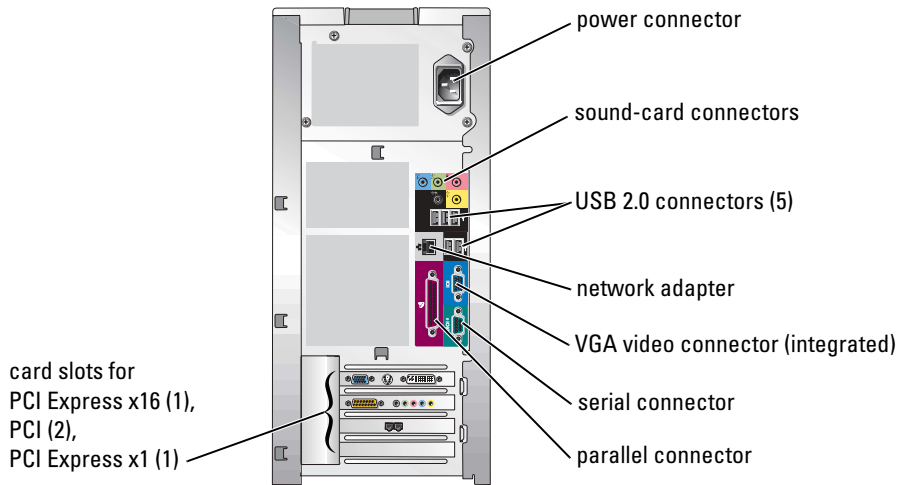
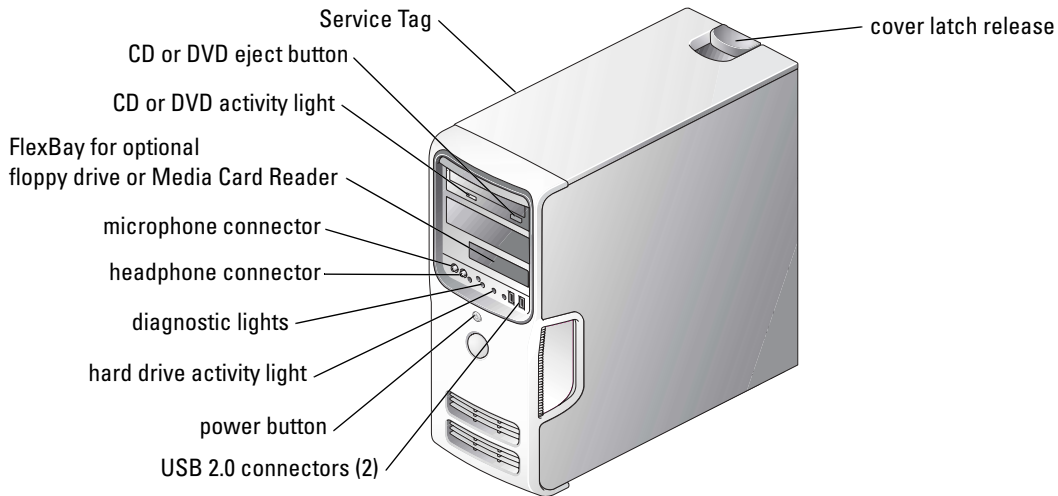


Dell™ Dimension™ 5000



Model DCSM

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.

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 DCSM

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Finding Information

 **NOTE:** Additional documentation may be included with your computer, depending on your country.

What Are You Looking For?	Find it Here
<ul style="list-style-type: none">• Warranty information• Safety instructions• Regulatory information• Ergonomics information• End User License Agreement	<p>Dell™ Product Information Guide</p> 
<ul style="list-style-type: none">• How to set up my computer	<p>Setup Diagram</p> 

What Are You Looking For?

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

Find it Here**Service Tag and Microsoft Windows License**

These labels are located on your computer.

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



- Enter the Express Service Code to direct your call when contacting technical support. The Express Service Code is not available in all countries.

-
- Latest drivers for my computer
 - Answers to technical service and support questions
 - Online discussions with other users and technical support
 - Documentation for my computer

Dell Support Website — support.dell.com


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

The Dell Support website provides several online tools, including:

- Solutions — Troubleshooting hints and tips, articles from technicians, and online courses
 - Community — Online discussion with other Dell customers
 - Upgrades — Upgrade information for components, such as memory, the hard drive, and the operating system
 - Customer Care — Contact information, order status, warranty, and repair information
 - Downloads — Drivers, patches, and software updates
 - Reference — Computer documentation, product specifications, and white papers
-

Setting Up and Using Your 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
- Contact the printer manufacturer for technical assistance

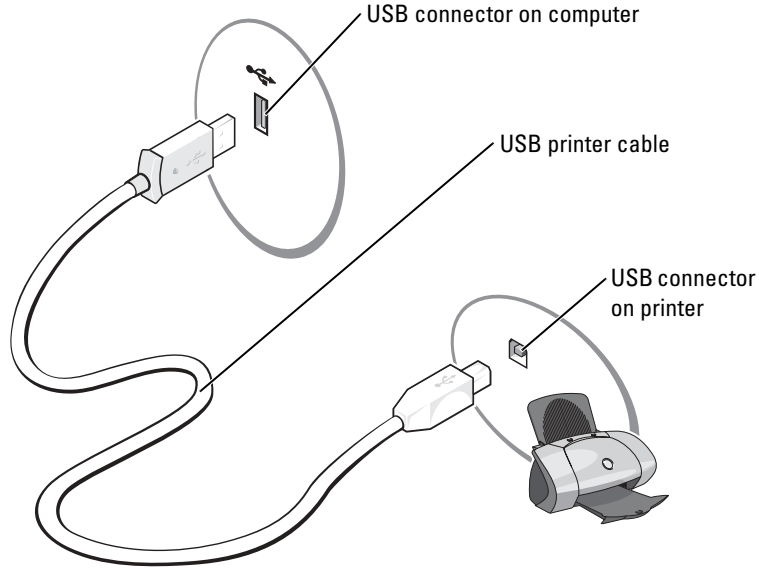
Printer Cable

Your printer connects to your computer with either a USB cable or a parallel 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 Install the printer driver if necessary. See the documentation that came with your printer.
- 3 Attach the USB printer cable to the USB connectors on the computer and the printer. The USB connectors fit only one way.

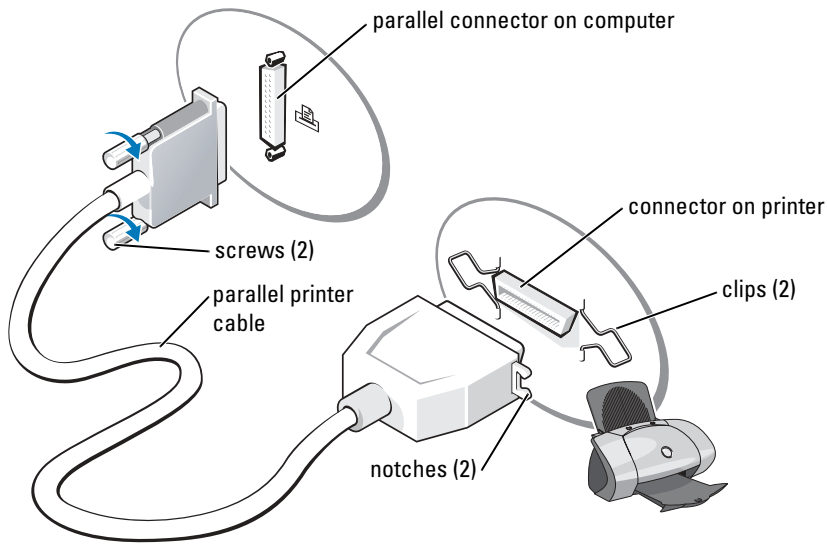


Connecting a Parallel Printer

- 1 Complete the operating system setup, if you have not already done so.
- 2 Turn off the computer (see page 53).


➔ NOTICE: For best results, use a 3-m (10-ft) or shorter parallel cable.

- 3 Attach the parallel printer cable to the parallel connector on the computer and tighten the two screws. Attach the cable to the connector on the printer and snap the two clips into the two notches.



- 4 Turn on the printer and then turn on the computer. If the **Add New Hardware Wizard** window appears, click **Cancel**.
- 5 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 AOL or MSN connection:

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

If you do not have an **MSN Explorer** or **AOL** 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 and 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 29. 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 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 and slide it 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 and 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**, and then click **Medium (16 bit)**.
- 6 Click **OK**.

Copying CDs and DVDs


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

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


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

The following instructions show how to make an exact copy of a CD or DVD. You can also use Sonic RecordNow for other purposes, including creating CDs from audio files on your computer and creating MP3 CDs. For instructions, see the Sonic RecordNow documentation that came with your computer. Open Sonic RecordNow, click the question mark icon in the upper-right corner of the window, and then click **RecordNow Help** or **RecordNow Tutorial**.

How to Copy a CD or DVD

 **NOTE:** If you have a DVD/CD-RW combo drive and you experience recording problems, check for available software patches at the Sonic support website at support.sonic.com.

Currently, five DVD-writable disc formats are available: DVD+R, DVD+RW, DVD-R, DVD-RW, and DVD-RAM. The DVD-writable drives installed in Dell™ computers can write to DVD+R and DVD+RW media, and can read DVD-R and DVD-RW media. However, DVD-writable drives do not write to and might not read DVD-RAM media. In addition, commercially available DVD players for home theater systems might not read all five formats.

 **NOTE:** Most commercial DVDs have copyright protection and cannot be copied using Sonic RecordNow.

- 1 Click the **Start** button, point to **All Programs**→ **Sonic**→ **RecordNow!**, and then click **RecordNow!**
- 2 Click either the audio tab or the data tab, depending on the kind of CD or DVD you want to copy.
- 3 Click **Exact Copy**.

4 To copy the CD or DVD:

- *If you have one CD or DVD drive*, ensure that the settings are correct and click **Copy**. The computer reads your source CD or DVD and copies it to a temporary folder on your computer hard drive.

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

- *If you have two CD or DVD drives*, select the drive into which you have inserted your source CD or DVD and click **Copy**. The computer copies the data on the 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 CD-Rs and CD-RWs

Your CD-RW drive can write to two different types of recording media: CD-Rs and CD-RWs (including high-speed CD-RWs). Use blank CD-Rs to record music or permanently store data files. After creating a CD-R, you cannot write to that CD-R again (see the Sonic documentation for more information). Use blank CD-RWs to write to CDs or to erase, rewrite, or update data on CDs.

Your DVD-writable drive can write to four different types of recording media: CD-Rs, CD-RWs (including high-speed CD-RWs), DVD+Rs, and DVD+RWs. Blank DVD+Rs can be used to permanently store large amounts of information. 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 that disc later.

Helpful Tips

- Use Microsoft® Windows® Explorer to drag and drop files to a CD-R or CD-RW only after you start Sonic RecordNow and open a RecordNow project.
- You must use CD-Rs to burn music CDs that you want to play in regular stereos. CD-RWs do not play in most home or car stereos.
- You cannot create audio DVDs with Sonic RecordNow.
- Music MP3 files can be played only on MP3 players or on computers that have MP3 software installed.
- 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 650-MB blank CD. The CD-RW drive needs 1 or 2 MB of the blank CD 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 support website at support.sonic.com for additional information.

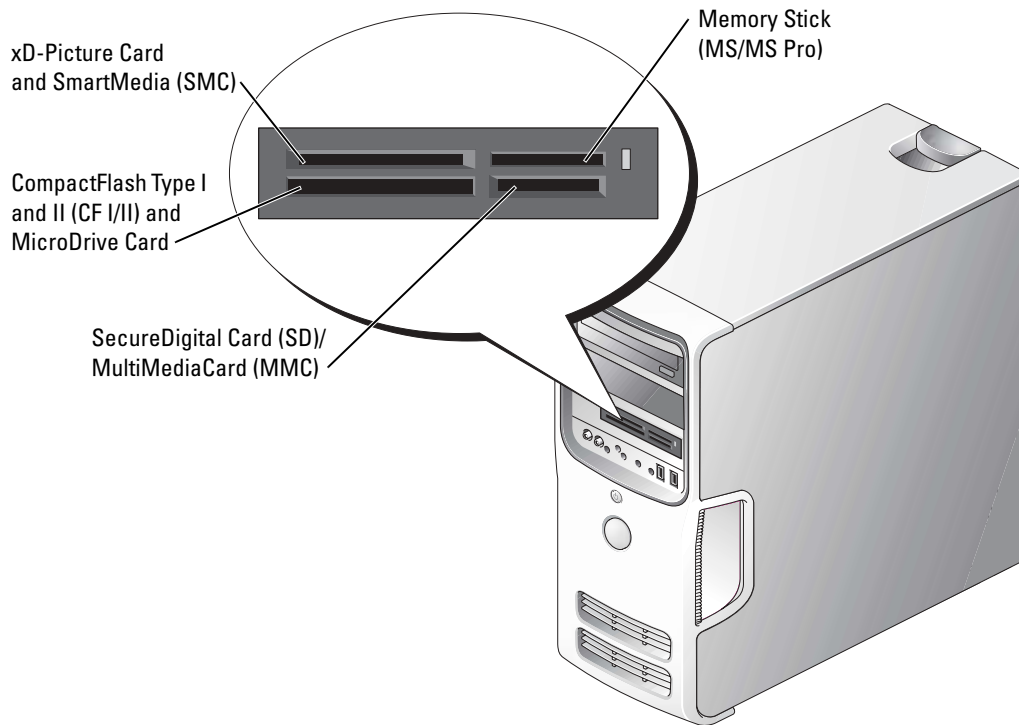
Using a Media Card Reader (Optional)

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 on installing a Media Card Reader, see "Installing a Media Card Reader" on page 92.



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.

Connecting Two Monitors




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

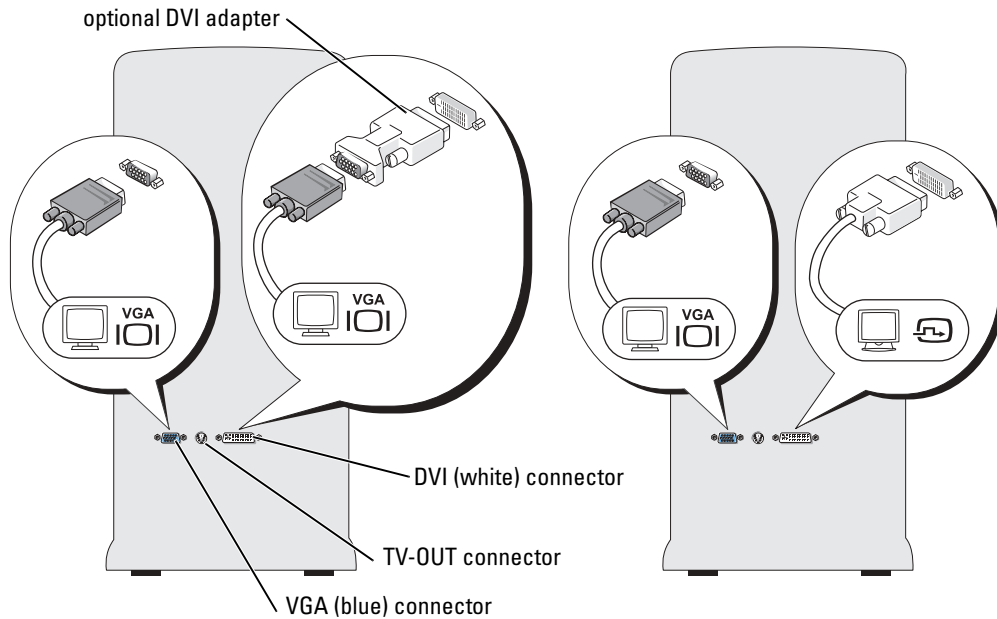


NOTICE: If you are connecting two monitors that have VGA connectors, you must have the optional DVI adapter. If you are connecting two flat-panel monitors, at least one of them must have a VGA connector. If you are connecting a TV, you may connect only one monitor (VGA or DVI) in addition to the TV.

If you purchased a graphics card that supports dual monitors, follow these instructions to connect and enable your monitors. The instructions tell you how to connect either two monitors (each with a VGA connector), one monitor with a VGA connector and one monitor with a DVI connector, or a TV.

Connecting Two Monitors With VGA Connectors

- 1 Follow the procedures in "Before You Begin" on page 53.
-  **NOTE:** If your computer has integrated video, do not connect either monitor to the integrated video connector. If the integrated video connector is covered by a cap, do not remove the cap to connect the monitor or the monitor will not function.
- 2 Connect one of the monitors to the VGA (blue) connector on the back of the computer.
- 3 Connect the other monitor to the optional DVI adapter and connect the DVI adapter to the DVI (white) connector on the back of the computer.



Connecting One Monitor With a VGA Connector and One Monitor With a DVI Connector

- 1 Follow the procedures in "Before You Begin" on page 53.
- 2 Connect the VGA connector on the monitor to the VGA (blue) connector on the back of the computer.
- 3 Connect the DVI connector on the other monitor to the DVI (white) connector on the back of the computer.

Connecting a TV

NOTE: To connect a TV to your computer, you must purchase an S-video cable, which is available at most consumer electronics stores. An S-video cable is not included with your computer.

- 1 Follow the procedures in "Before You Begin" on page 53.
- 2 Connect one end of the S-video cable to the TV-OUT connector on the back of the computer.
- 3 Connect the other end of the S-video cable to the S-video input connector on your TV.
- 4 Connect the VGA or DVI monitor.

Changing the Display Settings

- 1 After you connect the monitor(s) or TV, turn on the computer.
The Microsoft® Windows® desktop displays on the primary monitor.
- 2 Enable clone mode or extended desktop mode in the display settings.
 - In clone mode, both monitors display the same image.
 - In extended desktop mode, you can drag objects from one screen to the other, effectively doubling the amount of viewable work space.

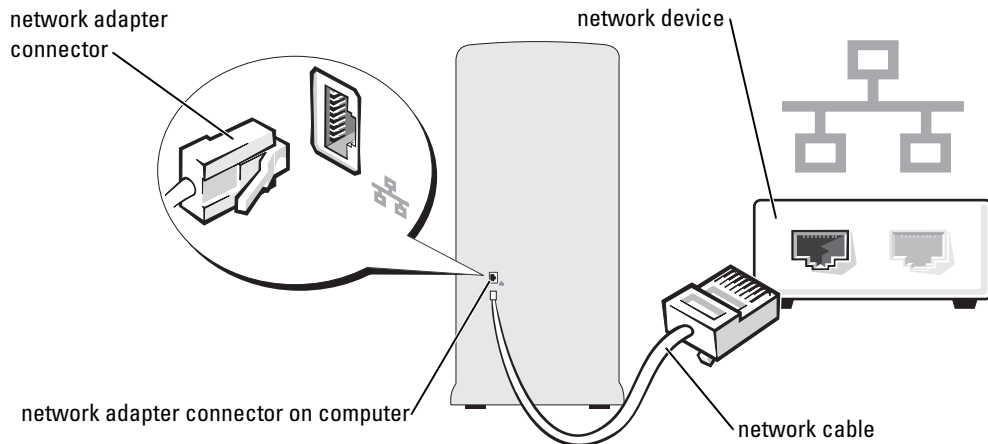
For information on changing the display settings for your graphics card, see the user's guide in the Help and Support Center (click the **Start** button, click **Help and Support**, click **User and system guides**, click **Device guides**, and then click the guide for your graphics card).

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. 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 Service Pack 1 (SP1).

- 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 and click **Control Panel**.
- 2 Under **Pick a category**, click **Performance and Maintenance**.
- 3 Under or pick a **Control Panel** icon, click **Power Options**.

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 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 Define your hibernate settings on the **Power Schemes** tab, **Advanced** tab, and **Hibernate** tab.

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 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 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 mode or hibernate mode, turning off the monitor, and turning off the 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.

- **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 stand by**, 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 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 and 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**.

Hyper-Threading

Hyper-Threading is an Intel[®] technology that can enhance overall computer performance by allowing one physical processor to function as two logical processors, capable of performing certain tasks simultaneously. It is recommended that you use the Microsoft[®] Windows[®] XP Service Pack 1 (SP1) or later operating system because Windows XP is optimized to take advantage of Hyper-Threading technology. While many programs can benefit from Hyper-Threading, some programs have not been optimized for Hyper-Threading and may require an update from the software manufacturer. Contact the software manufacturer for updates and information about using Hyper-Threading with your software.

To determine if your computer is using Hyper-Threading technology:

- 1 Click the **Start** button, right-click **My Computer**, and then click **Properties**.
- 2 Click **Hardware** and click **Device Manager**.
- 3 In the **Device Manager** window, click the plus (+) sign next to **Processors**. If Hyper-Threading is enabled, the processor is listed twice.

You can enable or disable Hyper-Threading through system setup. For more information on accessing system setup, see page 105. For more information on Hyper-Threading, search the Knowledge Base on the Dell Support website at support.dell.com.

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 technical support personnel diagnose and fix the problem(s).
- 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 page 98). If the battery still does not work properly, contact Dell (see page 118).

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 and 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 page 114.

CHECK THE CABLE CONNECTIONS

RUN THE HARDWARE TROUBLESHOOTER — See page 49.

RUN THE DELL DIAGNOSTICS — See page 46.

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 39.

Problems writing to a CD/DVD-RW drive

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

TURN OFF STANDBY MODE IN WINDOWS BEFORE WRITING TO A CD/DVD-RW DISC — Search for the keyword *standby* in Windows Help.

Hard drive problems

RUN CHECK DISK —

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

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, then 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 and click **Control Panel**.
 - 2 Click **Printers and Other Hardware**.
 - 3 Click **Phone and Modem Options**.
 - 4 Click the **Modems** tab.
 - 5 Click the COM port for your modem.
 - 6 Click **Properties**, click the **Diagnostics** tab, and then click **Query Modem** to verify that the modem is communicating with Windows.
- If all commands receive responses, the modem is operating properly.

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

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 page 118).

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 and 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: The Media Card Reader appears as a mapped drive only when it is connected. Each of the four Media Card Reader slots are mapped to a drive even if no media is installed. If you attempt to access the Media Card Reader when no media is inserted, 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.

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 page 53), reconnect the keyboard cable as shown on the setup diagram for your computer, and then restart the computer.
- Check the cable connector for bent or broken pins and for damaged or frayed cables. Straighten 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, and try using the keyboard.

RUN THE HARDWARE TROUBLESHOOTER — See page 49.

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 page 43.

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

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 page 63).
- Reseat the memory modules (see page 63) to ensure that your computer is successfully communicating with the memory.
- Run the Dell Diagnostics (see page 46).

IF YOU EXPERIENCE OTHER MEMORY PROBLEMS —

- Reseat the memory modules (see page 63) to ensure that your computer is successfully communicating with the memory.
- Ensure that you are following the memory installation guidelines (see page 63).
- Your computer supports DDR2 memory. For more information about the type of memory supported by your computer, see "Memory" on page 101.
- Run the Dell Diagnostics (see page 46).

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 — See "Mouse" for instructions on cleaning the mouse on page 115.

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 on 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 page 48.

RUN THE HARDWARE TROUBLESHOOTER — See page 49.

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 jack.

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 "Controls and Lights" on page 104.

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 page 49.

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 "Diagnostic Lights" on page 43.

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 page 61).

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

- Remove and then reinstall the memory modules (see page 63).
- Remove and then reinstall any cards (see page 65).
- Remove and then reinstall the graphics card, if applicable (see page 70).

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 page 61).

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 page 11).

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

VERIFY THAT THE PRINTER IS RECOGNIZED BY WINDOWS —

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

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

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 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 page 49.

RUN THE HARDWARE TROUBLESHOOTER — See page 49.

No sound from headphones

CHECK THE HEADPHONE CABLE CONNECTION — Ensure that the headphone cable is securely inserted into the headphone connector (see page 56).

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.

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.

If 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 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 page 43.

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




Troubleshooting Tools





Diagnostic Lights







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

To help you troubleshoot a problem, your computer has four lights labeled "A," "B," "C," and "D" on the front panel (see page 55). The lights can be yellow or green. When the computer starts normally, all four lights flash solid green. After the computer starts and the user accesses the operating system, all four lights go off. If the computer malfunctions, the color and sequence of the lights identify the problem.

Light Pattern	Problem Description	Suggested Resolution
	The computer is starting normally.	None.
	<ul style="list-style-type: none"> The computer is in a normal on condition and the operating system is running. The computer is in a normal off condition. 	<ul style="list-style-type: none"> None. If the computer is off, plug it into a working electrical outlet and press the power button.
	A possible processor failure has occurred.	Contact Dell (see page 118).

Light Pattern	Problem Description	Suggested Resolution
	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 page 63), 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 page 63). • If the problem persists, contact Dell (see page 118).
	A possible graphics card failure has occurred.	<ul style="list-style-type: none"> • If the computer has a graphics card, remove the card, reinstall it (see page 70), and then restart the computer. • If the problem still exists, install a graphics card that you know works and restart the computer. • If the problem persists or the computer has integrated graphics, contact Dell (see page 118).
	A possible floppy or hard drive failure has occurred.	<p>Reseat all power and data cables and restart the computer.</p> <ul style="list-style-type: none"> • If the problem persists, contact Dell (see page 118).
	A possible USB failure has occurred.	<p>Reinstall all USB devices, check cable connections, and then restart the computer.</p> <ul style="list-style-type: none"> • If the problem persists, contact Dell (see page 118).

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 page 63), 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 page 63). • If the problem persists, contact Dell (see page 118).
	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 page 63). • Verify that the memory modules that you are installing are compatible with your computer (see page 63). • If the problem persists, contact Dell (see page 118).
	A possible expansion card failure has occurred.	<ol style="list-style-type: none"> 1 Determine if a conflict exists by removing a card (not a graphics card) (see page 70) and restarting the computer. 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 49). 4 If the problem persists, contact Dell (see page 118).

Light Pattern	Problem Description	Suggested Resolution
	Another failure has occurred.	<ul style="list-style-type: none"> • Ensure that the cables are properly connected to the system board from the hard drive, CD drive, and DVD drive (see page 93). • If there is an error message on your screen identifying a problem with a device (such as the floppy drive or hard drive), check the device to make sure it is functioning properly. • The operating system is attempting to boot from a device (such as the floppy drive or hard drive); check system setup (see page 105) to make sure the boot sequence is correct for the devices installed on your computer. • If the problem persists, contact Dell (see page 118).

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 27 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 page 53) and try again.
- 3 When the boot device list appears, highlight **Boot to Utility Partition** and press <Enter>.
- 4 When the Dell Diagnostics **Main Menu** appears, select the test you want to run.

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.

- 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 page 118).



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.

- 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.
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.

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 and 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 and 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 and 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 right-click **My Computer**.
- 2 Click **Properties**.
- 3 Click the **Hardware** tab and 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 and click **Update Driver**.
- 7 Click **Install from a list or specific location (Advanced)** and 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 and click **Help and Support**.
- 2 Type `hardware troubleshooter` in the **Search** field and 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 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 and 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 page 49) 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 and 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 and 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** and 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 and 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.

During the boot process, a blue bar with **www.dell.com** appears at the top of the screen.

- 2 Immediately upon seeing the blue bar, 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 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" (see page 53) and "Before Working Inside Your Computer" (see page 54).
- You have read the safety information in your Dell™ *Product Information Guide*.
- 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 update program floppy disk or CD

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 on the locking tabs before you disconnect the cable. As you pull connectors apart, keep them evenly aligned to avoid bending any connector pins. Also, before you connect a cable, ensure that both connectors are correctly oriented and aligned.


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

1 Turn off your computer (see page 53).


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

2 Disconnect any telephone or telecommunication lines from the computer.

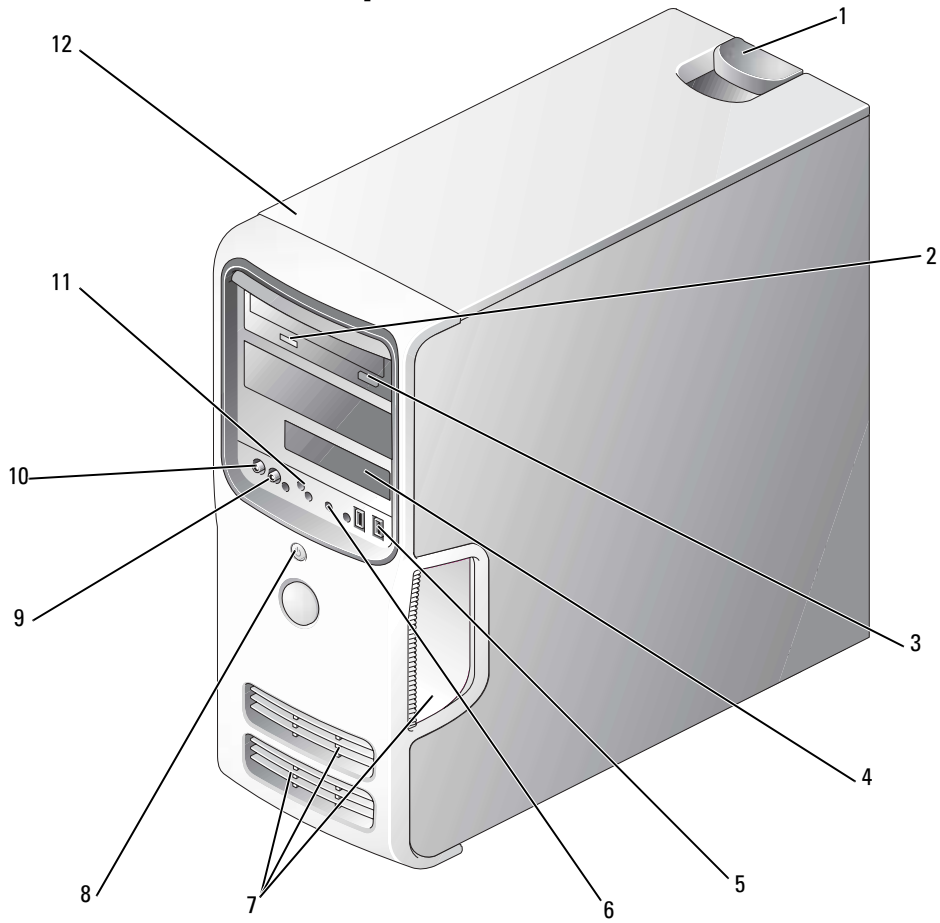
3 Disconnect your computer and all attached devices from their electrical outlets, and then press the power button to ground the system board.




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

4 Remove the computer cover (see page 59).

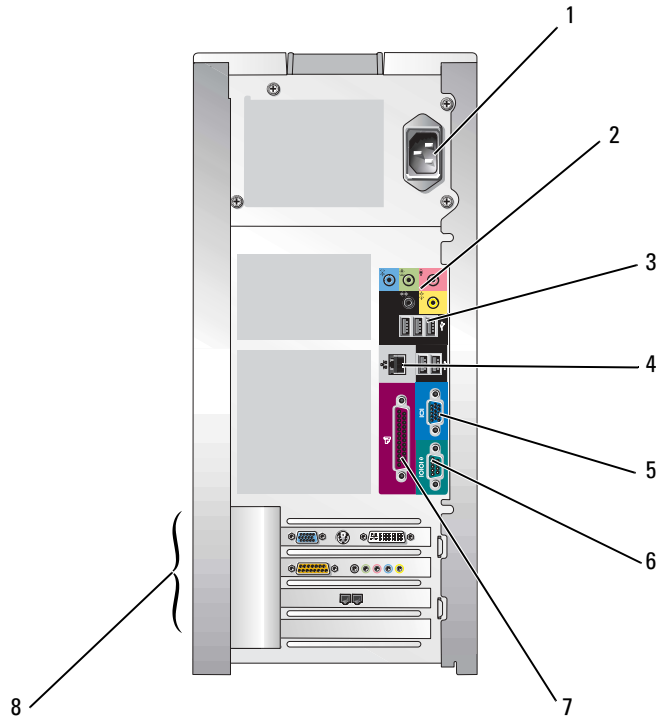
 **NOTICE:** Before touching anything inside your computer, ground yourself by touching an unpainted metal surface, such as the metal at the back of the computer. While you work, periodically touch an unpainted metal surface to dissipate any static electricity that could harm internal components.

Front View of the Computer



1	cover latch release	Use this latch to remove the cover. See "Removing the Computer Cover" on page 59.
2	CD or DVD activity light	The drive light is on when the computer reads data from the CD or DVD drive.
3	CD or DVD eject button	Press to eject a disk from the CD or DVD drive.
4	FlexBay drive	Can contain an optional floppy drive or optional Media Card Reader. For information on using the Media Card Reader, see "Media Card Reader" on page 89.
5	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 108 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.
6	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.
7	vents	<p>For adequate cooling, do not block any of the vents.</p> <p> NOTICE: Ensure that there is a minimum of two inches of space between all vents and any object near these vents.</p> <p> 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.</p>
8	power button	<p>Press to turn on the computer.</p> <p> NOTICE: To avoid losing data, do not use the power button to turn off the computer. Instead, perform an operating system shutdown.</p>
9	headphone connector	Use the headphone connector to attach headphones and most kinds of speakers.
10	microphone connector	<p>Use the microphone connector to attach a personal computer microphone for voice or musical input into a sound or telephony program.</p> <p>On computers with a sound card, the microphone connector is on the card.</p>
11	diagnostic lights (4)	Use the lights to help you troubleshoot a computer problem based on the diagnostic code. For more information, see "Diagnostic Lights" on page 43.
12	Service Tag	Used to identify your computer when you access the Dell Support website or call technical support.

Back View of the Computer



1	power connector	Insert the power cable.
2	sound card connectors (5)	<ul style="list-style-type: none"> • Line-in connector — Use the blue line-in connector to attach a record/playback device such as a cassette player, CD player, or VCR. • Line-out connector — Use the green line-out connector to attach headphones and most speakers with integrated amplifiers. • Microphone connector — Use the pink microphone connector to attach a personal computer microphone for voice or musical input into a sound or telephony program. • Surround connector — Use the black surround connector to attach multichannel-capable speakers. • Center/subwoofer connector — Use the yellow subwoofer connector to attach multiple speakers.
3	USB 2.0 connectors (5)	<p>Use the back USB connectors for devices that typically remain connected, such as printers and keyboards.</p> <p>It is recommended that you use the front USB connectors for devices that you connect occasionally, such as joysticks or cameras, or for bootable USB devices.</p>
4	network adapter connector	<p>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. 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>NOTE: Do not plug a telephone cable into the network connector.</p> <p>On computers with a network connector card, use the connector on the card.</p> <p>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>
5	VGA video connector	If your monitor has a VGA connector, plug it into the VGA connector on the computer.
6	serial connector	Connect a serial device, such as a handheld device, to the serial port.
7	parallel connector	Connect a parallel device, such as a printer, to the parallel connector. If you have a USB printer, plug it into a USB connector.
8	card slots (4)	Access connectors for any installed PCI cards (two slots) and PCI Express cards (one x16 slot and one x1 slot).

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 53.



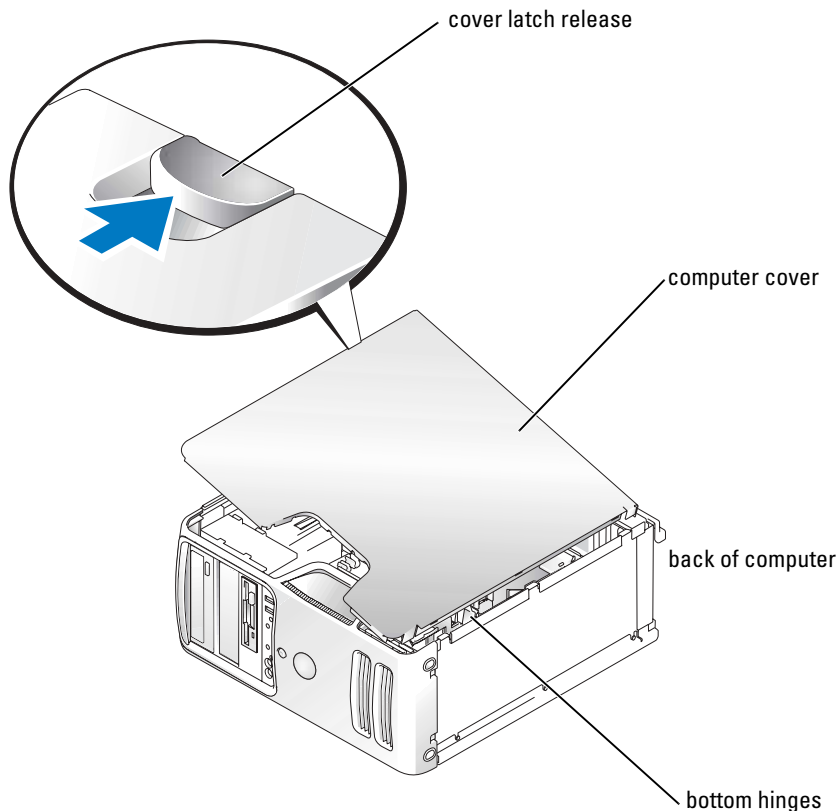
NOTICE: Ensure that sufficient space exists to support the removed cover—at least 30 cm (1 ft) of desk top space.



NOTICE: Ensure that you are working on a level, protected surface to avoid scratching either the computer or the surface on which it is resting.

2 Lay your computer on its side with the computer cover facing up.

3 Pull back the cover release latch located on the top panel.

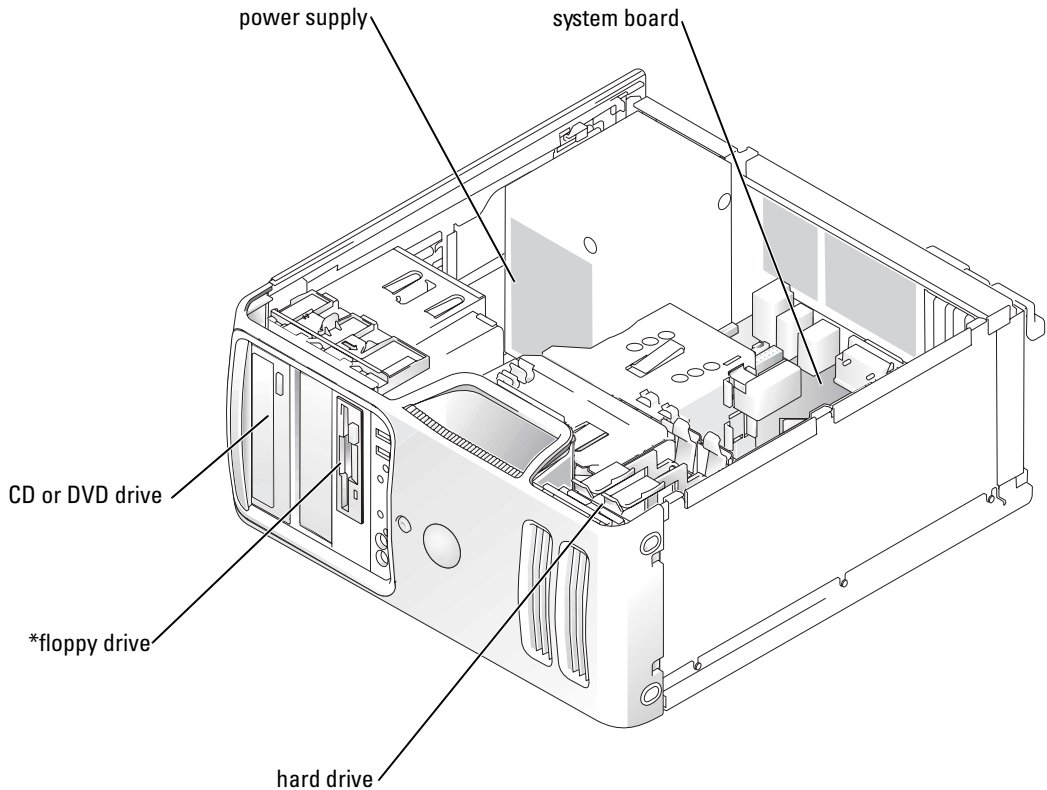


- 4 Locate the three hinge tabs on the bottom edge of the computer.
- 5 Grip the sides of the computer cover and pivot the cover up, using the bottom hinges as leverage points.
- 6 Release the cover from the hinge tabs and set it aside in a secure location.

Inside View of Your Computer

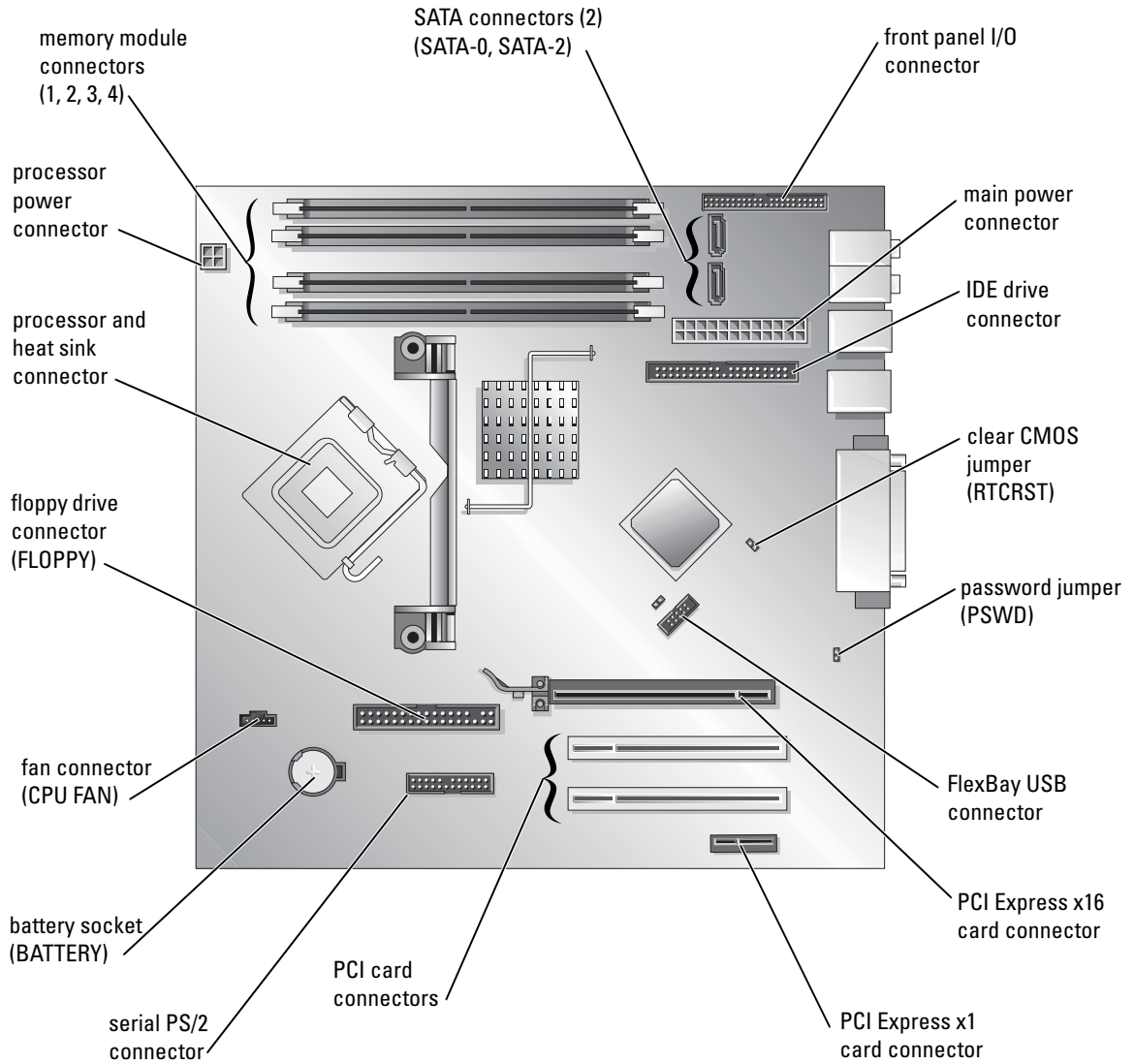
 **CAUTION:** Before you begin any of the procedures in this section, follow the safety instructions located in the *Product Information Guide*.

Follow the procedures in "Before You Begin" on page 53.



*May not be present on all computers.

System Board Components



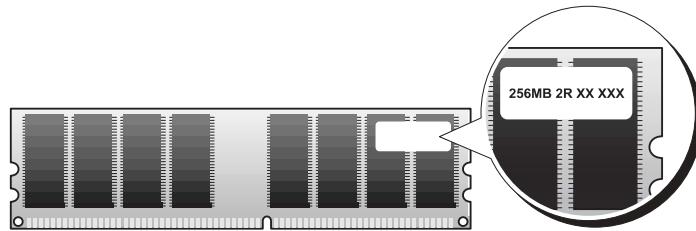
Memory

You can increase your computer memory by installing memory modules on the system board.

Your computer supports DDR2 memory. For additional information on the type of memory supported by your computer, see "Memory" on page 101.

DDR2 Memory Overview

DDR2 memory modules 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.



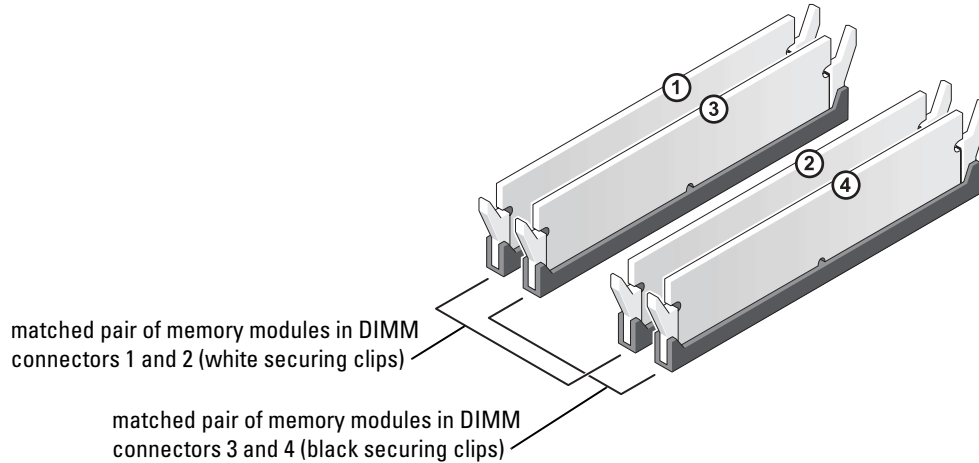
NOTE: Always install DDR2 memory modules in the order indicated on the system board.


The recommended memory configurations are:


- A pair of matched memory modules installed in DIMM connectors 1 and 2
- or
- A pair of matched memory modules installed in DIMM connectors 1 and 2 and another matched pair installed in DIMM connectors 3 and 4

NOTICE: Do not install ECC memory modules.

- If you install mixed pairs of DDR2 400-MHz (PC2-3200) and DDR2 533-MHz (PC2-4300) memory, the modules function at the slowest speed installed.
- Be sure to install a single memory module in DIMM connector 1, the connector closest to the processor, before you install modules in the other connectors.




 **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. You should install your original memory modules in pairs either in DIMM connectors 1 and 2 or DIMM connectors 3 and 4.

Addressing Memory With 4-GB Configurations

Your computer supports a maximum of 4 GB of memory when you use four 1-GB DIMMs. Current operating systems, such as Microsoft® Windows® XP, can only use a maximum of 4 GB of address space; however, the amount of memory available to the operating system is less than 4 GB. Certain components within the computer require address space in the 4-GB range. Any address space reserved for these components cannot be used by computer memory.

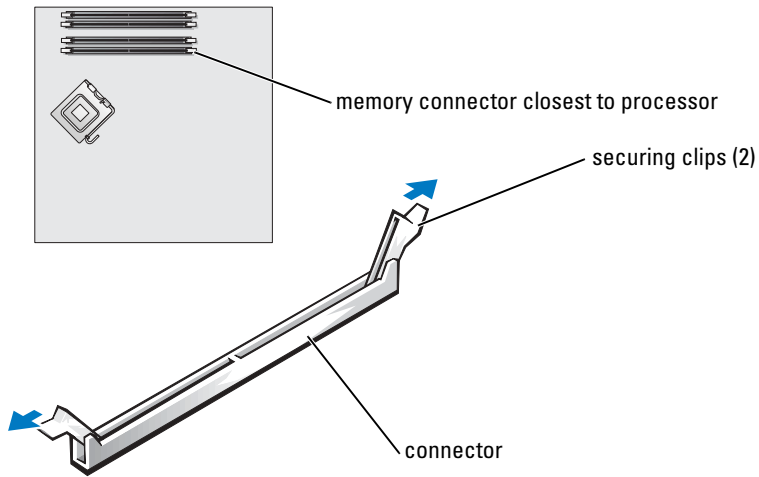
Installing Memory

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

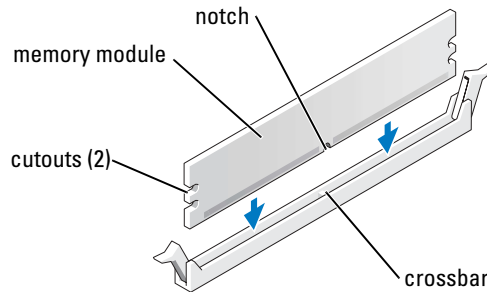
 **NOTICE:** To prevent static damage to components inside your computer, discharge static electricity from your body before you touch any of your computer's electronic components. You can do so by touching an unpainted metal surface on the computer chassis.

- 1 Follow the procedures in "Before You Begin" on page 53.
- 2 Lay the computer on its side so that the system board is on the bottom of the inside of the computer.

- 3 Press out the securing clip at each end of the memory module connector.



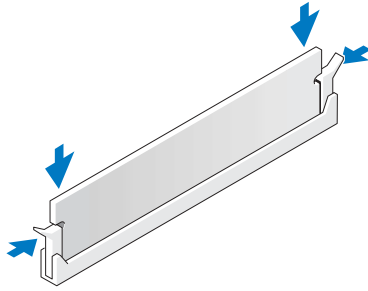
- 4 Align the notch on the bottom of the module with the crossbar in the connector.



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.

- 5 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.



- 6 Replace the computer cover.
- ➡ **NOTICE:** To connect a network cable, first plug the cable into the network device and then plug it into the computer.
- 7 Connect your computer and devices to electrical outlets, and turn them on.
- 8 Right-click the **My Computer** icon and click **Properties**.
- 9 Click the **General** tab.
- 10 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 53.
 - 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.

Cards

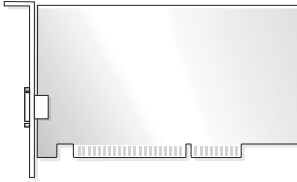
- ⚠ **CAUTION:** Before you begin any of the procedures in this section, follow the safety instructions located in the *Product Information Guide*.
- ➡ **NOTICE:** To prevent static damage to components inside your computer, discharge static electricity from your body before you touch any of your computer's 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:

- Two PCI card slots
- One PCI Express x16 card slot
- One PCI Express x1 card slot

PCI Cards

Your computer supports two PCI cards.



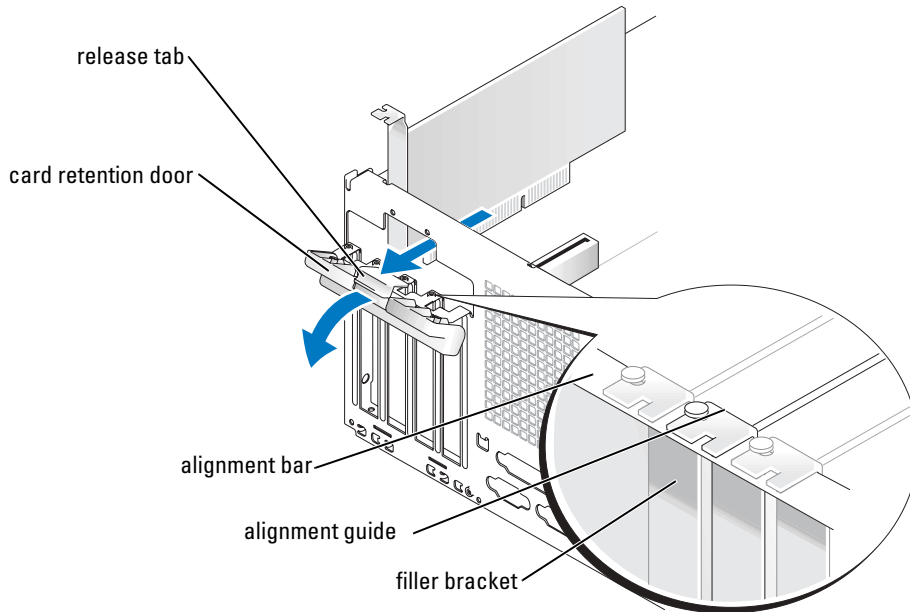
If you are installing or replacing a card, follow the procedures in the next section. If you are removing but not replacing a PCI card, see "Removing a PCI Card" on page 69.

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

If you are installing or replacing a PCI Express card, see "Installing a PCI Express Card" on page 70.

Installing a PCI Card

- 1 Follow the procedures in "Before You Begin" on page 53.

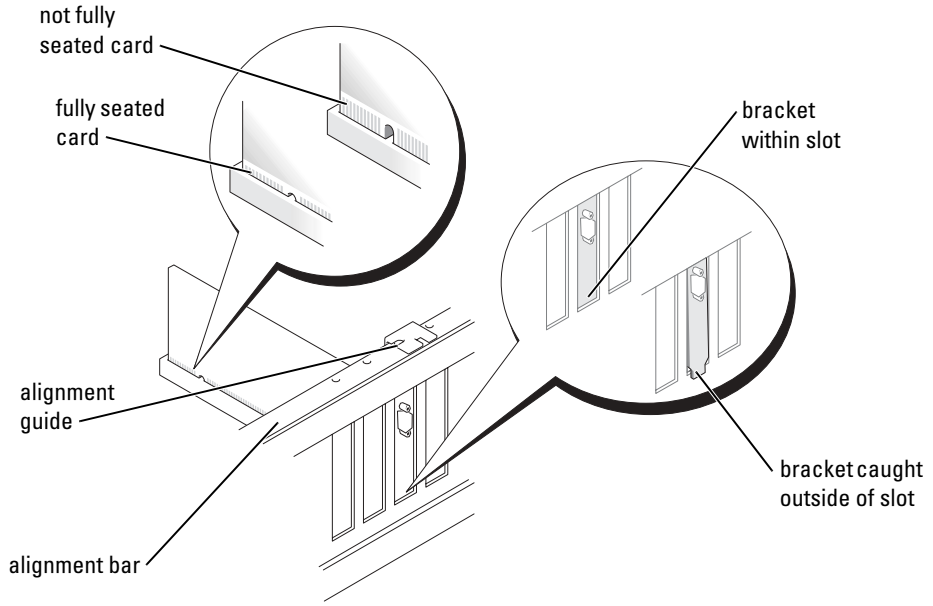


- 2 Gently push the release tab on the card retention door from the inside to pivot the door open. Because the door is captive, it will remain in the open position.
- 3 If you are installing a new card, remove the filler bracket to create a card-slot opening. Then continue with step 5.
- 4 If you are 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.

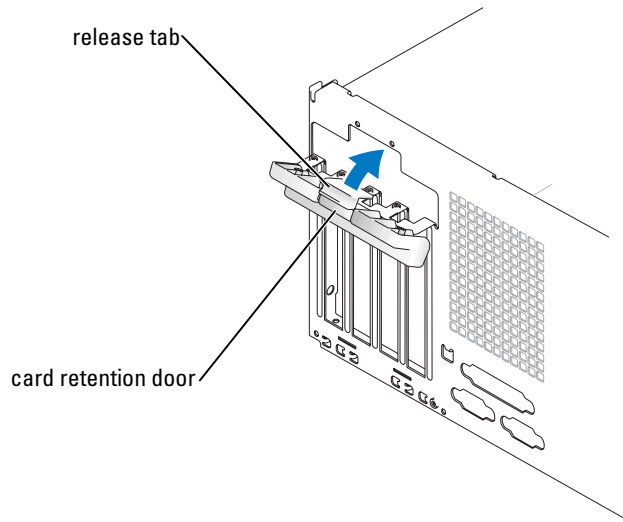




CAUTION: Some network adapters automatically start the computer when they are connected to a network. To guard against electrical shock, be sure to unplug your computer from its electrical outlet before installing any cards.

- 6 Place the card in the connector and press down firmly. Ensure that the card is fully seated in the slot.





- 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 card(s).
-  **NOTICE:** Do not route card cables over or behind 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 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 (see page 105), select **Audio Controller**, and then change the setting to **Off**.
 - b Connect external audio devices to the sound card's connectors. Do not connect external audio devices to the microphone, speaker/headphone, or line-in connectors on the back panel.
- 12 If you installed an add-in network adapter and want to disable the integrated network adapter:
 - a Enter system setup (see page 105), select **Network Controller**, and then change the setting to **Off**.
 - b Connect the network cable to the add-in network adapter's connectors. Do not connect the network cable to the integrated connector on the back panel.
- 13 Install any drivers required for the card as described in the card documentation.

Removing a PCI Card

- 1 Follow the procedures in "Before You Begin" on page 53.
- 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 you are removing the card permanently, install a filler bracket in the empty card-slot opening.
If you need a filler bracket, contact Dell (see page 118).
-  **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.
- 4 Close the card retention door by snapping it into place to secure the card(s).
-  **NOTICE:** To connect a network cable, first plug the cable into the network device and then plug it into the computer.
- 5 Replace the computer cover, reconnect the computer and devices to electrical outlets, and then turn them on.

- 6 Remove the card's driver from the operating system.
- 7 If you removed a sound card:
 - a Enter system setup (see page 105), select **Audio Controller**, and then change the setting to **On**.
 - b Connect external audio devices to the audio connectors on the back panel of the computer.
- 8 If you removed an add-in network connector:
 - a Enter system setup (see page 105), select **Network Controller**, and then change the setting to **On**.
 - b Connect the network cable to the integrated connector on the back panel of the computer.

PCI Express Cards

Your computer supports one PCI Express x16 card and one PCI Express x1 card.

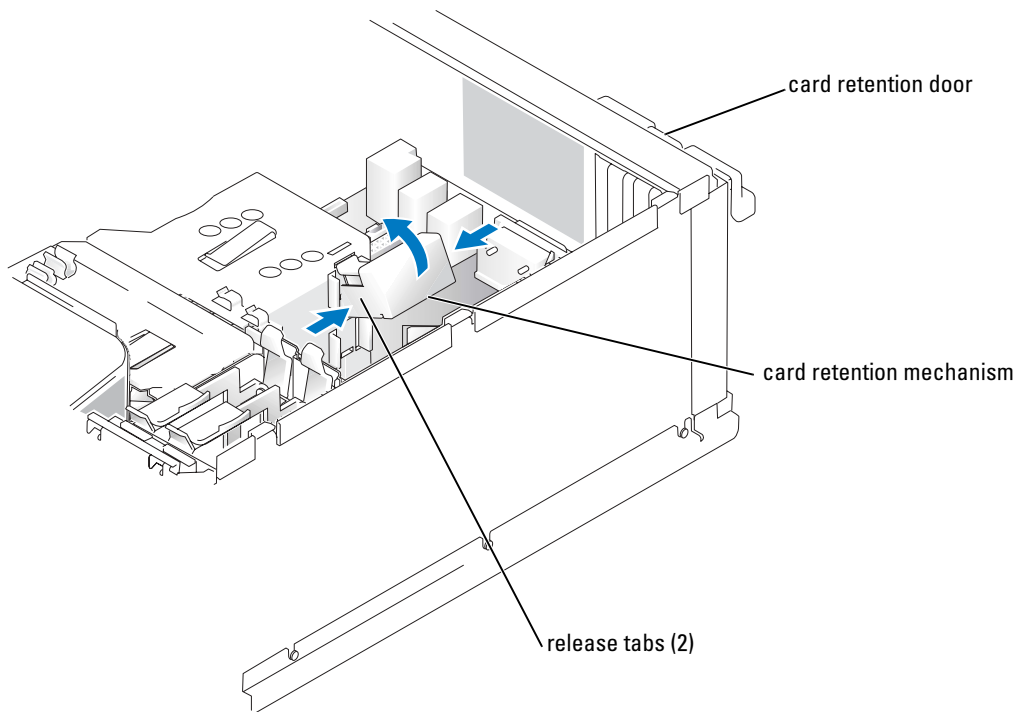
If you are installing or replacing a PCI Express card, follow the procedures in the next section. If you are removing but not replacing a card, see "Removing a PCI Express Card" on page 75.

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

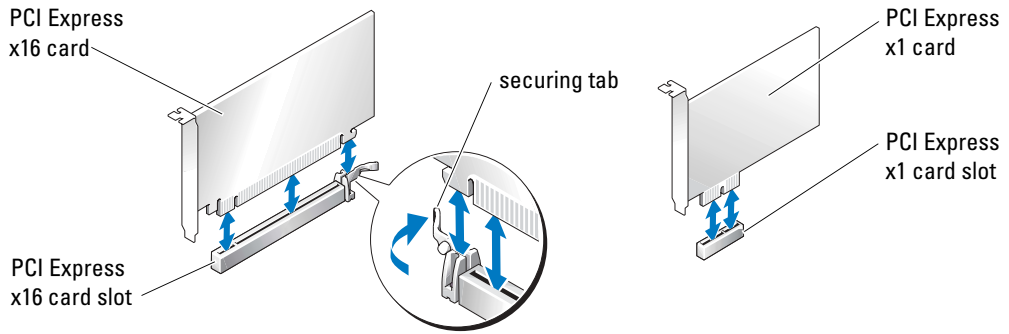
If you are installing or replacing a PCI card, see "Installing a PCI Card" on page 66.

Installing a PCI Express Card

- 1 Follow the procedures in "Before You Begin" on page 53.



- 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. (See page 66 for an illustration of the card retention door.)
- 3** If your computer includes a card retention mechanism, to secure the x16 card in place from the top:
 - a** Pivot the mechanism upward and gently squeeze in on the sides to release the mechanism from the two tab slots holding it in place.
 - b** Set the retention mechanism aside in a secure location.
- 4** If you are installing a new card, remove the filler bracket to create a card-slot opening. Then continue with step 5.
- 5** 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. If your card includes a retention mechanism, remove the top of the retention mechanism by pressing the tab and pulling up on the top. Gently pull the securing tab, grasp the card by its top corners, and then ease it out of its connector.



6 Prepare the card for installation.

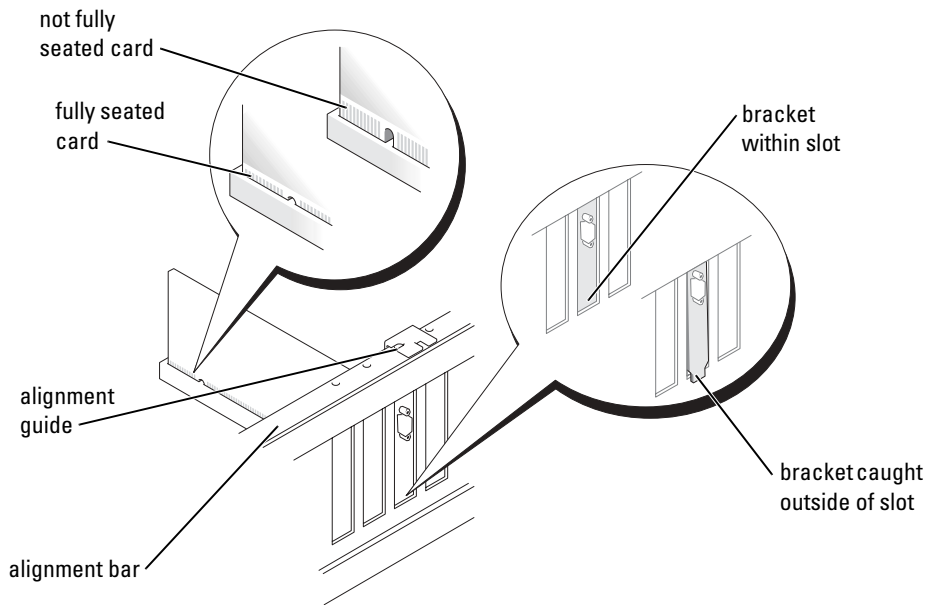
See the documentation that came with the card for information on configuring the card, making internal connections, or otherwise customizing it for your computer.

⚠ 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.

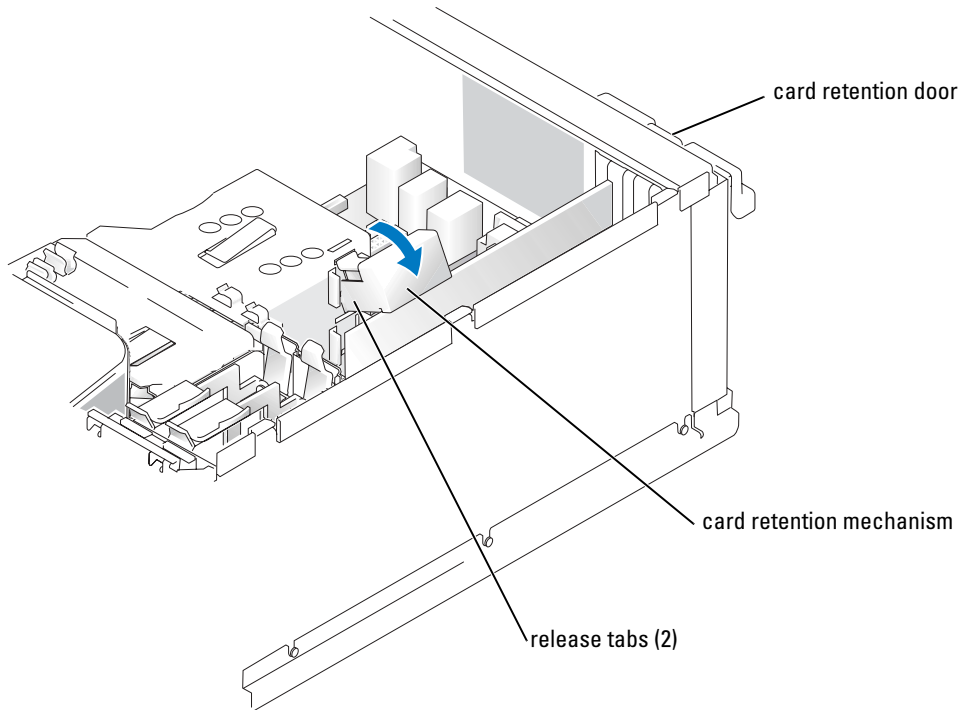
7 If you are installing the card into the x16 card connector, position the card so the securing slot is aligned with the securing tab, and gently pull the securing tab.

🔄 NOTICE: Ensure that you release the securing tab to unseat the card. If the card is not removed correctly, the system board may be damaged.

8 Place the card in the connector and press down firmly. Ensure that the card is fully seated in the slot.



- 9** If you replaced a card that was already installed in the computer and you removed the retention mechanism, you may reinstall the retention mechanism.
- 10** Before replacing the card retention mechanism, 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.
- 11** Snap the card retention mechanism into place, securing the x16 PCI card.



- ➔ **NOTICE:** Do not route card cables over or behind the cards. Cables routed over the cards can prevent the computer cover from closing properly or cause damage to the equipment.
- ➔ **NOTICE:** To connect a network cable, first plug the cable into the network device and then plug it into the computer.
- 12** Replace the computer cover, reconnect the computer and devices to electrical outlets, and then turn them on.
- 13** If you installed a sound card:
 - a** Enter system setup (see page 105), select **Audio Controller**, and then change the setting to **Off**.
 - b** Connect external audio devices to the sound card's connectors. Do not connect external audio devices to the microphone, speaker/headphone, or line-in connectors on the back panel.
- 14** If you installed an add-in network adapter and want to disable the integrated network adapter:
 - a** Enter system setup (see page 105), select **Network Controller**, and then change the setting to **Off**.


- b** Connect the network cable to the add-in network adapter's connectors. Do not connect the network cable to the integrated connector on the back panel.

15 Install any drivers required for the card as described in the card documentation.


Removing a PCI Express Card

- 1** Follow the procedures in "Before You Begin" on page 53.
- 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. (See page 66 for an illustration of the card retention door.)
- 3** If your computer includes a card retention mechanism, to secure the x16 card in place from the top:
 - a** Pivot the mechanism upward and gently squeeze in on the sides to release the mechanism from the two tab slots holding it in place.
 - b** Set the retention mechanism aside in a secure location.
- 4** If you are removing the card permanently, install a filler bracket in the empty card-slot opening.

If you need a filler bracket, contact Dell (see page 118).

 **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.

- 5** Reseat the card retention mechanism in the tabs and pivot downward to snap it into place.
- 6** Close the card retention door to snap it into place, securing the card(s).


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

- 7** Replace the computer cover, reconnect the computer and devices to electrical outlets, and then turn them on.
- 8** Remove the card's driver from the operating system.
- 9** If you removed a sound card:
 - a** Enter system setup (see page 105), select **Audio Controller**, and then change the setting to **On**.
 - b** Connect external audio devices to the audio connectors on the back panel of the computer.
- 10** If you removed an add-in network connector:
 - a** Enter system setup (see page 105), select **Network Controller**, and then change the setting to **On**.
 - b** Connect the network cable to the integrated connector on the back panel of the computer.

11 Install any drivers required for the card as described in the card documentation.

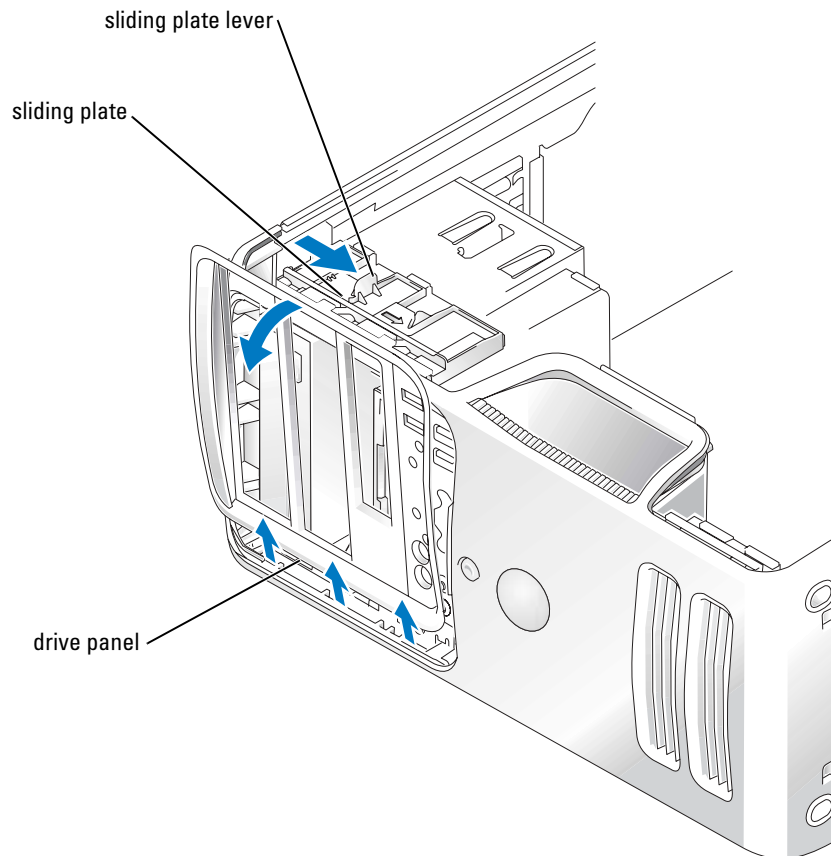
Drive Panels

 **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 the Drive Panel

- 1 Follow the procedures in "Before You Begin" on page 53.

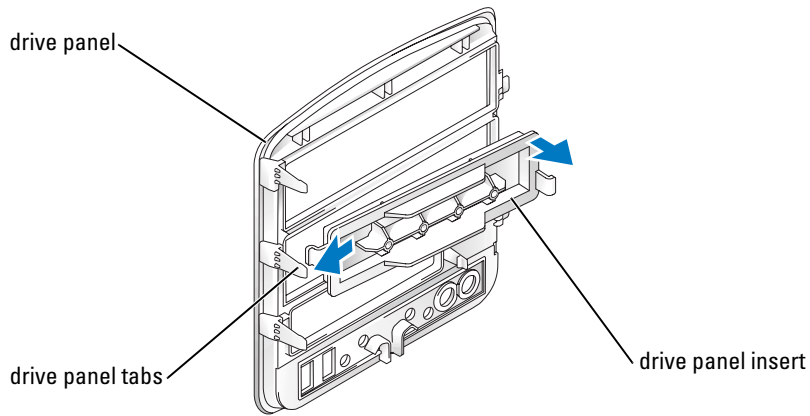


- 2 Grasping the lever on the sliding plate, pull the sliding plate to the right until it snaps into the open position.

 **NOTE:** This sliding plate secures and releases the drive panel and helps to secure the drives.

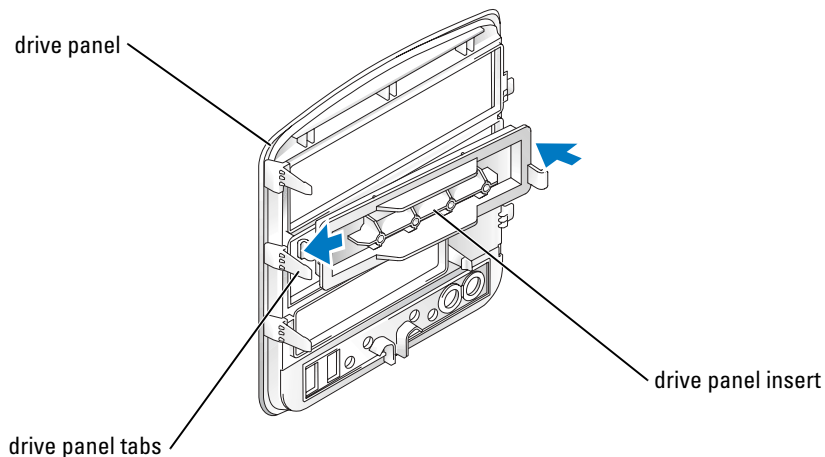
- 3 By pushing from the inside and pivoting the drive panel to the left, you can release the drive panel from its side hinges.
- 4 Set the drive panel aside in a secure location.

Removing the Drive-Panel Insert



- 1 On the inside of the drive panel, gently press the two drive-panel insert tab inward.
- 2 Pivot the drive-panel insert outward.
- 3 Set the drive-panel insert aside in a secure location.

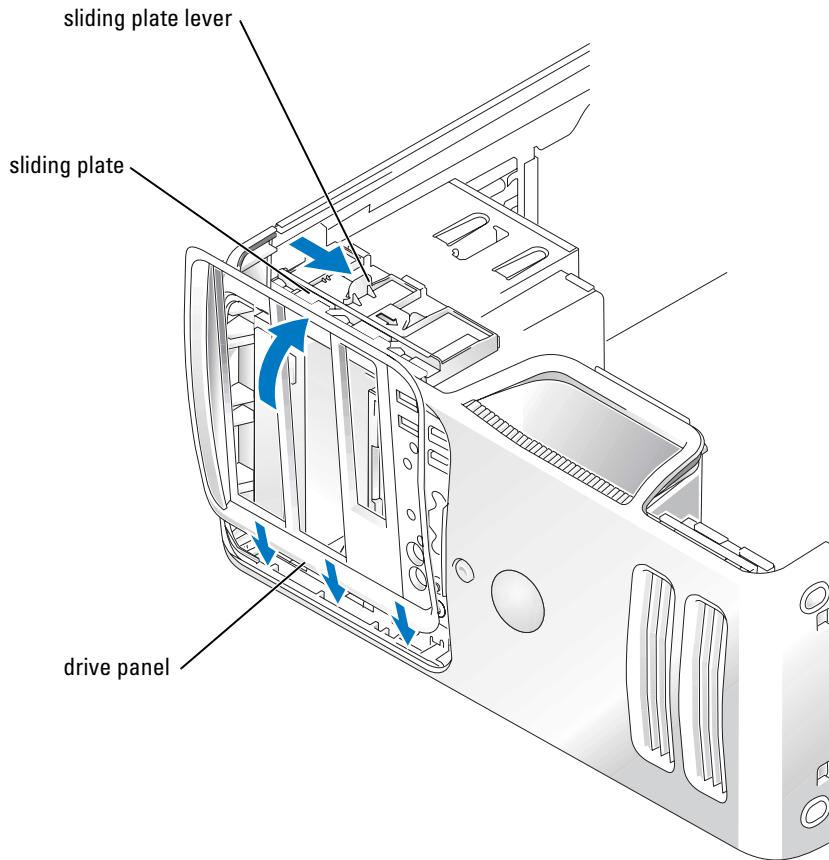
Replacing the Drive-Panel Insert



- 1 Align the tabs slots with the drive-panel insert tabs and seat the drive panel insert under the right edge.
- 2 Rotating inward toward the drive panel, align and snap the drive-panel insert into place on the drive panel.
- 3 Ensure that the drive-panel insert is correctly seated in the drive panel.

Replacing the Drive Panel.

- 1 Follow the procedures in "Before You Begin" on page 53.

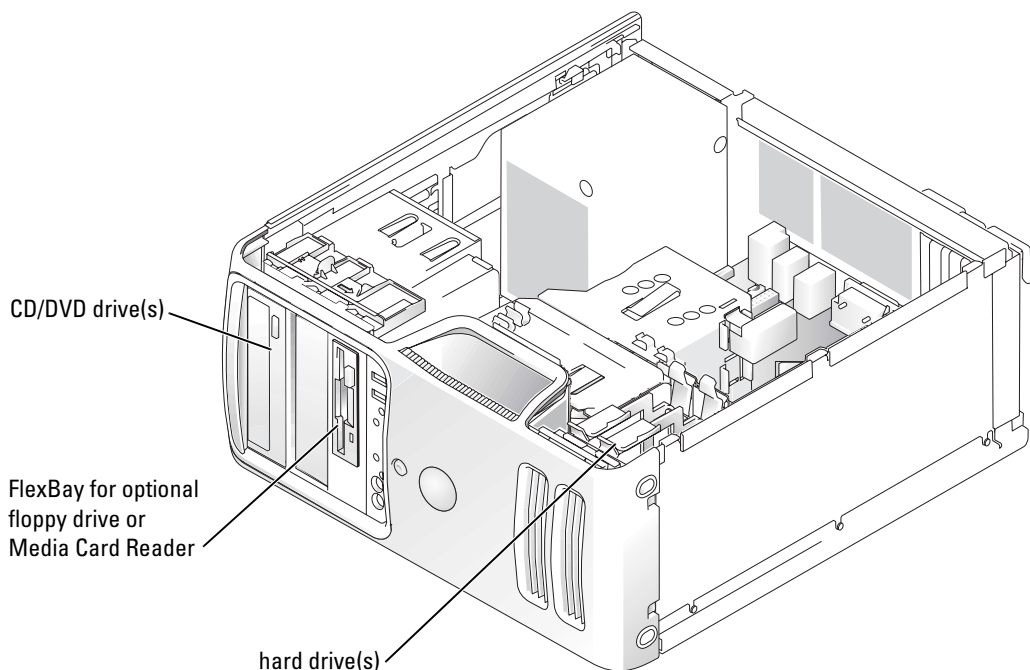


- 2 Align the drive panel tabs with the side-door hinges.
- 3 Rotate the drive panel toward the computer until it snaps into place on the front panel.
- 4 Grasping the lever, pull the sliding plate to the left, snapping it into the closed position to secure the drive panel.

Drives

Your computer supports a combination of these devices:

- Up to two serial ATA drives
- One FlexBay drive (floppy drive or Media Card Reader)
- Up to two CD or DVD drives



Connect CD/DVD drives to the connector labeled "IDE" on the system board. Serial ATA hard drives should be connected to the connectors labeled "SATA0" or "SATA2" on the system board.

IDE Drive Addressing

When you connect two IDE devices to a single IDE interface cable and configure them for the cable select setting, the device attached to the last connector on the interface cable is the master or boot device (drive 0), and the device attached to the middle connector on the interface cable is the slave device (drive 1). See the drive documentation in your upgrade kit for information on configuring devices for the cable select setting.

Connecting Drive Cables

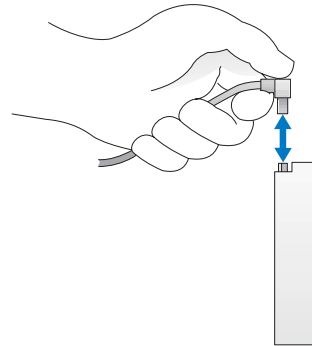
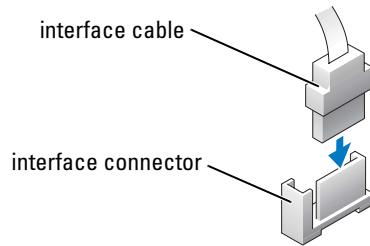
When you install a drive, you connect two cables—a DC power cable and a data cable—to the back of the drive and to the system board.

Drive Interface Connectors

Most interface connectors are keyed for correct insertion; that is, a notch or a missing pin on one connector matches a tab or a filled-in hole on the other connector. Keyed connectors ensure that the pin-1 wire in the cable (indicated by the colored stripe along one edge of the IDE cable—serial ATA cables do not use a colored stripe) goes to the pin-1 end of the connector. The pin-1 end of a connector on a board or a card is usually indicated by a silk-screened “1” printed directly on the board or card.

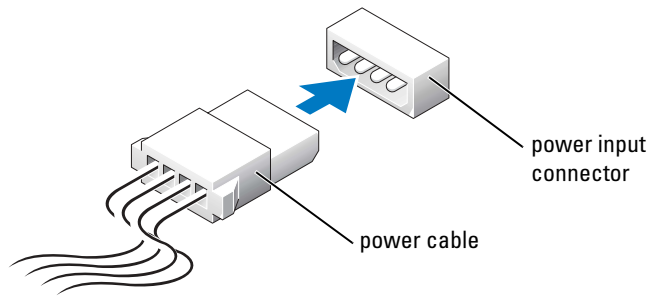
NOTICE: When you connect an IDE interface cable, do not place the colored stripe away from pin 1 of the connector. Reversing the cable prevents the drive from operating and could damage the controller, the drive, or both.

Serial ATA Connector



Power Cable Connector

To connect a drive using the power cable, locate the power input connector on the system board.

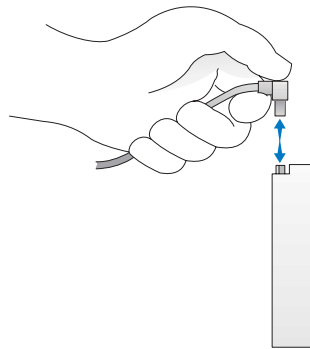


Connecting and Disconnecting Drive Cables




When removing an IDE drive data cable, grasp the colored pull tab and pull until the connector detaches.

When connecting and disconnecting a serial ATA data cable, hold the cable by the black connector at each end.

Like IDE connectors, the serial ATA interface connectors are keyed for correct insertion; that is, a notch or a missing pin on one connector matches a tab or a filled-in hole on the other connector.



Hard Drive

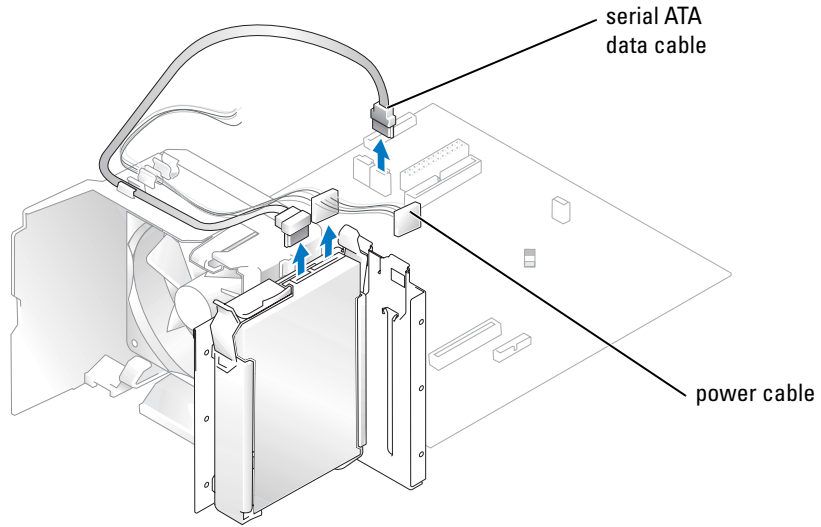
-  **CAUTION:** Before you begin any of the procedures in this section, follow the safety instructions located in the *Product Information Guide*.
-  **CAUTION:** To guard against electrical shock, always unplug your computer from the electrical outlet before removing the cover.
-  **NOTICE:** To avoid 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.

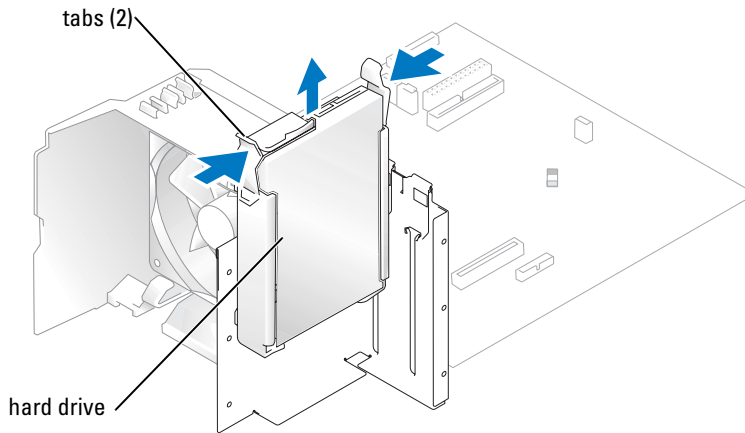
Check the documentation for the drive to verify that it is configured for your computer.

Removing a Hard Drive

- 1 Follow the procedures in "Before You Begin" on page 53."
- 2 Disconnect the power and hard-drive cables from the drive.



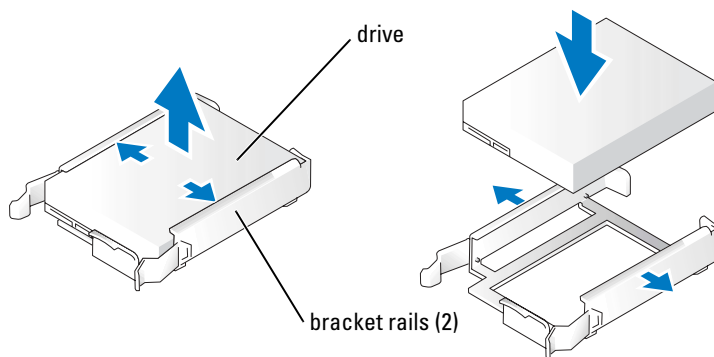
- 3 Press in on the blue tabs on each side of the drive and slide the drive up and out of the computer.



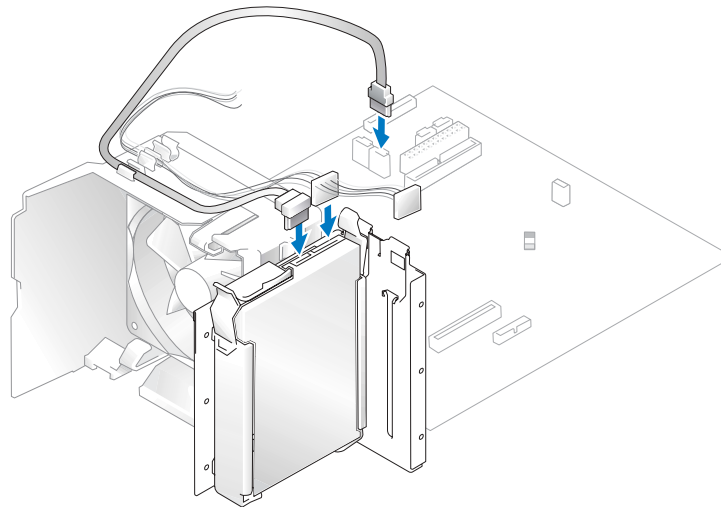
Installing a Hard Drive

- 1 Unpack the replacement hard drive, and prepare it for installation.
- 2 Check the documentation for the drive to verify that it is configured for your computer.

NOTE: If your replacement hard drive does not have the plastic guide bracket attached, remove the bracket from the old drive by unsnapping it from the drive. Snap the bracket onto the new drive.



- 3 Gently slide the drive into place until you hear a click or feel the drive securely installed.
- 4 Connect the power and hard-drive cables to the drive.

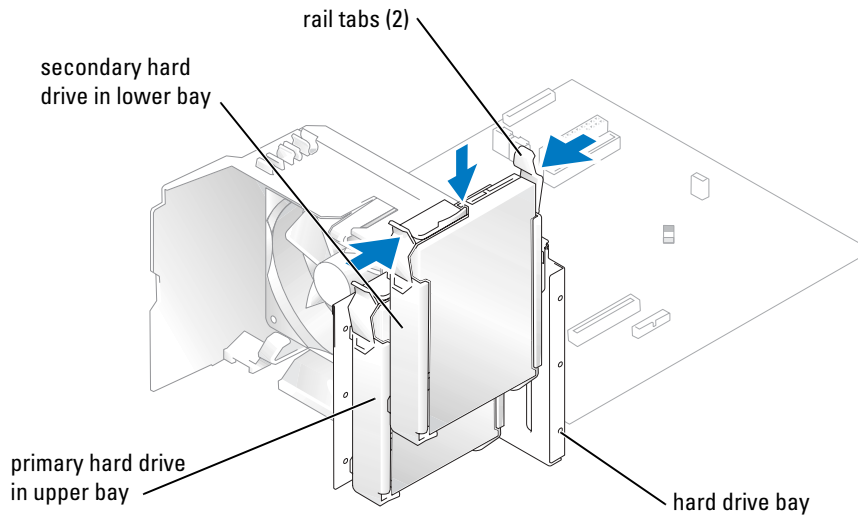


- 5 Check all connectors to be certain that they are properly cabled and firmly seated.
- 6 Replace the computer cover (page 99).
- ➡ **NOTICE:** To connect a network cable, first plug the cable into the network wall jack and then plug it into the computer.
- 7 Connect your computer and devices to electrical outlets, and turn them on.
See the documentation that came with the drive for instructions on installing any software required for drive operation.

Adding a Second 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.
- 1 Check the documentation for the drive to verify that it is configured for your computer.
 - 2 Follow the procedures in "Before You Begin" on page 53.
 - 3 Remove the plastic guide bracket from the inside of the hard-drive bay by gently pulling the bracket up and out of the bay.
 - 4 Snap the bracket to the hard drive.

- 5 Gently slide the new drive (second hard drive) into place until you hear a click or feel the drive securely installed.



- 6 Connect a power cable to the drive.
- 7 Connect the data cable to the drive and to the system board (see page 61).

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.

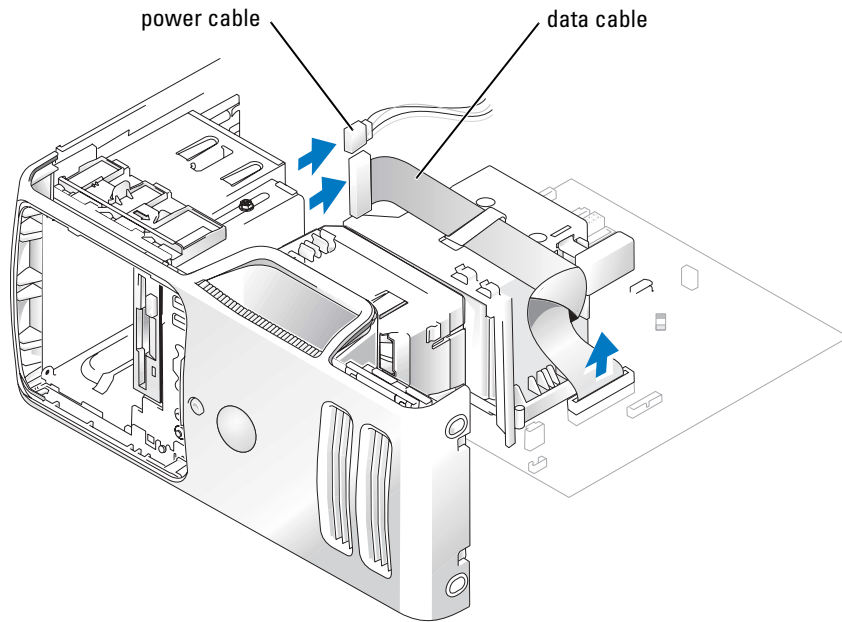
Follow the procedures in "Before You Begin" on page 53.




NOTE: If you are adding a floppy drive, see "Installing a Floppy Drive" on page 87.

Removing a Floppy Drive

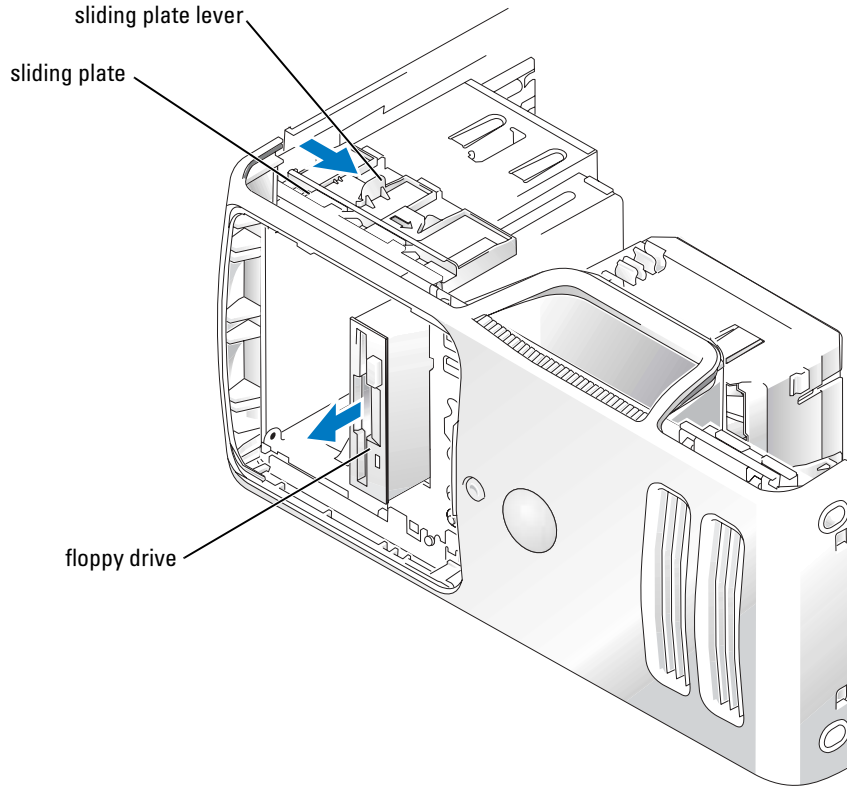
- 1 Follow the procedures in "Before You Begin" on page 53."
- 2 Remove the drive panel (see page 76).




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

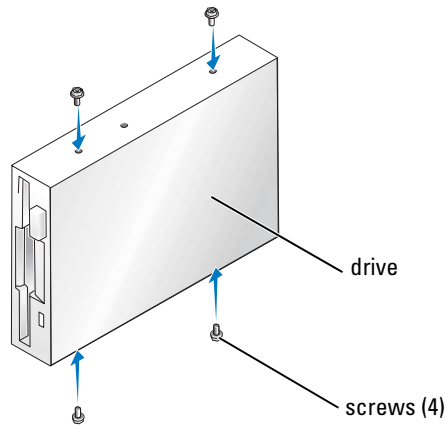
 **NOTE:** If you are installing a PCI Express x16 card, this card may cover the floppy-drive connectors. Remove this card before connecting the floppy-drive cables.


- 4 Remove the floppy drive by sliding and holding the drive release latch downward. Then, slide the drive out of the computer.

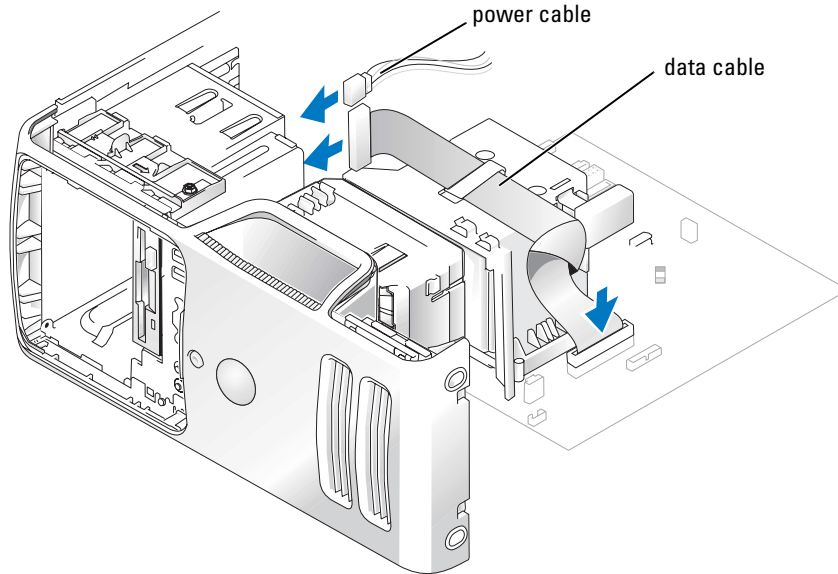



Installing a Floppy Drive

 **NOTE:** In the event the replacement or new floppy drive does not have the shoulder screws, use the screws located within the drive panel insert.



- 1 Follow the procedures in "Before You Begin" on page 53."
 - 2 Remove the drive panel (see page 76).
 - 3 Gently slide the drive into place until you hear a click or feel the drive securely installed.
-  **NOTE:** If you are installing a new floppy drive rather than replacing a drive, remove the drive panel insert where you want the drive to be installed, insert the shoulder screws located in the back of the drive panel insert into the drive, and then slide the drive back into place.
- 4 Attach the power and data cables to the floppy drive.
 - 5 Connect the other end of the data cable to the connector labeled "FLOPPY" on the system board (see page 61) and route the cable through the clip on the shroud.



- 6 If you are installing a new floppy drive rather than replacing a drive, remove the drive-panel inserts (see page 85).
- 7 Check all cable connections, and fold cables out of the way to provide airflow for the fan and cooling vents.
- 8 Replace the drive panel (see page 78).
- 9 Replace the computer cover (see page 99).
-  **NOTICE:** To connect a network cable, first plug the cable in to the network device and then plug it in to the computer.
- 10 Connect your computer and devices to their electrical outlets, and turn them on.
See the documentation that came with the drive for instructions on installing any software required for drive operation.
- 11 Enter system setup (see page 105) and select the appropriate **Diskette Drive** option.
- 12 Verify that your computer works correctly by running the Dell Diagnostics (see page 46).

Media Card Reader

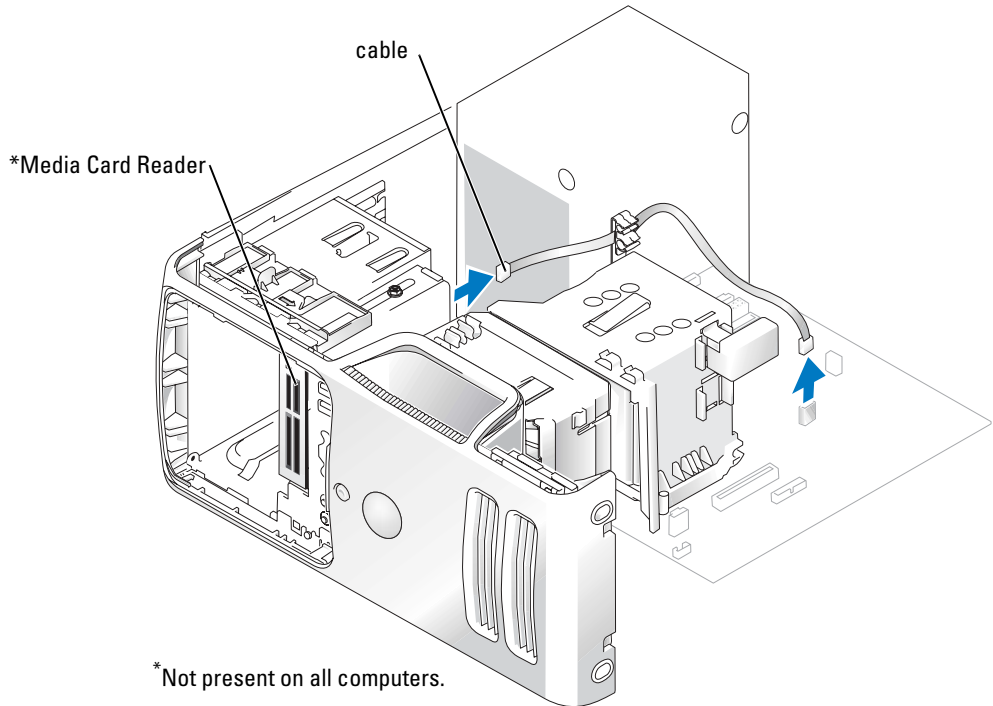
For information on using the Media Card Reader, see "Using a Media Card Reader (Optional)" on page 19.

Removing a Media Card Reader

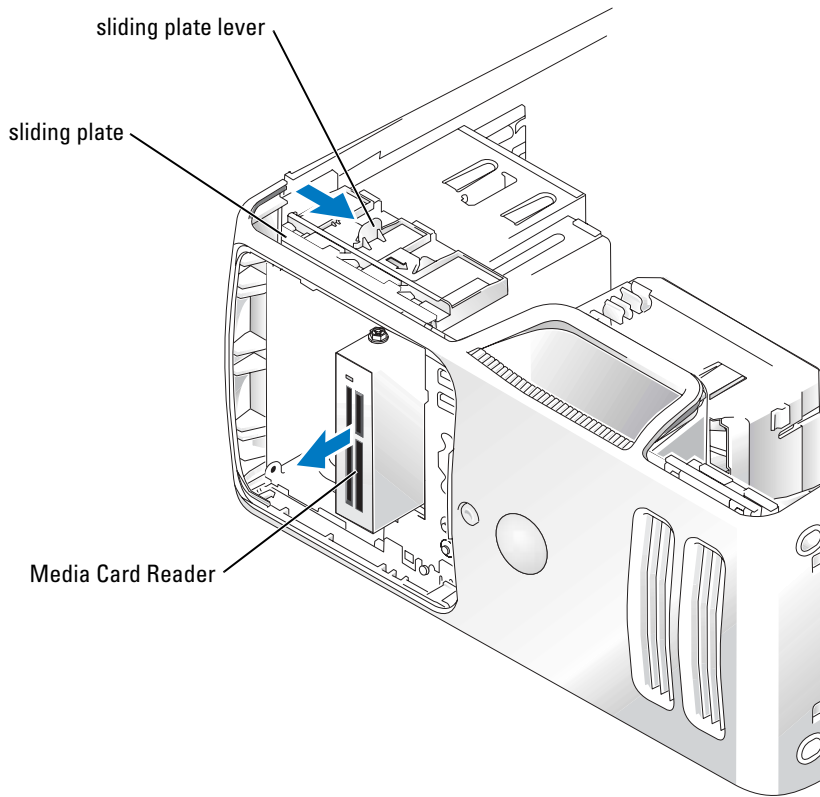
⚠ CAUTION: Before you begin any of the procedures in this section, follow the safety instructions located in the *Product Information Guide*.

🔄 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 53.
- 2 Lay the computer on its side so that the system board is on the bottom of the inside of the computer.
- 3 Remove the computer cover (page 59).
- 4 Remove the drive panel (see page 76).



- 5 Disconnect the USB cable on the back of the Media Card Reader to the front panel USB connector on the system board (see page 61) and route the cable through the clip on the shroud.



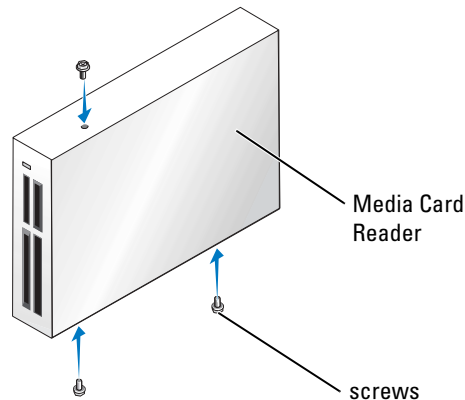
- 6** While pushing on the back of the drive, remove the Media Card Reader by sliding and holding the drive latch release downward.
- 7** Replace the drive panel (see page 78).
- 8** Replace the computer cover (see page 99).

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.

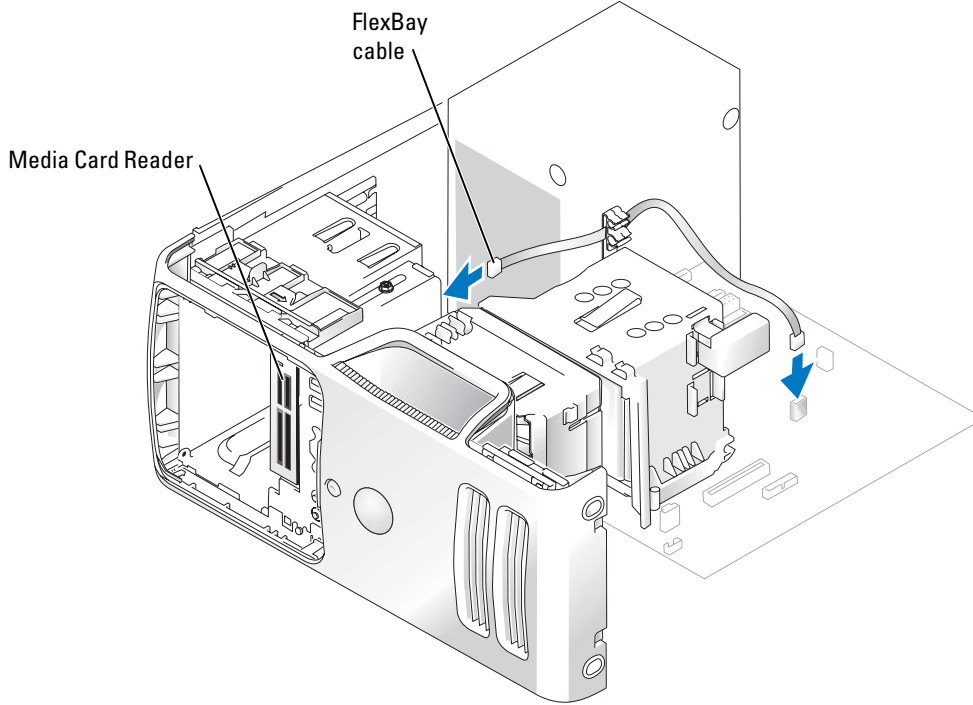
- 1 Follow the procedures in "Before You Begin" on page 53.



- 2 Lay the computer on its side so that the system board is on the bottom of the inside of the computer.
- 3 Remove the computer cover (see page 59).
- 4 Remove the drive panel (see page 76).
- 5 Remove the Media Card Reader and bracket from its packaging.
- 6 Ensure that the Media Card Reader is installed before the FlexBay USB cable is connected.

🔧 NOTE: Connect the USB cable on the back of the Media Card Reader to the front panel USB connector on the system board (see page 61).

- 7 Make sure the FlexBay USB cable is connected to the back of the Media Card Reader.



- 8 Insert the Media Card Reader by sliding and holding the drive release latch downward. Then, slide the drive in to seat it in the computer.
- 9 Route the USB cable through the cable routing clip.
- 10 Replace the computer cover (see page 99).

CD/DVD Drive



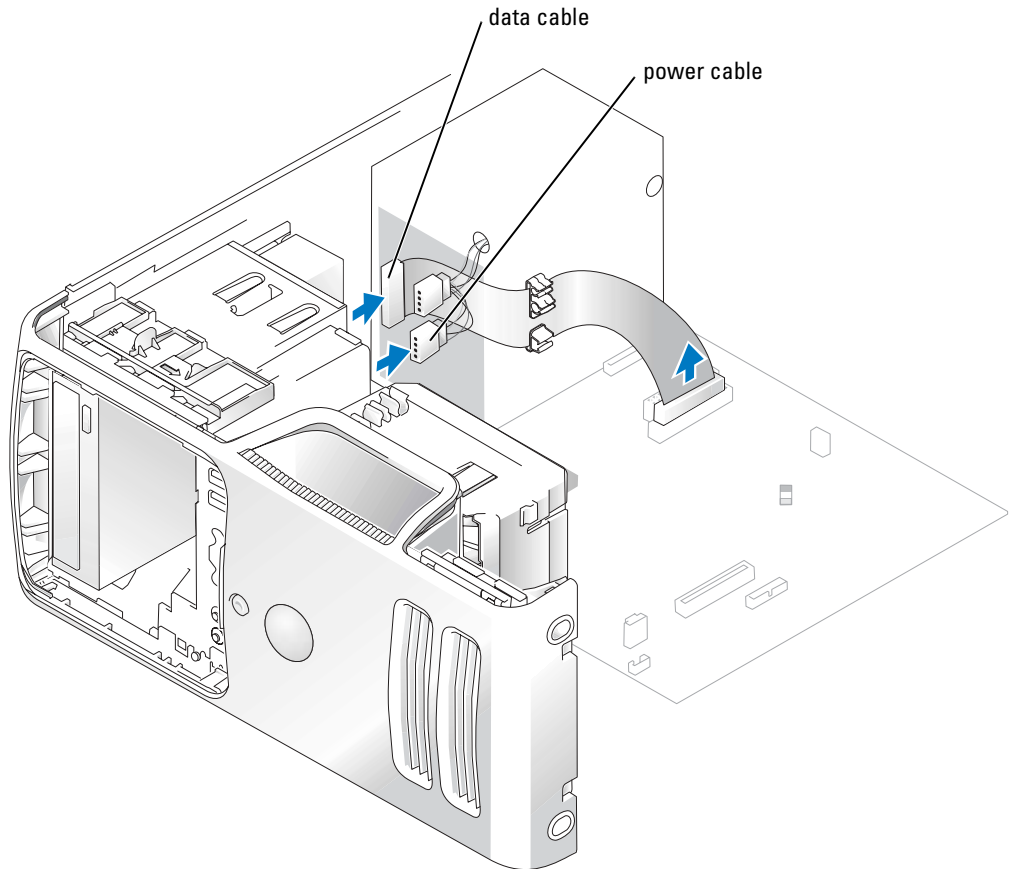
CAUTION: Before you begin any of the procedures in this section, follow the safety instructions located in the *Product Information Guide*.



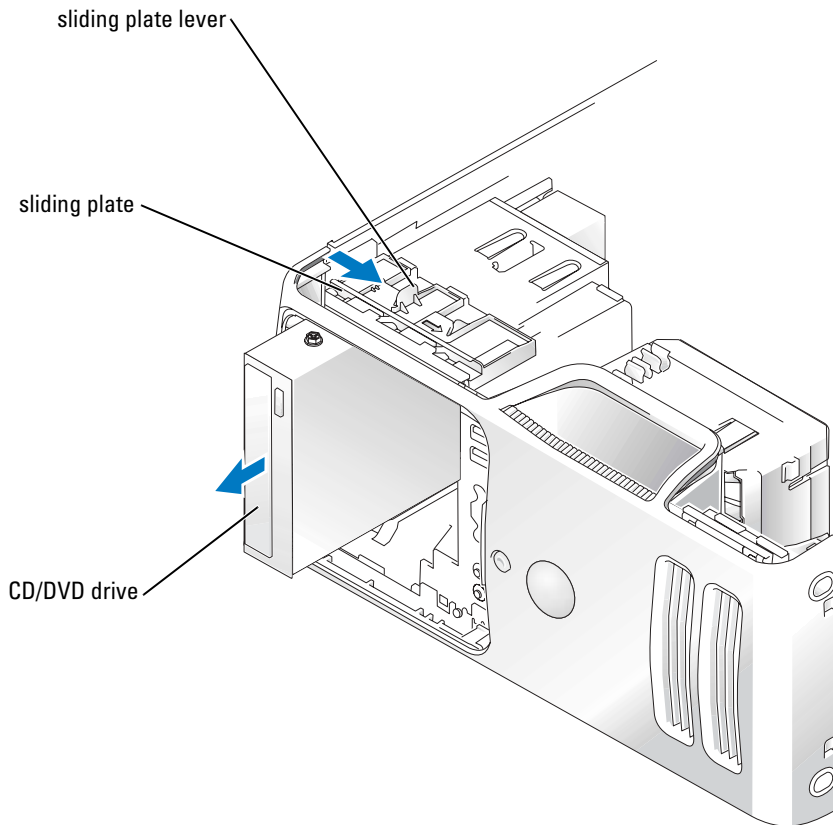
CAUTION: To guard against electrical shock, always unplug your computer from the electrical outlet before removing the cover.

Removing a CD/DVD Drive

- 1 Follow the procedures in "Before You Begin" on page 53.
- 2 Remove the computer cover (see page 59).
- 3 Remove the drive panel (see page 76).
- 4 Disconnect the power and data cables from the back of the drive.



- 5 Remove the CD/DVD drive by sliding and holding the drive release latch downward. Then, slide the drive out of the computer.

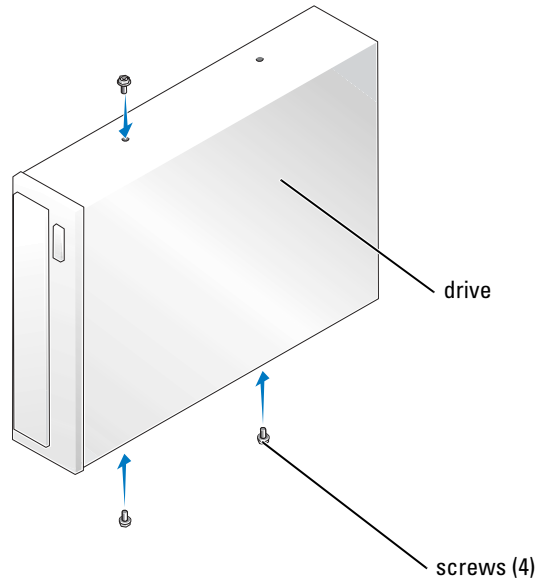


Installing a CD/DVD Drive

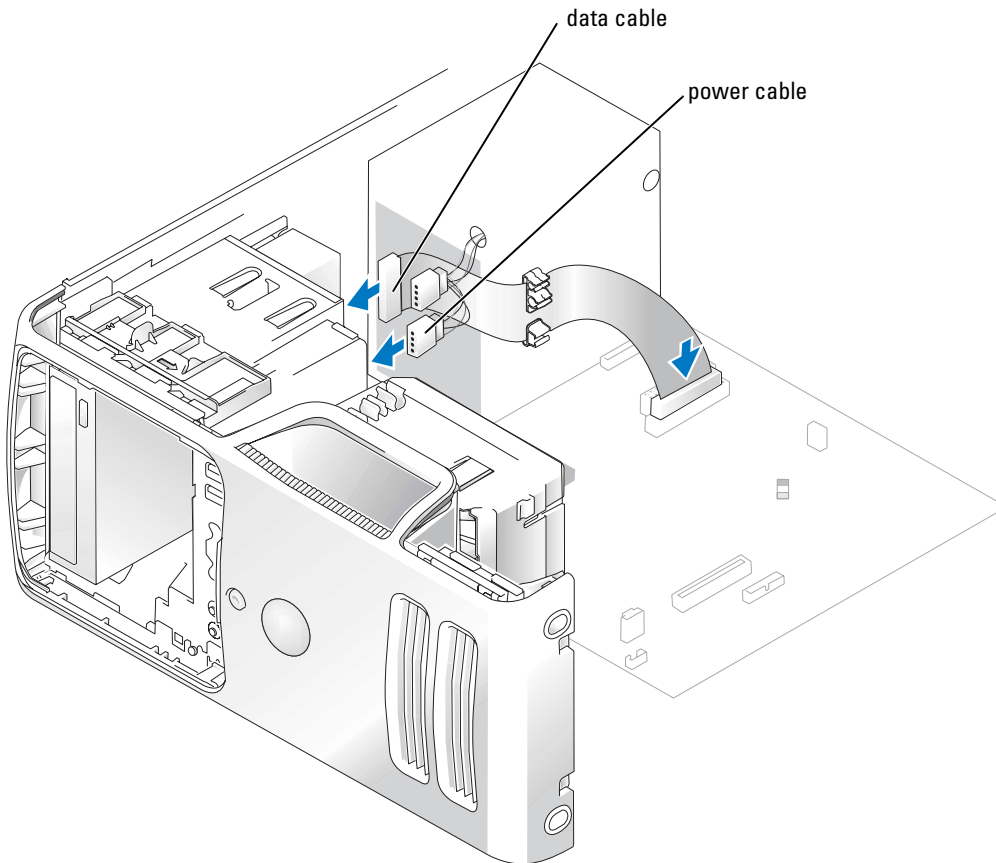
- 1 Follow the procedures in "Before You Begin" on page 53.
- 2 If you are installing a new CD/DVD drive rather than replacing a drive, remove the drive-panel inserts (see page 77).

3 Gently slide the drive into place until you hear a click or feel the drive securely installed.

NOTE: If you are installing a new CD/DVD drive rather than replacing a drive, remove the drive panel inserts and slide the drive into place. Check all cable connections, and fold cables out of the way to provide airflow for the fan and cooling vents.



- 4 Connect the power and data cables to the drive.



- 5 Check all cable connections, and fold cables out of the way to provide airflow for the fan and cooling vents.
- 6 Replace the computer cover (see page 99).
- 7 Replace the drive panel (see page 78).
- 8 **NOTICE:** To connect a network cable, first plug the cable in to the network device and then plug it in to the computer.
- 8 Connect your computer and devices to their electrical outlets, and turn them on.
See the documentation that came with the drive for instructions on installing any software required for drive operation.
- 9 Enter system setup (see page 105) and select the appropriate **Drive** option.
- 10 Verify that your computer works correctly by running the Dell Diagnostics (see page 46).

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:

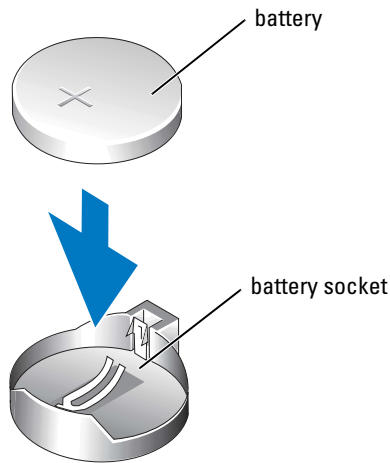
- 1 Record all the screens in system setup (see page 105) so that you can restore the correct settings in step 8.
- 2 Follow the procedures in "Before You Begin" on page 53.
- 3 Locate the battery socket (see page 99).



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.



- 6 Replace the computer cover (see page 99).


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

- 7 Connect your computer and devices to electrical outlets, and turn them on.
- 8 Enter system setup (see page 105) 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 Align the bottom of the cover with the tabs located along the bottom edge of the computer.
- 4 Using the tabs as leverage, rotate the cover downward and close.
- 5 Snap the cover into place by pulling back on the cover release latch, and then releasing the latch when the cover is seated.

- 6 Ensure that the cover is seated correctly before moving it to the upright position.
-  **NOTICE:** To connect a network cable, first plug the cable into the network device and then plug it into the computer.
- 7 Connect your computer and devices to electrical outlets, and turn them on.

Appendix

Specifications

Processor

Processor type	Intel® Pentium® 4 with Hyper-Threading technology NOTE: Not all Pentium 4 processors support Hyper-Threading technology.
Level 1 (L1) cache	16 KB
Level 2 (L2) cache	1 MB (depending on your computer configuration) pipelined-burst, eight-way set associative, write-back SRAM

Memory

Type	400- and 533-MHz DDR2 unbuffered SDRAM
Memory connectors	four
Memory capacities	256 MB, 512 MB, or 1 GB non-ECC
Minimum memory	256 MB
Maximum memory	4 GB NOTE: See "Addressing Memory With 4-GB Configurations" on page 63 to verify the amount of memory available to the operating system.
BIOS address	F0000h

Computer Information

Chipset	Intel 915G Express
DMA channels	eight
Interrupt levels	24
BIOS chip (NVRAM)	4 Mb
NIC	Integrated network interface capable of 10/100 communication
System clock	800-MHz data rate

Video

Type	PCI Express
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Audio

Type	ADI 1986 CoDec
------	----------------

Expansion Bus

Bus type	PCI 2.3 PCI Express x1 and x16
Bus speed	PCI: 33 MHz PCI Express: x1 slot bidirectional speed - 500 MB/s x16 slot bidirectional speed - 8 GB/s

PCI

connectors	two
connector size	120 pins
connector data width (maximum)	32 bits

PCI Express

connector	one x1
connector size	36 pins
connector data width (maximum)	1 PCI Express lane

PCI Express

connector	one x16
connector size	164 pins
connector data width (maximum)	16 PCI Express lanes

Drives

Externally accessible:

one 3.5-inch drive bay (FlexBay)
two 5.25-inch drive bays

Available devices

Serial ATA drives (2), floppy drive, Zip drive, USB memory devices, CD drive, CD-RW drive, DVD drive, DVD-RW drive, and DVD and CD-RW combo drive, and media reader

Internally accessible:

two bays for 1-inch high hard drives

Connectors

External connectors:

Serial	9-pin connector; 16550C-compatible
Parallel	25-hole connector (bidirectional)
Video	15-hole connector
Network adapter	RJ45 connector
USB	two front-panel and five back-panel USB 2.0-compliant connectors
Audio	five connectors for line-in, line-out, microphone, surround, and center/Low Frequency Effects (LFE) channel; two front-panel connectors for headphones/microphone

System board connectors:

Primary IDE drive	40-pin connector on PCI local bus
Serial ATA	two 7-pin connectors
FlexBay Drive	USB 10-pin header for optional floppy drive or optional Media Card Reader (3.5-inch bay devices)
Fan	one 5-pin connectors
PCI 2.3	120-pin connector
PCI Express x1	36-pin connector
PCI Express x16	164-pin connector

Controls and Lights

Power control	push button
Power light	green light — Blinking green in sleep state; solid green for power-on state. amber light — Blinking amber indicates a problem with the power supply inside the computer. If the system cannot boot and there is a solid amber light, this indicates a problem with the system board (see "Power Problems" on page 36).
Hard-drive access light	green
Link integrity light (on integrated network adapter)	green light — A good connection exists between a 10-Mbps network and the computer. orange light — A good connection exists between a 100-Mbps network and the computer. off (no light) — The computer is not detecting a physical connection to the network.
Activity light (on integrated network adapter)	yellow blinking light
Diagnostic lights	four lights on the front panel (see "Diagnostic Lights" on page 43.)
Standby power light	AUX_PWR on the system board

Power

DC power supply:	
Wattage	305 W
Heat dissipation	434.6 BTU/hr
Voltage (see the safety instructions located in the <i>Product Information Guide</i> for important voltage setting information)	90 to 135 V and 180 to 265 V at 50/60 Hz
Backup battery	3-V CR2032 lithium coin cell

Physical

Height	41.4 cm (16.3 inches)
Width	18.8 cm (7.4 inches)
Depth	45.7 cm (18.0 inches)
Weight	12.7 kg (28 lb)

Environmental

Temperature:

Operating 10° to 35°C (50° to 95°F)

NOTE: At 35°C (95°F), the maximum operating altitude is 914 m (3000 ft).

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 20 inches/sec (50.8 cm/sec)

Storage 27-G faired square wave with a velocity change of 200 inches/sec (508 cm/sec)

Altitude:

Operating -15.2 to 3023 m (-50 to 10,000 ft)

Storage -15.2 to 11,115 m (-50 to 50,000 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 page 53) and try again.

System Setup Screens

The system setup screen displays current or changeable configuration information for your computer. Information on the screen is divided into three areas: the options list, active options field, and key functions.

<p>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.</p> <p>Scroll up and down the list with 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. By pressing <Enter> or the left and right arrow keys, you can toggle between a primary topic (collapsed) and subtopics (expanded).</p>	<p>Option Field — This field contains information about each option. In this field you can view your current settings and make changes to your settings.</p> <p>Use the right and left arrow keys to highlight an option. Press <Enter> to make that selection active.</p>
	<p>Key Functions — This field appears below the Option Field and lists keys and their functions within the active system setup field.</p>

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 system information such as the computer name, the BIOS version number and date, system tags, and other system-specific information.
CPU Info	Identifies whether the computer's processor supports Hyper-Threading and lists the processor bus speed, processor ID, clock speed, and L2 cache.
Memory Info	Indicates amount of installed memory, memory speed, channel mode (dual or single), and type of memory installed.
Date/Time	Displays current date and time settings.
Boot Sequence	<p>The computer attempts to boot from the sequence of devices specified in this list.</p> <p>NOTE: If you insert a boot device and restart the computer, this option appears in the system setup menu. To boot from a USB memory device, select the USB device and move it so it becomes the first device in the list.</p>
Drives	
Diskette Drive	Identifies and defines the floppy drive attached to the FLOPPY connector on the system board as Off , USB , Internal , or Read Only .
Drives 0 through 3	Identifies the drives attached to the SATA connectors on the system board, and lists the capacity for hard drives.
SATA Operation	<p>Hard-drive controller feature that provides two configuration settings:</p> <p>Normal – native mode, which provides the highest drive performance and optimal flexibility.</p> <p>Combination – combination mode, which offers compatibility with versions of the operating system that do not support SATA drives.</p>
Onboard Devices	
Integrated NIC Controller	You can set the NIC to On (default), Off , or On w/ PXE . When the On w/ PXE setting is active (available only for the future boot process), the computer prompts you to press <Ctrl><Alt>. Pressing this key combination causes a menu to display that allows you to select a method for booting from a network server. 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 Controller	Enables or disables the onboard audio controller.
USB Controller	Set to On (default) so that USB devices will be detected and supported in the operating system.

USB for FlexBay	<p>This field enables and disables the internal USB for FlexBay.</p> <p>Off = Internal USB for FlexBay is disabled.</p> <p>On = Internal USB for FlexBay is disabled.</p> <p>The factory default setting is On.</p> <p>NOTE: This USB option appears only if a FlexBay device is installed.</p>
LPT Port Mode	Identifies and defines the parallel port settings. You can set the parallel port to Off , AT , PS/2 , EPP , or ECP .
LPT Port Address	Identifies the address for the parallel port.
LPT Port DMA	Identifies and defines the parallel port DMA settings. You can set the parallel port DMA to Off , DMA1 , or DMA3 .
Serial Port #1	Identifies and defines the serial port settings. Auto , the default setting, automatically configures a connector to a particular designation (COM1 or COM3).
Serial Port #2 (optional)	Identifies and defines the serial port settings. Auto , the default setting, automatically configures a connector to a particular designation (COM2 or COM4).
PS/2 Mouse Port (optional)	Enables or disables the onboard PS/2-compatible mouse controller.
Video	
Primary Video	This setting specifies which video controller is primary when two video controllers are present on the computer.
Video Memory Size	Offering selectable options of 1MB and 8MB, this field configures the system memory allocation reserved for the integrated video controller.
Performance	
HyperThreading	If your computer's processor supports Hyper-Threading, this option appears in the Options List.
Hard Drive Acoustics	<ul style="list-style-type: none"> • Bypass (default) — 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. <p>NOTE: Switching to performance mode will cause the drive heads to move faster, causing the hard drive to be noisier. However, some drives may not see an increase in data transfer rates.</p> <p>NOTE: Changing the acoustics setting does not alter your hard drive image.</p>

Security	This section displays available system security options.
Admin Password	This option provides restricted access to the computer's system setup program in the same way that access to the system can be restricted with the System Password option.
System Password	Displays the current status of the system's password security feature and allows a new system password to be assigned and verified.
Password Status	This option locks the system password field with the setup password. When the field is locked, you can no longer disable password security by pressing <Ctrl><Enter> when the computer starts.
Power Management	
AC Recovery	Determines what happens when AC power is restored to the computer.
Auto Power On	Sets the computer to automatically turn on. Choices are every day or every Monday through Friday . The default setting is Off . This feature does not work if you turn off your computer using 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 (<i>hours:minutes</i>). 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. This feature does not work if you turn off your computer using a power strip or surge protector.
Low Power Mode	When Low Power Mode is selected, remote wakeup events no longer power up from Hibernate or Off .
Remote Wake Up	This option allows the computer to power up when a NIC or Remote Wakeup-capable modem receives a wake up signal. On is the default setting. On w/ Boot to NIC allows the computer to attempt to boot from a network prior to using the boot sequence. NOTE: Normally, the system can be powered up remotely from suspend mode, hibernate mode, or when powered off. When Low Power Mode (in the Power Management menu) is enabled, the computer can only be powered up remotely from Suspend .
Suspend Mode	The options are S1 , a suspend state where the computer is running in a low-power mode, and S3 , a standby state where the power is reduced or turned off for most components, however, system memory remains active.
Maintenance	
CMOS Defaults	This setting restores the computer's default settings.
Event Log	Displays the system event log.

POST Behavior	
Fastboot	When set to On (default), your computer starts more quickly because it skips certain configurations and tests.
Numlock Key	This option involves the rightmost bank of keys on your keyboard. When set to On (default), this option activates the numeric and mathematical features shown at the top of each key. When set to Off , this option activates the cursor-control functions labeled on the bottom of each key.
POST Hotkeys	This option allows you to specify the function keys to display on the screen when the computer starts.
Keyboard Errors	This option disables or enables keyboard error reporting when the computer starts.

Boot Sequence

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

Option Settings

- **Diskette 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.
- **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.
- **CD 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.
- **USB Flash Device** — Insert the memory device into a USB port and restart the computer. When **F12 = Boot Menu** appears in the upper-right corner of the screen, press <F12>. The BIOS detects the device and adds the USB flash option to the boot menu.



NOTE: To boot to a USB device, the device must be bootable. To make sure that your 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 the floppy drive to **OFF** in system setup (see page 105).

- 1 If you are booting to a USB device, connect the USB device to a USB connector (see page 103).
- 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 page 53) and try again.

The **Boot Device Menu** appears, listing all available boot devices. Each device has a number next to it.

- 4 At the bottom of the menu, enter the number of the device that is to be used for the current boot only.

For example, if you are booting to a USB memory key, highlight **USB Flash Device** and press <Enter>.



NOTE: To boot to a USB device, the device must be bootable. To make sure your device is bootable, check the device documentation.

Changing Boot Sequence for Future Boots

- 1 Enter system setup (see page 106).
- 2 Use the arrow keys to highlight the **Boot Sequence** menu option and press <Enter> to access the menu.



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

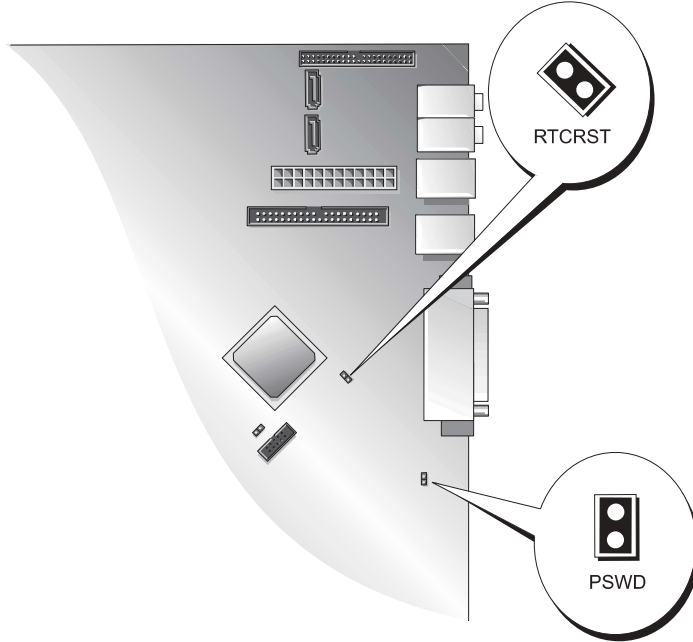
- 3 Press the up- and down-arrow keys to move through the list of devices.
- 4 Press the spacebar to enable or disable a device (enabled devices have a checkmark).
- 5 Press plus (+) or minus (-) to move a selected device up or down the list.

Clearing Forgotten Passwords



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 53.



- 2 Locate the 3-pin password jumper (PSWD) on the system board (see page 61), and attach the jumper plug to pins 2 and 3 to clear the password.


NOTE: When you receive your computer, the jumper plug is attached to pins 1 and 2.

- 3 Close the computer cover (see page 99).
- 4 Connect your computer and monitor to electrical outlets, and turn them on.
- 5 After the Microsoft® Windows® desktop appears on your computer, shut down the computer (see page 53).
- 6 Turn off the monitor and disconnect it from the electrical outlet.
- 7 Disconnect the computer power cable from the electrical outlet, and press the power button to ground the system board.
- 8 Open the computer cover (see page 59).
- 9 Locate the 3-pin password jumper (PSWD) on the system board (see page 61) and attach the jumper to pins 1 and 2 to reenble the password feature.
- 10 Close the computer cover (see page 99).


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

- 11 Connect your computer and devices to electrical outlets, and 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 53.
- 2 Reset the current CMOS settings:
 - a Locate the 2-pin CMOS jumper (RTCRST) on the system board (see page 61).
 - b Remove the jumper plug from pins 2 and 3.
 - c Place the jumper plug on pins 1 and 2 and wait approximately five seconds.
 - d Replace the jumper plug on pins 2 and 3.
- 3 Close the computer cover (see page 99).


 **NOTICE:** To connect a network cable, first plug the cable into the network wall jack and then plug it into the computer.

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


Cleaning Your Computer

 **CAUTION:** Before you begin any of the procedures in this section, follow the safety instructions located 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 vacuum cleaner with a brush attachment to gently remove dust from the slots and holes on your computer and from between the keys on the keyboard.

 **NOTICE:** Do not wipe the display screen with any soap or alcohol solution. Doing so may damage the antiglare coating.

- To clean your monitor screen, lightly dampen a soft, clean cloth with water. If possible, use a special screen-cleaning tissue or solution suitable for the monitor's antistatic coating.
- Wipe the keyboard, computer, and plastic part of the monitor 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

If your screen cursor skips or moves abnormally, clean the mouse. To clean a non-optical mouse:

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

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. 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 prevent 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 safe to use on DVDs.

Dell Technical Support Policy (U.S. Only)

Technician-assisted technical 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 technical support, online technical support is available at support.dell.com. Additional technical support options may be available for purchase.

Dell provides limited technical 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 Notices (U.S. Only)

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

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

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

This device may not cause harmful interference.

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

Class A

This equipment has been tested and found to comply with the limits for a Class A digital device pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the manufacturer's instruction manual, may cause harmful interference with radio communications. Operation of this equipment in a residential area is likely to cause harmful interference, in which case you will be required to correct the interference at your own expense.

Class B

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

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

FCC Identification Information

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

- Model number: DCSM
Company name:

Dell Inc.
One Dell Way
Round Rock, Texas 78682 USA
512-338-4400

Contacting Dell

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

- www.dell.com
- support.dell.com (technical support)
- premiersupport.dell.com (technical support for educational, government, healthcare, and medium/large business customers, including Premier, Platinum, and Gold customers)

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.

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 an 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

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
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: la_enterprise@dell.com Customer Care Tech Support Tech 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	E-mail (Australia): au_tech_support@dell.com E-mail (New Zealand): nz_tech_support@dell.com Home and Small Business Government and Business Preferred Accounts Division (PAD) Customer Care Technical Support (portables and desktops) Technical Support (servers and workstations) Corporate Sales Transaction Sales Fax	1-300-655-533 toll-free: 1-800-633-559 toll-free: 1-800-060-889 toll-free: 1-800-819-339 toll-free: 1-300-655-533 toll-free: 1-800-733-314 toll-free: 1-800-808-385 toll-free: 1-800-808-312 toll-free: 1-800-818-341
Austria (Vienna) International Access Code: 900 Country Code: 43 City Code: 1	Website: support.euro.dell.com E-mail: tech_support_central_europe@dell.com Home/Small Business Sales Home/Small Business Fax Home/Small Business Customer Care Preferred Accounts/Corporate Customer Care Home/Small Business Technical Support Preferred Accounts/Corporate Technical Support Switchboard	0820 240 530 00 0820 240 530 49 0820 240 530 14 0820 240 530 16 0820 240 530 14 0660 8779 0820 240 530 00
Bahamas	General Support	toll-free: 1-866-278-6818

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
Barbados	General Support	1-800-534-3066
Belgium (Brussels)	Website: support.euro.dell.com	
International Access Code: 00	E-mail for French Speaking Customers: support.euro.dell.com/be/fr/emaildell/	
Country Code: 32	Technical Support	02 481 92 88
City Code: 2	Technical 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, Technical Support	0800 90 3355
Country Code: 55	Technical Support Fax	51 481 5470
City Code: 51	Customer Care Fax	51 481 5480
	Sales	0800 90 3390
British Virgin Islands	General Support	toll-free: 1-866-278-6820
Brunei	Customer Technical Support (Penang, Malaysia)	604 633 4966
Country Code: 673	Customer Service (Penang, Malaysia)	604 633 4949
	Transaction Sales (Penang, Malaysia)	604 633 4955
Canada (North York, Ontario)	Online Order Status: www.dell.ca/ostatus	
International Access Code: 011	AutoTech (automated technical support)	toll-free: 1-800-247-9362
	Customer Care (Home Sales/Small Business)	toll-free: 1-800-847-4096
	Customer Care (med./large business, government)	toll-free: 1-800-326-9463
	Technical Support (Home Sales/Small Business)	toll-free: 1-800-847-4096
	Technical Support (med./large bus., government)	toll-free: 1-800-387-5757
	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

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
Chile (Santiago) Country Code: 56 City Code: 2	Sales, Customer Support, and Technical Support	toll-free: 1230-020-4823
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 (Dimension™ and Inspiron™) Technical Support (OptiPlex™, Latitude™, and Dell Precision™) Technical Support (servers and storage) Technical Support (projectors, PDAs, printers, switches, routers, and so on) 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	818 1350 toll-free: 800 858 2969 toll-free: 800 858 0950 toll-free: 800 858 0960 toll-free: 800 858 2920 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)	Website: support.euro.dell.com	
International Access Code: 00	E-mail: czech_dell@dell.com	
Country Code: 420	Technical Support	22537 2727
	Customer Care	22537 2707
	Fax	22537 2714
	Tech Fax	22537 2728
	Switchboard	22537 2711
Denmark (Copenhagen)	Website: support.euro.dell.com	
International Access Code: 00	E-mail:	
Country Code: 45	http://support.euro.dell.com/dk/da/emaildell/	
	Technical Support	7023 0182
	Customer Care (Relational)	7023 0184
	Home/Small Business Customer Care	3287 5505
	Switchboard (Relational)	3287 1200
	Switchboard Fax (Relational)	3287 1201
	Switchboard (Home/Small Business)	3287 5000
	Switchboard Fax (Home/Small Business)	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)	Website: support.euro.dell.com	
International Access Code: 990	E-mail: http://support.euro.dell.com/fi/fi/emaildell/	
Country Code: 358	Technical Support	09 253 313 60
City Code: 9	Customer Care	09 253 313 38
	Fax	09 253 313 99
	Switchboard	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	E-mail: support.euro.dell.com/fr/fr/emaildell/	
Country Code: 33	Home and Small Business	
City Codes: (1) (4)	Technical Support	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	06103 766-7200
City Code: 6103	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	E-mail: support.euro.dell.com/gr/en/emaildell/	
Country Code: 30	Technical Support	00800-44 14 95 18
	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: apsupport@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	Technical Support	1600 33 8045
	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) International Access Code: 16 Country Code: 353 City Code: 1	Website: support.euro.dell.com	
	E-mail: dell_direct_support@dell.com	
	Technical Support	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) International Access Code: 00 Country Code: 39 City Code: 02	Website: support.euro.dell.com	
	E-mail: support.euro.dell.com/it/it/emaildell/	
	Home and Small Business	
	Technical Support	02 577 826 90
	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)	Technical Support	toll-free: 080-200-3800
International Access Code: 001	Sales	toll-free: 080-200-3600
Country Code: 82	Customer Service (Penang, Malaysia)	604 633 4949
City Code: 2	Fax	2194-6202
	Switchboard	2194-6000
	Technical Support (Electronics and Accessories)	toll-free: 080-200-3801

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	E-mail: tech_be@dell.com	
Country Code: 352	Technical Support (Brussels, Belgium)	3420808075
	Home/Small Business Sales (Brussels, Belgium)	toll-free: 080016884
	Corporate Sales (Brussels, Belgium)	02 481 91 00
	Customer Care (Brussels, Belgium)	02 481 91 19
	Fax (Brussels, Belgium)	02 481 92 99
	Switchboard (Brussels, Belgium)	02 481 91 00
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	toll-free: 1 800 88 0193
International Access Code: 00	Technical Support (Dell Precision, OptiPlex, and Latitude)	toll-free: 1 800 88 1306
Country Code: 60	Technical Support (Dimension, Inspiron, and Electronics and Accessories)	
City Code: 4	Technical Support (PowerApp, PowerEdge, PowerConnect, and PowerVault)	toll-free: 1800 88 1386
	Customer Service (Penang, Malaysia)	04 633 4949
	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 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 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	E-mail (New Zealand): nz_tech_support@dell.com E-mail (Australia): au_tech_support@dell.com Technical Support (for desktop and portable computers) Technical Support (for servers and workstations) Home and Small Business Government and Business Sales Fax	toll-free: 0800 446 255 toll-free: 0800 443 563 0800 446 255 0800 444 617 0800 441 567 0800 441 566
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) International Access Code: 00 Country Code: 47	Website: support.euro.dell.com E-mail: http://support.euro.dell.com/no/no/emaildell/	
	Technical Support	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) International Access Code: 011 Country Code: 48 City Code: 22	Website: support.euro.dell.com E-mail: pl_support_tech@dell.com	
	Customer Service Phone	57 95 700
	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 International Access Code: 00 Country Code: 351	Website: support.euro.dell.com E-mail: support.euro.dell.com/pt/en/emaildell/	
	Technical Support	707200149
	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 Country Code: 65	Technical Support (Dimension, Inspiron, and Electronics and Accessories)	toll-free: 1800 394 7430
	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 Service (Penang, Malaysia)	604 633 4949
	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 Country Code: 421	E-mail: czech_dell@dell.com	
	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 Country Code: 27 City Code: 11	E-mail: dell_za_support@dell.com	
	Gold Queue	011 709 7713
	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	Customer 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	E-mail: support.euro.dell.com/es/es/emaildell/	
Country Code: 34	Home and Small Business	
City Code: 91	Technical Support	902 100 130
	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	E-mail: http://support.euro.dell.com/se/sv/emaildell/	
Country Code: 46	Technical Support	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	E-mail for French-speaking HSB and Corporate Customers: support.euro.dell.com/ch/fr/emaildell/	
City Code: 22	Technical Support (Home and Small Business)	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
	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 Service (Penang, Malaysia)	604 633 4949
	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)	Website: support.euro.dell.com	
International Access Code: 00	Customer Care website: support.euro.dell.com/uk/en/ECare/Form/Home.asp	
Country Code: 44		
City Code: 1344	E-mail: dell_direct_support@dell.com	
	Technical Support (Corporate/Preferred Accounts/PAD [1000+ employees])	0870 908 0500
	Technical Support (direct and general)	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 Country Code: 1	AutoTech (portable and desktop computers)	toll-free: 1-800-247-9362
	Consumer (Home and Home Office)	
	Technical Support	toll-free: 1-800-624-9896
	Customer Service	toll-free: 1-800-624-9897
	DellNet™ Service and Support	toll-free: 1-877-Dellnet (1-877-335-5638)
	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 Technical Support	toll-free: 1-800-822-8965
	Employee Purchase Program (EPP) Customers	toll-free: 1-800-695-8133
	Printers and Projectors Technical Support	toll-free: 1-877-459-7298
	Public (government, education, and healthcare)	
	Customer Service and Technical Support	toll-free: 1-800-456-3355
	Employee Purchase Program (EPP) Customers	toll-free: 1-800-234-1490
	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

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