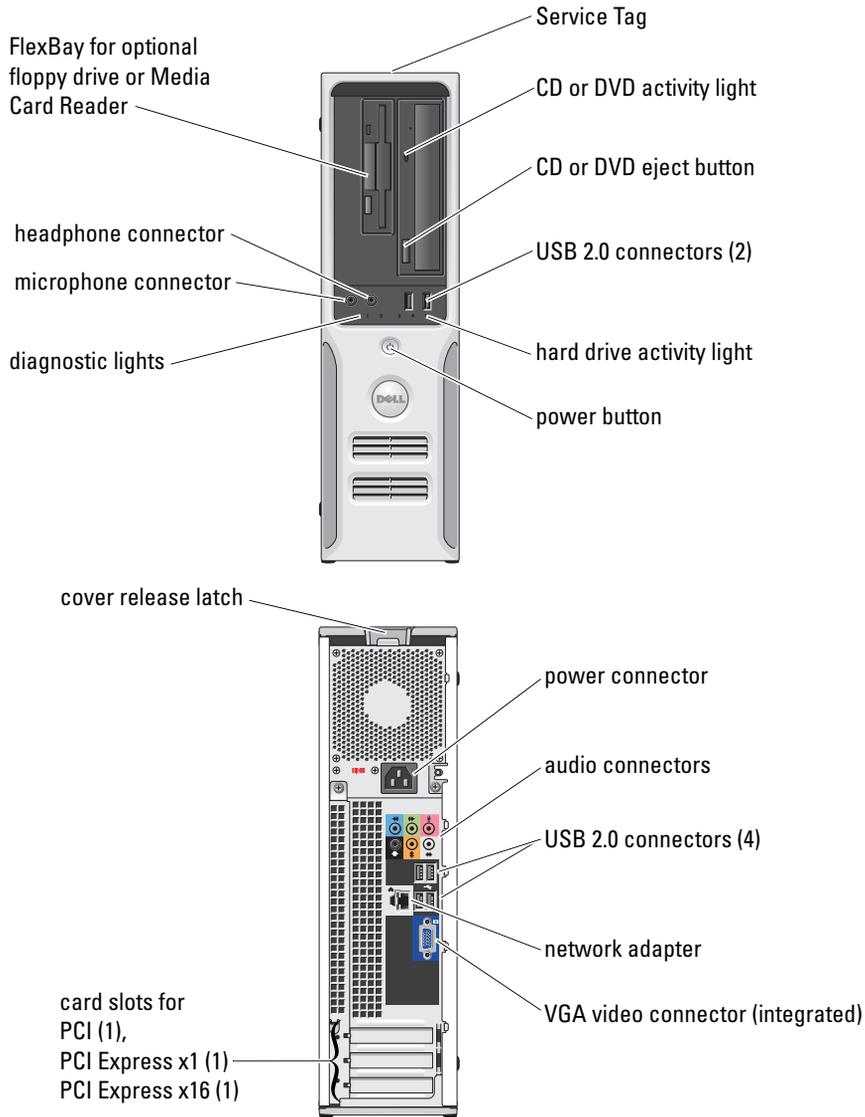


Dell™ Dimension™ C521

Owner's Manual



Model DCNE

Notes, Notices, and Cautions



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



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



CAUTION: A CAUTION indicates a potential for property damage, personal injury, or death.

Abbreviations and Acronyms

For a complete list of abbreviations and acronyms, see the "Glossary" on page 127.

If you purchased a Dell™ n Series computer, any references in this document to Microsoft® Windows® operating systems are not applicable.

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Model DCNE

August 2006

P/N RP333

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Finding Information

 **NOTE:** Some features or media may be optional and may not ship with your computer. Some features or media may not be available in certain countries.

 **NOTE:** Additional information may ship with your computer.

What Are You Looking For?

- A diagnostic program for my computer
- Drivers for my computer
- My device documentation
- Desktop System Software (DSS)

Find It Here

Drivers and Utilities CD (also known as ResourceCD)

NOTE: The *Drivers and Utilities* CD may be optional and may not ship with your computer.

Documentation and drivers are already installed on your computer. You can use the CD to reinstall drivers (see "Reinstalling Drivers" on page 53), to run the Dell Diagnostics (see "Dell Diagnostics" on page 50), or to access your documentation.



Readme files may be included on your CD to provide last-minute updates about technical changes to your computer or advanced technical reference material for technicians or experienced users.

NOTE: Drivers and documentation updates can be found at support.dell.com.

-
- Warranty information
 - Terms and Conditions (U.S. only)
 - Safety instructions
 - Regulatory information
 - Ergonomics information
 - End User License Agreement

Dell™ Product Information Guide



What Are You Looking For?

- How to set up my computer

Find It Here

Setup Diagram



-
- Service Tag and Express Service Code
 - Microsoft Windows License Label

Service Tag and Microsoft® Windows® License

These labels are located on your computer (see "Front View of the Computer" on page 13).

- Use the Service Tag to identify your computer when you use support.dell.com or contact support.



- Enter the Express Service Code to direct your call when contacting support.

What Are You Looking For?

- Solutions — Troubleshooting hints and tips, articles from technicians, online courses, and frequently asked questions
- Community — Online discussion with other Dell customers
- Upgrades — Upgrade information for components, such as the memory, hard drive, and operating system
- Customer Care — Contact information, service call and order status, warranty, and repair information
- Service and Support — Service call status, support history, service contract, and online discussions with support
- Reference — Computer documentation, details on my computer configuration, product specifications, and white papers
- Downloads — Certified drivers, patches, and software updates
- Desktop System Software (DSS)— If you reinstall the operating system for your computer, you should reinstall the DSS utility prior to installing any drivers. DSS provides critical updates for your operating system and support for Dell™ 3.5-inch USB floppy drives, AMD™ processors, optical drives, and USB devices. DSS is necessary for correct operation of your Dell computer. The software automatically detects your computer and operating system and installs the updates appropriate for your configuration.

- How to use Windows XP
- How to work with programs and files
- How to personalize my desktop

Find It Here

Dell Support Website — support.dell.com

NOTE: Select your region or business segment to view the appropriate support site.

To download Desktop System Software:

- 1** Go to support.dell.com, select your region or business segment, and then enter your Service Tag.
- 2** Select **Drivers & Downloads**, then click **Go**.
- 3** Click your operating system, and then search for the keyword *Desktop System Software*.

NOTE: The support.dell.com user interface may vary depending on your selections.

Windows Help and Support Center

- 1** Click **Start** → **Help and Support**.
- 2** Type a word or phrase that describes your problem, and then click the arrow icon.
- 3** Click the topic that describes your problem.
- 4** Follow the instructions on the screen.

What Are You Looking For?

- How to reinstall my operating system

Find It Here

Operating System CD

NOTE: The *Operating System CD* may be optional and may not ship with your computer.

The operating system is already installed on your computer. To reinstall your operating system, use the *Operating System CD* (see "Restoring Your Operating System" on page 54).

NOTE: If you reinstall the operating system for your computer, you should reinstall the DSS utility prior to installing any drivers.



After you reinstall your operating system, use the *Drivers and Utilities CD (ResourceCD)* to reinstall drivers for the devices that came with your computer.

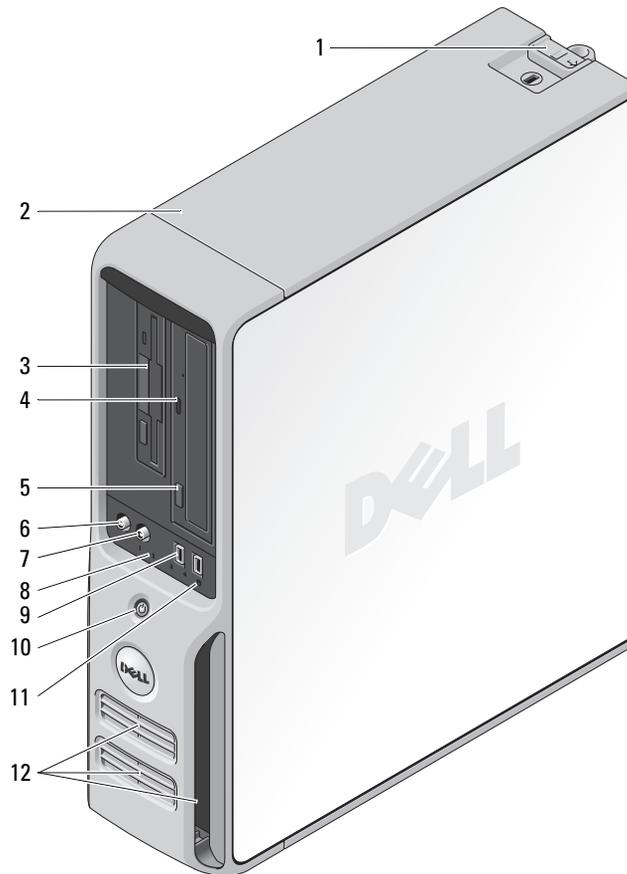
Your operating system product key label is located on your computer.

NOTE: The color of your CD

varies based on the operating system you ordered.

Setting Up and Using Your Computer

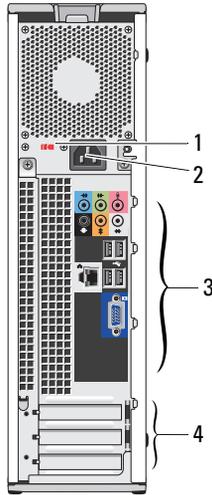
Front View of the Computer



1	cover release latch	Use this latch to remove the cover (see "Front View of the Computer" on page 13).
2	Service Tag	Use to identify your computer when you access the Dell Support website or call support.

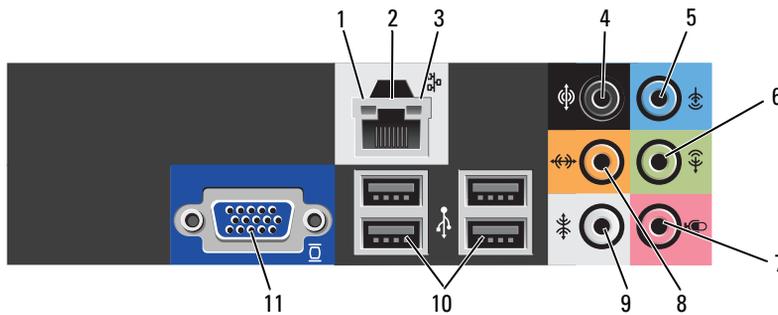
3	FlexBay drive	Can contain an optional floppy drive or optional Media Card Reader. For information on using the Media Card Reader, see "Using a Media Card Reader (Optional)" on page 24.
4	CD or DVD activity light	The drive light is on when the computer reads data from the CD or DVD drive.
5	CD or DVD eject button	Press to eject a disk from the CD or DVD drive.
6	microphone connector	Use the microphone connector to attach a personal computer microphone for voice or musical input into a sound or telephony program.
7	headphone connector	Use the headphone connector to attach headphones and most kinds of speakers.
8	diagnostic lights (4)	Use the lights to help you troubleshoot a computer problem based on the diagnostic code. For more information, see "Power Light and Diagnostic Lights" on page 47.
9	USB 2.0 connectors (2)	Use the front USB connectors for devices that you connect occasionally, such as joysticks or cameras, or for bootable USB devices (see "System Setup Options" on page 98 for more information on booting to a USB device). It is recommended that you use the back USB connectors for devices that typically remain connected, such as printers and keyboards.
10	power button	Press to turn on the computer.  NOTICE: To avoid losing data, do not use the power button to turn off the computer. Instead, perform an operating system shutdown.
11	hard-drive activity light	The hard drive activity light is on when the computer reads data from or writes data to the hard drive. The light might also be on when a device such as a CD player is operating.
12	vents	To ensure adequate cooling, do not block any of the vents.  NOTICE: Ensure that there is a minimum of two inches of space between all vents and any object near these vents.  NOTICE: Keep the vent area clean and dust-free to ensure that the system is adequately ventilated. Use only a dry cloth to clean the vent area to avoid water damage to the system.

Back View of the Computer



1	voltage selection switch	See the safety instructions in the Product Information Guide for more information.
2	power connector	Insert the power cable.
3	back panel I/O connectors	Plug serial, USB, and other devices into the appropriate connectors (see "Back Panel I/O Connectors" on page 16).
4	card slots (3)	Access connector slots for expansion cards: <ul style="list-style-type: none">• SLOT1 PCI Express x16• SLOT2 PCI Express x1• SLOT3 PCI

Back Panel I/O Connectors



1	link integrity light	<ul style="list-style-type: none"> • Green — A good connection exists between a 10-Mbps network and the computer. • Orange — A good connection exists between a 100-Mbps network and the computer. • Off — The computer is not detecting a physical connection to the network.
2	network adapter connector	<p>⚠ NOTICE: Do not plug a telephone cable into the network connector.</p> <p>Use the network adapter connector to attach your computer to a network or broadband device. Connect one end of a network cable to either a network jack or your network or broadband device, and then connect the other end of the network cable to the network adapter connector on your computer. A click indicates that the network cable has been securely attached.</p> <p>On computers with an additional network connector card, use the connectors on the card and on the back of the computer when setting up multiple network connections (such as a separate intra- and extranet).</p> <p>NOTE: It is recommended that you use Category 5 wiring and connectors for your network. If you must use Category 3 wiring, force the network speed to 10 Mbps to ensure reliable operation.</p>
3	network activity light	Flashes a yellow light when the computer is transmitting or receiving network data. A high volume of network traffic may make this light appear to be in a steady "on" state.
4	surround sound connector	<p>Use the (black) surround sound connector to attach multichannel-capable speakers.</p> <p>On computers with a sound card, use the connector on the card.</p>
5	line-in connector	<p>Use the (blue) line-in connector to attach a record/playback device such as a cassette player, CD player, or VCR.</p> <p>On computers with a sound card, use the connector on the card.</p>

6	line-out/headphone connector	Use the (green) line-out connector to attach headphones and most speakers with integrated amplifiers. On computers with a sound card, use the connector on the card.
7	microphone connector	Use the (pink) microphone connector to attach a personal computer microphone for voice or musical input into a sound or telephony program. On computers with a sound card, use the connector on the card.
8	center/subwoofer LFE connector	Use the (orange) center/subwoofer connector to attach a center speaker or a single subwoofer. On computers with a sound card, use the connector on the card. NOTE: The LFE (Low Frequency Effects) Audio channel, found in digital surround sound audio schemes, carries only low frequency information of 80 Hz and below. The LFE channel drives a subwoofer to provide extremely low bass extension. Systems not using subwoofers can shunt the LFE information to the main speakers in the surround sound setup.
9	side surround sound connector	Use the (gray) side surround sound connector to attach multichannel-capable speakers. The side-surround output provides enhanced surround audio for computers with 7.1 speakers. On computers with a sound card, use the connector on the card.
10	USB 2.0 connectors (4) (rear quad)	Use the back, rear-quad USB connectors for devices that typically remain connected, such as printers and keyboards. NOTE: It is recommended that you use the front USB connectors for devices that you connect occasionally, such as joysticks, cameras, or bootable USB devices.
11	VGA video connector	If your monitor has a VGA connector, plug it into the VGA connector on the computer.

Setting Up a Printer

 **NOTICE:** Complete the operating system setup before you connect a printer to the computer.

See the documentation that came with the printer for setup information, including how to:

- Obtain and install updated drivers
- Connect the printer to the computer
- Load paper and install the toner or ink cartridge

For technical assistance, refer to the printer owner's manual or contact the printer manufacturer.

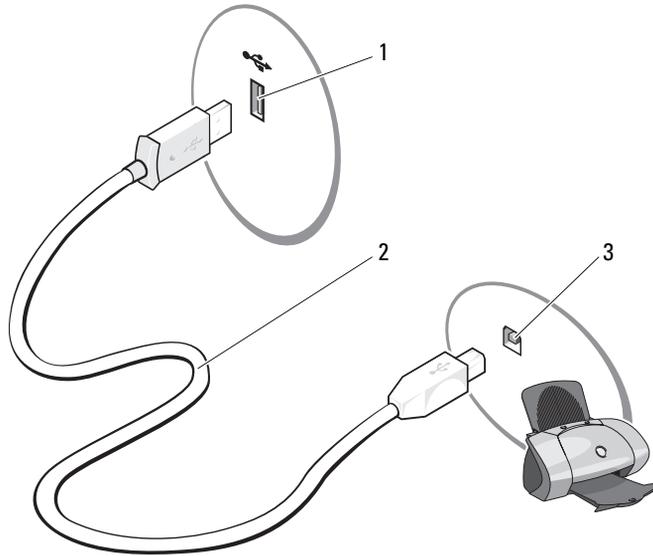
Printer Cable

Your printer connects to your computer with a USB cable. Your printer may not come with a printer cable, so if you purchase a cable separately, ensure that it is compatible with your printer. If you purchased a printer cable at the same time you purchased your computer, the cable may arrive in the computer box.

Connecting a USB Printer

 **NOTE:** You can connect USB devices while the computer is turned on.

- 1 Complete the operating system setup, if you have not already done so.
- 2 Attach the USB printer cable to the USB connectors on the computer and the printer. The USB connectors only fit into the ports when correctly oriented.



1 USB connector on computer

2 USB printer cable

3 USB connector on printer

- 3 Turn on the printer and then turn on the computer. If the **Add New Hardware Wizard** window appears, click **Cancel**.
- 4 Install the printer driver, if necessary. See the documentation that came with your printer.

Connecting to the Internet

 **NOTE:** ISPs and ISP offerings vary by country.

To connect to the Internet, you need a modem or network connection and an Internet service provider (ISP), such as AOL or MSN. Your ISP will offer one or more of the following Internet connection options:

- Dial-up connections that provide Internet access through a telephone line. Dial-up connections are considerably slower than DSL and cable modem connections.

- DSL connections that provide high-speed Internet access through your existing telephone line. With a DSL connection, you can access the Internet and use your telephone on the same line simultaneously.
- Cable modem connections that provide high-speed Internet access through your local cable TV line.

If you are using a dial-up connection, connect a telephone line to the modem connector on your computer and to the telephone wall jack before you set up your Internet connection. If you are using a DSL or cable modem connection, contact your ISP for setup instructions.

Setting Up Your Internet Connection

To set up an Internet connection with a provided ISP desktop shortcut:

- 1 Save and close any open files, and exit any open programs.
- 2 Double-click the ISP icon on the Microsoft® Windows® desktop.
- 3 Follow the instructions on the screen to complete the setup.

If you do not have an ISP icon on your desktop or if you want to set up an Internet connection with a different ISP:

- 1 Save and close any open files, and exit any open programs.

- 2 Click the **Start** button, then click **Internet Explorer**.

The **New Connection Wizard** appears.

- 3 Click **Connect to the Internet**.

- 4 In the next window, click the appropriate option:

- If you do not have an ISP and want to select one, click **Choose from a list of Internet service providers (ISPs)**.
- If you have already obtained setup information from your ISP, but you did not receive a setup CD, click **Set up my connection manually**.
- If you have a CD, click **Use the CD I got from an ISP**.

- 5 Click **Next**.

If you selected **Set up my connection manually**, continue to step 6. Otherwise, follow the instructions on the screen to complete the setup.



NOTE: If you do not know which type of connection to select, contact your ISP.

- 6 Click the appropriate option under **How do you want to connect to the Internet?**, and then click **Next**.

- 7 Use the setup information provided by your ISP to complete the setup.

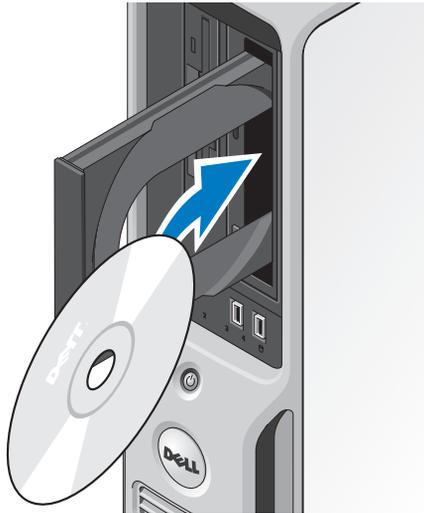
If you are having problems connecting to the Internet, see "E-Mail, Modem, and Internet Problems" on page 33. If you cannot connect to the Internet but have successfully connected in the past, the ISP might have a service outage. Contact your ISP to check the service status, or try connecting again later.

Playing CDs and DVDs

➔ **NOTICE:** Do not press down on the CD or DVD tray when you open or close it. Keep the tray closed when you are not using the drive.

➔ **NOTICE:** Do not move the computer when you are playing CDs or DVDs.

- 1 Press the eject button on the front of the drive.
- 2 Place the disc, label side up in the center of the tray.
- 3 Press the disc into the center of the tray until it clicks into place.



- 4 Press the eject button or gently push in the tray.

To format CDs for storing data, to create music CDs, or to copy CDs, see the CD software that came with your computer.

 **NOTE:** Ensure that you follow all copyright laws when you create CDs.

A CD player includes the following basic buttons:

	Play
	Move backward within the current track
	Pause
	Move forward within the current track
	Stop

	Go to the previous track
	Eject
	Go to the next track

A DVD player includes the following basic buttons:

	Stop
	Restart the current chapter
	Play
	Fast forward
	Pause
	Fast reverse
	Advance a single frame while in pause mode
	Go to the next title or chapter
	Continuously play the current title or chapter
	Go to the previous title or chapter
	Eject

For more information on playing CDs or DVDs, click **Help** on the CD or DVD player (if available).

Adjusting the Volume

 **NOTE:** When the speakers are muted, you do not hear the CD or DVD playing.

- 1 Click the **Start** button, point to **All Programs** → **Accessories** → **Entertainment**, and then click **Volume Control**.
- 2 In the **Volume Control** window, click and drag the bar in the **Volume Control** column up or down to increase or decrease the volume.

For more information on volume control options, click **Help** in the **Volume Control** window.

Adjusting the Picture

If an error message notifies you that the current resolution and color depth are using too much memory and preventing DVD playback, adjust the display properties:

- 1 Click the **Start** button, then click **Control Panel**.
- 2 Under **Pick a category**, click **Appearance and Themes**.
- 3 Under **Pick a task...**, click **Change the screen resolution**.
- 4 In the **Display Properties** window, click and drag the bar in **Screen resolution** to change the setting to 800 by 600 pixels.
- 5 Click the drop-down menu under **Color quality**, then click **Medium (16 bit)**.
- 6 Click **OK**.

Copying CDs and DVDs

 **NOTE:** Ensure that you observe all copyright laws when creating CDs or DVDs.

This section applies only to computers that have a CD-RW, DVD+/-RW, or CD-RW/DVD (combo) drive.

 **NOTE:** The types of CD or DVD drives offered by Dell may vary by country.

The following instructions explain how to make an exact copy of a CD or DVD using Roxio Creator Plus - Dell Edition. You can also use Roxio Creator Plus for other purposes, such as creating music CDs from audio files stored on your computer or backing up important data. For help, open Roxio Creator Plus, and then click the question mark icon in the upper-right corner of the window.

How to Copy a CD or DVD

 **NOTE:** CD-RW/DVD combo drives cannot write to DVD media. If you have a CD-RW/DVD combo drive and you experience recording problems, check for available software patches on the Sonic support website at www.sonic.com.

The DVD-writable drives installed in Dell computers can write to and read DVD+/-R, DVD+/-RW and DVD+R DL (dual layer) media, but cannot write to and may not read DVD-RAM or DVD-R DL media.

 **NOTE:** Most commercial DVDs have copyright protection and cannot be copied using Roxio Creator Plus.

- 1 Click **Start**, point to **All Programs**→**Roxio**→**Creator Projects**, and then click **RecordNow Copy**.
- 2 Under the **Copy** tab, click **Disc Copy**.
- 3 To copy the CD or DVD:
 - *If you have one CD/DVD drive*, ensure that the settings are correct, and then click **Disc Copy**. The computer reads your source CD or DVD and copies the data to a temporary folder on your computer hard drive.

When prompted, insert a blank CD or DVD into the drive and click **OK**.

- If you have two CD/DVD drives, select the drive into which you have inserted your source CD or DVD, and then click **Disc Copy**. The computer copies the data from the source CD or DVD to the blank CD or DVD.

Once you have finished copying the source CD or DVD, the CD or DVD that you have created automatically ejects.

Using Blank CDs and DVDs

CD-RW drives can write to CD recording media only (including high-speed CD-RW media) while DVD-writable drives can write to both CD and DVD recording media.

Use blank CD-Rs to record music or permanently store data files. After the maximum storage capacity of a CD-R is reached, you cannot write to that CD-R again (see the Sonic documentation for more information). Use blank CD-RWs if you plan to erase, rewrite, or update information on the CD later.

Blank DVD+/-Rs can be used to permanently store large amounts of data. After you create a DVD+/-R disc, you may not be able to write to that disc again if the disc is *finalized* or *closed* during the final stage of the disc creation process. Use blank DVD+/-RWs if you plan to erase, rewrite, or update information on the disc later.

CD-Writable Drives

Media Type	Read	Write	Rewritable
CD-R	Yes	Yes	No
CD-RW	Yes	Yes	Yes

DVD-Writable Drives

Media Type	Read	Write	Rewritable
CD-R	Yes	Yes	No
CD-RW	Yes	Yes	Yes
DVD+R	Yes	Yes	No
DVD-R	Yes	Yes	No
DVD+RW	Yes	Yes	Yes
DVD-RW	Yes	Yes	Yes
DVD+R DL	Yes	Yes	No

Helpful Tips

- Use Microsoft® Windows® Explorer to drag and drop files to a CD-R or CD-RW only after you start Roxio Creator Plus and open a Creator project.

- Use CD-Rs to burn music CDs that you want to play in regular stereos. CD-RWs may not play in many home or car stereos.
- You cannot create audio DVDs with Roxio Creator Plus.
- Music MP3 files can be played only on MP3 players or on computers that have MP3 software installed.
- Commercially available DVD players used in home theater systems may not support all available DVD formats. For a list of formats supported by your DVD player, see the documentation provided with your DVD player or contact the manufacturer.
- Do not burn a blank CD-R or CD-RW to its maximum capacity; for example, do not copy a 650-MB file to a blank 650-MB CD. The CD-RW drive needs 1–2 MB of blank space to finalize the recording.
- Use a blank CD-RW to practice CD recording until you are familiar with CD recording techniques. If you make a mistake, you can erase the data on the CD-RW and try again. You can also use blank CD-RWs to test music file projects before you record the project permanently to a blank CD-R.
- See the Sonic website at www.sonic.com for additional information.

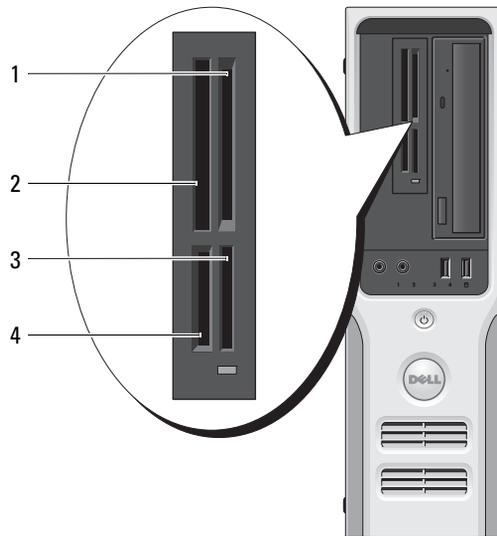
Using a Media Card Reader (Optional)

Use the Media Card Reader to transfer data directly to your computer.

The Media Card Reader supports the following memory types:

- xD-Picture Card
- SmartMedia (SMC)
- CompactFlash Type I and II (CF I/II)
- MicroDrive Card
- SecureDigital Card (SD)
- MultiMediaCard (MMC)
- Memory Stick (MS/MS Pro)

For information about installing or removing a Media Card Reader, see "Media Card Reader" on page 83.



- | | | | |
|---|--|---|---|
| 1 | xD-Picture Card and SmartMedia (SMC) | 3 | Memory Stick (MS/MS Pro) |
| 2 | CompactFlash Type-I and II (CF I/II) and MicroDrive Card | 4 | SecureDigital Card (SD)/ MultiMediaCard (MMC) |

To use the Media Card Reader:

- 1 Check the media or card to determine the proper orientation for insertion.
- 2 Slide the media or card into the appropriate slot until it is completely seated in the connector.
If you encounter resistance, do not force the media or card. Check the card orientation and try again.

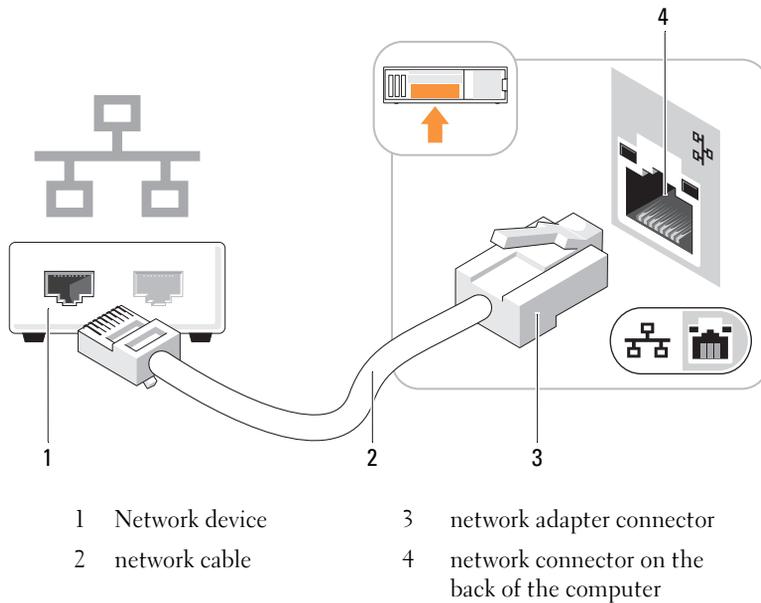
Setting Up a Home and Office Network

Connecting to a Network Adapter

➔ **NOTICE:** Plug the network cable into the network adapter connector on the computer. Do not plug the network cable into the modem connector on the computer.

➔ **NOTICE:** Do not plug a network cable into a telephone wall jack.

- 1 Connect the network cable to the network adapter connector on the back of your computer. Insert the cable until it clicks into place, and then gently pull it to ensure that it is secure.
- 2 Connect the other end of the network cable to a network device.



Network Setup Wizard

The Microsoft® Windows® XP operating system provides a Network Setup Wizard to guide you through the process of sharing files, printers, or an Internet connection between computers in a home or small office.

- 1 Click the **Start** button, point to **All Programs**→**Accessories**→**Communications**, and then click **Network Setup Wizard**.
- 2 On the welcome screen, click **Next**.
- 3 Click **Checklist for creating a network**.



NOTE: Selecting the connection method **This computer connects directly to the Internet** enables the integrated firewall provided with Windows XP.

- 4 Complete the checklist and required preparations.
- 5 Return to the Network Setup Wizard and follow the instructions on the screen.

Power Management

The Microsoft® Windows® XP power management features can reduce the amount of electricity your computer uses when it is on and you are not using it. You can reduce power to just the monitor or the hard drive, or you can use standby mode or hibernate mode to reduce power to the entire computer. When the computer exits from a power conservation mode, the Windows desktop is restored to the state it was in before it entered the mode.



NOTE: Windows XP Professional includes security and networking features not available in Windows XP Home Edition. When a Windows XP Professional computer is connected to a network, different options related to security and networking appear in certain windows.

Standby Mode

Standby mode conserves power by turning off the display and the hard drive after a time-out. When the computer exits from standby mode, it returns to the operating state it was in before it entered standby mode.

To set standby mode to automatically activate after a defined period of inactivity:

- 1 Click the **Start** button, then click **Control Panel**.
- 2 If **Switch to Category View** appears in the **Control Panel** in the left of the window, click **Switch to Category View**.
- 3 Under **Pick a category**, click **Performance and Maintenance**.
- 4 Under or pick a **Control Panel** icon, click **Power Options**.
- 5 Under the **Power Schemes** tab, change the settings in the drop-down boxes to those that you desire, and then click **OK**.

To immediately activate standby mode without a period of inactivity, click the **Start** button, click **Turn Off Computer**, and then click **Stand by**.

To exit from standby mode, press a key on the keyboard or move the mouse.

 **NOTICE:** If your computer loses power while in standby mode, it may lose data.

Hibernate Mode

Hibernate mode conserves power by copying system data to a reserved area on the hard drive and then completely turning off the computer. When the computer exits from hibernate mode, the desktop is restored to the state it was in before it entered hibernate mode.

To activate hibernate mode:

- 1 Click the **Start** button, then click **Control Panel**.
- 2 Under **Pick a category**, click **Performance and Maintenance**.
- 3 Under or pick a **Control Panel icon**, click **Power Options**.
- 4 Define your hibernate settings on the **Power Schemes** tab, **Advanced** tab, and **Hibernate** tab (see "Power Options Properties" on page 28).

To exit from hibernate mode, press the power button. The computer may take a short time to exit from hibernate mode. Pressing a key on the keyboard or moving the mouse does not bring the computer out of hibernation because the keyboard and the mouse do not function when the computer is in hibernate mode.

Because hibernate mode requires a special file on your hard drive with enough disk space to store the contents of the computer memory, Dell creates an appropriately sized hibernate mode file before shipping the computer to you. If the computer's hard drive becomes corrupted, Windows XP recreates the hibernate file automatically.

Power Options Properties

Define your standby mode settings, hibernate mode settings, and other power settings in the **Power Options Properties** window. To access the **Power Options Properties** window:

- 1 Click the **Start** button, then click **Control Panel**.
- 2 Under **Pick a category**, click **Performance and Maintenance**.
- 3 Under or pick a **Control Panel icon**, click **Power Options**.
- 4 Define your power settings on the **Power Schemes** tab, **Advanced** tab, and **Hibernate** tab.

Power Schemes Tab

Each standard power setting is called a scheme. If you want to select one of the standard Windows schemes installed on your computer, choose a scheme from the **Power schemes** drop-down menu. The settings for each scheme appear in the fields below the scheme name. Each scheme has different settings for starting standby or hibernate mode and for turning off the monitor and hard drive.

The **Power** schemes drop-down menu displays the following schemes:

- **Always On** (default) — If you want to use your computer with no power conservation.
- **Home/Office Desk** — If you use your computer as a home or office computer and you require minimal power conservation.
- **Portable/Laptop** — If your computer is a portable computer that you use for traveling.
- **Presentation** — If you want your computer to run without interruption (using no power conservation).
- **Minimal Power Management** — If you want your computer to run with minimal power conservation.
- **Max Battery** — If your computer is a portable computer and you run your computer from batteries for extended periods of time.

If you want to change the default settings for a scheme, click the drop-down menu in the **Turn off monitor**, **Turn off hard disks**, **System standby**, or **System hibernates** field, and then select a time-out from the displayed list. Changing the time-out for a scheme field permanently changes the default settings for that scheme, unless you click **Save As** and enter a new name for the changed scheme.



NOTICE: If you set the hard drive (hard disk) to time-out before the monitor does, your computer may appear to be locked up. To recover, press any key on the keyboard or click the mouse. To avoid this problem, always set the monitor to time-out before the hard drive.

Advanced Tab

The **Advanced** tab allows you to:

- Place the power options icon  in the Windows taskbar for quick access.
- Set the computer to prompt you for your Windows password before the computer exits from standby mode or hibernate mode.
- Program the power button to activate standby mode, activate hibernate mode, or turn off the computer.

To program these functions, click an option from the corresponding drop-down menu, and then click **OK**.

Hibernate Tab

The **Hibernate** tab allows you to enable hibernate mode. If you want to use the hibernate settings you defined on the **Power Schemes** tab, click the **Enable hibernate support** check box on the **Hibernate** tab.

For more information on power management options:

- 1 Click the **Start** button, then click **Help and Support**.
- 2 In the **Help and Support** window, click **Performance and maintenance**.
- 3 In the **Performance and maintenance** window, click **Conserving power on your computer**.

Enabling Cool 'n' Quiet™ Technology

The Cool 'n' Quiet technology controls your computer's processor performance automatically, dynamically adjusting the operating frequency and voltage, according to the task at hand. When an application does not require full performance, significant amounts of power can be saved. Performance is designed to still be responsive, with maximum processor performance being delivered when required, and automatic power savings when possible.

- 1** Enter system setup, select **Cool and Quiet** from the **Power Management** group, and change the setting to **On** (see "System Setup Options" on page 98).
- 2** Click on the **Start**→**Settings**→**Control Panel**→**Power Options** to access the **Power Options Properties** window.
- 3** From the **Power Schemes** tab, click the Power Schemes drop-down menu and select **Minimal Power Management** and then click **OK**.

Cool 'n' Quiet technology is now enabled.

Solving Problems

Troubleshooting Tips

Follow these tips when you troubleshoot your computer:

- If you added or removed a part before the problem started, review the installation procedures and ensure that the part is correctly installed.
- If a peripheral device does not work, ensure that the device is properly connected.
- If an error message appears on the screen, write down the exact message. This message may help support personnel diagnose and fix the problem.
- If an error message occurs in a program, see the program's documentation.

Battery Problems



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



CAUTION: Before you begin any of the procedures in this section, follow the safety instructions located in the *Product Information Guide*.

REPLACE THE BATTERY — If you have to repeatedly reset time and date information after turning on the computer, or if an incorrect time or date displays during start-up, replace the battery (see "Battery" on page 89). If the battery still does not work properly, contact Dell (see "Contacting Dell" on page 108).

Drive Problems



CAUTION: Before you begin any of the procedures in this section, follow the safety instructions located in the *Product Information Guide*.

ENSURE THAT MICROSOFT® WINDOWS® RECOGNIZES THE DRIVE — Click the Start button, then click My Computer. If the floppy, CD, or DVD drive, is not listed, perform a full scan with your antivirus software to check for and remove viruses. Viruses can sometimes prevent Windows from recognizing the drive.

TEST THE DRIVE —

- Insert another floppy disk, CD, or DVD to eliminate the possibility that the original one is defective.
- Insert a bootable floppy disk and restart the computer.

CLEAN THE DRIVE OR DISK — See "Cleaning Your Computer" on page 105.

CHECK THE CABLE CONNECTIONS

RUN THE HARDWARE TROUBLESHOOTER — See "Resolving Software and Hardware Incompatibilities" on page 54.

RUN THE DELL DIAGNOSTICS — See "Dell Diagnostics" on page 50.

CD and DVD drive problems



NOTE: High-speed CD or DVD drive vibration is normal and may cause noise, which does not indicate a defect in the drive or the CD or DVD.



NOTE: Because of different regions worldwide and different disc formats, not all DVD titles work in all DVD drives.

ADJUST THE WINDOWS VOLUME CONTROL —

- Click the speaker icon in the lower-right corner of your screen.
- Ensure that the volume is turned up by clicking the sidebar and dragging it up.
- Ensure that the sound is not muted by clicking any boxes that are checked.

CHECK THE SPEAKERS AND SUBWOOFER — See "Sound and Speaker Problems" on page 43.

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 —

- 1 Click the **Start** button and click **Control Panel**.
- 2 Under **Pick a Category**, click **Performance and Maintenance**.
- 3 Under or pick a **Control Panel** icon, click **Power Options**.
- 4 From the **Power Schemes** tab, select **Always On**.

Hard drive problems

RUN CHECK DISK —

- 1 Click the **Start** button, then 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**.

E-Mail, Modem, and Internet Problems



CAUTION: Before you begin any of the procedures in this section, follow the safety instructions located in the *Product Information Guide*.



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, bypass them and use the telephone to 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 HELPER DIAGNOSTICS — Click the **Start** button, point to **All Programs**, and then click **Modem Helper**. Follow the instructions on the screen to identify and resolve modem problems. **Modem Helper** is not available on all computers.

VERIFY THAT THE MODEM IS COMMUNICATING WITH WINDOWS —

- 1 Click the **Start** button, then 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.

Error Messages

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

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

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

- 1 Click the **Start** button, click **Control Panel**, and then click **Add or Remove Programs**.
- 2 Select the program you want to remove.
- 3 Click the **Change or Remove Program** icon.
- 4 See the program documentation for installation instructions.

drive letter : \ is not accessible. the device is not ready — The drive cannot read the disk. Insert a disk into the drive and try again.

INSERT BOOTABLE MEDIA — Insert a bootable floppy disk or CD.

NON-SYSTEM DISK ERROR — Remove the floppy disk from the drive and restart your computer.

NOT ENOUGH MEMORY OR RESOURCES. CLOSE SOME PROGRAMS AND TRY AGAIN — Close all windows and open the program that you want to use. In some cases, you might have to restart your computer to restore computer resources. If so, run the program that you want to use first.

OPERATING SYSTEM NOT FOUND — Contact Dell (see "Contacting Dell" on page 108).

Keyboard Problems



CAUTION: Before you begin any of the procedures in this section, follow the safety instructions located in the *Product Information Guide*.

CHECK THE KEYBOARD CABLE —

- Ensure that the keyboard cable is firmly connected to the computer.
- Shut down the computer (see "Turning Off Your Computer" on page 59), reconnect the keyboard cable as shown on the setup diagram for your computer, and then restart the computer.
- Ensure that the cable is not damaged or frayed and check cable connectors for bent or broken pins. Straighten any bent pins.
- Remove keyboard extension cables and connect the keyboard directly to the computer.

TEST THE KEYBOARD — Connect a properly working keyboard to the computer. Then, try using the keyboard.

RUN THE HARDWARE TROUBLESHOOTER — See "Resolving Software and Hardware Incompatibilities" on page 54.

Lockups and Software Problems

 **CAUTION:** Before you begin any of the procedures in this section, follow the safety instructions located in the *Product Information Guide*.

The computer does not start up

CHECK THE DIAGNOSTIC LIGHTS — See "Power Light and Diagnostic Lights" on page 47.

ENSURE THAT THE POWER CABLE IS FIRMLY CONNECTED TO THE COMPUTER AND TO THE ELECTRICAL OUTLET

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.

A program stops responding

END THE PROGRAM —

- 1 Press <Ctrl><Shift><Esc> simultaneously.
- 2 Click Applications.
- 3 Click the program that is no longer responding.
- 4 Click End Task.

A program crashes repeatedly

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

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

A program is designed for an earlier 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 XP operating system environments.

- 1 Click the **Start** button, point to **All Programs**→ **Accessories**, and then click **Program Compatibility Wizard**.
- 2 In the welcome screen, click **Next**.
- 3 Follow the instructions on the screen.

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.

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

Media Card Reader Problems

NO DRIVE LETTER IS ASSIGNED —

When Microsoft Windows XP detects the Media Card Reader, the device is automatically assigned a drive letter as the next logical drive after all other physical drives in the system. If the next logical drive after the physical drives is mapped to a network drive, Windows XP does not automatically assign a drive letter to the Media Card Reader.

To manually assign a drive for the Media Card Reader:

- 1 Right-click My Computer, then select **Manage**.
- 2 Select the **Disk Management** option.
- 3 Right-click the corresponding drive letter in the right pane that needs to be changed.
- 4 Select **Drive Letter and Paths**.
- 5 From the drop-down list, select the new drive letter assignment for the Media Card Reader.
- 6 Click **OK** to confirm your selection.

NOTE: Each slot in the Media Card Reader is mapped to a drive letter. A Media Card Reader slot only appears as a mapped drive when a media card is installed in it. If you attempt to access a drive that is mapped to an empty Media Card Reader slot, you are prompted to insert media.

FLEXBAY DEVICE IS DISABLED —

There is a FlexBay disable option in the BIOS setup that appears only when the FlexBay device is installed. If the FlexBay device is physically installed, but it is not running, check to see if it is enabled in the BIOS setup.

Memory Problems



CAUTION: Before you begin any of the procedures in this section, follow the safety instructions located in the *Product Information Guide*.

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" on page 64).
- Reseat the memory modules (see "Memory" on page 64) to ensure that your computer is successfully communicating with the memory.
- Run the Dell Diagnostics (see "Dell Diagnostics" on page 50).

IF YOU EXPERIENCE OTHER MEMORY PROBLEMS —

- Reseat the memory modules (see "Memory" on page 64) to ensure that your computer is successfully communicating with the memory.
- Ensure that you are following the memory installation guidelines (see "Memory" on page 64).
- Your computer supports DDR2 memory. For more information about the type of memory supported by your computer, see "Memory" on page 64.
- Run the Dell Diagnostics (see "Dell Diagnostics" on page 50).

Mouse Problems



CAUTION: Before you begin any of the procedures in this section, follow the safety instructions located in the *Product Information Guide*.

CLEAN THE MOUSE — For instructions on cleaning the mouse, see "Mouse" on page 106.

CHECK THE MOUSE CABLE —

- 1 Remove mouse extension cables, if used, and connect the mouse directly to the computer.
- 2 Reconnect the mouse cable as shown in the setup diagram for your computer.

RESTART THE COMPUTER —

- 1 Simultaneously press <Ctrl><Esc> to display the **Start** menu.
- 2 Type **u**, press the keyboard arrow keys to highlight **Shut down** or **Turn Off**, and then press <Enter>.
- 3 After the computer turns off, reconnect the mouse cable as shown on the on the setup diagram for your computer.
- 4 Start the computer.

TEST THE MOUSE — Connect a properly working mouse to the computer, and try using the mouse.

CHECK THE MOUSE SETTINGS —

- 1 Click the **Start** button, click **Control Panel**, and then click **Printers and Other Hardware**.
- 2 Click **Mouse**.
- 3 Try adjusting the settings.

REINSTALL THE MOUSE DRIVER — See "Reinstalling Drivers" on page 53.

RUN THE HARDWARE TROUBLESHOOTER — See "Resolving Software and Hardware Incompatibilities" on page 54.

Network Problems

 **CAUTION:** Before you begin any of the procedures in this section, follow the safety instructions located in the *Product Information Guide*.

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 port or device.

CHECK THE NETWORK LIGHTS ON THE BACK OF THE COMPUTER — If the link integrity light is off, that indicates no network communication exists. Replace the network cable. For a description of network lights, see "Back Panel I/O Connectors" on page 16.

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.

RUN THE HARDWARE TROUBLESHOOTER — See "Resolving Software and Hardware Incompatibilities" on page 54.

Power Problems

 **CAUTION:** Before you begin any of the procedures in this section, follow the safety instructions located in the *Product Information Guide*.

IF THE POWER LIGHT IS GREEN AND THE COMPUTER IS NOT RESPONDING — See "Power Light and Diagnostic Lights" on page 47.

IF THE POWER LIGHT IS BLINKING GREEN — The computer is in standby mode. Press a key on the keyboard, move the mouse, or press the power button to resume normal operation.

IF THE POWER LIGHT IS OFF — The computer is either turned off or is not receiving power.

- Reseat the power cable into both the power connector on the back of the computer and the electrical outlet.
- If the computer is plugged into a power strip, ensure that the power strip is plugged into an electrical outlet and that the power strip is turned on. Also bypass power protection devices, power strips, and power extension cables to verify that the computer turns on properly.
- Ensure that the electrical outlet is working by testing it with another device, such as a lamp.
- Ensure that the main power cable and front panel cable are securely connected to the system board (see "System Board Components" on page 63).

IF THE POWER LIGHT IS STEADY AMBER — A device might be malfunctioning or incorrectly installed.

- Remove and then reinstall the memory modules (see "Memory" on page 64).
- Remove and then reinstall any cards (see "Cards" on page 68).

IF THE POWER LIGHT IS BLINKING AMBER — The computer is receiving electrical power, but an internal power problem might exist.

- Ensure that the voltage selection switch is set to match the AC power at your location (if applicable).
- Ensure that the processor power cable is securely connected to the system board (see "System Board Components" on page 63).

ELIMINATE INTERFERENCE — Some possible causes of interference are:

- Power, keyboard, and mouse extension cables.
- Too many devices on a power strip.
- Multiple power strips connected to the same electrical outlet.

Printer Problems



CAUTION: Before you begin any of the procedures in this section, follow the safety instructions located in the *Product Information Guide*.



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

CHECK THE PRINTER DOCUMENTATION — See the printer documentation for setup and troubleshooting information.

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 (see "Setting Up a Printer" on page 17).

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**, then click the **Ports** tab. 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.

Scanner Problems



CAUTION: Before you begin any of the procedures in this section, follow the safety instructions located in the *Product Information Guide*.



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 the Start button, click Control Panel, and then click 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.

Sound and Speaker Problems



CAUTION: Before you begin any of the procedures in this section, follow the safety instructions located in the *Product Information Guide*.

No sound from speakers



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.

CHECK THE SPEAKER CABLE CONNECTIONS — Ensure that the speakers are connected as shown on the setup diagram supplied with the speakers. If you purchased a sound card, ensure that the speakers are connected to the card.

ENSURE THAT THE CORRECT AUDIO SOLUTION IS ENABLED IN THE BIOS SETUP PROGRAM — See "System Setup" on page 97.

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 front-panel 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 SOUND DRIVER — See "Reinstalling Drivers" on page 53.

RUN THE HARDWARE TROUBLESHOOTER — See "Resolving Software and Hardware Incompatibilities" on page 54.

No sound from headphones

CHECK THE HEADPHONE CABLE CONNECTION — Ensure that the headphone cable is securely inserted into the headphone connector (see "Front View of the Computer" on page 13).

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.

ENSURE THAT THE CORRECT AUDIO SOLUTION IS ENABLED IN THE BIOS SETUP PROGRAM — See "System Setup" on page 97.

Video and Monitor Problems



CAUTION: Before you begin any of the procedures in this section, follow the safety instructions located in the *Product Information Guide*.



NOTE: See the monitor documentation for troubleshooting procedures.

The screen is blank

CHECK THE MONITOR CABLE CONNECTION —

- Ensure that the graphics cable is connected as shown on the setup diagram for your computer. If an optional video card is installed, check that the monitor cable is connected to the card, rather than the video connector on the system board.
- If you are using a graphics extension cable and removing the cable solves the problem, the cable is defective.
- Swap the computer and monitor power cables to determine if the power cable is defective.
- Check the connector for bent or broken pins. It is normal for monitor cable connectors to have missing pins.

CHECK THE MONITOR POWER LIGHT — If the power light is off, firmly press the button to ensure that the monitor is turned on. If the power light is lit or blinking, the monitor has power. If the power light is blinking, press a key on the keyboard or move the mouse.

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

CHECK THE DIAGNOSTIC LIGHTS — See "Power Light and Diagnostic Lights" on page 47.

The screen is difficult to read

CHECK THE MONITOR SETTINGS — See the monitor documentation for instructions on adjusting the contrast and brightness, demagnetizing (degaussing) the monitor, and running the monitor self-test.

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

MOVE THE MONITOR AWAY FROM EXTERNAL POWER SOURCES — Fans, fluorescent lights, halogen lamps, and other electrical devices can cause the screen image to appear "shaky." Turn off nearby devices to check for interference.

ROTATE THE MONITOR TO ELIMINATE SUNLIGHT GLARE AND POSSIBLE INTERFERENCE

ADJUST THE WINDOWS DISPLAY SETTINGS —

- 1 Click Start, click Control Panel, and then click Appearance and Themes.
- 2 Click Display, then click the Settings tab.
- 3 Try different settings for Screen resolution and Color quality.

Advanced Troubleshooting

Power Light and Diagnostic Lights

 **CAUTION:** Before you begin any of the procedures in this section, follow the safety instructions located in the *Product Information Guide*.

Your computer has a power light and four lights labeled "1," "2," "3," and "4" on the front panel to help you troubleshoot problems (see "Front View of the Computer" on page 13). When the computer starts normally, the diagnostic lights flash. If the computer malfunctions, the color and sequence of the lights identify the problem.

Power Light

Power Light	Problem Description	Suggested Resolution
Off	The computer is in a normal "off" condition or in a power-conserving mode.	None. Press the power button to wake the computer or to turn the computer on.
Solid green	The computer has successfully booted and is operating normally.	None.
Blinking green	The computer is in a Windows standby power-saving state (S1 or S3).	None. Move the mouse, press the spacebar, or use another device that has been configured as a wake-up device to wake the computer.
Solid Amber	A pre-POST failure has occurred. The system has received a Power Good signal from the power supply.	See "Diagnostic Lights" on page 48 for more information. If this does not resolve your problem, contact Dell (see "Contacting Dell" on page 108).
Blinking Amber	A possible power supply failure has occurred. The system has not received a Power Good signal from the power supply	Plug the computer into a working electrical outlet. Also see "Power Problems" on page 40.

Diagnostic Lights

Light Pattern	Problem Description	Suggested Resolution
① ② ③ ④	The computer is in a normal condition or a possible pre-POST failure has occurred.	See "Power Light" on page 47.
① ② ③ ④	The computer is in recovery mode.	None.
① ② ③ ④	A possible processor failure was detected.	Contact Dell (see "Contacting Dell" on page 108).
① ② ③ ④	Memory modules are detected, but a memory failure has occurred.	<ul style="list-style-type: none"> • If you have two or more memory modules installed, remove the modules, reinstall one module (see "Memory" on page 64), and then restart the computer. If the computer starts normally, reinstall an additional module. Continue until you have identified a faulty module or reinstalled all modules without error. • If available, install properly working memory of the same type into your computer (see "Memory" on page 64). • If the problem persists, contact Dell (see "Contacting Dell" on page 108).
① ② ③ ④	A possible graphics failure has occurred.	If the problem persists, contact Dell (see "Contacting Dell" on page 108).
① ② ③ ④	A possible floppy drive or hard drive failure has occurred.	Reseat all power and data cables and restart the computer.
① ② ③ ④	A possible USB failure has occurred.	Reinstall all USB devices, check cable connections, and then restart the computer.

Light Pattern	Problem Description	Suggested Resolution
	No memory modules are detected.	<ul style="list-style-type: none"> • If you have two or more memory modules installed, remove the modules, reinstall one module (see "Memory" on page 64), and then restart the computer. If the computer starts normally, reinstall an additional module. Continue until you have identified a faulty module or reinstalled all modules without error. • If available, install properly working memory of the same type into your computer (see "Memory" on page 64). • If the problem persists, contact Dell (see "Contacting Dell" on page 108).
	Memory modules are detected, but a memory configuration or compatibility error exists.	<ul style="list-style-type: none"> • Ensure that no special memory module/memory connector placement requirements exist (see "Memory" on page 64). • Verify that the memory modules that you are installing are compatible with your computer (see "Memory" on page 64). • If the problem persists, contact Dell (see "Contacting Dell" on page 108).
	A possible expansion card failure has occurred.	<ol style="list-style-type: none"> 1 Determine whether a conflict exists by removing a card and restarting the computer (see "Cards" on page 68). 2 If the problem persists, reinstall the card that you removed, remove a different card, and then restart the computer. 3 Repeat this process for each card. If the computer starts normally, troubleshoot the last card removed from the computer for resource conflicts (see "Resolving Software and Hardware Incompatibilities" on page 54). 4 If the problem persists, contact Dell (see "Contacting Dell" on page 108).
	Routine system activity subsequent to video initialization.	Watch your monitor for on-screen messages.

Light Pattern	Problem Description	Suggested Resolution
	System resource configuration in progress.	None.
	System board failure has occurred.	Contact Dell (see "Contacting Dell" on page 108).
	<p>During normal operation, all of the diagnostic lights turn on and then turn off before the system starts.</p> <p>NOTE: If all of the diagnostic lights are on and the system does not start, there may be a problem with the power supply or with the processor.</p>	<p>If the system does not start, plug the computer into a working electrical outlet. Also see "Power Problems" on page 40.</p> <p>If there are no power problems and the system does not start, contact Dell (see "Contacting Dell" on page 108).</p>

Dell Diagnostics

 **CAUTION:** Before you begin any of the procedures in this section, follow the safety instructions located in the *Product Information Guide*.

If you experience a problem with your computer, perform the checks in "Solving Problems" on page 31 and run the Dell Diagnostics before you contact Dell for technical assistance.

 **NOTICE:** The Dell Diagnostics works only on Dell™ computers.

- 1 Turn on (or restart) your computer.
- 2 When the DELL™ logo appears, press <F12> immediately.
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 (see "Turning Off Your Computer" on page 59) and try again.
- 3 When the boot device list appears, highlight **Boot to Utility Partition**, then press <Enter>.
- 4 When the Dell Diagnostics **Main Menu** appears, select the test you want to run (see "Dell Diagnostics Main Menu" on page 51).

Dell Diagnostics Main Menu

- 1 After the Dell Diagnostics loads and the **Main Menu** screen appears, click the button for the option you want.

Option	Function
Express Test	Performs a quick test of devices. This test typically takes 10 to 20 minutes and requires no interaction on your part. Run Express Test first to increase the possibility of tracing the problem quickly.
Extended Test	Performs a thorough check of devices. This test typically takes an hour or more and requires you to answer questions periodically.
Custom Test	Tests a specific device. You can customize the tests you want to run.
Symptom Tree	Lists the most common symptoms encountered and allows you to select a test based on the symptom of the problem you are having.

- 2 If a problem is encountered during a test, a message appears with an error code and a description of the problem. Write down the error code and problem description and follow the instructions on the screen.

If you cannot resolve the error condition, contact Dell (see "Contacting Dell" on page 108).

 **NOTE:** The Service Tag for your computer is located at the top of each test screen. If you contact Dell, technical support will ask for your Service Tag.

- 3 If you run a test from the **Custom Test** or **Symptom Tree** option, click the applicable tab described in the following table for more information.

Tab	Function
Results	Displays the results of the test and any error conditions encountered.
Errors	Displays error conditions encountered, error codes, and the problem description.
Help	Describes the test and may indicate requirements for running the test.

Tab	Function
Configuration	Displays your hardware configuration for the selected device. The Dell Diagnostics obtains configuration information for all devices from system setup, memory, and various internal tests, and it displays the information in the device list in the left pane of the screen. The device list may not display the names of all the components installed on your computer or all devices attached to your computer.
Parameters	Allows you to customize the test by changing the test settings.

- 4 Close the test screen to return to the **Main Menu** screen. To exit the Dell Diagnostics and restart the computer, close the **Main Menu** screen.

Drivers

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.



NOTE: If you reinstall the operating system for your computer, you should reinstall the DSS utility prior to installing any drivers.

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.

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.

Windows XP

- 1 Click the **Start** button, then click **Control Panel**.
- 2 Under **Pick a Category**, click **Performance and Maintenance**.
- 3 Click **System**.

- 4 In the **System Properties** window, click the **Hardware** tab.
- 5 Click **Device Manager**.
- 6 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.

Reinstalling Drivers



NOTICE: The Dell Support website at support.dell.com provides approved drivers for Dell™ computers. If you install drivers obtained from other sources, your computer might not work correctly.

Using Windows XP Device Driver Rollback

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

- 1 Click the **Start** button, then click **Control Panel**.
- 2 Under **Pick a Category**, click **Performance and Maintenance**.
- 3 Click **System**.
- 4 In the **System Properties** window, click the **Hardware** tab.
- 5 Click **Device Manager**.
- 6 Right-click the device for which the new driver was installed, then click **Properties**.
- 7 Click the **Drivers** tab.
- 8 Click **Roll Back Driver**.

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

Manually Reinstalling Drivers

- 1 After copying the required driver files to your hard drive, click the **Start** button, and then right-click **My Computer**.
- 2 Click **Properties**.
- 3 Click the **Hardware** tab, then click **Device Manager**.
- 4 Double-click the type of device for which you are installing the driver.
- 5 Double-click the name of the device for which you are installing the driver.
- 6 Click the **Driver** tab, then click **Update Driver**.
- 7 Click **Install from a list or specific location (Advanced)**, then click **Next**.
- 8 Click **Browse** and browse to the location to which you previously extracted the driver files.

- 9 When the name of the appropriate driver appears, click **Next**.
- 10 Click **Finish** and restart your computer.

Resolving Software and Hardware Incompatibilities

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.

To resolve incompatibilities using the Hardware Troubleshooter:

- 1 Click the **Start** button, then click **Help and Support**.
- 2 Type `hardware troubleshooter` in the **Search** field, then click the arrow to start the search.
- 3 Click **Hardware Troubleshooter** in the **Search Results** list.
- 4 In the **Hardware Troubleshooter** list, click **I need to resolve a hardware conflict on my computer**, and then click **Next**.

Restoring Your Operating System

You can restore your operating system in the following ways:

- Microsoft Windows XP System Restore returns your computer to an earlier operating state without affecting data files.
- Dell PC Restore by Symantec restores your hard drive to the operating state it was in when you purchased the computer. Dell PC Restore permanently deletes all data on the hard drive and removes any applications installed after you received the computer.

Using Microsoft® Windows® XP System Restore

The Microsoft Windows XP operating system provides System Restore to allow 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. See the Windows Help and Support Center for information on using System Restore.



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 work if you set your Dell™ computer to the Windows Classic view.

Creating a Restore Point

- 1 Click the **Start** button, then click **Help and Support**.
- 2 Click **System Restore**.
- 3 Follow the instructions on the screen.

Restoring the Computer to an Earlier Operating State

If problems occur after you install a device driver, use Device Driver Rollback (see "Using Windows XP Device Driver Rollback" on page 53) to resolve the problem. If that is unsuccessful, then use 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.

- 1 Click the **Start** button, point to **All Programs**→**Accessories**→**System Tools**, and then click **System Restore**.

- 2 Ensure that **Restore my computer to an earlier time** is selected, then click **Next**.

- 3 Click a calendar date to which you want to restore your computer.

The **Select a Restore Point** screen provides a calendar that allows you to see and select restore points. All calendar dates with available restore points appear in boldface type.

- 4 Select a restore point, then click **Next**.

If a calendar date has only one restore point, then that restore point is automatically selected. If two or more restore points are available, click the restore point that you prefer.

- 5 Click **Next**.

The **Restoration Complete** screen appears after System Restore finishes collecting data and then the computer restarts.

- 6 After the computer restarts, click **OK**.

To change the restore point, you can either repeat the steps using a different restore point, or you can undo the restoration.

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.

- 1 Click the **Start** button, point to **All Programs**→**Accessories**→**System Tools**, and then click **System Restore**.

- 2 Click **Undo my last restoration**, then click **Next**.

Enabling System Restore

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 the **Start** button, then click **Control Panel**.

- 2 Click **Performance and Maintenance**.

- 3 Click **System**.

- 4 Click the **System Restore** tab.
- 5 Ensure that **Turn off System Restore** is unchecked.

Using Dell™ PC Restore by Symantec

 **NOTE:** Dell PC Restore is not available in all countries.

Use Dell PC Restore by Symantec only as the last method to restore your operating system. PC Restore restores your hard drive to the operating state it was in when you purchased the computer. Any programs or files added since you received your computer—including data files—are permanently deleted from the hard drive. Data files include documents, spreadsheets, e-mail messages, digital photos, music files, and so on. If possible, back up all data before using PC Restore.

 **NOTICE:** Using PC Restore permanently deletes all data on the hard drive and removes any applications or drivers installed after you received your computer. If possible, back up the data before using PC Restore.

To use PC Restore:

- 1 Turn on the computer and watch the keyboard status lights.
- 2 Immediately upon seeing the lights flash, press <Ctrl><F11>.
If you do not press <Ctrl><F11> in time, let the computer finish restarting, and then restart the computer again.

 **NOTICE:** If you do not want to proceed with PC Restore, click **Reboot** in the following step.

- 3 On the next screen that appears, click **Restore**.
- 4 On the next screen, click **Confirm**.
The restore process takes approximately 6–10 minutes to complete.
- 5 When prompted, click **Finish** to reboot the computer.

 **NOTE:** Do not manually shut down the computer. Click **Finish** and let the computer completely reboot.

- 6 When prompted, click **Yes**.
The computer restarts. Because the computer is restored to its original operating state, the screens that appear, such as the End User License Agreement, are the same ones that appeared the first time the computer was turned on.
- 7 Click **Next**.
The **System Restore** screen appears and the computer restarts.
- 8 After the computer restarts, click **OK**.

Removing Dell PC Restore

-  **NOTICE:** Removing Dell PC Restore from the hard drive permanently deletes the PC Restore utility from your computer. After you have removed Dell PC Restore, you will not be able to use it to restore your computer's operating system.

Dell PC Restore enables you to restore your hard drive to the operating state it was in when you purchased your computer. It is recommended that you *do not* remove PC Restore from your computer, even to gain additional hard-drive space. If you remove PC Restore from the hard drive, you cannot retrieve it, and you will not be able to use PC Restore to return your computer's operating system to its original state.

To remove PC Restore:

- 1 Log on to the computer as a local administrator.
- 2 In Windows Explorer, go to `c:\dell\utilities\DSR`.
- 3 Double-click the filename `DSRIRRemv2.exe`.

 **NOTE:** If you do not log on as a local administrator, a message appears stating that you must log on as administrator. Click **Quit**, and then log on as a local administrator.

 **NOTE:** If the partition for PC Restore does not exist on your computer's hard drive, a message appears stating that the partition was not found. Click **Quit**; there is no partition to delete.

- 4 Click **OK** to remove the PC Restore partition on the hard drive.
- 5 Click **Yes** when a confirmation message appears.

The PC Restore partition is deleted and the newly available disk space is added to the free space allocation on the hard drive.

- 6 Right-click **Local Disk (C)** in Windows Explorer, click **Properties**, and verify that the additional disk space is available as indicated by the increased value for **Free Space**.
- 7 Click **Finish** to close the **PC Restore Removal** window.
- 8 Restart the computer.

Removing and Installing Parts

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" on page 60.
- You have read the safety information in your Dell™ *Product Information Guide*.



NOTE: Unless otherwise noted, a component can be replaced or—if purchased separately—installed by performing the removal procedure in reverse order.

Recommended Tools

The procedures in this document may require the following tools:

- Small flat-blade screwdriver
- Phillips screwdriver
- Flash BIOS executable update program on support.dell.com

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 the **Start** button, and then click **Turn Off Computer**.
 - b In the **Turn off computer** window, click **Turn off**.

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.

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 located in the *Product Information Guide*.

 **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. Hold a component such as a processor by its edges, not by its pins.

 **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 strain-relief loop, not on the cable itself. Some cables have a connector with locking tabs; if you are disconnecting this type of cable, press in 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 Turn off your computer (see "Turning Off Your Computer" on page 59).

 **NOTICE:** To disconnect a network cable, first unplug the cable from your computer and then unplug it from the network port or device.

2 Disconnect any telephone or telecommunication lines from the computer.

3 Disconnect your computer and all attached devices from their electrical outlets, and then press the power button to ground the system board.

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

4 Remove the computer cover (see "Removing the Computer Cover" on page 60).

 **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.

Removing the Computer Cover

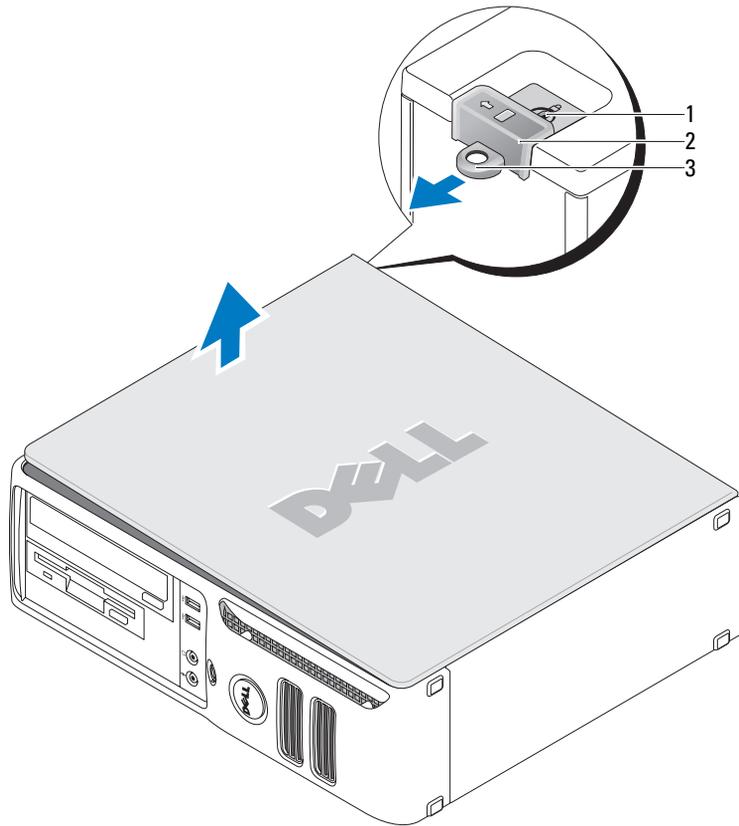
 **CAUTION:** Before you begin any of the procedures in this section, follow the safety instructions located in the *Product Information Guide*.

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

1 Follow the procedures in "Before You Begin" on page 59.

 **NOTICE:** Ensure that sufficient space exists to support the removed cover—at least 30 cm (1 ft) of desktop space.

- ➔ **NOTICE:** Work on a level, protected surface to avoid scratching either the computer or the surface on which it rests.
- 2 If you have installed a padlock through the padlock ring on the back panel, remove the padlock.
- 3 Lay your computer on its side with the computer cover facing up.
- ➔ **NOTICE:** Be careful when opening the computer cover to ensure that you do not accidentally disconnect cables from the system board.
- 4 Slide the cover release latch back and lift the cover.
- 5 Remove the cover and set it aside on a soft nonabrasive surface.



1 security cable slot

2 cover release latch

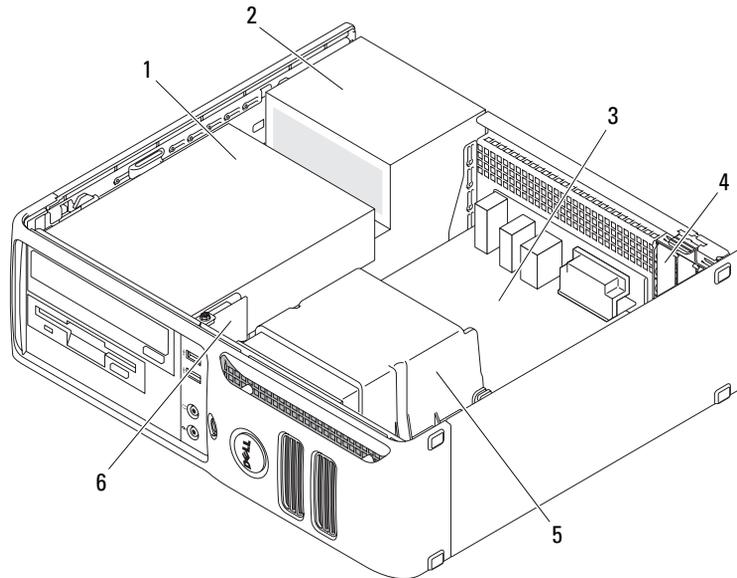
3 padlock ring

Inside View of Your Computer

CAUTION: Before you begin any of the procedures in this section, follow the safety instructions located in the *Product Information Guide*.

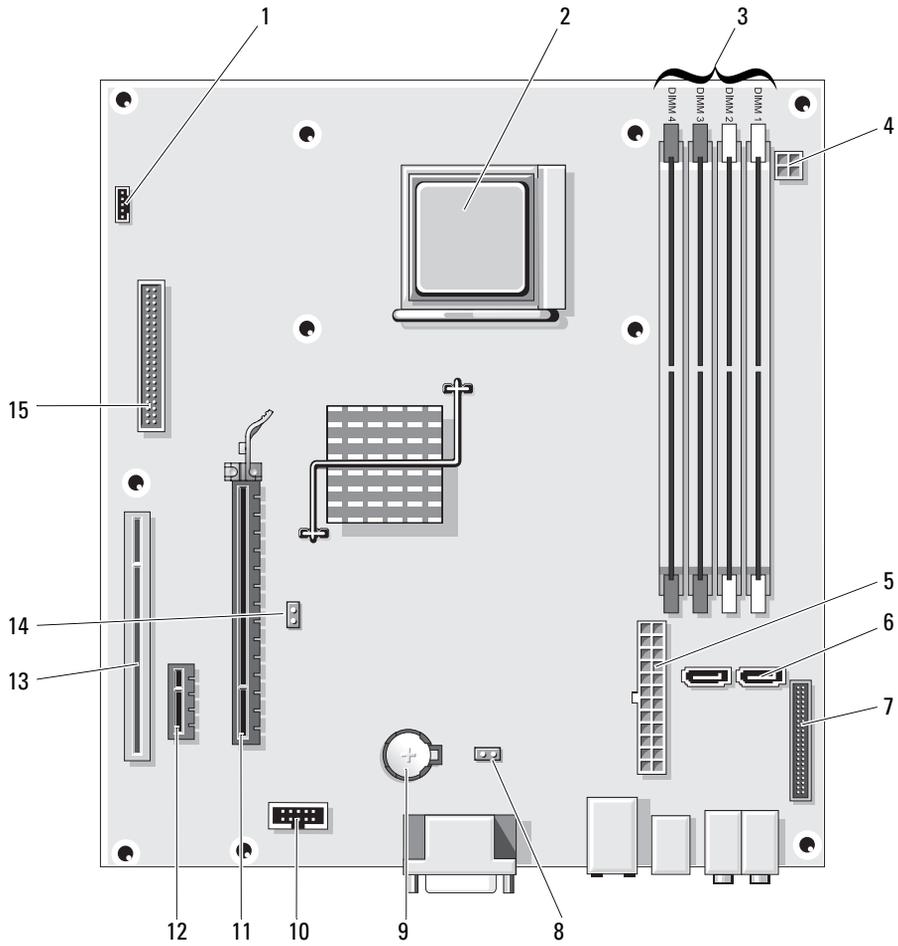
CAUTION: To avoid electrical shock, always unplug your computer from the electrical outlet before removing the computer cover.

NOTICE: Be careful when opening the computer cover to ensure that you do not accidentally disconnect cables from the system board.



- | | | | | | |
|---|---|---|--------------------|---|-----------------|
| 1 | drives bay (CD/DVD, floppy, and hard drive) | 2 | power supply | 3 | system board |
| 4 | card slots | 5 | heat sink assembly | 6 | front I/O panel |

System Board Components



1	fan connector(FAN_CPU1)	2	processor socket (CPU)	3	power connector (PW_12V_A1)
4	memory module connectors (DIMM_1, DIMM_2, DIMM_3, DIMM_4)	5	power connector (POWER1)	6	SATA drive connectors (SATA0, SATA1)
7	front-panel connector (FRONTPANEL)	8	CMOS reset (RTCRST)	9	battery socket (BT1)
10	internal USB (USB1)	11	PCI Express x16 connector (SLOT1)	12	PCI Express x1 connector (SLOT2)
13	PCI connector (SLOT3)	14	password jumper (PSWD)	15	floppy drive connector (FLOPPY1)

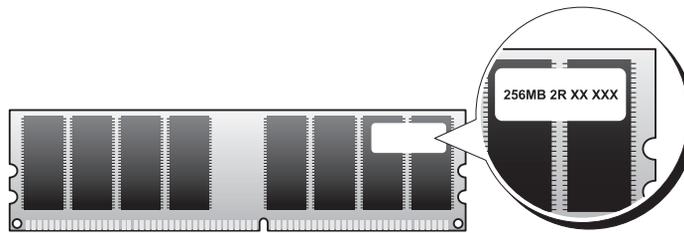
Memory

If your computer only has one memory module installed on the system board, you can increase your computer memory by installing an additional memory module.

Your computer supports DDR2 memory. For additional information on the type of memory supported by your computer, see "Specifications" on page 93.

DDR2 Memory Overview

Your computer has a minimum memory configuration of one DDR2 memory module. This memory module must be installed in DIMM1. If two or more DDR2 memory modules are installed, they should be installed in *pairs of matched memory size, speed, and technology*. If the DDR2 memory modules are not installed in matched pairs, the computer will continue to operate, but with a slight reduction in performance. See the label on the module to determine the module's capacity.



NOTE: Always install DDR2 memory modules in the order indicated on the system board.



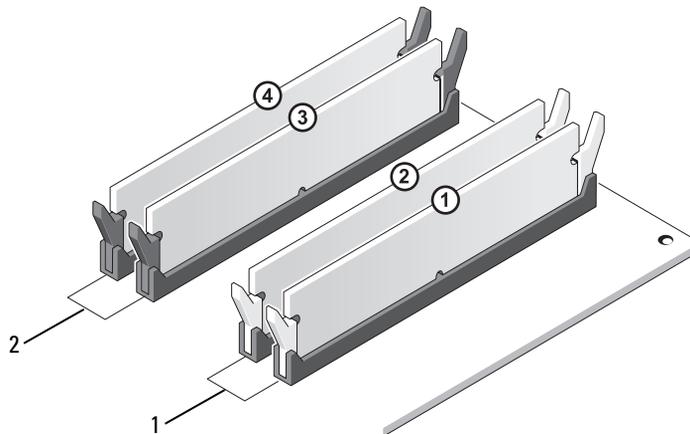
NOTICE: Do not install ECC or buffered memory modules. Only unbuffered, non-ECC memory is supported.

The recommended memory configurations are:

- A memory module installed in connector DIMM1
- A pair of matched memory modules installed in connectors DIMM1 and DIMM2

- A pair of matched memory modules installed in connectors DIMM1 and DIMM2 and another matched pair installed in connectors DIMM3 and DIMM4
- If you install mixed pairs of DDR2 533-MHz (PC2-4300) and DDR2 667-MHz (PC2-5400) memory, the modules function at the slower installed speed.

Be sure to populate the memory modules in order starting with DIMM1, the connector closest to the edge of the system board, before you install modules in the other connectors.



- | | |
|---|---|
| <p>1 Channel A: matched pair of memory modules in connectors DIMM_1 and DIMM_2 (white securing clips)</p> | <p>2 Channel B: matched pair of memory modules in connectors DIMM_3 and DIMM_4 (black securing clips)</p> |
|---|---|

 **NOTE:** Memory purchased from Dell is covered under your computer warranty.

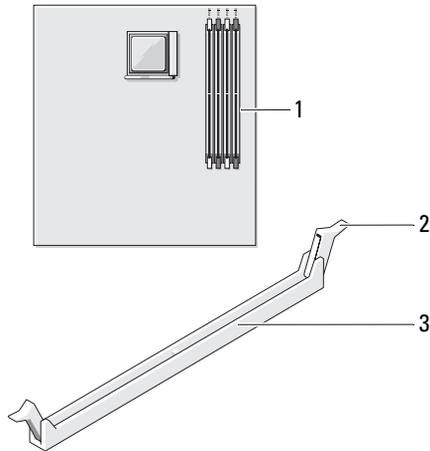
 **NOTICE:** If you remove your original memory modules from the computer during a memory upgrade, keep them separate from any new modules that you may have, even if you purchased the new modules from Dell. If possible, *do not* pair an original memory module with a new memory module. Otherwise, your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

Installing Memory

 **CAUTION:** Before you begin any of the procedures in this section, follow the safety instructions located in the *Product Information Guide*.

➔ NOTICE: To prevent static damage to components inside your computer, discharge static electricity from your body before you touch any of your computer's electronic components. You can do so by touching an unpainted metal surface on the computer chassis.

- 1 Follow the procedures in "Before You Begin" on page 59.
- 2 Press out the securing clip at each end of the memory module connector.

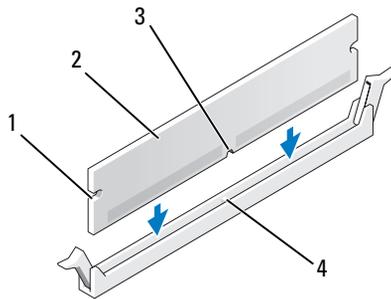


1 memory connector closer to edge of board

2 securing clips (2)

3 connector

- 3 Align the notch on the bottom of the module with the crossbar in the connector.

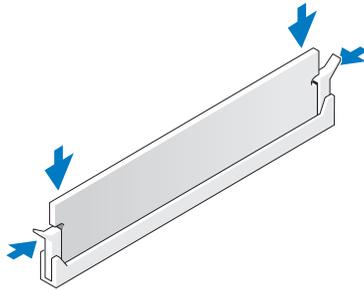


1 cutouts (2)
4 crossbar

2 memory module

3 notch

- 4 **NOTICE:** To avoid damage to the memory module, press the module straight down into the connector while you apply equal force to each end of the module.
- 4 Insert the module into the connector until the module snaps into position.
If you insert the module correctly, the securing clips snap into the cutouts at each end of the module.



- 5 Replace the computer cover (see "Replacing the Computer Cover" on page 90).
- 6 **NOTICE:** To connect a network cable, first plug the cable into the network port or device, and then plug it into the computer.
- 6 Connect your computer and devices to electrical outlets, and then turn them on.
- 7 When a message appears stating that memory size has changed, press <F1> to continue.
- 8 Log on to your computer.
- 9 Right-click the **My Computer** icon, then click **Properties**.
- 10 Click the **General** tab.
- 11 To verify that the memory is installed correctly, check the amount of memory (RAM) listed.

Removing Memory

 **CAUTION:** Before you begin any of the procedures in this section, follow the safety instructions located in the *Product Information Guide*.

 **NOTICE:** To prevent static damage to components inside your computer, discharge static electricity from your body before you touch any of your computer's electronic components. You can do so by touching an unpainted metal surface on the computer chassis.

- 1 Follow the procedures in "Before You Begin" on page 59.
- 2 Press out the securing clip at each end of the memory module connector.
- 3 Grasp the module and pull up.

If the module is difficult to remove, gently ease the module back and forth to remove it from the connector.

- 4 Replace the computer cover (see "Replacing the Computer Cover" on page 90).

 **NOTICE:** To connect a network cable, first plug the cable into the network port or device, and then plug it into the computer.

- 5 Connect your computer and devices to electrical outlets, and then turn them on.

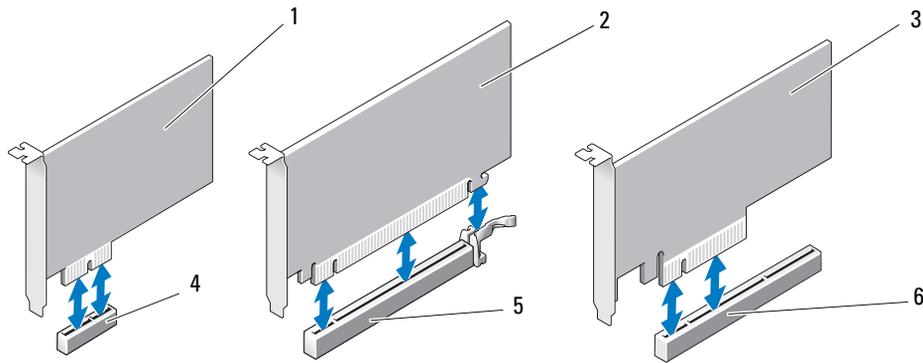
Cards

 **CAUTION:** Before you begin any of the procedures in this section, follow the safety instructions located in the *Product Information Guide*.

 **NOTICE:** To prevent static damage to components inside your computer, discharge static electricity from your body before you touch any of your computer's electronic components. You can do so by touching an unpainted metal surface on the computer chassis.

Your Dell™ computer provides the following slots for PCI and PCI Express cards:

- One low-profile PCI card slot
- One low-profile PCI Express x1 and x16 card slot



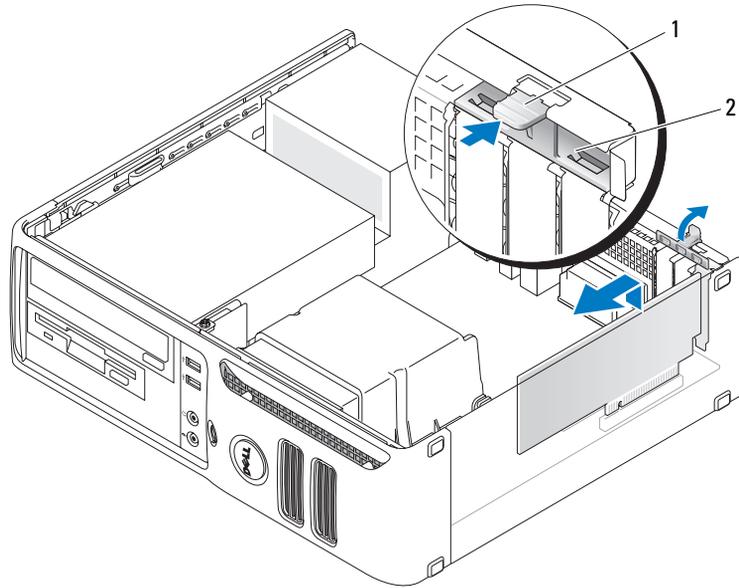
- | | | | | | |
|---|--------------------------|---|---------------------------|---|---------------|
| 1 | PCI Express x1 card | 2 | PCI Express x16 card | 3 | PCI |
| 4 | PCI Express x1 card slot | 5 | PCI Express x16 card slot | 6 | PCI card slot |

If you are installing or replacing an expansion card, follow the procedures in the next section. If you are removing and not replacing an expansion card, see "Removing an Expansion Card" on page 73.

If you are replacing a card with a different type of card, remove the current driver for the card from the operating system.

Installing an Expansion Card

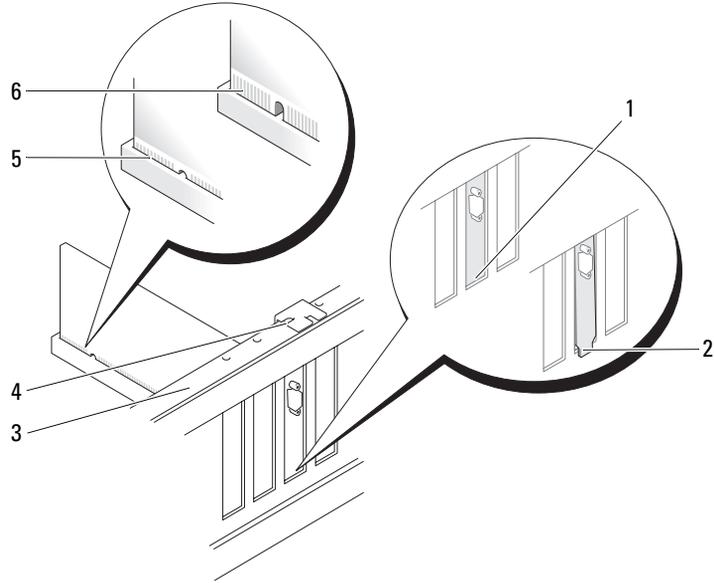
- 1 Follow the procedures in "Before You Begin" on page 59.
- 2 Gently push the release tab on the inside of the card retention door to pivot the door open. Because the door is captive, it will remain in the open position.
- 3 If you are installing a new card, remove the filler bracket to create a card-slot opening, then continue with step 5.



1 release tab

2 card retention door

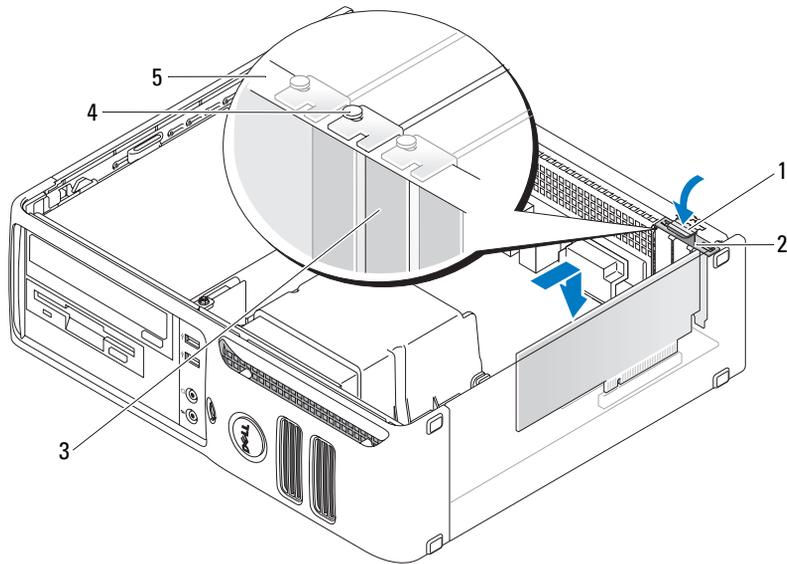
- 4 If you are replacing a card that is already installed in the computer, remove the card. If necessary, disconnect any cables connected to the card. Grasp the card by its top corners, and ease it out of its connector.
 - 5 Prepare the card for installation. See the documentation that came with the card for information on configuring the card, making internal connections, or otherwise customizing it for your computer.
-  **CAUTION: Some network adapters automatically start the computer when they are connected to a network. To guard against electrical shock, be sure to unplug your computer from its electrical outlet before installing any cards.**
- 6 Place the card in the connector and press down firmly. Ensure that the card is fully seated in the slot.



- | | | | | | |
|---|---------------------|---|--------------------------------|---|-----------------------|
| 1 | bracket within slot | 2 | bracket caught outside of slot | 3 | alignment bar |
| 4 | alignment guide | 5 | fully seated card | 6 | not fully seated card |

7 Before you close the card retention door, ensure that:

- The tops of all cards and filler brackets are flush with the alignment bar.
- The notch in the top of the card or filler bracket fits around the alignment guide.



- | | | | | | |
|---|-----------------|---|---------------------|---|----------------|
| 1 | release tab | 2 | card retention door | 3 | filler bracket |
| 4 | alignment guide | 5 | alignment bar | | |

8 Close the card retention door by snapping it into place.

➔ NOTICE: Do not route card cables over the cards. Cables routed over the cards can prevent the computer cover from closing properly or cause damage to the equipment.

9 Connect any cables that should be attached to the card.

See the documentation for the card for information about the card's cable connections.

➔ NOTICE: To connect a network cable, first plug the cable into the network port or device, and then plug it into the computer.

10 Replace the computer cover, reconnect the computer and devices to electrical outlets, and then turn them on.

11 If you installed a sound card:

a Enter system setup, select **Integrated Audio** from the **Onboard Devices** group, and change the setting to **Off** (see "System Setup Options" on page 98).

b Connect external audio devices to the sound card's connectors. Do not connect external audio devices to the line-in connector on the back panel of the computer. See "Back Panel I/O Connectors" on page 16.

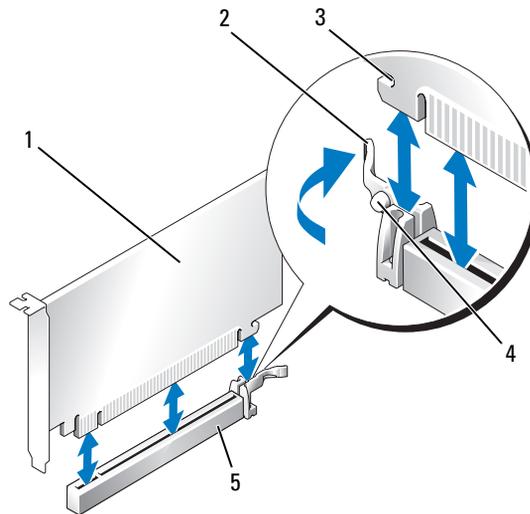
- 12 If you installed an add-in network adapter and want to disable the integrated network adapter:
 - a Enter system setup, select **Integrated NIC** from the **Onboard Devices** group, and change the setting to **Off** (see "System Setup Options" on page 98).
 - b Connect the network cable to the network adapter card's connectors. Do not connect the network cable to the integrated network connector on the back panel of the computer.
- 13 Install any drivers required for the card as described in the card documentation.

Removing an Expansion Card

- 1 Follow the procedures in "Before You Begin" on page 59.
- 2 Gently push the release tab on the card retention door from the inside to pivot the door open. Because the door is captive, it will remain in the open position.
- 3 If necessary, disconnect any cables connected to the card.
- 4 Remove the card:

If you are removing a PCI or PCI Express x1 card, grasp the card by its top corners and ease it out of its connector. Then go to step 6.

If you are removing a PCI Express x16 card, go to step 5.
- 5 While pressing the lever, pull the card up and out of the card connector.



- | | | | | | |
|---|----------------------|---|--------------------------------|---|---------------|
| 1 | PCI Express x16 card | 2 | lever | 3 | securing slot |
| 4 | securing tab | 5 | PCI Express x16 card connector | | |

6 If you are removing the card permanently, install a filler bracket in the empty card-slot opening.



NOTE: Installing filler brackets over empty card-slot openings is necessary to maintain FCC certification of the computer. The brackets also keep dust and dirt out of your computer.

7 Before you close the card retention door, ensure that:

- The tops of all cards and filler brackets are flush with the alignment bar.
- The notch in the top of the card or filler bracket fits around the alignment guide.

8 Close the card retention door by snapping it into place to secure the cards.



NOTICE: To connect a network cable, first plug the cable into the network port or device, and then plug it into the computer.

9 Replace the computer cover, reconnect the computer and devices to electrical outlets, and then turn them on.

10 Remove the card's driver from the operating system.

11 If you removed a sound card:

- a Enter system setup, select **Integrated Audio** from the **Onboard Devices** group, and change the setting to **On** (see "System Setup Options" on page 98).
- b Connect external audio devices to the audio connectors on the back panel of the computer. See "Back Panel I/O Connectors" on page 16.

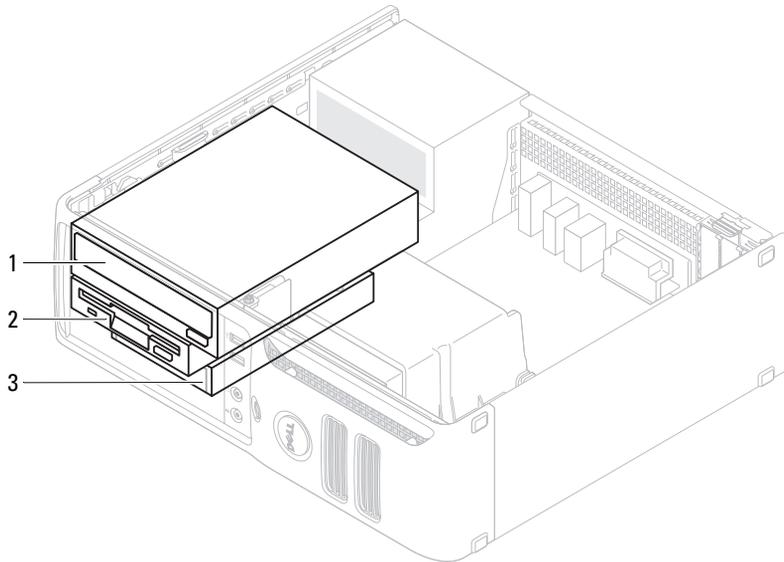
12 If you removed an add-in network connector:

- a Enter system setup, select **Integrated NIC** from the **Onboard Devices** group, and then change the setting to **On** (see "System Setup Options" on page 98).
- b Connect the network cable to the integrated connector on the back panel of the computer.

Drives

Your computer supports a combination of these devices:

- One serial ATA hard drive
- One optional floppy drive or Media Card Reader
- One CD or DVD drive



1 DVD drive

2 optional floppy drive or
media card reader

3 hard drive

General Installation Guidelines

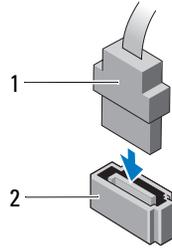
Connect the SATA hard drive to the connector labeled "SATA0." Connect the SATA CD or DVD drives to the connector labeled "SATA1" on the system board. See "System Board Components" on page 63 for information about system board connectors.

Connecting Drive Cables

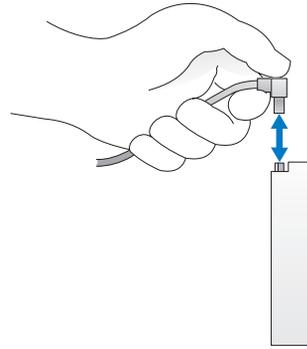
When you install a drive, you connect two cables—a DC power cable and a data cable—to the back of the drive and to the system board.

Drive Interface Connectors

Serial ATA Connector

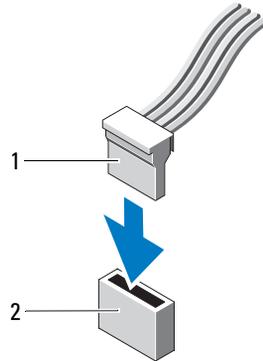


1 interface cable



2 interface connector

Power Cable Connector

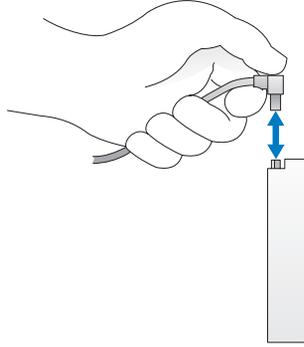


1 power cable

2 power input connector

Connecting and Disconnecting Drive Cables

When removing a serial ATA data cable, grasp the colored pull tab and pull until the connector detaches. When connecting a serial ATA data cable, hold the cable by the black connector at each end.



Hard Drive

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

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

➡ NOTICE: To avoid damage to the drive, do not set it on a hard surface. Instead, set the drive on a surface, such as a foam pad, that will sufficiently cushion it.

➡ NOTICE: If you are replacing a hard drive that contains data you want to keep, back up your files before you begin this procedure.

Check the documentation for the drive to verify that it is configured for your computer.

Removing a Hard Drive

1 Follow the procedures in "Before You Begin" on page 59.

✍ NOTE: In the following steps it is not necessary to disconnect the cables connecting the CD/DVD or floppy drive or the Media Card Reader, as long as it does not obstruct your working area once it is set aside.

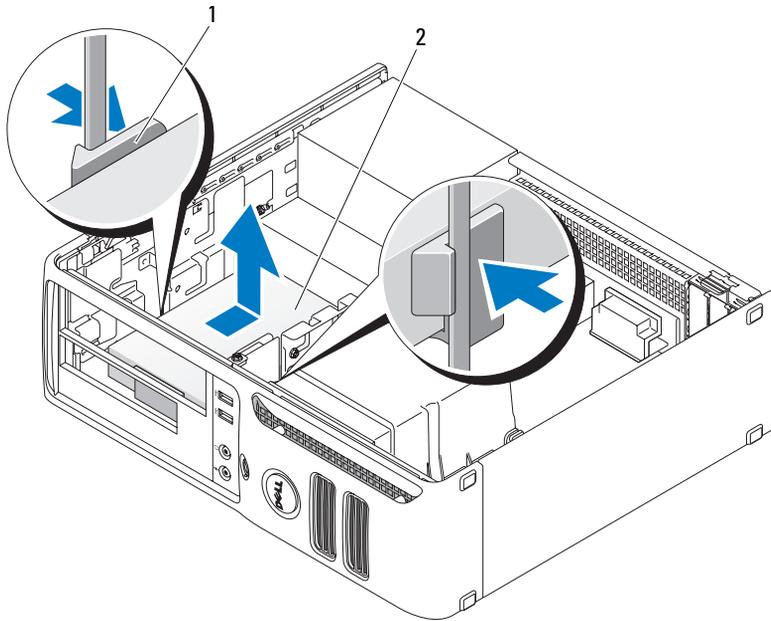
2 Remove the CD/DVD drive (if installed) from the bay and carefully set it aside (see "Removing a CD/DVD Drive" on page 87).

3 Remove the floppy drive or Media Card Reader (if installed) from the bay and carefully set it aside (see "Removing a Media Card Reader" on page 84 or "Removing a Floppy Drive" on page 81).

4 Press in on the two plastic securing clips on each side of the drive and slide the drive towards the back of the computer.

➡ NOTICE: Do not pull the drive out of the computer by the drive cables. Doing so may cause damage to the cables and the cable connectors.

5 Lift the drive out of the computer and disconnect the power and data cables from the drive.



1 securing clips (2)

2 hard drive

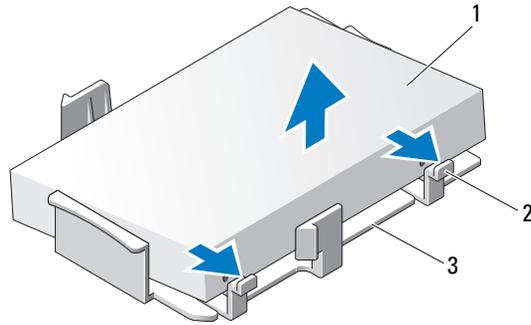
Installing a Hard Drive

1 Check the documentation for the drive to verify that it is configured for your computer.

➔ **NOTICE:** To avoid damage to the drive, do not set it on a hard surface. Instead, set the drive on a surface, such as a foam pad, that will sufficiently cushion it.

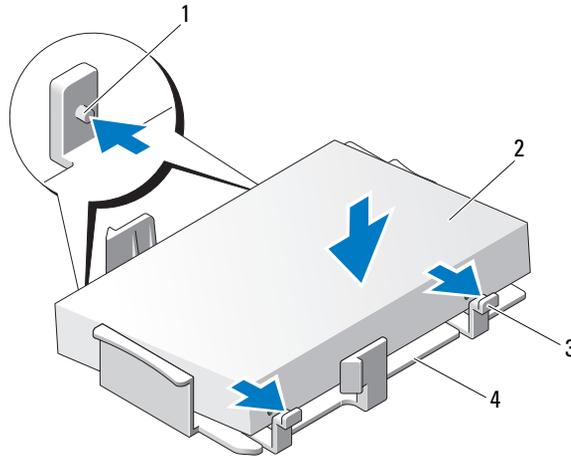
2 Unpack the replacement hard drive, and prepare it for installation.

- 3** If your replacement hard drive does not have the plastic hard-drive bracket attached, remove the bracket from the existing drive by unsnapping it from the drive.



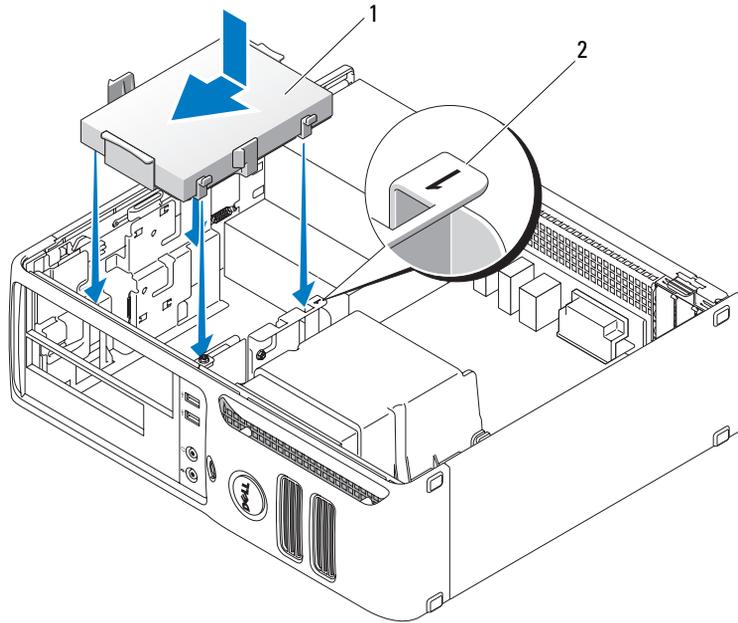
- 1 hard drive 2 release tabs (2) 3 plastic hard-drive bracket

- 4** Attach the bracket to the new drive by aligning the two securing tabs with the mounting holes in the hard drive and then rotating the drive down snapping it onto the bracket.



- 1 securing tabs (2) 2 hard drive 3 release tabs (2)
4 plastic hard-drive bracket

- 5 Connect the power and data cables to the drive.
- 6 Locate the correct guidance-slot for the drive (slot 1) and align the release tabs with the alignment guides.



1 hard drive

2 slot verification number

- 7 Slide the drive into the bay until it clicks into place.
- 8 Replace any drives or readers that you removed.
- 9 Check all connectors to ensure that they are properly cabled and firmly seated.
- 10 Replace the computer cover (see "Replacing the Computer Cover" on page 90).
- ➔ **NOTICE:** To connect a network cable, first plug the cable into the network port or device, and then plug it into the computer.
- 11 Connect your computer and devices to electrical outlets, and then turn them on.
- 12 If the drive that you installed is the primary drive, insert bootable media into your boot drive.
- 13 Enter system setup (see "Entering System Setup" on page 97) and update the appropriate **Primary Drive** option (0 or 2).
- 14 Exit system setup, and reboot the computer.
- 15 Partition and logically format your drive before you proceed to the next step.
For instructions, see the documentation that came with your operating system.

- 16 Test the hard drive by running the Dell Diagnostics (see "Dell Diagnostics" on page 50).
- 17 Install your operating system on the hard drive. For instructions, see the documentation that came with your operating system

Floppy Drive

CAUTION: Before you begin any of the procedures in this section, follow the safety instructions located in the *Product Information Guide*.

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

Removing a Floppy Drive

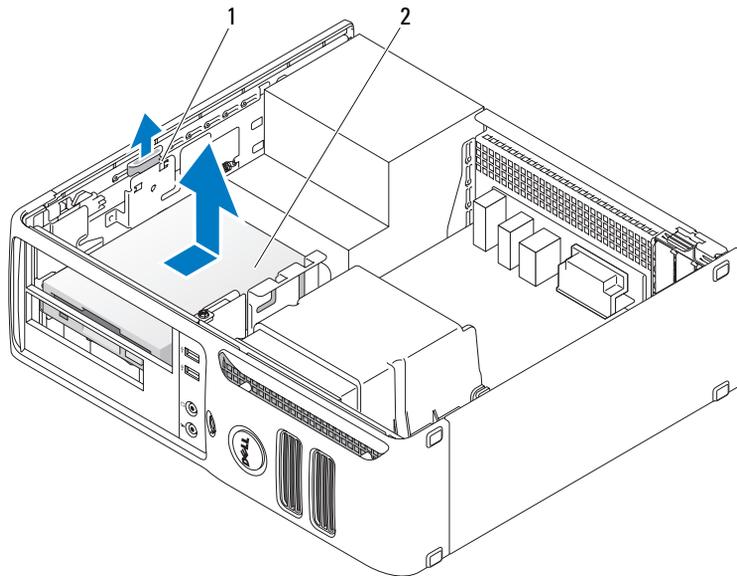
- 1 Follow the procedures in "Before You Begin" on page 59.

NOTE: It is not necessary to disconnect the cables connected to the CD/DVD drive in the following step, as long as the cables do not obstruct your working area once the drive is set aside.

- 2 Remove the CD/DVD drive (see "Removing a CD/DVD Drive" on page 87) and carefully set it aside.

NOTICE: Do not pull the drive out of the computer by the drive cables. Doing so may cause damage to the cables and cable connectors.

- 3 Pull up on the drive release latch and slide the floppy drive towards the back of the computer. Then, lift up to remove the drive from the computer.



1 drive release latch

2 floppy drive

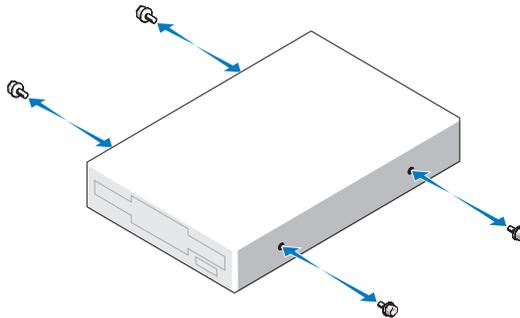
- 4 Disconnect the power and data cables from the back of the floppy drive.
- 5 Replace the computer cover (see "Replacing the Computer Cover" on page 90).
- ➔ **NOTICE:** To connect a network cable, first plug the cable into the network port or device, and then plug it into the computer.
- 6 Connect your computer and devices to electrical outlets, and turn them on.

Installing a Floppy Drive

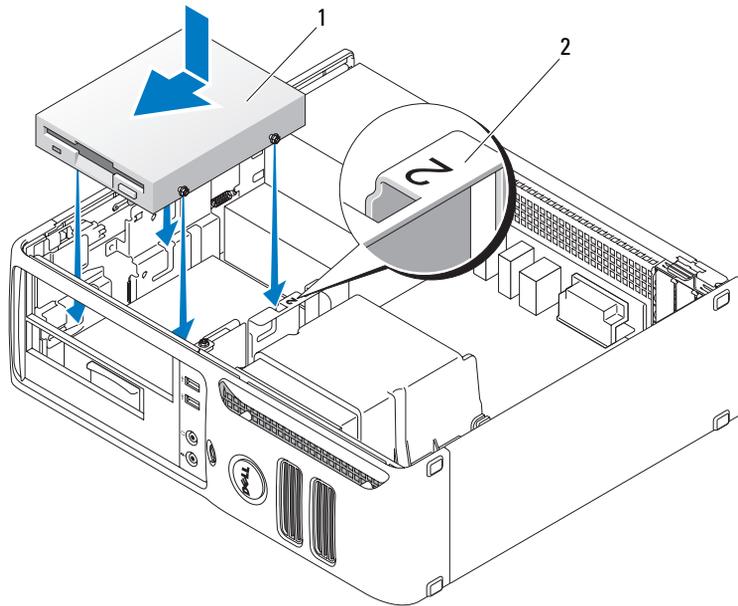
⚠ CAUTION: Before you begin any of the procedures in this section, follow the safety instructions located in the *Product Information Guide*.

➔ **NOTICE:** To prevent static damage to components inside your computer, discharge static electricity from your body before you touch any of your computer's electronic components. You can do so by touching an unpainted metal surface on the computer chassis.

- 1 Follow the procedures in "Before You Begin" on page 59.
- 2 Remove the floppy drive and bracket from its packaging.
- 3 If you are installing a new drive:
 - a Remove the drive-panel insert that blocks the FlexBay; gently slide a small flat-edge screwdriver between the drive-panel insert and the rear of the drive panel until the drive-panel insert pops out of place.
 - b Remove the four shoulder screws from the drive-panel insert.
- 4 If you are replacing an existing drive:
 - a Remove the existing drive.
 - b Remove the four shoulder screws from the existing drive.
- 5 Insert the four shoulder screws into the sides of the new floppy drive and tighten them.



- 6 Attach the power and data cables to the floppy drive.
- 7 Locate the correct guidance-slot for the drive (slot 2) and align the shoulder screws with the screw guides.



1 floppy drive

2 slot verification number

- 8 Slide the drive into the bay until it clicks into place.
- 9 Connect the data cable to the connector labeled "FLOPPY" on the system board (see "System Board Components" on page 63).
- 10 Replace the CD/DVD drive.
- 11 Check all cable connections, and fold cables out of the way to provide airflow for the fan and cooling vents.
- 12 Replace the computer cover (see "Replacing the Computer Cover" on page 90).
- ➡ **NOTICE:** To connect a network cable, first plug the cable into the network port or device, and then plug it into the computer.
- 13 Connect your computer and devices to electrical outlets, and then turn them on.

Media Card Reader

For information about using the Media Card Reader, see "Using a Media Card Reader (Optional)" on page 24.

Removing a Media Card Reader

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

➡ NOTICE: To prevent static damage to components inside your computer, discharge static electricity from your body before you touch any of your computer's electronic components. You can do so by touching an unpainted metal surface on the computer chassis.

1 Follow the procedures in "Before You Begin" on page 59.

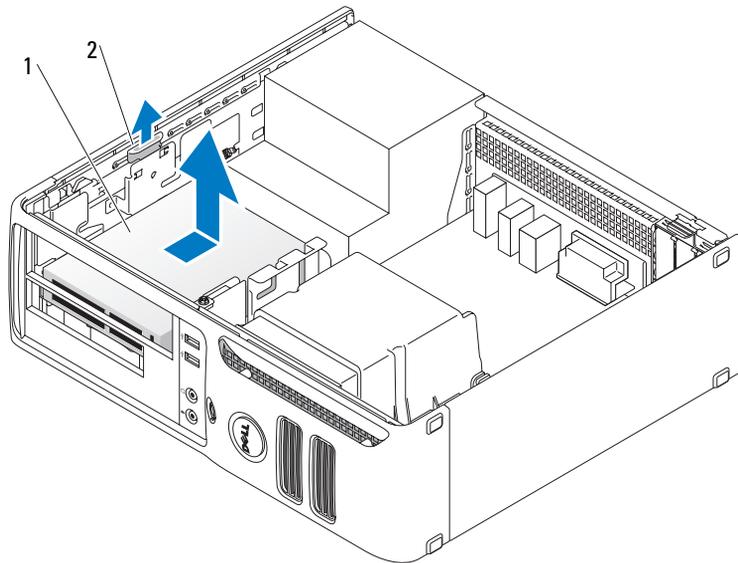
🔧 NOTE: It is not necessary to disconnect the cables connecting the CD/DVD drive in the following step, as long as the cables do not obstruct your working area once the drive is set aside.

2 Remove the CD/DVD drive (see "Removing a CD/DVD Drive" on page 87) and carefully set it aside.

➡ NOTICE: Do not pull the drive out of the computer by the drive cables. Doing so may cause damage to the cables and the cable connectors.

3 Disconnect the Media Card Reader USB cable from the USB connector (USB1) on the system board (see "System Board Components" on page 63) and route the cable through the clip on the shroud.

4 Pull up on the drive release latch and slide the Media Card Reader towards the back of the computer. Then, lift up to remove it from the computer.



1 Media Card Reader

2 drive release latch

5 Replace the computer cover (see "Replacing the Computer Cover" on page 90).

➡ NOTICE: To connect a network cable, first plug the cable into the network port or device, and then plug it into the computer.

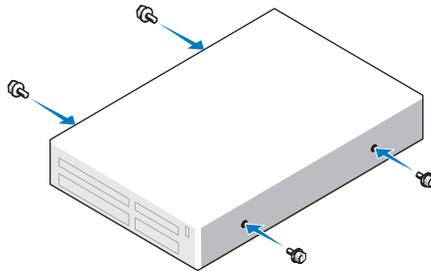
6 Connect your computer and devices to electrical outlets, and then turn them on.

Installing a Media Card Reader

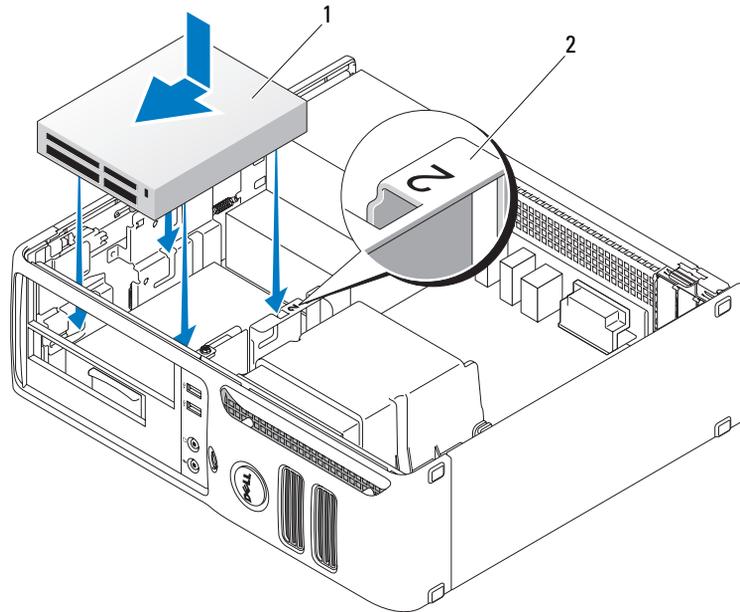
⚠ CAUTION: Before you begin any of the procedures in this section, follow the safety instructions located in the *Product Information Guide*.

➡ NOTICE: To prevent static damage to components inside your computer, discharge static electricity from your body before you touch any of your computer's electronic components. You can do so by touching an unpainted metal surface on the computer chassis.

- 1 Follow the procedures in "Before You Begin" on page 59.
- 2 Remove the Media Card Reader and bracket from its packaging.
- 3 If you are installing a new Media Card Reader:
 - a Remove the drive-panel insert that blocks the FlexBay; gently slide a small flat-edge screwdriver between the drive-panel insert and the rear of the drive panel until the drive-panel insert pops out of place.
 - b Remove the four shoulder screws from the drive-panel insert.
- 4 If you are replacing an existing Media Card Reader:
 - a Remove the existing Media Card Reader.
 - b Remove the four shoulder screws from the existing Media Card Reader.
- 5 Insert four shoulder screws into the sides of the Media Card Reader and tighten them.



- 6 Locate the correct guidance-slot for the Media Card Reader (slot 2) and align the shoulder screws with the screw guides.



1 Media Card Reader 2 slot verification number

- 7 Slide the Media Card Reader into the bay until it clicks into place.
- 8 Connect the power and data cables to the back of the Media Card Reader.
- 9 Connect the data cable to the USB connector on the system board (see "System Board Components" on page 63).
- 10 Replace the computer cover (see "Replacing the Computer Cover" on page 90).
- ➡ **NOTICE:** To connect a network cable, first plug the cable into the network port or device, and then plug it into the computer.
- 11 Connect your computer and devices to electrical outlets, and then turn them on.

CD/DVD Drive

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

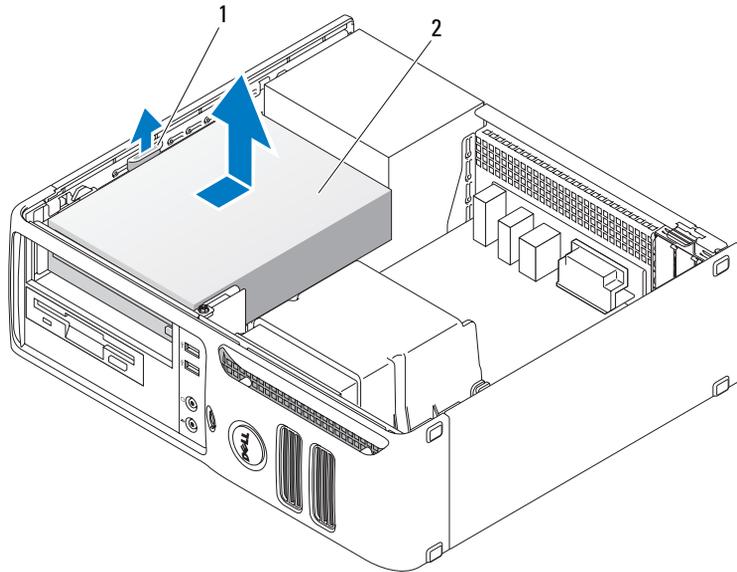
⚠ CAUTION: To guard against electrical shock, always unplug your computer from the electrical outlet before removing the cover.

Removing a CD/DVD Drive

1 Follow the procedures in "Before You Begin" on page 59.

➔ **NOTICE:** Do not pull the drive out of the computer by the drive cables. Doing so may cause damage to the cables and the cable connectors.

2 Pull up on the drive release latch and slide the drive towards the back of the computer. Then, lift up to remove the drive from the computer.



1 drive release latch

2 CD/DVD drive

3 Disconnect the power and data cables from the back of the drive.

4 Replace the computer cover (see "Replacing the Computer Cover" on page 90).

➔ **NOTICE:** To connect a network cable, first plug the cable into the network port or device, and then plug it into the computer.

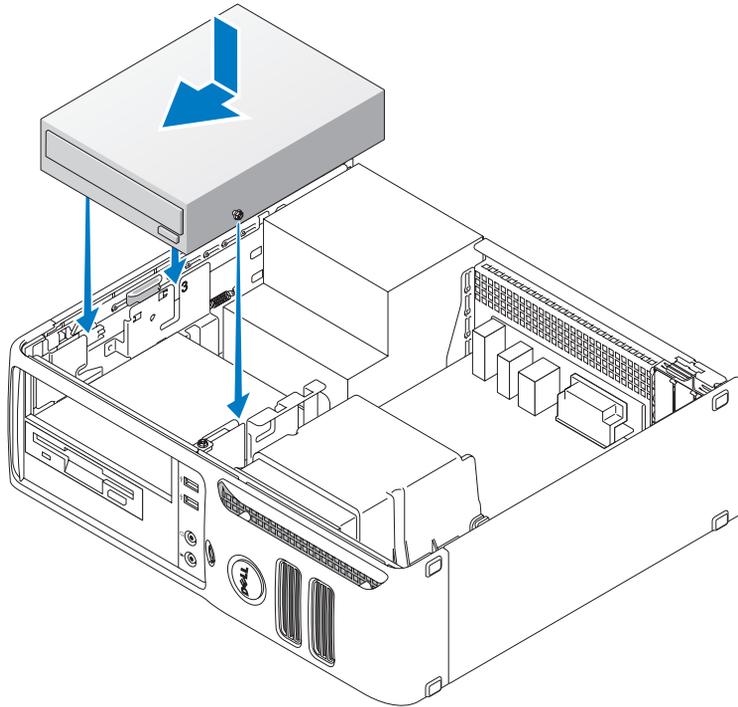
5 Connect your computer and devices to electrical outlets, and then turn them on.

Installing a CD/DVD Drive

1 Follow the procedures in "Before You Begin" on page 59.

2 Unpack the drive and prepare it for installation.

- 3** If you are installing a new drive:
 - a** Press the two snaps on the top of the drive-panel insert and rotate the insert toward the front of the computer. Remove it from the computer.
 - b** Remove the three shoulder screws from the drive-panel insert.
- 4** If you are replacing an existing drive:
 - a** Remove the existing drive.
 - b** Remove the three shoulder screws from the existing drive.
- 5** Insert the three shoulder screws into the sides of the new drive and tighten them.
- 6** Connect the power and data cables to the drive.
- 7** Align the shoulder screws with the screw guides, and slide the drive into the bay until it clicks into place.



- 8** Check all cable connections and fold cables out of the way to avoid blocking airflow between the fan and cooling vents.

- 9 Replace the computer cover (see "Replacing the Computer Cover" on page 90).
-  **NOTICE:** To connect a network cable, first plug the cable into the network port or device, and then plug it into the computer.
- 10 Connect your computer and devices to electrical outlets, and then turn them on.

Battery

Replacing the Battery

 **CAUTION:** Before you begin any of the procedures in this section, follow the safety instructions located in the *Product Information Guide*.

 **NOTICE:** To prevent static damage to components inside your computer, discharge static electricity from your body before you touch any of your computer's electronic components. You can do so by touching an unpainted metal surface on the computer chassis.

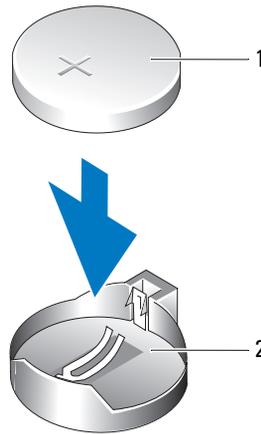
A coin-cell battery maintains computer configuration, date, and time information. The battery can last several years. If you have to repeatedly reset time and date information after turning on the computer, replace the battery.

 **CAUTION:** A new battery can explode if it is incorrectly installed. Replace the battery only with the same or equivalent type recommended by the manufacturer. Discard used batteries according to the manufacturer's instructions.

To replace the battery:

- 1 Record all of the settings in system setup (see "System Setup Options" on page 98) so that you can restore the correct settings in step 8.
- 2 Follow the procedures in "Before You Begin" on page 59.
- 3 Locate the battery socket (see "System Board Components" on page 63).
-  **NOTICE:** If you pry the battery out of its socket with a blunt object, be careful not to touch the system board with the object. Ensure that the object is inserted between the battery and the socket before you attempt to pry out the battery. Otherwise, you may damage the system board by prying off the socket or by breaking circuit traces on the system board.
- 4 Remove the battery by carefully prying it out of its socket with your fingers or with a blunt, nonconducting object, such as a plastic screwdriver.

- 5 Insert the new battery into the socket with the side labeled "+" facing up, and snap the battery into place.



1 battery

2 battery socket

- 6 Replace the computer cover (see "Replacing the Computer Cover" on page 90).

➔ NOTICE: To connect a network cable, first plug the cable into the network port or device, and then plug it into the computer.

- 7 Connect your computer and devices to electrical outlets, and then turn them on.

- 8 Enter system setup (see "System Setup" on page 97) and restore the settings you recorded in step 1.

- 9 Properly dispose of the old battery. See the *Product Information Guide* for battery disposal information.

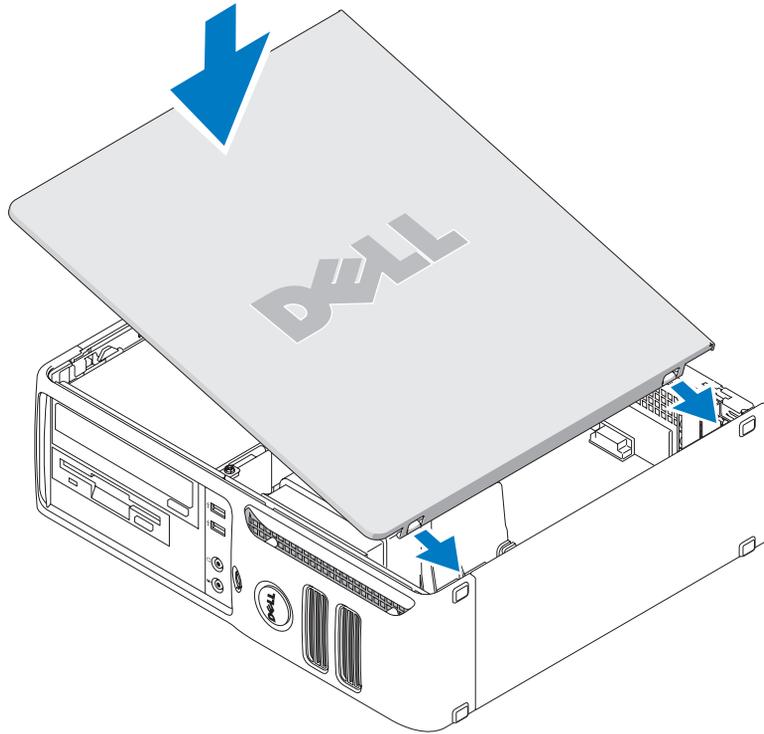
Replacing the Computer Cover

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

- 1 Ensure that all cables are connected, and fold cables out of the way.

Gently pull the power cables toward you so that they do not get caught underneath the drives.

- 2 Ensure that no tools or extra parts are left inside the computer.



- 3** To replace the cover:
 - a** Align the bottom of the cover with the hinge tabs located along the bottom edge of the computer.
 - b** Using the hinge tabs as leverage, rotate the cover downward to close it.
 - c** Press the cover down until it snaps into place.
 - d** Ensure that the cover is seated correctly before moving the computer.

➔ NOTICE: To connect a network cable, first plug the cable into the network port or device, and then plug it into the computer.

- 4** Connect your computer and devices to electrical outlets, and then turn them on.

Appendix

Specifications

Microprocessor

Microprocessor type	AMD Athlon™ 64 X2 Dual-Core processor AMD Athlon 64 AMD™ Sempron
Internal L2 cache	up to 1 MB per core up to 256 KB for Sempron

Memory

Type	533-MHz, 667-MHz, 800-MHz z (when available) DDR2 SDRAM
Memory connectors	4
Memory modules supported	256-MB, 512-MB, or 1-GB non-ECC
Minimum memory	256 MB
Maximum memory	4 GB

Computer Information

Chipset	nVidia GeForce 6150LE
DMA channels	eight
Interrupt levels	24
BIOS chip (NVRAM)	4 Mb
NIC	integrated network interface Capable of 10/100 communication

Video

Type	nVidia integrated video (DirectX 9.0c Shader Model 3.0 Graphics Processing Unit) or PCI Express x16 graphics card
------	---

Audio	
Type	Sigma Tel 9227 CODEC (7.1 Channel Audio)
Controllers	
Drives	two SATA controllers supporting two devices
Expansion Bus	
Bus type	PCI 2.3 PCI Express 1.0A SATA 1.0A and 2.0 USB 2.0
Bus speed	PCI: 133 MB/s PCI Express x16: 40 Gbps bidirectional speed PCI Express x1: 2.5 Gbps SATA: 1.5 Gbps and 3.0 Gbps USB: 480 Mbps high speed, 12Mbps full speed, 1.2 Mbps low speed
Cards	
PCI	
connectors	one
card size	low profile
connector size	124 pins
connector data width (maximum)	32 bits
PCI Express:	
connectors	one x1 and one x16
power	10 W (x1) and 25 W (x16) maximum
connector size	36 pins (x1) and 164 pins (x16)
connector data width (maximum)	one PCI Express lane (x1) and 16 PCI Express lanes (x16)
Drives	
Externally accessible	one 3.5-inch drive one 5.25-inch drive bays
Available devices	SATA hard drive, CD drive, DVD drive, DVD +/- RW drive, and CD-RW/DVD Combo drive
Internally accessible	one bay for a 1-inch-high hard drive

Connectors

External connectors:

Video	15-hole VGA connector
Network adapter	RJ45 connector
USB	two front-panel and four back-panel USB 2.0-compliant connectors
Audio	six connectors for line-in and line-out; two front-panel connectors for headphones and microphone

System board connectors:

SATA	two 7-pin connectors
Floppy drive	34-pin connector
Fan	5-pin connector
PCI 2.3	one 124-pin connectors
PCIe-x1	36-pin connector
PCIe-x16	164-pin connector
Internal USB	10-pin connector (supports two USB ports)
Speaker	5-pin connector
Memory modules	four 240-pin connector
Power 12V	4-pin connector
Power	24-pin connector
Battery	2-pin socket

Controls and Lights

Power control	push button
Power light	green light — Blinking green indicates a sleep mode; solid green indicates a power-on state. amber light — Blinking amber indicates a problem with an installed device; solid amber indicates an internal power problem (see "Power Problems" on page 40).
Hard-drive access light	green
Link light	solid green light indicates network connection
Link integrity light (on integrated network adapter)	green light for 10-Mb operation; orange light for 100-Mb operation

Controls and Lights

Activity light (on integrated network adapter)	yellow blinking light
Diagnostic lights	Four lights on the front panel. See "Diagnostic Lights" on page 48.
Standby power light	AUX_PWR on the system board

Power

DC power supply:	
Wattage	280 W
Heat dissipation	955.39 BTU/hr maximum NOTE: Heat dissipation is calculated based upon the power supply rating.
Voltage	manual selection power supplies — 90 to 135 V at 50/60 Hz; 180 to 265 V at 50/60 Hz
Backup battery	3-V CR2032 lithium coin cell

Physical

Height	11.4 cm (4.5 inches)
Width	39.9 cm (15.7 inches)
Depth	35.3 cm (13.9 inches)
Weight	10.4 kg (23 lb)

Environmental

Temperature:	
Operating	10° to 35°C (50° to 95°F)
Storage	-40° to 65°C (-40° to 149°F)
Relative humidity	20% to 80% (noncondensing)
Maximum vibration:	
Operating	0.25 G at 3 to 200 Hz at 0.5 octave/min
Storage	0.5 G at 3 to 200 Hz at 1 octave/min
Maximum shock:	
Operating	bottom half-sine pulse with a change in velocity of 50.8 cm/sec (20 inches/sec)
Storage	27-G faired square wave with a velocity change of 508 cm/sec (200 inches/sec)

Environmental (continued)

Altitude:

Operating	-15.2 to 3048 m (-50 to 10,000 ft)
Storage	-15.2 to 10,668 m (-50 to 35,000 ft)

System Setup

Overview

Use system setup as follows:

- To change the system configuration information after you add, change, or remove any hardware in your computer
- To set or change a user-selectable option such as the user password
- To read the current amount of memory or set the type of hard drive installed

Before you use system setup, it is recommended that you write down the system setup screen information for future reference.



NOTICE: Unless you are an expert computer user, do not change the settings for this program. Certain changes can make your computer work incorrectly.

Entering System Setup

- 1 Turn on (or restart) your computer.
- 2 When the blue DELL™ logo is displayed, you must watch for the F2 prompt to appear.
- 3 Once this F2 prompt appears, press <F2> immediately.



NOTE: The F2 prompt indicates that the keyboard has initialized. This prompt can appear very quickly, so you must watch for it to display, and then press <F2>. If you press <F2> before you are prompted, this keystroke will be lost.

- 4 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 (see "Turning Off Your Computer" on page 59) and try again.

System Setup Screen

The system setup screen displays current or changeable configuration information for your computer. Information on the screen is divided into four areas: the menu at the top, the main window, the Item Help field on the right, and key functions listed on the bottom.

Options List — This field appears on the left side of the system setup window. The field is a scrollable list containing features that define the configuration of your computer, including installed hardware, power conservation, and security features.

Scroll up and down the list by using the up and down arrow keys. As an option is highlighted, the **Option Field** displays more information about that option and the option's current and available settings.

Option Field — This field contains information about each option. In this field you can view your current settings and make changes to your settings.

Use the right- and left-arrow keys to highlight an option. Press <Enter> to make that selection active.

Key Functions — This field appears below the **Option Field** and lists keys and their functions within the active system setup field.

System Setup Options



NOTE: Depending on your computer and installed devices, the items listed in this section may not appear, or may not appear exactly as listed.

System

System Info	Lists the computer name, BIOS Version , Service Tag , Express Service Code , (if applicable), and the Asset Tag . None of these fields can be modified.
Processor Info	Identifies the CPU type, processor clock speed, bus speed, L2 cache size, and processor ID. States whether the processor supports 64-bit technology.
Memory Info	Lists the type, size, speed, and channel mode (dual or single) of installed memory.
PCI Info	Identifies any installed PCI or PCI Express cards.
Date/Time	Displays current date and time settings.
Boot Sequence	The computer attempts to boot from the sequence of devices specified in this list.
HDD Boot Sequence	Lists the order that the BIOS will search the available hard drives in the system.

Drives	
Diskette Drive (Internal default)	This option enables or disables the floppy drive. The options are Off , USB , Internal , and Read Only . NOTE: If USB is selected, ensure that USB Controller setup option under Onboard Devices is set to On .
Drive 0: (SATA-0) (On default)	Identifies and enables and disables the drives attached to the SATA connectors on the system board and lists the capacities for the hard drives.
Drive 1: (SATA-1) (On default)	Identifies and enables and disables the drives attached to the SATA connectors on the system board and lists the capacities for the hard drives.
SMART Reporting (Off default)	This setting determines whether integrated drive errors are reported or not during system startup.
Onboard Devices	
Integrated NIC (On default)	Enables or disables the integrated NIC controller. Settings are Off , On , On w/ PXE , or On w/RPL . When the On w/ PXE or the On w/RPL setting is active, if a boot routine is not available from the network server, the computer attempts to boot from the next device in the boot sequence list.
Integrated Audio (On default)	Enables or disables the onboard audio controller.
USB Controller (On default)	Enables or disables the internal USB controller. No Boot enables the controller but disables the ability to boot from a USB device. NOTE: Operating systems with USB support will recognize USB floppy drives regardless of the No Boot setting.
Rear Dual USB0 (On default)	Enables or disables the indicated group of USB ports on the back of the computer.
Rear Dual USB1 (On default)	Enables or disables the indicated group of USB ports on the back of the computer.
Front USB (On default)	Enables or disables the indicated group of USB ports on the front of the computer.

Video	
Primary Video (Auto default)	This setting specifies which video controller is primary when there is two video controllers available (PCI, Onboard, Auto, and PEG). This selection only matters when if there are two video controllers present. When Auto is selected, the add-in video controller will be used. NOTE: A PCI Express graphics card will override the integrated video controller.
Video Memory Size (64MB default)	This setting configures the amount of system memory that is reserved for the integrated video controller. The settings are Auto, 16MB, 32MB, 64MB, 128MB, or Off.
Performance	
HDD Acoustic Mode (Bypass default)	<ul style="list-style-type: none"> • Bypass — Your computer does not test or change the current acoustics mode setting. • Quiet — The hard drive operates at its most quiet setting. • Suggested — The hard drive operates at the level suggested by the drive manufacturer. • Performance — The hard drive operates at its maximum speed. NOTE: Switching to performance mode may cause the drive to be noisier, but its performance is not affected. Changing the acoustics setting does not alter your hard-drive image.
Security	
Unlock Setup	When an administrator password is being used, allows the user access to modify system setup settings. Enter the administrator password at the prompt to unlock system setup. If the correct password is not entered here, the user can view but not modify system setup fields.
Admin Password (Not Set default)	Displays the current status of your system setup program's password security feature and allows you to verify and assign a new admin password.
System Password (Not Set default)	Displays the current status of the system's password security feature and allows a new system password to be assigned and verified.
Password Changes (Unlocked default)	Determines the interaction between the System password and the Admin password. Locked prevents a user without a valid Admin password from being able to modify the System password. Unlocked allows a user with a valid System password to modify the system password.
Non-Execute Func (On default)	Enables or disables Execute Disable memory protection technology.

Power Management

AC Recovery
(**Off** default)

Determines how the system responds when AC power is re-applied after a power loss. **Off** commands the system to stay off when the power is re-applied. You must press the front-panel power button before the system turns on. **On** commands the system to turn on when the power is re-applied. **Last** commands the system to return to the last power state the system was in just before it was turned off.

Auto Power On
(**Off** default)

Sets the computer to automatically turn on. **Off** disables this feature. **Everyday** turns the computer on every day at the time set in **Auto Power Time**. **Weekdays** turns the computer on every day from Monday through Friday at the time set in **Auto Power Time**.

NOTE: This feature does not work if you turn off your computer using the switch on a power strip or surge protector.

Auto Power Time

Sets time to automatically turn on the computer.

Time is kept in the standard 12-hour format (*hours:minutes*). Change the startup time by pressing the right- or left-arrow key to increase or decrease the numbers, or type numbers in both the date and time fields.

Low Power Mode
(**On** default)

When **Low Power Mode** is selected, remote wakeup events will no longer power up the computer from **Hibernate** or **Off** via the onboard network controller.

Cool and Quiet
(**Off** default)

This option enables or disables the Cool 'n' Quiet technology for all supported processors

Suspend Mode
(**S3** default)

Sets the computer's suspend mode. The options are **S1**, a suspend state in which the computer is running in a low-power mode, and **S3**, a suspend state in which the power is reduced or turned off for many components, however, system memory remains active.

Maintenance

Service Tag

Displays the service tag for your computer.

Load Defaults

Restores system setup options to their factory defaults.

Event Log

Allows you to view the **Event Log**. Entries are marked **R** for **Read** and **U** for **Unread**. **Mark All Entries Read** puts an **R** to the left of all the entries. **Clear Log** clears the **Event Log**.

POST Behavior	
Fastboot (On default)	When enabled, this feature reduces computer startup time by bypassing some compatibility steps. Off does not skip any steps during computer startup. On starts the system more quickly.
Numlock Key (On default)	Determines the functionality of the numeric keys on the right side of your keyboard. Off commands the right keypad keys to function as arrows. On commands the right keypad keys to function as numbers.
POST Hotkeys (Setup & Boot Menu default)	Determines whether the sign-on screen displays a message stating the keystroke sequence that is required to enter the Setup program or the Quickboot feature. Setup & Boot Menu displays both messages (F2=Setup and F12=Boot Menu). Setup displays the setup message only (F2=Setup). Boot Menu displays the Quickboot message only (F12=Boot Menu). None displays no message.
Keyboard Errors	When set to Report (enabled) and an error is detected during POST, the BIOS will display the error message and prompt you to press <F1> to continue or press <F2> to enter system setup. When set to Do Not Report (disabled) and an error is detected during POST, the BIOS will display the error message and continue booting the system.

Boot Menu

This feature allows you to change the boot sequence for devices.

Option Settings

- **Bootable Hard Drive** — The computer attempts to boot from the primary hard drive. If no operating system is on the drive, the computer generates an error message.
- **Onboard Floppy Drive** — The computer attempts to boot from the floppy drive. If the floppy disk in the drive is not bootable, if no floppy disk is in the drive, or if there is no floppy drive installed in the computer, the computer generates an error message.
- **Onboard CD-ROM Drive** — The computer attempts to boot from the CD drive. If no CD is in the drive, or if the CD has no operating system, the computer generates an error message.
- **Integrated NIC** — The computer attempts to boot using the integrated NIC. If integrated NIC is not connected, the computer generates an error message.
- **USB-Device, USB-Floppy, USB-CDROM** — Attach the device to a USB port and restart the computer before selecting the option from the Boot Menu. The computer will attempt to boot from the appropriate USB device. If no operating system is on the appropriate drive or disk, the computer will generate an error message.



NOTE: To boot to a USB device, the device must be bootable. To ensure that a device is bootable, check the device documentation.

Changing Boot Sequence for the Current Boot

You can use this feature, for example, to restart your computer to a USB device, such as a floppy drive, memory key, or CD-RW drive.

 **NOTE:** If you are booting to a USB floppy drive, you must first set **Diskette Interface** to **Disabled** in system setup (see "System Setup" on page 97).

- 1 If you are booting to a USB device, connect the USB device to a USB connector (see "Front View of the Computer" on page 13).
- 2 Turn on (or restart) your computer.
- 3 When **F2 = Setup**, **F12 = Boot Menu** appears in the upper-right corner of the screen, press <F12>.

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 (see "Turning Off Your Computer" on page 59) and try again.

- 4 Press <F1> to continue.
The **Boot Menu** appears, listing all available boot devices.
- 5 Use the arrow keys to select the appropriate device (for the current boot only).

 **NOTE:** To boot to a USB device, the device must be bootable. To ensure that a device is bootable, check the device documentation.

Changing Boot Sequence for Future Boots

- 1 Enter system setup, select **Boot Sequence** from the **System** group (see "System Setup Options" on page 98).
- 2 Press <Enter> to access the menu.

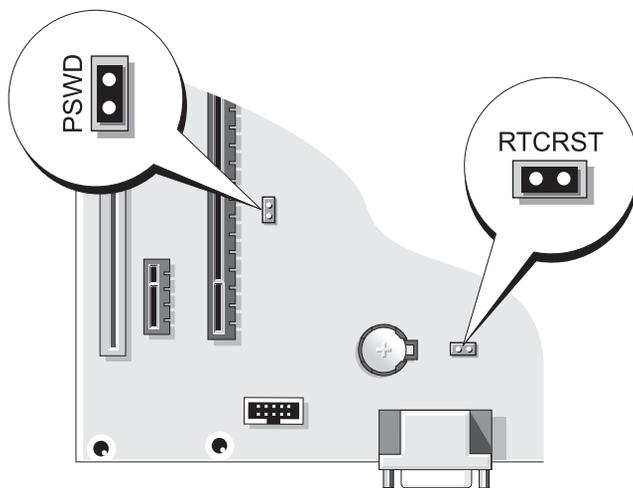
 **NOTE:** Write down your current boot sequence in case you want to restore it.

- 3 Press the up- and down-arrow keys to highlight the appropriate **Boot Sequence** option.
- 4 Press the **U** or **D** keys to move the option **up** or **down** in the boot sequence.
- 5 Press <Enter> to **Save** the changes or <Esc> to **Cancel**.

Clearing Forgotten Passwords and CMOS Settings

CAUTION: Before you begin any of the procedures in this section, follow the safety instructions located in the *Product Information Guide*.

Jumper Locations



Clearing Password Settings

- 1 Follow the procedures in "Before You Begin" on page 59.
- 2 Locate the 2-pin password jumper (PSWD) on the system board (see "Jumper Locations" on page 104), and attach the jumper plug to pins 1 and 2 to clear the password.
NOTE: When you receive your computer, the jumper plug is attached to pin 1.
- 3 Replace the computer cover (see "Replacing the Computer Cover" on page 90).
- 4 Connect your computer and monitor to electrical outlets, and then turn them on.
- 5 After the Microsoft® Windows® desktop appears on your computer, shut down the computer (see "Turning Off Your Computer" on page 59).
- 6 Turn off the monitor and disconnect it from the electrical outlet.
- 7 Disconnect the computer power cable from the electrical outlet, then press the power button to ground the system board.
- 8 Remove the computer cover (see "Removing the Computer Cover" on page 60).
- 9 Locate the 2-pin password jumper (PSWD) on the system board and attach the jumper to pin 1 to reenble the password feature.
- 10 Replace the computer cover (see "Replacing the Computer Cover" on page 90).

 **NOTICE:** To connect a network cable, first plug the cable into the network port or device, and then plug it into the computer.

11 Connect your computer and devices to electrical outlets, and then turn them on.

Clearing CMOS Settings

 **CAUTION:** Before you begin any of the procedures in this section, follow the safety instructions located in the *Product Information Guide*.

1 Follow the procedures in "Before You Begin" on page 59.

2 Reset the current CMOS settings:

- a Locate the 2-pin CMOS jumper (RTCRST) on the system board (see "Jumper Locations" on page 104).
- b Remove the jumper plug from pin 1.
- c Place the jumper plug on pins 1 and 2 and wait approximately five seconds.
- d Replace the jumper plug on pin 1.

3 Replace the computer cover (see "Replacing the Computer Cover" on page 90).

 **NOTICE:** To connect a network cable, first plug the cable into the network port or device, and then plug it into the computer.

4 Connect your computer and devices to electrical outlets, and then turn them on.

Cleaning Your Computer

 **CAUTION:** Before you begin any of the procedures in this section, follow the safety instructions in the *Product Information Guide*.

Computer, Keyboard, and Monitor

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

- Use a can of compressed air to remove dust from between the keys on the keyboard.

 **NOTICE:** To prevent damage to the antiglare coating, do not wipe the display with soap or alcohol.

- To clean your monitor screen, lightly dampen a soft, clean cloth with water. You can also use a special screen-cleaning tissue or solution suitable for the monitor's antistatic coating.
- Wipe the keyboard, computer, and monitor plastics with a soft cleaning cloth moistened with a solution of three parts water and one part dishwashing detergent.

Do not soak the cloth or let water drip inside your computer or keyboard.

Mouse

➡ NOTICE: Disconnect the mouse from the computer before cleaning the mouse

If your screen cursor skips or moves abnormally, clean the mouse.

Cleaning a Non-Optical Mouse

- 1 Clean the outside casing of the mouse with a cloth moistened with a mild cleaning solution.
- 2 Turn the retainer ring on the underside of your mouse counterclockwise, and then remove the ball.
- 3 Wipe the ball with a clean, lint-free cloth.
- 4 Blow carefully into the ball cage or use a can of compressed air to dislodge dust and lint.
- 5 If the rollers inside the ball cage are dirty, clean the rollers with a cotton swab moistened lightly with isopropyl alcohol.
- 6 Recenter the rollers in their channels if they are misaligned. Ensure that fluff from the swab is not left on the rollers.
- 7 Replace the ball and retainer ring, and turn the retainer ring clockwise until it clicks into place.

Cleaning an Optical Mouse

Clean the outside casing of the mouse with a cloth moistened with a mild cleaning solution.

Floppy Drive

➡ NOTICE: Do not attempt to clean drive heads with a swab. You might accidentally misalign the heads which prevents the drive from operating.

Clean your floppy drive using a commercially available cleaning kit. These kits contain pretreated floppy disks to remove contaminants that accumulate during normal operation.

CDs and DVDs

➡ NOTICE: Always use compressed air to clean the lens in the CD/DVD drive, and follow the instructions that come with the compressed-air product. Never touch the lens in the drive.

If you notice problems, such as skipping, with the playback quality of your CDs or DVDs, try cleaning the discs.

- 1 Hold the disc by its outer edge. You can also touch the inside edge of the center hole.

➡ NOTICE: To avoid damaging the surface, do not wipe in a circular motion around the disc.

- 2 With a soft, lint-free cloth, gently wipe the bottom of the disc (the unlabeled side) in a straight line from the center to the outer edge of the disc.

For stubborn dirt, try using water or a diluted solution of water and mild soap. You can also purchase commercial products that clean discs and provide some protection from dust, fingerprints, and scratches. Cleaning products for CDs are also safe to use on DVDs.

Dell Hardware Warranty Support Policy (U.S. Only)

Technician-assisted support requires the cooperation and participation of the customer in the troubleshooting process and provides for restoration of the operating system, software programs, and hardware drivers to the original default configuration as shipped from Dell, as well as the verification of appropriate functionality of the computer and all Dell-installed hardware. In addition to this technician-assisted support, online support is available at support.dell.com. Additional support options may be available for purchase.

Dell provides limited support for the computer and any "Dell-installed" software and peripherals¹. Support for third-party software and peripherals is provided by the original manufacturer, including those purchased and/or installed through Dell Software and Peripherals, Readyware, and Custom Factory Integration².

- ¹ Repair services are provided pursuant to the terms and conditions of your limited warranty and any optional support service contract purchased with the computer.
- ² All Dell-standard components included in a Custom Factory Integration (CFI) project are covered by the standard Dell limited warranty for your computer. However, Dell also extends a parts replacement program to cover all nonstandard, third-party hardware components integrated through CFI for the duration of the computer's service contract.

Definition of "Dell-Installed" Software and Peripherals

Dell-installed software includes the operating system and some of the software programs that are installed on the computer during the manufacturing process (Microsoft[®] Office, Norton Antivirus, and so on).

Dell-installed peripherals include any internal expansion cards, or Dell-branded module bay or PC Card accessories. In addition, any Dell-branded monitors, keyboards, mice, speakers, microphones for telephonic modems, docking stations/port replicators, networking products, and all associated cabling are included.

Definition of "Third-Party" Software and Peripherals

Third-party software and peripherals include any peripheral, accessory, or software program sold by Dell not under the Dell brand (printers, scanners, cameras, games, and so on). Support for all third-party software and peripherals is provided by the original manufacturer of the product.

FCC Notice (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 Inc. 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 Inc. 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™ Dimension™ C521
Model number:	DCNE
Company name:	Dell Inc. Worldwide Regulatory Compliance & Environmental Affairs One Dell Way Round Rock, TX 78682 USA 512-338-4400

 **NOTE:** For Further regulatory information, see your *Product Information Guide*.

Contacting Dell

To contact Dell electronically, you can access the following websites:

- www.dell.com
- support.dell.com (support)

For specific web addresses for your country, find the appropriate country section in the table below.

 **NOTE:** Toll-free numbers are for use within the country for which they are listed.

 **NOTE:** In certain countries, support specific to Dell XPS™ portable computers is available at a separate telephone number listed for participating countries. If you do not see a telephone number listed that is specific for XPS portable computers, you may contact Dell through the support number listed and your call will be routed appropriately.

When you need to contact Dell, use the electronic addresses, telephone numbers, and codes provided in the following table. If you need assistance in determining which codes to use, contact a local or international operator.

Country (City) International Access Code Country Code City Code	Department Name or Service Area, Website and E-Mail Address	Area Codes, Local Numbers, and Toll-Free Numbers
Anguilla	General Support	toll-free: 800-335-0031
Antigua and Barbuda	General Support	1-800-805-5924
Argentina (Buenos Aires) International Access Code: 00 Country Code: 54 City Code: 11	Website: www.dell.com.ar E-mail: us_latin_services@dell.com E-mail for desktop and portable computers: la-techsupport@dell.com E-mail for servers and EMC® storage products: la_enterprise@dell.com Customer Care Technical Support Technical Support Services Sales	toll-free: 0-800-444-0730 toll-free: 0-800-444-0733 toll-free: 0-800-444-0724 0-810-444-3355
Aruba	General Support	toll-free: 800-1578
Australia (Sydney) International Access Code: 0011 Country Code: 61 City Code: 2	Website: support.ap.dell.com E-mail: support.ap.dell.com/contactus General Support	13DELL-133355

Country (City) International Access Code Country Code City Code	Department Name or Service Area, Website and E-Mail Address	Area Codes, Local Numbers, and Toll-Free Numbers
Austria (Vienna)	Website: support.euro.dell.com	
International Access Code: 900	E-mail: tech_support_central_europe@dell.com	
Country Code: 43	Home/Small Business Sales	0820 240 530 00
City Code: 1	Home/Small Business Fax	0820 240 530 49
	Home/Small Business Customer Care	0820 240 530 14
	Preferred Accounts/Corporate Customer Care	0820 240 530 16
	Support for XPS portable computers only	0820 240 530 81
	Home/Small Business Support for all other Dell computers	0820 240 530 14
	Preferred Accounts/Corporate Support	0660 8779
	Switchboard	0820 240 530 00
Bahamas	General Support	toll-free: 1-866-278-6818
Barbados	General Support	1-800-534-3066
Belgium (Brussels)	Website: support.euro.dell.com	
International Access Code: 00	Tech Support for XPS portable computers only	02 481 92 96
Country Code: 32	Tech Support for all other Dell computers	02 481 92 88
City Code: 2	Tech Support Fax	02 481 92 95
	Customer Care	02 713 15 65
	Corporate Sales	02 481 91 00
	Fax	02 481 92 99
	Switchboard	02 481 91 00
Bermuda	General Support	1-800-342-0671
Bolivia	General Support	toll-free: 800-10-0238
Brazil	Website: www.dell.com/br	
International Access Code: 00	Customer Support, Tech Support	
Country Code: 55		0800 90 3355
City Code: 51	Technical Support Fax	51 481 5470
	Customer Care Fax	51 481 5480
	Sales	0800 90 3390
British Virgin Islands	General Support	toll-free: 1-866-278-6820

Country (City) International Access Code Country Code City Code	Department Name or Service Area, Website and E-Mail Address	Area Codes, Local Numbers, and Toll-Free Numbers
Brunei	Technical Support (Penang, Malaysia)	604 633 4966
Country Code: 673	Customer Care (Penang, Malaysia)	604 633 4888
	Transaction Sales (Penang, Malaysia)	604 633 4955
Canada (North York, Ontario)	Online Order Status: www.dell.ca/ostatus	
International Access Code: 011	AutoTech (automated Hardware and Warranty Support)	toll-free: 1-800-247-9362
	Customer Service (Home Sales/Small Business)	toll-free: 1-800-847-4096
	Customer Service (med./large business, government)	toll-free: 1-800-326-9463
	Customer Service (printers, projectors, televisions, handhelds, digital jukebox, and wireless)	toll-free: 1-800-847-4096
	Hardware Warranty Support (Home Sales/Small Business)	toll-free: 1-800-906-3355
	Hardware Warranty Support (med./large bus., government)	toll-free: 1-800-387-5757
	Hardware Warranty Support (printers, projectors, televisions, handhelds, digital jukebox, and wireless)	1-877-335-5767
	Sales (Home Sales/Small Business)	toll-free: 1-800-387-5752
	Sales (med./large bus., government)	toll-free: 1-800-387-5755
	Spare Parts Sales & Extended Service Sales	1 866 440 3355
Cayman Islands	General Support	1-800-805-7541
Chile (Santiago)	Sales and Customer Support	toll-free: 1230-020-4823
Country Code: 56		
City Code: 2		

Country (City) International Access Code Country Code City Code	Department Name or Service Area, Website and E-Mail Address	Area Codes, Local Numbers, and Toll-Free Numbers
China (Xiamen) Country Code: 86 City Code: 592	Technical Support website: support.dell.com.cn Technical Support E-mail: cn_support@dell.com Customer Care E-mail: customer_cn@dell.com Technical Support Fax Technical Support (Dell™ Dimension™ and Inspiron) Technical Support (OptiPlex™, Latitude™, and Dell Precision™) Technical Support (servers and storage) Technical Support (projectors, PDAs, switches, routers, and so on) Technical Support (printers) Customer Care Customer Care Fax Home and Small Business Preferred Accounts Division Large Corporate Accounts GCP Large Corporate Accounts Key Accounts Large Corporate Accounts North Large Corporate Accounts North Government and Education Large Corporate Accounts East Large Corporate Accounts East Government and Education Large Corporate Accounts Queue Team Large Corporate Accounts South Large Corporate Accounts West Large Corporate Accounts Spare Parts	592 818 1350 toll-free: 800 858 2968 toll-free: 800 858 0950 toll-free: 800 858 0960 toll-free: 800 858 2920 toll-free: 800 858 2311 toll-free: 800 858 2060 592 818 1308 toll-free: 800 858 2222 toll-free: 800 858 2557 toll-free: 800 858 2055 toll-free: 800 858 2628 toll-free: 800 858 2999 toll-free: 800 858 2955 toll-free: 800 858 2020 toll-free: 800 858 2669 toll-free: 800 858 2572 toll-free: 800 858 2355 toll-free: 800 858 2811 toll-free: 800 858 2621
Colombia	General Support	980-9-15-3978
Costa Rica	General Support	0800-012-0435

Country (City) International Access Code Country Code City Code	Department Name or Service Area, Website and E-Mail Address	Area Codes, Local Numbers, and Toll-Free Numbers
Czech Republic (Prague) International Access Code: 00 Country Code: 420	Website: support.euro.dell.com E-mail: czech_dell@dell.com Technical Support Customer Care Fax Technical Fax Switchboard	22537 2727 22537 2707 22537 2714 22537 2728 22537 2711
Denmark (Copenhagen) International Access Code: 00 Country Code: 45	Website: support.euro.dell.com Technical Support for XPS portable computers only Technical Support for all other Dell computers Customer Care (Relational) Home/Small Business Customer Care Switchboard (Relational) Switchboard Fax (Relational) Switchboard (Home/Small Business) Switchboard Fax (Home/Small Business)	7010 0074 7023 0182 7023 0184 3287 5505 3287 1200 3287 1201 3287 5000 3287 5001
Dominica	General Support	toll-free: 1-866-278-6821
Dominican Republic	General Support	1-800-148-0530
Ecuador	General Support	toll-free: 999-119
El Salvador	General Support	01-899-753-0777
Finland (Helsinki) International Access Code: 990 Country Code: 358 City Code: 9	Website: support.euro.dell.com Technical Support Customer Care Fax Switchboard	09 253 313 60 09 253 313 38 09 253 313 99 09 253 313 00

Country (City) International Access Code Country Code City Code	Department Name or Service Area, Website and E-Mail Address	Area Codes, Local Numbers, and Toll-Free Numbers
France (Paris) (Montpellier)	Website: support.euro.dell.com	
International Access Code: 00	Home and Small Business	
Country Code: 33	Technical Support for XPS portable computers only	0825 387 129
City Codes: (1) (4)	Technical Support for all other Dell computers	0825 387 270
	Customer Care	0825 823 833
	Switchboard	0825 004 700
	Switchboard (calls from outside of France)	04 99 75 40 00
	Sales	0825 004 700
	Fax	0825 004 701
	Fax (calls from outside of France)	04 99 75 40 01
	Corporate	
	Technical Support	0825 004 719
	Customer Care	0825 338 339
	Switchboard	01 55 94 71 00
	Sales	01 55 94 71 00
	Fax	01 55 94 71 01
Germany (Langen)	Website: support.euro.dell.com	
International Access Code: 00	E-mail: tech_support_central_europe@dell.com	
Country Code: 49	Technical Support for XPS portable computers only	06103 766-7222
City Code: 6103	Technical Support for all other Dell computers	06103 766-7200
	Home/Small Business Customer Care	0180-5-224400
	Global Segment Customer Care	06103 766-9570
	Preferred Accounts Customer Care	06103 766-9420
	Large Accounts Customer Care	06103 766-9560
	Public Accounts Customer Care	06103 766-9555
	Switchboard	06103 766-7000

Country (City) International Access Code Country Code City Code	Department Name or Service Area, Website and E-Mail Address	Area Codes, Local Numbers, and Toll-Free Numbers
Greece	Website: support.euro.dell.com	
International Access Code: 00	Technical Support	00800-44 14 95 18
Country Code: 30	Gold Service Technical Support	00800-44 14 00 83
	Switchboard	2108129810
	Gold Service Switchboard	2108129811
	Sales	2108129800
	Fax	2108129812
Grenada	General Support	toll-free: 1-866-540-3355
Guatemala	General Support	1-800-999-0136
Guyana	General Support	toll-free: 1-877-270-4609
Hong Kong	Website: support.ap.dell.com	
International Access Code: 001	Technical Support E-mail: HK_support@Dell.com	
Country Code: 852	Technical Support (Dimension and Inspiron)	2969 3188
	Technical Support (OptiPlex, Latitude, and Dell Precision)	2969 3191
	Technical Support (PowerApp™, PowerEdge™, PowerConnect™, and PowerVault™)	2969 3196
	Customer Care	3416 0910
	Large Corporate Accounts	3416 0907
	Global Customer Programs	3416 0908
	Medium Business Division	3416 0912
	Home and Small Business Division	2969 3105
India	E-mail: india_support_desktop@dell.com india_support_notebook@dell.com india_support_Server@dell.com	
	Technical Support	1600338045 and 1600448046
	Sales (Large Corporate Accounts)	1600 33 8044
	Sales (Home and Small Business)	1600 33 8046

Country (City) International Access Code Country Code City Code	Department Name or Service Area, Website and E-Mail Address	Area Codes, Local Numbers, and Toll-Free Numbers
Ireland (Cherrywood)	Website: support.euro.dell.com	
International Access Code: 00	E-mail: dell_direct_support@dell.com	
Country Code: 353	Technical Support for XPS portable computers only	1850 200 722
City Code: 1	Technical Support for all other Dell computers	1850 543 543
	U.K. Technical Support (dial within U.K. only)	0870 908 0800
	Home User Customer Care	01 204 4014
	Small Business Customer Care	01 204 4014
	U.K. Customer Care (dial within U.K. only)	0870 906 0010
	Corporate Customer Care	1850 200 982
	Corporate Customer Care (dial within U.K. only)	0870 907 4499
	Ireland Sales	01 204 4444
	U.K. Sales (dial within U.K. only)	0870 907 4000
	Fax/Sales Fax	01 204 0103
	Switchboard	01 204 4444
Italy (Milan)	Website: support.euro.dell.com	
International Access Code: 00	Home and Small Business	
Country Code: 39	Technical Support	02 577 826 90
City Code: 02	Customer Care	02 696 821 14
	Fax	02 696 821 13
	Switchboard	02 696 821 12
	Corporate	
	Technical Support	02 577 826 90
	Customer Care	02 577 825 55
	Fax	02 575 035 30
	Switchboard	02 577 821
Jamaica	General Support (dial from within Jamaica only)	1-800-682-3639

Country (City) International Access Code Country Code City Code	Department Name or Service Area, Website and E-Mail Address	Area Codes, Local Numbers, and Toll-Free Numbers
Japan (Kawasaki)	Website: support.jp.dell.com	
International Access Code: 001	Technical Support (servers)	toll-free: 0120-198-498
Country Code: 81	Technical Support outside of Japan (servers)	81-44-556-4162
City Code: 44	Technical Support (Dimension and Inspiron)	toll-free: 0120-198-226
	Technical Support outside of Japan (Dimension and Inspiron)	81-44-520-1435
	Technical Support (Dell Precision, OptiPlex, and Latitude)	toll-free:0120-198-433
	Technical Support outside of Japan (Dell Precision, OptiPlex, and Latitude)	81-44-556-3894
	Technical Support (PDAs, projectors, printers, routers)	toll-free: 0120-981-690
	Technical Support outside of Japan (PDAs, projectors, printers, routers)	81-44-556-3468
	Faxbox Service	044-556-3490
	24-Hour Automated Order Service	044-556-3801
	Customer Care	044-556-4240
	Business Sales Division (up to 400 employees)	044-556-1465
	Preferred Accounts Division Sales (over 400 employees)	044-556-3433
	Large Corporate Accounts Sales (over 3500 employees)	044-556-3430
	Public Sales (government agencies, educational institutions, and medical institutions)	044-556-1469
	Global Segment Japan	044-556-3469
	Individual User	044-556-1760
	Switchboard	044-556-4300
Korea (Seoul)	E-mail: krsupport@dell.com	
International Access Code: 001	Support	toll-free: 080-200-3800
Country Code: 82	Support (Dimension, PDA, Electronics and Accessories)	toll-free: 080-200-3801
City Code: 2	Sales	toll-free: 080-200-3600
	Fax	2194-6202
	Switchboard	2194-6000

Country (City) International Access Code Country Code City Code	Department Name or Service Area, Website and E-Mail Address	Area Codes, Local Numbers, and Toll-Free Numbers
Latin America	Customer Technical Support (Austin, Texas, U.S.A.)	512 728-4093
	Customer Service (Austin, Texas, U.S.A.)	512 728-3619
	Fax (Technical Support and Customer Service) (Austin, Texas, U.S.A.)	512 728-3883
	Sales (Austin, Texas, U.S.A.)	512 728-4397
	SalesFax (Austin, Texas, U.S.A.)	512 728-4600 or 512 728-3772
Luxembourg	Website: support.euro.dell.com	
International Access Code: 00	Support	342 08 08 075
Country Code: 352	Home/Small Business Sales	+32 (0)2 713 15 96
	Corporate Sales	26 25 77 81
	Customer Care	+32 (0)2 481 91 19
	Fax	26 25 77 82
Macao	Technical Support	toll-free: 0800 105
Country Code: 853	Customer Service (Xiamen, China)	34 160 910
	Transaction Sales (Xiamen, China)	29 693 115
Malaysia (Penang)	Website: support.ap.dell.com	
International Access Code: 00	Technical Support (Dell Precision, OptiPlex, and Latitude)	toll-free: 1 800 880 193
Country Code: 60	Technical Support (Dimension, Inspiron, and Electronics and Accessories)	toll-free: 1 800 881 306
City Code: 4	Technical Support (PowerApp, PowerEdge, PowerConnect, and PowerVault)	toll-free: 1800 881 386
	Customer Care	toll-free: 1800 881 306 (option 6)
	Transaction Sales	toll-free: 1 800 888 202
	Corporate Sales	toll-free: 1 800 888 213

Country (City) International Access Code Country Code City Code	Department Name or Service Area, Website and E-Mail Address	Area Codes, Local Numbers, and Toll-Free Numbers
Mexico International Access Code: 00 Country Code: 52	Customer Technical Support Sales Customer Service Main	001-877-384-8979 or 001-877-269-3383 50-81-8800 or 01-800-888-3355 001-877-384-8979 or 001-877-269-3383 50-81-8800 or 01-800-888-3355
Montserrat	General Support	toll-free: 1-866-278-6822
Netherlands Antilles	General Support	001-800-882-1519
Netherlands (Amsterdam) International Access Code: 00 Country Code: 31 City Code: 20	Website: support.euro.dell.com Technical Support for XPS portable computers only Technical Support for all other Dell computers Technical Support Fax Home/Small Business Customer Care Relational Customer Care Home/Small Business Sales Relational Sales Home/Small Business Sales Fax Relational Sales Fax Switchboard Switchboard Fax	020 674 45 94 020 674 45 00 020 674 47 66 020 674 42 00 020 674 4325 020 674 55 00 020 674 50 00 020 674 47 75 020 674 47 50 020 674 50 00 020 674 47 50
New Zealand International Access Code: 00 Country Code: 64	Website: support.ap.dell.com E-mail: support.ap.dell.com/contactus General Support	0800 441 567
Nicaragua	General Support	001-800-220-1006

Country (City) International Access Code Country Code City Code	Department Name or Service Area, Website and E-Mail Address	Area Codes, Local Numbers, and Toll-Free Numbers
Norway (Lysaker)	Website: support.euro.dell.com	
International Access Code: 00	Technical Support for XPS portable computers only	815 35 043
Country Code: 47	Technical Support for all other Dell products	671 16882
	Relational Customer Care	671 17575
	Home/Small Business Customer Care	23162298
	Switchboard	671 16800
	Fax Switchboard	671 16865
Panama	General Support	001-800-507-0962
Peru	General Support	0800-50-669
Poland (Warsaw)	Website: support.euro.dell.com	
International Access Code: 011	E-mail: pl_support_tech@dell.com	
Country Code: 48	Customer Service Phone	57 95 700
City Code: 22	Customer Care	57 95 999
	Sales	57 95 999
	Customer Service Fax	57 95 806
	Reception Desk Fax	57 95 998
	Switchboard	57 95 999
Portugal	Website: support.euro.dell.com	
International Access Code: 00	Technical Support	707200149
Country Code: 351	Customer Care	800 300 413
	Sales	800 300 410 or 800 300 411 or 800 300 412 or 21 422 07 10
	Fax	21 424 01 12
Puerto Rico	General Support	1-800-805-7545
St. Kitts and Nevis	General Support	toll-free: 1-877-441-4731
St. Lucia	General Support	1-800-882-1521
St. Vincent and the Grenadines	General Support	toll-free: 1-877-270-4609

Country (City) International Access Code Country Code City Code	Department Name or Service Area, Website and E-Mail Address	Area Codes, Local Numbers, and Toll-Free Numbers
Singapore (Singapore)	Website: support.ap.dell.com	
International Access Code: 005	Technical Support (Dimension, Inspiron, and Electronics and Accessories)	toll-free: 1800 394 7430
Country Code: 65	Technical Support (OptiPlex, Latitude, and Dell Precision)	toll-free: 1800 394 7488
	Technical Support (PowerApp, PowerEdge, PowerConnect, and PowerVault)	toll-free: 1800 394 7478
	Customer Care	toll-free: 1 800 394 7430 (option 6)
	Transaction Sales	toll-free: 1 800 394 7412
	Corporate Sales	toll-free: 1 800 394 7419
Slovakia (Prague)	Website: support.euro.dell.com	
International Access Code: 00	E-mail: czech_dell@dell.com	
Country Code: 421	Technical Support	02 5441 5727
	Customer Care	420 22537 2707
	Fax	02 5441 8328
	Tech Fax	02 5441 8328
	Switchboard (Sales)	02 5441 7585
South Africa (Johannesburg)	Website: support.euro.dell.com	
International Access Code: 09/091	E-mail: dell_za_support@dell.com	
Country Code: 27	Gold Queue	011 709 7713
City Code: 11	Technical Support	011 709 7710
	Customer Care	011 709 7707
	Sales	011 709 7700
	Fax	011 706 0495
	Switchboard	011 709 7700
Southeast Asian and Pacific Countries	Technical Support, Customer Service, and Sales (Penang, Malaysia)	604 633 4810

Country (City) International Access Code Country Code City Code	Department Name or Service Area, Website and E-Mail Address	Area Codes, Local Numbers, and Toll-Free Numbers
Spain (Madrid)	Website: support.euro.dell.com	
International Access Code: 00	Home and Small Business	
Country Code: 34	Technical Support	902 100 130
City Code: 91	Customer Care	902 118 540
	Sales	902 118 541
	Switchboard	902 118 541
	Fax	902 118 539
	Corporate	
	Technical Support	902 100 130
	Customer Care	902 115 236
	Switchboard	91 722 92 00
	Fax	91 722 95 83
Sweden (Upplands Vasby)	Website: support.euro.dell.com	
International Access Code: 00	Technical Support for XPS portable computers only	0771 340 340
Country Code: 46	Technical Support for all other Dell products	08 590 05 199
City Code: 8	Relational Customer Care	08 590 05 642
	Home/Small Business Customer Care	08 587 70 527
	Employee Purchase Program (EPP) Support	20 140 14 44
	Technical Support Fax	08 590 05 594
	Sales	08 590 05 185
Switzerland (Geneva)	Website: support.euro.dell.com	
International Access Code: 00	E-mail: Tech_support_central_Europe@dell.com	
Country Code: 41	Technical Support for XPS portable computers only	0848 33 88 57
City Code: 22	Technical Support (Home and Small Business) for all other Dell products	0844 811 411
	Technical Support (Corporate)	0844 822 844
	Customer Care (Home and Small Business)	0848 802 202
	Customer Care (Corporate)	0848 821 721
	Fax	022 799 01 90
	Switchboard	022 799 01 01

Country (City) International Access Code Country Code City Code	Department Name or Service Area, Website and E-Mail Address	Area Codes, Local Numbers, and Toll-Free Numbers
Taiwan	Website: support.ap.dell.com	
International Access Code: 002	E-mail: ap_support@dell.com	
Country Code: 886	Technical Support (OptiPlex, Latitude, Inspiron, Dimension, and Electronics and Accessories)	toll-free: 00801 86 1011
	Technical Support (PowerApp, PowerEdge, PowerConnect, and PowerVault)	toll-free: 00801 60 1256
	Customer Care	toll-free: 00801 60 1250 (option 5)
	Transaction Sales	toll-free: 00801 65 1228
	Corporate Sales	toll-free: 00801 651 227
Thailand	Website: support.ap.dell.com	
International Access Code: 001	Technical Support (OptiPlex, Latitude, and Dell Precision)	toll-free: 1800 0060 07
Country Code: 66	Technical Support (PowerApp, PowerEdge, PowerConnect, and PowerVault)	toll-free: 1800 0600 09
	Customer Care	toll-free: 1800 006 007 (option 7)
	Corporate Sales	toll-free: 1800 006 009
	Transaction Sales	toll-free: 1800 006 006
Trinidad/Tobago	General Support	1-800-805-8035
Turks and Caicos Islands	General Support	toll-free: 1-866-540-3355

Country (City) International Access Code Country Code City Code	Department Name or Service Area, Website and E-Mail Address	Area Codes, Local Numbers, and Toll-Free Numbers
U.K. (Bracknell) International Access Code: 00 Country Code: 44 City Code: 1344	Website: support.euro.dell.com Customer Care website: support.euro.dell.com/uk/en/ECare/Form/Home.asp E-mail: dell_direct_support@dell.com	
	Technical Support (Corporate/Preferred Accounts/PAD [1000+ employees])	0870 908 0500
	Technical Support for XPS portable computers only	0870 366 4180
	Technical Support (direct and general) for all other products	0870 908 0800
	Global Accounts Customer Care	01344 373 186
	Home and Small Business Customer Care	0870 906 0010
	Corporate Customer Care	01344 373 185
	Preferred Accounts (500–5000 employees) Customer Care	0870 906 0010
	Central Government Customer Care	01344 373 193
	Local Government & Education Customer Care	01344 373 199
	Health Customer Care	01344 373 194
	Home and Small Business Sales	0870 907 4000
	Corporate/Public Sector Sales	01344 860 456
	Home and Small Business Fax	0870 907 4006
Uruguay	General Support	toll-free: 000-413-598-2521

Country (City) International Access Code Country Code City Code	Department Name or Service Area, Website and E-Mail Address	Area Codes, Local Numbers, and Toll-Free Numbers
U.S.A. (Austin, Texas)	Automated Order-Status Service	toll-free: 1-800-433-9014
International Access Code: 011	AutoTech (portable and desktop computers)	toll-free: 1-800-247-9362
Country Code: 1	Hardware and Warranty Support (Dell TV, Printers, and Projectors) for Relationship customers	toll-free 1-877-459-7298
	Consumer (Home and Home Office) Support for all other Dell products	toll-free: 1-800-624-9896
	Customer Service	toll-free: 1-800-624-9897
	Employee Purchase Program (EPP) Customers	toll-free: 1-800-695-8133
	Financial Services website: www.dellfinancialservices.com	
	Financial Services (lease/loans)	toll-free: 1-877-577-3355
	Financial Services (Dell Preferred Accounts [DPA])	toll-free: 1-800-283-2210
	Business	
	Customer Service and Support	toll-free: 1-800-456-3355
	Employee Purchase Program (EPP) Customers	toll-free: 1-800-695-8133
	Support for printers, projectors, PDAs, and MP3 players	toll-free: 1-877-459-7298
	Public (government, education, and healthcare)	
	Customer Service and Support	toll-free: 1-800-456-3355
	Employee Purchase Program (EPP) Customers	toll-free: 1-800-695-8133
	Dell Sales	toll-free: 1-800-289-3355 or toll-free: 1-800-879-3355
	Dell Outlet Store (Dell refurbished computers)	toll-free: 1-888-798-7561
	Software and Peripherals Sales	toll-free: 1-800-671-3355
	Spare Parts Sales	toll-free: 1-800-357-3355
	Extended Service and Warranty Sales	toll-free: 1-800-247-4618
	Fax	toll-free: 1-800-727-8320
	Dell Services for the Deaf, Hard-of-Hearing, or Speech-Impaired	toll-free: 1-877-DELLTY (1-877-335-5889)
U.S. Virgin Islands	General Support	1-877-673-3355
Venezuela	General Support	8001-3605

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.

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

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 CD — A CD 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 or floppy disk available. Your *Drivers and Utilities* or *ResourceCD* is a bootable CD.

bootable disk — A 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 or floppy disk available.

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.

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.

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 — See *APR*.

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 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 video display.

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.

ENERGY STAR® — Environmental Protection Agency requirements that decrease the overall consumption of electricity.

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.

Express Service Code — A numeric code located on a sticker on your Dell™ computer. Use the Express Service Code when contacting Dell for assistance. Express Service Code service may not be available in some countries.

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.

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 — A bay that supports devices such as optical drives, a second battery, or a Dell TravelLite™ module.

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 *media bay*.

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 start-up.

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.

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.

RTCST — real-time clock reset — A jumper on the system board of some computers that can often be used for troubleshooting problems.

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 access Dell Support at support.dell.com or when you call Dell 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.

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.

Strike Zone™ — Reinforced area of the platform base that protects the hard drive by acting as a dampening device when a computer experiences resonating shock or is dropped (whether the computer is on or off).

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.

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.

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

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.

W hr — watt-hour — A unit of measure commonly used to indicate the approximate capacity of a battery. For example, a 66-W hr 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 high-speed 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

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.

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