive through an X-ray security machine, but *never* put the drive through a metal detector.

- When traveling, do not place the computer in overhead storage compartments where it could slide around. Do not drop your computer or subject it to other mechanical shocks.

- Protect your computer, battery, and hard-disk drive from environmental hazards such as dirt, dust, food, liquids, temperature extremes, and overexposure to sunlight.

- When you move your computer between environments with very different temperature and/or humidity ranges, condensation may form on or within the computer. To avoid damaging the computer, allow sufficient time for the moisture to evaporate before using the computer.

   NOTICE: When taking the computer from low-temperature conditions into a warmer environment or from high-temperature conditions into

a cooler environment, allow the computer to acclimate to room temperature before turning on power.

- When you disconnect a cable, pull on its connector or on its strain-relief loop, not on the cable itself. As you pull out the connector, keep it 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 with care. Hold a component such as a memory module by its edges, not its pins.

- Before you clean your computer, turn it off, unplug it from its power source, and remove the battery pack(s).

- Clean your computer with a soft cloth dampened with water rather than with liquid or aerosol cleaners.

- Clean the display with a soft, clean cloth and commercial window cleaner that does not contain wax or abrasives. Apply the cleaner to the cloth; then stroke the cloth across the display in one direction, moving from the top of the display to the bottom. If the display contains grease or some other contaminant, use isopropyl alcohol instead of commercial window cleaner.

- If your computer gets wet or is damaged, follow the procedures described in Chapter 3, "Basic Troubleshooting." If, after following these procedures, you confirm that your computer is not operating properly, contact Dell Computer Corporation. (See Chapter 5, "Getting Help," for the appropriate telephone number.)
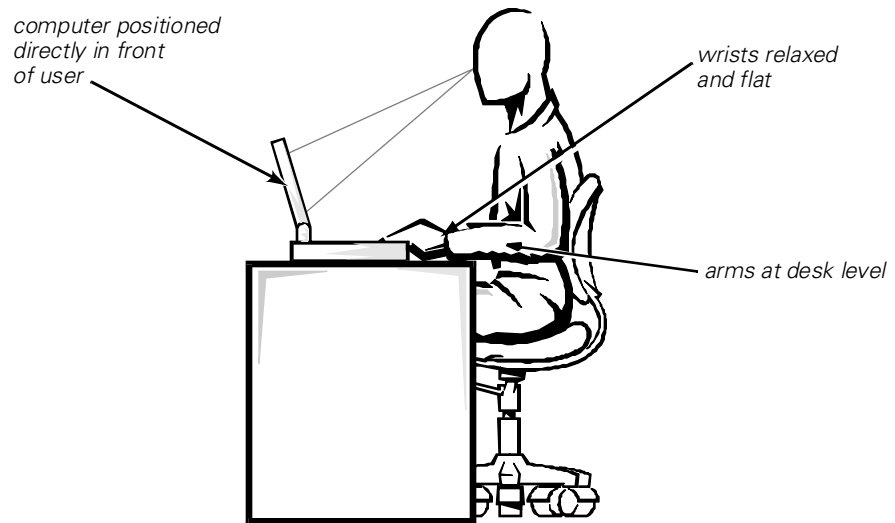
Ergonomic Computing Habits

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

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

computer positioned directly in front of user

wrists relaxed and flat

arms at desk level

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

- When setting up the computer for work, place it on a level surface.

- Position your computer directly in front of you as you work.

- Adjust the tilt of the computer's display, its contrast and/or 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 display.

- When using an external monitor with your computer, 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.

- 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, trackball, touch pad, or external mouse.

- Always use the palmrest with the keyboard, touch pad, or trackball. Leave space to rest your hands when using an external 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.

Protecting Against Electrostatic Discharge

Static electricity can harm electronic 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 a memory module. You can do so by touching an unpainted metal surface on the computer's I/O panel.

As you continue to work inside the computer, periodically touch an I/O connector 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. Just before unwrapping the antistatic packaging, be sure to discharge static electricity from your body.

- When transporting a sensitive component, first place it in an antistatic container or packaging.

- Handle all sensitive components in a static-safe area. If possible, use antistatic floor pads and workbench pads.

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

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

x

Preface

About This Guide

This guide is intended for anyone who uses a Dell portable computer. It can be used by both first-time and experienced computer users who want to learn about the features of the computer. This guide also provides basic troubleshooting procedures and instructions for using the Dell Diagnostics to test your computer and its components.

Summaries of the chapters and appendixes of this guide follow:

- Chapter 1, "Introduction," provides an overview of the computer features and a list of available upgrades.

- Chapter 2, "Options and Upgrades," describes the installation procedures for the options and upgrades available from Dell for your computer.

- Read Chapter 3, "Basic Troubleshooting," for some initial checks and procedures that you can use to solve basic computer problems and for some general guidelines on analyzing software problems.

- Chapter 4, "System Software Solutions," provides detailed instructions for reinstalling system drivers and software.

- Chapter 5, "Getting Help," describes the help tools Dell provides to assist you if you have a problem with the computer. It also explains how and when to call Dell for technical assistance.

- Appendix A, "Technical Specifications," is intended primarily as reference material if you are interested in learning more about the details of your computer.

- Read Appendix B, "Using the System Setup Program," to learn how to access the system setup program, which allows you to change system settings, such as your computer's power conservation features.

- Appendix C, "Error Messages," defines system messages and error codes.

- Appendix D, "Regulatory Notices," is for users who are interested in which regulatory agencies have tested and approved your computer.

- Appendix E, "Limited Warranty, Return Policy, and Year 2000 Statement of Compliance," describes the warranty for your Dell computer, the "Total Satisfaction" Return Policy, and the year 2000 compliance of Dell-branded hardware products.

Limited 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 and return policy, see Appendix E, "Limited Warranty, Return Policy, and Year 2000 Statement of Compliance."

Other Documents You May Need

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

- The *Setup Guide* provides instructions for setting up a Dell Inspiron computer and for using your computer's hardware.

- The system *Help* contains essential information you need to use your computer.

    To open the *Help*, click the **Start** button, point to **Programs—> Dell Documents**, and click **Dell Inspiron 2000 System Help**.

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

- Information updates describing changes to your computer or software.

    *NOTE: Always read any included update **before** consulting any other documentation because the updates contain the latest information.*

- Operating system documentation is included if Dell installed the operating system on your hard-disk drive. This documentation describes how to configure and use your operating system software.

Notational Conventions

The following subsections list 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*, the labeling that appears on the keys on a keyboard, are enclosed in angle brackets.

  Example: <Enter>

- *Key combinations* are series of keys to be pressed simultaneously (unless otherwise indicated) to perform a single function.

  Example: <Ctrl><Alt><Enter>

- *Commands* presented in lowercase bold are for reference purposes only and are not intended to be typed at that particular point in the discussion.

  Example: "Use the **setup** command to . . . ."

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

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

- *Filenames* and *directory names* are presented in lowercase bold.

  Examples: **autoexec.bat** and **c:\windows**

- *Syntax lines* consist of a command and all its possible parameters. Commands are displayed in lowercase bold; variable parameters (those for which you substitute a value) are displayed in lowercase italics; constant parameters are displayed in lowercase bold. The brackets indicate items that are optional.

  Example: **del** [*drive:*] [[*path*]*filename*] [**/p**]

- *Command lines* consist of a command and may include one or more of the command's possible parameters. Command lines are presented in the Courier New font.

  Example: del c:\myfile.doc

- *Screen text* is text that appears on the screen of your display or external monitor. It can be a system message, for example, or it can be 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
    ```

- *Variables* are symbols for which you substitute a value. They are presented in italics.

    Example: module *n* (where *n* represents the memory module number)

Contents

Appendix E   *Limited Warranty, Return Policy, and Year 2000 Statement of Compliance E-1*

Index

Figures

Tables

C H A P T E R   1
Introduction

This chapter provides information about the major hardware and software features of your computer, as well as available upgrades.

Hardware Features

Your computer includes the following hardware features:

- An Intel® mobile microprocessor incorporating the latest processor technology.

- A minimum of 64 megabytes (MB) of synchronous dynamic random access memory (SDRAM) system memory, with support for a maximum of 128 MB.

- An external media bay in which you can install a variety of modules, including a diskette drive, CD-ROM drive, DVD-ROM drive (on computers running Microsoft® Windows® 98 Second Edition), or a SuperDisk LS-120 drive.

  NOTES: Your computer was shipped with a diskette drive in the external media bay. For information on removing the diskette drive and installing a different device in the bay, see "Using the External Media Bay" in Chapter 2.

  Because the Microsoft Windows NT® operating system does not support DVD technology, the DVD-ROM drive is available only on computers that use the Windows 98 Second Edition operating system.

- A 256-bit hardware-accelerated NeoMagic NM2200 accelerated graphics port (AGP) video controller with 2.5 MB of video memory.

- An active-matrix super extended graphics array (SXGA) thin-film transistor (TFT) color display.

- NeoMagic NMG5 + AC97 CODEC audio controller with hardware wavetable support and 3D surround sound.

- Integrated stereo speakers and microphone.

- Connectors for connecting external speakers, headphones, or an external microphone to the computer.

- Ultra direct memory access (DMA)/33 data transfer protocol for Advanced Technology Attachment (ATA)/integrated drive electronics (IDE) hard-disk drive interface. Ultra DMA/33 allows data transfer rates of up to 33 MB/sec.

- An integrated keyboard that includes two special keys that support the Windows operating systems.

- A Personal System/2 (PS/2)-compatible touch pad that gives your computer full mouse functionality.

- Universal Serial Bus (USB) capability, which simplifies connecting peripheral devices such as mice, printers, and computer speakers. The USB connector on your computer's back panel provides a single connection point for multiple USB-compliant devices such as keyboards, mice, printers, and computer speakers. Also, you can connect and disconnect USB-compliant devices while the computer is running.

NOTES: Windows NT does not support USB functions.

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 lithium-ion battery in the battery bay.

NOTICE: Do not puncture or incinerate the battery. When your battery no longer holds a charge, call your local waste disposal agency or environmental agency for advice on disposing of the computer's lithium-ion battery. The lithium-ion technology used in the battery is significantly less hazardous to the environment than the lithium metal technology used in some other batteries (such as watch batteries).

- A PC Card slot with one connector for a 3.3- or 5-volt (V) PC Card. The PC Card connector supports zoomed video (ZV) port cards.

NOTES: The PC Card controller supports the CardBus standard for 32-bit data transfer on the PC Card.

Windows NT does not support zoomed video.

- One high-performance serial port connector.

- One parallel port connector that can be set to unidirectional, bidirectional, or Extended Capabilities Port (ECP) mode.

- One PS/2 keyboard/mouse port connector.

- An integrated 56-kilobits per second (Kbps) v.90 controllerless modem with support for telephone hardware worldwide.

- An integrated 3Com® 10/100-BASETX Peripheral Component Interconnect (PCI) bus master Ethernet network interface controller (NIC).

- A security cable connector to which you can attach a commercially available security cable to prevent unauthorized removal of the computer.

- Two power conservation modes—*standby mode* and *save-to-disk suspend mode*—that help you conserve battery power. If the batteries run out of power, save-to-disk suspend mode prevents data loss by copying all system data to the hard-disk drive and turning off the computer.

- An automatic thermal management system that uses a variable-speed fan and microprocessor speed changes to keep the computer running at the optimum temperature.

⚠️ **CAUTION: Do not allow your computer to operate with the base resting directly on exposed skin. With extended operation, heat can potentially build up in the base. Allowing sustained contact with the skin could cause discomfort or, eventually, a burn.**

Front View of the Computer
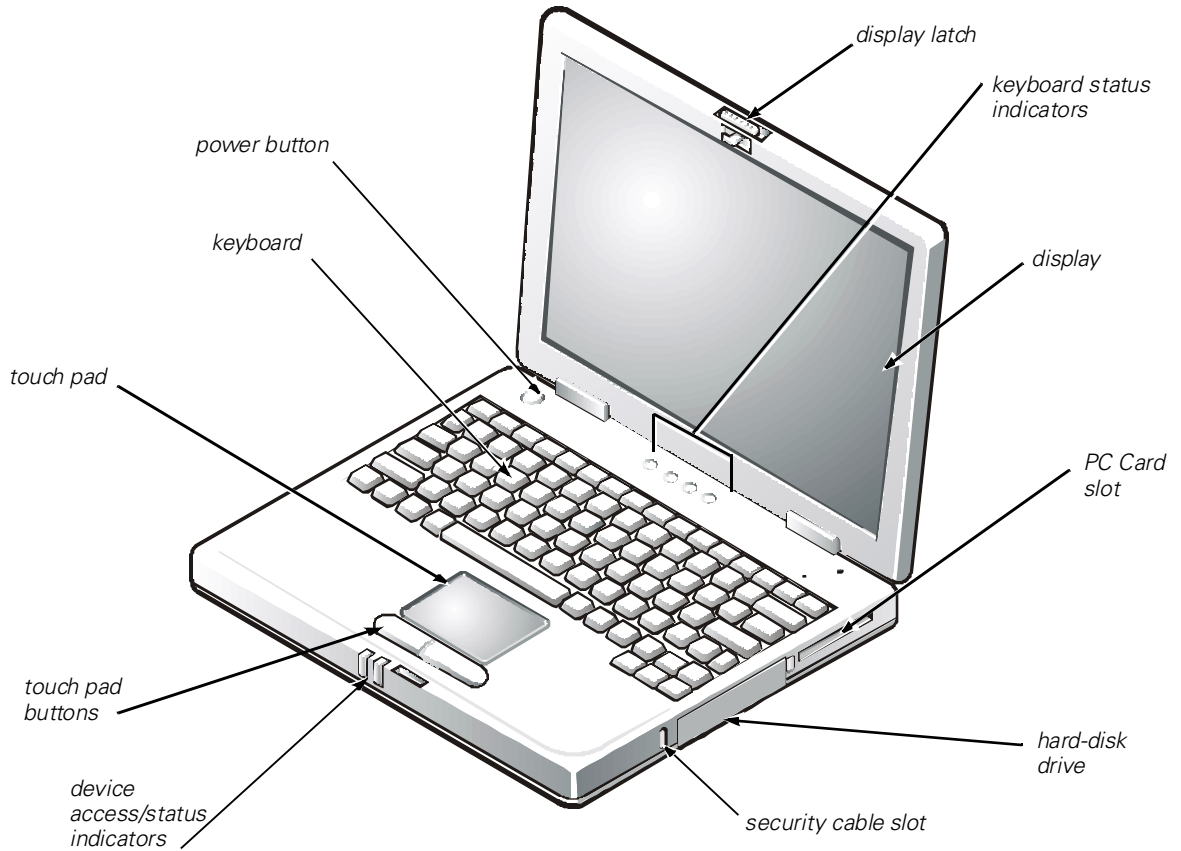
Figure 1-1. Front View of the Computer

Back View of the Computer

modem connector

NIC connector

video connector

parallel port connector

external media bay cable connector

AC adapter connector

PS/2 connector

air inlet

fan intake/ exhaust vents

USB connector

speaker jack

microphone jack

external media bay
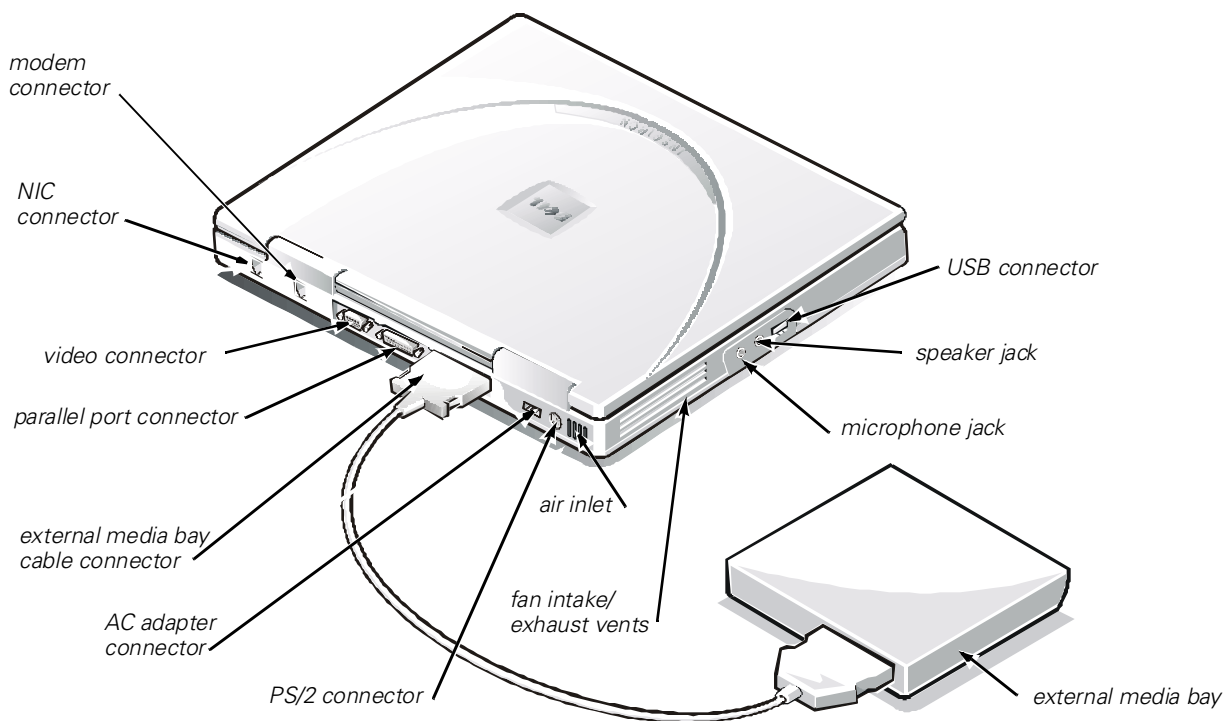
Figure 1-2. Back View of the Computer

Bottom View of the Computer
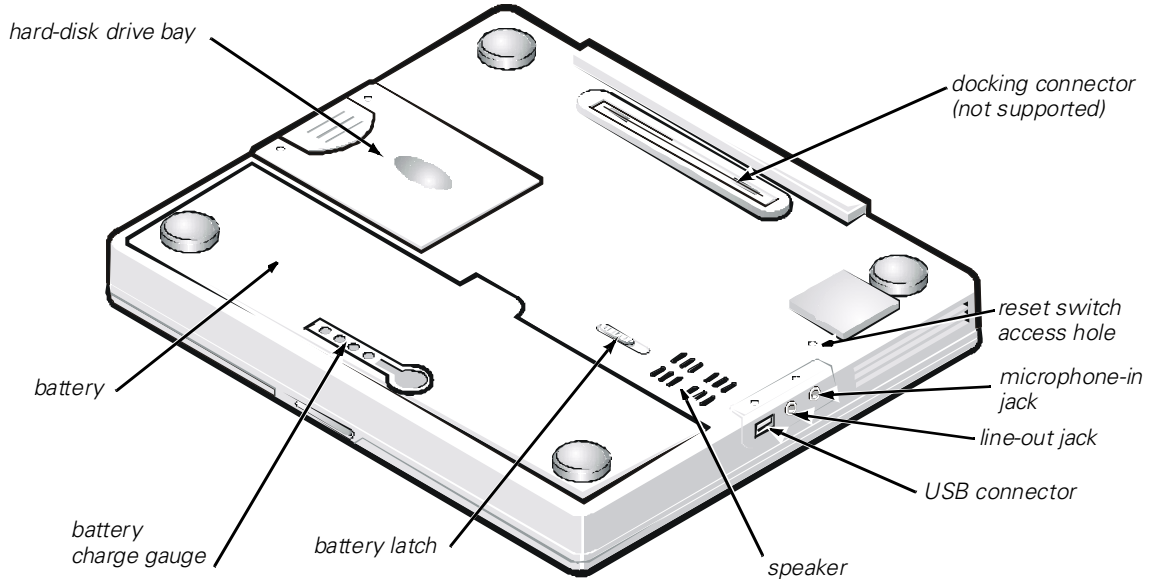
Figure 1-3. Bottom View of the Computer

Software Features

Your computer includes the following software features:

- Microsoft Windows 98 Second Edition or Windows NT operating system installed on your hard-disk drive.

- Virus-scanning software for computers that ship with Windows 98.

- A standard set of video drivers provided for supporting video resolutions greater than 640 x 480 pixels.

- Audio utilities for computers with integrated audio capabilities.

- Drivers that tell your computer how to communicate with various types of hardware devices, such as CD-ROM drives or speakers. If you need to reinstall these drivers, or if you installed your own operating system, use the *System Software* CD that accompanied your computer. Instructions for installing the drivers are provided in Chapter 4, "System Software Solutions."

NOTE: The drivers on the System Software CD are the ones Dell installed on your hard-disk drive before shipping the computer to you. To download the latest

*version of these drivers from the following Dell Web site, **http://www.dell.com/ support**, click **File Library**, and then select your computer model.*

- Optional software DVD decoder driver on computers that use the Microsoft Windows 98 Second Edition operating system.

  NOTE: Windows NT does not support the DVD decoder driver.

- Two power conservation modes—*standby mode* and *save-to-disk suspend mode*—that help you conserve battery power. If the batteries run out of power, save-to-disk suspend mode prevents data loss by copying all system data to the hard-disk drive and turning off the computer.

- The system setup program for quickly viewing and changing system configuration information. For information on using the system setup program, refer to Appendix B, "Using the System Setup Program."

- Dell Diagnostics for evaluating the computer's components and devices. For information on using the diagnostics, refer to "Running the Dell Diagnostics" in Chapter 3.

ENERGY STAR® Compliance

Certain configurations of Dell computer systems comply with the requirements set forth by the Environmental Protection Agency (EPA) for energy-efficient computers. If the front panel of your computer bears the ENERGY STAR® Emblem (see Figure 1-4), your original configuration complies with these requirements and all ENERGY STAR® power management features of the computer are enabled.

NOTES: As an ENERGY STAR® Partner, Dell Computer Corporation has determined that this product meets the ENERGY STAR® guidelines for energy efficiency.

*Any Dell computer bearing the ENERGY STAR® Emblem is certified to comply with EPA ENERGY STAR® requirements **as configured when shipped by Dell**. Any changes you make to this configuration (such as installing additional expansion cards or drives) may increase the system's power consumption beyond the limits set by the EPA's ENERGY STAR® Computers program.*

Figure 1-4. ENERGY STAR® Emblem

The EPA's ENERGY STAR® Computers program is a joint effort between the EPA and computer manufacturers to reduce air pollution by promoting energy-efficient computer products. The EPA estimates that use of ENERGY STAR computer products can save computer users up to two billion dollars annually in electricity costs. In turn, this

reduction in electricity usage can reduce emissions of carbon dioxide, the gas primarily responsible for the greenhouse effect, and sulfur dioxide and nitrogen oxides, which are the two primary causes of acid rain.

Computer users can also help to reduce electricity usage and its side effects by turning off their computer systems when they are not in use for extended periods of time—particularly at night and on weekends.

Available Options and Upgrades

Dell offers the following upgrade options:

- Additional batteries
- External pointing devices, keyboards, and a numeric keypad
- External monitors
- External speakers, headphones, and microphones
- Printers
- Hard-disk drives
- DVD-ROM drives
- SuperDisk LS-120 drives
- AC adapter
- PC Cards
- Carrying case

To order any of these options or upgrades, call Dell. For instructions, see Chapter 5, "Getting Help," or the "Contacting Dell" section of the system *Help*.

Getting Help

If at any time you do not understand a procedure described in this guide, or if your computer does not perform as expected, Dell provides a number of tools to help you. For more information, see Chapter 5, "Getting Help."

C H A P T E R 2
Options and Upgrades

This chapter describes the installation procedures for the options and upgrades available from Dell for your computer.

Using the AC Adapter

The AC adapter converts AC power to the DC power required by the computer. The AC adapter kit includes two cables: the AC adapter cable and an AC power cable (see Figure 2-1).

You can connect the AC adapter with your computer either turned on or off.

The AC adapter works with electrical outlets worldwide. However, power connectors vary among countries. Before you use AC power in a foreign country, you may need to obtain a new power cable designed for use in that country.

NOTE: If you are running your computer on AC power with a battery installed, the AC adapter charges the battery (if needed) and then maintains the battery's charge.

NOTICE: The AC adapter should be in a ventilated area, such as on a desktop or on the floor, when used to power the computer or charge the battery. Do not use the AC adapter in a poorly ventilated environment, such as inside a carrying case.

AC adapter cable

AC adapter connector

AC adapter
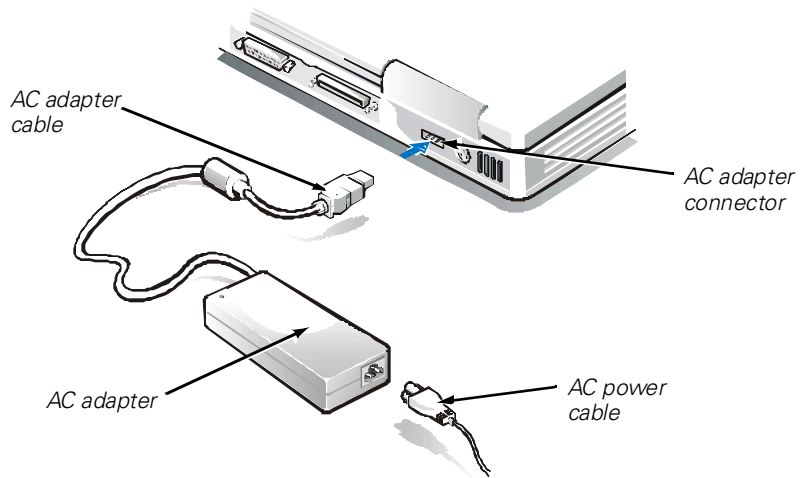
AC power cable

Figure 2-1. Using the AC Adapter

To connect the AC adapter, perform the following steps:

1.   Connect the AC adapter power cable to the AC adapter (see Figure 2-1).

2.   Plug the AC adapter power cable into an electrical outlet.

3.   Plug the AC adapter cable into the AC adapter connector on the computer.

Installing a Battery

Your computer comes with a lithium-ion battery installed in the battery bay. The battery provides power to your computer when AC power is not available.

NOTICE: This battery is designed to work with Dell Inspiron 2000 computers only. To avoid damaging the battery or the computer, do not use the battery with other computers, and do not use a battery from another computer.

To install a battery in the battery bay, perform the following steps:

1.   Save and close any open files, exit any open application programs, and shut down the computer.

NOTICE: To avoid data loss, do not replace a battery while the computer is turned on unless the computer is connected to an electrical outlet.

2. Remove the battery from the battery bay:

    a. Close the computer display and turn the computer over.

    b. Slide the battery bay latch toward the unlock position (see Figure 2-2).

        The battery pops up on one side.

    c. Keep the latch in the unlock position with one hand, and pivot the battery up and out of the bay (see Figure 2-2).

    d. Release the latch after you remove the battery.

3. Position the new battery as shown in Figure 2-2 and lower the outside edge of the battery into the battery compartment.

    Four small tabs on the battery fit into four slots in the side wall of the computer.

battery
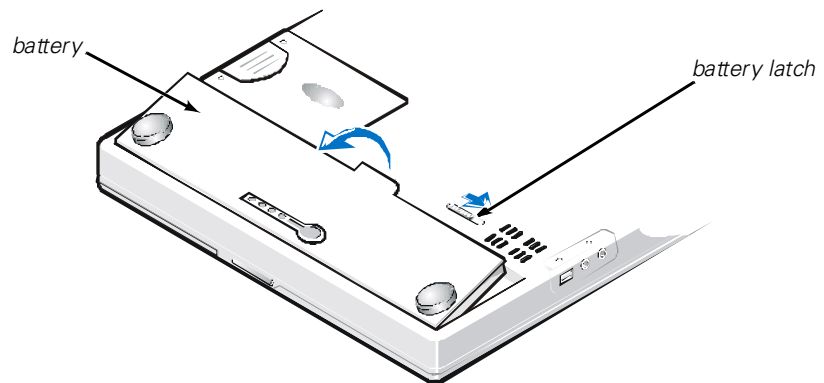
battery latch

Figure 2-2. Removing a Battery

4. Press the battery firmly into place, flush with the surrounding surface.

    Make sure that the battery latch is completely closed before turning the computer right-side up.

Battery Charge Gauge

The battery charge gauge, located on the battery and accessible on the underside of the computer, consists of four indicators and a test button. Each indicator represents 25 percent of full charge. If only one indicator lights up, recharge the battery before using it. See "Percentage of Charge," found later in this chapter.

To check the charge level, press the battery test button (see Figure 2-3). The appropriate number of indicators lights up for a few seconds to indicate the amount of charge remaining in the battery.

battery charge indicators (4)

battery test
button
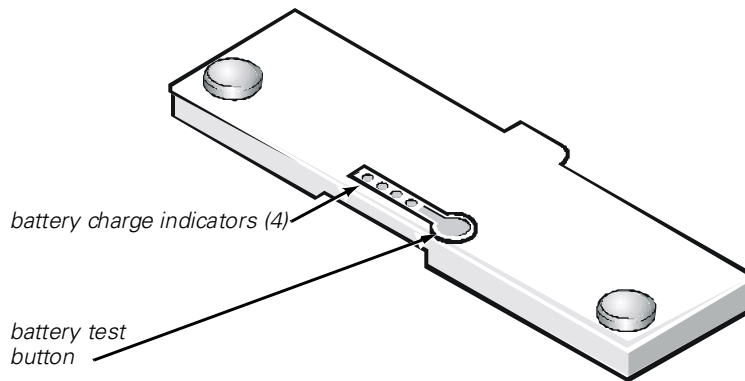
Figure 2-3. Battery Charge Gauge

*NOTE: A charge indicator that blinks rapidly indicates a temporary failure or a poten-
tially recoverable failure such as overheating. Allow the battery to cool for several
minutes before checking the charge level again.*

If the battery has permanently failed or completely discharged, no charge indicators
light when you press the battery test button. If you install a failed or completely dis-
charged battery in the computer and the battery status indicator (in front of the touch
pad) turns red, the battery has failed. If the battery status indicator turns red, allow the
battery to charge overnight and check it the next day. If the battery is fully discharged,
it takes a much longer time than usual to recharge it.

To purchase a new battery, call Dell or access the Dell World Wide Web site at
http://www.dell.com. Dispose of the old battery properly. See "Battery Disposal" in
Appendix D.

Percentage of Charge

The battery charge gauge uses its four indicator lights to show the percent of charge
remaining in the battery:

- If one indicator lights up, the battery has 1 to 25 percent of its charge remaining.

- If two indicators light up, the battery has 26 to 50 percent of its charge remaining.

- If three indicators light up, the battery has 51 to 75 percent of its charge
  remaining.

- If four indicators light up, the battery has 76 to 100 percent of its charge
  remaining.

External Media Bay Cable

You can use the media bay cable (see Figure 2-4) to connect your computer to a device that is either inside or outside the external media bay.

securing clips (2)

media bay cable

external media bay with device installed

securing clips (2)
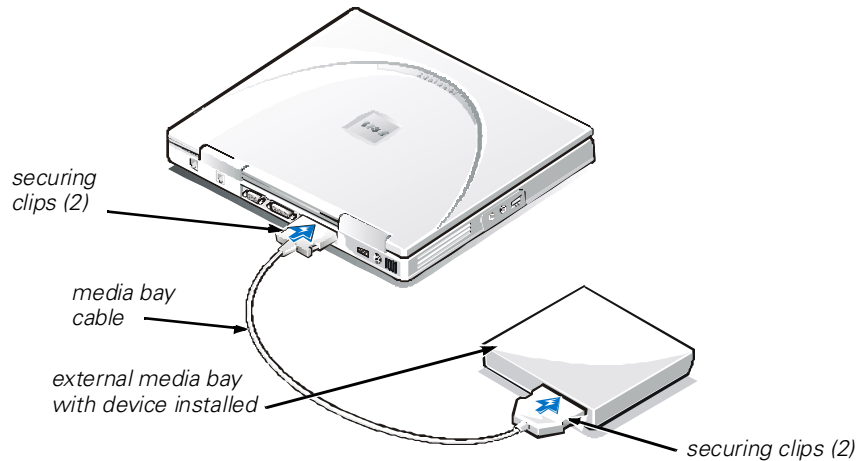
Figure 2-4. External Media Bay Cable

To connect the cable as shown, position the larger cable connector with its shiny metal lip down, and connect it firmly to the device through the slot in the back of the media bay. Connect the other end of the cable to the media bay connector on the computer. For both connections, make sure that the securing clips are fully engaged and the connector is fully seated.

To remove the cable from a device, press in on the securing clips while pulling the connector straight out.

Using the External Media Bay

The media bay supports the following devices:

- Diskette drive
- CD-ROM drive
- DVD-ROM

NOTE: Because the Microsoft Windows NT operating system does not support DVD technology, the DVD-ROM drive is available only on computers that use the Microsoft Windows 98 Second Edition operating system. If you choose to install Windows NT on a computer that originally came with a DVD-ROM drive, the DVD-ROM drive will function as a CD-ROM drive.

- SuperDisk LS-120 drive

When you receive your computer, a diskette drive is installed in the external media bay.

NOTE: You can also use the media bay cable to connect a device directly to the external media bay connector, without using the external media bay.

To install a device in the external media bay, perform the following steps:

1. *If your computer is running with Softex BayManager:* Right-click the Softex icon in the system tray at the bottom right on your display screen (the icon looks like a tiny open portable computer), and click **Insert Bay Devices**.

   If your computer is not running Softex BayManager: Save your work, close all open files and application programs, and turn off the computer.

   NOTICE: When a device is not inside the external media bay, it is fragile and must be handled carefully to avoid damage. Do not press down on it or place a heavy object on top of it. Place extra devices in a travel case to keep them free of dust and liquids. Store devices in a safe place.

2. If the external media bay contains a device (see Figure 2-5), remove the media bay cable from the back of the bay by pressing in on the securing clips while pulling the connector straight out. Then remove the device by sliding the release latch on the bottom of the bay to the release position, holding it there, and pulling the device out of the bay.

3. Slide the new device firmly into the external media bay until you hear a click indicating that the device is fully seated.
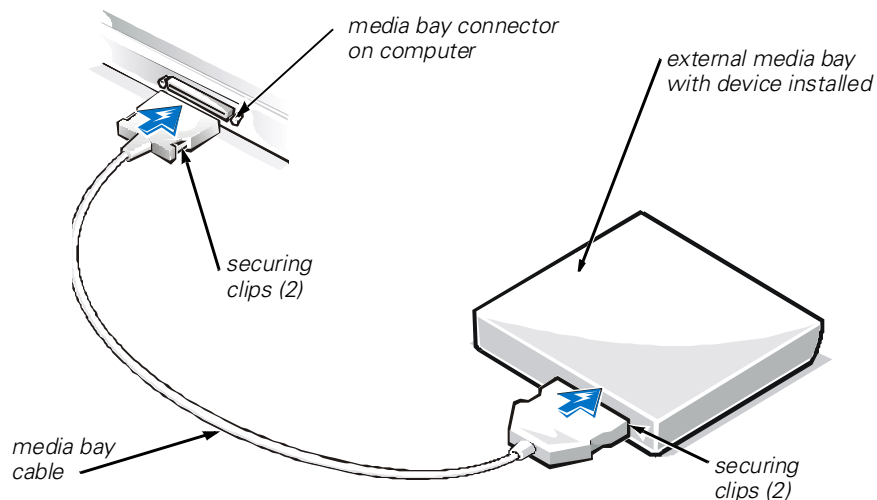
Figure 2-5. Connecting the External Media Bay

NOTICE: To avoid overheating the computer, do not place the external media bay close to any air vents or fan intake/exhaust vents on your computer.

4. *If your computer is running Softex Bay Manager:* Click **OK** at the **Softex Bay Manager** screen. Click **OK** at the **Device Removal** screen (if it appears), and then click **OK** at the **Device Configured** screen.

   If you turned off the computer in step 1: Press the power button to turn the computer back on.

Device Configuration

Some devices require that you configure them before using them for the first time. For more information, see the documentation that came with the device.

Installing Devices With Softex BayManager Software

Your computer may be using Softex BayManager software. This software allows you to change devices in the external media bay while the computer is running. You do not have to shut down or restart the computer for the device to be recognized.

Using the Diskette Drive Module as an External Device

If the external media bay in your computer is already occupied by another device, you can use the diskette drive module as an external device (see Figure 2-6).

NOTICE: Use the diskette drive module cable with the diskette drive module only.

parallel connector on back of computer

diskette drive module cable

diskette drive module
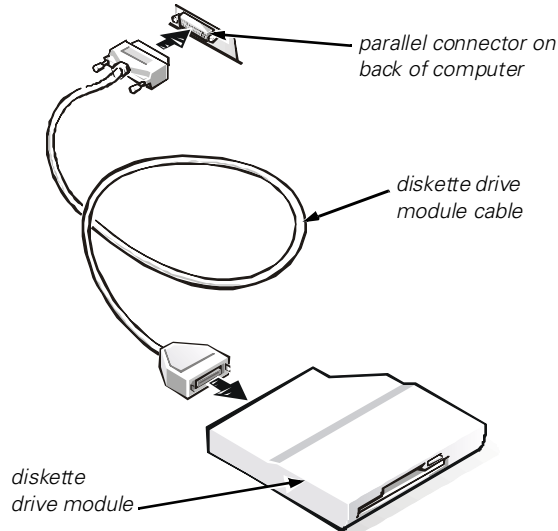
Figure 2-6. Connecting the Diskette Drive Module as an External Device

Use the diskette drive module cable to connect the diskette drive module to the parallel connector on the back of the computer, as illustrated.

Installing an Internal Hard-Disk Drive

Read the following notices carefully before attempting to replace your hard-disk drive:

NOTES: You will need the Microsoft Windows installation CD and the System Software CD to install software on the new hard-disk drive.

The computer's basic input/output system (BIOS) may not support hard-disk drives obtained from vendors other than Dell. Dell does not guarantee compatibility or provide support for hard-disk drives obtained from other sources.

NOTICE: Hard-disk drives are extremely fragile and must be handled carefully. Follow these guidelines when handling hard-disk drives.

NOTICE: The hard-disk drive is installed in a metal carrier to protect the drive and make installation easier. When removing and installing hard-disk drives, handle the drive carrier, not the drive itself.

NOTICE: Never press down on the top of the drive.

NOTICE: Do not drop the drive. Even a slight jar or bump can damage the spinning heads and plates, thus rendering the drive inoperable.

CAUTION: The hard-disk drive may be hot to the touch. Do not touch the metal housing of the hard-disk drive if you remove the drive from the computer when the drive is hot.

1. Save and close any open files, exit any open application programs, and shut down the computer.

   Wait for the computer's power indicator to turn off before continuing this procedure.

2. Close the display, turn the computer over, and then remove the battery.

3. Remove the old hard-disk drive carrier assembly from the drive bay.

   Using a #0 (very small) Phillips-head screwdriver, remove the two screws that secure the drive carrier assembly (see Figure 2-7). Save the screws for use later in this procedure.

   With the computer still upside-down, press down on the drive carrier assembly's three grip lines and pull the assembly straight out to the side to remove it.

bottom of computer
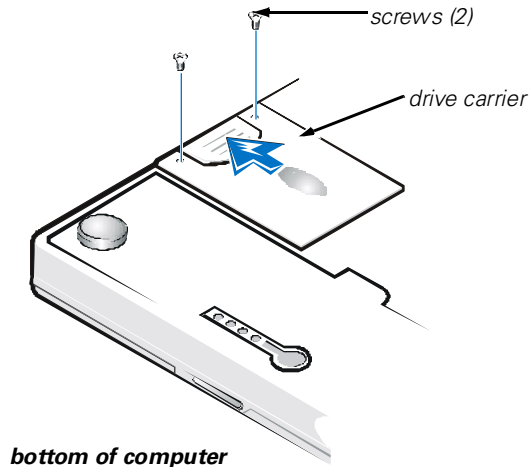
Figure 2-7. Removing the Internal Hard-Disk Drive

4. Remove the new hard-disk drive from its packaging.

    Save the original packaging to use when storing or shipping the hard-disk drive.

NOTICE: If the drive does not slide easily into the drive bay, pull it out and try again. Do not force the drive into the drive bay.

NOTICE: Be sure that the screws are set straight into the holes. Do not try to tighten the screws if they are angled into the holes. If the screws do not tighten easily, remove them and try again. Do not overtighten the screws.

5. Install the new hard-disk drive into the computer (the drive comes in a drive carrier).

    Insert the hard-disk drive carrier assembly into the drive bay, connector first and label facing down (toward the top of the computer). Push the assembly straight in until it snaps into place, with the assembly flush with the computer case.

6. Replace the screws you removed in step 3.

7. Turn on the computer.

8. Partition and format the drive as described in "Partitioning and Formatting the Hard-Disk Drive" in Chapter 4.

9. Install the operating system on the drive.

    For instructions, see Chapter 4, "System Software Solutions."

10. Test the drive by running the **IDE Devices** device group tests in the Dell Diagnostics.

    For instructions, see "Running the Dell Diagnostics" in Chapter 3.

Returning a Hard-Disk Drive to Dell

If you need to return your hard-disk drive, you must ship it to Dell in its original foam packaging (see Figure 2-8). Otherwise, the hard-disk drive may be damaged while in transit.
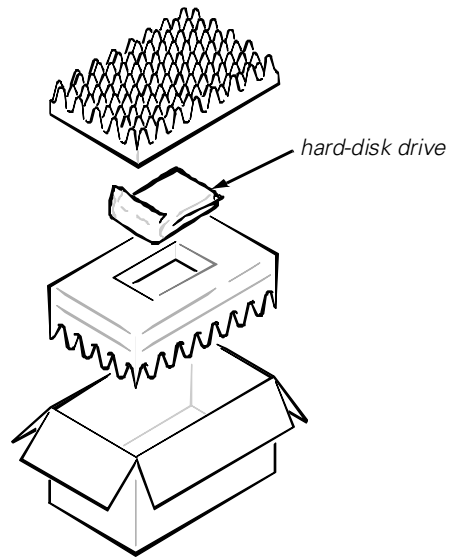
hard-disk drive

Figure 2-8. Repackaging the Hard-Disk Drive

Connecting Other External Devices

You can connect a variety of external devices to your computer. For instructions, refer to the section titled "Connecting External Devices" in the system *Help*. To open the *Help*, click the **Start** button, point to **Programs—> Dell Documents**, and click **Dell Inspiron 2000 System Help**.

C H A P T E R 3
Basic Troubleshooting

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

CAUTION: To help prevent possible damage to the system board, wait 5 seconds after turning off the computer before you disconnect a peripheral device.

Checking the Basics

To perform an initial check of your computer, perform the following steps.

NOTE: If your computer is wet or damaged, refer to "If Your Computer Gets Wet" or "If Your Computer is Dropped or Damaged" found later in this chapter.

1.   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 option 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 that updates or supplements 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 the documentation that accompanied the hardware device for more information. Also make sure you changed the appropriate settings in the system setup program for the system's new hardware configuration (refer to Appendix B, "Using the System Setup Program").

   If you need technical assistance, contact the product manufacturer or the company from whom you purchased the product.

NOTE: DellWare™ products are supported by the item's manufacturer. To receive product support information, refer to the manufacturer's documentation that accompanied the item.

2. Perform the steps described in the next subsection, "Checking Connections."

3. Check the items listed in "Environmental Factors" found later in this chapter.

4. For power problems, refer to "Power" found later in this chapter.

5. Check the boot routine indications in Table 3-1.

NOTE: The boot routine is the operating system's attempt to load its files into memory from the boot-up sector on the hard-disk drive or bootable diskette.

6. If you see an error message, refer to Appendix C, "Error Messages."

7. Verify that the settings in the system setup program match your computer's configuration as explained in Appendix B, "Using the System Setup Program."

8. Use the Dell Diagnostics to check your computer (refer to "Running the Dell Diagnostics" found later in this chapter).

9. If the problem persists, refer to Chapter 5, "Getting Help," for instructions on obtaining technical assistance.

Checking Connections

Loose or improperly connected cables are likely sources of problems for your computer, external monitor, or other peripherals (such as a printer, external keyboard, or mouse). A quick check of all cable connections can easily solve these problems. If the connector has two small screws, make sure the screws are tight. In addition, check for damaged or frayed cables and for bent pins on connectors.

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

Be sure the following items are properly connected or installed:

- AC adapter and AC power cable
- Second battery or any other optional device installed in the media bay
- Cables that connect external devices through the input/output (I/O) connectors and ports on the computer.

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:

- 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 subwoofer, or telephone too close to the monitor, generating magnetic fields that distort the display image

- Fluorescent lights 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 computer

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

Power

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

- Check the computer's power indicator. When lit, the power indicator verifies that the power supply is operating.

- If your computer is connected to a power strip, turn the power strip off and then on again.

- Plug the computer directly into an electrical outlet, bypassing any power protection devices.

- Plug a device, such as a lamp that you know works, into the electrical outlet to make sure the power source is okay.

Modem

NOTICE: Do not confuse the modem connector with the network interface controller (NIC) connector. 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.

NOTICE: Do not connect an analog telephone line to the NIC connector. Doing so will damage the computer.

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, or line splitters, then bypass them and plug the modem cable directly into the telephone connector on the wall.

- Reseat the cable connections.

- Try a different cable; if you are using a cable that is 10 feet or more in length, try a shorter one.

- Disconnect the cable from the modem and plug it directly into a telephone. Listen for a dial tone.

- 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.

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 drive operations at the MS-DOS® prompt in the Dell Diagnostics (refer to "Running the Dell Diagnostics" found later in this chapter) and the Windows operating system.

- Check the settings on the **Page One** submenu of the system setup program as described in Appendix B, "Using the System Setup Program."

- Run the **Diskette** device group as described in "Running the Dell Diagnostics" found later in this chapter.

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

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 do not indicate a defect in the drive or the CD.

- Double-click **My Computer** and check to see if the drive is recognized by the computer. 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 computer, 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.

- Clean the drive as described in the next subsection, "Cleaning Diskette Drives."

- 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.

- Run the **IDE Devices** device group as described in "Running the Dell Diagnostics" found later in this chapter.

- Refer to "Troubleshooting the CD-ROM or DVD-ROM Drive" found later in this chapter for further troubleshooting information.

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 **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, "Using the System Setup Program."

Cleaning Diskette Drives

You can clean a diskette drive using a commercially available cleaning kit. These kits contain pretreated diskettes to nonabrasively 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.

Look and Listen

Looking at and listening to your computer is important in determining the source of a problem. Look and listen for the indications described in Table 3-1.

If the problem is still not resolved, see the next subsection, "System Setup Program Options."

Table 3-1. Boot Routine Indications

Look for:	Action
An error message	See Appendix C, "Error Messages."
The power indicator	If the computer's power status indicator does not come on, see "Power" found earlier in this chapter.

NOTE: For the full name of an abbreviation or acronym used in this table, see the Glossary in the system Help.

Table 3-1. **Boot Routine Indications** *(continued)*

Look for:	Action
The keyboard status indicators	Press the <Num Lock> key, the <Caps Lock> key, and the <Scroll Lock> key to toggle their respective status indicator. If the indicators do not light up, run the **PC-AT Compatible Keyboards** device group in the Dell Diagnostics (for instructions, see "Running the Dell Diagnostics" found later in this chapter).
The diskette-drive access indicator	The diskette-drive access indicator lights up when data is accessed on the diskette drive. You can test this indicator by inserting a diskette into the drive, typing `dir a:` at an MS-DOS prompt, and pressing <Enter>. If the diskette-drive access indicator does not light up, see "Drives" found earlier in this chapter.
The CD-ROM/hard-disk drive access indicator	The CD-ROM/hard-disk drive access indicator lights up when data is accessed on the CD-ROM drive or the hard-disk drive. You can test this indicator by typing `dir c:` at an MS-DOS prompt and pressing <Enter>. If the CD-ROM/hard-disk drive access indicator does not light up, see "Drives" found earlier in this chapter.
A series of flashes	See Appendix C, "Error Messages."
An unfamiliar constant scraping or grinding sound when a drive is accessed	Make sure the sound is not caused by the application program that is running. The sound could also be caused by a hardware malfunction. See Chapter 5, "Getting Help," for instructions on obtaining technical assistance from Dell.
The absence of a familiar sound	When you turn on the computer, you can hear the hard-disk drive spin up, and the computer tries to access the boot files from the hard-disk drive or the diskette drive. If your computer does not boot, call Dell for technical assistance. (See Chapter 5, "Getting Help," for instructions.) Otherwise, see "Running the Dell Diagnostics" found later in this chapter.

NOTE: For the full name of an abbreviation or acronym used in this table, see the Glossary in the system Help.

System Setup Program Options

You can easily correct certain computer problems by verifying the settings for system setup program options. When you boot the computer, it compares the system configuration information with the current hardware configuration. If the computer's hardware configuration doesn't match the information recorded by the system setup program options, an error message may appear on the display.

To fix this problem, correct the appropriate options in the system setup program. See Appendix B, "Using the System Setup Program," for detailed information about the system setup program and its options.

If, after checking the setup options, you have not resolved the problem, see "Running the Dell Diagnostics" found later in this chapter.

Finding Software Solutions

Because most computers have several application programs installed in addition to the operating system, isolating a software problem can be confusing. Software errors can also appear to be hardware malfunctions at first. Software problems can result from the following circumstances:

- Improper installation or configuration of a program

- Input errors

- Drivers that may conflict with certain application programs

- Memory conflicts resulting from the use of terminate-and-stay-resident (TSR) programs, such as drivers

- Interrupt conflicts between devices

You can confirm that a computer problem is caused by software by first running the **System Board Devices** device group as described in "Running the Dell Diagnostics" found later in this chapter. If all tests in the device group complete successfully, the error condition is most likely caused by software.

The following subsections provide general guidelines for analyzing some software problems. For detailed troubleshooting information on a particular program, see the documentation that accompanied the software or consult the support service for the software.

Installing and Configuring Software

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

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

The software installation routine assists you in transferring the appropriate program files to the computer's hard-disk drive. Installation instructions may provide details about how to configure the operating system to successfully run the program. Always read the installation instructions before running a program's installation routine. If you are instructed to modify the start-up files, see the documentation that came with the operating system for instructions.

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

Start-Up Files

Whenever you start or reboot the computer, the operating system executes commands from its start-up files.

These files contain commands that automatically configure the operating system by setting system parameters, starting memory-resident programs, and loading device driver software. If you experience program conflicts or memory error messages, check the commands for memory-resident programs in the start-up files of the operating system. (For information on start-up files, see the documentation that came with the operating system). If a program or peripheral does not work correctly, check the product's documentation to see if you need to modify these files.

Using Software

The following subsections discuss errors that can occur while using software.

Error Messages

Error messages can be produced by an application program, the operating system, or the computer. Appendix C, "Error Messages," discusses the error messages generated by the computer. If you receive an error message not listed in Appendix C, check the operating system or application program documentation.

Input Errors

If a specific key or set of keys is pressed at the wrong time, a program may give you unexpected results. See the documentation that came with the application program to make sure the values or characters you are entering do not conflict with the application program you are using.

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

Memory-Resident Programs

There are a variety of utilities and supplementary programs that can be loaded either when the computer boots or from an operating system prompt. These programs are designed to stay resident in system memory and thus always be available for use. Because they remain in the computer's memory, memory conflicts and errors can result when other programs require use of all or part of the memory already occupied by these TSR programs.

Typically, the operating system's start-up files contain commands to start TSR programs when you boot the computer. If you suspect that one of these TSR programs is causing a memory conflict, remove the commands that start them from the start-up file. If the problem you were experiencing does not recur, one of the TSR programs probably created the conflict. Add the TSR commands back into the start-up files one at a time until you identify which TSR program is creating the conflict.

Program Conflicts

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

Other programs use specialized subroutines called *drivers* that can cause problems in the computer. For example, a variation in the way the data is sent to an external monitor may require a special screen driver program that *expects* a certain kind of video mode or monitor. In such cases, you may have to develop an alternative method of running that particular program—for example, the creation of a boot file made especially for that program. For help with this situation, call the support service offered by the manufacturer of the software you are using.

Avoiding Interrupt Assignment Conflicts

Problems can arise if two devices attempt to use the same interrupt request (IRQ) line. To avoid this type of conflict, check the documentation for the default IRQ line setting for each installed device. Then consult Table 3-2 to configure the device for one of the available IRQ lines.

NOTES: Installed devices cannot share the same COM port address. The default address of the computer's serial port is COM1.

*To view IRQ line assignments in the Microsoft Windows 98 operating system, click the **Start** button, point to **Settings**, and click **Control Panel**. Double-click the **System** icon. Select the **Device Manager** tab, and then double-click **Computer**.*

Table 3-2. IRQ Line Assignments

IRQ Line	Used/Available
IRQ0	Reserved; generated by the system timer
IRQ1	Reserved; generated by the keyboard controller to signal that the keyboard output buffer is full
IRQ2	Cascade from the secondary interrupt controller
IRQ3	Available
IRQ4	Serial port; available if serial port is not configured for COM1 or COM3
IRQ5	Available
IRQ6	Generated by the diskette drive controller to indicate that the diskette drive requires the attention of the microprocessor
IRQ7	Parallel port; available if parallel port is disabled
IRQ8	Reserved; generated by the system I/O controller's real time clock

NOTE: For the full name of an abbreviation or acronym used in this table, see the Glossary in the system Help.

Table 3-2. *IRQ Line Assignments* *(continued)*

IRQ Line	Used/Available
IRQ9	SCI in ACPI mode
IRQ10	PCI IRQA, B, C, D
IRQ11	Available
IRQ12	Reserved; generated by the keyboard controller to indicate that the output buffer of the touch pad or the external PS/2 mouse is full
IRQ13	Reserved; generated by the math coprocessor
IRQ14	Reserved; generated by the hard-disk drive to indicate that the drive requires the attention of the microprocessor
IRQ15	Reserved; generated by CD-ROM **or DVD-ROM drive in the external** media bay to indicate that the drive requires the attention of the microprocessor

NOTE: For the full name of an abbreviation or acronym used in this table, see the Glossary in the system Help.

Resolving IRQ Conflicts

Windows 98 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**.

If Your Computer Gets Wet

Liquids, spills and splashes, rain, and excessive humidity can cause moisture damage to the computer. If the computer gets wet or if condensation forms on the computer because of humid conditions, perform the following steps.

CAUTION: Perform step 1 of the following procedure only after you are certain that it is safe to do so. If the computer is connected to an electrical outlet, Dell recommends turning off AC power at the circuit breaker before attempting to remove the power cables from the electrical outlet. Use the utmost caution when removing wet cables from live power.

1. Turn off the computer and disconnect it from the AC adapter. Then disconnect the AC adapter from the electrical outlet. Turn off any attached peripherals and disconnect them from their power sources and then from the computer.

2. Ground yourself by touching one of the metal connectors on the back of the computer.

3. If the media bay is wet, remove the device from the bay. If the PC Card slot is wet, remove any PC Card. Put the device and card in a safe place to dry.

4. Remove the battery.

   Wipe off the battery and store it in a safe place to dry.

5. Remove the hard-disk drive.

   For instructions, refer to "Installing an Internal Hard-Disk Drive" in Chapter 2.

6. Open the display, and place the computer across two books or similar props to let air circulate all around it. Let the computer dry for at least 24 hours.

   Place the computer in a dry area at room temperature. Do not use artificial means to speed up the drying process.

   CAUTION: Before continuing with the remainder of this procedure, verify that the computer is thoroughly dry.

7. Ground yourself by touching one of the unpainted metal connectors on the I/O panel.

8. Reinstall the hard-disk drive.

9. Reinstall the media bay and PC Card that you removed in step 3.

10. Replace the battery that you removed in step 4.

11. Reconnect the computer and peripherals to an electrical outlet and turn them on.

12. If the computer is able to boot, run the Dell Diagnostics to identify computer damage. If the computer is unable to boot, see "Troubleshooting a Power Failure" found later in this section. If you cannot identify the damaged component(s), call Dell for technical assistance. (See Chapter 5, "Getting Help," for instructions.)

If Your Computer is Dropped or Damaged

If the computer is dropped or damaged, perform the following steps:

1. Save and close any open files, exit any open application programs, and shut down the computer.

2. Disconnect the computer from the electrical outlet. Then disconnect the AC adapter from the electrical outlet. Turn off any attached peripherals and disconnect them from the electrical outlet and then from the computer.

3. Ground yourself by touching one of the metal connectors on the back of the computer.

4. Remove the battery and the external media bay.

5. Remove the hard-disk drive.

   For instructions, refer to "Installing an Internal Hard-Disk Drive" in Chapter 2.

6. Reinstall the hard-disk drive.

7. Verify that any installed PC Card is properly seated in the PC Card connector.

8. Reinstall the battery.

9. Reconnect the computer and peripherals to the electrical outlet and turn them on.

10. Run the Dell Diagnostics to verify that the computer is operating properly. (For instructions, see "Running the Dell Diagnostics" found later in this chapter.)

11. If the computer does not operate properly, make a copy of the Diagnostics Checklist found in Chapter 5 and fill it out. Then call Dell for technical assistance. (See Chapter 5, "Getting Help," for instructions.)

Running the Dell Diagnostics

Unlike many diagnostic programs, the Dell Diagnostics helps you check your computer's hardware without any additional equipment and without destroying any data. By using the diagnostics, you can have confidence in your computer's operation.

And 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. 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 device groups or subtests. You can also control the sequence in which the tests are run. The diagnostic device 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 device 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 menu category called **Devices** that briefly describes each test and its parameters
- A menu category called **Config** that describes the configuration of the devices in the selected device group
- Status messages that inform you whether device groups or subtests were completed successfully
- Error messages that appear if any problems are detected

Whenever a major component or device in your computer does not function properly, you may have a component failure. As long as the microprocessor and the input and output components of your computer (the display, keyboard, 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 chapter.

Starting the Dell Diagnostics

To start the diagnostics, perform the following steps:

1. Turn on or restart the computer.

2. Press <F2> at the Dell logo screen to access the system setup menu. If you wait too long and the operating system begins to load into memory, *let the computer complete the load operation*. Then shut down the system and try again.

3. In the system setup program, go to the **Boot** screen and set the following boot sequence:

   - **Removable Devices**

- **ATAPI CD-ROM Drive**
- **Hard Disk**
- **Boot to LAN**

For instructions on using the system setup program, refer to Appendix B, "Using the System Setup Program."

4. Save the changes and exit the system setup program.

5. Insert the *Dell System Software* CD into the CD-ROM drive.

   If your computer has a diskette drive attached, make sure that the drive does not contain a diskette.

6. Restart the computer. The Dell Diagnostics run automatically.

NOTES: After running the Dell Diagnostics, to change the boot sequence, repeat steps 1 through 4 and then restart your computer.

Before you read the rest of this subsection, you may want to start the Dell Diagnostics so that you can see it on your display.

When you start the diagnostics, the Dell logo screen appears, followed by a message telling you that the diagnostics is loading.

After the diagnostics loads, the **Diagnostics Menu** appears (see Figure 3-1). The menu allows you to run all or specific diagnostic tests or to exit to the MS-DOS prompt.

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

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.

```
Fully Test All Devices

Quickly Test All Devices

Select Devices to Test

Exit to MS-DOS
```
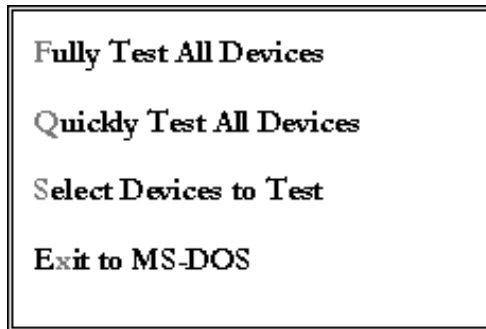
Figure 3-1. Diagnostics Menu

Dell Diagnostics Main Screen

When you select **Select Devices to Test** from the **Diagnostics Menu**, the main screen of the diagnostics appears (see Figure 3-2). The main screen lists the diagnostic test device groups, lists the devices of the selected device group, and allows you to select categories from a menu.

Information on the main screen of the diagnostics is presented in the following five 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 category. Press the up- or down-arrow key to highlight a test device group.

- On the right side of the screen, the **Devices for Highlighted Group** area lists the computer's currently detected hardware and some of the relevant settings.

- Two lines at the bottom of the screen make up the menu area. The first line lists the categories you can select; press the left- or right-arrow key to highlight a menu category. The second line gives information about the category currently highlighted.

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

```
                    Dell Computer Corporation
                    Diagnostics Version 2.00


  ┌──────────────────────────────┬──────────────────────────────┐
  │ Device Groups                │ Devices for Highlighted Group│
  │                              │                              │
  │ System Board Devices         │ DMA Controller               │
  │ Processor Cache              │ Realtime Clock               │
  │ IR                           │ System Timer                 │
  │ System Memory                │ Interrupt Controller         │
  │ Latitude Battery             │ System Speaker               │
  │ Latitude Fan                 │ Floating Point Unit          │
  │ Latitude Temperature         │                              │
  │ System Management BIOS       │                              │
  │ VESA/VGA Interface           │                              │
  │ Universal Serial Bus Interface│                             │
  │ PC-AT Compatible Keyboards   │                              │
  │ Pointing Devices             │                              │
  │ Serial Ports                 │                              │
  │ Parallel Ports               │                              │
  │ Audio Controller             │                              │
  │ IDE Devices                  │                              │
  │ Misc. PCI Devices            │                              │
  └──────────────────────────────┴──────────────────────────────┘

  Device groups:  Run tests  Devices  Select  Config  Help

  Display the Run tests menu.              Press ESC for previous menu.
```

Figure 3-2. Dell Diagnostics Main Screen

Confirming the System Configuration Information

When you boot your computer from your *System Software* CD, the diagnostics checks your system configuration information and displays it in the **Device Groups** area on the main screen.

The following sources supply this configuration information for the diagnostics:

- The system configuration information settings (stored in nonvolatile random-access memory [NVRAM]) that you selected while using the system setup program

- Identification tests of the microprocessor, the video controller, the keyboard controller, and other key components

- Basic input/output system (BIOS) configuration information temporarily saved in RAM

Do not be concerned if the **Device Groups** area does not list the names of all the components or devices you know are part of your computer. For example, you may not see a printer listed, although you know one is attached to your computer. Instead, the printer is listed as a parallel port. The computer recognizes the parallel port as LPT1, which is an address that tells the computer where to send outgoing information and where to look for incoming information. Because your printer is a parallel

communications device, the computer recognizes the printer by its LPT1 address and identifies it as a parallel port. You can test your printer connection with the **Parallel Ports** tests.

Using the Dell Diagnostics

Six comprehensive, menu-driven, online Help categories provide instructions on how to use the program and explain 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 six **Help** menu categories 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** categories are explained in the following subsections.

Menu

The **Menu** Help category provides descriptions of the main menu screen area, the **Device Groups**, and the different diagnostic menus and commands and instructions on how to use them.

Keys

The **Keys** Help category explains the functions of the all of the keystrokes that can be used in Dell Diagnostics.

Device Group

The **Device Group** Help category 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

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

The **Test** Help category provides a thorough explanation of the test procedure of each presently highlighted test group subtest. An example of the **Diskette** subtest **Diskette Drive Seek Test** is as follows:

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

The **Versions** Help category lists the version numbers of the subtests that are used by the Dell Diagnostics.

C H A P T E R 4
System Software Solutions

This chapter explains how to reinstall Dell device drivers and utilities on your Dell computer running the Microsoft Windows 98 Second Edition operating system or the Microsoft Windows NT operating system. You may need to use this document under the following conditions:

- You are reinstalling the version of the Windows operating system that came with your computer, and you need to reinstall the drivers and utilities that Dell provides.

- You have a new hard-disk drive and you need to install all of the system software.

Partitioning and Formatting the Hard-Disk Drive

Before you can store data on a hard-disk drive, you must partition and format the drive. Then you must assign logical drive letters to the partitions you created.

To partition and format the new hard-disk drive, and then assign logical drive letters to the partitions you created, perform the following steps.

NOTICE: Formatting a hard-disk drive erases all the data stored on the drive; however, the formatting utility included with the operating system may allow you to restore the data from a hard-disk drive immediately after you format it. Partitioning a hard-disk drive permanently deletes all data stored on the drive.

1. Partition the hard-disk drive using the partitioning software for your particular operating system.

   When you set up the partition(s) on the hard-disk drive, set aside some disk space for the save-to-disk suspend (S2D) partition rather than allocating the entire hard-disk drive to your operating system. Use the following guidelines to determine the size of the S2D partition:

   - If you are using Windows 98 with a 16-bit file allocation table (FAT16), leave 4 megabytes (MB) of storage space for an S2D partition. For a 32-bit file allocation table (FAT32), leave 8 MB.

- For any operating system that uses a file system other than FAT16 or FAT32, including compressed file systems such as DriveSpace, use the following algorithm to determine the amount of disk space to reserve for an S2D partition:

  Size of system memory + size of video memory + 1 percent of size of system memory + 2 MB rounded up to the next cylinder

  Examples:

  32 MB + 4 MB + .36 MB + 2 MB = 38.36 MB (approximately 1.25 percent of a 3-GB drive)
  256 MB + 6 MB + 2.62 MB + 2 MB = 266.62 MB (approximately 4.4 percent of a 4-GB drive)

2. Format the hard-disk drive and assign logical drive letters to the partitions you created according to the instructions provided with your operating system.

3. Restart the computer from a bootable diskette such as the *Microsoft Boot Disk Windows 98 Series* diskette.

   NOTE: To boot the computer from a diskette without removing the CD-ROM or DVD-ROM drive from the external media bay, connect the diskette drive to the computer as described in "Using the Diskette Drive Module as an External Device" in Chapter 2.

4. Create the S2D partition.

   For instructions, see "Save-to-Disk Suspend Utility" found later in this chapter.

5. Follow the instructions found later in this chapter to install the appropriate device drivers.

6. Install your application programs on the hard-disk drive.

   If you have trouble with the hard-disk drive, run the **IDE Devices** device group tests in the Dell Diagnostics. For instructions, see "Running the Dell Diagnostics" in Chapter 3.

7. If you ever need to remove the S2D partition to free up storage space on the hard-disk drive, do so by using the **rms2d.exe** utility on the *System Software* CD. See "Removing the Save-to-Disk Suspend Partition" found later in this chapter for instructions. When more space is available on the drive, you can also recreate the S2D partition using the **mks2d.exe** utility. See "Creating the Save-to-Disk Suspend Partition" found later in this chapter for instructions.

Installing the Windows 98 Operating System

You must install Windows 98 on the hard-disk drive, as described in the following steps, before you install any device drivers:

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

2. Restart the computer.

3. When the **Microsoft Windows 98 Startup** menu appears, insert the *Microsoft Windows 98* CD into the CD-ROM or DVD-ROM drive.

4. Select **Start Windows 98 Setup from CD-ROM** and press <Enter>.

   The Setup program runs ScanDisk to check your hard-disk drive.

5. When the hard-disk drive check is completed, type x to exit ScanDisk.

6. Follow the prompts on your screen to continue with the installation.

7. When prompted to create a start-up diskette, remove the *Microsoft Boot Disk Windows 98 Series* diskette, and click **Next>**.

8. Label a blank, high-density diskette as instructed, insert the diskette into the diskette drive, and then click **OK**.

9. Follow the prompts on your screen to complete the installation.

Installing Drivers and Utilities from the System Software CD

All of your computer's drivers for Dell-installed devices are operative when you receive the computer. 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 *System Software* CD.

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.

Before beginning this procedure, make sure that the external media bay containing a CD-ROM or DVD-ROM drive is connected to the computer, and make sure that the computer is connected to an electrical outlet.

*NOTE: If a **Version Conflict** dialog box appears at any time during this procedure, click **OK** and continue with the procedure.*

1. Insert your *System Software* CD into the CD-ROM or DVD-ROM drive.

2. Click **Start**, click **Run**, and type `d:\setup.exe` (where **d** is your CD-ROM or DVD-ROM drive letter) in the **Run** dialog box.

3. Click **Next** at the **Welcome** screen.

4. Read the **Information** screen and click **Next**.

    The system setup program checks to see if you need an operating system update before installing the drivers.

5. If the system setup program launches the Operating System Update program, click **OK** and then follow the screen prompts to complete the update. You may need to click **OK** to reboot the system several times during this process. When the system stops prompting you to reboot, repeat steps 2, 3, and 4.

6. At the **Setup Type** dialog box, highlight the level of installation you desire:

    - **Core Drivers** — includes the audio, video, touch pad, modem, local area network (LAN), and MS-DOS CD-ROM drivers.

    - **All Drivers and Applications** — includes the core drivers plus other application programs such as the Yamaha Software Wavetable, Softex BayManager, your computer's system *Help*, and various system utilities.

    - **Custom** — lists all available drivers, applications, and utilities. To perform a custom installation, click **Custom** and then click the radio button for each item you want to install.

7. Click **Next** to view a list of the files that will be installed; then click **Next** again.

    The selected files are copied to your hard-disk drive in preparation for installation.

8. Read the **Information** dialog box and click **OK**.

    The Windows driver **QuickInstall** screen appears and driver installation begins.

    NOTICE: While the files are being installed, there may be several minutes where the only visible activity is that of the hard-disk drive indicator light; also, various windows may appear and disappear without your intervention. *During this time, do not do anything to interrupt the process.*

9. At the **Restarting Windows** dialog box, click the **Yes** radio button and then click **OK** to restart the computer.

10. If an **Add New Hardware Wizard** dialog box appears, click **Next** and follow the screen prompts, accepting all defaults.

11. If you are prompted to insert your Windows operating system CD, remove the *System Software* CD, insert the Windows CD, and click **OK**. If after doing this you are prompted again to insert the CD, click **OK** to continue the installation.

Suspend-to-Disk Utility

If you are installing a new hard-disk drive or rebuilding one and you want to be able to use suspend-to-disk (S2D) mode (called hibernate in the Microsoft Windows 98 operating system), you must create an S2D file on the hard-disk drive. This allows all system data to be stored in the S2D file whenever you activate S2D mode.

Creating an S2D File for Windows 98

NOTE: The following procedure assumes that your hard-disk drive is already partitioned and formatted. For information on partitioning and formatting your drive, see both your operating system and your drive documentation.

To create the S2D file for computers running the Windows 98 operating system, perform the following steps:

1. Insert the *Dell System Software* CD into the CD-ROM or DVD-ROM drive.

2. Turn on or restart the computer.

3. Press <F2> as soon as you see the Dell logo screen to enter the system setup program.

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

4. Enter the **Boot** screen, select **ATAPI CD-ROM Drive**, and move it to the first position in the boot sequence.

5. Press <F10> to save the settings and exit the system setup program.

   The computer restarts and automatically begins to run the Dell Diagnostics.

6. Type x to exit to MS-DOS mode.

7. At the MS-DOS prompt, type d:\, where d is the drive letter for your CD-ROM or DVD-ROM drive, and press <Enter>.

   Your MS-DOS prompt changes from A:\> to D:\>, assuming that D is your drive letter.

8. Type cd\utilities and press <Enter>.

9. Type phdisk /create /file and press <Enter>.

   NOTE: Include a space before each forward slash.

   The utility calculates the size of the file in megabytes (MB), based on the amount of system memory in your computer, plus 2 MB to handle video memory and additional system requirements.

10. Follow the instructions on your screen to create the S2D file.

11. To check the size of the S2D file, at an MS-DOS prompt type `phdisk /info` and press <Enter>.

12. If you need to delete the S2D file, at an MS-DOS prompt type `phdisk /delete /file` and press <Enter>.

NOTICE: The S2D file is placed in your computer's root directory, where it may be a hidden file, depending on how you set up your operating system. Do not delete the file inadvertently.

To restore the default boot sequence, perform the following steps:

1. Turn on or restart the computer.

2. Press <F2> as soon as you see the Dell logo screen to enter the system setup program.

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

3. Enter the **Boot** screen, and press <F9> to restore the default boot sequence.

4. Press <F10> to save the settings and exit the system setup program.

Creating an S2D Partition for Windows NT

NOTE: The following procedure assumes that your hard-disk drive is unpartitioned and unformatted or you have a minimum of 150 MB of unpartitioned space on the drive. For information on partitioning and formatting your drive, see both your operating system and your drive documentation.

To create the S2D file for computers running Microsoft Windows NT, perform the following steps:

1. Insert the *Dell System Software* CD into the CD-ROM or DVD-ROM drive.

2. Turn on or restart the computer.

3. Press <F2> as soon as you see the Dell logo screen to enter the system setup program.

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

4. Enter the **Boot** screen, select **ATAPI CD-ROM Drive**, and move it to the first position in the boot sequence.

5. Press <F10> to save the settings and exit the system setup program.

   The computer restarts and automatically begins to run the Dell Diagnostics.

6. Type x to exit to MS-DOS mode.

7. At the MS-DOS prompt, type $d:\backslash$, where d is the drive letter for your CD-ROM or DVD-ROM drive, and press <Enter>.

   Your MS-DOS prompt changes from `A:\>` to `D:\>`, assuming that D is your drive letter.

8. Type `cd\utilities` and press <Enter>.

9. Type `phdisk /create /partition` and press <Enter>.

   NOTE: Include a space before each forward slash.

   The utility calculates the size of the file in MB, based on the amount of system memory in your computer, plus 2 MB to handle video memory and additional system requirements.

10. Follow the instructions on your screen to create the S2D file.

To check the size of the S2D file, at an MS-DOS prompt type `phdisk /info` and press <Enter>.

If you need to delete the S2D file, at an MS-DOS prompt type `phdisk /delete / partition` and press <Enter>.

NOTICE: The S2D file is placed in your computer's root directory, where it may be a hidden file, depending on how you set up your operating system. Do not delete the file inadvertently.

To restore the default boot sequence, perform the following steps:

1. Turn on or restart the computer.

2. Press <F2> as soon as you see the Dell logo screen to enter the system setup program.

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

3. Enter the **Boot** screen, and press <F9> to restore the default boot sequence.

4. Press <F10> to save the settings and exit the system setup program.

Contacting Dell

Dell's technical assistance Web site (**http://support.dell.com**) provides driver and utility updates, as well as technical assistance with questions about your computer. In addition, if you have access to a computer with a modem and/or fax capabilities, you can access Dell's TechConnect bulletin board service (BBS), AutoTech service, and TechFax service. Dell's Web site also contains links to some of these services.

C H A P T E R   5
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 troubleshooting checks in Chapter 3, "Basic Troubleshooting."

2. Run the Dell Diagnostics as described in "Running the Dell Diagnostics" in Chapter 3.

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 services available at Dell's World Wide Web site (**http://www.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.

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

    NOTES: The Express Service Code is shown on the bottom of the computer.

    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 subsections.

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. Through the Internet, you can access most of the services described in this chapter, including AutoTech, TechFax, order status, technical support, and product information.

You can access Dell's support Web site at **http://support.dell.com.** To select your country, click the map that appears. The **Welcome to support.dell.com** page opens. Enter your system information to access help tools and information such as:

- **Support Your Dell** — 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.dell.com/jp/ (for Japan)

    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

  mobile_support@us.dell.com

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

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

- Electronic Quote Service

  sales@dell.com

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

- Electronic Information Service

  info@dell.com

AutoTech Service

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

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

The AutoTech service is available 24 hours a day, seven days a week. You can also access this service through the technical support service. For the telephone number to call, refer to "Dell Contact Numbers" 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 5-1). 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.

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: _____

Peripherals: _____

_____

_____

Expansion cards:_____

_____

_____

Are you connected to a network?   ☐ yes   ☐ no

Network, version, and network card: _____

Programs and versions:_____

_____

_____

_____

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

Error message, beep code, or diagnostic code: _____

Description of problem and troubleshooting procedures you performed: _____

_____

_____

Figure 5-1. Diagnostics Checklist

Dell Contact Numbers

When you need to contact Dell, use the telephone numbers and codes provided in Tables 5-1 and 5-2. Table 5-1 provides the various codes required to make long-distance and international calls. Table 5-2 provides local telephone numbers, area codes, and toll-free numbers, 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 5-1 in addition to the local numbers provided in Table 5-2. 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.

00	**44**	**1344**	
International Access Code (in France)	Country Code (for U.K.)	City Code (Bracknell)	Local Number
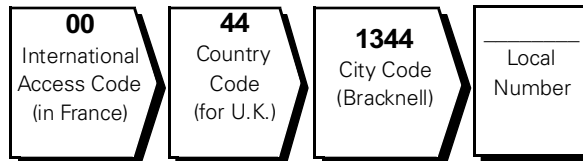
To place a long-distance call within your own country, use area codes instead of international access codes, country codes, and city codes. For example, to call Paris, France from Montpellier, France, dial the area code plus the local number as shown in the following illustration.

01	
Area Code (for Paris from outside Paris)	Local Number
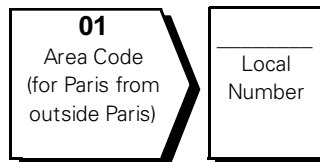
The codes required depend on where you are calling from as well as the destination of your call; in addition, each country has a different dialing protocol. If you need assistance in determining which codes to use, contact a local or an international operator.

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 5-1. 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
Brazil	0021	55	51
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

Table 5-1. International Dialing Codes (continued)

Country (City)	International Access Code	Country Code	City Code
Spain (Madrid)	07	34	91
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 5-2. Dell Contact Numbers

Country (City)	Department Name or Service	Area Code	Local Number or Toll-Free Number
Australia (Sydney)	Customer Technical Support		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 Germany for technical support and customer assistance.	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: **http://support.euro.dell.com/at**		
	E-mail: tech_support_germany@dell.com		

Table 5-2. 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: **http://support.euro.dell.com/be**		
	E-mail: tech_be@dell.com		
Brazil	Sales, Customer Support, Technical Support 0800 90 3355		
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		

Table 5-2. Dell Contact Numbers (continued)

Country (City)	Department Name or Service	Area Code	Local Number or Toll-Free Number
Chile (Santiago) *NOTE: Customers in Chile call the U.S.A for sales, customer, and technical assistance.*	Sales, Customer Support, and Technical Support. . . . . toll free: 1230-020-4823		
China (Xiamen)	Customer Service . . . . toll free: 800 858 2437		
	Sales. . . . . toll free: 800 858 2222		
Czech Republic (Prague)	Technical Support	02	22 83 27 27
	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: **http://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: **http://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: **http://support.euro.dell.com/fi**		
	E-mail: fin_support@dell.com		

Table 5-2. 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: **http://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 5-2. 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: **http://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: **http://support.euro.dell.com/it**		
	E-mail: support_italy@dell.com		
Japan (Kawasaki)	Technical Support . . . . .toll free: 0088-22-7890		
	Technical Support (Inspiron™) . . . . 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 5-2. **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: **http://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 5-2. 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	581 8838
	Customer Care.	020	581 8740
	Home/Small Business Sales		toll free: 0800-0663
	Home/Small Business Sales Fax	020	682 7171
	Corporate Sales	020	581 8818
	Corporate Sales Fax	020	686 8003
	Fax	020	686 8003
	Switchboard	020	581 8818
	Web site: **http://support.euro.dell.com/nl**		
	E-mail: tech_nl@dell.com		
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: **http://support.euro.dell.com/no**		
	E-mail: nor_support@dell.com		

Table 5-2. 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: **http://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: **http://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 5-2. 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: **http://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: **http://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: **http://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: 088 006 007		
	Customer Service (Penang, Malaysia)		810 4949
	Sales. . . . . toll free: 088 006 009		

*Table 5-2. **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: **http://support.euro.dell.com/uk**		
	E-mail: dell_direct_support@dell.com		

*Table 5-2. **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 (Return Material Authorization Numbers)		toll free: 1-800-624-9896
	Customer Technical Support (Home sales purchased via **http://www.dell.com**)		toll free: 1-877-576-3355)
	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^{TM}		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		512338-4400

A P P E N D I X A
Technical Specifications

The most complete specifications for your computer are available on Dell's World Wide Web support site at **http://support.dell.com**. Enter your service tag sequence (or, if you have one, your Express Service Code) and click **Submit**. The service tag and Express Service Code are shown on the bottom of the computer.

You can also access the same support information by clicking **Inspiron** and selecting your system by name, but you have to select options from a series of menus to reach the same information.

Table A-1. Technical Specifications

Microprocessor	
Microprocessor type	Intel mobile microprocessor
L1 cache	32 KB (internal)
L2 cache	256 KB (integrated)
External bus frequency	100 MHz
Math coprocessor	internal to the microprocessor
Chip Set and Bus Architecture	
System chip set	Intel Mobile 443BX/PIIX4m
Data bus width	64 bits
DRAM bus width	64 bits
Microprocessor address bus width	32 bits
Flash EPROM	4 Mb
AGP bus	66 MHz
PCI bus	33 MHz

NOTE: For the full name of an abbreviation or acronym used in this table, see the Glossary in the system Help.

Table A-1. Technical Specifications (continued)

PC Card	
PCI controller.	Texas Instruments PCI 1211 CardBus controller
PC Card connectors	one (supports Type I and Type II cards, including zoomed video cards on computers using the Microsoft Windows 98 operating system)
Cards supported	3.3 V and 5 V
PC Card connector size.	68 pins
Data width (maximum)	
PCMCIA	16 bits
CardBus	32 bits

Memory	
Architecture.	SDRAM
Memory module sockets	one 144-pin SODIMM socket
Memory module capacities and type	64- and 128-MB 3.3-V SDRAM modules
Minimum RAM	64-MB
Maximum RAM.	128 MB
Memory clock speed.	100 MHz
Memory access time	CL2 or CL3 (Note: CL3 indicates a CAS latency of 3 clocks)
BIOS address	FF000:0000-F000:FFFF

Connectors	
Parallel.	25-hole connector; unidirectional, bidirectional, EPP 1.9, or ECP
Video	15-hole connector
PS/2.	6-pin mini-DIN connector
Audio	one microphone-in connector; one line-in/audio-in connector; one headphones/speakers connector
USB	4-pin connector
Modem	RJ-45 connector

NOTE: For the full name of an abbreviation or acronym used in this table, see the Glossary in the system Help.

Table A-1. Technical Specifications (continued)

	Connectors (continued)
Network interface controller	RJ-11 connector
Docking	240-pin connector (not supported)

	Audio
Audio type	Sound Blaster (software emulation-capable)
Audio controller	NeoMagic NMG5 + AC97 CODEC
Stereo Conversion	16 bit (analog-to-digital and digital-to-analog)
Interfaces:	
Internal	PCI bus/AC97
External	microphone (minijack); headphone; line-in
Speakers	2.5-ohm speakers
Internal speaker amplifier	500 mW
Controls	volume can be controlled through key combinations, application program menus

	Video
Video type	256-bit hardware-accelerated
Data bus	AGP
Video controller	NeoMagic NM2200
Video memory	2.5 MB

	Display
Type	SVGA, active-matrix color (TFT)
Maximum resolution/colors	800 x 600 pixels; 262,144-color display
Response time (typical)	50 ms rise; 20 ms fall
Operating angle	0° (closed) to 180°
Dot pitch	0.30 mm
Power consumption	
Panel (typical)	7 W
Backlight	1.6 W

NOTE: For the full name of an abbreviation or acronym used in this table, see the Glossary in the system Help.

Table A-1. Technical Specifications (continued)

Display (continued)	
Controls.	brightness can be controlled through a key combination

Keyboard	
Key travel.	3.0 mm + 0.5 mm/–0.2 mm (0.12 inch + 0.02 inch/–0.0008 inch)
Key spacing	19.05 mm ± 0.3 mm (0.75 inch ± 0.012 inch)

Battery	
Type.	lithium ion
Dimensions:	
Height	12.7 mm (0.5 inch)
Depth	58.8 mm (2.31 inches)
Width	159.1 mm (6.26 inches)
Weight	214 g (0.47 lb)
Voltage	14.8 VDC for 4-cell; 11.10 VDC for 6-cell
Capacity	23 WH for 4-cell; 34 WH for 6-cell
Charge time (approximate):[1]	
Computer on	1.5 hours
Computer off	1.5 hours
Life span (approximate)[1]	350 discharge/charge cycles
Temperature range:	
Charge	0° to 40°C (32° to 104°F)
Storage.	–20° to 60°C (–4° to 140°F)

AC Adapter	
Input voltage	100 to 240 VAC
Input current (maximum).	1.5 A
Input frequency	50 to 60 Hz
Output current.	2.64 A (maximum)
Rated output voltage.	19.0 VDC

[1] Battery performance features such as charge time and life span can vary according to the conditions under which the computer and battery are used.

NOTE: For the full name of an abbreviation or acronym used in this table, see the Glossary in the system Help.

Table A-1. Technical Specifications (continued)

AC Adapter (continued)

Dimensions:

    Height. . . . . 29 mm (1.14 inches)

    Width . . . . 46.3 mm (1.82 inches)

    Depth . . . . 108 mm (4.25 inches)

Weight (with cables) . . . . 355 g (0.78 lb)

Temperature range:

    Operating . . . . 0° to 40°C (32° to 104°F)

    Storage. . . . . –20° to 60°C (–4° to 140°F)

Physical

Dimensions:

    Height. . . . . 25.7 mm (1.01 inches)

    Width . . . . 272 mm (10.7 inches)

    Depth . . . . 220 mm (8.66 inches)

    Weight . . . . 1.665 kg (3.67 lb) with 6-cell battery
                                 1.618 kg (3.57 lb) with 4-cell battery

Environmental (Computer)

Temperature:

    Operating . . . . 0° to 40°C (32° to 104°F)

    Storage. . . . . –20° to 65°C (–4° to 149°F)

Relative humidity (maximum):

    Operating . . . . 10% to 90% (noncondensing)

    Storage. . . . . 5% to 95% (noncondensing)

Maximum vibration:

    Operating . . . . 0.9 GRMS using a random-vibration spectrum that
                                   simulates user environment

    Storage. . . . . 1.3 GRMS using a random-vibration spectrum that sim-
                                   ulates air/truck shipment

NOTE: For the full name of an abbreviation or acronym used in this table, see the Glossary in the system Help.

Table A-1. Technical Specifications (continued)

Environmental (Computer) (continued)

Maximum shock:[1]

    Operating . . . . 152.4 cm/sec (60.0 inches/sec)
    (equal to a half-sine pulse width of 2 ms)

    Storage. . . . . 203.2 cm/sec (80 inches/sec)
    (equal to a half-sine pulse width of 2 ms)

Altitude (maximum):

    Operating . . . . –18 to 3048 m (–59 to 10,000 ft)

    Storage. . . . . –18 to 10,600 m (–59 to 35,000 ft)

Touch Pad

Interface PS/2-compatible

X/Y position resolution
(graphics table mode) . . . . 20 points/mm (500 points/inch)

Size:

    Thickness . . . . 0.69 ± 0.15 mm (0.027 ± 0.006 inch) at highest
    component

    Width
    (sensor-active area) . . . . . . 64.88 mm (2.55 inch)

    Height . . . . 48.88 mm (1.54-inch rectangle)

    Weight . . . . 6.0 ± 0.5g (0.21 oz)

Power:

    Supply voltage . . . . 5 V ± 10%

    Supply current . . . . 4.0 mA (nominal operating)

ESD . . . . In accordance with IEC-801-2

---

[1]   *Measured with the hard-disk drive in head-parked position.*

NOTE: For the full name of an abbreviation or acronym used in this table, see the Glossary in the system Help.

A P P E N D I X B

Using the System Setup Program

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

Your computer retains system configuration information in the nonvolatile random-access memory (NVRAM) maintained by your computer's reserve battery. Each time you turn on your computer, the system compares the installed hardware with the system configuration information stored in NVRAM. If the system detects a discrepancy, it generates an error message that identifies the incorrect configuration setting.

You can use the system setup program as follows:

- To change your system configuration information after you add, change, or remove hardware connected to or installed inside your computer

- To verify information about your computer's current configuration, such as the amount of system memory

- To set or change user-selectable features — for example, power management or security features

*NOTE: Many of the options that are configured in the system setup program are overridden by the settings in the Windows control panels, such as the **Power Management** control panel. When your computer is running the Windows 98 operating system, it will use the settings that are selected in the Windows control panels rather than those set in the system setup program.*

Accessing the System Setup Program

NOTICE: To avoid data loss, exit any application programs before rebooting the computer to enter the system setup program.

To access the system setup program, turn on the computer and press <F2> as soon as you see the Dell logo screen and before the Windows logo screen appears. The computer reboots automatically when you exit the system setup program.

The **Main** menu of the system setup program shows how the computer is configured. In addition to the **Main** menu (see Figure B-1), you can also access the **System Devices** menu, **Security** menu, **Power** menu, **Boot** menu, and **Exit** menu.

NOTE: When you press <F9> and press <Enter> to confirm, the computer resets the default values for each option in that menu. When you press <F10> and press <Enter> to confirm, the computer saves the current settings and exits the system setup program.

Main Menu

See Figure B-1 and Table B-1 for an explanation of the options and settings on the **Main** menu.

```
                         PhoenixBIOS Setup Utility

   ┌────────┐
   │  Main  │ Advanced   Security   Power   Boot   Exit
   └────────┘
 ┌───────────────────────────────────────────────┬──────────────────────────┐
 │                                                │     Item Specific Help    │
 │ System Time:              [03:06:18]           │                           │
 │ System Date:              [09/18/1998]         │                           │
 │                                                │ <Tab>, <Shift-Tab>, or    │
 │ Diskette A:               [1.44 MB, 3 1/2"]    │ <Enter> selects field.    │
 │ Diskette B:               [Disabled]           │                           │
 │                                                │                           │
 │ IDE Adapter 0 Master      3253MB               │                           │
 │  HDD0 Master ID:          33890883             │                           │
 │ IDE Adapter 1 Master      None                 │                           │
 │                                                │                           │
 │ PS/2 Pointing Device:     [Auto Device]        │                           │
 │ Summary Screen:           [Enabled]            │                           │
 │ Quiet Boot:               [Enabled]            │                           │
 │                                                │                           │
 │ System Memory:            640 KB               │                           │
 │ Extended Memory:          64512 KB             │                           │
 │                                                │                           │
 ├────────────────────────────────────────────────┴─────────────────────────┤
 │ F1 Help     ↑↓ Select Item    Space Change Values     F9 Setup Defaults   │
 │ ESC Exit    ↔ Select Menu     Enter Select ➤ Sub-Menu  F10 Save and Exit  │
 └───────────────────────────────────────────────────────────────────────────┘
```

Figure B-1. Main Menu

Table B-1. Main Menu Options

Option	Function
System Time	Resets the time on the computer's internal clock.
System Date	Resets the date on the computer's internal calendar.
Diskette Drive A, Diskette Drive B	Identifies the type of diskette drive being used by the computer. **Diskette Drive B** identifies a second diskette drive, if installed.
IDE Adapter 0 Master	Displays the capacity of the computer's internal hard-disk drive. This option does not have any user-selectable settings.
IDE Adapter 1 Master	Identifies an IDE device (such as a CD-ROM or DVD-ROM drive) attached to the media bay connector through the media bay cable.
PS/2 Pointing Device	**Auto Detect** (the default) allows the BIOS to detect and enable an external PS/2 mouse (if attached) or enable the touch pad. **Enabled** enables the touch pad only. **Disabled** allows the use of a serial mouse.
Summary Screen	When **Summary Screen** is **Enabled** (the default), a **Phoenix BIOS Setup Utility** summary screen appears during system boot after the POST. The summary screen lists many of the system setup settings. When this option is set to **Disabled**, the summary screen does not appear.
Quiet Boot	When set to **Enabled** (default), prevents the diagnostic POST messages and summary screen from appearing at system start-up. When set to **Disabled,** allows POST messages and the summary screen to appear at system start-up. If **Quiet Boot** is enabled, you cannot choose a boot device as the system initializes.
System Memory	Displays the base amount of DRAM installed in the computer. Each computer has 640 KB of base memory. This option has no user-selectable settings.
Extended Memory	Displays the total amount of memory above 1 MB. Each computer comes standard with at least 64 MB of memory installed. If you install or remove memory, the amount of extended memory displayed changes. This option has no user-selectable settings.

NOTE: For the full name of an abbreviation or acronym used in this table, see the Glossary in the system Help.

Advanced Menu

See Figure B-2 and Table B-2 for an explanation of the options and settings on the **Advanced** menu.

```
                    PhoenixBIOS Setup Utility

   Main    Advanced    Security   Power   Boot   Exit

┌──────────────────────────────────────────────┬──────────────────────┐
│                  Setup Warning                 │  Item Specific Help  │
│                                                ├──────────────────────┤
│    Setting items on this menu to incorrect values                    │
│         may cause your system to malfunction.  │  Peripheral          │
│                                                │  Configuration       │
│                                                │                      │
│                                                │                      │
│  I/O Device Configuration                      │                      │
│  L2 Cache                      [Enabled]       │                      │
│                                                │                      │
│  Plug & Play O/S:              [Yes]           │                      │
│  Large Disk Access Mode:       [DOS]           │                      │
│                                                │                      │
│  External Hot-Key:             [Scroll Lock]   │                      │
│  Display Device Selection:     [LCD/CRT]       │                      │
│  Display Mode:                 [Expanded]      │                      │
│                                                │                      │
│                                                │                      │
└──────────────────────────────────────────────┴──────────────────────┘

 F1 Help     ↑↓ Select Item    Space Change Values    F9 Setup Defaults
 ESC Exit    ↔ Select Menu     Enter Select ➤ Sub-Menu   F10 Save and Exit
```

Figure B-2. Advanced Menu

Table B-2. Advanced Menu Options

Option	Function
I/O Device Configuration	Select this option and press <Enter> to display the **I/O Device Configuration** submenu.
L2 Cache	Sets the level-2 (L2) cache to **Enabled** (the default) or **Disabled**.

NOTE: For the full name of an abbreviation or acronym used in this table, see the Glossary in the system Help.

Table B-2. Advanced Menu Options (continued)

Option	Function
Plug & Play O/S	Options are **Yes** (the default) and **No**. Set this option to **Yes** unless your computer is running a non-Microsoft operating system such as Linux.
Large Disk Access Mode	Options are **DOS** (the default) and **Other**. Set this option to **DOS** unless your computer is running a non-Microsoft operating system such as Linux.
External Hot-Key	Lets you use the <Scroll Lock> key on the external keyboard the same way you use the <Fn> key on the computer's keyboard. Set this option to **Scroll Lock** (the default) if you are using an external keyboard. Set this option to **Disabled** to disable this function on the external keyboard.
Display Device Selection	Specifies whether the screen image will appear on the computer display, an attached external monitor, or both. Options are **LCD** (the display), **CRT** (an external monitor), and **LCD/CRT**. If this option is set to **CRT** but no external monitor is connected, the screen image appears on the computer display.
Display Mode	Allows you to switch between **Standard** and **Expanded** mode. Under **Expanded** mode, resolutions other than 800 x 600 expand to fill the screen.

NOTE: For the full name of an abbreviation or acronym used in this table, see the Glossary in the system Help.

I/O Device Configuration Submenu

See Figure B-3 and Table B-3 for an explanation of the options and settings on the **I/O Device Configuration** submenu.

```
                    PhoenixBIOS Setup Utility

    Main  │ Advanced │  Security   Power   Boot   Exit

                  I/O Device Configuration
┌──────────────────────────────────────────┬──────────────────────┐
│                                           │   Item Specific Help │
│ Serial port A:            [Auto]          │                      │
│                                           │  Configure Serial Port A
│ Parallel Port:            [Enabled]       │  Using Options       │
│   Mode:                   [Bi-directional]│                      │
│   Base I/O address:       [378 IRQ7]      │                      │
│                                           │                      │
│ Local bus IDE controller: [Both]          │                      │
│                                           │                      │
│ PCI Devices                               │                      │
│ Modem:                    [Auto]          │                      │
│ LAN:                      [Auto]          │                      │
│                                           │                      │
│                                           │                      │
└───────────────────────────────────────────┴─────────────────────┘
 F1 Help    ↑↓ Select Item    Space Change Values    F9 Setup Defaults
 ESC Exit   ↔ Select Menu     Enter Select ➤ Sub-Menu  F10 Save and Exit
```

Figure B-3. I/O Device Configuration Submenu

Table B-3. I/O Device Configuration Submenu Options

Option	Function
Serial port A	**Enabled** sets the **Serial port A: Base I/O Address** to **3F8h IRQ4**. If there is a conflict between two or more addresses, an asterisk appears next to the port type. **Disabled** disables the serial port to conserve power.

NOTE: For the full name of an abbreviation or acronym used in this table, see the Glossary in the system Help.

Table B-3. I/O Device Configuration Submenu Options (continued)

Option	Function
Parallel port	When the option is **Enabled**, the **Mode** is **Bi-directional**, the **Base I/O address** is **378h IRQ 7**. When the option is set to **Disabled**, the port is disabled and you can use its assigned LPT resources for another device. If you change the parallel port address or DMA channel, be careful not to create a conflict with the address or DMA channel of the infrared port.
Local bus IDE controller	Configures the integrated local-bus IDE adapter. Options are **Both** (default), **Disabled**, **Primary**, or **Secondary**. If **Both** is selected, you can access both the hard-disk drive and the media bay device(s). If **Primary** is selected, only the hard-disk drive is accessible. When **Disabled**, the media bay device(s) and hard-disk drive are disabled.
Modem	Options are **Auto** (the default) and **Disabled**. Setting to **Auto** automatically configures the internal modem.
LAN	Options are **Auto** (the default) and **Disabled**. Setting to **Auto** automatically configures the integrated NIC.

NOTE: For the full name of an abbreviation or acronym used in this table, see the Glossary in the system Help.

Security Menu

See Figure B-4 and Table B-4 for an explanation of the options and settings for the **Security** menu.

```
                      PhoenixBIOS Setup Utility

     Main    Advanced   Security   Power   Boot   Exit
   ┌──────────────────────────────────────────┬──────────────────────┐
   │                                           │  Item Specific Help  │
   │                                           │                      │
   │  HD Password is          Clear            │                      │
   │  User Password is        Clear            │                      │
   │  Supervisor Password is  Clear            │                      │
   │                                           │                      │
   │  Set HD Password         [Enter]          │                      │
   │  Set User Password       [Enter]          │                      │
   │  Set Supervisor Password [Enter]          │                      │
   │                                           │                      │
   │  Password On Boot        [Enabled]        │                      │
   │  Diskette access:        [Supervisor]     │                      │
   │                                           │                      │
   │                                           │                      │
   └───────────────────────────────────────────┴─────────────────────┘
   F1 Help    ↑↓ Select Item    Space Change Values   F9 Setup Defaults
   ESC Exit   ↔ Select Menu     Enter Select ➤ Sub-Menu  F10 Save and Exit
```

Figure B-4. Security Menu

Table B-4. Security Menu Options

Option	Function
HD Password is	If no hard-disk drive password has been set, the setting for **HD Password is** is **Clear**. Otherwise, the setting displayed is **Set**.
User Password is	If no user password has been set, the setting for **User Password is** is **Clear**. Otherwise, the setting displayed is **Set**.
Supervisor Password is	If no supervisor password has been set, the setting for **Supervisor Password is** is **Clear**. Otherwise, the setting displayed is **Set**.
Set HD Password	Press <Enter> to set up a new hard-disk drive password, and then follow the instructions on your screen. This password restricts access to the hard-disk drive.

NOTE: For the full name of an abbreviation or acronym used in this table, see the Glossary in the system Help.

Table B-4. Security Menu Options (continued)

Option	Function
Set User Password	Press <Enter> to set up a new user password, and then follow the instructions on your screen. This password restricts access to the computer.
Set Supervisor Password	Press <Enter> to set up a new supervisor password, and then follow the instructions on your screen. This password can replace the user password.
Password on Boot	When this option is enabled, you must enter a password before the computer loads the operating system into memory. Settings for this option are **Disabled** (default) and **Enabled**.
Diskette access	Specifies whether a **Supervisor** or **User** password is required to access the diskette drive.

NOTE: For the full name of an abbreviation or acronym used in this table, see the Glossary in the system Help.

Power Menu

See Figure B-5 and Table B-5 for an explanation of the options and settings for the **Power** menu.

NOTE: The power management settings of the Windows 98 operating system take precedence over the settings described here. For more information, see "Using Windows 98 to Conserve Battery Power" in the system Help.

```
                        PhoenixBIOS Setup Utility

       Main    Advanced   Security   Power    Boot    Exit
    ┌────────────────────────────────────────────┬─────────────────────┐
    │                                            │ Item Specific Help  │
    │                                            ├─────────────────────│
    │  Power Switch Mode:        [On/Off]        │                     │
    │  PM Control:               [Battery Only]  │                     │
    │  Power Management:         [Customized]    │                     │
    │                                            │                     │
    │  Video Timeout:            [2 Minutes]     │                     │
    │  Hard Disk Timeout:        [2 Minutes]     │                     │
    │  Auto Suspend Timeout:     [10 Minutes]    │                     │
    │                                            │                     │
    │  Battery Low Suspend:      [Enabled]       │                     │
    │  Suspend Mode:             [Save To RAM]   │                     │
    │  Resume On Modem Ring:     [Off]           │                     │
    │  Resume On Time:           [Off]           │                     │
    │                                            │                     │
    │  Auto Dim:                 [Enabled]       │                     │
    │  Lid Close:                [Suspend]       │                     │
    │                                            │                     │
    └────────────────────────────────────────────┴─────────────────────┘
     F1 Help    ↑↓ Select Item   Space Change Values    F9 Setup Defaults
     ESC Exit   ↔ Select Menu    Enter Select ➤ Sub-Menu  F10 Save and Exit
```

Figure B-5. Power Menu

Table B-5. Power Menu Options

Option	Function
Power Switch Mode	Specifies whether the power button operates in **On/Off** or **Suspend/Resume** mode. When the option is set to **On/Off**, the power button turns the computer on and off. When the option is set to **Suspend/Resume**, the power button suspends or resumes the computer.
PM Control	Enables or disables all power management features for the battery only or for both the battery and the AC power adapter. **AC/Battery** enables the power management features regardless of power source. **Battery Only** (the default) enables power management features only while the computer is running on battery power. **Disabled** completely disables the power management features.
Power Management	**Customized** (the default) allows you to control each power management setting. **Maximum Battery Life** conserves the maximum amount of system power and sets **Video Timeout**, **Hard Disk Timeout**, and **Auto Suspend Timeout** to 2 minutes each. **Maximum Performance** conserves power but allows the greatest system performance and sets **Video Timeout** to 10 minutes, **Hard Disk Timeout** to 5 minutes, and **Auto Suspend Timeout** to 10 minutes.
Video Timeout	Lets you determine how long the keyboard, touch pad, and PS/2 mouse remain idle (no I/O activity) before the display and backlight turn off. The display and backlight turn on again at the first attempt to access the keyboard, touch pad, PS/2 mouse, or display memory. Settings are **Off**, **30 Minutes**, **20 Minutes**, **15 Minutes**, **10 Minutes**, **5 Minutes**, and **2 Minutes**. To increase battery operating time, set this option to a lower number of minutes. To use this option, you must set **Power Management** to **Customized**.
Hard Disk Timeout	Lets you determine how long the hard-disk drive remains idle (no I/O activity) before the drive motor shuts down. The drive motor starts up again at the first attempt to access the hard-disk drive. Settings are **Off**, **30 Minutes**, **20 Minutes**, **10 Minutes**, **5 Minutes**, and **2 Minutes**. To increase battery operating time, set this option to a lower number of minutes. To use this option, you must set **Power Management** to **Customized**.

NOTE: For the full name of an abbreviation or acronym used in this table, see the Glossary in the system Help.

Table B-5. Power Menu Options *(continued)*

Option	Function
Auto Suspend Timeout	Lets you determine how long the computer remains idle (no I/O activity) before activating suspend-to-disk mode. Settings are **Off**, **30 Minutes**, **20 Minutes**, **10 Minutes**, **5 Minutes**, **2 Minutes**, **1 Minute.** To increase battery operating time, set this option to a lower number of minutes. To use this option, you must set **Power Management** to **Customized**.
Battery Low Suspend	Sets the computer to enter standby mode when the battery is low. Options are **Enabled** (the default) and **Disabled**. **Disabled** turns off the low-battery suspend function, but the **Auto Suspend Timeout** setting is still operative.
Suspend Mode	When set to **Save to RAM** (default), the computer conserves battery power by entering standby mode by stopping almost all computer activity, but leaves the computer ready to resume operations in seconds. Resume normal computer activity by pressing the power button (the computer may take several seconds to return to normal operation).
	When set to **Save to Disk**, the computer copies all system data to a reserved area on the hard-disk drive and then turns off all power to the computer. When the computer resumes normal operation, the same programs will be running and the same files will be open that were loaded before you activated this mode. Use save-to-disk suspend mode to conserve battery power or to preserve system data by quickly saving it to the hard-disk drive if you are about to run out of battery power.
Resume on Modem Ring	Setting this option to **On** tells the computer to resume normal operation when an incoming call is detected by a modem and the computer is in standby mode. The default is **Disabled**. To use this option, you must set **Suspend Mode** to **Save to RAM**.
Resume on Time	When the **Resume On Time** option is set to **On**, a computer in standby mode resumes normal operation at the time specified in the **Resume Time** field. The default is **Off**. To use this option, you must set **Suspend Mode** to **Save to RAM**.

NOTE: For the full name of an abbreviation or acronym used in this table, see the Glossary in the system Help.

Table B-5. Power Menu Options (continued)

Option	Function
Resume Time	**Resume Time** appears on the screen only when **Resume On Time** is set to **On**.
	Lets you specify a time when the computer resumes from standby mode to normal operation. To use this option, you must set **Suspend Mode** to **Save to RAM**.
Auto Dim	Extends battery life by setting the computer to automatically decrease the brightness of the display when running on battery power. Options are **Enabled** (the default) and **Disabled**.
Lid Close	Specifies how the computer will respond when the display lid is closed. When set to **Active** (the default), the computer switches the display image to an attached monitor. When set to **Suspend**, the computer enters standby mode.

NOTE: For the full name of an abbreviation or acronym used in this table, see the Glossary in the system Help.

Boot Menu

See Figure B-6 and Table B-6 for an explanation of the options and settings for the **Boot** menu. To select the boot device, press the up- or down-arrow key; then press <F6> or <+> to move the device up the list, or press <F5> or <-> to move the device down the list.

```
                    PhoenixBIOS Setup Utility

   Main    Advanced    Security    Power    │ Boot │    Exit

                                                    Item Specific Help

1.          [Removable Devices]
                                               Use <↑> or <↓> to
2.          [Hard Disk]                        select a device. Then
                                               press <+> to move it
3.          [ATAPI CD-ROM Drive]               up the list, or <-> to
                                               move it down the list.
4.          [Boot to LAN]                      Press <Esc> to exit
                                               this menu.


F1 Help    ↑↓ Select Item    Space Change Values    F9 Setup Defaults
ESC Exit   ↔ Select Menu     Enter Select ➤ Sub-Menu  F10 Save and Exit
```

Figure B-6. Boot Menu

Table B-6. Boot Menu Options

Option	Function
Removable Devices	The computer attempts to boot first from a bootable diskette or SuperDisk. If it does not detect one of these removable media disks, the computer tries to boot from the hard-disk drive. If a disk is in its drive, but the disk does not have the required boot files, an error message appears.
Hard Disk	The computer boots only from the hard-disk drive. If it fails to boot from the hard-disk drive, the computer does not attempt to boot from the diskette drive.
ATAPI CD-ROM Drive	The computer attempts to boot first from a bootable CD. If it does not detect a bootable CD in the CD-ROM or DVD-ROM drive, the computer tries to boot from the next device on the list. If a CD is in the CD-ROM or DVD-ROM drive, but the CD does not have the required boot files, an error message appears.
Boot to LAN	The computer attempts to boot first from a LAN.

NOTE: For the full name of an abbreviation or acronym used in this table, see the Glossary section of the system Help.

Exit Menu

To exit the system setup program from the **Exit** menu, press the up- or down-arrow key to highlight a menu option, and then press <Enter>. See Figure B-7 and Table B-7 for an explanation of the options and setting for the **Exit** menu.

```
                    PhoenixBIOS Setup Utility

    Main    Advanced   Security   Power   Boot   │ Exit │

                                                    ┌─────────────────────┐
                                                    │  Item Specific Help │
    Exit Saving Changes                             ├─────────────────────┤
    Exit Discarding Changes                         │ Exit system setup and │
    Load Setup Defaults                             │ save your changes to  │
    Load Last Saved Values                          │ CMOS.                 │
    Save Changes


 F1 Help      ↑↓ Select Item     Space Change Values     F9 Setup Defaults
 ESC Exit     ↔ Select Menu      Enter Execute Command    F10 Save and Exit
```

Figure B-7. Exit Menu

Table B-7. Exit Menu Options

Option	Function
Exit Saving Changes	Saves any changes you have made and exits the system setup program
Exit Discarding Changes	Discards any changes you have made and exits the system setup program.

NOTE: For the full name of an abbreviation or acronym used in this table, see the Glossary section of the system Help.

Table B-7. *Exit Menu Options* (continued)

Option	Function
Load Setup Defaults	Discards any changes you have made and reverts all options to their defaults, but does not exit the system setup program.
Load Last Saved Values	Discards the settings you have made and restores the settings you previously saved. Press <Enter> when prompted to continue.
Save Changes	Saves settings without exiting the system setup program. Press <Enter> when prompted to continue, and then return to other menus to make changes.

NOTE: For the full name of an abbreviation or acronym used in this table, see the Glossary section of the system Help.

A P P E N D I X   C
Error Messages

Your application programs, operating system, and the computer itself can identify problems and alert you to them. When this occurs, a message may appear on the computer's display or on an external monitor (if one is attached). This appendix documents the 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.

System Messages

If an error message appears on the display or external monitor, make a note of the message. For an explanation of the message and suggestions for correcting any errors, see Table C-1. The messages are listed alphabetically.

NOTE: If the message is not listed In Table C-1, see the documentation for the application program that was running at the time the message appeared and/or the operating system documentation for an explanation of the message and a recommended action.

Table C-1. System Error Messages

Message	Cause	Action
`0271: Check date and time settings`	The real-time clock has reverted to a default date and time.	Enter the system setup program and change the date and time back to the correct settings. If the problem persists, call Dell for technical assistance. For instructions, see Chapter 5, "Getting Help."

NOTE: For the full name of an abbreviation or acronym used in this table, see the Glossary in the system Help.

Table C-1. System Error Messages (continued)

Message	Cause	Action

`02B0:Diskette drive A error`
 	
`02B1:Diskette drive B error`
	A connector may be loose or the diskette may be faulty.	If the diskette-drive access indicator lights up when you access a file on the diskette, but you still get this error message, try a different diskette. If the message reappears, shut down the computer, remove the drive from the external media bay, and then reinsert it. Turn the computer back on, and check for the error message. If the problem persists, run the **IDE Devices** test in the Dell Diagnostics. For instructions, see "Running the Dell Diagnostics" in Chapter 3. If the problem persists, call Dell for technical assistance. For instructions, see Chapter 5, "Getting Help."

`0232:Extended RAM Failed at address line:` *nnnn*	Extended memory is not configured properly or has failed at memory address *nnnn*.	Call Dell for technical assistance. For instructions, see Chapter 5, "Getting Help."
`0200:Failure Fixed Disk`	The hard-disk drive failed to initialize.	Remove and reseat the hard-disk drive and reboot the computer. If the problem persists, run the **IDE Devices** tests in the Dell Diagnostics. For instructions, see "Running the Dell Diagnostics" in Chapter 3.

`02B2:Incorrect drive A type— run Setup`
 	
`02B3:Incorrect drive B type— run Setup`
	The diskette drive is not identified properly in the system setup program.	Shut down the computer, remove the drive from the external media bay, and then reinsert it. Turn the computer back on and check for the error message. If the problem persists, reboot the computer and press <F2> as soon as you see the Dell logo screen to enter the system setup program. Write down the setting for **IDE Adapter 1 Master** on the **Main** screen. Then call Dell for technical assistance. For instructions, see Chapter 5, "Getting Help."

`0212:Keyboard controller failed`	The keyboard controller is faulty.	Call Dell for technical assistance. For instructions, see Chapter 5, "Getting Help."
`0211:Keyboard error`	If an external keyboard is being used, a cable or connector may be loose or the keyboard may be faulty. If the built-in keyboard is being used, it may be faulty. A key on the built-in keyboard may have been pressed while the computer was booting.	If using an external keyboard, check and reseat the keyboard cable. Check and reseat the diskette drive cable. If the problem persists, run the **Stuck Key** tests in the Dell Diagnostics. For instructions, see "Running the Dell Diagnostics" in Chapter 3. If the problem cannot be corrected, call Dell for technical assistance. For instructions, see Chapter 5, "Getting Help."

NOTE: For the full name of an abbreviation or acronym used in this table, see the Glossary in the system Help.

*Table C-1. **System Error Messages** (continued)*

Message	Cause	Action
`0280:Previous boot incomplete-Default configuration used`	The computer has attempted to boot three times unsuccessfully and will now attempt to boot using the default BIOS settings.	If the computer completes the boot routine, enter the system setup program and reset any default settings you had previously customized for your computer. If you receive this message the next time you restart the computer, call Dell for technical assistance. For instructions, see Chapter 5, "Getting Help."
`0270:Real time clock error`	The CMOS battery that supports data stored in NVRAM may be dead.	Call Dell for technical assistance. For instructions, see Chapter 5, "Getting Help."
`0231:Shadow RAM failed at offset: nnnn`	Shadow RAM failed at address *nnnn*.	Call Dell for technical assistance. For instructions, see Chapter 5, "Getting Help."
`Diskette write-protected`	Because the diskette is write-protected, the operation cannot be completed.	Slide the write-protect notch up.
`0210:Stuck Key`	If the built-in keyboard is being used, it may be faulty. A key on the built-in keyboard may have been pressed while the computer was booting.	Run the **Stuck Key** test in the Dell Diagnostics. For instructions, see "Running the Dell Diagnostics" in Chapter 3. If the problem cannot be corrected, call Dell for technical assistance. For instructions, see Chapter 5, "Getting Help."
`0250:System battery is dead—Replace and run Setup`	The system battery does not have enough charge to power the computer.	Connect the computer to electrical power to recharge the battery, or replace the battery. Then check your system setup settings.
`02D0:System cache error— cache disabled`	The primary cache internal to the microprocessor has failed.	Call Dell for technical assistance. For instructions, see Chapter 5, "Getting Help."
`0251:System CMOS checksum bad—default configuration used`	The BIOS has been changed. CMOS has been corrupted or modified, possibly by an application program that changes data stored in CMOS.	Reboot the computer. As soon as you see the Dell logo screen, press <F2> to enter the system setup program and reconfigure the system. If the problem persists, call Dell for technical assistance. For instructions, see Chapter 5, "Getting Help."
`0230:System RAM failed at offset: nnnn`	System RAM failed at address *nnnn* in the 64-KB block at which the error was detected.	Call Dell for technical assistance. For instructions, see Chapter 5, "Getting Help."
`0260:System timer error`	A chip on the system board may be malfunctioning.	Run the **System Set** test and the **Keyboard Controller** test in the Dell Diagnostics. For instructions, see "Running the Dell Diagnostics" in Chapter 3.

NOTE: For the full name of an abbreviation or acronym used in this table, see the Glossary in the system Help.

A P P E N D I X   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 Technical Support 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 typically for business or industrial environments.
- Class B is typically 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.

A Notice About Networked Computer Systems: Some Dell computer systems that are classified for Class B environments may include an on-board network interface controller (NIC). If your Class B system contains a NIC, it may be considered to be a Class A system at the time that the NIC is connected to a network. When the NIC is not connected to a network, your system is considered to be a Class B digital device.

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 an FCC Class B rating as 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:

- Model number: PP01S
- Company name: Dell Computer Corporation
  EMC Engineering Department
  One Dell Way
  Round Rock, Texas 78682 USA
  512-338-4400

Modem Regulatory Information

This equipment complies with Part 68 of the FCC rules. On the bottom of your computer is a label that contains, among other information, the FCC registration number and ringer equivalence number (REN) for your equipment. If requested, you must provide this information to the telephone company.

The REN is used to determine the quantity of devices that may be connected to the telephone line. Excessive RENs on the telephone line may result in the devices not

ringing in response to an incoming call. In most areas, the sum of all the RENs on your telephone line should be less than five to ensure proper service from the telephone company. To be certain of the number of devices that you may connect to a line, as determined by the total RENs, contact your local telephone company.

The registration jack Universal Service Order Code (USOC) used by this equipment is RJ-11C. An FCC compliant telephone cord and modular plug is provided with this equipment. This equipment is designed to be connected to the telephone network or premises wiring using a compatible modular jack that is Part 68 compliant.

This equipment cannot be used on public coin-phone service provided by the telephone company. Connection to party line service is subject to state tariffs.

There are no user serviceable parts on the modem contained in your computer.

If your telephone equipment causes harm to the telephone network, the telephone company will notify you in advance that service may be temporarily discontinued. If advance notice is not practical, the telephone company will notify you as soon as possible. Also, you will be advised of your right to file a complaint with the FCC if you believe it is necessary.

The telephone company may make changes in its facilities, equipment, operations, or procedures that could affect the operation of this equipment. If this happens, the telephone company will provide advance notice in order for you to make necessary modifications to maintain uninterrupted service.

If you experience trouble with this telephone equipment, refer to Chapter 5, "Getting Help," or the section titled "Contacting Dell" in your system *Help* to find the appropriate telephone number for obtaining customer assistance. If the equipment is causing harm to the telephone network, the telephone company may request that you disconnect the equipment until the problem is resolved.

Fax Branding

The Telephone Consumer Protection Act of 1991 makes it unlawful for any person to use a computer or other electronic device, including fax machines, to send any message unless such message clearly contains in a margin at the top or bottom of each transmitted page or on the first page of the transmission, the date and time it is sent, identification of the business, other entity, or individual sending the message, and the telephone number of the sending machine or such business, other entity, or individual. The telephone number provided may not be a 900 number or any other number for which charges exceed local or long-distance transmission charges.

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-003" or "IC Class B ICES-003" 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.

Modem Regulatory Information

The IC label identifies certified equipment. This certification means that the equipment meets telecommunications network protective, operational, and safety requirements as prescribed in the appropriate Terminal Equipment Technical Requirements document(s). The IC label does not guarantee that the equipment will operate to the user's satisfaction.

Before installing this equipment, users should ensure that it is permissible to be connected to the facilities of the local telecommunications company. The equipment must also be installed using an acceptable method of connection. The customer should be aware that compliance with the above conditions may not prevent degradation of service in some situations.

Repairs to certified equipment should be coordinated by a representative designated by the supplier. Any repairs or alteration made by a user to this equipment, or equipment malfunctions, may give the telephone communications company cause to request the user to disconnect the equipment.

Users should ensure for their own protection, that the electrical ground connections of the power utility, telephone lines, and internal metallic water-pipe system, if present, are connected together. This precaution may be particularly important in rural areas.

NOTICE: Users should not attempt to make such connections themselves. Contact the appropriate electric inspection authority, or electrician, as appropriate.

NOTE: The REN assigned to each terminal device provides an indication of the maximum number of terminals allowed to be connected to a telephone interface. The termination on an interface may consist of any combination of devices subject only to the requirement that the sum of the RENs of all the devices does not exceed the number five.

The REN for the internal modem as stated on the IC regulatory label located on the bottom of the computer is 0.6B.

The following information is provided in compliance with IC regulations:

Dell Computer Corporation
Warranty and Repair Service Center
One Dell Way
Round Rock, TX 78682 USA

512-338-4400

CE Notice (European Union)

Marking by the symbol $\mathsf{C}\mathsf{E}$ 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 uses both a lithium-ion battery and a nickel-metal hydride (NiMH) coin cell battery. For instructions about replacing the lithium-ion battery in your computer, refer to "Installing a Battery" in Chapter 2. The NiMH battery is a long-life battery, and it is very possible that you will never need to replace it. However, if this battery ever needs to be replaced, the procedure must be performed by an authorized service technician.

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

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

MOC Notice (South Korea Only)

To determine which classification (Class A or B) applies to your computer system (or other Dell digital device), examine the South Korean Ministry of Communications (MOC) registration labels located on your computer (or other Dell digital device). The MOC label may be located separately from the other regulatory marking applied to your product. The English text, "EMI (A)," for Class A products, or "EMI (B)" for Class B products, appears in the center of the MOC label (see Figures D-3 and D-4).

NOTE: MOC emissions requirements provide for two classifications:

- *Class A devices are for business purposes.*
- *Class B devices are for nonbusiness purposes.*

Class A Device

장치 종류	사용자 안내문
A급 기기	이 장치는 업무용으로 전자파 적합등록을 한 장치이오니 판매자 또는 사용자는 이 점을 주의하시기 바라며 만약 잘못 판매 또는 구입하였을 때에는 가정용으로 교환하시기 바랍니다.

Please note that this device has been approved for business purposes with regard to electromagnetic interference. If you find that this device is not suitable for your use, you may exchange it for a nonbusiness device.

EMI (A)
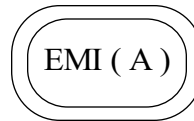
Figure D-3. MOC Class A Regulatory Mark

Class B Device

장치 종류	사용자 안내문
B급 기기	이 장치는 가정용으로 전자파 적합등록을 한 장치로서 주거지역 에서는 물론 모든 지역에서 사용할 수 있습니다.

Please note that this device has been approved for nonbusiness purposes and may be used in any environment, including residential areas.
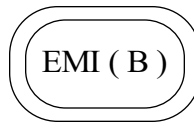
Figure D-4. MOC Class B Regulatory Mark

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:	100–240 VAC
Frequency:	60–50 Hz
Input current rating:	1.5 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:	100–240 VAC
Frecuencia:	60–50 Hz
Consumo de corriente:	1.5 A

BSMI Notice (Taiwan Only)

> ### 警告使用者：
> 這是甲類的資訊產品，在居住的環境中使用時，可能會造成射頻干擾，在這種情況下，使用者會被要求採取某些適當的對策。

A P P E N D I X   E

Limited 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 limited 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 limited warranty. Otherwise, this limited 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 limited 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 limited 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 limited 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 5, "Getting Help," or the section titled "Contacting Dell" in your system *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., 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 LIMITED 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 LIMITED 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 LIMITED WARRANTY STATEMENT OR LIABILITY FOR INCIDENTAL OR CONSE-QUENTIAL 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 LIMITA-TION OF INCIDENTAL OR CONSEQUENTIAL DAMAGES, SO THE PRECEDING EXCLUSION OR LIMITATION MAY NOT APPLY TO YOU.

These provisions apply to Dell's three-year limited 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 limited warranty.

NOTE: If you chose one of the available warranty and service options in place of the standard three-year limited 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 limited warranty. Otherwise, this limited 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 per-form required preventive maintenance, and problems caused by use of parts and components not supplied by Dell.

This limited warranty does not cover any items that are in one or more of the follow-ing 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; accesso-ries 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 limited 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 limited 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 5, "Getting Help," or the section titled "Contacting Dell" in your system *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 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 LIMITED 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 LIMITED WAR-RANTY 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 LIMITED WARRANTY STATEMENT OR LIABILITY FOR INCIDENTAL OR CONSE-QUENTIAL 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 LIMITA-TION OF INCIDENTAL OR CONSEQUENTIAL DAMAGES, SO THE PRECEDING EXCLUSION OR LIMITATION MAY NOT APPLY TO YOU.

These provisions apply to Dell's three-year limited 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 limited warranty.

NOTE: If you chose one of the available warranty and service options in place of the standard three-year limited 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 com-pany, 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.

The factory-installed software on your system is the current version provided by the software manufacturer and is validated by Dell for installation. Dell recommends that you check each software manufacturer's year 2000 Web site for updates to their products. Links to a number of these Web sites can be found at the Dell year 2000 Web sites.

Additional Information

For additional information on year 2000 compliance of Dell-branded hardware products, refer to the following Dell year 2000 Web sites, or contact a Dell customer service representative in your area:

- **http://www.dell.com/year2000** (Americas)
- **http://www.dell.com/jp/year2000** (Japan)
- **http://www.euro.dell.com/year2000** (Europe)
- **http://www.dell.com/ap/year2000** (Asia Pacific)

Index

TSR programs
about, 3-7

typographical conventions, xi

U

upgrade options, 1-7

user's documentation, x

W

warnings, x

warranty information, x, E-1, E-3

warranty repair or credit, 5-5

water damage, 3-11

Windows 98
resolving software and hardware
incompatibilities, 3-10

World Wide Web help tools, 5-2