




Dell™ Dimension™ 4500S

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Hints, Notices, and Cautions

-  **HINT:** A HINT 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.
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Abbreviations and Acronyms

For a complete list of abbreviations and acronyms, see the [Tell Me How](#) help file.

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September 2002 Rev. A02

Advanced Troubleshooting

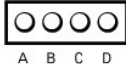
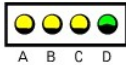
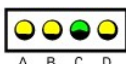
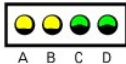
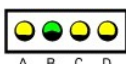
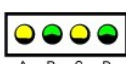
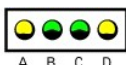
Dell™ Dimension™ 4500S

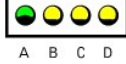
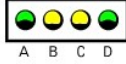
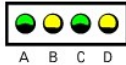
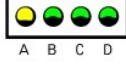
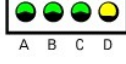
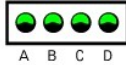



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Diagnostic Codes

Your computer is equipped with four diagnostic lights, which are labeled "A," "B," "C," and "D" on the back of the computer. Each of the four lights can be yellow, green, or off as shown in the following table. When the computer is turned on or restarted and it is functioning normally, the lights flash during POST. After the computer starts, the lights remain green to signify normal computer operation.

If a malfunction is detected and the computer fails to start, the lights display a code that identifies the problem. Write down the diagnostic code displayed and look it up in the following table.

Diagnostic Code	Definition	Corrective Action
	Power up default.	Make sure that the computer is connected to a known working electrical outlet, and then check whether the front-panel power light on the power button is on or off. If the power light is off, check the power supply. If the problem persists, see "Contacting Dell" in the Dell <i>Owner's Manual</i> for instructions on obtaining technical assistance. See " Safety Instructions ," and then remove all cards . If the computer still does not start, see "Contacting Dell" in the Dell <i>Owner's Manual</i> for instructions on obtaining technical assistance.
	Recovery mode from BIOS failure.	See "Contacting Dell" in the Dell <i>Owner's Manual</i> for instructions on obtaining technical assistance.
	Microprocessor has failed a BIOS test.	See "Contacting Dell" in the Dell <i>Owner's Manual</i> for instructions on obtaining technical assistance.
	Memory modules are detected, but a memory failure has occurred.	<ol style="list-style-type: none"> 1 If you have one memory module installed, reinstall it, and then restart the computer. 1 If you have two or more memory modules installed, remove the modules, reinstall one module, and then restart the computer. If the computer starts normally, reinstall an additional module. Continue until you have identified a faulty connector or reinstalled all modules without error. 1 If available, install properly working memory of the same type into your computer. <p>If the problem persists, see "Contacting Dell" in the Dell <i>Owner's Manual</i> for instructions on obtaining technical assistance.</p>
	PCI bus failure has occurred.	<ol style="list-style-type: none"> 1. Determine if a conflict exists by removing a card and then 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"). <p>If the problem persists, see "Contacting Dell" in the Dell <i>Owner's Manual</i> for instructions on obtaining technical assistance.</p>
	Video controller failed to initialize or respond.	<ol style="list-style-type: none"> 1 If the computer has a video card, remove the card and reinstall it. 1 If the problem persists or the computer has integrated video, see "Contacting Dell" in the Dell <i>Owner's Manual</i> for instructions on obtaining technical assistance. <p>If the problem persists or the computer has integrated video, see "Contacting Dell" in the Dell <i>Owner's Manual</i> for instructions on obtaining technical assistance.</p>
	IDE bus failure has occurred.	<p>Reseat the drive cables.</p> <p>If the problem persists, see "Contacting Dell" in the Dell <i>Owner's Manual</i> for instructions on obtaining technical assistance.</p>
	No memory modules are detected.	<ol style="list-style-type: none"> 1 Reseat all memory modules, and then restart the computer. 1 To eliminate the possibility of a faulty memory connector, remove all memory modules, reinstall

 <p>A B C D</p>		<p>one memory module (if the computer supports a single module), and then restart the computer. If the computer starts normally, move the memory module to a different connector and restart the computer. Continue until you have identified a faulty connector or reinstalled all modules without error.</p> <ol style="list-style-type: none"> If the problem still persists, see "Contacting Dell" in the Dell <i>Owner's Manual</i> for instructions on obtaining technical assistance. <p>If the problem persists, see "Contacting Dell" in the Dell <i>Owner's Manual</i> for instructions on obtaining technical assistance.</p>
 <p>A B C D</p>	System board failure.	See "Contacting Dell" in the Dell <i>Owner's Manual</i> for instructions on obtaining technical assistance.
 <p>A B C D</p>	Memory modules are detected, but a memory configuration or compatibility error exists.	<ol style="list-style-type: none"> Be sure that there are no special memory module/memory connector placement requirements. Verify that the memory modules that you are installing are compatible with the computer. <p>If the problem persists, see "Contacting Dell" in the Dell <i>Owner's Manual</i> for instructions on obtaining technical assistance.</p>
 <p>A B C D</p>	USB port or a device connected to it has failed initialization.	<p>Disconnect the device from the USB connector.</p> <p>If the problem persists, see "Contacting Dell" in the Dell <i>Owner's Manual</i> for instructions on obtaining technical assistance.</p>
 <p>A B C D</p>	Other failure.	<ol style="list-style-type: none"> Ensure that the cables are properly connected from the hard drive, CD drive, and DVD drive to the system board. If the problem persists, see "Contacting Dell" in the Dell <i>Owner's Manual</i> for instructions on obtaining technical assistance. <p>If the problem persists, see "Contacting Dell" in the Dell <i>Owner's Manual</i> for instructions on obtaining technical assistance.</p>
 <p>A B C D</p>	Computer has started and turned over control to the operating system.	No action is necessary.
<p>  = yellow  = green  = off </p>		

Beep Codes

If the monitor cannot display errors or problems, during POST the computer might emit a series of beeps, or beep code, that identifies the problem.

Reseating the memory modules may fix the POST beep code errors listed below. If the problem persists, see "Contacting Dell" in the Dell *Owner's Manual* for instructions on obtaining technical assistance.

Code	Cause
1-3-1 through 2-4-4	DIMMs not being properly identified or used
4-3-1	Memory failure above address 0FFFFh

If you hear one of the following POST beep codes, see "Contacting Dell" in the Dell *Owner's Manual* for instructions on obtaining technical assistance.

Code	Cause
1-1-2	Microprocessor register failure
1-1-3	NVRAM
1-1-4	ROM BIOS checksum failure
1-2-1	Programmable interval timer
1-2-2	DMA initialization failure
1-2-3	DMA page register read/write failure
3-1-1	Slave DMA register failure
3-1-2	Master DMA register failure
3-1-3	Master interrupt mask register failure
3-1-4	Slave interrupt mask register failure

3-2-2	Interrupt vector loading failure
3-2-4	Keyboard Controller Test failure
3-3-1	NVRAM power loss
3-3-2	NVRAM configuration
3-3-4	Video Memory Test failure
3-4-1	Screen initialization failure
3-4-2	Screen retrace failure
3-4-3	Search for video ROM failure
4-2-1	No time tick
4-2-2	Shutdown failure
4-2-3	Gate A20 failure
4-2-4	Unexpected interrupt in protected mode
4-3-3	Timer-chip counter 2 failure
4-3-4	Time-of-day clock stopped
4-4-1	Serial or parallel port test failure
4-4-4	Cache test failure


System Messages

Message	Possible Cause	Corrective Action
8042 Gate-A20 error	The keyboard controller failed its test.	If you receive this message after making changes in the system setup program , enter the program and restore the original value(s).
Address Line Short!	Error in the address decoding circuitry in the memory.	Reset the memory modules.
C: Drive Error C: Drive Failure	The hard drive is not working or is not configured correctly.	Ensure that the drive is installed correctly in the computer and defined correctly in the system setup program .
Cache Memory Bad, Do Not Enable Cache	Cache memory is not operating.	See "Contacting Dell" in the Dell <i>Owner's Manual</i> for instructions on obtaining technical assistance.
CH-2 Timer Error	An error is occurring on the timer on the system board.	See "Contacting Dell" in the Dell <i>Owner's Manual</i> for instructions on obtaining technical assistance.
CMOS Battery State Low CMOS Checksum Failure CMOS System Options Not Set CMOS Display Type Mismatch CMOS Memory Size Mismatch CMOS Time and Date Not Set	The system configuration information in the system setup program is incorrect, or the battery charge may be low.	Enter the system setup program and verify the system configuration; then restart the computer.
Diskette Boot Failure	Drive A or B is present but has failed the BIOS POST.	Ensure that the drive is installed correctly in the computer and defined correctly in the system setup program . Check the interface cable at both ends.
DMA Error DMA 1 Error DMA 2 Error	Error in the DMA controller on the system board.	The keyboard or system board may need to be replaced.
FDD Controller Failure HDD Controller Failure	BIOS cannot communicate with the floppy drive or hard drive controller.	Ensure that the floppy drive or the hard drive is installed correctly in the computer and defined correctly in the system setup program . Check the interface cable at both ends.
INTR1 Error INTR2 Error	Interrupt channel on the system board failed to POST.	The keyboard or system board may need to be replaced.
Invalid Boot Diskette	The operating system cannot be located on drive A or drive C.	Enter the system setup program and confirm that drive A or drive C is properly identified.
Keyboard Error	The BIOS has detected a stuck key.	Make sure that nothing is resting on the keyboard; if a key appears to be stuck, carefully pry it up. If the problem persists, you may need to replace the keyboard.
KB/Interface Error	An error occurred with the keyboard connector.	Make sure that nothing is resting on the keyboard; if a key appears to be

		stuck, carefully pry it up. If the problem persists, you may need to replace the keyboard.
No ROM Basic	The operating system cannot be located on drive A or drive C.	Enter the system setup program and confirm that drive A or drive C is properly identified.

Using 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 Windows Help for information on using System Restore. To access Windows Help, see "[Finding Help Information](#)."


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

Creating a Restore Point

1. Click the **Start** button.
2. Click **Help and Support**.
3. Click **System Restore**.
4. Follow the instructions on the screen.

Restoring the Computer to an Earlier Operating State

If problems occur after installing a device driver, first try using [Device Driver Rollback](#). If that is unsuccessful, then use System Restore.

 **NOTICE:** Before restoring the computer to an earlier operating state, save and close all open files and close all 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 then click **Next**.
3. Click a calendar date to which you want to restore your computer.

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

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

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


5. Click **Next**.

The **Restoration Complete** screen appears after System Restore finishes collecting data, and then the computer automatically 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 undoing the last system restore, save and close all open files and close all 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. Select **Undo my last restoration** and click **Next**.
3. Click **Next**.

The System Restore screen appears, and then the computer automatically restarts.


4. After the computer restarts, click **OK**.

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 then click **Control Panel**.
2. Click **Performance and Maintenance**.
3. Click **System**.
4. Click the **System Restore** tab.
5. Make sure that **Turn off System Restore** is unchecked.

Reinstalling Drivers

 **NOTICE:** The Dell | Support website and the *Dell Dimension ResourceCD* provide approved drivers for Dell™ computers. If you install drivers obtained from other sources, your computer might not work correctly.

A driver is a software program that allows a hardware device controller to function properly and to communicate with the computer. Sometimes you can fix a device problem by reinstalling its driver.

Using Windows® XP Device Driver Rollback

Windows XP Device Driver Rollback replaces a device driver with the previously installed version if you install a new driver that causes system instability. If Device Driver Rollback does not resolve the problem, then try using [System Restore](#) to return your operating system to the operating state it was in before you installed the new device driver.

To use Device Driver Rollback:


1. Click the **Start** button, and then right-click **My Computer**.
2. Click **Properties**.
3. Click the **Hardware** tab, and then click **Device Manager**.
4. In the **Device Manager** window, right-click the device for which the new driver was installed, and then click **Properties**.
5. Click the **Drivers** tab.
6. Click **Roll Back Driver**.

Using the Dell Dimension ResourceCD

If using Device Driver Rollback or System Restore does not resolve the problem, then reinstall the driver from the *Dell Dimension ResourceCD*:

1. With the Windows desktop displayed, insert the ResourceCD into the CD or DVD drive.

If this is your first time to use the ResourceCD, go to [step 2](#). If not, go to [step 5](#).
2. When the ResourceCD installation program starts, follow the prompts on the screen.
3. When the **InstallShield Wizard Complete** window appears, remove the ResourceCD and click **Finish** to restart the computer.
4. When you see the Windows desktop, reinsert the ResourceCD into the CD or DVD drive.
5. At the **Welcome Dell System Owner** screen, click **Next**.

 **HINT:** The ResourceCD displays drivers only for the hardware that came on your computer. If you installed additional hardware, the drivers for the new hardware might not be displayed by the ResourceCD. If those drivers are not displayed, exit the ResourceCD program. For drivers information, see the documentation that came with that product.

A message stating that the ResourceCD is detecting hardware in your computer appears.

The drivers that are used by your computer are automatically displayed in the **My Drivers—The ResourceCD has identified these components in your system** window.

6. Click the driver that you want to reinstall and follow the instructions on the screen.

If a particular driver is not listed, then that driver is not required by your operating system.

Resolving Software and Hardware Incompatibilities

Microsoft® Windows® XP IRQ conflicts occur if a device either is not detected during the operating system setup or is detected but incorrectly configured.

To check for conflicts on a computer running Windows XP:

1. Click the **Start** button, and then click **Control Panel**.
2. Click **Performance and Maintenance**, and then click **System**.
3. Click the **Hardware** tab, and then click **Device Manager**.
4. In the **Device Manager** list, check for conflicts with the other devices.

Conflicts are indicated by a yellow exclamation point (!) beside the conflicting device or a red x if the device has been disabled.

5. Double-click any conflicting device listed to bring up the **Properties** window to determine what needs to be reconfigured or removed from the Device Manager.

Resolve these conflicts before checking specific devices.

6. Double-click the malfunctioning device type in the **Device Manager** list.
7. Double-click the icon for the specific device in the expanded list.

The **Properties** window appears.

8. Resolve any IRQ conflicts, as described in [step 5](#).

If an IRQ conflict exists, the **Device** status area in the **Properties** window reports the cards or devices that share the device's IRQ.

You can also use the Windows XP Hardware Troubleshooter:

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

Reinstalling Windows® XP

Before reinstalling the Microsoft® Windows XP operating system to correct a problem, try correcting the problem by performing a Windows XP [System Restore](#). The reinstallation process can take 1 to 2 hours, and you will need to reinstall your drivers, virus protection program, and other software when the process is complete.

- ➔ **NOTICE:** The *Operating System* CD provides options for reinstalling your Windows XP operating system. The options can potentially overwrite files installed by Dell and possibly affect programs installed on your hard drive. Therefore, Dell does not recommend that you reinstall your operating system unless instructed to do so by a Dell technical support representative.
- ➔ **NOTICE:** To prevent conflicts with Windows XP, you must disable any virus protection software installed on your computer before you reinstall Windows XP.

To reinstall Windows XP:

1. To reinstall Windows XP, insert the *Operating System* CD into the CD or DVD drive.

Close any program or utility that might run after you insert the CD into the drive.

2. [Turn off the computer](#), and then turn the computer on again.
3. **When the blue 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 the computer and try again.

4. Use the arrow keys to select the CD-ROM option, and then press <Enter>.
5. When the **Windows XP Setup** screen appears, press <Enter> to select **To set up Windows now**.
6. Read the information in the **License Agreement** window, and then press <F8> on your keyboard to agree with the license information.
7. If your computer already has Windows XP installed and you want to recover your current Windows XP data, type `r` to select the repair option, and then go to [step 1c](#).

If you want to install a new copy of Windows XP, press <Esc> to select the fresh copy option, and then press <Enter> on the next screen to select the highlighted partition (recommended). Then follow the instructions on the screen.

The **Windows XP Setup** screen appears and Windows XP begins to copy files and install the devices. The computer automatically restarts multiple times before it requires additional input.

8. When the **Welcome to Microsoft** screen appears, click the green arrow icon at the bottom of the screen to continue. Follow the directions on the screen to finish.
9. When the **Regional Settings** screen appears, select the settings for your locale, and then click **Next**.
10. Enter your name and organization in the **Personalize Your Software** screen, and then click **Next**.
11. If you are reinstalling Windows XP Home Edition, enter a name for your computer when the **Computer Name** window appears, and then click **Next**.

If you are reinstalling Windows XP Professional, enter a name for your computer and a password when the **Computer Name and Administrator Password** window appears, and then click **Next**.

12. If the **Modem Dialing Information** screen appears, enter the requested information. Then click **Next**.
13. Enter the date, time, and time zone in the **Date and Time Settings** window, and then click **Next**.
14. If you have a network card in your computer, select the appropriate network settings.

If you do not have a network card, this option does not appear.

Windows XP begins to install its components and configure the computer. The computer automatically restarts.

15. When the **Welcome to Microsoft** screen appears, click the green arrow icon at the bottom of the screen to continue. Follow the directions on the screen to finish.
16. Remove the CD from the drive.

17. [Reinstall the appropriate drivers.](#)
18. Reinstall your virus protection software.
19. Reinstall your other software programs.

See the documentation supplied with the software for instructions.






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Documentation

Dell™ Dimension™ 4500S


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- [Printed Documentation](#)
- [Online Documentation](#)

Finding Information for Your Computer

What Are You Looking For?	Find it Here
<ul style="list-style-type: none"> 1 A diagnostic program for my computer 1 Drivers for my computer 1 My computer documentation 1 My device documentation 	<p>ResourceCD</p>  <p>You can use this CD to access documentation, reinstall drivers, or run diagnostics tools.</p>
<ul style="list-style-type: none"> 1 How to set up my computer 1 Troubleshooting information 1 Tools and utilities 1 Warranty information 	<p>Setup and Quick Reference Guide</p> 
<ul style="list-style-type: none"> 1 Express Service Code and Service Tag Number 1 Windows® License Label 	<p>Express Service Code and Product Key</p>  <p>Located on your computer.</p>
<ul style="list-style-type: none"> 1 How to reinstall my operating system 	<p>Operating System CD and Installation Guide</p>  <p>If you reinstall your operating system, use the ResourceCD to reinstall drivers for the devices that came with your computer.</p>
<ul style="list-style-type: none"> 1 How to remove and replace parts 1 Technical specifications 1 How to configure system settings 1 How to troubleshoot and solve problems 	<p>Tell Me How Help File</p> 

	Click the Start button and then click Help and Support to access the electronic documentation stored on your hard drive.
<ul style="list-style-type: none"> 1 Latest drivers for my computer 1 Answers to technical service and support questions 1 Online discussions with other users and technical support 1 Documentation for my computer 	<p>Dell Support website</p> <p>support.dell.com</p> <p>The Dell Support website provides several online tools, including:</p> <ul style="list-style-type: none"> 1 Knowledge Base — hints, tips, and online courses 1 Customer Forum — online discussion with other Dell customers 1 Upgrades — upgrade information for components, such as memory, the hard drive, and the operating system 1 Customer Care — contact information, order status, warranty, and repair information 1 Downloads — drivers, patches, and software updates 1 Reference — computer documentation, product specifications, and white papers
<ul style="list-style-type: none"> 1 How to use Microsoft® Windows XP 1 Documentation for my computer and devices 	<p>Windows XP Help and Support Center</p> <ol style="list-style-type: none"> 1. Click the Start button, and then click Help and Support. 2. Type a word or phrase that describes your problem, and then click the arrow icon. 3. Click the topic that describes your problem. 4. Follow the instructions shown on the screen.


Printed Documentation

 **HINT:** You must right-click the link for a portable document format (PDF) file and save the file to your hard drive. Attempting to open large PDF files through your browser causes your computer to freeze.

To save PDF files (files with an extension of **.pdf**) to your hard drive, right-click the document title, click **Save Target As** in Microsoft® Internet Explorer or **Save Link As** in Netscape Navigator, and specify a location on your hard drive.

Right-click only the following links:


[Dell Dimension 4500S Owner's Manual \(.pdf\) \(1.48 MB\)](#) — Provides information on adding upgrades, performing basic troubleshooting procedures, and reinstalling drivers. It also provides technical specifications.

 **HINT:** PDF files require Adobe™ Acrobat Reader, which can be downloaded from the Adobe World Wide Web site at <http://www.adobe.com/acrobat/>. To view a PDF file, launch Acrobat Reader. Click **File**—> **Open** and select the PDF file.

Online Documentation

The *Tell Me How* help file is already loaded on your hard drive when you receive your computer. To open the file:

1. Click the **Start** button, and then click **Help and Support**.
2. Click **User and system guides**, and then click **User's guides**.
3. Click **Tell Me How**.

 **HINT:** *Tell Me How* help files (files with an extension of **.chm**) require Microsoft Internet Explorer 4.0 or later.

The *Tell Me How* help file allows you to search for information in multiple ways. You can quickly link to information on the following topics:

- 1 Hardware and software features of your computer
- 1 The Windows desktop, where you can change your wallpaper and screen saver, create shortcuts, and position icons
- 1 Software access, installation, and removal
- 1 Basic file management, such as finding, copying, deleting, and renaming files
- 1 Tips on using your computer hardware

Downloading the *Tell Me How* Help File and Associated Files

1. Right-click the following link to the **hhactivex.dll** file: [hhactivex.dll](#).
2. Click **Save Target As** in Microsoft Internet Explorer or **Save Link As** in Netscape Navigator, and specify **c:\windows\system**.
3. Click the **Start** button on the Microsoft Windows desktop, and then click **Run**.
4. Type `regsvr32 hhactivex.dll` and then press <Enter>.
5. Click **OK** when the installation is complete.
6. Right-click the following link to the file: [Dell Dimension 4500S Tell Me How \(.chm\) \(950 KB\)](#).
7. Click **Save Target As** in Microsoft Internet Explorer or **Save Link As** in Netscape Navigator, and specify a location on your hard drive.

Viewing the *Tell Me How* Help File

1. Click the **Start** button, and then click **Help and Support**.
 2. Click **User and system guides**, and then click **User's guides**.
 3. Click **Tell Me How**.
-

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Adding and Replacing Parts

Dell™ Dimension™ 4500S

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Safety Instructions

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

When Using Your Computer

As you use your computer, observe the following safe-handling guidelines.

⚠ CAUTION: Do not operate your computer with any cover(s) (including the computer cover, filler brackets, front-panel inserts, and so on) removed or opened.

- 1 Your computer is equipped with one of the following:
 - o A fixed-voltage power supply — Computers with a fixed-voltage power supply do not have a voltage selection switch on the back panel and operate at only one voltage (see the regulatory label on the outside of the computer for its operating voltage).
 - o An auto-sensing voltage circuit — Computers with an auto-sensing voltage circuit do not have a voltage selection switch on the back panel and automatically detect the correct operating voltage.
 - o A manual voltage selection switch — Computers with a voltage selection switch on the back panel must be manually set to operate at the correct operating voltage.
- 1 To help avoid damaging a computer with a manual voltage selection switch, be sure that the voltage selection switch is set to match the AC power available at your location:
 - o 115 V/60 Hz in most of North and South America and some Far Eastern countries such as South Korea and Taiwan
 - o 100 V/50 Hz in eastern Japan and 100 V/60 Hz in western Japan

🔧 NOTE: The voltage selection switch must be set to the 115V position even though the AC supply in Japan is 100 V.

- o 230 V/50 Hz in some regions in the Caribbean and South America and most of Europe, the Middle East, and the Far East



🔧 NOTE: Fixed-voltage power supplies and auto-select power supplies do not require a voltage selection switch. Your power supply may not have this switch. Check the regulatory label on the outside of the computer for your power supply type.

Also be sure that your monitor and attached devices are electrically rated to operate with the AC power available in your location.

- 1 To avoid shorting out your computer when disconnecting a network cable, first unplug the cable from the network adapter on the back of your computer, and then from the network jack. When reconnecting a network cable to your computer, first plug the cable into the network jack, and then into the network adapter.
- 1 To help avoid possible damage to the system board, wait 5 seconds after turning off the computer before disconnecting or connecting a non-USB device from the computer.
- 1 To help prevent electric shock, plug the computer and device power cables into properly grounded power sources. These cables are equipped with three-prong plugs to help ensure proper grounding. Do not use adapter plugs or remove the grounding prong from a cable. If you must use an extension cable, use a three-wire cable with properly grounded plugs.



- 1 To help protect your computer from sudden, transient increases and decreases in electrical power, use a surge suppressor, line conditioner, or uninterruptible power supply.
- 1 Be sure that nothing rests on your computer's cables and that the cables are not located where they can be stepped on or tripped over.
- 1 Do not spill food or liquids on your computer. If the computer gets wet, contact Dell. See "Contacting Dell" in the *Owner's Manual* for instructions on obtaining technical assistance.
- 1 Do not push any objects into the openings of your computer. Doing so can cause fire or electric shock by shorting out interior components.
- 1 Keep your computer away from radiators and heat sources. Also, do not block cooling vents. Avoid placing loose papers underneath your computer; do not place your computer in a closed-in wall unit or on a bed, sofa, or rug.

When Working Inside Your Computer

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

⚠ CAUTION: Do not attempt to service the computer yourself, except as explained in this guide and elsewhere in Dell documentation. Always follow installation and service instructions closely.

1. [Perform an orderly computer shutdown](#) using the operating system menu.
2. Turn off your computer and any devices.
3. Ground yourself by touching an unpainted metal surface at the back of the computer before touching anything inside your computer.

While you work, periodically touch an unpainted metal surface on the computer to dissipate any static electricity that might harm internal components.

4. Disconnect any devices connected to the computer, including the monitor, from their electrical outlets to reduce the potential for personal injury or shock. Also, disconnect any telephone or telecommunication lines from the computer.
5. Disconnect the power cable to your computer, and then press the power button to ground the system board.

In addition, take note of these safety guidelines when appropriate:

- 1 When you disconnect a cable, pull on its connector, not on the cable itself. As you pull connectors apart, keep them evenly aligned to avoid bending any pins. Also, before you connect a cable, make sure that both connectors are correctly oriented and aligned.
- 1 Handle components and cards with care. Don't touch the components on a card. Hold a card by its edges or by its metal bracket.

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

Protecting Against Electrostatic Discharge

To prevent static damage, discharge static electricity from your body before you touch anything inside your computer and periodically while you work inside the computer. You can do so by touching an unpainted metal surface on the back of the computer.

You can also take the following steps to prevent static damage:

- 1 Do not remove items from their antistatic packing material until you are ready to install them in your computer. Just before unwrapping the antistatic packaging, be sure to discharge static electricity from your body.
- 1 When transporting a sensitive component, first place it in an antistatic container or packaging.

Battery Disposal



Your computer uses a lithium battery. For instructions about replacing the lithium battery in your computer, see "[Replacing the Battery](#)." The lithium battery is a long-life battery, and it is very possible that you will never need to replace it.

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

Shutting Down the Computer

🔄 NOTICE: To prevent data loss, you must turn off your computer through the **Start** menu rather than by pressing the power button.

🔍 HINT: If you are having difficulty turning off your computer, see "[General Problems](#)."

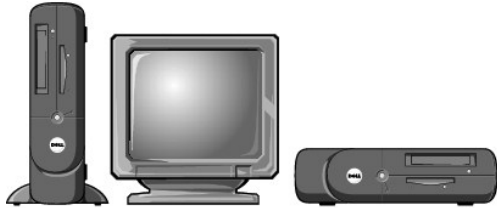
1. Save and close any open files and exit any open programs.
2. Click the **Start** button and then click **Turn off Computer**.
3. Click **Turn off**.

The computer automatically turns off after the shutdown process finishes.

4. Turn off your monitor and any other devices connected to power.
-

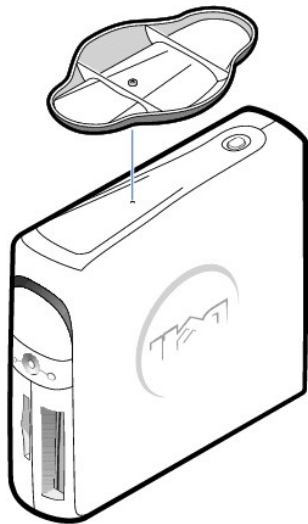
Attaching and Removing the Computer Stand

The computer can be used in either a vertical or horizontal position.



To use the computer in a vertical position, you must attach the computer stand:

1. Place the computer on its right side so that the drive bays are at the bottom.
2. Fit the stand onto what was the left side of the computer.
 - a. Position the stand as shown in the following illustration by aligning the large round hole in the stand with the securing button on the side of the cover and aligning the captive screw in the stand with the screw hole in the cover.
 - b. When the stand is in place, tighten the thumbscrew.
3. Rotate the computer so that the stand is at the bottom and the drives are at the top.



To remove the computer stand:

1. Turn the computer over so that the stand is at the top.
 2. Loosen the thumbscrew and lift the stand away.
 3. Place the computer in a horizontal position.
-

Opening the Computer Cover

⚠ CAUTION: Before you begin any of the procedures in this section, follow the "[Safety Instructions](#)."

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

1. [Shut down the computer](#).

2. Turn off any attached devices and disconnect them from their electrical outlets.

➡ NOTICE: To disconnect a network cable, first unplug the cable from your computer and then unplug it from the network wall jack.

3. Disconnect the computer power cable from the wall outlet, and then press the power button to ground the system board.

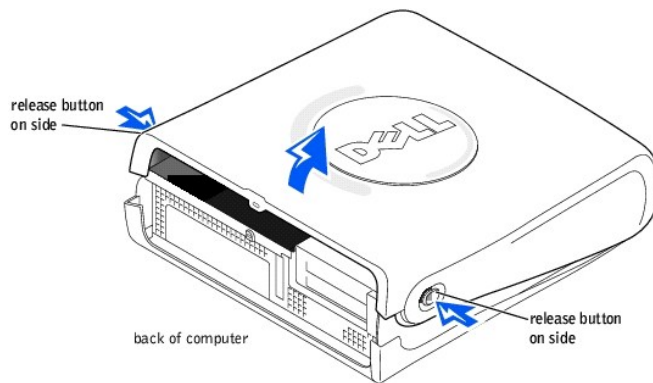
4. [Remove the computer stand](#), if it is attached.

➡ NOTICE: Ensure that there is sufficient space to support the open cover—at least 30 cm (1 ft) of desk top space.

5. Locate the *two* release buttons shown in the illustration. Then, press the *two* release buttons as you lift the cover.

➡ NOTICE: Open the cover slowly to ensure that you do not damage any cables.

Raise the back of the cover, and pivot it toward the front of the computer.

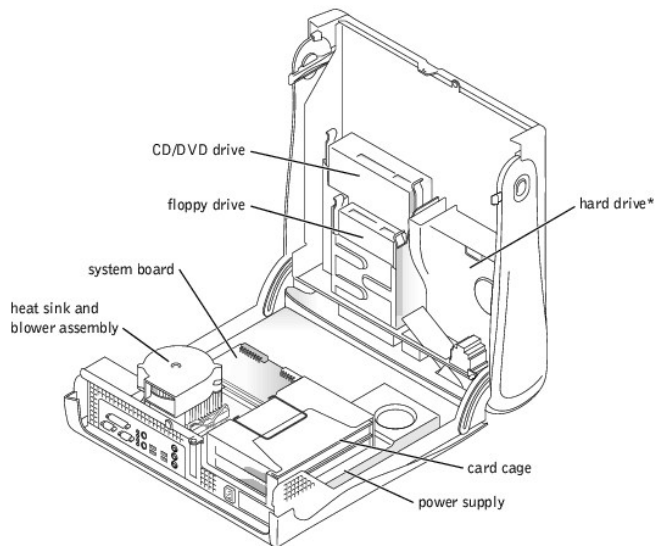


Looking Inside Your Computer

⚠ CAUTION: Before you begin any of the procedures in this section, follow the "[Safety Instructions](#)."

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

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



* Your computer's hard drive may or may not have a plastic shroud cover. Operating the computer without a hard-drive shroud does not affect its performance.

Adding or Removing Cards

⚠ CAUTION: Before you begin any of the procedures in this section, follow the "[Safety Instructions](#)."

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

1. [Shut down the computer](#).

2. Turn off any attached devices and disconnect them from their electrical outlets.

🔄 NOTICE: To disconnect a network cable, first unplug the cable from your computer and then unplug it from the network wall jack.

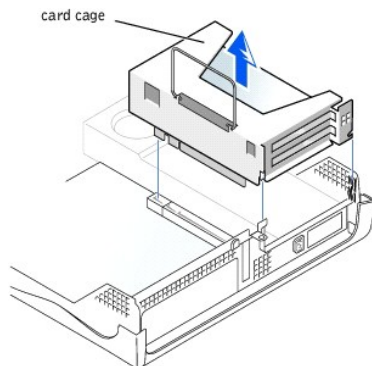
3. Disconnect the computer power cable from the wall outlet, and then press the power button to ground the system board.

4. [Remove the computer stand](#), if it is attached.

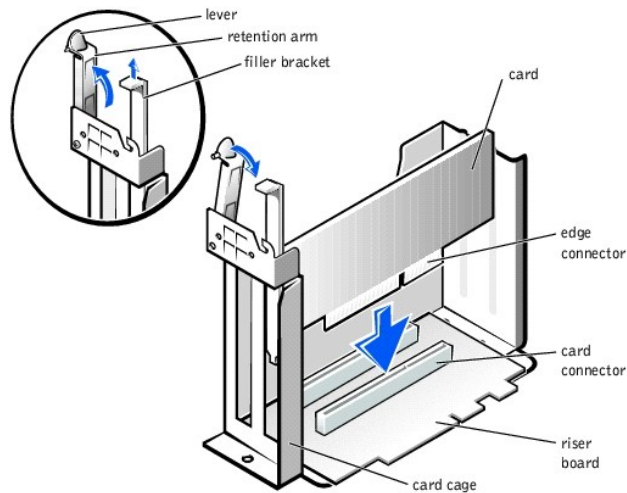
5. [Open the computer cover](#).

6. Remove the card cage.

- a. Check any cables connected to cards through the back-panel openings. Disconnect any cables that will not reach the card cage once it is removed from the computer.
- b. Gently pull on the handle and lift the card cage up and away from the computer.



7. Press the lever on the retention arm and raise the retention arm.



8. If you are installing a new card, remove the filler bracket to create an empty card-slot opening.

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.

9. 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.

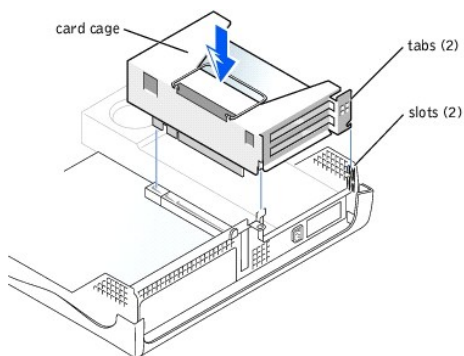
10. Insert the card into the card connector.

If the card is full-length, insert the end of the card into the card guide bracket as you lower the card toward its connector on the system board. Insert the card firmly into the card connector on the riser board.

11. Lower the retention arm and press it into place, securing the card(s) in the computer.

12. Replace the card cage.

- a. Align the tabs in the side of the card cage with the slots on the side of the computer, and slide the card cage down into place.
- b. Make sure that the riser board is fully seated in the connector on the system board.



13. Reconnect any cables that you removed in [step 6](#).

14. 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: 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.

15. [Close the computer cover.](#)
 16. [Attach the computer stand](#) (optional).
- 🔔 **NOTICE:** To connect a network cable, first plug the cable into the network wall jack and then plug it into the computer.
17. Connect your computer and devices to electrical outlets, and turn them on.
 18. Install any drivers required for the card as described in the card documentation.
-

Adding Memory

- ⚠️ **CAUTION:** Before you begin any of the procedures in this section, follow the "[Safety Instructions.](#)"
- ⚠️ **CAUTION:** To guard against electrical shock, always unplug your computer from the electrical outlet before opening the cover.

You can increase your computer memory by installing memory modules on the system board. For information on the type of memory supported by your computer, look under "[Memory](#)" in "Technical Specifications."

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

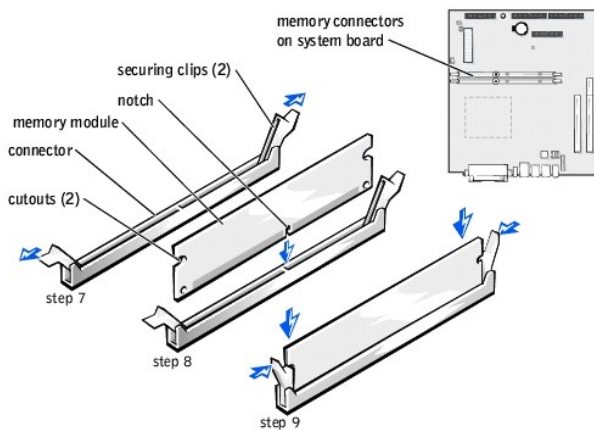
1. [Shut down the computer.](#)
2. Turn off any attached devices and disconnect them from their electrical outlets.

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

3. Disconnect the computer power cable from the wall outlet, and then press the power button to ground the system board.
4. [Remove the computer stand](#), if it is attached.
5. [Open the computer cover.](#)
6. If necessary, remove a memory module:
 - a. Press out the securing clip at each end of the memory module connector.
 - b. 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.

7. To insert a module, press out the securing clip at each end of the memory module connector.



8. Align the notches on the bottom of the module with the crossbars in the connector.

🔔 **NOTICE:** To avoid breaking the memory module, do not press near the middle of the module.

9. Insert the module straight down into the connector, ensuring that it fits into the vertical guides at each end of the connector. Press firmly on the ends of the module until it snaps into place.

If you insert the module correctly, the securing clips snap into the cutouts at each end of the module.

10. [Close the computer cover.](#)

11. [Attach the computer stand](#) (optional).

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

12. Connect your computer and devices to electrical outlets, and turn them on.
 13. Right-click the **My Computer** icon and then click **Properties**.
 14. Click the **General** tab.
 15. To verify that the memory is installed correctly, check the amount of memory (RAM) listed.
-

Front-Panel Inserts

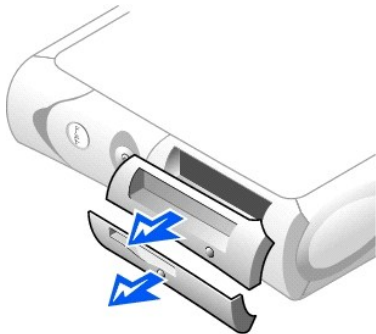
⚠ **CAUTION:** Before you begin any of the procedures in this section, follow the "[Safety Instructions](#)."

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

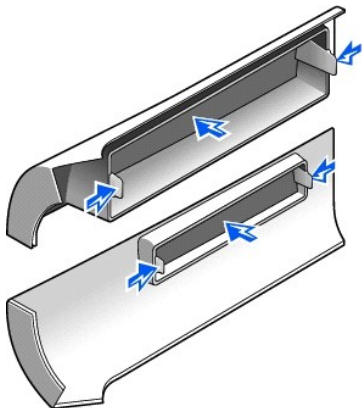
1. [Shut down the computer](#).
2. Turn off any attached devices and disconnect them from their electrical outlets.

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




3. Disconnect the computer power cable from the wall outlet, and then press the power button to ground the system board.
4. [Remove the computer stand](#), if it is attached.
5. [Open the computer cover](#).
6. Facing the front of the computer, use your fingers to remove the front-panel cover.




7. Press on the inserts until they pop free from the front-panel cover.



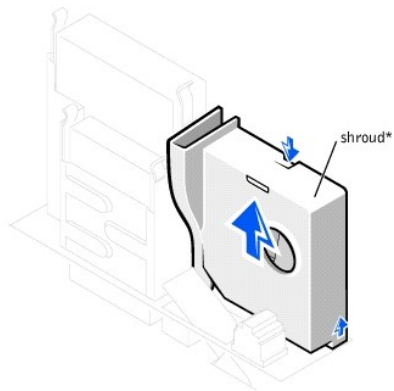
Hard Drive

-  **CAUTION:** Before you begin any of the procedures in this section, follow the "[Safety Instructions](#)."
-  **CAUTION:** To guard against electrical shock, always unplug your computer from the electrical outlet before opening the cover.
-  **CAUTION:** 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. [Shut down the computer](#).
2. Turn off any attached devices and disconnect them from their electrical outlets.

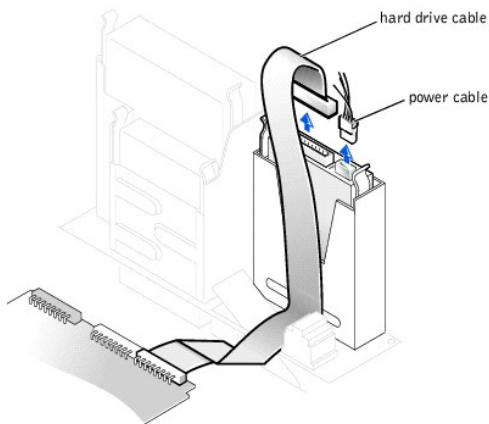
 **NOTICE:** To disconnect a network cable, first unplug the cable from your computer and then unplug it from the network wall jack.

3. Disconnect the computer power cable from the wall outlet, and then press the power button to ground the system board.
4. [Remove the computer stand](#), if it is attached.
5. [Open the computer cover](#).
6. Your computer's hard drive may or may not have a plastic shroud cover. (Operating the computer without a hard-drive shroud does not affect its performance.) If your computer's hard drive does not have a shroud, proceed to the next step. If your computer's hard drive does have a shroud, remove it by pressing in on the indented tab at the top of the shroud and lifting the shroud away.

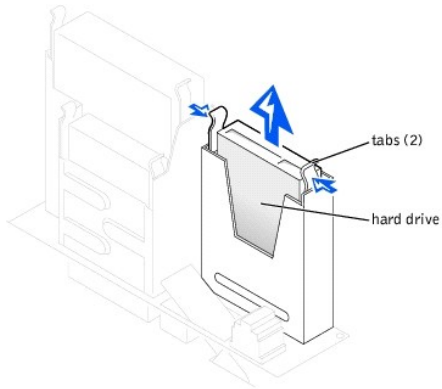


* Your computer's hard drive may or may not have a plastic shroud cover. Operating the computer without a hard-drive shroud does not affect its performance.

7. Disconnect the power cable and hard drive cable from the drive.



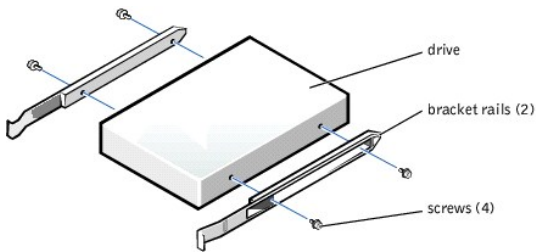
8. Press in on the tabs on each side of the drive and slide the drive up and out.



➡ **NOTICE:** Ground yourself by touching an unpainted metal surface on the back of the computer.

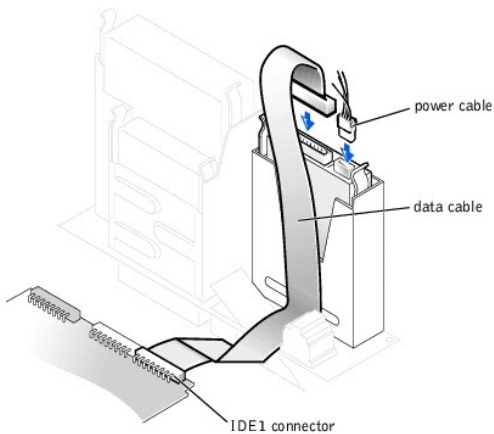
➡ **NOTICE:** When you unpack the drive, do not set it on a hard surface, which may damage the drive. Instead, set the drive on a surface, such as a foam pad, that will sufficiently cushion it.

9. Unpack the replacement hard drive, and prepare it for installation.
10. Check the documentation for the drive to verify that it is configured for your computer.
11. If your replacement hard drive does not have the bracket rails attached, remove the rails from the old drive by removing the two screws that secure each rail to the drive. Attach the bracket rails to the new drive by aligning the screw holes on the drive with the screw holes on the bracket rails and then inserting and tightening all four screws (two screws on each rail).



12. Install the hard drive into the computer by gently sliding the drive into place until you hear it securely click.
13. Connect the power cable and hard-drive data cable to the drive.

⚠ **CAUTION:** Match the colored strip on the cable with pin 1 on the drive (pin 1 is marked as "1").



14. Check all connectors to be certain that they are properly cabled and firmly seated.
15. If your computer has a hard-drive shroud, replace the shroud by inserting the two tabs on the bottom into the holes in the computer and snapping the

top into place. (Operating the computer without a hard-drive shroud does not affect its performance.)

16. [Close the computer cover.](#)

17. [Attach the computer stand](#) (optional).

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

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

19. See the documentation that came with the drive for instructions on installing any software required for drive operation.

Floppy Drive

⚠️ **CAUTION:** Before you begin any of the procedures in this section, follow the "[Safety Instructions.](#)"

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

1. [Shut down the computer.](#)

2. Turn off any attached devices and disconnect them from their electrical outlets.

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

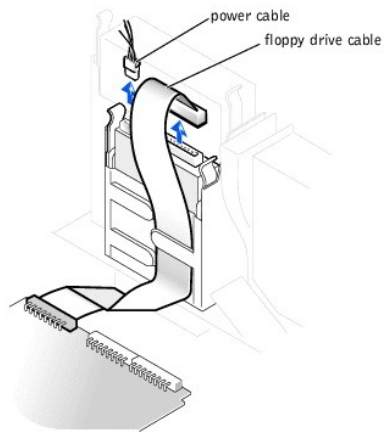
3. Disconnect the computer power cable from the wall outlet, and then press the power button to ground the system board.

4. [Remove the computer stand](#), if it is attached.

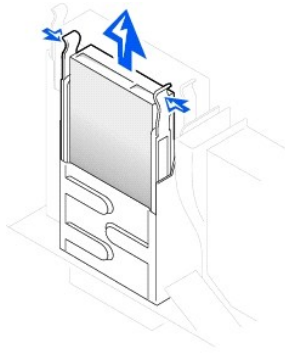
5. [Open the computer cover.](#)

6. Disconnect the power and data cables from the back of the drive that is installed in the CD/DVD drive bay above the floppy drive.

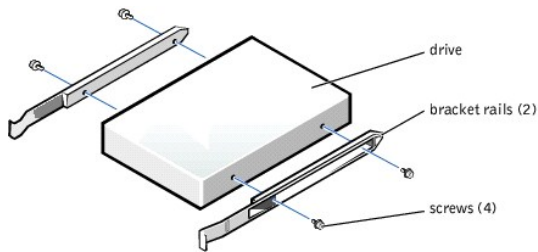
7. Disconnect the power and floppy-drive data cables from the back of the floppy drive.



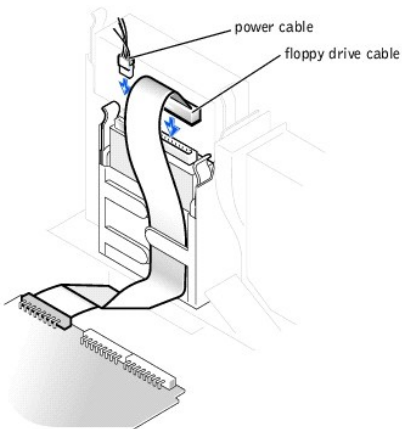
8. Press inward on the two tabs on the sides of the drive, slide the drive upward, and remove it from the floppy-drive bay.



9. If the replacement drive does not have the bracket rails attached, remove the rails from the old drive by removing the two screws that secure each rail to the drive. Attach the bracket to the new drive by aligning the screw holes on the drive with the screw holes on the bracket rails and then inserting and tightening all four screws (two screws on each rail).



10. Gently slide the drive into place until the tabs securely click into position.
11. Attach the power and data cables to the floppy drive.



12. Reconnect the power and data cables to the back of the drive installed in the CD/DVD drive bay above the floppy drive.
13. Check all cable connections, and fold cables out of the way to provide airflow for the fan and cooling vents.
14. [Close the computer cover.](#)
15. [Attach the computer stand](#) (optional).

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

16. Connect your computer and devices to electrical outlets, and turn them on.
17. See the documentation that came with the drive for instructions on installing any software required for drive operation.

CD/DVD Drive

⚠ CAUTION: Before you begin any of the procedures in this section, follow the "[Safety Instructions](#)."

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

🔧 HINT: Drives sold by Dell come with their own operating software and documentation. After you install a drive, refer to the documentation that came with the drive for instructions on installing and using the drive software.

1. [Shut down the computer](#).

2. Turn off any attached devices and disconnect them from their electrical outlets.

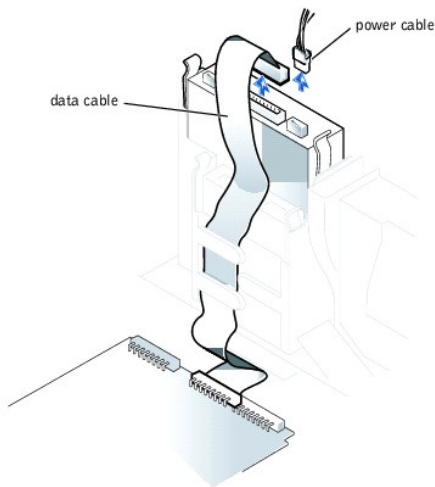
🔄 NOTICE: To disconnect a network cable, first unplug the cable from your computer and then unplug it from the network wall jack.

3. Disconnect the computer power cable from the wall outlet, and then press the power button to ground the system board.

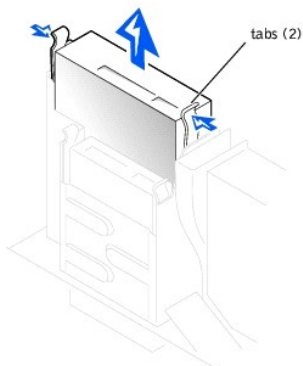
4. [Remove the computer stand](#), if it is attached.

5. [Open the computer cover](#).

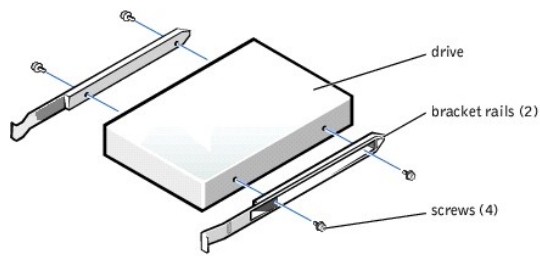
6. If you are replacing a drive, disconnect the power and data cables from the back of the drive before you remove the drive.



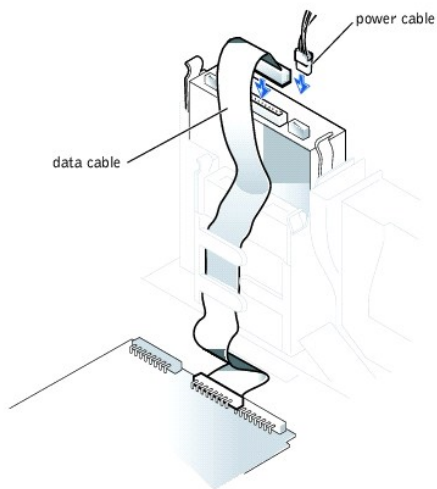
7. Press inward on the two tabs on the sides of the drive, and then slide the drive upward and remove it from the drive bay.



8. If the replacement drive does not have the bracket rails attached, remove the rails from the old drive by removing the two screws that secure each rail to the drive. Attach the bracket to the new drive by aligning the screw holes on the drive with the screw holes on the bracket rails and then inserting and tightening all four screws (two screws on each rail).



9. Gently slide the drive into place until the tabs securely click into position.
10. Connect the power and data cables to the drive.



11. If you are installing a drive that has its own controller card, install the controller card in a card slot.
12. Check all cable connections, and fold cables out of the way to provide airflow for the fan and cooling vents.
13. If the drive uses removable media and drive bay was previously empty, remove the [front-panel insert](#).
14. [Close the computer cover](#).
15. [Attach the computer stand](#) (optional).

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

16. Connect your computer and devices to electrical outlets, and turn them on.
17. See the documentation that came with the drive for instructions on installing any software required for drive operation.

Replacing the Microprocessor

⚠ **CAUTION:** Before you begin any of the procedures in this section, follow the "[Safety Instructions](#)."

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

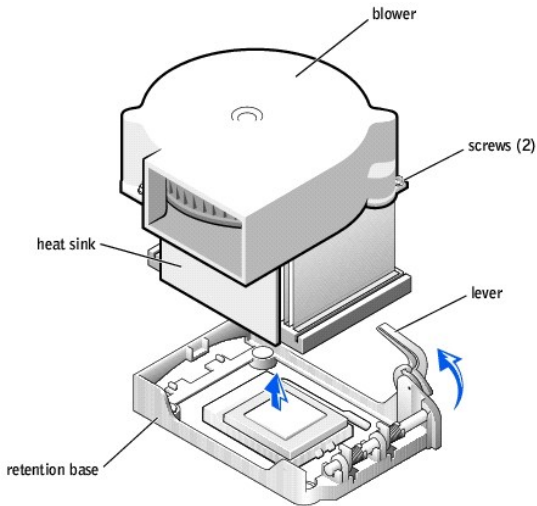
1. [Shut down the computer](#).
2. Turn off any attached devices and disconnect them from their electrical outlets.

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

3. Disconnect the computer power cable from the wall outlet, and then press the power button to ground the system board.
4. [Remove the computer stand](#), if it is attached.
5. [Open the computer cover](#).

6. Disconnect the cooling fan power cable from the [FAN connector](#) on the system board.
7. Disconnect the 12-volt power cable from the [12-V POWER connector](#) on the system board.
8. Remove the heat sink/blower assembly.
 - a. The heat sink is attached to the blower. Press and lower the green lever on the retention mechanism until it is parallel to the system board.
 - b. Gently rock the heat sink, and then slightly twist it as you lift it from the microprocessor.

➡ **NOTICE:** Lay the heat sink down with the thermal solution facing upward.

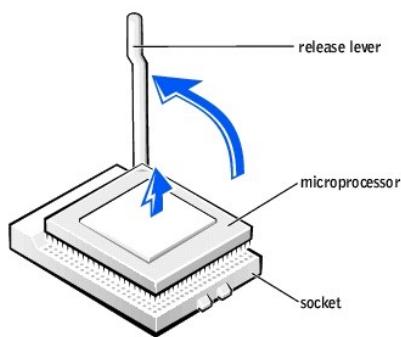


9. Lift the heat sink/blower assembly away from the microprocessor.
10. Remove the two screws on the blower to remove it from the heat sink.

➡ **NOTICE:** Do not discard the original heat sink and securing clips unless you are installing a microprocessor upgrade kit from Dell. If you are *not* installing a microprocessor upgrade kit from Dell, reuse the original heat sink, blower, and securing clips when installing your new microprocessor.

➡ **NOTICE:** Be careful not to bend any of the pins when you remove the microprocessor. Bending the pins can permanently damage the microprocessor.

11. Pull the release lever straight up until the microprocessor is released, and then remove the microprocessor from the socket.



➡ **NOTICE:** Ground yourself by touching an unpainted metal surface on the back of the computer.

➡ **NOTICE:** Be careful not to bend any of the pins when you unpack the microprocessor. Bending the pins can permanently damage the microprocessor.

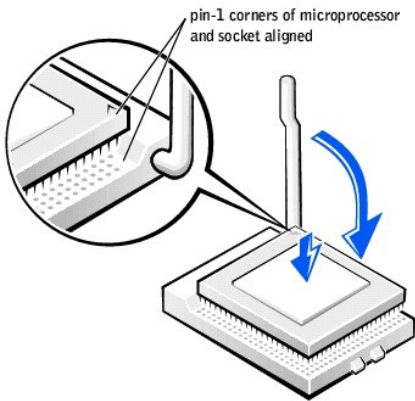
12. Unpack the new microprocessor.

➡ **NOTICE:** You must position the microprocessor correctly in the socket to avoid permanent damage to the microprocessor and the computer when you turn on the computer.

13. If the release lever on the socket is not fully extended, move it to that position.

- Align the pin-1 corners of the microprocessor and socket.

➔ **NOTICE:** When you place the microprocessor in the socket, ensure that all of the pins fit into the corresponding holes on the socket. Be careful not to bend the pins.



- Set the microprocessor lightly in the socket and make sure that all pins are headed into the correct holes. Do not use force, which could bend the pins if the microprocessor is misaligned. When the microprocessor is positioned correctly, press it with minimal pressure to seat it.

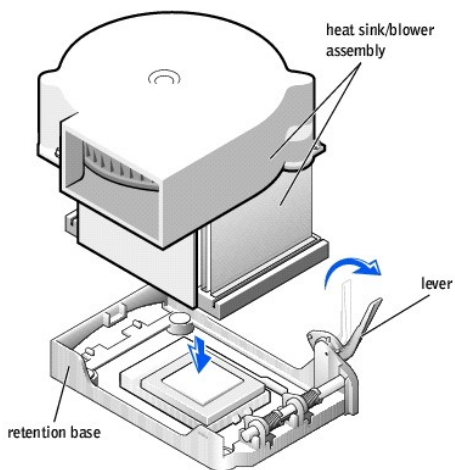
- When the microprocessor is fully seated in the socket, pivot the release lever back toward the socket until it snaps into place to secure the microprocessor.

➔ **NOTICE:** Ground yourself by touching an unpainted metal surface on the back of the computer.

➔ **NOTICE:** If you are *not* installing a microprocessor upgrade kit from Dell, reuse the original blower/heat-sink assembly when you replace the microprocessor.

If you are installing a microprocessor replacement kit from Dell, return the microprocessor to Dell in the same package in which your replacement kit was sent.

- Reinstall the two screws that attach the blower to the heat sink.
- Lower the heat sink/blower assembly to the microprocessor so that the heat sink fits in the retention base.
- Raise the retention lever and press until the heat sink is secured. You will feel the lever pause once it is at a 90-degree angle. Keep pressing the lever another 30 degrees, ensuring that it is in the locked position.



- Plug the fan cable into the FAN connector on the [system board](#).
- Plug the 12-volt power cable into the 12VPOWER connector on the [system board](#).
- [Close the computer cover](#).
- [Attach the computer stand](#) (optional).

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

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

If you are installing a microprocessor replacement kit from Dell, return the original heat sink assembly and microprocessor package to Dell in the same package in which your replacement kit was sent. Your microprocessor replacement kit should include a replacement microprocessor heat sink and one replacement securing clip.

Replacing the System Board

Removing the System Board

⚠ **CAUTION:** Before you begin any of the procedures in this section, follow the "[Safety Instructions](#)."

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

1. [Shut down the computer](#).
2. Turn off any attached devices and disconnect them from their electrical outlets.

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

3. Disconnect the computer power cable from the wall outlet, and then press the power button to ground the system board.
4. [Remove the computer stand](#), if it is attached.
5. [Open the computer cover](#).

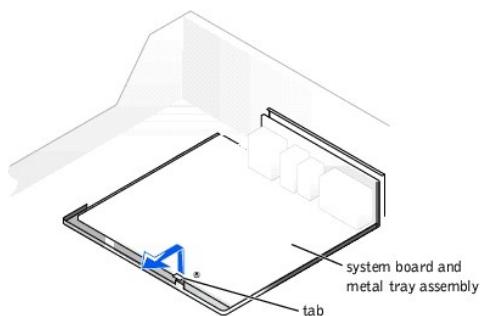
➡ **NOTICE:** The system board and the metal tray are attached and are removed as one piece.

6. Remove the card cage.
7. Remove or move any components that restrict access to the system board.
8. Disconnect all cables from the system board.

Before you remove the existing system board, visually compare the replacement system board to the existing system board to make sure that you have the correct part.

➡ **NOTICE:** Release the tab on the system board before you remove the system board.

9. Pull up on the tab and slide the system board toward the front of the computer; lift it up and away.



10. Place the system board that you just removed next to the replacement system board.

Replacing the System Board

1. Transfer components from the existing system board to the replacement system board.
 - a. [Remove the memory modules and install them](#) on the replacement board.

⚠ **CAUTION:** The microprocessor package and heat sink assembly can get hot. To avoid burns, be sure that the package and assembly have had sufficient time to cool before you touch them.

- b. [Remove the heat sink assembly and microprocessor](#) from the existing system board and transfer it to the replacement system board.
2. Configure the settings of the replacement system board.

Set the jumper on the replacement system board so it is identical to the one on the existing board.

3. Orient the replacement board by aligning the notches on the bottom to the tabs on the computer floor.
4. Slide the board toward the back of the computer until it clicks into place.
5. Replace any components and cables that you removed from the system board.
6. [Close the computer cover](#).
7. [Attach the computer stand](#) (optional).

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

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

Replacing the Power Supply

Removing the Power Supply

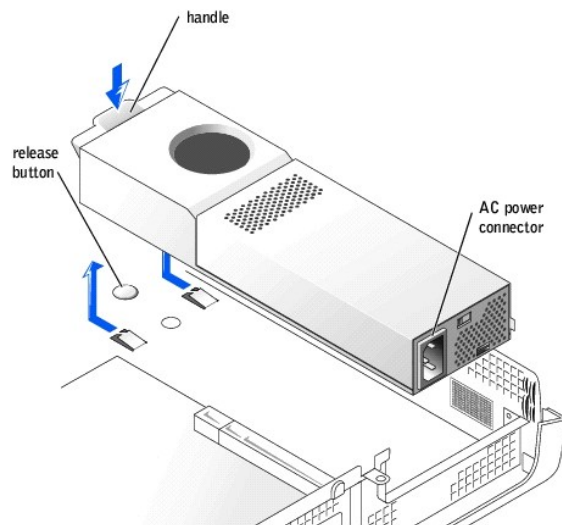
CAUTION: Before you begin any of the procedures in this section, follow the "[Safety Instructions](#)."

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

1. [Shut down the computer](#).
2. Turn off any attached devices and disconnect them from their electrical outlets.

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

3. Disconnect the computer power cable from the wall outlet, and then press the power button to ground the system board.
4. [Remove the computer stand](#), if it is attached.
5. [Open the computer cover](#).
6. Disconnect the AC power cable from the AC power connector on the back of the power supply.



7. Disconnect the DC power cables from the system board and the drives.

Note the routing of the DC power cables underneath the clips in the computer as you remove them from the system board and drives. It is important to route these cables properly when you replace them to prevent them from being pinched or crimped.

8. [Remove the card cage](#) and remove the power cables from the side of the hard drive. To remove the power cables, use the cables as leverage and pull away from the clips while simultaneously pulling on the metal clips with your fingers.
9. Press the release button by pressing down on the handle, which in turn presses the release button.
10. Slide the power supply toward the front of the computer approximately 1 inch.

11. Lift the power supply up and out of the computer.

Replacing the Power Supply

1. Slide the power supply into place.
2. Reconnect the DC power cables.
3. Connect the AC power cable to the AC power connector on the back of the power supply.
4. Reattach the power cables to the side of the hard drive and [replace the card cage](#) replace the expansion-card cage.
5. Run the cables underneath the clips.
6. Press the clips to close them over the cables.
7. [Close the computer cover](#).
8. [Attach the computer stand](#) (optional).

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

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

Replacing the Battery

⚠ **CAUTION:** Before you begin any of the procedures in this section, follow the "[Safety Instructions](#)."

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

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 3-V CR2032 battery only with the same or equivalent type recommended by the manufacturer. Discard used batteries according to the manufacturer's instructions (see "[Battery Disposal](#)").

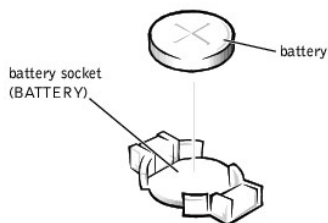
1. Record all the screens in the [system setup program](#) so that you can restore the correct settings in [step 10](#).
2. [Shut down the computer](#).
3. Turn off any attached devices and disconnect them from their electrical outlets.

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

4. Disconnect the computer power cable from the wall outlet, and then press the power button to ground the system board.
5. [Open the computer cover](#).

➡ **NOTICE:** To avoid damage to the system board while you pry the battery loose, be sure to insert the plastic screwdriver between the battery and the socket (not the system board).

6. [Locate the battery socket BATTERY](#) on the system board and pry the battery out of its socket with your fingers or with a plastic screwdriver.
7. Insert the battery into the socket with the side labeled "+" facing up.



8. [Replace the computer cover](#).

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

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

10. Access the [system setup program](#) and restore the settings you recorded in [step 1](#).
-

Closing the Computer Cover

1. Ensure that all cables are connected, and fold cables out of the way. Do not route cables over the drive cage—they can prevent the cover from closing properly.
2. Ensure that no tools or extra parts are left inside the computer.
3. Pivot the cover down and ensure that the release buttons click into place.
4. [Attach the computer stand](#) (optional).



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

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

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Solving Problems

Dell™ Dimension™ 4500S

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- [E-Mail, Modem, and Internet Problems](#)
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- [General Problems](#)
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Finding Help Information

To access the *Tell Me How* help file

1. Click the **Start** button, and then click **Help and Support**.
2. Click **User and system guides**, and then click **User's guides**.
3. Click **Tell Me How**.


To access Windows help

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

To locate additional information for your computer — See "[Finding Information for Your Computer](#)."

Battery Problems

 **CAUTION:** Before you begin any of the procedures in this section, follow the "[Safety Instructions](#)."

 **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.

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](#). If the battery still does not work properly, contact Dell. See "Contacting Dell" in the Dell *Owner's Manual* for the correct number to call.

Drive Problems

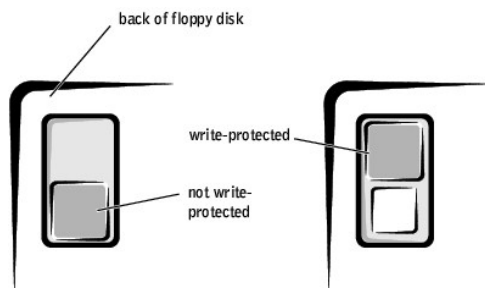
Floppy drive problems

Ensure that Windows® recognizes the drive — Click the **Start** button, and then click **My Computer**. If the floppy 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

1. Insert another disk to eliminate the possibility that the original floppy disk is defective.
1. Insert a bootable floppy disk and reboot the computer.

Ensure that the disk is not full or write-protected — Ensure that the disk has available space and that it is not write-protected (locked). See the following illustration.



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

Clean the drive — Use a commercially available cleaning kit.

CD drive problems

HINT: High-speed CD drive vibration is normal and may cause noise. This does not indicate a defect in the drive or the CD.

Adjust the Windows volume control — Click the speaker icon in the lower-right corner of your screen.

- 1. Ensure that the volume is turned up by clicking the slider and dragging it up.
- 1. Ensure that the sound is not muted by clicking any boxes that are checked.

Test the drive with another CD — Insert another CD to eliminate the possibility that the original CD is defective.

Check the speakers and subwoofer — See "[Sound and Speaker Problems](#)."

Ensure that Windows recognizes the drive — Click the **Start** button, and then click **My Computer**. If the CD 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.

Clean the disc — See the [Tell Me How](#) help file for instructions on cleaning your CDs.

Problems writing to a CD-RW drive

Change the write speed to a slower rate — The CD-RW drive must receive a steady stream of data when writing. If the stream is interrupted, an error occurs. Try closing all programs before writing to the CD-RW.

See the CD-RW program's Help file for CD-RW recording instructions — See the CD-RW program's online help information for complete instructions on how to record CD-RWs.

DVD drive problems

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

Test the drive with another DVD — Insert another DVD to eliminate the possibility that the original DVD is defective.

Ensure that Windows recognizes the drive — Click the **Start** button, and then click **My Computer**. If the 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.


Clean the disc — See the [Tell Me How](#) help file for instructions on cleaning your DVDs.

Hard drive problems

Run Check Disk

1. Click the **Start** button, and then click **My Computer**.
2. Right-click the drive letter (local disk) that you want to scan for errors, and then click **Properties**.
3. Click the **Tools** tab.
4. Under **Error-checking**, click **Check Now**.
5. Click **Start**.

E-Mail, Modem, and Internet Problems

 **HINT:** 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 telephone line connection — 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.
Check the telephone jack — Disconnect the telephone line from the modem and connect it to a telephone. Listen for a dial tone.
Connect the modem directly to the telephone wall jack — 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.
Use a different telephone line — 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® <ol style="list-style-type: none">1. Click the Start button, and then click Control Panel.2. Click Printers and Other Hardware.3. Click Phone and Modem Options.4. Click the Modems tab.5. Click the COM port for your modem.6. Click Properties, click the Diagnostics tab, and then click Query Modem to verify that the modem is communicating with Windows. <p>If all commands receive responses, the modem is operating properly.</p>
Turn off call waiting (catch-phone) — See your telephone directory for instructions on deactivating this feature. Then adjust the dial-up networking connection properties. <ol style="list-style-type: none">1. Click the Start button, and then click Control Panel.2. Click Printers and Other Hardware, and then click Phone and Modem Options.3. Click your connection type to highlight it.4. Click the Dialing Rules tab, and then click Edit.5. Click the To Disable Call Waiting box to place a checkmark in it.6. Select the disable code from the drop-down menu (for example, *70).7. Click Apply, and then click OK.
Ensure that you are connected to the Internet — 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.
Ensure that you have subscribed to an Internet service provider — Contact an Internet service provider to subscribe.
Contact your Internet service provider — Contact your Internet service provider for assistance.
Check for interrupt request conflicts — See " Resolving Software and Hardware Incompatibilities ."

Error Messages

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: <ol style="list-style-type: none">1. Click the Start button.2. Click Control Panel.3. Click Add or Remove Programs.4. Select the program you want to remove.5. Click the Change or Remove Program icon.6. See the program documentation for installation instructions.
Insert bootable media — The operating system is trying to boot to a nonbootable floppy disk or CD. Insert a bootable floppy disk or CD.
Non-system disk error — A floppy disk is in the floppy drive. Remove the floppy disk and restart the computer.
Not enough memory or resources. Close some programs and try again — You have too many programs open. 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, try running the program that you want to use first.
Operating system not found — Contact Dell. See "Contacting Dell" in the Dell <i>Owner's Manual</i> for the correct number to call.
The file being copied is too large for the destination drive — The file that you are trying to copy is too large to fit on the disk. Try copying the file to a blank disk or using a larger-capacity disk.
x:\ is not accessible. The device is not ready — Insert a disk into the drive and try again.

General Problems

The computer stops responding

Turn the computer off — If your computer locks up and 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 press the power button again to turn on the computer. You might lose data if you are unable to perform an operating system shutdown.

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

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

Check the software documentation — Many software manufacturers maintain websites with information that may help you solve the problem. Ensure that you properly installed and configured the program. If necessary, uninstall and then reinstall the program.

A program is designed for an earlier Windows operating system

Run the Program Compatibility Wizard

Windows XP provides a Program Compatibility Wizard that 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 the computer does not respond to a keystroke or a proper shutdown, press the power button for at least 8 to 10 seconds until the computer turns off. Press the power button again to restart the computer. The chkdsk program automatically runs during the start-up process. Follow the instructions on the screen.

Other software problems

Check the software documentation or contact the software manufacturer for troubleshooting information

Back up your files immediately — If your computer has a CD-RW drive or a zip drive installed, see the drive's documentation for instructions.

Ensure that you have not made an error while entering data — See the program documentation to make sure that the values or characters you are entering are valid.

Check for viruses — Use a virus-scanning program to check the hard drive, floppy disks, or CDs.

Restart the computer — Save and close any open files, exit any open programs, and then shut down your computer through the **Start** menu instead of pressing the power button. Otherwise, you may lose data.

Check for compatibility

1. Ensure that the program is compatible with the operating system installed on your computer and that your computer meets the minimum hardware requirements needed to run the software. See the software documentation for information.
1. If necessary, uninstall and then reinstall the program.

Ensure that you properly installed and configured the program — See the software documentation for information. If necessary, uninstall and then reinstall the program.

Other technical problems

Go to the Dell | Support website — Go to support.dell.com for help with general usage, installation, and troubleshooting questions. See "Dell Technical Support Policy" in the *Owner's Manual* for a description of the hardware and software support provided by Dell.

E-mail Dell — Go to the Dell | Support website, and then click **E-Mail Dell** in the **Communicate** list. Send an e-mail message to Dell about your problem; you can expect to receive an e-mail message from Dell within hours. See "Dell Technical Support Policy" in the *Owner's Manual* for a description of the hardware and software support provided by Dell.

Call Dell — If you cannot solve your problem by using the Dell | Support website or e-mail service, call Dell for technical assistance (see "Contacting Dell" in the *Dell Owner's Manual* for the correct number to call). See "Dell Technical Support Policy" in the *Dell Owner's Manual* for a description of the hardware and software support provided by Dell.

General hardware problems

If your computer exhibits one or more of the following symptoms, a device conflict may exist:

- 1 Your computer locks up, particularly while using a specific device.
- 1 A recently added device does not work.
- 1 A sound card emits noise or demonstrates other problems.
- 1 Unintelligible characters print from the printer.
- 1 The mouse pointer does not move or "stutters" when it moves.
- 1 Messages appear stating that the computer is not operating at maximum performance.
- 1 Errors occur and programs crash for no apparent reason.
- 1 Nothing displays on the monitor.

Remove any recently added hardware to see if it resolves the conflict — If removing the hardware resolves the conflict, see the hardware documentation for configuration and troubleshooting instructions. If the problem persists, contact the hardware manufacturer for technical assistance.

Check your operating system documentation for additional troubleshooting information

Check for interrupt request conflicts — See "[Resolving Software and Hardware Incompatibilities](#)."

Keyboard Problems

Restart the computer

- 1 If the mouse is functioning, [shut down the computer](#) through the **Start** menu. After the computer shuts down, press the [power button](#) to restart the computer.
- 1 If the computer does not respond to a keystroke or the mouse, press the power button for at least 8 to 10 seconds until the computer turns off. Press the power button again to restart the computer.

Check the keyboard cable

- 1 Ensure that the keyboard cable is firmly connected to the computer.
- 1 [Shut down the computer](#), reconnect the keyboard cable as shown on the *Start Here* setup diagram for your computer, and then restart the computer.
- 1 Check the cable connector for bent or broken pins and for damaged or frayed cables. Straighten bent pins.
- 1 Remove keyboard extension cables and connect the keyboard directly to the computer.

Test the keyboard — Connect a keyboard that works properly to the computer, and try using the keyboard. If the new keyboard works, the original keyboard is faulty.

Check for interrupt request conflicts — See "[Resolving Software and Hardware Incompatibilities](#)."

Mouse Problems

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, press the power button to restart the computer.

If you connected the mouse before turning on the computer, reconnect the mouse cable

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 *Start Here* setup diagram for your computer.
4. Start the computer.

If you connected the mouse after turning on the computer, remove the power cable, and then reconnect the mouse cable — If the mouse is connected after the power is turned on, the mouse appears to be nonfunctional. To make the mouse function properly:

1. While your computer is on, remove the power cable from the back of the computer.
2. Connect the mouse to the computer.
3. Reconnect the power cable.
4. Turn on your computer.

Pressing the power button does not clear the computer's settings and does not restore mouse functionality.

Check the mouse cable

- 1 Check the cable connector for bent or broken pins and for damaged or frayed cables. Straighten bent pins.

- 1 Ensure that the cable is firmly connected to the computer.

Test the mouse — Connect a mouse that works properly to the computer, and try using the mouse. If the new mouse works, the original mouse was faulty.

Check the mouse settings

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

Reinstall the mouse driver — See "[Reinstalling Drivers](#)."

Check for interrupt request conflicts — See "[Resolving Software and Hardware Incompatibilities](#)."

Network Problems

Check the network cable connector — Ensure that the network cable is connected as shown in the *Dell Owner's Manual*.

Check the network lights on the back of the computer — No light indicates that there is no network communication. Try replacing the network cable.

These lights indicate there is network communication:

- 1 Green light—indicates a 10-Mbps network connection
- 1 Orange light—indicates a 100-Mbps network connection
- 1 Blinking amber—indicates network traffic



Restart the computer and try to 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.

Check for interrupt request conflicts — See "[Resolving Software and Hardware Incompatibilities](#)."

Power Problems

CAUTION: Before you begin any of the procedures in this section, follow the "[Safety Instructions](#)."

HINT: If the power light on the front-panel [power button](#) is steady green, the computer is operating normally.

Adjust the Power Properties — Your computer may be in standby or hibernate mode. For information on power conservation modes, see the [Tell Me How](#) help file, or search for the keyword *standby* or *hibernate* in Windows® Help.

If the power light is blinking green — The computer is in standby mode. Press a key on the keyboard or move the mouse to resume normal operation.

If the power light is off — The computer is either turned off or is not receiving power.

- 1 Ensure that the power cable is firmly inserted into both the [power connector](#) on the back of the computer and the electrical outlet.
- 1 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.
- 1 Ensure that the electrical outlet is working by testing it with another device, such as a lamp.
- 1 Ensure that the [voltage selection switch](#) is set to match the AC power at your location.
- 1 Bypass power protection devices, power strips, and power extension cables to verify that the computer turns on.
- 1 Swap the computer and monitor power cables to determine if the power cable is defective.
- 1 Ensure that the microprocessor power cable is securely connected to the [system board](#).
- 1 Ensure that the power supply cables are securely connected to the [system board](#).
- 1 Remove and then [reinstall the memory modules](#).
- 1 Remove and then [reinstall any cards](#).
- 1 If the problem persists, contact Dell. See "Contacting Dell" in the *Dell Owner's Manual* for the correct number to call.

If the power light is steady amber — The computer is receiving electrical power, but an internal power problem might exist.

- 1 Ensure that the power cable is firmly inserted into both the [power connector](#) on the back of the computer and the electrical outlet.
- 1 Ensure that the [voltage selection switch](#) is set to match the AC power at your location.
- 1 Ensure that the microprocessor power cable is securely connected to the [system board](#).
- 1 Ensure that the power supply cables are securely connected to the [system board](#).
- 1 If the problem persists, contact Dell. See "Contacting Dell" in the *Dell Owner's Manual* for the correct number to call.


If the power light is blinking amber — A device might be malfunctioning or incorrectly installed.

- 1 Remove and then [reinstall the memory modules](#).
- 1 Remove and then [reinstall any cards](#).
- 1 If the problem persists, contact Dell. See "Contacting Dell" in the Dell *Owner's Manual* for the correct number to call.

Eliminate interference — Electrical appliances on the same circuit or operating near the computer can cause interference. Other causes of interference are:

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

Printer Problems

 **HINT:** Dell does not cover the printer's warranty. If you need technical assistance for your printer, call the printer's manufacturer. See the printer documentation for the correct phone number.

Check the printer documentation — See the printer documentation for setup and troubleshooting information.

Ensure that the printer is turned on — See the printer documentation for power button information.

Verify the printer cable connections

- 1 See the printer documentation for cable connection information.
- 1 Ensure that the printer cables are securely connected to the printer and the computer as shown in the Dell *Owner's Manual*.


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.
2. Click **Control Panel**.
3. Click **Printers and Other Hardware**.
4. Click **View installed printers or fax printers**. If the printer is listed, right-click the printer icon.
5. Click **Properties**, and then select 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

 **HINT:** Dell does not cover the scanner's warranty. If you need technical assistance for your scanner, call the scanner's manufacturer. See the scanner documentation for the correct phone number.

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

- 1 If your scanner has a power cable, ensure that the power cable is firmly connected to a working electrical outlet and that the scanner is turned on.
- 1 Ensure that the scanner cable is firmly connected to the computer and to the scanner.


Verify that the scanner is recognized by Microsoft® Windows®

1. Click the **Start** button.
2. Click **Control Panel**.
3. Click **Printers and Other Hardware**.
4. 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

No sound from speakers

 **HINT:** 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.
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.
Run the speaker diagnostics — Some speaker systems have self- diagnostics. See the speaker documentation for diagnostics instructions.
Reinstall the audio (sound) driver — See " Reinstalling Drivers ."
Check for interrupt request conflicts — See " Resolving Software and Hardware Incompatibilities ."

No sound from headphones

Check the headphone cable connection — Ensure that the headphone cable is securely inserted into the headphone connector .
Disable digital mode — Your headphones do not work if the CD drive is operating in digital mode. To disable digital mode: <ol style="list-style-type: none"> 1. Click the Start button, click Control Panel, and then click Sounds, Speech, and Audio Devices. 2. Click Sounds and Audio Devices. 3. Click the Hardware tab. 4. Double-click the name of your CD drive. 5. Click the Properties tab. 6. Uncheck the Enable digital CD audio for this CD-ROM device box.
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

If the screen is blank

 **HINT:** See the monitor documentation for troubleshooting procedures.

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.
Check the monitor cable connection — Check the connector for bent or broken pins. (It is normal for monitor cable connectors to have missing pins.) Ensure that the video cable is connected as shown on the Start Here setup diagram for your computer.
Test the electrical outlet — Ensure that the electrical outlet is working by testing it with another device, such as a lamp.
Swap the power cables — Swap the computer and monitor power cables to determine if the power cable is defective.
Test the video extension cable (if used) — If you are using a video extension cable and removing the cable solves the problem, the cable is defective.
Test another monitor — If another monitor is available, connect it to the computer.
Check the diagnostic lights — See " Diagnostic Codes ."

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 face a different direction — Eliminate sunlight glare, which can cause poor picture quality.
Adjust the Windows® display settings <ol style="list-style-type: none"> 1. Click the Start button, and then click Control Panel. 2. Click Appearance and Themes. 3. Click Display, and then click the Settings tab. 4. Try different settings for Screen resolution and Color quality.
Restore the recommended settings — Restore the original resolution and refresh rate settings. See for instructions.

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Technical Specifications

Dell™ Dimension™ 4500S

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- [System Information](#)
- [Expansion Bus](#)
- [Memory](#)
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- [Ports and Connectors](#)
- [Video](#)
- [Audio](#)
- [Controls and Lights](#)
- [Power](#)
- [Physical](#)
- [Environmental](#)

Microprocessor	
Microprocessor type	Intel® Pentium® 4 that runs at 1.70, 1.80, 1.90, 2.00 GHz internally and 400 MHz externally; 2.26, 2.40, 2.53, or 2.66 GHz internally and 533 MHz externally; or Intel Celeron® that runs at 1.70, 1.80, or 2.00 GHz internally and 400 MHz externally <i>NOTE: Microprocessor offerings and front-side bus support vary by country.</i>
L1 cache:	
Pentium 4	8 KB first-level
Celeron	32 KB
L2 cache:	
Pentium 4	256- or 512-KB (displayed in the system setup program) pipelined-burst, eight-way set associative, write-back SRAM
Celeron	128-KB SRAM

System Information	
System chip set	Intel 845 G
DMA channels	seven
Interrupt levels	24 APIC mode
System BIOS chip	4 Mb (512 KB)
System clock	400- or 533-MHz data rate

Expansion Bus	
Bus types	PCI
Bus speed	PCI: 33 MHz
PCI connectors	two
PCI connector size	120 pins
PCI connector data width (maximum)	32 bits

Memory	
Architecture	DDR SDRAM
Memory connectors	two
Memory capacities	128-, 256-, 384-, 512-, or 768-MB, or 1-GB non-ECC DDR SDRAM
Minimum memory	128 MB
Maximum memory	2 GB
Memory type	266-MHz DDR SDRAM (non-ECC)
BIOS address	F0000h

Drives	
Externally accessible	one 5.25-inch bay one 3.5-inch bay
Internally accessible	one bay for 1-inch-high IDE hard drive
Available devices	ATA-66 or ATA-100 Ultra DMA hard drive, CD drive, Zip drive, DVD drive, and CD-RW drive

Ports and Connectors	
Externally accessible:	
Serial	9-pin connector: 16550C-compatible
Parallel	25-hole connector (bidirectional)
Video	15-hole connector
Keyboard	6-pin mini-DIN connector or USB connector
Mouse	6-pin mini-DIN connector or USB connector
USB	two front-panel and four back-panel USB 2.0-compliant connectors
Headphone	front-panel miniature jack
Audio	three miniature jacks for line-in, line-out, and microphone
Internally accessible:	
Primary IDE channel	40-pin connector on PCI local bus
Secondary IDE channel	40-pin connector on PCI local bus
Floppy drive	34-pin connector

Video	
Video controller	Intel integrated AGP graphics

Audio	
Audio controller	ADI 1981A (AC97 Codec)

Controls and Lights	
Power control	push button
Power light	green light on power button—blinking green in sleep state; solid green for power-on state
Hard-drive access light	green
Diagnostic code lights	four bicolor (yellow and green) located on back panel
System board standby power light	yellow—indicates system board is receiving standby power

Power	
DC power supply:	
Wattage	180 W
Heat dissipation	500 BTU (fully-loaded computer without monitor)
Voltage (see "Safety Instructions" for important voltage setting information)	fixed-voltage power supply—110 V at 50/60 Hz manual selection and auto-sensing power supplies—90 to 135 V at 50/60 Hz; 180 to 265 V at 50/60 Hz; 100 V at 50/60 Hz for Japanese computers
Backup battery	3-V CR2032 coin cell

Physical	
Height x Width x Depth	10.6 x 38.9 x 43.2 cm (4.2 x 15.3 x 17 inches)
Weight	9.9 kg (22 lb)

Environmental	
Temperature:	
Operating	10° to 35°C (50° to 95°F)*
Storage	-40° to 65°C (-40° to 149°F)
Relative humidity	20% to 80% (noncondensing)
Maximum vibration:	
Operating	0.25 G at 3 to 200 Hz at 1/2 octave/min
Storage	0.5 G at 3 to 200 Hz at 1/2 octave/min
Maximum shock:	
Operating	bottom half-sine pulse with a change in velocity of 50.8 cm/sec (20 inches/sec)
Storage	23-G faired-square wave with a velocity change of 508 cm/sec (200 inches/sec)

Altitude:	
Operating	-15.2 to 3048 m (-50 to 10,000 ft) *
Storage	-15.2 to 10,670 m (-50 to 35,000 ft)
* At 35°C (95°F), the maximum operating altitude is 914 m (3000 ft).	

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System Setup Program

Dell™ Dimension™ 4500S

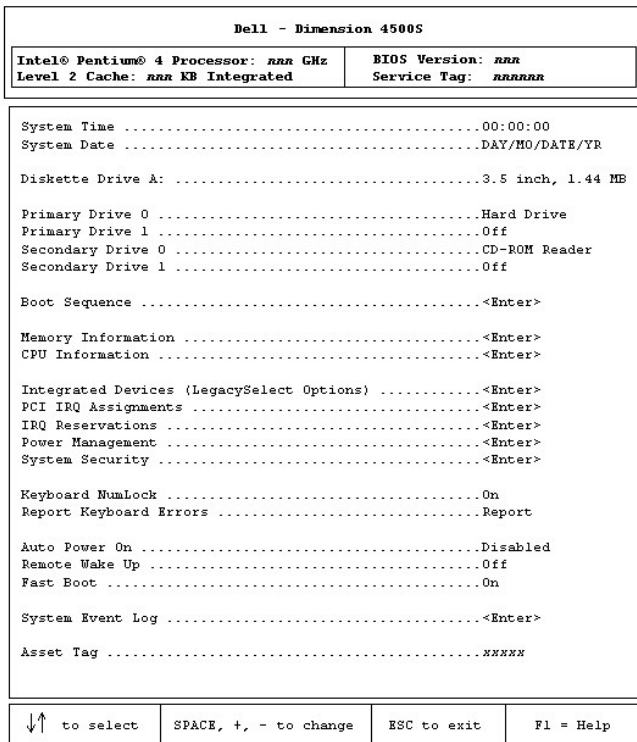
- [Overview](#)
- [Viewing Settings](#)
- [Clearing Forgotten Passwords](#)

Overview

The system setup program contains the standard settings for your computer.

NOTICE: Unless you are an expert computer user, don't change the settings for this program. Certain changes might make your computer work incorrectly.

See the following figure for an example of the main screen of the program.



Viewing Settings

1. Turn on (or restart) your computer.
2. When the blue DELL™ logo appears, press <F2> 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 and try again.

System Setup Program Screens

The system setup program screens display the current configuration information for your computer. Information on the screen is divided into five areas:

1. Title – The area at the top of all system setup screens that displays your computer's model number.
1. Computer data – Two boxes below the title that display the system processor, L2 cache, service tag, and the version number of the system setup program.

- 1 Options – A scrollable box listing options that define the configuration of your computer (including installed hardware, power conservation, and security features).

Fields to the right of the listed options contain settings or values. The settings and values that you can change are brighter on the screen. All other settings and values are set by the computer and cannot be changed. When <Enter> appears to the right of an option, press <Enter> to access a pop-up menu of additional options.

- 1 Key functions – A line of boxes across the bottom of all system setup screens that lists keys and their functions within the system setup program.
- 1 Help – Press <F1> for information on the option that is selected (highlighted).

Option	Function
System Time	Displays the system time.
System Date	Displays the system date.
Diskette Drive A:	Displays floppy drive details.
Primary Drive 0:	Displays primary hard drive 0. The default is Auto .
Primary Drive 1:	Displays primary hard drive 1 (if installed). The default is Off .
Secondary Drive 0:	Displays secondary hard drive 0. The default is Auto .
Secondary Drive 1:	Displays secondary hard drive device type. The default is Off .
Boot Sequence	Displays boot sequence when <Enter> is pressed.
Memory Information	Displays amount of system memory.
CPU Information	Displays CPU information when <Enter> is pressed.
Integrated Devices (Legacy Select Options)	Displays integrated device options when <Enter> is pressed.
PCI IRQ Assignments	Displays PCI IRQ assignments when <Enter> is pressed.
IRQ Reservations	Displays the IRQ reservations when <Enter> is pressed.
Power Management	Displays power management options when <Enter> is pressed.
System Security	Displays system security options when <Enter> is pressed.
Keyboard Numlock	Turns the Keyboard NumLock option on and off. The default is On .
Report Keyboard Errors	Displays keyboard errors when set to Report . The default is Report .
Auto Power On	Allows auto power-on. The default is Disabled .
Remote Wake Up	Allows remote Wakeup on LAN. The default is Off .
Fast Boot	Turns the fast boot option on and off. The default is On .
System Event Log	Displays the system event log when <Enter> is pressed.
Asset Tag	Displays asset tag information.

The following table shows **CPU Information** option information.

Option	Function
CPU Speed	Sets the CPU speed. The default is Normal .
Bus Speed	Displays the bus speed.
Processor ID	Displays processor ID.
Clock Speed	Displays clock speed.
Cache Size	Displays cache size.

The following table shows **Integrated Devices (Legacy Select Options)** information.

Option	Function
Sound	Turns the integrated sound off and on. The default is On .
Mouse Port	Turns the mouse port off and on. The default is On .
USB Emulation	Turns USB emulation off and on. The default is On .
USB Controller	Turns the USB controller off and on. The default is On .
Serial Port 1	Sets serial port options and turns the port off and on. The default is Auto .
Parallel Port	Displays parallel port settings when <Enter> is pressed. The default mode is PS/2 and the I/O address default is 378h .
IDE Drive Interface	Sets the IDE drive interface options. The default is Auto .

Diskette Interface	Sets diskette interface options. The default is Auto .
PC Speaker	Turns the PC speaker off and on. The default is On .
Primary Video Controller	Sets the primary video controller. The default is Auto .
Video DAC Snoop	Turns the video DAC Snoop off and on. The default is Off .


The following table shows **Power Management** option information.

Option	Function
Suspend Mode	Displays the suspend state used by the computer. The default is S3 .
AC Power Recovery	Enables AC power recovery to occur. The default is Off .


The following table shows **System Security** option information.

Option	Function
Password Status	Locks and unlocks the password option. The default is Unlocked .
System Password	Enables and disables the system password. The default is Disabled .
Setup Password	Enables and disables the setup password. The default is Disabled .
POST Hotkeys	Selects key that are active during POST. The default is F2 and F12 .
PXE BIS Default Policy	Specifies how the computer will respond to boot integrity services authentication requests when no certificate has been installed. When set to Deny (the default), this request is rejected. The request is accepted when set to Accept .


Clearing Forgotten Passwords

 **CAUTION:** Before you begin any of the procedures in this section, follow the "[Safety Instructions](#)."

If you forget your system or setup password, you cannot operate your computer or change settings in the system setup program until you clear the forgotten password(s).

 **NOTICE:** This process erases both the system and setup passwords.


1. [Shut down the computer](#).
2. Turn off any attached devices and disconnect them from their electrical outlets.

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

3. Disconnect the computer power cable from the wall outlet, and then press the power button to ground the system board.
4. [Open the computer cover](#).
5. Locate jumper [PSWD on the system board](#) and remove the jumper plug.
6. [Close the computer cover](#), plug your computer into an electrical outlet, and turn on the computer.

The existing password(s) are erased.

7. [Shut down the computer](#).
8. Turn off any attached devices and disconnect them from their electrical outlets.

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

9. Disconnect the computer power cable from the wall outlet, and then press the power button to ground the system board.
10. [Open the computer cover](#).
11. Install the PSWD jumper plug.
12. [Close the computer cover](#), plug your computer into an electrical outlet, and turn on the computer.

Turning on your computer with the PSWD jumper installed reenables the password feature.

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Technical Overview

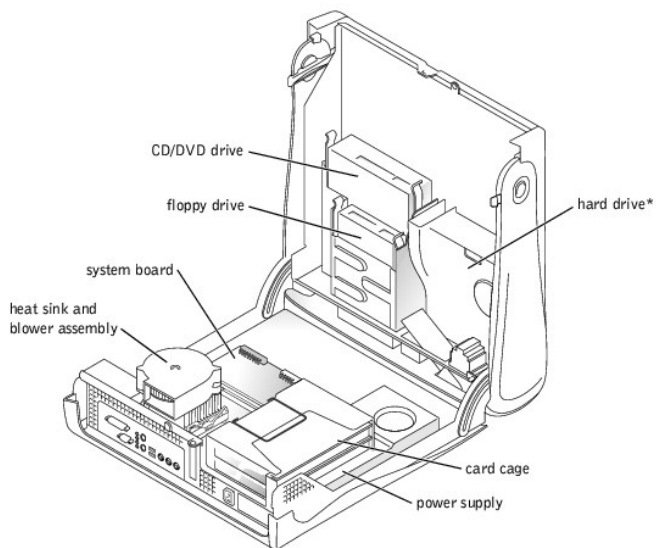
Dell™ Dimension™ 4500S

- [Internal View](#)
 - [System Board Connectors and Sockets](#)
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 - [DC Power Connectors](#)
-

Internal View

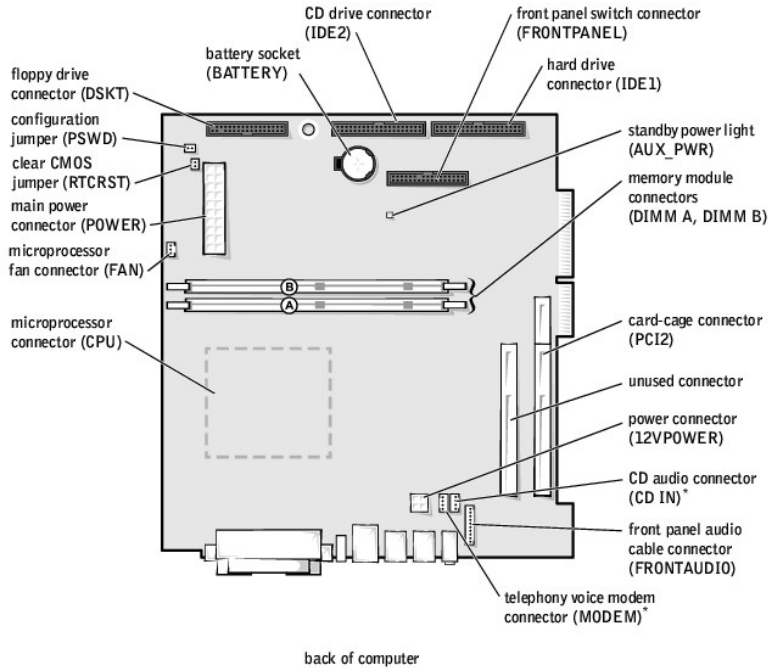
⚠ CAUTION: Before you begin any of the procedures in this section, read "[Safety Instructions](#)."

🔍 NOTICE: Be careful when [opening the computer cover](#) to ensure that you do not inadvertently disconnect cables from the system board.



* Your computer's hard drive may or may not have a plastic shroud cover. Operating the computer without a hard-drive shroud does not affect its performance.

System Board Connectors and Sockets



* On computers with integrated audio.

Power Supply

Your computer is equipped with one of the following 180-W power supply units (see "[Safety Instructions](#)" for more information):

- 1 A fixed-voltage power supply — Computers with a fixed-voltage power supply do not have a voltage selection switch on the [back panel](#) and operate at only one voltage (see the regulatory label on the outside of the computer for its operating voltage).
- 1 An auto-sensing voltage circuit — Computers with an auto-sensing voltage circuit do not have a voltage selection switch on the back panel and automatically detect the correct operating voltage.
- 1 A manual voltage selection switch — Computers with a voltage selection switch on the back panel must be manually set to operate at the correct operating voltage.

The power supply provides the DC operating voltages and currents listed in the following table.

Output Voltage ¹	Regulation	Minimum Current (A)	Maximum Current (A) ²
+12 VDC	+/-5%	0.0	10.0
+5 VDC	+/-5%	1.0/0.2 ³	12.0
+3.3 VDC	+/-5%	0.1/0.0 ⁴	10.0
-12 VDC	+/-10%	0.0	0.5
+5 VFP	+/-5%	0.0	2.0

¹Outputs meet and do not exceed SELV requirements per electrical standards (UL 1950, IEC 950, or EN60950 Par. 2.3).

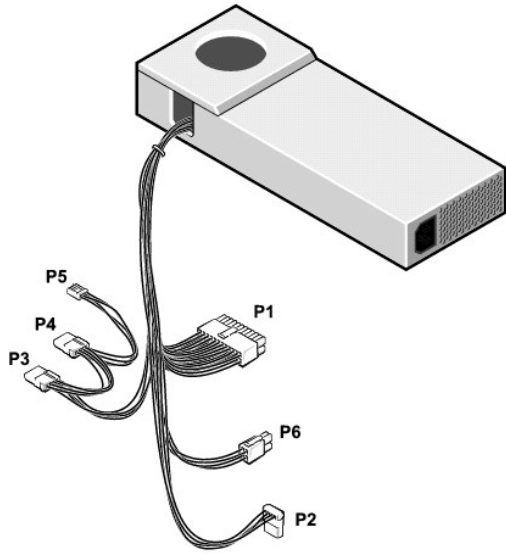
²Maximum continuous combined load on +5 VDC and +3.3 VDC outputs do not exceed 80 W.

³+5 VDC minimum load is 0.2 A when there is a minimum load of 0.3 A on the +12 VDC and 0.42 A on the +3.3 VDC outputs simultaneously. +5 V minimum load is 1 A for load transient tests.

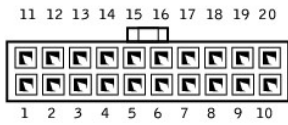
⁴In system configurations where +3.3 VDC is not used, all other outputs stay within regulation while the +3.3 VDC output is in a zero load condition.

DC Power Connectors

Power Supply DC Connector Pin Assignments



DC Power Connector P1



Pin Number	Signal name	18-AWG Wire
1	+3.3 VDC	Orange
2	+3.3 VDC	Orange
3	COM	Black
4	+5 VDC	Red
5	COM	Black
6	+5 VDC	Red
7	COM	Black
8	POK*	Gray
9	+5 VFP	Purple
10	+12 VDC	Yellow
11	+3.3 VDC	Orange
12	-12 VDC*	Blue
13	COM	Black
14	PS ON*	Green
15	COM	Black
16	COM	Black
17	COM	Black
18	N/C	N/C
19	+5 VDC	Red
20	+5 VDC	Red

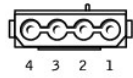
* Use 22-AWG wire instead of 18-AWG wire

DC Power Connector P6



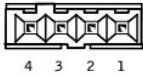
Pin Number	Signal Name	18-AWG Wire
1	COM	Black
2	COM	Black
3	+12 VDC	Yellow
4	+12 VDC	Yellow

DC Power Connectors P2, P3, and P4



Pin Number	Signal Name	18-AWG Wire
1	+12 VDC	Yellow
2	COM	Black
3	COM	Black
4	+5 VDC	Red

DC Power Connector P5



Pin Number	Signal Name	22-AWG Wire
1	+5 VDC	Red
2	COM	Black
3	COM	Black
4	+12 VDC	Yellow

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Controls and Lights

Dell™ Dimension™ 4500S

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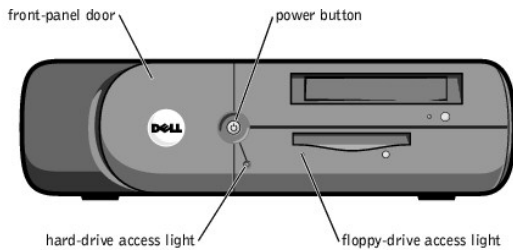
Computer Stand

The computer can be used in either a vertical or horizontal position. See "[Attaching and Removing the Computer Stand](#)" for more information.



Front View

Front View With Front-Panel Door Closed



Front-Panel Door

The front-panel door opens for access to a headphone connector and two USB connectors.

Power Button

Press the power button to turn on the computer.

NOTICE: To turn off your computer, perform a Microsoft® Windows® shutdown instead of pressing the power button. Otherwise, you may lose data.

Floppy-Drive Access Light

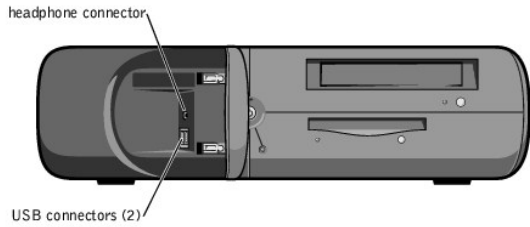
The floppy drive light is on when the computer reads data from or writes data to the floppy drive.

Hard-Drive Access Light

The hard drive light is on when the computer reads data from or writes data to your hard drive.

Front View With Front-Panel Door Open

HINT: The front-panel door is removable; if you remove it or accidentally knock it off its hinges, it snaps back in place.




Headphone Connector

Use the headphone connector to attach headphones and most speakers so you can listen to all sounds coming from your computer including your CD player and computer sounds such as beeps.

Your headphones do not work if the CD drive is operating in digital mode. To disable digital mode:

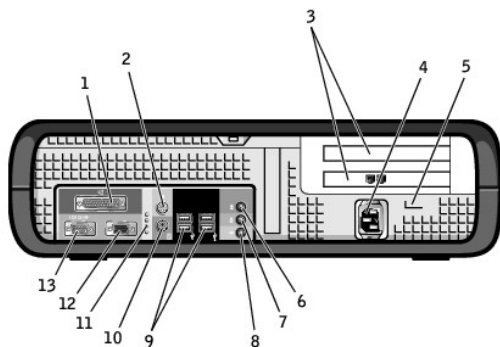
1. Click the **Start** button, click **Control Panel**, and then click **Sounds, Speech, and Audio Devices**.
2. Click **Sounds and Audio Devices**.
3. Click the **Hardware** tab.
4. Double-click the name of your CD drive.
5. Click the **Properties** tab.
6. Uncheck the **Enable digital CD audio for this CD-ROM device** box.

USB Connectors

 **HINT:** If you attach a USB device that was not included in your original computer order, you may need to install a specific driver to make the device work. Check the documentation that came with the device or contact the USB device manufacturer for more information.

Although any USB device can be attached to either the front- or back-panel USB connectors, Dell recommends using the front-panel USB connectors for devices that you frequently connect and disconnect, such as USB digital cameras and gaming controllers. Use the back-panel USB connectors for devices that you rarely connect and disconnect, such as USB printers, scanners, mouse, and keyboards.

Back View



1	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.
2	mouse connector	Plug a standard mouse into the green mouse connector. Turn off the computer and any attached devices before you connect a mouse to the computer. If you have a USB mouse, plug it into a USB connector.
3	card slots (2)	The slots for PCI cards.
4	power connector	The connection for the power cable.
5	voltage selection switch (may not be available on all computers)	Your computer is equipped with either a fixed-voltage power supply, an auto-sensing voltage circuit, or a manual voltage selection switch. See " Safety Instructions " for more information.
6	line-in connector	Use the blue line-in connector (available on computers with integrated sound) to attach a record/playback device such as a cassette player, CD player, or VCR. On computers with a sound card, the line-in connector is on the card.

7	line-out connector	Use the green line-out connector (available on computers with integrated sound) to attach headphones and most speakers with integrated amplifiers. On computers with a sound card, the line-out connector is on the card.
8	microphone connector	Use the pink microphone connector (available on computers with integrated sound) to attach a personal computer microphone for voice or musical input into a sound or telephony program. On computers with a sound card, the microphone connector is on the card.
9	USB connectors (4)	Connect USB devices such as a mouse, keyboard, printer, joystick, and computer speakers into any of the USB connectors.
10	keyboard connector	If you have a standard keyboard, plug it into the purple keyboard connector. If you have a USB keyboard, plug it into a USB connector.
11	diagnostic lights (4)	Use the lights to help you recognize a diagnostic code that can tell you how to troubleshoot a computer problem.
12	video connector	Plug the cable from your monitor into the blue connector.
13	serial connector	Connect a serial device, such as a handheld device, to the serial port.

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