Problems writing to a CD/DVD-RW drive

CLOSE OTHER PROGRAMS — The CD/DVD-RW drive must receive a steady stream of data when writing. If the stream is interrupted, an error occurs. Try closing all programs before you write to the CD/DVD-RW.

TURN OFF STANDBY MODE IN WINDOWS BEFORE WRITING TO A CD/DVD-RW DISC — Search for the keyword *standby* in the Windows Help and Support Center for information on power management modes. To access the Help and Support Center, click **Start→ Help and Support**.

CHANGE THE WRITE SPEED TO A SLOWER RATE — See the help files for your media creation software.

If you cannot eject the CD, CD-RW, DVD, or DVD+RW drive tray
1. Ensure that the computer is shut down.
2. Straighten a paper clip and insert one end into the eject hole at the front of the drive; push firmly until the tray is partially ejected.
3. Gently pull out the tray until it stops.

If you hear an unfamiliar scraping or grinding sound
- Ensure that the sound is not caused by the program that is running.
- Ensure that the disk or disc is inserted properly.

11.3.2   Hard Drive Problems

ALLOW THE COMPUTER TO COOL BEFORE TURNING IT ON — A hot hard drive may prevent the operating system from starting. Try allowing the computer to return to within the operating temperature range before turning it on.

RUN CHECK DISK
1. Click the **Start** button and click **My Computer**.
2. Right-click **Local Disk C:**.
3. Click **Properties**.
4. Click the **Tools** tab.
5. Under **Error-checking**, click **Check Now**.
6. Click **Scan for and attempt recovery of bad sectors**.
7. Click **Start**.

11.4   E-Mail, Modem, and Internet Problems

Fill out the Diagnostics Checklist (see "Diagnostics Checklist") as you complete these checks.

⚠ **CAUTION: Before you begin any of the procedures in this section, follow the Safety Information in this manual.**

📝 **NOTE:** Connect the modem to an analog telephone jack only. The modem does not operate while it is connected to a digital telephone network.

CHECK THE MICROSOFT OUTLOOK® EXPRESS SECURITY SETTINGS — If you cannot open your e-mail attachments:

1. In Outlook Express, click **Tools**, click **Options**, and then click **Security**.
2. Click **Do not allow attachments** to remove the checkmark.

CHECK THE TELEPHONE LINE CONNECTION.

CHECK THE TELEPHONE JACK.

CONNECT THE MODEM DIRECTLY TO THE TELEPHONE WALL JACK.

USE A DIFFERENT TELEPHONE LINE —
- Verify that the telephone line is connected to the jack on the modem. (The jack has either a green label or a connector-shaped icon next to it.)
- Ensure that you hear a click when you insert the telephone line connector into the modem.
- Disconnect the telephone line from the modem and connect it to a telephone. Listen for a dial tone.
- If you have other telephone devices sharing the line, such as an answering machine, fax machine, surge protector, or line splitter, then bypass them and connect the modem directly to the telephone wall jack.

  If you are using a line that is 3 m (10 ft) or more in length, try a shorter one.

RUN THE MODEM DIAGNOSTIC TOOL — Click the **Start** button, point to **All Programs** and then click **Modem Diagnostic Tool**. Follow the instructions on the screen to identify and resolve modem problems.

VERIFY THAT THE MODEM IS COMMUNICATING WITH WINDOWS —
1. Click the **Start** button and click **Control Panel**.
2. Click **Printers and Other Hardware**.
3. Click **Phone and Modem Options**.
4. Click the **Modems** tab.
5. Click the COM port for your modem.
6. Click **Properties**, click the **Diagnostics** tab, and then click **Query Modem** to verify that the modem is communicating with Windows.

   If all commands receive responses, the modem is operating properly.

ENSURE THAT YOU ARE CONNECTED TO THE INTERNET — Ensure that you have subscribed to an Internet provider. With the Outlook Express e-mail program open, click **File**. If **Work Offline** has a checkmark next to it, click the checkmark to remove it and connect to the Internet. For help, contact your Internet service provider.

SCAN THE COMPUTER FOR SPYWARE — If you are experiencing slow computer performance, you frequently receive pop-up advertisements, or you are having problems connecting to the Internet, your computer might be infected with spyware. Use an anti-virus program that includes anti-spyware protection (your program may require an upgrade) to scan the computer and remove spyware.

11.5   Error Messages

Fill out the Diagnostics Checklist (see "Diagnostics Checklist") as you complete these checks.

⚠ **CAUTION: Before you begin any of the procedures in this section, follow the safety instructions in the Safety Information section of this manual.**

If the message is not listed, see the documentation for the operating system or the program that was running when the message appeared.

AUXILIARY DEVICE FAILURE — The touch pad, track stick, or external mouse may be faulty. For an external mouse, check the cable connection. Enable the **Pointing Device** option in the system setup program. If the problem persists, contact Dell Customer Support.

BAD COMMAND OR FILE NAME — Ensure that you have spelled the command correctly, put spaces in the proper place, and used the correct pathname.

CACHE DISABLED DUE TO FAILURE — The primary cache internal to the microprocessor has failed. Contact Dell Customer Support.

CD DRIVE CONTROLLER FAILURE — The CD drive does not respond to commands from the computer (see "Dell Support Utility").

DATA ERROR — The hard drive cannot read the data (see "Dell Support Utility").

DECREASING AVAILABLE MEMORY — One or more memory modules may be faulty or improperly seated. Reinstall the memory modules and, if necessary, replace them (see "Memory Problems").

DISK C: FAILED INITIALIZATION — The hard drive failed initialization. Run the hard drive tests in the Dell Diagnostics (see "Dell Diagnostics").

DRIVE NOT READY — The operation requires a hard drive in the bay before it can continue. Install a hard drive in the hard drive bay (see "Drive Problems").

ERROR READING PCMCIA CARD — The computer cannot identify the PC Card. Reinsert the card or try another PC Card (see "Installing a PC Card or ExpressCard").

EXTENDED MEMORY SIZE HAS CHANGED — The amount of memory recorded in NVRAM does not match the memory installed in the computer. Restart the computer. If the error appears again, contact Dell Customer Support.

THE FILE BEING COPIED IS TOO LARGE FOR THE DESTINATION DRIVE — The file that you are trying to copy is too large to fit on the disk, or the disk is too full. Try copying the file to a different disk or use a larger capacity disk.

A FILENAME CANNOT CONTAIN ANY OF THE FOLLOWING CHARACTERS: \ / : * ? " < > | — Do not use these characters in filenames.

GATE A20 FAILURE — A memory module may be loose. Reinstall the secondary memory modules (see "Memory"). If this does not resolve the issue, contact Dell Customer Support.

GENERAL FAILURE — The operating system is unable to carry out the command. The message is usually followed by specific information—for example, Printer out of paper. Take the appropriate action.

HARD-DISK DRIVE CONFIGURATION ERROR — The computer cannot identify the drive type. Shut down the computer, remove the hard drive (see "Hard Drive Problems"), and boot the computer from media. Then shut down the computer, reinstall the hard drive, and restart the computer. Run the Hard-Disk Drive tests in the Dell Diagnostics (see "Dell Diagnostics").

HARD-DISK DRIVE CONTROLLER FAILURE 0 — The hard drive does not respond to commands from the computer. Shut down the computer, remove the hard drive (see "Hard Drive Problems"), and boot the computer from media. Then shut down the computer, reinstall the hard drive, and restart the computer. If the problem persists, try another drive. Run the Hard-Disk Drive tests in the Dell Diagnostics (see "Dell Diagnostics").

HARD-DISK DRIVE FAILURE — The hard drive does not respond to commands from the computer. Shutdown the computer, remove the hard drive (see "Hard Drive Problems"), and boot the computer from media. Then shut down the computer, reinstall the hard drive, and restart the computer. If the problem persists, try another drive. Run the Hard-Disk Drive tests in the Dell Diagnostics (see "Dell Diagnostics").

HARD-DISK DRIVE READ FAILURE — The hard drive may be defective. Shut down the computer, remove the hard drive (see "Hard Drive Problems"), and boot the computer from media. Then shut down the computer, reinstall the hard drive, and restart the computer. If the problem persists, try another drive. Run the Hard-Disk Drive tests in the Dell Diagnostics (see "Dell Diagnostics").

INSERT BOOTABLE MEDIA — The operating system is trying to boot to nonbootable media. Insert bootable media.

INVALID CONFIGURATION INFORMATION-PLEASE RUN SYSTEM SETUP PROGRAM — The system configuration information does not match the hardware configuration. The message is most likely to occur after a memory module is installed. Correct the appropriate options in the system setup program (see "System Setup Program").

KEYBOARD CLOCK LINE FAILURE — For external keyboards, check the cable connection. Run the Keyboard Controller test in the Dell Diagnostics (see ""Dell Diagnostics").

KEYBOARD CONTROLLER FAILURE — For external keyboards, check the cable connection. Restart the computer, and avoid touching the keyboard or the mouse during the boot routine. Run the Keyboard Controller test in the Dell Diagnostics (see "Dell Diagnostics").

KEYBOARD DATA LINE FAILURE — For external keyboards, check the cable connection. Run the Keyboard Controller test in the Dell Diagnostics (see "Dell Diagnostics").

KEYBOARD STUCK KEY FAILURE — For external keyboards or keypads, check the cable connection. Restart the computer, and avoid touching the keyboard or keys during the boot routine. Run the Stuck Key test in the Dell Diagnostics (see "Dell Diagnostics").

MEMORY ADDRESS LINE FAILURE AT ADDRESS, READ VALUE EXPECTING VALUE — A memory module may be faulty or improperly seated. Reinstall the secondary memory modules (see "Memory"). If this does not resolve the issue, contact Dell Customer Support.

MEMORY ALLOCATION ERROR — The software you are attempting to run is conflicting with the operating system, another program, or a utility. Shut down the computer, wait 30 seconds, and then restart it. Try to run the program again. If the error message still appears, see the software documentation.

MEMORY DATA LINE FAILURE AT ADDRESS, READ VALUE EXPECTING VALUE — A memory module may be faulty or improperly seated. Reinstall the secondary memory modules (see "Memory"). If this does not resolve the issue, contact Dell Customer Support.

MEMORY DOUBLE WORD LOGIC FAILURE AT ADDRESS, READ VALUE EXPECTING VALUE — A memory module may be faulty or improperly seated. Reinstall the secondary memory modules (see "Memory"). If this does not resolve the issue, contact Dell Customer Support.

MEMORY ODD/EVEN LOGIC FAILURE AT ADDRESS, READ VALUE EXPECTING VALUE — A memory module may be faulty or improperly seated. Reinstall the secondary memory modules (see "Memory"). If this does not resolve the issue, contact Dell Customer Support.

MEMORY WRITE/READ FAILURE AT ADDRESS, READ VALUE EXPECTING VALUE — A memory module may be faulty or improperly seated. Reinstall the secondary memory modules (see "Memory"). If this does not resolve the issue, contact Dell Customer Support.

NO BOOT DEVICE AVAILABLE — The computer cannot find the hard drive. If the hard drive is your boot device, ensure that the drive is installed, properly seated, and partitioned as a boot device.

NO BOOT SECTOR ON HARD DRIVE — The operating system may be corrupted. Contact Dell Customer Support..

NO TIMER TICK INTERRUPT — A chip on the system board may be malfunctioning. Run the System Set tests in the Dell Diagnostics (see "Dell Diagnostics").

NOT ENOUGH MEMORY OR RESOURCES. EXIT SOME PROGRAMS AND TRY AGAIN — You have too many programs open. Close all windows and open the program that you want to use.

OPERATING SYSTEM NOT FOUND — Reinstall the hard drive (see "Drive Problems"). If the problem persists, contact Dell Customer Support.

OPTIONAL ROM BAD CHECKSUM — The optional ROM apparently failed. Contact Dell Customer Support.

A REQUIRED .DLL FILE WAS NOT FOUND — The program that you are trying to open is missing an essential file. Remove and then reinstall the program.

1. Click the **Start** button and click **Control Panel**.
2. Click **Add or Remove Programs**.
3. Select the program you want to remove.
4. Click **Remove** or **Change/Remove** and follow the prompts on the screen.
5. See the program documentation for installation instructions.

SECTOR NOT FOUND — The operating system cannot locate a sector on the hard drive. You may have a defective sector or corrupted FAT on the hard drive. Run the Windows error-checking utility to check the file structure on the hard drive. For instructions, access the Help and Support Center (click **Start→ Help and Support**). If a large number of sectors are defective, back up the data (if possible), and then reformat the hard drive.

SEEK ERROR — The operating system cannot find a specific track on the hard drive.

SHUTDOWN FAILURE — A chip on the system board may be malfunctioning. Run the System Set tests in the Dell Diagnostics (see "Dell Diagnostics").

TIME-OF-DAY CLOCK LOST POWER — System configuration settings are corrupted. Connect your computer to an electrical outlet to charge the battery. If the problem persists, try to restore the data by entering the system setup program. Then immediately exit the program. If the message reappears, contact Dell Customer Support.

TIME-OF-DAY CLOCK STOPPED — The reserve battery that supports the system configuration settings may require replacement. Contact Dell Customer Support.

TIME-OF-DAY NOT SET-PLEASE RUN THE SYSTEM SETUP PROGRAM — The time or date stored in the system setup program does not match the system clock. Correct the settings for the Date and Time options (see "System Setup Program").

TIMER CHIP COUNTER 2 FAILED — A chip on the system board may be malfunctioning. Run the System Set tests in the Dell Diagnostics (see "Dell Diagnostics").

UNEXPECTED INTERRUPT IN PROTECTED MODE — The keyboard controller may be malfunctioning, or a memory module may be loose. Run the System Memory tests and the Keyboard Controller test in the Dell Diagnostics (see "Dell Diagnostics").

X:\ IS NOT ACCESSIBLE. THE DEVICE IS NOT READY — Insert a disk into the drive and try again.

WARNING: BATTERY IS CRITICALLY LOW — The battery is running out of charge. Replace the battery, or connect the computer to an electrical outlet. Otherwise, activate hibernate mode or shut down the computer.

11.6   IEEE 1394 Device Problems

⚠ **CAUTION: Before you begin any of the procedures in this section, follow the safety instructions in the Safety Information section of this manual.**

ENSURE THAT THE IEEE 1394 DEVICE IS RECOGNIZED BY WINDOWS —

1. Click the **Start** button and click **Control Panel**.
2. Click **Printers and Other Hardware**.
   If your IEEE 1394 device is listed, Windows recognizes the device.

IF YOU HAVE PROBLEMS WITH AN IEEE 1394 DEVICE —
Contact the IEEE 1394 device manufacturer.

ENSURE THAT THE IEEE 1394 DEVICE IS PROPERLY INSERTED INTO THE CONNECTOR.

11.7 Keyboard Problems

Fill out the Diagnostics Checklist (see "Diagnostics Checklist") as you complete these checks.

⚠ **CAUTION: Before you begin any of the procedures in this section, follow the safety instructions in the Safety Information section of this manual.**

📝 **NOTE:** Use the integrated keyboard when running the Dell Diagnostics or the system setup program. When you attach an external keyboard, the integrated keyboard remains fully functional.

11.7.1 External Keyboard problems

📝 **NOTE:** When you attach an external keyboard, the integrated keyboard remains fully functional.

CHECK THE KEYBOARD CABLE — Shut down the computer. Disconnect the keyboard cable and check it for damage, and firmly reconnect the cable.

If you are using a keyboard extension cable, disconnect it and connect the keyboard directly to the computer.

CHECK THE EXTERNAL KEYBOARD —
1. Shut down the computer, wait 1 minute, and turn it on again.
2. Verify that the numbers, capitals, and scroll lock lights on the keyboard blink during the boot routine.
3. From the Windows desktop, click the **Start** button, point to **Programs**, point to **Accessories**, and click **Notepad**.
4. Type some characters on the external keyboard and verify that they appear on the display.

   If you cannot verify these steps, you may have a defective external keyboard.

TO VERIFY THAT THE PROBLEM IS WITH THE EXTERNAL KEYBOARD, CHECK THE INTEGRATED KEYBOARD —
1. Shut down the computer.
2. Disconnect the external keyboard.
3. Turn on the computer.
4. From the Windows desktop, click the **Start** button, point to **Programs**, point to **Accessories**, and click **Notepad**.
5. Type some characters on the internal keyboard and verify that they appear on the display.

   If the characters appear now but did not with the external keyboard, you may have a defective external keyboard. Contact Dell Customer Support.

RUN THE KEYBOARD DIAGNOSTICS TESTS — Run the PC-AT Compatible Keyboards tests in the Dell Diagnostics (see "Dell Diagnostics"). If the tests indicate a defective external keyboard, contact Dell Customer Support.

11.7.2   Unexpected characters

DISABLE THE NUMERIC KEYPAD — Press **<Num Lk>** to disable the numeric keypad if numbers are displayed instead of letters. Verify that the numbers lock light is not lit.

11.8   Lockups and Software Problems

Fill out the Diagnostics Checklist (see "Diagnostics Checklist") as you complete these checks.

⚠ **CAUTION: Before you begin any of the procedures in this section, follow the safety instructions in the Safety Information section of this manual.**

11.8.1   The computer does not start up

ENSURE THAT THE AC ADAPTER IS FIRMLY CONNECTED TO THE COMPUTER AND TO THE ELECTRICAL OUTLET.

11.8.2   The computer stops responding

🠊 **NOTICE:** You might lose data if you are unable to perform an operating system shutdown.

TURN THE COMPUTER OFF — If you are unable to get a response by pressing a key on your keyboard or moving your mouse, press and hold the power button for at least 8 to 10 seconds until the computer turns off. Then restart your computer.

11.8.3   A program stops responding or crashes repeatedly

📝 **NOTE:** Software usually includes installation instructions in its documentation or on a floppy disk or CD.

END THE PROGRAM —
1. Press **<Ctrl><Shift><Esc>** simultaneously.
2. Click **Task Manager**.
3. Click the program that is no longer responding.
4. Click **End Task**.

CHECK THE SOFTWARE DOCUMENTATION — If necessary, uninstall and then reinstall the program.

11.8.4   A program is designed for an earlier Microsoft® Windows® operating system

RUN THE PROGRAM COMPATIBILITY WIZARD — The Program Compatibility Wizard configures a program so it runs in an environment similar to non-Windows operating system environments.

1. Click **Start→ All Programs→ Accessories→ Program Compatibility Wizard→ Next**.
2. Follow the instructions on the screen.

11.8.5   A solid blue screen appears

TURN THE COMPUTER OFF — If you are unable to get a response by pressing a key on your keyboard or moving your mouse, press and hold the power button for at least 8 to 10 seconds until the computer turns off. Then restart your computer.

11.9   Other software problems

CHECK THE SOFTWARE DOCUMENTATION OR CONTACT THE SOFTWARE MANUFACTURER FOR TROUBLESHOOTING INFORMATION —

- Ensure that the program is compatible with the operating system installed on your computer.
- Ensure that your computer meets the minimum hardware requirements needed to run the software.
  See the software documentation for information.
- Ensure that the program is installed and configured properly.
- Verify that the device drivers do not conflict with the program.
- If necessary, uninstall and then reinstall the program.

BACK UP YOUR FILES IMMEDIATELY.

USE A VIRUS-SCANNING PROGRAM TO CHECK THE HARD DRIVE, FLOPPY DISKS, OR CDS.

SAVE AND CLOSE ANY OPEN FILES OR PROGRAMS AND SHUT DOWN YOUR COMPUTER THROUGH THE Start MENU.

SCAN THE COMPUTER FOR SPYWARE — If you are experiencing slow computer performance, you frequently receive pop-up advertisements, or you are having problems connecting to the Internet, your computer might be infected with spyware. Use an anti-virus program that includes anti-spyware protection (your program may require an upgrade) to scan the computer and remove spyware.

RUN THE DELL DIAGNOSTICS — See "Dell Diagnostics". If all tests run successfully, the error condition is related to a software problem.

11.10   Memory Problems

Fill out the Diagnostics Checklist (see "Diagnostics Checklist") as you complete these checks.

⚠ **CAUTION: Before you begin any of the procedures in this section, follow the safety instructions in the Safety Information section of this manual.**

🚫 **NOTICE:** Your computer has one user-accessible SODIMM socket accessed from the bottom of the computer (DIMM B). DIMM B is also referred to as secondary memory. You can add or replace memory modules to the SODIMM sockets accessible from the bottom of the computer (DIMM B). However, you must not attempt to access the SODIMM socket located beneath the keyboard, DIMM A, without first contacting Dell Customer Support. DIMM A is also referred to as primary memory.

IF YOU RECEIVE AN INSUFFICIENT MEMORY MESSAGE —
- Save and close any open files and exit any open programs you are not using to see if that resolves the problem.
- See the software documentation for minimum memory requirements. If necessary, install additional memory (see "Memory").
- Reinstall the secondary memory modules (see "Memory") to ensure that your computer is successfully communicating with the memory. If this does not resolve the issue, contact Dell Customer Support.
- Run the Dell Diagnostics (see "Dell Diagnostics").

IF YOU EXPERIENCE OTHER MEMORY PROBLEMS —
- Reinstall the secondary memory modules (see "Memory") to ensure that your computer is successfully communicating with the memory. If this does not resolve the issue, contact Dell Customer Support.

- Ensure that you are following the memory installation guidelines (see "Memory").
- Run the Dell Diagnostics (see "Dell Diagnostics").

11.11   Network Problems

Fill out the Diagnostics Checklist (see "Diagnostics Checklist") as you complete these checks.

⚠ **CAUTION: Before you begin any of the procedures in this section, follow the safety instructions in the Safety Information section of this manual.**

11.11.1 General

CHECK THE NETWORK CABLE CONNECTOR — Ensure that the network cable is firmly inserted into both the network connector on the back of the computer and the network connector.

CHECK THE NETWORK LIGHTS ON THE NETWORK CONNECTOR — No light indicates that no network communication exists. Replace the network cable.

RESTART THE COMPUTER AND LOG ON TO THE NETWORK AGAIN.

CHECK YOUR NETWORK SETTINGS — Contact your network administrator or the person who set up your network to verify that your network settings are correct and that the network is functioning.

11.11.2 Wireless Local Area Network (WLAN)

For information about troubleshooting wireless local area networks, see "Wireless Local Area Network".

11.11.3 Mobile Broadband (Wireless Wide Area Network)

✎ **NOTE:** The Dell Mobile Broadband Card Utility user's guide is available through the Windows Help and Support Center. To access the Help and Support Center, click **Start→ Help and Support**.

✎ **NOTE:** Remove any network cables from the computer and disable the WLAN card. To disable the WLAN card, click **Start→ Connect To→ Wireless Network Connection→ Disable**.

✎ **NOTE:** The icon appears on the Windows desktop if the computer has a Dell Mobile Broadband card installed. Double-click the icon to launch the utility. Once the utility has launched, the icon appears in the notification area.

CANNOT CONNECT — The Dell Mobile Broadband Card must be activated on the network in order to connect. Once the Dell Mobile Broadband Card Utility has been launched, position the mouse over the icon in the taskbar to read the status of the connection. If the status indicates the mobile broadband card is not activated, see "Activate your Mobile Broadband card" for more information. If problems persist, contact your Mobile Broadband service carrier for details on your plan.

CHECK YOUR MOBILE BROADBAND NETWORK SERVICE — Contact your Mobile Broadband service carrier to verify coverage plan and supported services.

CHECK THE STATUS IN THE DELL MOBILE BROADBAND CARD UTILITY — Click the icon on the Windows desktop to launch the utility. Check the status in the main window:
- No card detected – Restart the computer and launch the utility again.
- Radio Off – Ensure the Mobile Broadband card is enabled by viewing the status in the Dell Mobile Broadband Card Utility. If the card is disabled, enable the Mobile Broadband card by clicking the **Turn Radio On** button in the main screen of the Dell Mobile Broadband Card Utility.

- Searching – The Dell Mobile Broadband Card Utility has not yet located a Mobile Broadband network. If the searching state persists, ensure that the signal strength is adequate.
- No service – The Dell Mobile Broadband Card Utility did not locate a Mobile Broadband network. Ensure that the signal strength is adequate. Restart the Dell wireless utility or contact your Mobile Broadband network provider.
- Check your Mobile Broadband Network Service – Contact your Mobile Broadband network service provider to verify coverage plan and supported services.

ACTIVATE YOUR MOBILE BROADBAND CARD — Before you connect to the Internet, you must activate the Mobile Broadband service through your cellular service provider. For instructions and for additional information about using the Dell Mobile Broadband Card Utility, see the user's guide available through the Windows Help and Support Center (click **Start→ Help and Support**). The user's guide is also available on the media included with your Mobile Broadband card if you purchased the card separately from your computer.

11.12   PC Card Problems

Fill out the Diagnostics Checklist (see "Diagnostics Checklist") as you complete these checks.

⚠ **CAUTION: Before you begin any of the procedures in this section, follow the safety instructions in the Safety Information section of this manual.**

CHECK THE CARD — Ensure that the card is properly inserted into the connector.

ENSURE THAT THE CARD IS RECOGNIZED BY WINDOWS — Double-click the **Safely Remove Hardware** icon in the Windows taskbar. Ensure that the card is listed.

IF YOU HAVE PROBLEMS WITH AN DELL-PROVIDED CARD — Contact Dell Customer Support.

IF YOU HAVE PROBLEMS WITH A CARD NOT PROVIDED BY DELL — Contact the card manufacturer.

11.13   Power Problems

Fill out the Diagnostics Checklist (see "Diagnostics Checklist") as you complete these checks.

⚠ **CAUTION: Before you begin any of the procedures in this section, follow the safety instructions in the Safety Information section of this manual.**

CHECK THE POWER LIGHT — When the power light is lit or blinking, the computer has power. If the power light is blinking, the computer is in standby mode—press the power button to exit standby mode. If the light is off, press the power button to turn on the computer.

CHARGE THE BATTERY — The battery charge may be depleted.
1. Reinstall the battery.
2. Use the AC adapter to connect the computer to an electrical outlet.
3. Turn on the computer.

📝 **NOTE:** Battery operating time (the time the battery can hold a charge) decreases over time. Depending on how often the battery is used and the conditions under which it is used, you may need to purchase a new battery during the life of your computer.

CHECK THE BATTERY STATUS LIGHT — If the battery status light flashes orange or is a steady orange the battery charge is low or depleted. Connect the computer to an electrical outlet.

If the battery status light flashes green and orange, the battery is too hot to charge. Shut down the computer, disconnect the computer from the electrical outlet, and then let the battery and computer cool to room temperature.

If the battery status light rapidly flashes orange, the battery may be defective. Contact Dell Customer Support.

CHECK THE BATTERY TEMPERATURE — If the battery temperature is below 0° C (32° F), the computer may not startup. If this occurs, connect your computer to AC or DC approved power and the system will start up if within the operating specification range. See "Specifications".

TEST THE ELECTRICAL OUTLET — Ensure that the electrical outlet is working by testing it with another device, such as a lamp.

CHECK THE AC ADAPTER — Check the AC adapter cable connections. If the AC adapter has a light, ensure that the light is on.

CONNECT THE COMPUTER DIRECTLY TO AN ELECTRICAL OUTLET — Bypass power protection devices, power strips, and the extension cable to verify that the computer turns on.

ELIMINATE POSSIBLE INTERFERENCE — Turn off nearby fans, fluorescent lights, halogen lamps, or other appliances.

ADJUST THE POWER PROPERTIES — See "Configuring Power Management Settings".

RESEAT THE MEMORY MODULES — If the computer power light turns on but the display remains blank, reinstall the secondary memory modules (see "Memory"). If this does not resolve the issue, contact Dell Customer Support.

11.13.1 Ensuring Sufficient Power for Your Computer

Your computer is designed to use a 65-W or higher AC adapter.

Using AC adapters that are less-powerful than 65 W will cause you to receive a WARNING message.

11.13.2 Docking Power Considerations

Due to the extra power consumption when a computer is docked to an approved docking device, normal computer operation is not possible on battery power alone. Ensure that the AC adapter is connected to your computer when the computer is docked via the Desk Dock Adapter to the Dell D/Dock or D/Port, or approved in-vehicle DC power is connected to the Mobile Dock (MD) when installed in a vehicle.

11.13.3 Docking While the Computer Is Running

If a computer is connected to an approved docking device while the computer is running, presence of the docking device is ignored until the AC adapter is connected to the computer.

11.13.4 AC Power Loss While the Computer Is Docked

If a computer loses AC power while docked, the computer immediately goes into low-performance mode.

11.14   Printer Problems

Fill out the Diagnostics Checklist (see "Diagnostics Checklist") as you complete these checks.

⚠ **CAUTION: Before you begin any of the procedures in this section, follow the safety instructions in the Safety Information section of this manual.**

✎ **NOTE:** If you need technical assistance for your printer, contact the printer's manufacturer.

ENSURE THAT THE PRINTER IS TURNED ON.

CHECK THE PRINTER CABLE CONNECTIONS —
- See the printer documentation for cable connection information.
- Ensure that the printer cables are securely connected to the printer and the computer.

TEST THE ELECTRICAL OUTLET — Ensure that the electrical outlet is working by testing it with another device, such as a lamp.

VERIFY THAT THE PRINTER IS RECOGNIZED BY WINDOWS —
1. Click the **Start** button, click **Control Panel**, and then click **Printers and Other Hardware**.
2. Click **View installed printers or fax printers**.
   If the printer is listed, right-click the printer icon.
3. Click **Properties** and click the **Ports** tab. For a parallel printer, ensure that the **Print to the following port(s):** setting is **LPT1 (Printer Port)**. For a USB printer, ensure that the **Print to the following port(s):** setting is **USB**.

REINSTALL THE PRINTER DRIVER — See the printer documentation for instructions.

11.15   Scanner Problems

Fill out the Diagnostics Checklist (see "Diagnostics Checklist") as you complete these checks.

⚠ **CAUTION: Before you begin any of the procedures in this section, follow the safety instructions in the Safety Information section of this manual.**

✎ **NOTE:** If you need technical assistance for your scanner, contact the scanner's manufacturer.

CHECK THE SCANNER DOCUMENTATION — See the scanner documentation for setup and troubleshooting information.

UNLOCK THE SCANNER — Ensure that your scanner is unlocked if it has a locking tab or button.

RESTART THE COMPUTER AND TRY THE SCANNER AGAIN.

CHECK THE CABLE CONNECTIONS —
- See the scanner documentation for cable connection information.
- Ensure that the scanner cables are securely connected to the scanner and the computer.

VERIFY THAT THE SCANNER IS RECOGNIZED BY MICROSOFT WINDOWS —
1. Click **Start→ Control Panel→ Printers and Other Hardware**.
2. Click **Scanners and Cameras**.
   If your scanner is listed, Windows recognizes the scanner.

REINSTALL THE SCANNER DRIVER — See the scanner documentation for instructions.

11.16   Sound and Speaker Problems

Fill out the Diagnostics Checklist (see "Diagnostics Checklist") as you complete these checks.

⚠ **CAUTION: Before you begin any of the procedures in this section, follow the safety instructions in the Safety Information section of this manual.**

11.16.1 No Sound From Integrated Speakers

ADJUST THE WINDOWS VOLUME CONTROL — Double-click the speaker icon in the lower-right corner of your screen. Ensure that the volume is turned up and that the sound is not muted. Adjust the volume, bass, or treble controls to eliminate distortion.

ADJUST THE VOLUME USING KEYBOARD SHORTCUTS — Press **<Fn><End>** to disable (mute) or reenable the integrated speakers.

REINSTALL THE SOUND (AUDIO) DRIVER — See "Reinstalling Drivers and Utilities".

11.16.2 No Sound From External Speakers

ENSURE THAT THE SUBWOOFER AND THE SPEAKERS ARE TURNED ON — See the setup diagram supplied with the speakers. If your speakers have volume controls, adjust the volume, bass, or treble to eliminate distortion.

ADJUST THE WINDOWS VOLUME CONTROL — Click or double-click the speaker icon in the lower-right corner of your screen. Ensure that the volume is turned up and that the sound is not muted.

DISCONNECT HEADPHONES FROM THE HEADPHONE CONNECTOR — Sound from the speakers is automatically disabled when headphones are connected to the computer's headphone connector.

TEST THE ELECTRICAL OUTLET — Ensure that the electrical outlet is working by testing it with another device, such as a lamp.

ELIMINATE POSSIBLE INTERFERENCE — Turn off nearby fans, fluorescent lights, or halogen lamps to check for interference.

REINSTALL THE AUDIO DRIVER — See "Reinstalling Drivers and Utilities".

RUN THE DELL DIAGNOSTICS — See "Dell Diagnostics".

NOTE: The volume control in some MP3 players overrides the Windows volume setting. If you have been listening to MP3 songs, ensure that you did not turn the player volume down or off.

11.16.3 No Sound From Headphones

CHECK THE HEADPHONE CABLE CONNECTION — Ensure that the headphone cable is securely inserted into the headphone connector.

ADJUST THE WINDOWS VOLUME CONTROL — Click or double-click the speaker icon in the lower-right corner of your screen. Ensure that the volume is turned up and that the sound is not muted.

11.17 Touch Pad or Mouse Problems

CHECK THE TOUCH PAD SETTINGS —
1. Click the **Start** button, click **Control Panel**, and then click **Printers and Other Hardware**.
2. Click **Mouse**.
3. Try adjusting the settings.

CHECK THE MOUSE CABLE — Shut down the computer. Disconnect the mouse cable, check it for damage, and firmly reconnect the cable.

If you are using a mouse extension cable, disconnect it and connect the mouse directly to the computer.

TO VERIFY THAT THE PROBLEM IS WITH THE MOUSE, CHECK THE TOUCH PAD —
1. Shut down the computer.
2. Disconnect the mouse.
3. Turn on the computer.
4. At the Windows desktop, use the touch pad to move the cursor around, select an icon, and open it.
   If the touch pad operates correctly, the mouse may be defective.

CHECK THE SYSTEM SETUP PROGRAM SETTINGS — Verify that the system setup program lists the correct device for the pointing device option. (The computer automatically recognizes a USB mouse without making any setting adjustments.)

TEST THE MOUSE CONTROLLER — To test the mouse controller (which affects pointer movement) and the operation of the touch pad or mouse buttons, run the Mouse test in the **Pointing Devices** test group in the Dell Diagnostics (see "Dell Diagnostics").

REINSTALL THE TOUCH PAD DRIVER — See "Reinstalling Drivers and Utilities".

11.18   Video and Display Problems

Fill out the Diagnostics Checklist (see "Diagnostics Checklist") as you complete these checks.

⚠ **CAUTION: Before you begin any of the procedures in this section, follow the safety instructions in the Safety Information section of this manual.**

11.18.1 If the Display is Blank

✎ **NOTE:** If you are using a program that requires a higher resolution than your computer supports, it is recommended that you attach an external monitor to your computer.

CHECK THE BATTERY — If you are using a battery to power your computer, the battery charge may be depleted. Connect the computer to an electrical outlet using the AC adapter, and turn on the computer.

TEST THE ELECTRICAL OUTLET — Ensure that the electrical outlet is working by testing it with another device, such as a lamp.

CHECK THE AC ADAPTER — Check the AC adapter cable connections. If the AC adapter has a light, ensure that the light is on.

CONNECT THE COMPUTER DIRECTLY TO AN ELECTRICAL OUTLET — Bypass power protection devices, power strips, and the extension cable to verify that the computer turns on.

ADJUST THE POWER PROPERTIES — Search for the keyword standby in the Windows Help and Support Center (click **Start→ Help and Support**).

SWITCH THE VIDEO IMAGE — If your computer is attached to an external monitor, press **<Fn><F8>** to switch the video image to the display.

11.18.2 If the Display is Difficult to Read

ADJUST THE BRIGHTNESS — Press **<Fn>** and the up- or down-arrow key

MOVE THE EXTERNAL SUBWOOFER AWAY FROM THE COMPUTER OR MONITOR — If your external speaker system includes a subwoofer, ensure that the subwoofer is at least 60 cm (2 ft) away from the computer or external monitor.

ELIMINATE POSSIBLE INTERFERENCE — Turn off nearby fans, fluorescent lights, halogen lamps, or other appliances.

ROTATE THE COMPUTER TO FACE A DIFFERENT DIRECTION — Eliminate sunlight glare, which can cause poor picture quality.

ADJUST THE WINDOWS DISPLAY SETTINGS —
1. Click the **Start** button and then click **Control Panel**.
2. Click **Appearance and Themes**.
3. Click the area you want to change or click the **Display** icon.
4. Try different settings for **Color quality** and **Screen resolution**.

RUN THE VIDEO DIAGNOSTICS TESTS — If no error message appears and you still have a display problem, but the display is not completely blank, run the **Video** device group in the Dell Diagnostics. If the problem persists, contact Dell Customer Support.

SEE "ERROR MESSAGES" — If an error message appears, see "Error Messages".

11.18.3 If Only Part of the Display is Readable

CONNECT AN EXTERNAL MONITOR —
1. Shut down your computer and connect an external monitor to the computer.
2. Turn on the computer and the monitor and adjust the monitor brightness and contrast controls.

If the external monitor works, the computer display or video controller may be defective. Contact Dell Customer Support.

12 System Setup Program

12.1 Overview

NOTE: Your operating system may automatically configure most of the options available in the system setup program, thus overriding options that you set through the system setup program. (An exception is the **External Hot Key** option, which you can disable or enable only through the system setup program.) For more information on configuring features for your operating system, access the Help and Support Center (click **Start→ Help and Support**).

You can use the system setup program as follows:
- To set or change user-selectable features—for example, your computer password
- To verify information about the computer's current configuration, such as the amount of system memory

After you set up the computer, run the system setup program to familiarize yourself with your system configuration information and optional settings. You may want to write down the information for future reference.

The system setup screens display the current setup information and settings for your computer, such as:
- System configuration
- Boot order
- Boot (start-up) configuration and docking-device configuration settings

- Basic device-configuration settings
- System security and hard-drive password settings

⊘ **NOTE:** Unless you are an expert computer user or are directed to do so by Dell technical support, do not change the system setup settings. Certain changes might make your computer work incorrectly.

12.2 Viewing the System Setup Screens

1. Turn on (or restart) your computer.
2. When the DELL™ logo appears, press **<F2>** immediately. If you wait too long and the Microsoft® Windows® logo appears, continue to wait until you see the Windows desktop. Then shut down your computer and try again.

12.3 System Setup Screens

✎ **NOTE:** For information about a specific item on a system setup screen, highlight the item and see the Help area on the screen.

On each screen, the system setup options are listed at the left. To the right of each option is the setting or value for that option. You can change settings that appear as white type on the screen. Options or values that you cannot change (because they are determined by the computer) appear less bright.

The upper-right corner of the screen displays help information for the currently highlighted option; the lower-right corner displays information about the computer. System-setup key functions are listed across the bottom of the screen.

12.4 Commonly Used Options

Certain options require that you reboot the computer for new settings to take effect.

12.4.1 Changing the Boot Sequence

The boot sequence, or *boot order*, tells the computer where to look to find the software needed to start the operating system. You can control the boot sequence and enable/disable devices using the **Boot Order** page of the system setup program.

✎ **NOTE:** To change the boot sequence on a one-time-only basis, see "Performing a One-Time Boot".

The **Boot Order** page displays a general list of the bootable devices that may be installed in your computer, including but not limited to the following:
- Diskette Drive
- Modular bay HDD
- Internal HDD
- Optical Drive

During the boot routine, the computer starts at the top of the list and scans each enabled device for the operating system start-up files. When the computer finds the files, it stops searching and starts the operating system.

To control the boot devices, select (highlight) a device by pressing the down-arrow or up-arrow key, and then enable or disable the device or change its order in the list.

- To enable or disable a device, highlight the item and press the space bar. Enabled items appear as white and display a small triangle to the left; disabled items appear blue or dimmed without a triangle.
- To reorder a device in the list, highlight the device and then press **<u>** or **<d>** (not case-sensitive) to move the highlighted device up or down.

Boot sequence changes take effect as soon as you save the changes and exit the system setup program.

12.4.2   Performing a One-Time Boot

You can set a one-time-only boot sequence without entering the system setup program. (You can also use this procedure to boot the Dell Diagnostics on the diagnostics utility partition on your hard drive.)

1. Shut down the computer through the **Start** menu.
2. If the computer is connected to a docking device (docked), undock it. See the documentation that came with your docking device for instructions.
3. Connect the computer to an electrical outlet.
4. Turn on the computer. When the DELL logo appears, press **<F12>** immediately.
   If you wait too long and the Windows logo appears, continue to wait until you see the Windows desktop. Then shut down your computer and try again.
5. When the boot device list appears, highlight the device from which you want to boot and press **<Enter>**.
   The computer boots to the selected device.

The next time you reboot the computer, the previous boot order is restored.

12.4.3   Changing Printer Modes

Set the **Parallel Mode** option according to the type of printer or device connected to the parallel connector. To determine the correct mode to use, see the documentation that came with the device.

Setting **Parallel Mode** to **Disabled** disables the parallel port and the port's LPT address, which frees computer resources for another device to use.

12.4.4   Changing COM Ports

Serial Port allows you to map the serial port COM address or disable the serial port and its address, which frees computer resources for another device to use.

13 Reinstalling Software

13.1   Drivers

13.1.1   What Is a Driver?

A driver is a program that controls a device such as a printer, mouse, or keyboard. All devices require a driver program.

A driver acts like a translator between the device and any other programs that use the device. Each device has its own set of specialized commands that only its driver recognizes.

Dell ships your computer to you with required drivers already installed—no further installation or configuration is needed.

NOTICE: The *Drivers and Utilities* media may contain drivers for operating systems that are not on your computer. Ensure that you are installing software appropriate for your operating system.

Many drivers, such as the keyboard driver, come with your Microsoft Windows operating system. You may need to install drivers if you:
- Upgrade your operating system.
- Reinstall your operating system.
- Connect or install a new device.

13.1.2   Identifying Drivers

If you experience a problem with any device, identify whether the driver is the source of your problem and, if necessary, update the driver.

Microsoft® Windows® XP
1. Click **Start→ Control Panel**.
2. Under **Pick a Category**, click **Performance and Maintenance**, and click **System**.
3. In the **System Properties** window, click the **Hardware** tab, and click **Device Manager**.

Microsoft Windows Vista™
1. Click the Windows Vista start button, , and right-click **Computer**.
2. Click **Properties→ Device Manager**.

📝 **NOTE:** The **User Account Control** window may appear. If you are an administrator on the computer, click **Continue**; otherwise, contact your administrator to continue.

Scroll down the list to see if any device has an exclamation point (a yellow circle with a "!") on the device icon.

If an exclamation point is next to the device name, you may need to reinstall the driver or install a new driver (see "Reinstalling Drivers and Utilities").

13.1.3   Reinstalling Drivers and Utilities

⊘ **NOTICE:** The *Drivers and Utilities* media provides approved drivers for Dell computers. If you install drivers obtained from other sources, your computer might not work correctly.

Installing Drivers in the Correct Order
Microsoft Windows XP (with service pack 2 and later) does not require a system driver installation order. However, the following order preference works best.

📝 **NOTE:** The list below is a general overview of Dell portable systems. Actual system configurations may vary.

- **Notebook System Software (NSS)** - A compilation of critical Microsoft updates.
- **Intel Chipset** - Helps Windows control system board components and controllers.
- **Video Card** - Enhances video performance.
- **Network Interface Card (NIC)** - Enables and enhances the network controller.
- **Sound Card** - Enables and enhances the audio controller.
- **Modem** - Enables and enhances the modem.
- **Wireless Network Card** - Enables and enhances the wireless network controller.
- **Bluetooth® Module** - Enables and enhances the Bluetooth controller.
- **PCMCIA/Smartcard controller** - Enables and enhances the PCMCIA/SmartCard controller.
- **Touch Pad/Track Stick/Pointer** - Enhances the pointing device features.
- **Other** - Other devices and peripherals such as printers and digital cameras that are connected to the computer.

Using Windows Device Driver Rollback

If a problem occurs on your computer after you install or update a driver, use Windows Device Driver Rollback to replace the driver with the previously installed version.

Microsoft Windows XP
1. Click **Start→ My Computer→ Properties→ Hardware→ Device Manager**.
2. Right-click the device for which the new driver was installed and click **Properties**.
3. Click the **Drivers** tab→ **Roll Back Driver**.

Microsoft Windows Vista
1. Click the Windows Vista start button, , and right-click **Computer**.
2. Click **Properties→ Device Manager**.

> **NOTE:** The **User Account Control** window may appear. If you are an administrator on the computer, click **Continue**; otherwise, contact your administrator to enter the Device Manager.

3. Right-click the device for which the new driver was installed and click **Properties**.
4. Click the **Drivers** tab→ **Roll Back Driver**.

If Device Driver Rollback does not resolve the problem, then use System Restore (see "Restoring Your Operating System") to return your computer to the operating state that existed before you installed the new driver.

Using the Drivers and Utilities Media
If using Device Driver Rollback or System Restore (see "Restoring Your Operating System") does not resolve the problem, then reinstall the driver from the *Drivers and Utilities* media.

1. Save and close any open files, and exit any open programs.
2. Insert the *Drivers and Utilities* CD.

   In most cases, the media starts running automatically. If it does not, start Windows Explorer, click your media drive directory to display the media contents, and then double-click the **autorcd.exe** file. The first time that you run the CD, it might prompt you to install setup files. Click **OK** and follow the instructions on the screen to continue.

3. From the **Language** drop-down menu in the toolbar, select your preferred language for the driver or utility (if available).
4. At the welcome screen, click **Next** and wait for the media to complete the hardware scan.
5. To detect other drivers and utilities, under **Search Criteria**, select the appropriate categories from the **System Model**, **Operating System**, and **Topic** drop-down menus.

   A link or links appear(s) for the specific drivers and utilities used by your computer.

6. Click the link of a specific driver or utility to display information about the driver or utility that you want to install.
7. Click the **Install** button (if present) to begin installing the driver or utility. At the welcome screen, follow the screen prompts to complete the installation.

   If no **Install** button is present, automatic installation is not an option. For installation instructions, either see the appropriate instructions in the following subsections, or click **Extract**, follow the extracting instructions, and then read the readme file.

   If instructed to navigate to the driver files, click the media directory on the driver information window to display the files associated with the driver.

Manually Reinstalling Drivers
 NOTE: After extracting the driver files to your hard drive as described in the previous section, reinstall the drivers.

Microsoft Windows XP
1. Click **Start→ My Computer→ Properties→ Hardware→ Device Manager**.
2. Double-click the type of device for which you are installing the driver (for example, **Audio** or **Video**).
3. Double-click the name of the device for which you are installing the driver.
4. Click the **Driver** tab→ **Update Driver**.
5. Click **Install from a list or specific location (Advanced)→ Next**.
6. Click **Browse** and browse to the location to which you previously copied the driver files.
7. When the name of the appropriate driver appears, click **Next**.
8. Click **Finish** and restart your computer.

Microsoft Windows Vista
1. Click the Windows Vista start button, 🔘, and right-click **Computer**.
2. Click **Properties→ Device Manager**.

📝 **NOTE:** The **User Account Control** window may appear. If you are an administrator on the computer, click **Continue**; otherwise, contact your administrator to enter the Device Manager.

3. Double-click the type of device for which you are installing the driver (for example, **Audio** or **Video**).
4. Double-click the name of the device for which you are installing the driver.
5. Click the **Driver** tab→ **Update Driver→ Browse my computer for driver software**.
6. Click **Browse** and browse to the location to which you previously copied the driver files.
7. When the name of the appropriate driver appears, click the name of the driver→ **OK→ Next**.
8. Click **Finish** and restart your computer.

13.2   Using the Hardware Troubleshooter Tool

If a device is either not detected during the operating system setup or is detected but incorrectly configured, you can use the Hardware Troubleshooter to resolve the incompatibility.

Microsoft Windows XP
1. Click **Start→ Help and Support**.
2. Type 'hardware troubleshooter' in the search field and press **<Enter>** to start the search.
3. In the **Fix a Problem** section, click **Hardware Troubleshooter**.
4. In the **Hardware Troubleshooter** list, select the option that best describes the problem and click **Next** to follow the remaining troubleshooting steps.

Microsoft Windows Vista
1. Click the Windows Vista start button, 🔘 , and click **Help and Support**.
2. Type hardware troubleshooter in the search field and press **<Enter>** to start the search.
3. In the search results, select the option that best describes the problem and follow the remaining troubleshooting steps.

13.3   Restoring Your Operating System

You can restore your operating system in the following ways:
- Microsoft Windows XP System Restore and Microsoft Windows Vista System Restore return your computer to an earlier operating state without affecting data files. Use System Restore as the first solution for restoring your operating system and preserving data files.

- If you received an *Operating System* CD with your computer, you can use it to restore your operating system. However, using the *Operating System* CD also deletes all data on the hard drive. Use the media *only* if System Restore did not resolve your operating system problem.

13.3.1   Using Microsoft® Windows® System Restore

The Windows operating systems provide a System Restore option which allows you to return your computer to an earlier operating state (without affecting data files) if changes to the hardware, software, or other system settings have left the computer in an undesirable operating state. Any changes that System Restore makes to your computer are completely reversible.

🚫 **NOTICE:** Make regular backups of your data files. System Restore does not monitor your data files or recover them.

📝 **NOTE:** The procedures in this document were written for the Windows default view, so they may not apply if you set your Dell computer to the **Windows Classic** view.

Starting System Restore

🚫 **NOTICE:** Before you restore the computer to an earlier operating state, save and close any open files and exit any open programs. Do not alter, open, or delete any files or programs until the system restoration is complete.

Microsoft Windows XP
1. Click **Start→ All Programs→ Accessories→ System Tools→ System Restore**.
2. Click either **Restore my computer to an earlier time** or **Create a restore point**.
3. Click **Next** and follow the remaining on-screen prompts.

Microsoft Windows Vista
1. Click the Windows Vista Start button, 🔘, and click **Help and Support**.
2. In the search box, type **System Restore** and press **<Enter>**.

📝 **NOTE:** The **User Account Control** window may appear. If you are an administrator on the computer, click **Continue**; otherwise, contact your administrator to continue the desired action.

3. Click **Next** and follow the remaining prompts on the screen.

In the event that System Restore did not resolve the issue, you may undo the last system restore.

13.3.2   Undoing the Last System Restore

🚫 **NOTICE:** Before you undo the last system restore, save and close all open files and exit any open programs. Do not alter, open, or delete any files or programs until the system restoration is complete.

Microsoft Windows XP
1. Click **Start→ All Programs→ Accessories→ System Tools→ System Restore**.
2. Click **Undo my last restoration** and click **Next**.

Microsoft Windows Vista
1. Click the Windows Vista Start button, 🔘, and click **Help and Support**.
2. In the search box, type **System Restore** and press **<Enter>**.
3. Click **Undo my last restoration** and click **Next**.

13.3.3   Enabling System Restore

📝 **NOTE:** Windows Vista does not disable System Restore regardless of low disk space. Therefore, the steps below apply only to Windows XP.

If you reinstall Windows XP with less than 200 MB of free hard-disk space available, System Restore is automatically disabled.

To see if System Restore is enabled:
1. Click **Start→ Control Panel→ Performance and Maintenance→ System**.
2. Click the **System Restore** tab and ensure that **Turn off System Restore** is unchecked.

13.3.4   Using the Operating System Media

13.3.4.1   Before You Begin

If you are considering reinstalling the Windows operating system to correct a problem with a newly installed driver, first try using Windows Device Driver Rollback (see "Using Windows Device Driver Rollback" in "Reinstalling Drivers and Utilities"). If Device Driver Rollback does not resolve the problem, then use "System Restore" to return your operating system to the operating state it was in before you installed the new device driver (see "Using Microsoft® Windows® System Restore").

⊘ **NOTICE:** Before performing the installation, back up all data files on your primary hard drive. For conventional hard drive configurations, the primary hard drive is the first drive detected by the computer.

To reinstall Windows, you need the following items:
- Dell™ *Operating System* CD
- Dell *Drivers and Utilities* CD

📝 **NOTE:** The Dell *Drivers and Utilities* media contains drivers that were installed during the assembly of the computer. Use the Dell *Drivers and Utilities* media to load any required drivers. Depending on the region from which you ordered your computer, or whether you requested the media, the Dell *Drivers and Utilities* media and *Operating System* media may not ship with your computer.

13.3.4.2   Reinstalling Windows

The reinstallation process can take 1 to 2 hours to complete. After you reinstall the operating system, you must also reinstall the device drivers, virus protection program, and other software.

⊘ **NOTICE:** The *Operating System* media provides options for reinstalling Windows XP. The options can overwrite files and possibly affect programs that are installed on your hard drive. Therefore, do not reinstall Windows XP unless a Dell technical support representative instructs you to do so.

1. Save and close any open files and exit any open programs.
2. Insert the *Operating System* media.
3. Click **Exit** if the Install Windows message appears.
4. Restart the computer.

   When the DELL logo appears, press **<F12>** immediately.

📝 **NOTE:** If you wait too long and the operating system logo appears, continue to wait until you see the Microsoft® Windows® desktop; then, shut down your computer and try again.

📝 **NOTE:** The next steps change the boot sequence for one time only. On the next start-up, the computer boots according to the devices specified in the system setup program.

5. When the boot device list appears, highlight **CD/DVD/CD-RW Drive** and press **<Enter>**.
6. Press any key to **Boot from CD-ROM**.
7. Follow the instructions on the screen to complete the installation.

14 Adding and Replacing Parts

14.1 Before You Begin

This chapter provides procedures for removing and installing the components in your computer. Unless otherwise noted, each procedure assumes that the following conditions exist:

- You have performed the steps in "Turning Off Your Computer" and "Before Working Inside Your Computer".
- You have read the safety information in the "Safety Information" section.
- A component can be replaced or—if purchased separately—installed by performing the removal procedure in reverse order.

14.1.1 Recommended Tools

The procedures in this document may require the following tools:
- Small flat-blade screwdriver
- Small Phillips screwdriver

14.1.2 Turning Off Your Computer

NOTICE: To avoid losing data, save and close any open files and exit any open programs before you turn off your computer.

1. Shut down the operating system:
   a. Save and close any open files, exit any open programs, click **Start→ Shut Down→ Shut down→ OK**.
   The computer turns off after the operating system shutdown process finishes.

2. Ensure that the computer and any attached devices are turned off. If your computer and attached devices did not automatically turn off when you shut down your operating system, press and hold the power button for 4 seconds.

14.1.3 Before Working Inside Your Computer

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

CAUTION: Before you begin any of the procedures in this section, follow the safety instructions in the Safety Information section of this manual.

CAUTION: Handle components and cards with care. Do not touch the components or contacts on a card. Hold a card by its edges or by its metal mounting bracket.

NOTICE: Only a certified service technician should perform repairs on your computer. Damage due to servicing that is not authorized by Dell is not covered by your warranty.

NOTICE: When you disconnect a cable, pull on its connector or on its pull-tab, not on the cable itself. Some cables have a connector with locking tabs; if you are disconnecting this type of cable, press in on the locking tabs before you disconnect the cable. As you pull connectors apart, keep them evenly aligned to avoid bending any connector pins. Also, before you connect a cable, ensure that both connectors are correctly oriented and aligned.

⊘ **NOTICE:** To avoid damaging the computer, perform the following steps before you begin working inside the computer.

1. Ensure that the work surface is flat and clean to prevent the computer cover from being scratched.
2. Turn off your computer (see "Turning Off Your Computer").
3. If the computer is connected to a docking device (docked), undock it. See the documentation that came with your docking device for instructions.

⊘ **NOTICE:** To disconnect a network cable, first unplug the cable from your computer and then unplug it from the network wall connector.

4. Disconnect any telephone or network cables from the computer.
5. Close the display and turn the computer upside down on a flat work surface.

⊘ **NOTICE:** To avoid damaging the system board, you must remove the main battery before you service the computer.

6. Remove any installed modules, including a second battery, if installed (see "XBay").
7. Disconnect your computer and all attached devices from their electrical outlets.
8. Remove the battery (see "Replacing the Battery").
9. Press the power button to ground the system board.
10. Remove the computer stand, if it is attached.

⚠ **CAUTION: To guard against electrical shock, always unplug your computer from the electrical outlet before opening the cover.**

⊘ **NOTICE:** Before touching anything inside your computer, ground yourself by touching an unpainted metal surface, such as the metal at the back of the computer. While you work, periodically touch an unpainted metal surface to dissipate any static electricity that could harm internal components.

11. Remove any installed PC Cards from the PC Card slot (see "Removing a Card or Blank").

14.2   Memory

You can increase your computer memory by installing memory modules on the system board. See "Specifications" for information on the memory supported by your computer. Install only memory modules that are intended for your computer.

⚠ **CAUTION: Before you begin any of the procedures in this section, follow the safety instructions in the Safety Information section of this manual.**

⊘ **NOTICE:** If you remove your original memory modules from the computer during a memory upgrade, keep them separate from any new modules that you may have, even if you purchased the new modules from Dell. If possible, do not pair an original memory module with a new memory module. Otherwise, your computer may not function at optimal performance.

✎ **NOTE:** Memory modules purchased from Dell are covered under your computer warranty.

⊘ **NOTICE:** Your computer has one user-accessible SODIMM socket accessed from the bottom of the computer (DIMM B). DIMM B is also referred to as secondary memory. You can add or replace memory modules to the SODIMM sockets accessible from the bottom of the computer (DIMM B). However, you must not attempt to access the SODIMM socket located beneath the

keyboard, DIMM A, without first contacting Dell Customer Support. DIMM A is also referred to as primary memory.

To add or replace a memory module in the DIMM B connector:

NOTICE: Insert memory modules at a 45-degree angle to avoid damaging the connector.

1. Follow the procedures in "<u>Before You Begin</u>".
2. Turn the computer bottom-side up, remove the 4 screws that secure the memory module cover, and then remove the cover.

Figure 14-1 Memory Module Cover Removal
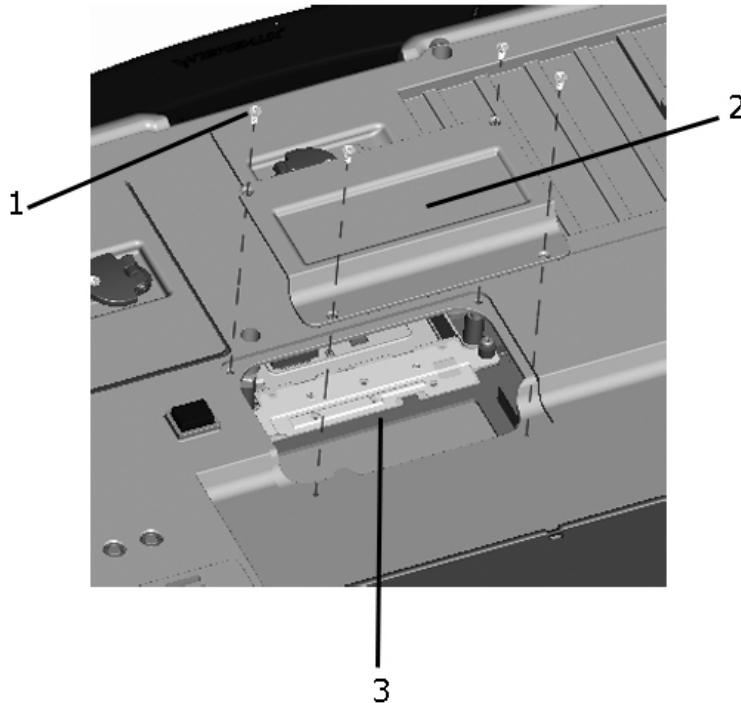
| 1 | Screws (4) | 2 | Memory module cover | 3 | Memory module compartment |

NOTICE: To prevent damage to the memory module connector, do not use tools to spread the memory-module securing clips.

3. If you are replacing a memory module, ground yourself and remove the existing module:

   a. Use your fingertips to carefully spread apart the securing clips on each end of the memory module connector until the module pops up.
   b. Remove the module from the connector.
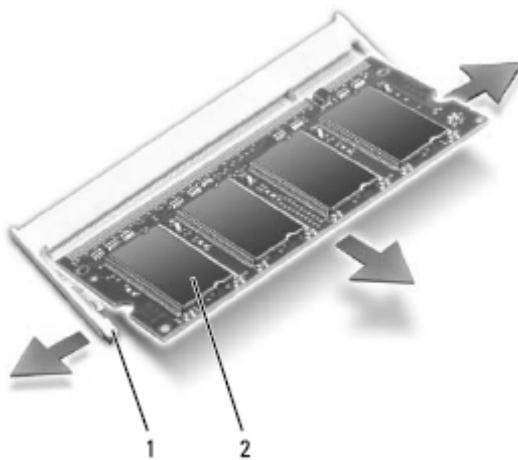
1	Securing clips (2 per connector)	2	Memory module

⊘ **NOTICE:** Insert memory modules at a 45-degree angle to avoid damaging the connector.

4. Ground yourself and install the new memory module:

📝 **NOTE:** If the memory module is not installed properly, the computer may not boot properly. No error message indicates this failure.

    a. Align the notch in the module edge connector with the tab in the connector slot.
    b. Slide the module firmly into the slot at a 45-degree angle, and rotate the module down until it clicks into place. If you do not feel the click, remove the module and reinstall it.
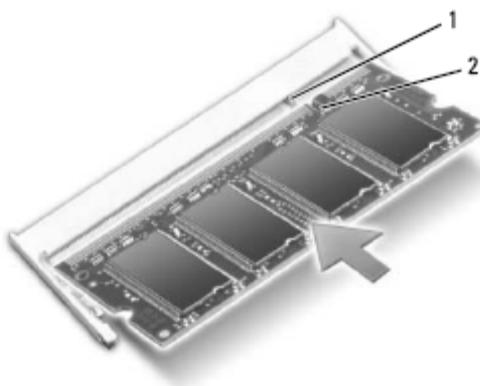
1	Tab	2	Notch

5. Replace the cover.

⊘ **NOTICE:** If the cover is difficult to close, remove the module and reinstall it. Forcing the cover to close may damage your computer.

6. Insert the battery into the battery bay, or connect the AC adapter to your computer and an electrical outlet.

7. Turn on the computer.

As the computer boots, it detects the additional memory and automatically updates the system configuration information.

To confirm the amount of memory installed in the computer, click **Start→ Help and Support**, and then click **Computer Information**.

8. Replace the memory module cover.

14.3   Subscriber Identity Module (SIM) Card

⚠ **CAUTION: Before you begin any of the procedures in this section, follow the safety instructions in the <u>Safety Information</u> section of this manual.**

✎ **NOTE:** Only Cingular and Vodafone need a SIM card. Verizon, Sprint, and Telus do not use a SIM.

1. Remove the battery (see "<u>Replacing the Battery</u>").
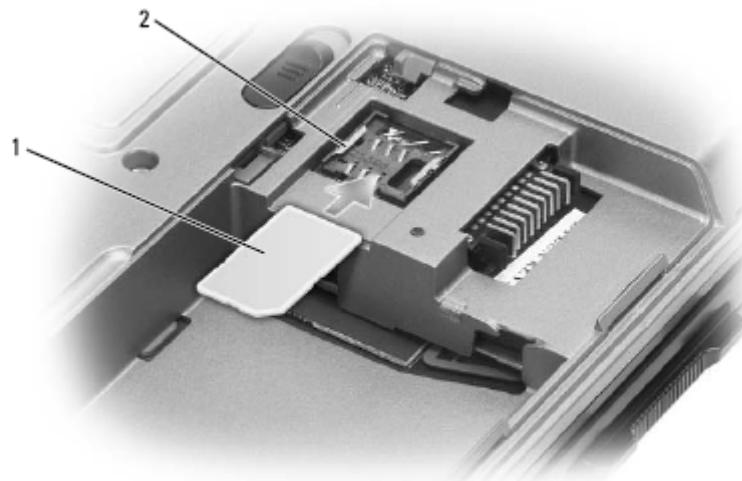
| 1 | SIM card | 2 | metal brackets (2) |

⊖ **NOTICE:** Do not touch the SIM card connectors to protect the card from electrostatic discharge (ESD). To prevent ESD, hold the card in your hand before you insert or remove the card.

2. With the cut-off corner on the card facing away from the card slot, insert the SIM card into the slot so that it slides under the metal tabs on the sides.

14.4   Hard Drive

✎ **NOTE:** You need the *Operating System* CD to install the Microsoft® Windows® operating system. You also need the *Drivers and Utilities* CD for your computer to install the drivers and utilities on the new hard drive.

⚠ **CAUTION: If you remove the hard drive from the computer when the drive is hot, *do not touch* the metal housing of the hard drive.**

⚠ **CAUTION: Before you begin any of the procedures in this section, follow the safety instructions in the Safety Information section of this manual.**

⚠ **CAUTION: Before performing these procedures, to prevent data loss, turn off the computer. Do not remove the hard drive while the computer is on, in standby mode, or in hibernate mode. Disconnect the AC adapter from the electrical outlet and the computer, disconnect the modem from the wall connector and computer, remove the battery (see "Removing the Battery") and remove any other external cables from the computer.**

⊙ **NOTICE:** Hard drives are extremely fragile; even a slight bump can damage the drive.

✎ **NOTE:** Dell does not guarantee compatibility or provide support for hard drives from sources other than Dell.

To replace the hard drive in the hard disk drive compartment:

1. Follow the procedures in "Before You Begin".

Figure 14-2 Accessing the Hard Disk Drive Compartment
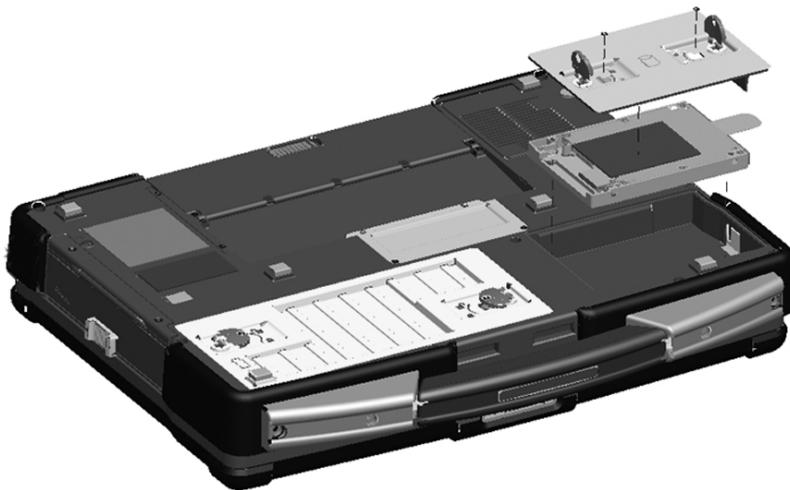
2. See "Bottom View" for the location of the hard disk drive compartment. If the 2 optional screws that secure the quarter-turn latches are installed, remove the 2 screws on the latches on the hard disk drive compartment using a #1 Philips screw driver. If the 2 security screws are not installed, proceed to step 3.

3. Lift each latch and turn each a quarter-turn, towards the 'unlock' icon, to release the latching mechanism. Remove the compartment cover from the computer.

4. Locate the tab on the hard disk drive and pull it back to disconnect the hard disk drive from the motherboard.

5. Continue to utilize the tab to assist in removing the hard disk drive from the compartment.

⊙ **NOTICE:** When the hard drive is not in the computer, store it in protective antistatic packaging. See "Protecting Against Electrostatic Discharge" in the "Safety Information" section.

6. Remove the new drive from its packaging.

   Save the original packaging for storing or shipping the hard drive.

⊘ **NOTICE:** Use firm and even pressure to slide the drive into place. If you use excessive force, you may damage the connector.

7. Slide the hard drive into the bay until it is fully seated.
8. Replace and secure the hard disk drive compartment cover with the quarter-turn latches.
9. Use the *Operating System* CD to install the operating system for your computer (see "Using the Operating System CD").
10. Use the *Drivers and Utilities* CD to install the drivers and utilities for your computer (see "Reinstalling Drivers and Utilities").

14.5 Returning a Hard Drive to Dell

Return your old hard drive to Dell in packaging comparable to that shown in the figure below. Otherwise, the hard drive may be damaged in transit.
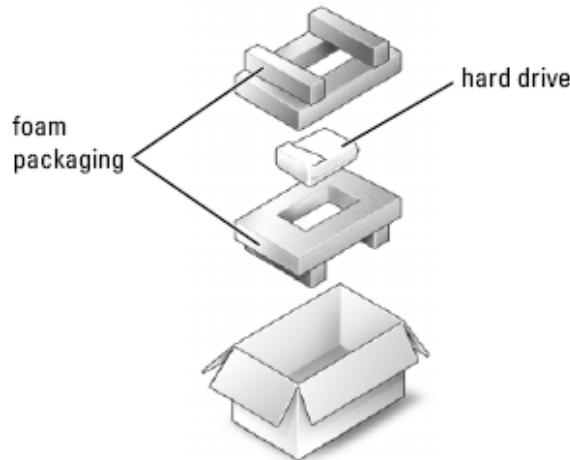
14.6 XBay Expansion Bay

📝 **NOTE:** If the device locking screw is not present, you can remove and install devices while the computer is running and connected to a docking device (docked).

The following is applicable to UL 1604 and CSA C22.2 No. 213 compliant systems:

⚠ **WARNING - Explosion Hazard - Do not disconnect equipment unless power has been removed or the area is known to be non-hazardous**

⚠ **WARNING - Explosion Hazard - Do not utilize any of the connectors/hubs unless area is known to be non-hazardous**

Removing XBay Devices

⊘ **NOTICE:** To prevent damage to devices, store them in a safe, dry place when they are not installed in the computer. Avoid pressing down on them or placing heavy objects on top of them.

1. If present, remove the device locking screw from the bottom of the computer.
2. If the computer is running, double-click the **Safely Remove Hardware** icon on the taskbar, click the device you want to eject, and click **Stop**.
3. Press the device latch release.
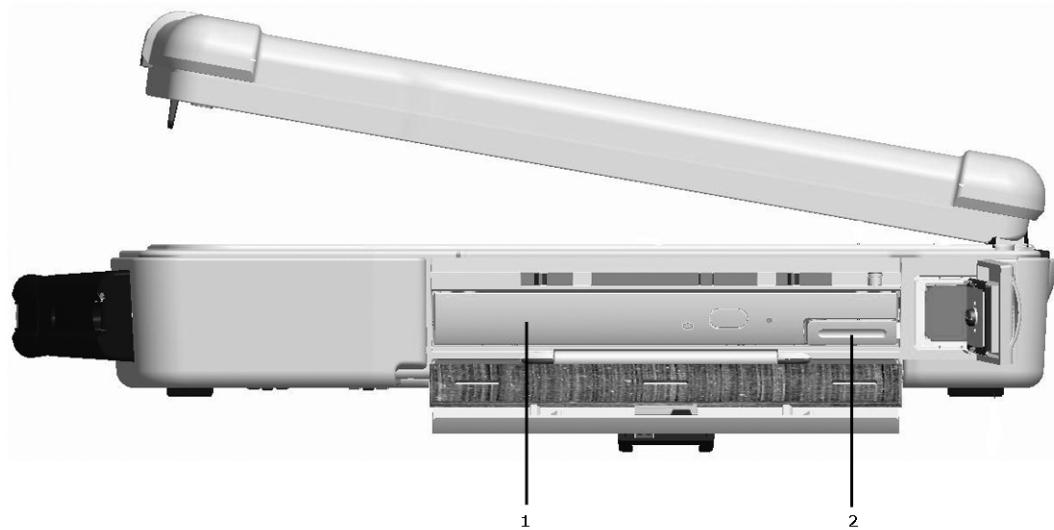
1	Optical drive	2	Device Latch release

4. Pull the device out of the XBay.

To install a device, push the new device into the XBay until it clicks into place.

14.7   Protective Doors

The XFR630 utilizes 3 types of doors to provide a secure and protected environment for the connectors and devices of the notebook. The three types are:

- Compartment Doors
- Hinged Doors
- Friction Fit Doors

All 3 types of doors are components of the Armored Protection System that protects the XFR630 in the most challenging environments.

This section provides the information required should you need to replace one of the doors.

14.7.1   Compartment Door

The compartment door is utilized on compartments accessed from the bottom of the computer, such as the battery and hard disk drive compartment doors.

If the entire compartment door should need to be replaced, contact Dell Customer Support.

Figure 14-3 Sample Compartment Door

Figure 14-4 Removing a Compartment Door
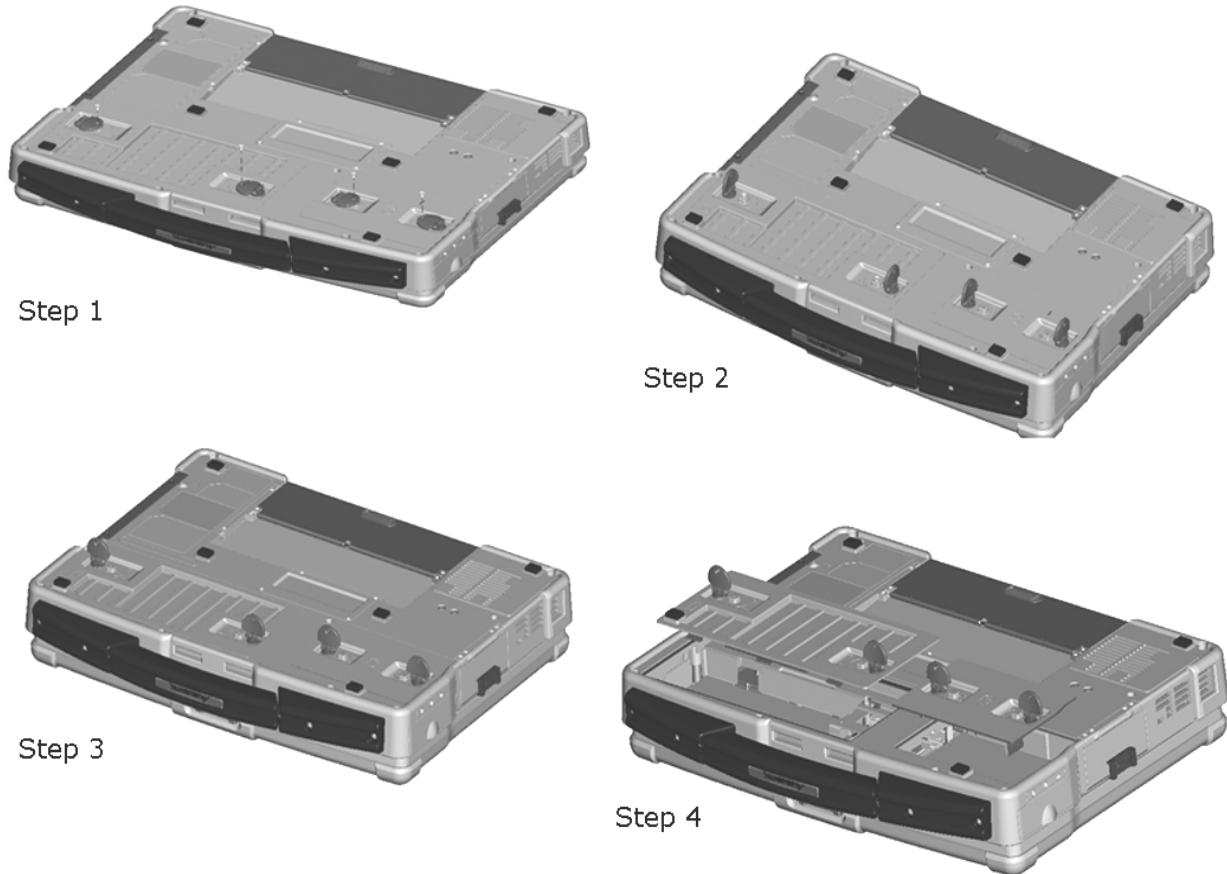
The figure above shows the sequence to remove a compartment door. Two quarter-turn latches are used to secure each compartment door to the computer. The removal of both the battery and disk compartment doors is shown.

To remove a compartment door follow these steps:

1. The quarter-turn latches on the compartment door can be secured with optional M2 screws. If the screws are present, remove them using a #1 Philips screw driver. If not, proceed to step 2.
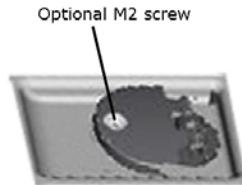
2. Lift the handle on the latch.
3. Turn the latch a quarter-turn in the direction of the 'unlock' icon.
4. Lift the compartment door away from the system.
5. Reverse this procedure to replace and secure the compartment door.

If a single quarter-turn latch should fail, it can be replaced. See the figure below for the construction of the quarter-turn latch assembly.

Figure 14-5 Replacing a Quarter-Turn Latch
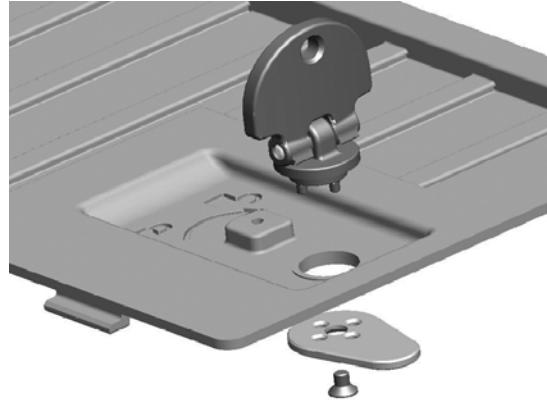
14.7.2   Hinged Door

Figure 14-6 Sample Hinged Door
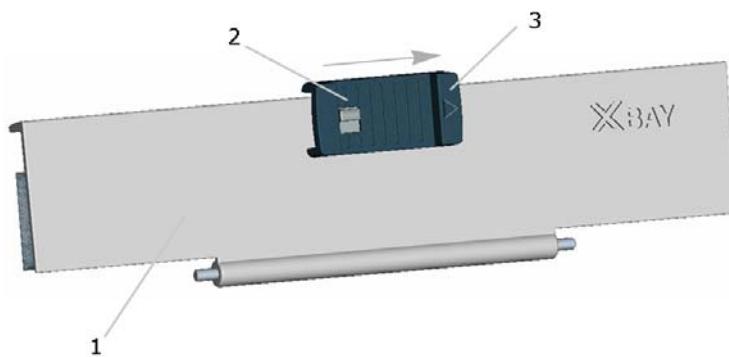
1	Hinged door	2	Latch locking mechanism	3	Arrow shows latch release direction

The dense magnesium hinged door is utilized on doors on the back and side panels of the computer to protect the devices and connectors from ingress. The hinged door is secured by a sliding latch.

The devices and/or connectors protected by these doors can be accessed by pushing the latch in the direction indicated by the arrow and then rotating the door away from the computer along its hinge. The door can be closed by rotating the door back along its hinge toward the computer, and pushing the latch until it is secured.

The latch on the hinged door can also be locked by sliding the lock on the latch up to the locked position as shown in the figure above.

Figure 14-7 Hinged Door Replacement
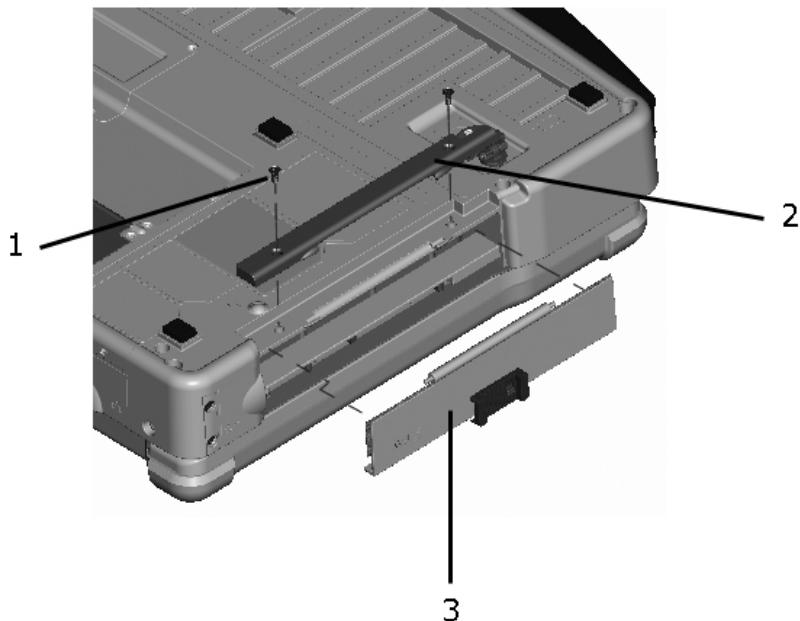
1	Screws (2)	2	Hinge retaining bar	3	Hinged door

To remove a hinged door:

⊘ **NOTICE:** The number of screws and retaining bars will vary depending on the exact hinge assembly.

1. Follow the procedures in "Before You Begin".
2. Turn the computer bottom-side up, remove the screws that are securing the hinge retaining bar(s).
3. Lift the hinge retaining bar(s) away from the computer.
4. Slide the hinged door away from the system.
5. Reverse the procedure to install a new hinged door.

14.7.3   Friction Fit Door

Figure 14-8 Sample Friction Fit Door

The friction fit door is utilized on connectors and devices on the back and side panels of the computer to protect the devices and connectors from ingress.

The devices and/or connectors protected by these doors can be accessed by lifting the door away from the system and rotating it along the seam. Reverse this procedure to close and secure the cover.

Figure 14-9 Friction Fit Door Removal
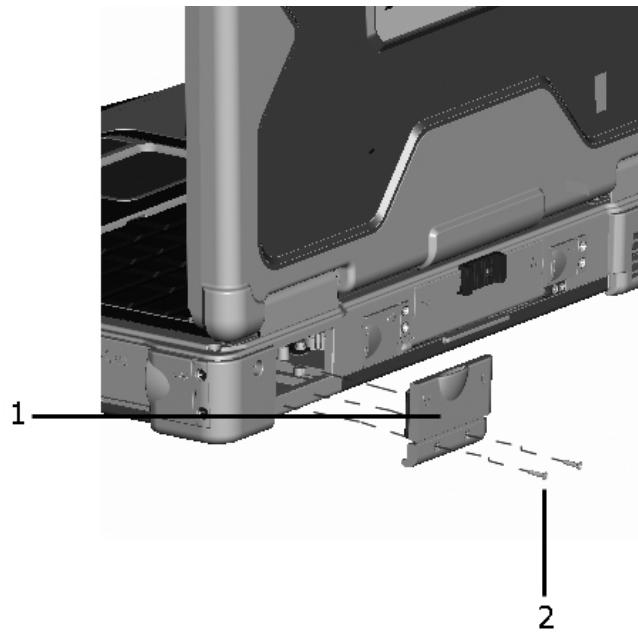
1	Friction fit door	2	Screws (2)

To remove a friction fit door:

> ⊃ **NOTICE:** The number of screws will vary depending on the size of the door. The screws are clearly visible when viewing the system.

1. Follow the procedures in "Before You Begin".
2. Remove the screws that are securing the friction fit door.
3. Remove the friction fit door from the system.
4. Reverse the procedure to install a new friction fit door.

14.8 XFR630 Handle

The XFR630 is equipped with a factory installed handle. This section provides instructions for removing and installing the handle if replacement is required.

Figure 14-10 Installation of the XFR630 Handle Assembly
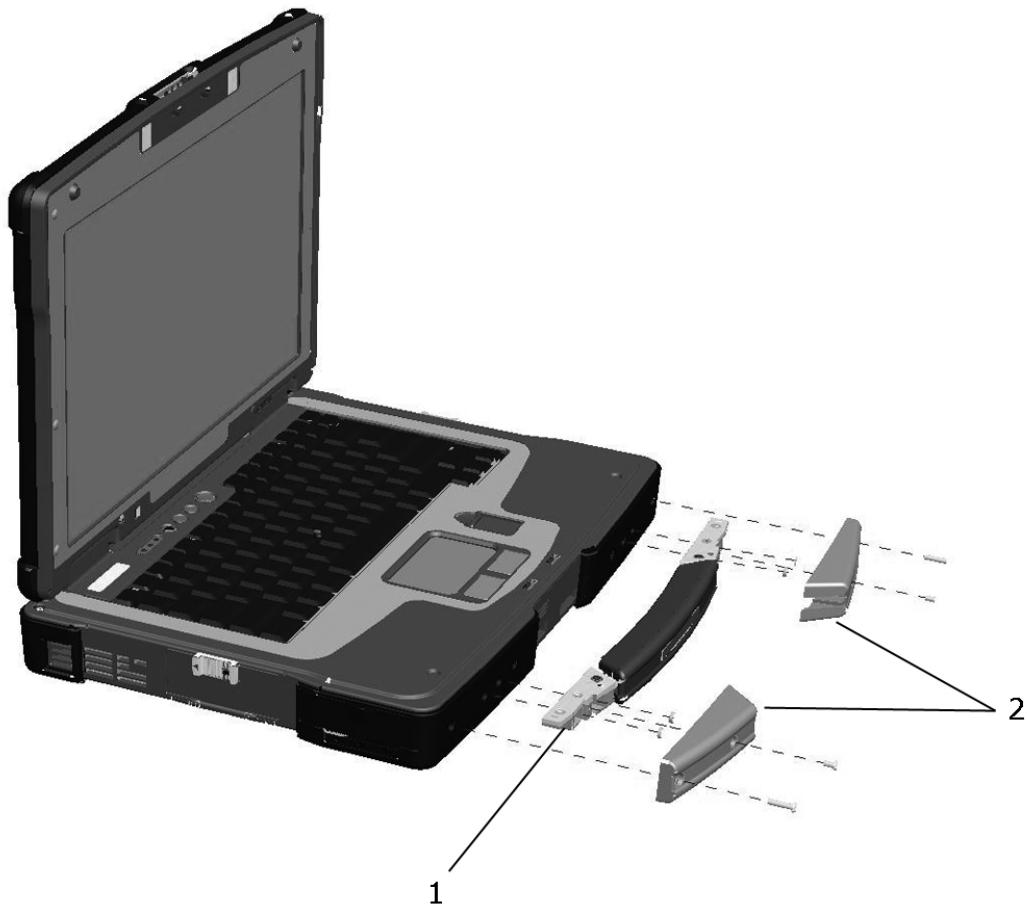
1	Main handle assembly	2	Handle cover (2)

To install the handle:

1. Align the main handle assembly with the holes in the front plate of the XFR630 as shown in the figure above.
2. Secure the handle to the XFR630 using the screws provided.
3. Align each of the handle covers over the main handle ends as shown.
4. If you are also installing the optional shoulder strap anchors, please refer to "Shoulder Strap Anchors" before proceeding with the next step.
5. Secure the handle covers over the main handle assembly and to the XFR630 with the screws provided.

Reverse this procedure to remove the handle.

14.9   Should Strap Anchors (optional)

If your XFR630 is equipped with the optional handle (see "XFR630 Handle"), you can also install the shoulder strap anchors to allow for the use of a shoulder strap with your computer.

Figure 14-11 Shoulder Strap Anchors Installation
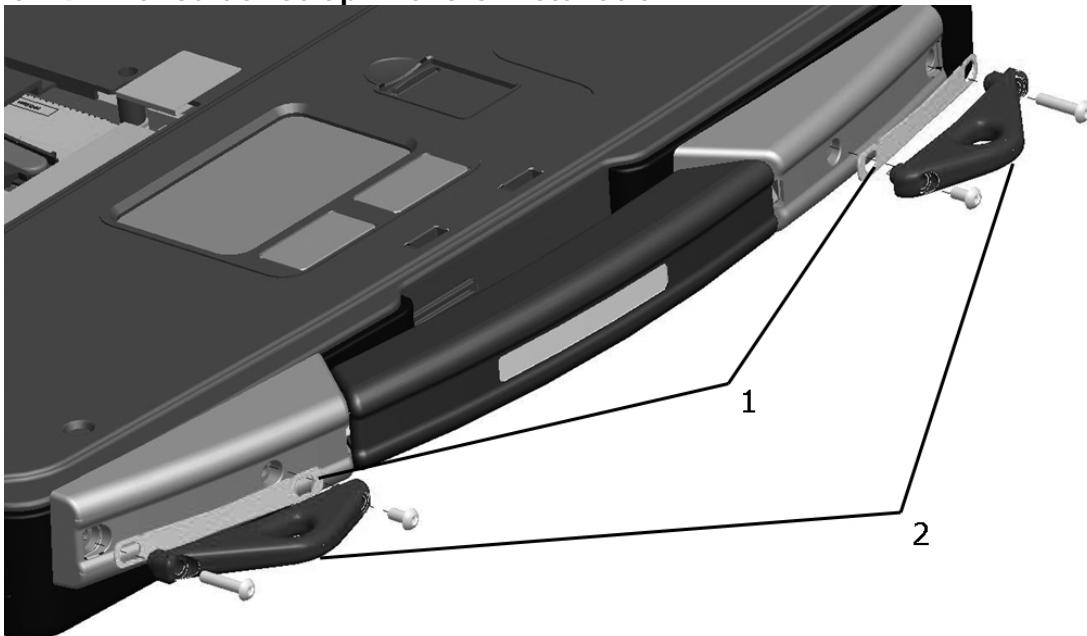
1	Shoulder strap anchor gasket (2)	2	Shoulder strap anchor (2)

To install the shoulder strap anchors:

1. If your handle is already installed, remove the 4 screws that secure the handle covers (see "XFR630 Handle"). If the handle is not already installed, proceed to step 2.
2. Align the shoulder strap gaskets with the holes in the main handle assembly and the handle covers.
3. Align the shoulder strap anchors with the holes in the gasket and the handle.
4. Use the screws provided to attach the shoulder strap anchors to the XFR630.

14.10   Stylus, Tether and Clip (DirectVue Touch Display option)

If your XFR630 is configured with the DirectVue Touch Display, it will also be equipped with the optional stylus housing, stylus, stylus tether, and stylus clip.

To replace the stylus, stylus tether or stylus clip, follow the directions provided in the sections below.

Figure 14-12 XFR with Stylus
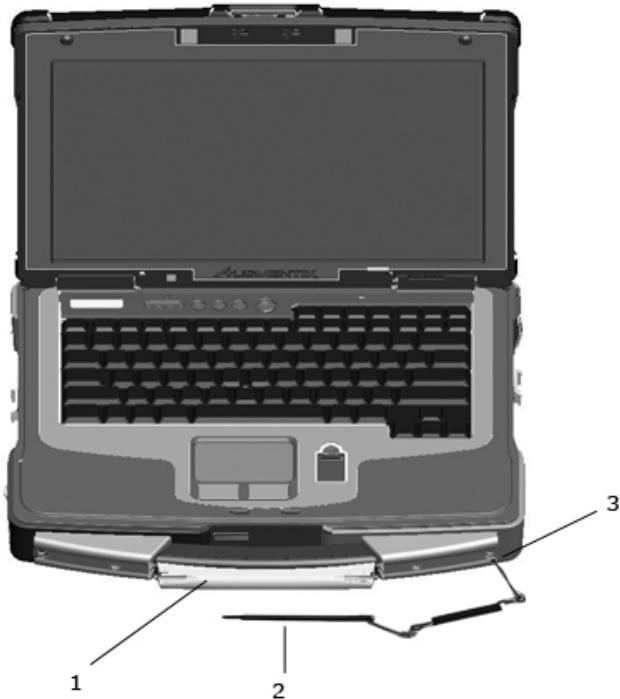
1	Stylus housing	2	Stylus and stylus tether	3	Stylus clip (for connection to the notebook)

📝 **NOTE:** The stylus clip can be installed on either the left or right side of the handle.

14.10.1 Replacing a Stylus Clip

The stylus clip is installed on the handle assembly's end screw on the left or right side of the notebook. The stylus clip provides an eyelet into which the stylus tether can be routed to attach the stylus and stylus tether to the notebook

Figure 14-13 Stylus Clip Assembly
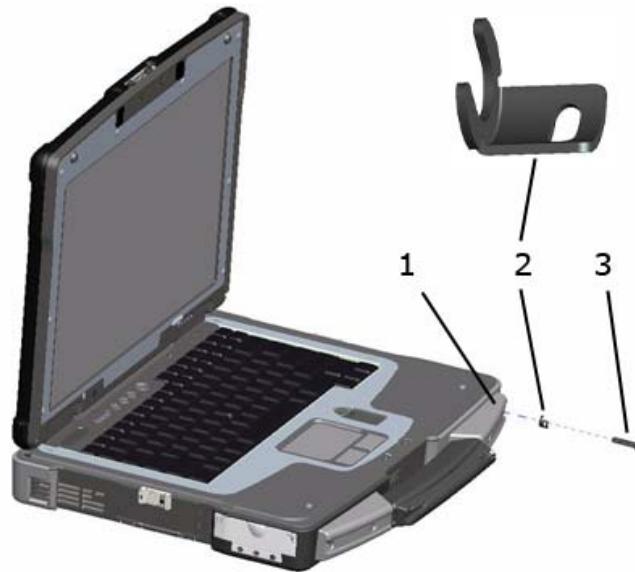
1	Handle cover	2	Stylus clip	3	Screw

Figure 14-14 Close Up View of Installed Stylus Clip

To replace the stylus clip:

1. Remove the screw on the end of the handle cover that secures the stylus clip. Note that the stylus clip can be installed on the end of either handle cover.
2. Remove the old stylus clip.
3. Place the new stylus clip between the handle cover and the screw.
4. Install and tighten the screw, ensuring the screw head secures the stylus clip in place.

14.10.2 Replacing a Stylus

Figure 14-15 Stylus and Tether

1	Stylus	2	Stylus tether (with loops on each end)
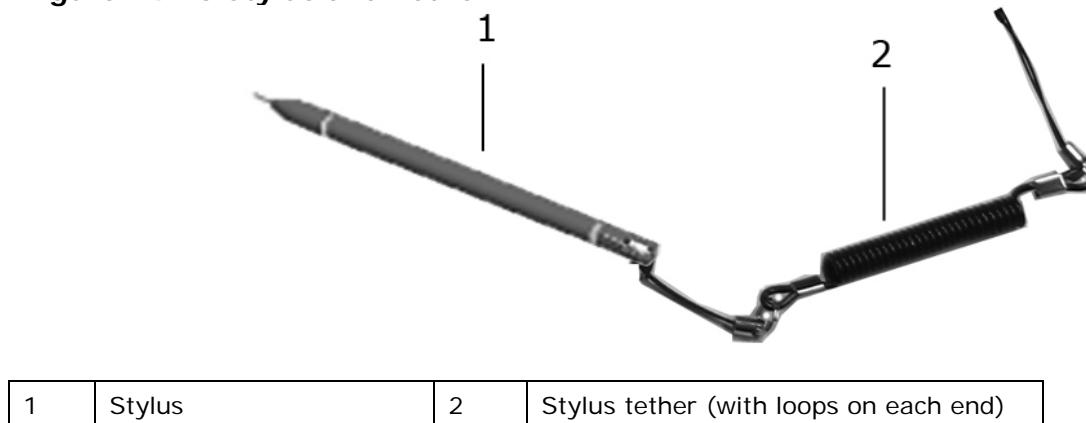
To replace the stylus:

1. Remove the tether and stylus from the stylus clip:
    a. At the stylus clip, loosen the looped end of the tether.
    b. Pull the stylus and tether through the loop until the tether is free from the stylus clip.
2. Remove the stylus from the tether:
    a. At the stylus, loosen the looped end of the tether.
    b. Pull the stylus and tether through the loop until the stylus is free from the tether.
3. Install the new stylus:
    a. Place one of the looped ends of the tether through the hole in the end of the new stylus and then place the free end of the tether through the loop.
    b. Pull the remainder of the tether through the loop until tight.
    c. Your new stylus is now attached to the tether.
4. Attach the stylus and tether to the stylus clip:
    a. Place the free end of the tether through the stylus clip.
    b. Pull the stylus and tether through the loop until tight.

14.10.3 Replacing a Stylus Tether

Figure 14-16 Stylus and Tether

1	Stylus	2	Stylus tether (with loops on each end)
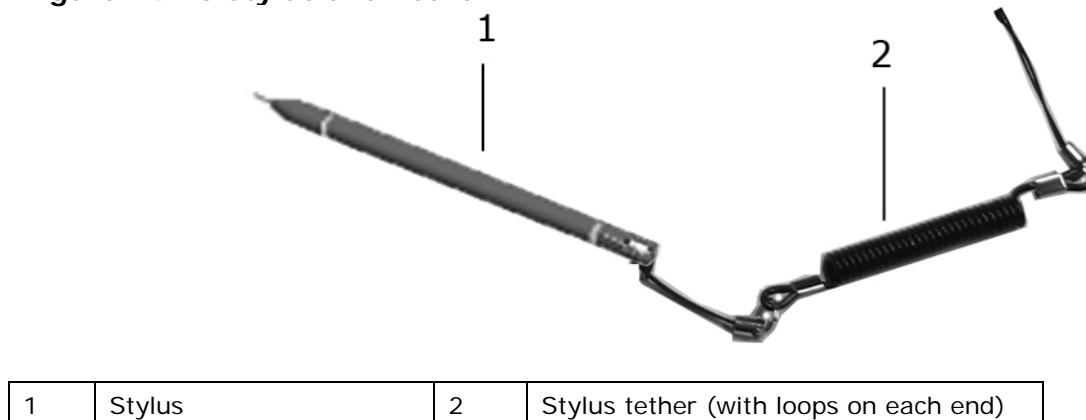
To replace the tether:

1. Remove the tether and stylus from the stylus clip:
    a. At the stylus clip, loosen the looped end of the tether.
    b. Pull the stylus and tether through the loop until the tether is free from the stylus clip.
2. Remove the stylus from the tether:

   a. At the stylus, loosen the looped end of the tether.
   b. Pull the stylus and tether through the loop until the stylus is free from the tether.
  3. Using the new tether:
   a. Place one of the looped ends of the tether through the hole in the end of the stylus
    and then place the free end of the tether through the loop.
   b. Pull the remainder of the tether through the loop until tight.
  4. Attach the stylus and tether to the stylus clip:
   a. Place the free end of the tether through the stylus clip.
   b. Pull the stylus and tether through the loop until tight.

14.11 Flashing the BIOS

⚠ **CAUTION: Contact Dell Customer Support before attempting to flash the BIOS.**

If a BIOS-update program CD is provided, flash the BIOS from the CD. If you do not have a BIOS-update program CD, flash the BIOS from the hard drive.

14.11.1 Flashing the BIOS From a CD

1. Ensure that the AC adapter is plugged in and that the main battery is installed properly.

📝 **NOTE:** If you use a BIOS-update program CD to flash the BIOS, set up the computer to boot from a CD before inserting the CD.

2. Insert the BIOS-update program CD, and restart the computer.

  Follow the instructions that appear on the screen. The computer continues to boot and updates the new BIOS. When the flash update is complete, the computer will automatically reboot.

3. Press **<F2>** during POST to enter the system setup program.

4. Press **<Alt>** and **<F>** to reset the computer defaults.

5. Press **<Esc>**, select **Save changes and reboot**, and press **<Enter>** to save configuration changes.

6. Remove the flash BIOS-update program CD from the drive and restart the computer.

14.11.2 Flashing the BIOS From the Hard Drive

1. Ensure that the AC adapter is plugged in, the main battery is properly installed, and a network cable is attached.

2. Turn on the computer.

3. Locate the latest BIOS update file for your computer at **support.dell.com**.

4. Click **Download Now** to download the file.

5. If the **Export Compliance Disclaimer** window appears, click **Yes, I Accept this Agreement**.

The **File Download** window appears.

6. Click **Save this program to disk** and then click **OK**.

The **Save In** window appears.

7. Click the down arrow to view the **Save In** menu, select **Desktop**, and then click **Save**.

The file downloads to your desktop.

8. Click **Close** if the **Download Complete** window appears.

The file icon appears on your desktop and is titled the same as the downloaded BIOS update file.

9. Double-click the file icon on the desktop and follow the instructions on the screen.

15 Dell^{TM} QuickSet

📝 **NOTE:** This feature may not be available on your computer.

Dell™ QuickSet provides you with easy access to configure or view the following types of settings:
- Network connectivity
- Power management
- Display
- System information

Depending on what you want to do in Dell™ QuickSet, you can start it by either clicking, double-clicking, or right-clicking the QuickSet icon in the Microsoft® Windows® taskbar. The taskbar is located in the lower-right corner of your screen.

For more information about QuickSet, right-click the QuickSet icon and select Help.

16 Traveling With Your Computer

16.1 Identifying Your Computer

- Attach a name tag or business card to the computer.
- Write down your Service Tag and store it in a safe place away from the computer or carrying case. Use the Service Tag if you need to report a loss or theft to law enforcement officials and to Dell.
- Create a file on the Microsoft® Windows® desktop called *if found*. Place information such as your name, address, and phone number in this file.
- Contact your credit card company and ask if it offers coded identification tags.

16.2 Packing the Computer

- Remove any external devices attached to the computer and store them in a safe place. Remove any cables attached to installed PC Cards, and remove any extended PC Cards.
- Fully charge the main battery and any spare batteries that you plan to carry with you.
- Shut down the computer.
- Disconnect the AC adapter.

⊘ **NOTICE:** When the display is closed, extraneous items on the keyboard or palm rest could damage the display.

- Remove any extraneous items, such as paper clips, pens, and paper, from the keyboard and palm rest and close the display.
- Use a carrying case to pack the computer and its accessories together safely.

⊘ **NOTICE:** If the computer has been exposed to extreme temperatures beyond the published operating specifications, allow it to acclimate to within the approved temperature range for 1 hour before turning it on.

- Protect the computer, the batteries, and the hard drive from hazards such as extreme temperatures beyond the published operating specifications, and overexposure to excessive sunlight, dirt, dust, or liquids.
- Pack the computer so that it does not slide around in the trunk of your car or in an overhead storage compartment.

16.3 Travel Tips

⊘ **NOTICE:** Do not move the computer while using the optical drive to prevent loss of data.

⊘ **NOTICE:** Do not check the computer as baggage.

- Consider disabling wireless activity on your computer to maximize battery operating time. To disable wireless activity, use the wireless switch (see "Enabling/Disabling the Dell™ Mobile Broadband Card").
- Consider changing your power management options to maximize battery operating time (see "Configuring Power Management Settings").
- If you are traveling internationally, carry proof of ownership—or of your right to use the computer if it is company-owned—to speed your passage through customs. Investigate the customs regulations of the countries you plan to visit, and consider acquiring an international carnet (also known as a *merchandise passport*) from your government.
- Find out what type of electrical outlets are used in the countries you will visit, and have appropriate power adapters.
- Check with your credit card company for information about the kinds of emergency travel assistance it offers to users of portable computers.

16.3.1 Traveling by Air

⊘ **NOTICE:** Do not walk the computer through a metal detector. Send the computer through an X-ray machine or have it hand-inspected.

- Ensure that you have a charged battery available in case you are asked to turn on the computer.
- Prior to entering the airplane, verify that using a computer is permitted. Some airlines forbid the use of electronic devices during flight. All airlines forbid the use of electronic devices during takeoff and landing.

17 Customer Support

17.1 Obtaining Assistance

If you experience a problem with your computer, you can complete the following steps to diagnose and troubleshoot the problem:

1. See "Troubleshooting" for information and procedures that pertain to the problem your computer is experiencing.

2. See "Dell Diagnostics" for procedures on how to run Dell Diagnostics.

3. Fill out the "Diagnostics Checklist".

4. If the preceding steps have not resolved the problem, contact Dell Customer Support.

17.2   Problems With Your Order

If you have a problem with your order, such as missing parts, wrong parts, or incorrect billing, contact Dell Customer Support. Have your invoice or packing slip handy when you call.

17.3   Product Information

If you need information about additional products available from Dell, or if you would like to place an order, contact Dell Customer Support.

17.4   Before You Call

NOTE: Have your Service Tag information available (located on the bottom of your computer).

Remember to fill out the Diagnostics Checklist (see "Diagnostics Checklist"). If possible, turn on your computer before you call Dell for 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 itself. Ensure that the computer documentation is available.

17.5   Diagnostic Checklist

⚠ **CAUTION: Before you begin any of the procedures in this section, follow the safety instructions in the Safety section of this manual.**

Name:

Date:

Address:

Phone number:

Service Tag (bar code on the bottom of the computer):

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

Operating system and version:

Devices:

Expansion cards:

Are you connected to a network? Yes No

Network, version, and network adapter:

Programs and versions:

See 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:

18 Specifications

![note icon] **NOTE:** Offerings may vary by region. For more information regarding the configuration of your computer, click **Start→ Help and Support** and select the option to **view information about your computer**.

Processor	
Processor type	Intel Core 2 Duo and Solo processors
L1 cache	32 KB per instruction, 32 KB data cache per core
L2 cache	2 MB per core
External bus frequency	800 MHz
System Information	
System chipset	Intel GM965 Express
Data bus width	64 bits
DRAM bus width	Dual-channel (2) 64-bit buses
Processor address bus width	36 bits
Flash EPROM	2 MB
Graphics bus	Internal graphics
PCI bus	32 bits
PC Card	
CardBus controller	02Micro OZ711EZ1
PC Card connector	One (supports one Type I or Type II card)
Cards supported	PC card: 3.3 V and 5 V
PC Card connector size	80 pins
PCI-E Card	
Flash Card Module (FCM)	512 MB, 1 GB
Memory	
Memory module connector	one user-accessible SODIMM socket
Memory module capacities	512 MG, 1 GB, 2 GB 4-GB capable
Memory type	DDR2 SODIMM
Minimum memory	512 MB
Maximum memory	4 GB
Smart Card	
Read/write capabilities	reads and writes to all ISO 7816 1/2/3/4 microprocessor cards (T=0, T=1)
Cards supported	3 V and 5 V
Program technology supported	Java cards
Interface speed	9600-115,200 BPS
EMV level	Level 1 certified

WHQL certification	PC/SC
Compatibility	Compatible within a PKI environment
Insert/eject cycles	Certified for up to 100,000 cycles
Ports and Connectors	
Serial	9-pin connector; 16550C-compatible, 16-byte buffer connector
Audio	Microphone connector, stereo headphones/speakers connector
Mini-Card	Two Type IIIA Mini-Card slots
Modem	RJ-11 port
Network Adapter	RJ-45 port
USB	Four 4-pin USB 2.0 compliant connectors
Video	15-hole connector
IEEE 1394	4-pin mini
D-Dock with Desk Dock Adapter	Standard D-Dock connector for devices such as a D-Dock advanced port replicators and expansion stations
D-Port with Desk Dock Adapter	Standard D-Port connector
Communications	
Modem:	
Type	v.92 Data/Fax MDC Modem
Controller	Softmodem
Interface	HAD Bus
Network Adapter	10/100/1000 Ethernet LAN on system board
Wireless	Internal WLAN, WWAN, and Bluetooth® wireless support (if optional cards are provided)
Video	
Video type:	integrated on system board, hardware accelerated
Data bus	Integrated video
Video controller	Intel® GMA X3100
Video memory	Up to 64MB (shared) at total system memory of less than 512MB Up to 256MB (shared) at total system memory of 512MB or greater
Audio	
Audio type	two-channel high definition audio (Azalia)
Audio controller	IDT STAC9205 Codec
Stereo conversion	24-bit (analog-to-digital and digital-to-analog)
Interfaces:	
Internal	High definition audio (Azalia)
External	Microphone-in connector, stereo headphones/speakers connector
Speaker	One 4-ohm speaker
Internal speaker amplifier	2-W channel into 4 ohms

Volume controls	Volume control buttons and program menus
Display	
Type (active-matrix TFT)	WXGA
Active area (X/Y)	303.74 x 189.84
LCD Viewable Dimensions:	
Height	189.74mm (7.47 inches)
Width	302.26mm (11.90 inches)
Diagonal	356.77mm (14.05 inches)

Keyboard	
Number of keys	87 (U.S. and Canada); 88 (Europe); 91 (Japan)
Layout	QWERTY/AZERTY/Kanji
Type	Standard
Touch Pad	
X/Y position resolution (graphics table mode)	240 cpi
Size:	
Width	73.0-mm (2.9-inch) sensor-active area
Height	42.9-mm (1.7-inch) rectangle
Track Stick	
X/Y position resolution (graphics table mode)	250 count/sec @ 100 gf
Size	Protrudes 0.5 mm higher than surrounding keycaps
Battery	
Type	6-cell "smart" lithium ion (56 WHr)
Dimensions:	
Depth	66.6 mm (2.62 inches)
Height	19.2 mm (0.76 inches)
Weight	0.33 kg (0.73 lb)
Voltage	11.1 VDC
Charge time (approximate)	
Computer off	Approximately 1 hour to 80% capacity
Operating time	Battery operating time varies depending on operating conditions and can be significantly reduced under certain power-intensive conditions. See "<u>Using a Battery</u>" for more information about battery life.
Life span (approximate)	300 charge/discharge cycles
Coin-cell battery	CR-2032

AC Adapter	

Input voltage	100–240 VAC
Input current (maximum)	1.5 A
Input frequency	50-60 Hz
Output current	4.34 A (maximum at 4-second pulse); 3.34 A (continuous)
Output power	65 W or higher
Rated output voltage	19.5 +/-1.0 VDC
Dimensions:	
Height	32 mm (1.27 inches)
Width	337 mm (13.31 inches)
Depth	238 mm (9.3 inches)

Biometric Fingerprint Reader (Optional)	
Type	UPEK TCS3 TouchStrip™ strip sensor with CMOS active capacitive pixel-sensing technology
Physical	
Height	57.66 mm (2.27 inches)
Width	346.96 mm (13.66 inches)
Depth	258.06 mm (10.16 inches)
Weight (with 6-cell battery and and CD drive, and without handle)	4.06 kg (8.96 lb)

📝 **NOTE:** Refer to the current XFR630 Specification Sheet for environmental specifications and testing methods.

19 Safety Information

19.1 CAUTION: General Safety Instructions

Use the following safety guidelines to help ensure your own personal safety and to help protect your equipment and working environment from potential damage.

📝 **NOTE:** In this section, *equipment* refers to all portable devices (computers, port replicators, XBays, docking stations, and similar devices).

IMPORTANT NOTICE FOR HEALTHCARE ENVIRONMENTS: Dell products are not medical devices and are not listed under UL 60601 (or equivalent). As a result, they must not be used with six feet of a patient or in a manner that directly or indirectly contacts a patient.

19.1.1 SAFETY: General Safety

When setting up the equipment for use:

- Place the equipment on a hard, level surface. Leave 10.2 cm (4 in) minimum clearance on all vented sides of the computer to permit the airflow required for proper ventilation. Restricting airflow can damage the computer or cause a fire.

- Do not stack equipment or place equipment so close together that it is subject to re-circulated or preheated air.

- Ensure that nothing rests on your equipment's cables and that the cables are not located where they can be stepped on or tripped over.

- Do not place your equipment in a closed-in wall unit or on a bed, sofa, carpet, or rug.

- Keep your equipment away from radiators and heat sources.

- Keep your equipment away from extremely hot or cold temperatures to ensure that it is used within the specified operating range.

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

- Avoid placing loose papers underneath your equipment.

When operating your equipment:

- Do not use your equipment in a wet environment, for example, near a bath tub, sink, swimming pool or in a wet basement.

- Do not use AC powered equipment during an electrical storm. Battery powered devices may be used if all cables have been disconnected.

- If your equipment includes an integrated or optional (PC Card) modem, disconnect the modem cable if an electrical storm is approaching to avoid the remote risk of electric shock form lightening via the telephone line.

- If your equipment includes a modem, the cable used with the modem should be manufactured with a minimum wire size of 26 American wire gauge (AWG) and an FCC-compliant RJ-11 modular plug.

- This equipment may contain Optical Disk Drives (ODD), CD-ROM, CDR/W, DVD, etc., which have built-in laser devices. To prevent any risk of exposure to laser radiation, do not disable or open any ODD assembly for any reason.

  These ODDs comply with safety requirements and are classified as Class 1 Laser Products, under US DHHS Standard and EN/IEC60825-1 Laser Safety Standard. These ODDs contain no user adjustments or serviceable or replaceable parts.

- Before you clean your equipment, disconnect the device from the electrical outlet. Clean your device with a soft cloth dampened with water. Do not use liquid or aerosol cleaners, which may contain flammable substances.

- Clean the portable computer display with a soft, clean cloth and water. Apply the water to the cloth; then stroke the cloth across the display in one direction, moving from top of the display to the bottom. Remove moisture form the display quickly and keep the display dry. Long-term exposure to moisture can damage the display. Do *not* use a commercial window cleaner to clean your display.

- If your equipment does not operate normally – in particular, if there are any unusual sounds or smells coming from it – unplug it immediately and contact Dell Customer Support

19.1.2   SAFETY: When Working Inside Your System

Do not attempt to service the equipment yourself, except as explained in your Dell documentation or in instructions otherwise provided to you be Dell. Always follow installation and service instructions closely.

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

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

19.1.3   SAFETY: General Power Safety

Observe the following guidelines when connecting your equipment to a power source:

- Check the voltage rating before you connect the equipment to an electrical outlet to ensure that the required voltage and frequency match the available power source.

- Do not plug the equipment power cables into an electrical outlet if the power cable is damaged.

- To prevent electric shock, plug the equipment power cables into properly grounded electrical outlets.

- If the equipment is provided with a 3-prong power cable, do not use adapter plugs that bypass the grounding feature, or remove the grounding feature from the plug or adapter.

- Norway and Sweden: If this product is provided with a 3-prong power cable, connect the power cable to a grounded electrical outlet only.

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

- If you must use an extension cable or power strip, ensure the extension cable or power strip is connected to a wall power outlet and not to another extension cable or power strip. The extension cable or power strip must be designed for grounded plugs and plugged into a grounded wall outlet.

- If you are using a multiple-outlet power strip, use caution when plugging the power cable into the power strip. Some power strips may allow you to insert the plug incorrectly. Incorrect insertion of the power plug could result in permanent damage to your equipment, as well as risk of electric shock and/or fire. Ensure that the ground prong of the power plug is inserted into the mating ground contact of the power strip.

- Be sure to grasp the plug, not the cable, when disconnecting equipment from an electric socket.

When using the AC adapter:

- Use only the Dell provided AC adapter approved for use with this device. Use of another AC adapter may cause a fire or explosion.

- 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.

- The AC adapter may become hot during normal operation of your computer. Use care when handling the adapter during or immediately after operation.

- It is recommended that you lay the adapter on the floor or desk so that the green light is visible. This will alert you if the adapter should accidentally go off due to external effects. If for any reason the green light goes off, disconnect the AC cord from the wall for a period of ten seconds, and then re-connect the power cord.

- Japan Only: Use on the Dell provided AC power cable with the AC adapter. Use of any other power cable may damage the device or AC adapter or may present a risk of fire or electric shock.

⚠ **CAUTION: When preparing your AC adapter for travel, wrap both of the cords around the adapter in the same direction as shown in the following picture. Failure to wrap the cords in the correct direction can result in damage to the cords not covered by the adapter warranty. Never use an AC adapter that shows signs of damage or excessive wear.**
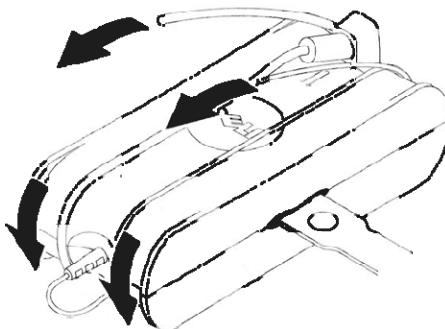
Connecting the AC Plug Adapter (Japan Only)

⚠ **CAUTION: When using the AC plug adapter, do no permit contact between the green ground wire and power leads because electrical shock, fire, or damage to your computer can occur.**

📝 **NOTE:** Some devices available in Japan do not include the AC plug adapter

1. Connect the metal ground connector to the grounding source on the outlet.

   a. Loosen the grounding source

   b. Slide the metal ground connector behind the grounding source, and then tighten the ground source.
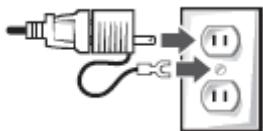
2. Connect the AC power cable to the outlet.

19.1.4   SAFETY: If Your System Gets Wet

⚠ **CAUTION: Before you begin any of the procedures in this section, see SAFETY: General Safety in this document.**

⚠ **CAUTION: Perform this procedure only after you are certain that it is safe to do so. If the computer is connected to an electrical outlet, it is recommended that you turn 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 a live power source.**

1. Disconnect the AC adapter from the electrical outlet, and then, if possible, disconnect the AC adapter from the device.

2. Turn off any attached external devices, and disconnect them from their power sources and then from the device.

3. Remove the main battery from the battery bay, and if necessary, the second battery from the XBay. Wipe off the batteries and put them in a safer place to dry.

4. Contact Dell Customer Support.

📝 **NOTE:** Refer to the Limited Warranty document for information on your warranty coverage.

19.1.5   SAFETY: If You Drop or Damage Your Computer

⚠ **CAUTION: Before you begin any of the procedures in this section, see the SAFETY: General Safety section in this document.**

⚠ **CAUTION: If any internal components can be seen through damaged portions, or if**

smoke or unusual odors are detected, disconnect the device from the electrical outlet and contact Dell Customer Support.

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

2. Disconnect the AC adapter from electrical outlet, and then, if possible, disconnect the AC adapter from the computer.

3. Turn off any attached external devices, then disconnect them from their power sources, and then from the computer.

4. If provided, remove and then reinstall the battery. If not battery powered, connect the device to the electrical outlet.

5. Turn on the device.

If the device does not start, or if any smoke or unusual odors are detected, or if you cannot identify the damaged components, contact Dell Customer Support.

NOTE: Refer to the Limited Warranty document for information on your warranty coverage.

19.2   SAFETY: General Portable Device Safety

⚠ **CAUTION: Portable Device Safety Instructions**

Review the sections on SAFETY: General Safety and SAFETY: General Power Safety in this document. Use the following portable device safety guidelines to help ensure your own personal safety and to help protect your device and working environment from potential damage.

• Do not store your computer in a low-airflow environment, such as a carrying case or a closed briefcase, while the computer is turned on. Restricting airflow can damage the computer and cause a fire.

• Do no allow your portable computer or adapter to operate with the base resting directly on exposed skin for extended periods of time. The surface temperature of the base will rise during normal operation, particularly when AC power is present. Allowing sustained contact with exposed skin can cause discomfort or burn.

• Disconnect all cables including the phone cable before opening the memory/modem access door.

19.2.1   SAFETY: Portable Device Power Safety

• Use only the Dell provided AC adapter approved for use with this device. Use of another AC adapter may cause a safety hazard. See the "Specifications" section for AC adapter electrical ratings.

• To remove the computer from all power sources from your portable computer, turn the computer off, disconnect the AC adapter from the electrical outlet, and remove any battery installed in the battery bay or XBay.

19.2.2   SAFETY: Portable Device Battery Safety

⚠ **CAUTION: Using an incompatible battery may increase the risk of fire or explosion. Replace the battery only with a compatible battery purchased from Dell that is designed to work with your computer. Do not use a battery from other computers with your computer.**

• A damaged battery may pose a risk of personal injury. Damage may include impact or shock that dents or punctures the battery, exposure to a flame, or other deformation. Do no disassemble the

battery. Handle a damaged or leaking battery pack with extreme care. If the battery is damaged, electrolyte may leak from the cells or fire may result which may cause personal injury.

- Keep the battery away from children.

- Do not expose (store or place) your computer or battery pack to a heat source such as a radiator, fireplace, stove, electric heater, or other heat-generating appliance or otherwise expose it to temperatures in excess of 70⁰C (158⁰F). When heated to excessive temperatures, battery cells could vent or explode, posing a fire risk.

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

- Dispose of used batteries properly See "Battery Disposal" in this document.

19.3   Ergonomic Instructions for Portable Computers

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

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

19.4   Environmental Considerations for Portable Computers

19.4.1   Recycling Information

Dell recommends that customers dispose of their used computer hardware, monitors, printers, and other peripherals in an environmentally sound manner. Potential methods include reuse of parts or whole products and recycling of products, components, and/or materials.

After reviewing the information provided in this section, if you require additional information regarding the disposal of a product or component, contact Dell Customer Support.

19.4.2   Portable Display Lamp Disposal (U.S. only)

(Hg) THE LAMP(S) INSIDE THIS PRODUCT MAY CONTAIN(S) A SMALL AMOUNT OF MERCURY FOR ENERGY-EFFICIENT LIGHTING PURPOSES. MERCURY LAMPS IN THIS PRODUCT ARE LABELED ACCORDINGLY. PLEASE MANAGE THE LAMP ACCORDING TO LOCAL, STATE, OR FEDERAL LAWS. FOR MORE INFORMATION CONTACT THE ELECTRONIC INDUSTRIES ALLIANCE AT WWW.EIAE.ORG. FOR LAMP SPECIFIC DISPOSAL INFORMATION CHECK WITH WWW.LAMPRECYCLE.ORG.

19.4.3   Battery Disposal

⚠ **CAUTION: There is a danger of a new battery exploding if it is incorrectly installed. Replace the battery only with the same or equivalent type recommended by the manufacturer. Do not dispose of the battery in a fire or with household waste. Contact your local waste disposal agency for the address of the nearest battery deposit site.**

Your computer uses a lithium-ion or nickel-metal hydride (NiMH) and a reserve battery. For instructions about replacing the battery in your computer, see "Replacing the Battery". The reserve battery is a long-life battery, and it is very possible that you will never need to replace it. However, should you need to replace the reserve battery, the procedure must be performed by an authorized service technician.

⚠ **CAUTION: Do not dispose of your computer's battery in a fire or with normal household waste. Battery cells may explode. Discard a used battery according to the manufacturer's instructions or contact your local waste disposal agency for disposal instructions. Dispose of a spent or damaged battery promptly.**

19.5 Hazardous Locations (UL 1604 and CSA C22.2 No. 213)

The following is applicable to UL 1604 and CSA C22.2 No. 213 compliant systems:

This equipment is suitable for use in Class I, Division 2, Groups A, B, C and D Hazardous Locations or non-hazardous locations only.

⚠ **WARNING - Explosion Hazard - Do not disconnect equipment unless power has been removed or the area is known to be non-hazardous**

⚠ **WARNING - Explosion Hazard - Do not utilize any of the connectors/hubs unless area is known to be non-hazardous**

⚠ **WARNING - Explosion Hazard - Substitution of Components may impair suitability for Class I, Division 2**

20 Regulatory Information

FCC Notices (U.S. Only)

FCC Class B

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 and television reception. 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.

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

1. This device may not cause harmful interference.

2. This device must accept any interference received, including interference that may cause undesired operation.

⬤ **NOTICE:** The FCC regulations provide that changes or modifications not expressly approved by Dell Incorporated could void your authority to operate this equipment.

These limits are designed to provide reasonable protection against harmful interference in a residential installation. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference with 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 the receiving antenna.

- Relocate the system with respect to the receiver.

- Move the system away from the receiver.

- Plug the system into a different outlet so that the system and the receiver are on different branch circuits.

If necessary, consult a representative of Dell Incorporated or an experienced radio/television technician for additional suggestions.

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

Product name: Dell^{TM} XFR630
Model number: PP34L

Company name: Dell Inc.
                       Worldwide Regulatory Compliance & Environmental Affairs
                       One Dell Way
                       Round Rock, TX
                       512-338-4400

21 Glossary

Terms in this Glossary are provided for informational purposes only and may or may not describe features included with your particular computer.

A

AC — Alternating Current — The form of electricity that powers your computer when you plug the AC adapter power cable in to an electrical outlet.

ACPI — Advanced Configuration and Power Interface — A power management specification that enables Microsoft® Windows® operating systems to put a computer in standby or hibernate mode to conserve the amount of electrical power allocated to each device attached to the computer.

AGP — Accelerated Graphics Port — A dedicated graphics port that allows system memory to be used for video related tasks. AGP delivers a smooth, true-color video image because of the faster interface between the video circuitry and the computer memory.

AHCI — Advanced Host Controller Interface — An interface for a SATA hard drive Host Controller which allows the storage driver to enable technologies such as Native Command Queuing (NCQ) and hot plug.

ALS — Ambient Light Sensor — A feature that helps to control display brightness.

antivirus software — A program designed to identify, quarantine, and/or delete viruses from your computer.

Armored Protection System (APS) – The ruggedization technology that combines material selection, mechanical, thermal and structural designs and third party military testing to create highly rugged systems.

ASF — Alert Standards Format — A standard to define a mechanism for reporting hardware and software alerts to a management console. ASF is designed to be platform- and operating system independent.

B

battery life span — The length of time (years) during which a portable computer battery is able to be depleted and recharged.

battery operating time — The length of time (minutes or hours) that a portable computer battery powers the computer.

BIOS — Basic Input/Output System — A program (or utility) that serves as an interface between the computer hardware and the operating system. Unless you understand what effect these settings have on the computer, do not change them. Also referred to as system setup.

bit — The smallest unit of data interpreted by your computer.

Bluetooth® wireless technology — A wireless technology standard for short-range (9 m [29 feet]) networking devices that allows for enabled devices to automatically recognize each other.

boot sequence — Specifies the order of the devices from which the computer attempts to boot.

bootable media — A CD, DVD, or floppy disk that you can use to start your computer. In case your hard drive is damaged or your computer has a virus, ensure that you always have a bootable CD, DVD, or floppy disk available. Your *Drivers and Utilities* media is an example of bootable media.

bps — bits per second — The standard unit for measuring data transmission speed.

BTU — British Thermal Unit — A measurement of heat output.

bus — A communication pathway between the components in your computer.

bus speed — The speed, given in MHz, that indicates how fast a bus can transfer information.

byte – The basic data unit used by your computer. A byte is usually equal to 8 bits.

C
C — Celsius — A temperature measurement scale where 0° is the freezing point and 100° is the boiling point of water.

cache — A special high-speed storage mechanism which can be either a reserved section of main memory or an independent high-speed storage device. The cache enhances the efficiency of many processor operations.

L1 cache — Primary cache stored inside the processor.

L2 cache — Secondary cache which can either be external to the processor or incorporated into the processor architecture.

carnet — An international customs document that facilitates temporary imports into foreign countries. Also known as a merchandise passport.

CD-R — CD recordable — A recordable version of a CD. Data can be recorded only once onto a CD-R. Once recorded, the data cannot be erased or written over.

CD-RW — CD rewritable — A rewritable version of a CD. Data can be written to a CD-RW disc, and then erased and written over (rewritten).

CD-RW drive — A drive that can read CDs and write to

CD-RW (rewritable CDs) and CD-R (recordable CDs) discs. You can write to CD-RW discs multiple times, but you can write to CD-R discs only once.

CD-RW/DVD drive — A drive, sometimes referred to as a combo drive, that can read CDs and DVDs and write to CD-RW (rewritable CDs) and CD-R (recordable CDs) discs. You can write to CD-RW discs multiple times, but you can write to CD-R discs only once.

clock speed — The speed, given in MHz, that indicates how fast computer components that are connected to the system bus operate.

CMOS — A type of electronic circuit. Computers use a small amount of battery-powered CMOS memory to hold date, time, and system setup options.

COA — Certificate of Authenticity — The Windows alpha-numeric code located on a sticker on your computer. Also referred to as the Product Key or Product ID.

Control Panel — A Windows utility that allows you to modify operating system and hardware settings, such as display settings.

controller — A chip that controls the transfer of data between the processor and memory or between the processor and devices.

CRIMM — Continuity Rambus In-line Memory Module — A special module that has no memory chips and is used to fill unused RIMM slots.

cursor — The marker on a display or screen that shows where the next keyboard, touch pad, or mouse action will occur. It often is a blinking solid line, an underline character, or a small arrow.

D

DDR SDRAM — Double-Data-Rate SDRAM — A type of SDRAM that doubles the data burst cycle, improving system performance.

DDR2 SDRAM — Double-Data-Rate 2 SDRAM — A type of DDR SDRAM that uses a 4-bit prefetch and other architectural changes to boost memory speed to over 400 MHz.

device — Hardware such as a disk drive, printer, or keyboard that is installed in or connected to your computer.

device driver — See driver.

DIMM — Dual In-line Memory Module — A circuit board with memory chips that connects to a memory module on the system board.

DIN connector — A round, six-pin connector that conforms to DIN (Deutsche Industrie-Norm) standards; it is typically used to connect PS/2 keyboard or mouse cable connectors.

DirectVue – A unique optical technology that combines higher backlit performance or NITS with anti reflective LCD films and other proprietary optics technology. Result is a Wide Aspect LCD that can be viewed in challenging lighting conditions including direct sunlight.

disk striping — A technique for spreading data over multiple disk drives. Disk striping can speed up operations that retrieve data from disk storage. Computers that use disk striping generally allow the user to select the data unit size or stripe width.

DMA — Direct Memory Access — A channel that allows certain types of data transfer between RAM and a device to bypass the processor.

docking device — provides port replication, cable management, and security features to adapt your notebook to a desktop workspace.

DMTF — Distributed Management Task Force — A consortium of hardware and software companies who develop management standards for distributed desktop, network, enterprise, and Internet environments.

domain — A group of computers, programs, and devices on a network that are administered as a unit with common rules and procedures for use by a specific group of users. A user logs on to the domain to gain access to the resources.

DRAM — Dynamic Random-Access Memory — Memory that stores information in integrated circuits containing capacitors.

driver — Software that allows the operating system to control a device such as a printer. Many devices do not work properly if the correct driver is not installed in the computer.

DSL — Digital Subscriber Line — A technology that provides a constant, high-speed Internet connection through an analog telephone line.

dual-core — A technology in which two physical computational units exist inside a single processor package, thereby increasing computing efficiency and multi-tasking ability.

dual display mode — A display setting that allows you to use a second monitor as an extension of your display. Also referred to as extended display mode.

DVD-R — DVD recordable — A recordable version of a DVD. Data can be recorded only once onto a DVD-R. Once recorded, the data cannot be erased or written over.

DVD+RW — DVD rewritable — A rewritable version of a DVD. Data can be written to a DVD+RW disc, and then erased and written over (rewritten). (DVD+RW technology is different from DVD-RW technology.)

DVD+RW drive — drive that can read DVDs and most CD media and write to DVD+RW (rewritable DVDs) discs.

DVI — Digital Video Interface — A standard for digital transmission between a computer and a digital videodisplay.

E

ECC — Error Checking and Correction — A type of memory that includes special circuitry for testing the accuracy of data as it passes in and out of memory.

ECP — Extended Capabilities Port — A parallel connector design that provides improved bidirectional data transmission. Similar to EPP, ECP uses direct memory access to transfer data and often improves performance.

EIDE — Enhanced Integrated Device Electronics — An improved version of the IDE interface for hard drives and CD drives.

EMI — ElectroMagnetic Interference — Electrical interference caused by electromagnetic radiation.

EPP — Enhanced Parallel Port — A parallel connector design that provides bidirectional data transmission.

ESD — ElectroStatic Discharge — A rapid discharge of static electricity. ESD can damage integrated circuits found in computer and communications equipment.

expansion card — A circuit board that installs in an expansion slot on the system board in some computers, expanding the capabilities of the computer. Examples include video, modem, and sound cards.

expansion slot — A connector on the system board (in some computers) where you insert an expansion card, connecting it to the system bus.

ExpressCard — A removable I/O card adhering to the PCMCIA standard. Modems and network adapters are common types of ExpressCards. ExpressCards support both the PCI Express and USB 2.0 standard.

extended display mode — A display setting that allows you to use a second monitor as an extension of your display. Also referred to as dual display mode.

extended PC Card — A PC Card that extends beyond the edge of the PC Card slot when installed.

F

Fahrenheit — A temperature measurement scale where 32° is the freezing point and 212° is the boiling point of water.

FBD — Fully-Buffered DIMM — A DIMM with DDR2 DRAM chips and an Advanced Memory Buffer (AMB) that speeds communication between the DDR2 SDRAM chips and the system.

FCC — Federal Communications Commission — A U.S. agency responsible for enforcing communications-related regulations that state how much radiation computers and other electronic equipment can emit.

fingerprint reader — A strip sensor that uses your unique fingerprint to authenticate your user identity to help secure your computer.

folder — A term used to describe space on a disk or drive where files are organized and grouped. Files in a folder can be viewed and ordered in various ways, such as alphabetically, by date, and by size.

format — The process that prepares a drive or disk for file storage. When a drive or disk is formatted, the existing information on it is lost.

FSB — Front Side Bus — The data path and physical interface between the processor and RAM.

FTP — File Transfer Protocol — A standard Internet protocol used to exchange files between computers connected to the Internet.

G

G — Gravity — A measurement of weight and force.

GB — GigaByte — A measurement of data storage that equals 1024 MB (1,073,741,824 bytes). When used to refer to hard drive storage, the term is often rounded to 1,000,000,000 bytes.

GHz — gigahertz — A measurement of frequency that equals one thousand million Hz, or one thousand MHz. The speeds for computer processors, buses, and interfaces are often measured in GHz. graphics mode — A video mode that can be defined as x horizontal pixels by y vertical pixels by z colors. Graphics modes can display an unlimited variety of shapes and fonts.

GUI — Graphical User Interface — Software that interacts with the user by means of menus, windows, and icons. Most programs that operate on the Windows operating systems are GUIs.

H

hard drive — A drive that reads and writes data on a hard disk. The terms hard drive and hard disk are often used interchangeably.

heat sink — A metal plate on some processors that helps dissipate heat.

hibernate mode — A power management mode that saves everything in memory to a reserved space on the hard drive and then turns off the computer. When you restart the computer, the memory information that was saved to the hard drive is automatically restored.

HTTP — HyperText Transfer Protocol — A protocol for exchanging files between computers connected to the Internet.

Hyper-Threading — Hyper-Threading is an Intel technology that can enhance overall computer performance by allowing one physical processor to function as two logical processors, capable of performing certain tasks simultaneously.

Hz — hertz — A unit of frequency measurement that equals 1 cycle per second. Computers and electronic devices are often measured in kilohertz (kHz), megahertz (MHz), gigahertz (GHz), or terahertz (THz).

I

IC — Integrated Circuit — A semiconductor wafer, or chip, on which thousands or millions of tiny electronic components are fabricated for use in computer, audio, and video equipment.

IDE — Integrated Device Electronics — An interface for mass storage devices in which the controller is integrated into the hard drive or CD drive.

IEEE 1394 — Institute of Electrical and Electronics Engineers, Inc. — A high-performance serial bus used to connect IEEE 1394-compatible devices, such as digital cameras and DVD players, to the computer.

infrared sensor — A port that allows you to transfer data between the computer and infrared-compatible devices without using a cable connection.

integrated — Usually refers to components that are physically located on the computer's system board. Also referred to as built-in.

I/O — Input/Output — An operation or device that enters and extracts data from your computer. Keyboards and printers are I/O devices.

I/O address — An address in RAM that is associated with a specific device (such as a serial connector, parallel connector, or expansion slot) and allows the processor to communicate with that device.

IrDA — Infrared Data Association — The organization that creates international standards for infrared communications.

IRQ — interrupt request — An electronic pathway assigned to a specific device so that the device can communicate with the processor. Each device connection must be assigned an IRQ. Although two devices can share the same IRQ assignment, you cannot operate both devices simultaneously.

ISP — Internet Service Provider — A company that allows you to access its host server to connect directly to the Internet, send and receive e-mail, and access websites. The ISP typically provides you with a software package, user name, and access phone numbers for a fee.

K

Kb — kilobit — A unit of data that equals 1024 bits. A measurement of the capacity of memory integrated circuits.

KB — kilobyte — A unit of data that equals 1024 bytes but is often referred to as 1000 bytes.

key combination — A command requiring you to press multiple keys at the same time.

kHz — kilohertz — A measurement of frequency that equals 1000 Hz.

L

LAN — Local Area Network — A computer network covering a small area. A LAN usually is confined to a building or a few nearby buildings. A LAN can be connected to another LAN over any distance through telephone lines and radio waves to form a wide area network (WAN).

LCD — Liquid Crystal Display — The technology used by portable computer and flat-panel displays.

LED — Light-Emitting Diode — An electronic component that emits light to indicate the status of the computer.

local bus — A data bus that provides a fast throughput for devices to the processor.

LPT — Line Print Terminal — The designation for a parallel connection to a printer or other parallel device.

M

Mb — Megabit — A measurement of memory chip capacity that equals 1024 Kb.

Mbps — Megabits per second — One million bits per second. This measurement is typically used for transmission speeds for networks and modems.

MB — megabyte — A measurement of data storage that equals 1,048,576 bytes. 1 MB equals 1024 KB. When used to refer to hard drive storage, the term is often rounded to 1,000,000 bytes.

MB/sec — megabytes per second — One million bytes per second. This measurement is typically used for data transfer ratings.

Media bay — See XBay.

memory — A temporary data storage area inside your computer. Because the data in memory is not permanent, it is recommended that you frequently save your files while you are working on them, and always save your files before you shut down the computer. Your computer can contain several different forms of memory, such as RAM, ROM, and video memory. Frequently, the word memory is used as a synonym for RAM.

memory address — A specific location where data is temporarily stored in RAM.

memory mapping — The process by which the computer assigns memory addresses to physical locations at start-up. Devices and software can then identify information that the processor can access.

memory module — A small circuit board containing memory chips, which connects to the system board.

MHz — megahertz — A measure of frequency that equals 1 million cycles per second. The speeds for computer processors, buses, and interfaces are often measured in MHz.

Mini PCI — A standard for integrated peripheral devices with an emphasis on communications such as modems and NICs. A Mini PCI card is a small external card that is functionally equivalent to a standard PCI expansion card.

Mini-Card — A small card designed for integrated peripherals, such as communication NICs. The Mini-Card is functionally equivalent to a standard PCI expansion card.

modem — A device that allows your computer to communicate with other computers over analog telephone lines. Three types of modems include: external, PC Card, and internal. You typically use your modem to connect to the Internet and exchange e-mail.

module bay — See XBay.

MP — megapixel — A measure of image resolution used for digital cameras.

ms — millisecond — A measure of time that equals one thousandth of a second. Access times of storage devices are often measured in ms.

N

network adapter — A chip that provides network capabilities. A computer may include a network adapter on its system board, or it may contain a PC Card with an adapter on it. A network adapter is also referred to as a NIC (network interface controller).

NIC — See network adapter.

notification area — The section of the Windows taskbar that contains icons for providing quick access to programs and computer functions, such as the clock, volume control, and print status. Also referred to as system tray.

ns — nanosecond — A measure of time that equals one billionth of a second.
NVRAM — nonvolatile random access memory — A type of memory that stores data when the computer is turned off or loses its external power source. NVRAM is used for maintaining computer configuration information such as date, time, and other system setup options that you can set.

O

optical drive — A drive that uses optical technology to read or write data from CDs, DVDs, or DVD+RWs. Example of optical drives include CD drives, DVD drives, CD-RW drives, and CD-RW/DVD combo drives.

P

parallel connector — An I/O port often used to connect a parallel printer to your computer. Also referred to as an LPT port.

partition — A physical storage area on a hard drive that is assigned to one or more logical storage areas known as logical drives. Each partition can contain multiple logical drives.

PC Card — A removable I/O card adhering to the PCMCIA standard. Modems and network adapters are common types of PC Cards.

PCI — Peripheral Component Interconnect — PCI is a local bus that supports 32-and 64-bit data paths, providing a high-speed data path between the processor and devices such as video, drives, and networks.

PCI Express — A modification to the PCI interface that boosts the data transfer rate between the processor and the devices attached to it. PCI Express can transfer data at speeds from 250 MB/sec to 4 GB/sec. If the PCI Express chip set and the device are capable of different speeds, they will operate at the slower speed.

PCMCIA — Personal Computer Memory Card International Association — The organization that establishes standards for PC Cards.

PIO — Programmed Input/Output — A method of transferring data between two devices through the processor as part of the data path.

pixel — A single point on a display screen. Pixels are arranged in rows and columns to create an image. A video resolution, such as 800 x 600, is expressed as the number of pixels across by the number of pixels up and down.

Plug-and-Play — The ability of the computer to automatically configure devices. Plug and Play provides automatic installation, configuration, and compatibility with existing hardware if the BIOS, operating system, and all devices are Plug and Play compliant.

POST — Power-On Self-Test — Diagnostics programs, loaded automatically by the BIOS, that perform basic tests on the major computer components, such as memory, hard drives, and video. If no problems are detected during POST, the computer continues the startup. processor — A computer chip

that interprets and executes program instructions. Sometimes the processor is referred to as the CPU (central processing unit).

PS/2 — Personal System/2 — A type of connector for attaching a PS/2-compatible keyboard, mouse, or keypad.

PXE — pre-boot execution environment — A WfM (Wired for Management) standard that allows networked computers that do not have an operating system to be configured and started remotely.

Q

QuadCool – The multi-faceted Thermal Management System that combines enhanced forced convection and conductive cooling focused on the internal core system components, primary memory, storage and smart battery elements. QuadCool Technology moves heat away from core system components and elements to the exterior of the system.

R

RAID — Redundant Array of Independent Disks — A method of providing data redundancy. Some common implementations of RAID include RAID 0, RAID 1, RAID 5, RAID 10, and RAID 50.

RAM — Random-Access Memory — The primary temporary storage area for program instructions and data. Any information stored in RAM is lost when you shut down your computer.

readme file — A text file included with a software package or hardware product. Typically, readme files provide installation information and describe new product enhancements or corrections that have not yet been documented.

read-only — Data and/or files you can view but cannot edit or delete. A file can have read-only status if:
- It resides on a physically write-protected floppy disk, CD, or DVD.
- It is located on a network in a directory and the system administrator has assigned rights only to specific individuals.

refresh rate — The frequency, measured in Hz, at which your screen's horizontal lines are recharged (sometimes also referred to as its vertical frequency). The higher the refresh rate, the less video flicker can be seen by the human eye.

resolution — The sharpness and clarity of an image produced by a printer or displayed on a monitor. The higher the resolution, the sharper the image.

RFI — Radio Frequency Interference — Interference that is generated at typical radio frequencies, in the range of 10 kHz to 100,000 MHz. Radio frequencies are at the lower end of the electromagnetic frequency spectrum and are more likely to have interference than the higher frequency radiations, such as infrared and light.

ROM — Read-Only Memory — Memory that stores data and programs that cannot be deleted or written to by the computer. ROM, unlike RAM, retains its contents after you shut down your computer. Some programs essential to the operation of your computer reside in ROM.

RPM — Revolutions Per Minute — The number of rotations that occur per minute. Hard drive speed is often measured in rpm.

RTC — Real Time Clock — Battery-powered clock on the system board that keeps the date and time after you shut down the computer.

RTCRST — Real-Time Clock Reset — A jumper on the system board of some computers that can often be used for troubleshooting problems.

Rugged Redefined – The design and development system that delivers a higher performance and functionality platform, while maintaining the core system IT architecture of the base computing platform.

S

SAS — Serial Attached SCSI — A faster, serial version of the SCSI interface (as opposed to the original SCSI parallel architecture).

SATA — Serial ATA — A faster, serial version of the ATA (IDE) interface.

ScanDisk — A Microsoft utility that checks files, folders, and the hard disk's surface for errors. ScanDisk often runs when you restart the computer after it has stopped responding.

SCSI — small computer system interface — A high-speed interface used to connect devices to a computer, such as hard drives, CD drives, printers, and scanners. The SCSI can connect many devices using a single controller. Each device is accessed by an individual identification number on the SCSI controller bus.

SDRAM — Synchronous Dynamic Random-Access Memory — A type of DRAM that is synchronized with the optimal clock speed of the processor.

serial connector — An I/O port often used to connect devices such as a handheld digital device or digital camera to your computer.

Service Tag — A bar code label on your computer that identifies your computer when you call Dell Customer Support for customer service or technical support.

setup program — A program that is used to install and configure hardware and software. The setup.exe or install.exe program comes with most Windows software packages. Setup program differs from system setup.

shortcut — An icon that provides quick access to frequently used programs, files, folders, and drives. When you place a shortcut on your Windows desktop and double-click the icon, you can open its corresponding folder or file without having to find it first. Shortcut icons do not change the location of files. If you delete a shortcut, the original file is not affected. Also, you can rename a shortcut icon.

SIM — Subscriber Identity Module — A SIM card contains a microchip that encrypts voice and data transmissions. SIM cards can be used in phones or portable computers.

smart card — A card that is embedded with a processor and a memory chip. Smart cards can be used to authenticate a user on computers equipped for smart cards.

S/PDIF — Sony/Philips Digital Interface — An audio transfer file format that allows the transfer of audio from one file to another without converting it to and from an analog format, which could degrade the quality of the file.

standby mode — A power management mode that shuts down all unnecessary computer operations to save energy.

surge protectors — Prevent voltage spikes, such as those that may occur during an electrical storm, from entering the computer through the electrical outlet. Surge protectors do not protect against lightning strikes or against brownouts, which occur when the voltage drops more than 20 percent below the normal AC-line voltage level. Network connections cannot be protected by surge protectors. Always disconnect the network cable from the network connector during electrical storms.

SVGA — Super-Video Graphics Array — A video standard for video cards and controllers. Typical SVGA resolutions are 800 x 600 and 1024 x 768. The number of colors and resolution that a program displays depends on the capabilities of the monitor, the video controller and its drivers, and the amount of video memory installed in the computer.

S-video TV-out — A connector used to attach a TV or digital audio device to the computer.

SXGA — Super-extended Graphics Array — A video standard for video cards and controllers that supports resolutions up to 1280 x 1024.

SXGA+ — Super-extended Graphics Array plus — A video standard for video cards and controllers that supports resolutions up to 1400 x 1050.

system board — The main circuit board in your computer. Also known as the motherboard.

system setup — A utility that serves as an interface between the computer hardware and the operating system. System setup allows you to configure user selectable options in the BIOS, such as date and time or system password. Unless you understand what effect the settings have on the computer, do not change the settings for this program.

T

TAPI — Telephony Application Programming Interface — Enables Windows programs to operate with a wide variety of telephony devices, including voice, data, fax, and video.

text editor — A program used to create and edit files that contain only text; for example, Windows Notepad uses a text editor. Text editors do not usually provide word wrap or formatting functionality (the option to underline, change fonts, and so on).

TPM — Trusted Platform Module — A hardware-based security feature that when combined with security software enhances network and computer security by enabling features such as file and e-mail protection.

travel module — A plastic device designed to fit inside the module bay of a portable computer to reduce the weight of the computer.

U

UAC — User Account Control— Microsoft Windows Vista™ security feature that, when enabled, provides an added layer of security between user accounts and access to operating system settings.

UMA — Unified Memory Allocation — System memory dynamically allocated to video.

UPS — Uninterruptible Power Supply — A backup power source used when the electrical power fails or drops to an unacceptable voltage level. A UPS keeps a computer running for a limited amount of time when there is no electrical power. UPS systems typically provide surge suppression and may also provide voltage regulation. Small UPS systems provide battery power for a few minutes to enable you to shut down your computer.

USB — Universal Serial Bus — A hardware interface for a low-speed device such as a USB-compatible keyboard, mouse, joystick, scanner, set of speakers, printer, broadband devices (DSL and cable modems), imaging devices, or storage devices. Devices are plugged directly in to a 4-pin socket on your computer or in to a multi-port hub that plugs in to your computer. USB devices can be connected and disconnected while the computer is turned on, and they can also be daisy-chained together.

UTP — Unshielded Twisted Pair — Describes a type of cable used in most telephone networks and some computer networks. Pairs of unshielded wires are twisted to protect against electromagnetic interference, rather than relying on a metal sheath around each pair of wires to protect against interference.

UXGA — Ultra extended Graphics Array — A video standard for video cards and controllers that supports resolutions up to 1600 x 1200.

V

video controller — The circuitry on a video card or on the system board (in computers with an integrated video controller) that provides the video capabilities—in combination with the monitor—for your computer.

video memory — Memory that consists of memory chips dedicated to video functions. Video memory is usually faster than system memory. The amount of video memory installed primarily influences the number of colors that a program can display.

video mode — A mode that describes how text and graphics are displayed on a monitor. Graphics based software, such as Windows operating systems, displays in video modes that can be defined as x horizontal pixels by y vertical pixels by z colors. Character-based software, such as text editors, displays in video modes that can be defined as x columns by y rows of characters.

video resolution — See resolution.

virus — A program that is designed to inconvenience you or to destroy data stored on your computer. A virus program moves from one computer to another through an infected disk, software downloaded from the Internet, or e-mail attachments. When an infected program starts, its embedded virus also starts. A common type of virus is a boot virus, which is stored in the boot sectors of a floppy disk. If the floppy disk is left in the drive when the computer is shut down and then turned on, the computer is infected when it reads the boot sectors of the floppy disk expecting to find the operating system. If the computer is infected, the boot virus may replicate itself onto all the floppy disks that are read or written in that computer until the virus is eradicated.

V — volt — The measurement of electric potential or electromotive force. One V appears across a resistance of 1 ohm when a current of 1 ampere flows through that resistance.

W

W — Watt — The measurement of electrical power. One W is 1 ampere of current flowing at 1 volt.

WHr — Hatt-Hour — A unit of measure commonly used to indicate the approximate capacity of a battery. For example, a 66-WHr battery can supply 66 W of power for 1 hour or 33 W for 2 hours.

wallpaper — The background pattern or picture on the Windows desktop. Change your wallpaper through the Windows Control Panel. You can also scan in your favorite picture and make it wallpaper.

WLAN — Wireless Local Area Network. A series of interconnected computers that communicate with each other over the air waves using access points or wireless routers to provide Internet access.

write-protected — Files or media that cannot be changed. Use write-protection when you want to protect data from being changed or destroyed. To write-protect a 3.5-inch floppy disk, slide its write-protect tab to the open position.

WWAN — Wireless Wide Area Network. A wireless highspeed data network using cellular technology and covering a much larger geographic area than WLAN.

WXGA — wide-aspect extended graphics array — A video standard for video cards and controllers that supports resolutions up to 1280 x 800."

X

XBay — A bay that supports devices such as optical drives, a second battery, or a second hard drive.

XGA — extended Graphics Array — A video standard for video cards and controllers that supports resolutions up to 1024 x 768.

Z

ZIF — Zero Insertion Force — A type of socket or connector that allows a computer chip to be installed or removed with no stress applied to either the chip or its socket.

Zip — A popular data compression format. Files that have been compressed with the Zip format are called Zip files and usually have a filename extension of .zip. A special kind of zipped file is a self-extracting file, which has a filename extension of .exe. You can unzip a self-extracting file by double-clicking it.

Zip drive — A high-capacity floppy drive developed by Iomega Corporation that uses 3.5-inch removable disks called Zip disks. Zip disks are slightly larger than regular floppy disks, about twice as thick, and hold up to 100 MB of data.