

# Dell Dimension 4700 Series Service Manual

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## Notes, Notices, and Cautions

-  **NOTE:** A NOTE indicates important information that helps you make better use of your computer.
-  **NOTICE:** A NOTICE indicates either potential damage to hardware or loss of data and tells you how to avoid the problem.
-  **CAUTION:** A CAUTION indicates a potential for property damage, personal injury, or death.

## Abbreviations and Acronyms

For a complete list of abbreviations and acronyms, see the *Dell Dimension Help file*. If you purchased a Dell™ Series computer, any references in this document to Microsoft® Windows® operating systems are not applicable.

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Model DMC

June 2004 Rev. A00

## Advanced Troubleshooting

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## Power Lights

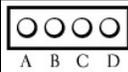
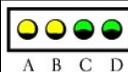
The power button light located on the front of your computer illuminates and blinks or remains solid to indicate different states:

- 1 If the power light is green, the power status is good and the computer is functioning properly.
- 1 If the power light is green and the computer is not responding, see "[Diagnostic Lights](#)."
- 1 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.
- 1 If the power light is off, the computer is either turned off or is not receiving power.
  - o Reseat the power cable into both the power connector on the back of the computer and the electrical outlet.
  - o If the computer is plugged into a power strip, ensure that the power strip is plugged into an electrical outlet and that the power strip is turned on. Also bypass power protection devices, power strips, and power extension cables to verify that the computer turns on properly.
  - o Ensure that the electrical outlet is working by testing it with another device, such as a lamp.
  - o Ensure that the main power cable and front panel cable are securely connected to the [system board](#).
- 1 If the power light is blinking amber, **the computer is receiving electrical power, but an internal power problem might exist.**
  - o **Ensure that the voltage selection switch is set to match the AC power at your location (if applicable).** See your *Owners Manual* for more information.
  - o **Ensure that the processor power cable is securely connected to the system board.** See your *Owners Manual* for more information.
- 1 If the power light is steady amber, a device might be malfunctioning or incorrectly installed.
  - o [Remove and then reinstall the memory modules](#).
  - o [Remove and then reinstall any cards](#).
  - o Remove and then reinstall the [graphics card](#), if applicable.

## Diagnostic Lights

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

To help you troubleshoot a problem, your computer has four lights labeled "A," "B," "C," and "D" on the back panel (see your *Owner's Manual*). The lights can be yellow or green. When the computer starts normally, the lights flash. After the computer starts, all four lights display solid green. If the computer malfunctions, the color and sequence of the lights identify the problem.

Light Pattern	Problem Description	Suggested Resolution
	The computer is in a normal off condition or a possible pre-BIOS failure has occurred.	Plug the computer into a working electrical outlet and press the power button.
	Memory modules are detected, but a memory failure has occurred.	<ol style="list-style-type: none"><li>1 If you have one <a href="#">memory</a> module installed, reinstall it and restart the computer.</li><li>1 If you have two or more <a href="#">memory</a> 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 module or reinstalled all modules without error.</li><li>1 If available, install properly working <a href="#">memory</a> of the same type into your computer.</li><li>1 If the problem persists, contact Dell (see your <i>Owner's Manual</i>).</li></ol>
	A possible graphics card failure has occurred.	<ol style="list-style-type: none"><li>1 If the computer has a <a href="#">graphics card</a>, remove the card, reinstall it, and then restart the computer.</li><li>1 If the problem still exists, install a graphics card that you know works and restart the computer.</li><li>1 If the problem persists or the computer has integrated graphics, contact Dell (see your <i>Owner's Manual</i>).</li></ol>

	A possible floppy or hard drive failure has occurred.	Reset all power and data cables and restart the computer.
	A possible USB failure has occurred.	Reinstall all USB devices, check cable connections, and then restart the computer.
	Memory modules are detected, but a memory configuration or compatibility error exists.	<ol style="list-style-type: none"> <li>1. Ensure that no special <a href="#">memory</a> module/memory connector placement requirements exist.</li> <li>1. Verify that the <a href="#">memory</a> modules that you are installing are compatible with your computer.</li> <li>1. If the problem persists, contact Dell (see your <i>Owner's Manual</i>).</li> </ol>
	A possible expansion card failure has occurred.	<ol style="list-style-type: none"> <li>1. Determine if a conflict exists by <a href="#">removing a card</a> (not a graphics card) and restarting the computer.</li> <li>2. If the problem persists, reinstall the card that you removed, remove a different card, and then restart the computer.</li> <li>3. Repeat this process for each card. If the computer starts normally, troubleshoot the last card removed from the computer for resource conflicts (see your <i>Owner's Manual</i>).</li> <li>4. If the problem persists, contact Dell (see your <i>Owner's Manual</i>).</li> </ol>
	Another failure has occurred.	<ol style="list-style-type: none"> <li>1. <a href="#">Ensure that the cables are properly connected to the system board</a>, from the hard drive, CD drive, and DVD drive.</li> <li>1. If there is an error message on your screen identifying a problem with a device (such as the floppy drive or hard drive), check the device to make sure it is functioning properly.</li> <li>1. The operating system is attempting to boot from a device (such as the floppy drive or hard drive); check <a href="#">system setup</a> to make sure that the boot sequence is correct for the devices installed on your computer.</li> <li>1. If the problem persists, contact Dell (see your <i>Owner's Manual</i>).</li> </ol>
	The computer is in a normal operating condition after POST.	None.
<ul style="list-style-type: none"> <li>● = yellow</li> <li>● = green</li> <li>○ = off</li> </ul>		

## Beep Codes

Your computer might emit a series of beeps during start-up if the monitor cannot display errors or problems. This series of beeps, called a beep code, identifies a problem. One possible beep code (code 1-3-1) consists of one beep, a burst of three beeps, and then one beep. This beep code tells you that the computer encountered a memory problem.

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

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

If you hear one of the following beep codes, see "Contacting Dell" in your *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

 **NOTE:** If the message you received is not listed in the table, see the documentation for either the operating system or the program that was running when the message appeared.

Message	Possible Cause	Corrective Action
8042 Gate-A20 error	The keyboard controller failed its test.	If you receive this message after you make changes in the system setup program, enter the <a href="#">system setup</a> program and restore the original value (s).
Address Line Short!	An error in the address decoding circuitry in the memory has occurred.	Reseat the <a href="#">memory</a> modules.
C: Drive Error C: Drive Failure	The hard drive is not working or is not configured correctly.	Ensure that the <a href="#">drive</a> is installed correctly in the computer and defined correctly in the <a href="#">system setup</a> program.
Cache Memory Bad, Do Not Enable Cache	The cache memory is not operating.	See "Contacting Dell" in your <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 your <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.	<a href="#">Enter the system setup</a> program, verify the system configuration, and then restart the computer.
Diskette Boot Failure	Drive A or B is present but has failed the BIOS POST.	Ensure that the <a href="#">drive</a> is installed correctly in the computer and defined correctly in the <a href="#">system setup</a> 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.	<a href="#">The keyboard or system board</a> may need to be replaced.
FDD Controller Failure HDD Controller Failure	The BIOS cannot communicate with the floppy drive or hard drive controller.	Ensure that the <a href="#">floppy drive</a> or the <a href="#">hard drive</a> is installed correctly in the computer and defined correctly in the <a href="#">system setup</a> program. Check the interface cable at both ends.

INTR1 Error INTR2 Error	An interrupt channel on the system board failed to POST.	The keyboard or <a href="#">system board</a> may need to be replaced.
Invalid Boot Diskette	The operating system cannot be located on drive A or drive C.	<a href="#">Enter the system setup</a> program and confirm that drive A or drive C is properly identified.
Keyboard Error	The BIOS has detected a stuck key.	Ensure 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.	Ensure 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.	<a href="#">Enter the system setup</a> program and confirm that drive A or drive C is properly identified.

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## Before You Begin

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## Getting Started

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

1. You have performed the steps in "[Turning Off Your Computer](#)" and "[Before Working Inside Your Computer](#)."
  1. You have read the safety information in the Dell *Product Information Guide*.
  1. A component can be replaced by performing the removal procedure in reverse order.
- 

## Recommended Tools

The procedures in this document may require the following tools:

1. Small flat-blade screwdriver
  1. Phillips screwdriver
- 

## Turning Off Your Computer

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

1. Shut down the operating system:
  - a. Save and close any open files, exit any open programs, click the **Start** button, and then click **Turn Off Computer**.
  - b. In the **Turn off computer** window, click **Turn off**.

The computer turns off after the operating system shutdown process finishes.

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

## Before Working Inside Your Computer

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

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

⚠ **CAUTION:** Handle components and cards with care. Do not touch the components or contacts on a card. Hold a card by its edges or by its metal mounting bracket. Hold a component such as a processor by its edges, not by its pins.

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

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

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

1. [Turn](#) off your computer.

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

2. Disconnect any telephone or telecommunication lines from the computer.
3. Disconnect your computer and all attached devices from their electrical outlets, and then press the power button to ground the system board.

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

4. Open the computer cover.

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

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## Replacing the Computer Cover

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### Replacing the Computer Cover

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

1. Ensure that all cables are connected, and fold cables out of the way.  
Gently pull the power cables toward you so that they do not get caught underneath the drives.
2. Ensure that no tools or extra parts are left inside the computer.
3. Place the cover on the computer.
4. Slide the cover towards the front of the computer until it fits completely into place.

 **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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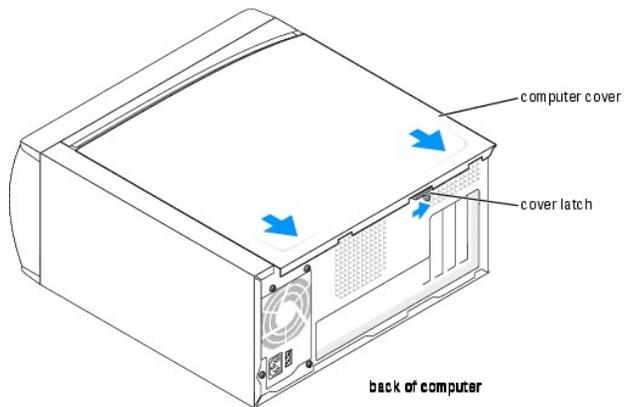
## Removing the Computer Cover

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

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

1. Follow the procedures in "[Before You Begin](#)".
2. Lay your computer on its side with the computer cover facing up.
3. If your computer cover has a cover latch, slide and hold the cover latch.
4. Grip the indents on the computer cover, and slide the computer cover toward the back of the computer.



5. Place the computer cover on a level surface.

## Removing and Installing Parts

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## Memory

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

Your Dell Dimension computer supports DDR2 memory. For additional information on the type of memory supported by your computer, see "[Memory](#)."

## DDR2 Memory Overview

DDR2 memory modules should be installed in *pairs of matched memory size, speed, and technology*. If the DDR2 memory modules are not installed in matched pairs, the computer will continue to operate, but with a slight reduction in performance. See the label on the upper-right corner of the module to determine the module's capacity.



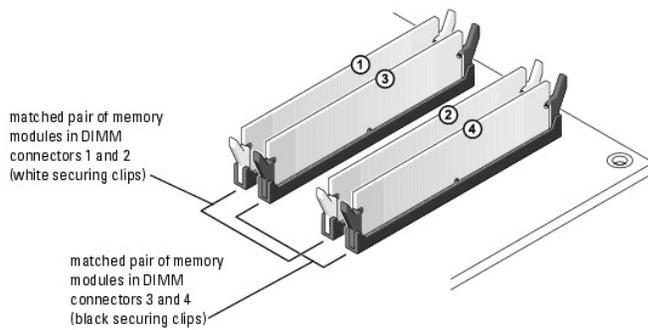
**NOTE:** Always install DDR2 memory modules in the order indicated on the system board.

The recommended memory configurations are:

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

**NOTICE:** Do not install ECC memory modules.

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



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

**NOTICE:** If you remove your original memory modules from the computer during a memory upgrade, keep them separate from any new modules that you may have, even if you purchased the new modules from Dell. If possible, *do not* pair an original memory module with a new memory module. Otherwise, your computer may not start properly. You should install your original memory modules in pairs either in DIMM connectors 1 and 2 or DIMM connectors 3 and 4.

## Addressing Memory With 4-GB Configurations

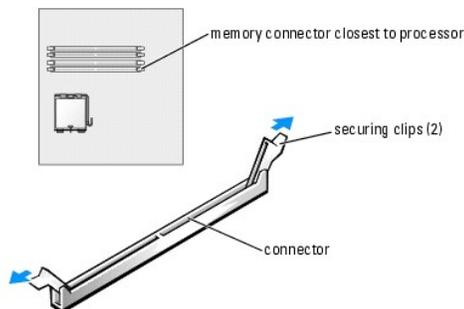
Your computer supports a maximum of 4 GB of memory when you use four 1-GB DIMMs. Current operating systems, such as Microsoft® Windows® XP, can only use a maximum of 4 GB of address space; however, the amount of memory available to the operating system is less than 4 GB. Certain components within the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

## Installing Memory

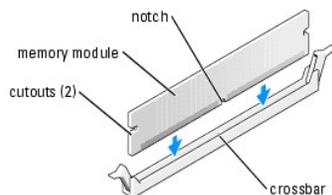
**CAUTION:** Before you begin any of the procedures in this section, follow the safety instructions located in the Product Information Guide.

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

1. Follow the procedures in "[Before You Begin](#)."
2. Lay the computer on its side so that the system board is on the bottom of the inside of the computer.
3. Press out the securing clip at each end of the memory module connector.



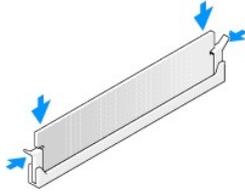
4. Align the notch on the bottom of the module with the crossbar in the connector.



➡ **NOTICE:** To avoid damage to the memory module, press the module straight down into the connector while you apply equal force to each end of the module.

5. Insert the module into the connector until the module snaps into position.

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



6. Close 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.

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

8. Right-click the **My Computer** icon and click **Properties**.

9. Click the **General** tab.

10. To verify that the memory is installed correctly, check the amount of memory (RAM) listed.

## Removing Memory

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

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

1. Follow the procedures in "[Before You Begin](#)."

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

3. Grasp the module and pull up.

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

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## Cards

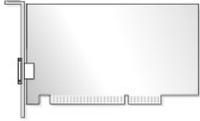
⚠ **CAUTION:** Before you begin any of the procedures in this section, follow the safety instructions located in the Product Information Guide.

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

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

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

## PCI Cards



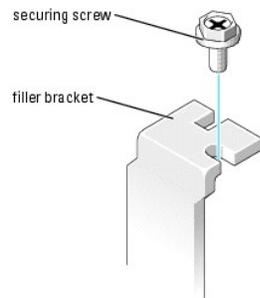
If you are installing or replacing a card, follow the procedures in the next section. If you are removing but not replacing a card, see "[Removing a PCI Card.](#)"

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

If you are installing or replacing a PCI Express card, see "[Installing a PCI Express Card.](#)"

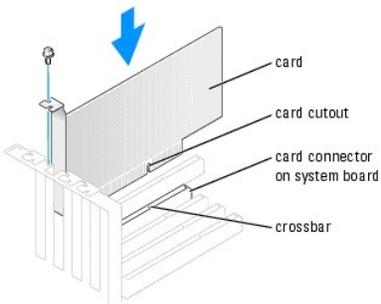
## Installing a PCI Card

1. Follow the procedures in "[Before You Begin.](#)"
2. Unscrew and remove the filler bracket for the card slot you want to use.

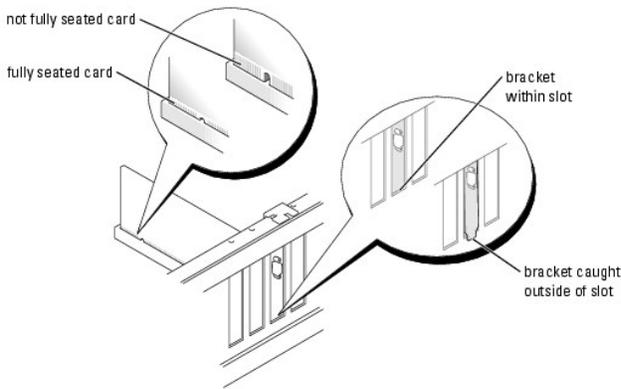


**⚠ CAUTION:** Some network adapters automatically start the computer when they are connected to a network. To guard against electrical shock, be sure to unplug your computer from its electrical outlet before installing any cards.

3. Align the cutout on the bottom of the card with the crossbar in the system board connector. Gently rock the card into the connector until it is fully seated.



Ensure that the card is fully seated and that its bracket is within the card slot.



4. Secure the card bracket with the screw you removed in [step 2](#).
5. 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 cause damage to the equipment.

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

## Removing a PCI Card

1. Follow the procedures in "[Before You Begin](#)."
2. If necessary, disconnect any cables connected to the card.
3. Remove the securing screw from the card bracket.
4. Grasp the card by its top corners, and ease it out of its connector.
5. If you are removing the card permanently, install a filler bracket in the empty card-slot opening.

If you need a filler bracket, contact Dell (see the *Owner's Manual*).

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

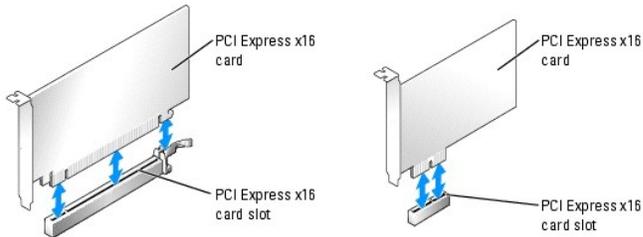
➔ **NOTICE:** To connect a network cable, first plug the cable into the network wall jack and then plug it into the computer.

6. Close the computer cover, reconnect the computer and devices to electrical outlets, and then turn them on.
7. Remove the card's driver from the operating system.
8. If you removed a sound card:
  - a. Enter [system setup](#), select **Audio Controller**, and then change the setting to **On**.
  - b. Connect external audio devices to the audio connectors on the computer back panel.

9. If you removed an add-in network connector:
  - a. Enter [system setup](#), select **Network Controller**, and then change the setting to **On**.
  - b. Connect the network cable to the integrated connector on the computer back panel.

## PCI Express Cards

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



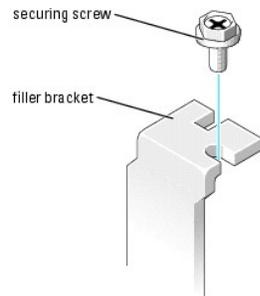
If you are installing or replacing a PCI Express card, follow the procedures in the next section. If you are removing but not replacing a PCI Express card, see "[Removing a PCI Express Card](#)."

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

If you are installing or replacing a PCI card, see "[Installing a PCI Card](#)."

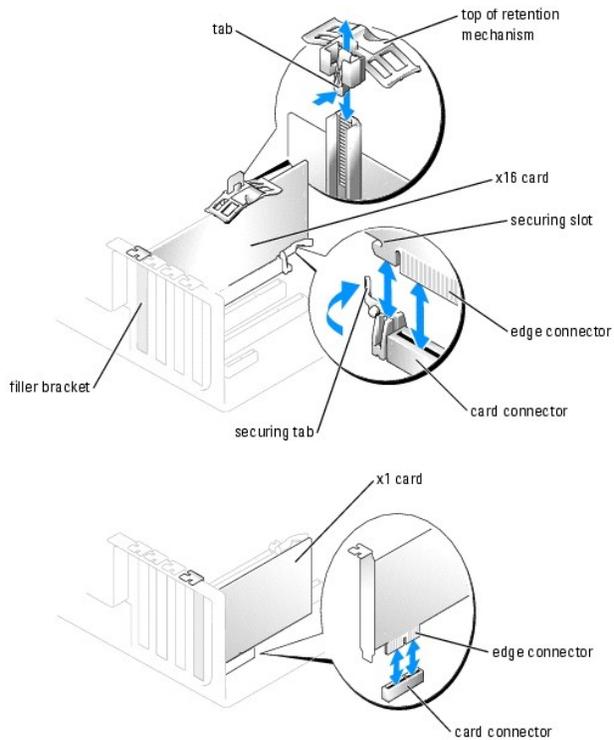
## Installing a PCI Express Card

1. Follow the procedures in "[Before You Begin](#)."
2. If you are installing a new card, unscrew and remove the filler bracket to create a card-slot opening. Then continue with [step 4](#).



3. If you are replacing a card that is already installed in the computer, remove the card.

If necessary, disconnect any cables connected to the card. If your card includes a retention mechanism, remove the top of the retention mechanism by pressing the tab and pulling up on the top. Gently pull the securing tab, grasp the card by its top corners, and then ease it out of its connector.

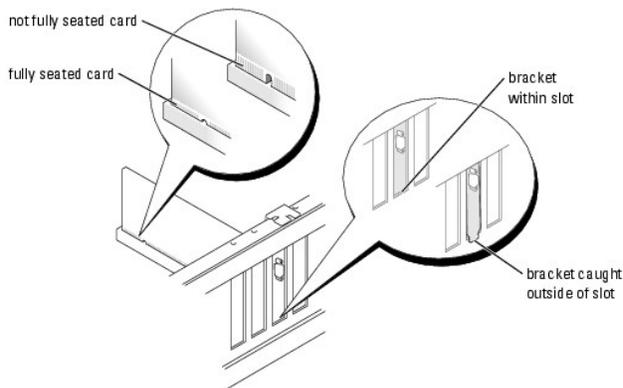


4. Prepare the card for installation.

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.

5. If you are installing the card into the x16 card connector, position the card so the securing slot is aligned with the securing tab, and gently pull the securing tab.
6. Place the card in the connector and press down firmly. Ensure that the card is fully seated and that the bracket is within the card slot.



7. If you replaced a card that was already installed in the computer and you removed the top of the retention mechanism, you may reinstall the top.
8. Secure the card bracket with the screw you removed in [step 2](#).

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

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

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

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

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

11. If you installed a sound card:

- a. [Enter system setup](#), select **Audio Controller**, and then change the setting to **Off**.
- b. Connect external audio devices to the sound card's connectors. Do not connect external audio devices to the microphone, speaker/headphone, or line-in connectors on the back panel.

12. If you installed an add-in network adapter and want to disable the integrated network adapter:

- a. Enter system setup, select **Network Controller**, and then change the setting to **Off**.
- b. Connect the network cable to the add-in network adapter's connectors. Do not connect the network cable to the integrated connector on the back panel.

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

## Removing a PCI Express Card

1. Follow the procedures in "[Before You Begin](#)."
2. If necessary, disconnect any cables connected to the card.
3. If your card includes a retention mechanism, remove the top of the retention mechanism by pressing the tab and pulling up on the top.
4. Remove the securing screw from the card bracket.
5. Gently pull back the securing tab, grasp the card by its top corners, and then ease it out of its connector.
6. If you are removing the card permanently, install a filler bracket in the empty card-slot opening.

If you need a filler bracket, contact Dell (see the *Owner's Manual*).

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

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

7. Close the computer cover, reconnect the computer and devices to electrical outlets, and then turn them on.

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

9. If you removed a sound card:

- a. Enter system setup, select **Audio Controller**, and then change the setting to **On**.
- b. Connect external audio devices to the audio connectors on the computer back panel.

10. If you removed an add-in network connector:

- a. Enter system setup, select **Network Controller**, and then change the setting to **On**.
- b. Connect the network cable to the integrated connector on the computer back panel.

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

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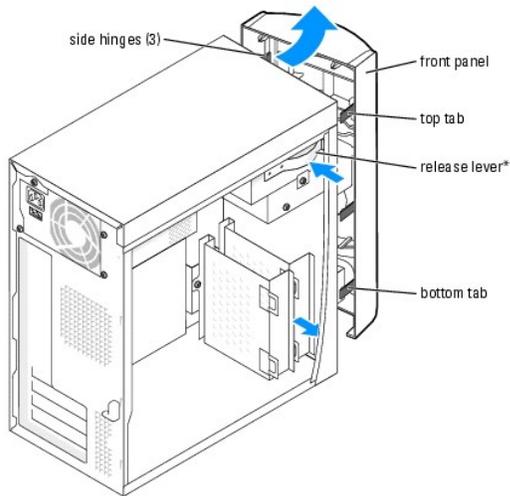
## Front Panel

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

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

## Removing the Front Panel

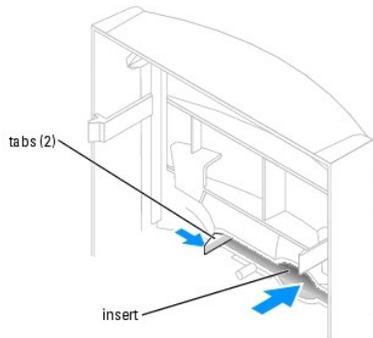
1. Follow the procedures in "[Before You Begin](#)."
2. [Remove the computer cover](#).
3. Release and remove the front panel:
  - a. If your computer has a release lever, push the release lever to release the top tab.
  - b. Reach inside the computer and push the top and bottom tab towards you to release them.
  - c. Rotate the front panel to separate it from the side hinges.



\*May not be present on all computers.

## Removing the Front-Panel Insert

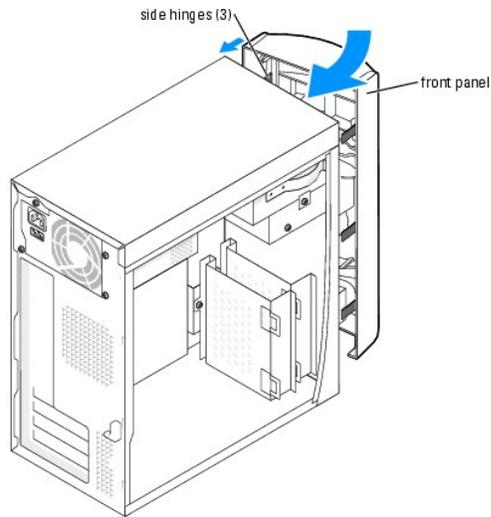
1. Press in the two insert tabs.



2. Push out the front-panel insert.

## Reattaching the Front Panel

1. Reattach the front panel to the side hinges.



2. Rotate the front panel until it snaps onto the front of the computer.

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## Drives

Your computer supports a combination of these devices:

- 1 Up to two hard drives
- 1 One optional floppy
- 1 Up to two CD or DVD drives

## General Installation Guidelines

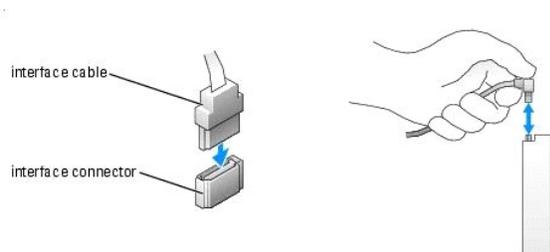
Connect serial ATA hard drives to the system board connectors labeled SATA-0 or SATA-2. Connect CD/DVD drives to the connector labeled PRI IDE.

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

## Connecting Drive Cables

When you install a drive, you connect two cables—a DC power cable and a data cable—to the back of the drive and to the system board. Some drives may also have an audio connector; one end of the audio cable will attach to the drive connector and the other will attach to the system board.

## Drive Interface Connectors



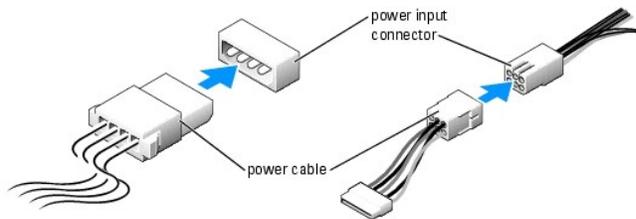
Most interface connectors are keyed for correct insertion; that is, a notch or a missing pin on one connector matches a tab or a filled-in hole on the other connector.

When connecting an IDE cable, ensure you align the colored stripe with the pin 1 connector. When disconnecting an IDE cable, grasp the colored pull tab and pull until the connector detaches.

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

 **NOTE:** The system board serial ATA connector may have an attached cover or shroud.

## Power Cable Connector



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## Hard Drive

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

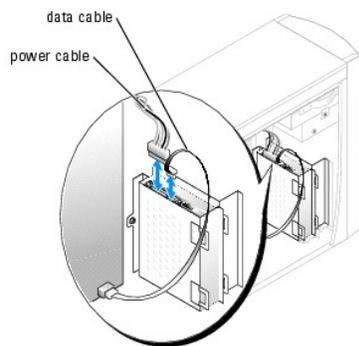
 **CAUTION:** To guard against electrical shock, always unplug your computer from the electrical outlet before opening the cover.

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

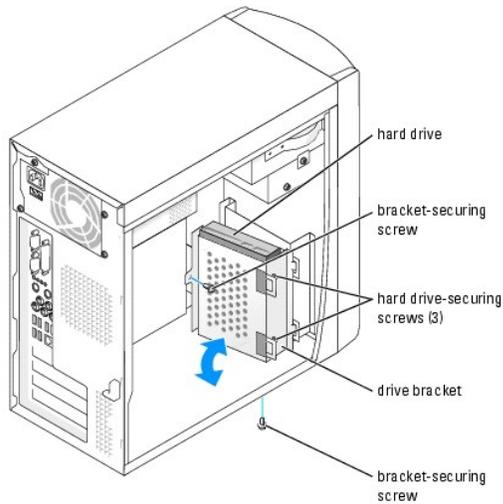
1. If you are replacing a hard drive that contains data you want to keep, back up your files before you begin this procedure.
2. Follow the procedures in "[Before You Begin](#)."
3. [Remove the computer cover](#).

## Removing a Hard Drive

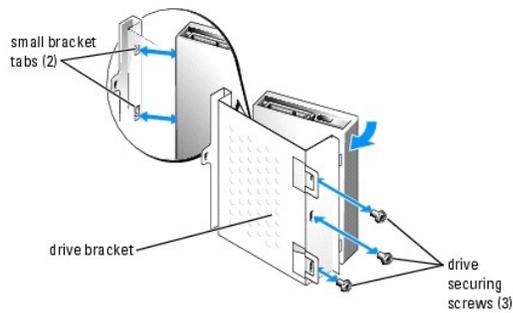
1. Disconnect the power and data cables from the drive and from the system board.



2. Remove the hard drive bracket from the computer:
  - a. Remove the bracket-securing screws for the hard drive.
  - b. Remove the bracket for the hard drive from the computer.



3. If you are replacing the hard drive, remove the drive from the bracket:
  - a. Remove the hard drive-securing screws.
  - b. Remove the hard drive from the bracket.



## Installing a Hard Drive

1. Unpack the replacement hard drive, and prepare it for installation.
2. Check the documentation for the drive to verify that it is configured for your computer.
3. Remove the [hard drive bracket](#).
4. Attach the hard drive to the hard drive bracket:
  - a. Place the small bracket tabs into the drive-securing screw holes on one side of the drive.
  - b. Gently swing the drive toward the bracket and align the three screw holes on the other side of the drive with the screen holes on the bracket.
  - c. Attach the hard drive bracket to the hard drive.
  - d. Insert and tighten all three drive-securing screws.
5. Install the hard drive:
  - a. Place the two bracket tabs into the drive slots inside the bracket for the additional hard drive.
  - b. Swing the bracket forward so that it is flush with the bracket for the additional hard drive.
  - c. Replace the bracket-securing screws.
6. Connect a power cable to the drive.
7. [Connect the data cable to the drive and to the system board.](#)

8. [Close 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.

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

10. If the drive you just installed is the primary drive, insert a bootable floppy disk into drive A.

11. Turn on the computer.

12. [Enter system setup](#), and update the appropriate **Drive** option.

13. [Exit system setup](#), and restart the computer.

14. Partition and logically format your drive before you proceed to the next step.

See the documentation for your operating system for instructions.

15. Test the hard drive by running the Dell Diagnostics (see the *Owner's Manual*).

16. If the drive you just installed is the primary drive, install your operating system on the hard drive.

## Adding a Second Hard Drive

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

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

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

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

2. Follow the procedures in "[Before You Begin](#)."

3. [Remove the computer cover.](#)

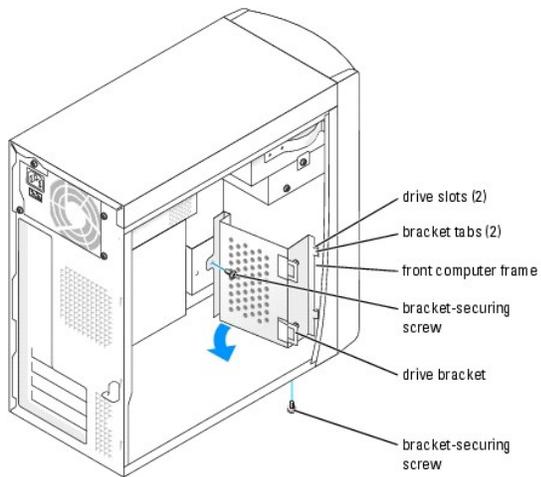
4. [Remove the existing hard drive.](#)

5. Remove the additional hard drive bracket from the computer:

- a. Remove the bracket-securing screws for the additional drive.
- b. Remove the bracket for the additional drive from the computer.

6. If you are replacing the additional hard drive, remove the drive from the bracket:

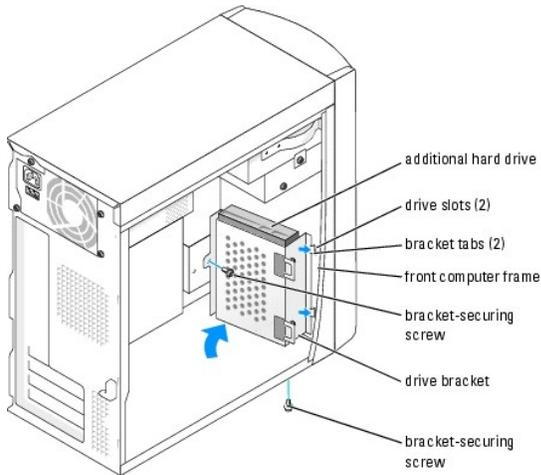
- a. Remove the hard drive-securing screws.
- b. Remove the hard drive from the bracket.



➔ **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 soft surface, such as a foam pad, that will sufficiently cushion it.

7. Install the additional hard drive:
  - a. Place the two bracket tabs into the drive slots inside the computer's front panel.
  - b. Swing the bracket forward so that it is flush with the computer's front panel.
  - c. Replace the bracket-securing screws.



8. [Reinstall the existing hard drive](#) into the computer in front of the additional drive.

9. Connect a power cable to the drive.

10. Connect the data cable to the drive and to the [system board](#).

11. [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.

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

13. 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 located in the Product Information Guide.

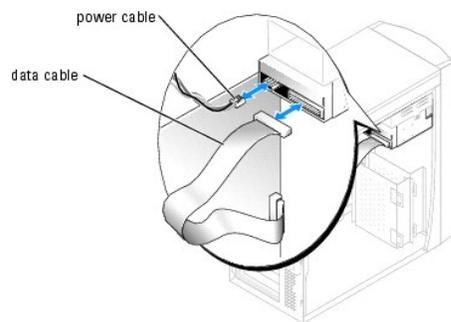
**⚠ CAUTION:** To guard against electrical shock, always unplug your computer from the electrical outlet before opening the cover.

1. Follow the procedures in "[Before You Begin](#)."
2. [Release and remove the front panel](#).

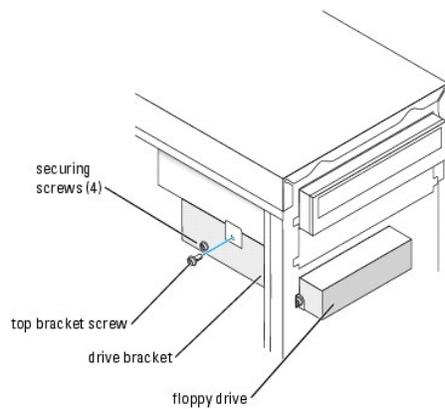
**🔍 NOTE:** If you are adding a floppy drive, see "[Installing a Floppy Drive](#)."

## Removing a Floppy Drive

1. Disconnect the power and data cables from the back of the floppy drive and from the [system board](#).



2. [Remove the floppy drive bracket](#) from the computer:
  - a. Remove the bracket-securing screw for the floppy drive.
  - b. Remove the bracket for the floppy drive from the computer.



3. Remove the floppy drive from the bracket:
  - a. Remove all four drive-securing screws (two on each side).
  - b. Remove the floppy drive from the bracket.

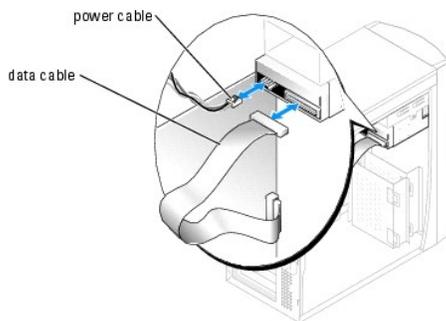
## Installing a Floppy Drive

1. [Remove the floppy drive bracket](#) from the computer.

2. If you are replacing a floppy drive, [remove the drive](#) from the bracket.
3. Attach the floppy drive bracket to the floppy drive.
  - a. Align the screw holes on the drive with the screw holes on the bracket.
  - b. Insert and tighten all four drive-securing screws (two on each side).
4. Position the top of the floppy drive bracket so that it is completely flush with the bottom of the upper drive bay, and then slide the floppy drive bracket forward into position.

 **NOTE:** The top of the floppy drive bracket has two slots that fit into two clips on the bottom of the upper drive bay. When the floppy drive bracket is properly mounted, it remains in place without support.

5. Secure the floppy drive bracket with the top bracket screw that came with your drive.
6. [Reattach the front panel](#).
7. [Connect the data cable to the back of the drive and to the floppy drive connector on the system board](#).



 **NOTICE:** Match the colored stripe on the cable with pin 1 on the drive (pin 1 is marked as "1").

8. [Reattach the front panel](#).
9. [Replace the computer cover](#).

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

10. Connect your computer and devices to their electrical outlets, and turn them on.  
See the documentation that came with the drive for instructions on installing any software required for drive operation.
11. [Enter system setup](#) and update the appropriate **Diskette Drive** option.
12. Verify that your computer works correctly by running the Dell Diagnostics (see the *Owner's Manual*).

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## CD/DVD Drive

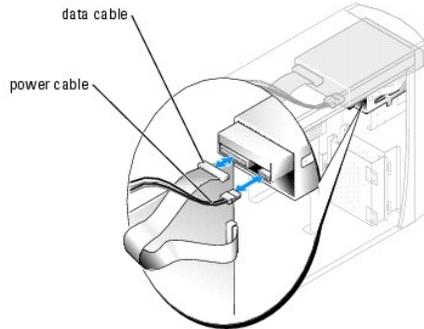
 **CAUTION:** Before you begin any of the procedures in this section, follow the safety instructions located in the Product Information Guide.

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

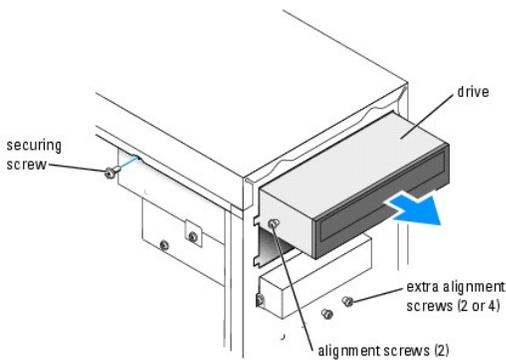
1. Follow the procedures in "[Before You Begin](#)."
2. [Remove the computer cover](#).
3. [Release and remove the front panel](#).

## Removing a CD/DVD Drive

1. Disconnect the power, audio, and CD/DVD drive cables from the back of the drive and from the system board.



2. Remove the CD/DVD drive securing screw.
3. Slide the drive forward and remove it from the drive bay.



## Installing a CD/DVD Drive

1. If you are installing a new drive, unpack the drive and prepare it for installation.

Check the documentation that accompanied the drive to verify that the drive is configured for your computer. If you are installing an IDE drive, configure the drive for the cable select setting.

2. If you are replacing a drive, [remove the existing drive](#).
3. Gently slide the drive into place in the drive bay.
4. After the drive is in place, apply pressure to ensure that the drive is fully seated.
5. Use the securing screw that came with the drive to attach the drive to the computer.

**NOTICE:** Match the colored stripe on the cable with pin 1 on the drive (pin 1 is marked as "1").

6. Connect the power cable to the [system board](#).
7. Connect the power and CD/DVD drive cables to the drive and to the [system board](#).
8. If you are installing a drive that has its own controller card, install the controller card in a card slot.
9. [Reattach the front panel](#).
10. [Replace the computer cover](#).

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

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

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

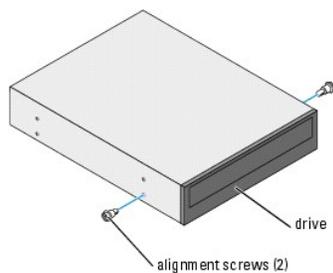
12. [Enter system setup](#) and select the appropriate **Drive** option.

13. Verify that your computer works correctly by running Dell Diagnostics (see the *Owner's Manual*).

## Adding a Second CD or DVD Drive

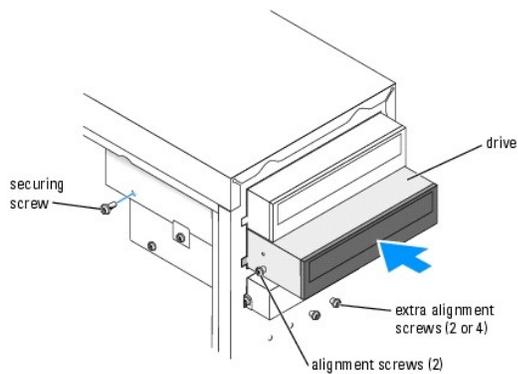
1. Ensure that the jumper setting on the new drive is set for "cable select" (see the documentation that came with the drive for information).

2. Remove two extra alignment screws, from the front of the computer and insert them into the drive as shown in the following illustration.



🔧 **NOTE:** Some computers come with only two extra alignment screws; others come with four. You only need two alignment screws for this procedure.

3. Gently slide the drive into place in the drive bay.



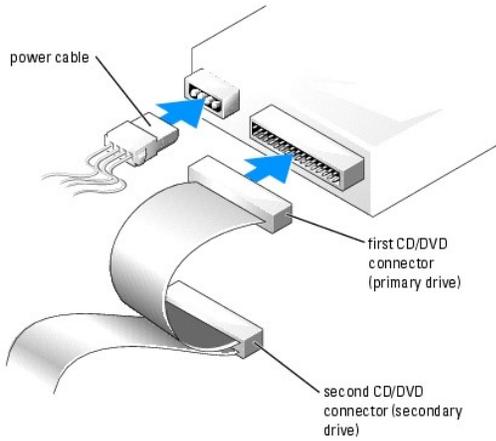
4. After the drive is in place, apply pressure to ensure that the drive is fully seated.

5. Use the securing screw that came with the drive to attach the drive to the computer.

➔ **NOTICE:** Match the colored stripe on the cable with pin 1 on the drive (pin 1 is marked as "1").

6. [Connect the power cable to the system board.](#)

7. Locate the data cable from the CD or DVD drive in the upper drive bay and connect its middle data connector to the new drive.



8. [Reattach the front panel.](#)

9. [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.

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

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

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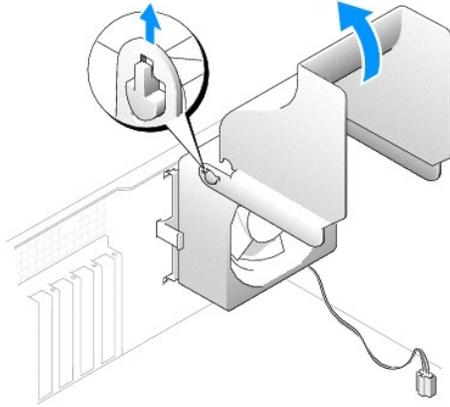
## Processor

### Removing the Processor

👉 **NOTICE:** Do not perform the following steps unless you are familiar with hardware removal and replacement. Performing these steps incorrectly could damage your system board. For technical service, see "Contacting Dell" in the *Owner's Manual*.

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

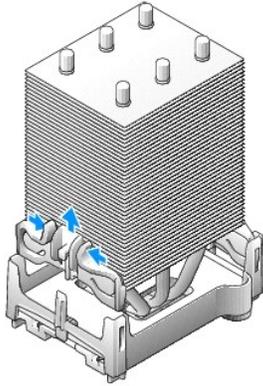
1. Follow the procedures in "[Before You Begin.](#)"
2. Disconnect the cooling fan power cable from the fan connector on the system board.
3. Disconnect the power cable from the processor power connector on the system board.
4. Lift up the airflow shroud.



**⚠ CAUTION:** The heat sink can get very hot during normal operation. Be sure that the heat sink has had sufficient time to cool before you touch it.

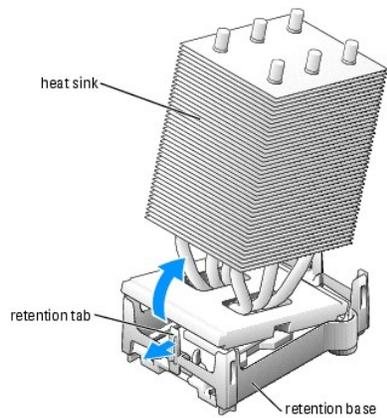
5. Remove the heat sink:

- a. Remove the retention module clips. Press the tabs toward the center of the clip and lift up.



- b. On the retention base locate the tab opposite the power supply. Press on the retention base tab until the heat sink pops up slightly.
- c. Press out on the second retention tab while lifting the heat sink up and out of the retention base.

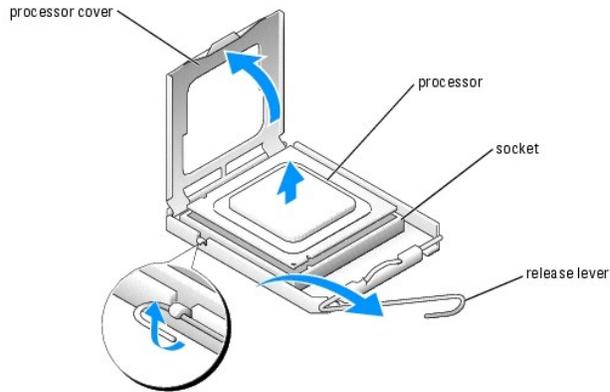
**➡ NOTICE:** Lay the heat sink down on its side.



➔ **NOTICE:** If you are installing a processor upgrade kit from Dell, discard the original heat sink. If you are *not* installing a processor upgrade kit from Dell, reuse the original heat sink and blower when you install your new processor.

6. Push down and out on the socket release lever.

7. Open the processor cover.



8. To remove the processor from the socket, lift the processor vertically in one motion.

Leave the release lever extended in the release position so that the socket is ready for the new processor.

## Installing the Processor

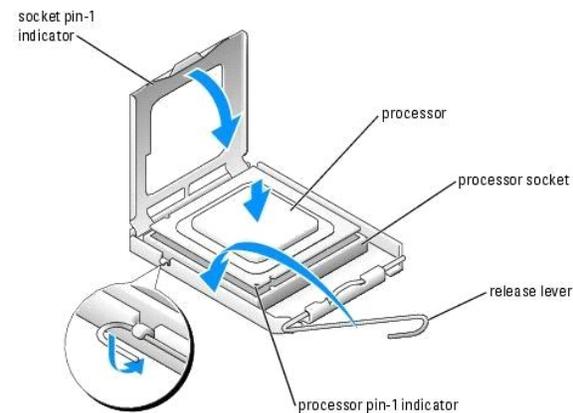
➔ **NOTICE:** Ground yourself by touching an unpainted metal surface on the back of the computer.

1. Unpack the new processor.

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

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

3. Align the pin-1 corners of the processor and socket.



➔ **NOTICE:** Socket pins are delicate. To avoid damage, ensure that the processor is aligned properly with the socket, and do not use excessive force when you install the process. Be careful not to touch or bend the pins on the system board.

4. Set the processor lightly in the socket and ensure that the processor is level in the socket. When the processor is positioned correctly, press it with minimal pressure to seat it.

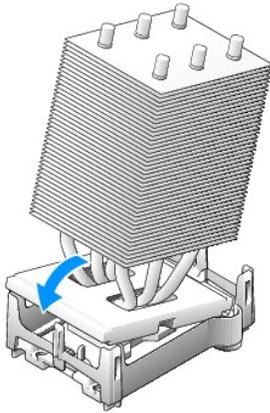
5. When the processor is fully seated in the socket, close the processor cover.
6. Pivot the socket release lever back toward the socket and snap it into place to secure the processor.

➡ **NOTICE:** If you are *not* installing a processor upgrade kit from Dell, reuse the original heat sink assembly when you replace the processor.

If you installed a processor replacement kit from Dell, return the original heat sink assembly and processor to Dell in the same package in which your replacement kit was sent.

7. Install the heat sink:
  - a. Slide one end of the heat sink under the retention tab.
  - b. Pull out the other retention tab and lower the heat sink until it fits securely in the base.

➡ **NOTICE:** Ensure the heat sink is correctly seated and secure.



8. Reinstall the retention module clips.
9. Lower the airflow shroud over the heat sink.
10. Reconnect the cooling fan power cable to the fan connector on the system board.
11. Reconnect the power cable to the processor power connector on the system board.
12. [Close 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.

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

## Fan Assembly

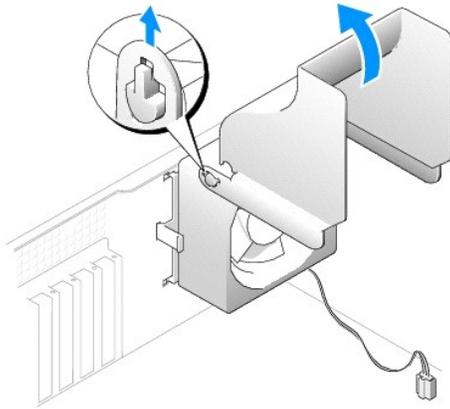
### Removing the Fan Assembly

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

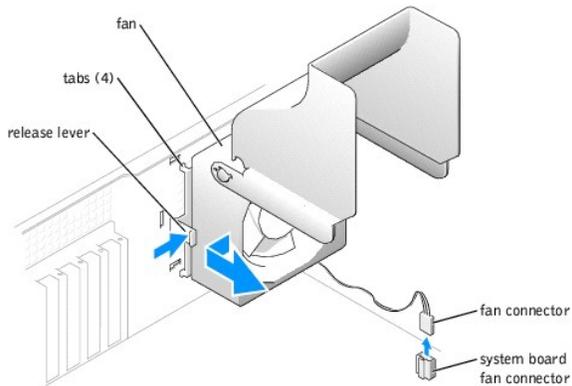
⚠ **CAUTION:** To guard against electrical shock, always unplug your computer from the electrical outlet before removing the cover.

1. Follow the procedures in "[Before You Begin.](#)"
2. Disconnect the AC power cable from the AC power connector on the back of the power supply.
3. Unplug the DC power cables from the drives and system board.

4. Lift up the airflow shroud.



5. Disconnect the fan power cable from its connector on the system board.
6. Pull the fan release lever away from the back of the computer and slide the fan toward the release lever.



7. Remove the fan assembly from the computer.

## Replacing the Fan Assembly

1. Align the fan assembly tabs with the holes in the back of the computer.
2. Slide the fan assembly away from the fan release lever until it clicks in place.
3. Reconnect the DC power cables to the drives and system board.
4. Replace the computer cover.
5. Connect the AC power cable to the AC power connector on the back of the power supply.
6. **NOTICE:** To connect a network cable, first plug the cable into the network wall jack and then plug it into the computer.
6. Connect your computer and devices to electrical outlets, and turn them on.

---

## System Board

## Removing the System Board

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

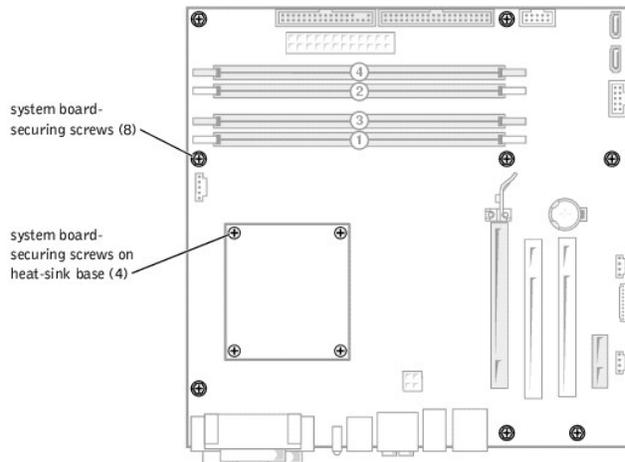
**CAUTION:** To guard against electrical shock, always unplug your computer from the electrical outlet before removing the cover.

1. Follow the procedures in ["Before You Begin."](#)
2. Remove the floppy drive. To remove the floppy drive, see ["Installing a Floppy Drive."](#)
3. Remove any [cards](#) that are installed.
4. Disconnect all cables from the system board.
5. Lift up the heat-sink shroud.

**CAUTION:** The microprocessor heat sink can get hot. To avoid burns, ensure that the heat sink has had sufficient time to cool before you touch it.

6. [Remove the microprocessor heat sink.](#)
7. [Remove the fan assembly.](#)
8. Remove the 12 screws that secure the system board to the computer frame.

Four of the 12 screws that secure the system board to the computer frame also secure the heat-sink base to the system board.



9. Lift the system board out from the computer.
10. Place the system board that you just removed next to the replacement system board.

Visually compare the replacement system board to the existing system board to ensure that you have the correct part.

## Installing 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 can get hot. To avoid burns, ensure that the package has had sufficient time to cool before you touch it.

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

Set the jumpers on the replacement system board so that they are identical to the ones on the existing board.

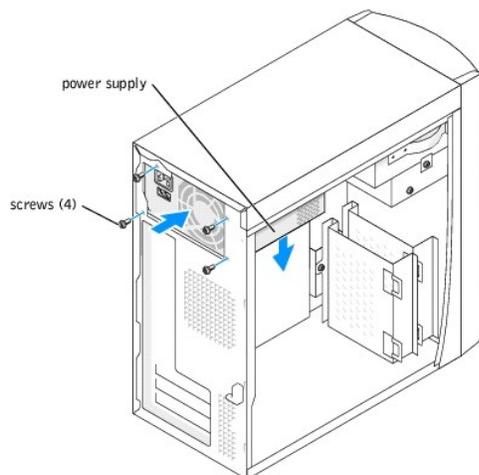
3. Place the system board inside the computer frame, place the heat-sink base on the system board, and then replace the screws that you removed in [step 8](#) of the preceding procedure.
  4. [Reinstall the fan assembly.](#)
  5. Reinstall the microprocessor heat sink, and then lower the heat-sink shroud.
  6. Reattach the cables to the system board.
  7. [Reinstall any cards.](#)
  8. Replace the floppy drive.
  9. 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.
10. Connect your computer and devices to electrical outlets, and turn them on.
- 

## Power Supply

### Removing the Power Supply

-  **CAUTION:** Before you begin any of the procedures in this section, follow the safety instructions in the Owner's Manual.
-  **CAUTION:** To guard against electrical shock, always unplug your computer from the electrical outlet before removing the cover.

1. Follow the procedures in ["Before You Begin."](#)
2. [Remove the fan assembly.](#)
3. Disconnect the AC power cable from the AC power connector on the back of the power supply.
4. Unplug the DC power cables from the drives and system board.
5. Remove the four screws that secure the power supply to the back of the computer.



6. Remove the power supply from the computer.

## Replacing the Power Supply

1. Slide the power supply into place.
  2. Replace the four screws that secure the power supply to the back of the computer.
  3. [Reinstall the fan assembly.](#)
  4. Reconnect the DC power cables to the drives and system board.
  5. [Replace the computer cover.](#)
  6. Connect the AC power cable to the AC power connector on the back of the power supply.
- ➡ **NOTICE:** To connect a network cable, first plug the cable into the network wall jack and then plug it into the computer.
7. Connect your computer and devices to electrical outlets, and turn them on.
- 

## Battery

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

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

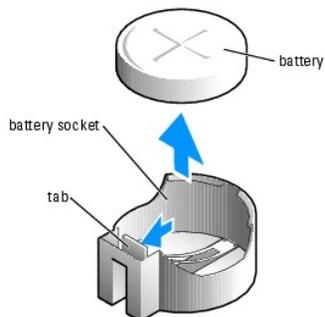
A coin-cell battery maintains computer configuration, date, and time information. The battery can last several years.

If you have to repeatedly reset time and date information after turning on the computer, replace the battery.

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

To replace the battery:

1. Record all the screens in [system setup](#) so that you can restore the correct settings in [step 8](#).
  2. Follow the procedures in "[Before You Begin](#)."
  3. Locate the battery socket (see "[System Board Components](#)").
- ➡ **NOTICE:** If you pry the battery out of its socket with a blunt object, be careful not to touch the system board with the object. Ensure that the object is inserted between the battery and the socket before you attempt to pry out the battery. Otherwise, you may damage the system board by prying off the socket or by breaking circuit traces on the system board.
4. Remove the battery by carefully prying it out of its socket with your fingers or with a blunt, nonconducting object such as a plastic screwdriver.
  5. Insert the new battery into the socket with the side labeled "+" facing up, and snap the battery into place.



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

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

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

8. [Enter system setup](#) and restore the settings you recorded in step 1.

9. Properly dispose of the old battery (see the "Battery Disposal" section of the *Product Information Guide*).

---

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## Technical Specifications

### Dell Dimension 4700 Series Service Manual

<b>Processor</b>	
Processor type	Intel® Pentium® 4 processor 520, 530, 540, 550, 560, or 570 with HT Technology  Intel Pentium 4 that runs at 2.8, 3.0, 3.2, 3.4, 3.6, and 3.8 GHz internally and 800 MHz externally
Level 1 (L1) cache	16 KB
Level 2 (L2) cache	1-MB (displayed in system setup) pipelined-burst, eight-way set associative, write-back SRAM

<b>Memory</b>	
Type	400-MHz (PC2-3200) and 533-MHz (PC2-4300) DDR2 unbuffered SDRAM non-ECC
Memory connectors	four
Memory capacities	128-, 256-, 512-, or 1-GB non-ECC
Minimum memory	128 MB  <b>NOTE:</b> Up to 128 MB of system memory may be allocated to support graphics, depending on system memory size and other factors.
Maximum memory	4 GB  <b>NOTE:</b> See " <a href="#">Addressing Memory With 4-GB Configurations</a> " to verify the amount of memory available to the operating system.
BIOS address	F0000h

<b>Computer Information</b>	
Chipset	Intel 915G Express
DMA channels	eight
Interrupt levels	24
BIOS chip (NVRAM)	4-Mb
NIC	integrated network interface capable of 10/100 communication.
System Clock	800-MHz data rate

<b>Video</b>	
Type	integrated or PCI Express

<b>Audio</b>	
Type	ADI 1980 AC97 Codec

<b>Expansion Bus</b>	
Bus type	PCI 2.2 PCI Express x1 and PCI Express x16
Bus speed	PCI: 33 MHz  PCI Express:  x1 slot bidirectional speed - 500 MB/s

	x16 slot bidirectional speed - 8 GB/s
PCI	
connectors	two
connector size	120 pins
connector data width (maximum)	32 bits
PCI Express	
connector	one PCI Express x1
connector size	36 pins
connector data width (maximum)	1 PCI Express lane
PCI Express	
connector	one PCI Express x16
connector size	164 pins
connector data width (maximum)	16 PCI Express lanes

<b>Drives</b>	
Externally accessible:	
	one 3.5-inch drive bay two 5.25-inch drive bays
Available devices	SATA hard drives, floppy drive, USB memory devices, CD drive, CD-RW drive, DVD drive, DVD-RW drive, and DVD and CD-RW combo drive
Internally accessible:	
	two bays for 1-inch high SATA hard drives

<b>Connectors</b>	
External connectors:	
Serial	9-pin connector; 16550C-compatible
Parallel	25-hole connector (bidirectional)
Video	15-hole connector
Network adapter	RJ45 connector
PS/2 (keyboard and mouse)	6-pin mini-DIN
USB	two front-panel and six back-panel USB 2.0-compliant connectors
Audio	five connectors for line-in, line-out, microphone, surround, and center/Low Frequency Effects (LFE) channel; one front-panel connector for headphones
System board connectors:	
Primary IDE drive	40-pin connector on PCI local bus
Serial ATA	two 7-pin connectors
Floppy drive	34-pin connector
CD Audio	4-pin connector
Fan	5-pin connector
PCI 2.2	120-pin connector
PCI Express x1	36-pin connector
PCI Express x16	164-pin connector
Telephony (TAPI)	4-pin connector

<b>Controls and Lights</b>	
Power control	push button
Power light	green light - Blinking green in sleep state; solid green for power-on state.  amber light - Blinking amber indicates a problem with an installed device; solid amber indicates an internal

	power problem (see " <a href="#">Power Lights</a> ").
Hard-drive access light	green
Link integrity light (on integrated network adapter)	green light - A good connection exists between a 10-Mbps network and the computer.  orange light - A good connection exists between a 100-Mbps network and the computer.  off (no light) - The computer is not detecting a physical connection to the network.
Activity light (on integrated network adapter)	yellow blinking light
Diagnostic lights	four lights on the back panel (See " <a href="#">Diagnostic Lights</a> ".)
Standby power light	CR3J1 on the system board

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

<b>Physical</b>	
Height	36.8 cm (14.5 inches)
Width	18.4 cm (7.25 inches)
Depth	42.6 cm (16.75 inches)
Weight	10.4 kg (23 lbs)

<b>Environmental</b>	
Temperature:	
Operating	10° to 35°C (50° to 95°F)  <b>NOTE:</b> At 35°C (95°F), the maximum operating altitude is 914 m (3000 ft).
Storage	-40° to 65°C (-40° to 149°F)
Relative humidity	20% to 80% (noncondensing)
Maximum vibration:	
Operating	0.25 G at 3 to 200 Hz at 0.5 octave/min
Storage	0.5 G at 3 to 200 Hz at 1 octave/min
Maximum shock:	
Operating	bottom half-sine pulse with a change in velocity of 20 inches/sec (50.8 cm/sec)
Storage	27-G faired square wave with a velocity change of 200 inches/sec (508 cm/sec)
Altitude:	
Operating	-15.2 to 3048 m (-50 to 10,000 ft)
Storage	-15.2 to 10,668 m (-50 to 35,000 ft)

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# System Setup

## Dell Dimension 4700 Series Service Manual

- [Overview](#)
- [Entering System Setup](#)
- [System Setup Screens](#)
- [System Setup Options](#)
- [Clearing Forgotten Passwords](#)
- [Clearing CMOS Settings](#)

---

## Overview

Use system setup as follows:

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

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

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

---

## Entering System Setup

1. Turn on (or restart) your computer.
2. When the blue DELL logo 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 (see the *Owner's Manual*) and try again.

---

## System Setup Screens

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

<p><b>Options List</b> - This field appears on the left side of the system setup window. The field is a scrollable list containing features that define the configuration of your computer, including installed hardware, power conservation, and security features.</p> <p>Scroll up and down the list by using the up- and down- arrow keys. As an option is highlighted, the <b>Option Field</b> displays more information about that option and the option's current and available settings.</p> <p>Press &lt;Enter&gt; to expand or contract each of the main option fields.</p>	<p><b>Option Field</b> - This field contains information about each option. In this field you can view your current settings and make changes to your settings.</p> <p>Use the right- and left- arrow keys to highlight an option. Press &lt;Enter&gt; to make that selection active.</p> <p><b>Key Functions</b> - This field appears below the <b>Option Field</b> and lists keys and their functions within the active system setup field.</p>
---	---

## System Setup Options

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

<b>System</b>	
<b>CPU Info</b>	Identifies whether the computer's processor supports Hyper-Threading and lists the processor bus speed, processor ID, clock speed, and L2 cache.
<b>Memory Info</b>	Indicates amount of installed memory, memory speed, channel mode (dual or single), and type of memory installed.
<b>Date/Time</b>	Displays current date and time settings.
<b>Boot Sequence</b>	The computer attempts to boot from the sequence of devices specified in this list.  <b>NOTE:</b> If you insert a boot device and restart the computer, this option appears in the system setup menu. To boot from a USB memory device, select the USB device and move it so it becomes the first device in the list.
<b>Drives</b>	
<b>Diskette Drive</b>	Identifies and defines the floppy drive attached to the FLOPPY connector on the system board as <b>Off</b> , <b>USB</b> , <b>Internal</b> , or <b>Read Only</b> .
<b>Drives 0 through 3</b>	Identifies the drives attached to the SATA or PRI IDE connectors on the system board, and lists the capacity for hard drives.
<b>Drive Controller</b>	Sets the SATA controller operating mode. Use the <b>Normal</b> option ATA native mode. Use the <b>Compatible</b> option for SATA/PATA combination mode.
<b>Onboard Devices</b>	
<b>NIC Controller</b>	You can set the NIC to <b>On</b> (default), <b>Off</b> , or <b>On w/ PXE</b> . When the <b>On w/ PXE</b> setting is active (available only for the future boot process), the computer prompts the user to press <Ctrl><Alt><b>. Pressing this key combination causes a menu to display that allows you to select a method for booting from a network server. If a boot routine is not available from the network server, the computer attempts to boot from the next device in the boot sequence list.
<b>Audio Controller</b>	Enables or disables the onboard audio controller
<b>USB</b>	Set to <b>On</b> (default) so that USB devices will be detected and supported in the operating system.  The <b>No Boot</b> option restricts external access to drive data. Use this option to prohibit users from booting the computer using an external USB device.
<b>Mouse Port</b>	Enables or disables the onboard PS/2-compatible mouse controller.
<b>LPT Port Mode</b>	Identifies and defines the parallel port settings. You can set the parallel port to <b>Off</b> , <b>AT</b> , <b>PS/2</b> , <b>EPP</b> , or <b>ECP</b> .
<b>LPT Port Address</b>	Identifies the LPT port address for the parallel port.
<b>LPT Port DMA</b>	Identifies and defines the parallel port DMA settings. You can set the parallel port DMA to <b>Off</b> , <b>DMA1</b> , or <b>DMA3</b> .
<b>Serial Port #1</b>	Identifies and defines the serial port settings. <b>Auto</b> , the default setting, automatically configures a connector to a particular designation ( <b>COM1</b> or <b>COM3</b> ).
<b>Video</b>	
<b>Primary Video</b>	This setting specifies which video controller is primary when two video controllers are present on the computer.
<b>Video Memory Size</b>	Sets the amount of system memory to be reserved for the onboard video controller.
<b>Performance</b>	
<b>Hyperthreading</b>	If your computer's processor supports Hyper-Threading, this option appears in the <b>Options List</b> .
<b>Performance</b>	<ul style="list-style-type: none"> <li>1 <b>Bypass</b> (default) - Your computer does not test or change the current acoustics mode setting.</li> <li>1 <b>Quiet</b> - The hard drive operates at its most quiet setting.</li> <li>1 <b>Suggested</b> - The hard drive operates at the level suggested by the drive manufacturer.</li> <li>1 <b>Performance</b> - The hard drive operates at its maximum speed.</li> </ul> <p><b>NOTE:</b> Switching to performance mode may cause the drive to be noisier, but its performance may not be affected.</p> <p><b>NOTE:</b> Changing the acoustics setting does not alter your hard drive image.</p>
<b>Security</b>	
<b>Admin Password</b>	This option provides restricted access to the computer's system setup program in the same way that access to the system can be restricted with the <b>System Password</b> option.
<b>System Password</b>	Displays the current status of the system's password security feature and allows a new system password to be assigned and verified.
<b>Password Status</b>	This option locks the system password field with the setup password. When the field is locked, the option to disable password security by pressing <Ctrl><Enter> when the computer starts is no longer available.
<b>Power Management</b>	
<b>AC Recovery</b>	Determines what happens when AC power is restored to the computer.
<b>Auto Power On</b>	Sets the computer to automatically turn on. Choices are <b>every day</b> or <b>weekdays</b> (every Monday through Friday).  The default setting is <b>Off</b> .

	This feature does not work if you turn off your computer using a power strip or surge protector.
<b>Auto Power Time</b>	Sets time to automatically turn on the computer. Time is kept in a 24-hour format ( <i>hours:minutes</i> ). Change the start-up time by pressing the right- or left-arrow key to increase or decrease the numbers, or type numbers in both the date and time fields. This feature does not work if you turn off your computer using a power strip or surge protector.
<b>Remote Wake Up</b>	This option allows the computer to power up when a NIC or Remote Wakeup-capable modem receives a wake up signal. <b>On</b> is the default setting. <b>On w/ Boot to NIC</b> allows the computer to attempt to boot from a network prior to using the boot sequence.  <b>NOTE:</b> The computer can be powered up remotely from the suspend or standby modes only.
<b>Suspend Mode</b>	The options are <b>S1</b> , a suspend state where the computer is running in a low-power mode, and <b>S3</b> , a standby state where the power is reduced or turned off for most components, however, system memory remains active.
<b>Maintenance</b>	
<b>CMOS Defaults</b>	This setting restores the computer's factory-installed default settings.
<b>Event Log</b>	Displays the system event log.
<b>BIOS Update</b>	After downloading a new version of the BIOS, use this option to identify and define the location of the BIOS update file. The options are <b>Diskette</b> or <b>Disk</b> .
<b>POST Behavior</b>	
<b>Fastboot</b>	When set to <b>On</b> (default), your computer starts more quickly because it skips certain configurations and tests.
<b>Numlock Key</b>	This option involves the rightmost bank of keys on your keyboard. When set to <b>On</b> (default), this option activates the numeric and mathematical features shown at the top of each key. When set to <b>Off</b> , this option activates the cursor-control functions labeled on the bottom of each key.
<b>OS Install</b>	This setting turns the <b>OS Install Mode</b> either <b>On</b> or <b>Off</b> (default).
<b>POST Hotkeys</b>	This option allows you to specify the function keys to display on the screen when the computer starts.
<b>Keyboard Errors</b>	This option disables or enables keyboard error reporting when the computer starts.

## Boot Sequence

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

### Option Settings

- 1 **Diskette Drive** - The computer attempts to boot from the floppy drive. If the floppy disk in the drive is not bootable, if no floppy disk is in the drive, or if there is no floppy drive installed in the computer, the computer generates an error message.
- 1 **Hard Drive** - The computer attempts to boot from the primary hard drive. If no operating system is on the drive, the computer generates an error message.
- 1 **CD Drive** - The computer attempts to boot from the CD drive. If no CD is in the drive, or if the CD has no operating system, the computer generates an error message.
- 1 **USB Flash Device** - Insert the memory device into a USB port and restart the computer. When **F12 = Boot Menu** appears in the upper-right corner of the screen, press <F12>. The BIOS detects the device and adds the USB flash option to the boot menu.

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

### Changing Boot Sequence for the Current Boot

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

 **NOTE:** If you are booting to a USB floppy drive, you must first set the floppy drive to **OFF** in [system setup](#).

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

If you wait too long and the operating system logo appears, continue to wait until you see the Microsoft Windows desktop. Then [shut down your computer](#) and try again.

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

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

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

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

## Changing Boot Sequence for Future Boots

1. Enter [system setup](#).
2. Use the arrow keys to highlight the **Boot Sequence** menu option and press <Enter> to access the menu.

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

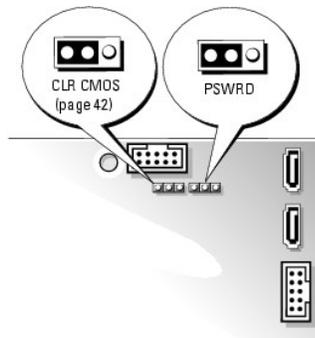
3. Press the up- and down-arrow keys to move through the list of devices.
4. Press the spacebar to enable or disable a device (enabled devices have a check mark).
5. Press plus (+) or minus (-) to move a selected device up or down the list.

---

## Clearing Forgotten Passwords

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

1. Follow the procedures in "[Before You Begin](#)."



2. Locate the 3-pin password jumper (PSWRD) on the [system board](#), and attach the jumper plug to pins 2 and 3 to clear the password.

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

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

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

---

## Clearing CMOS Settings

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

1. Follow the procedures in "[Before You Begin](#)."
2. Reset the current CMOS settings:
  - a. Locate the 3-pin CMOS jumper (CLR CMOS) on the [system board](#).
  - b. Remove the jumper plug from pins 1 and 2.
  - c. Place the jumper plug on pins 2 and 3 and wait approximately 5 seconds.
  - d. Replace the jumper plug on pins 1 and 2.
3. [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.

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

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## Technical Overview

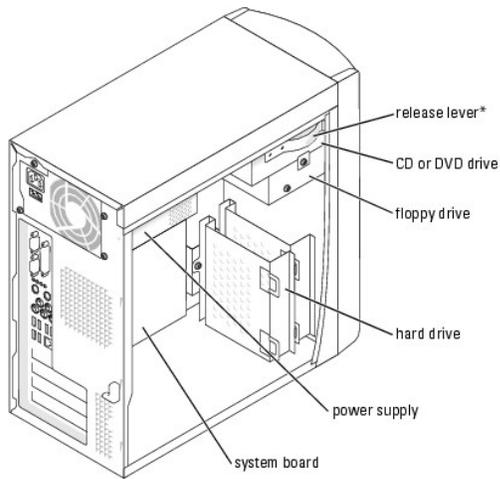
### Dell Dimension 4700 Series Service Manual

- [Inside View of Your Computer](#)
  - [System Board Components](#)
  - [Power Supply DC Connector Pin Assignments](#)
- 

## Inside View of Your Computer

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

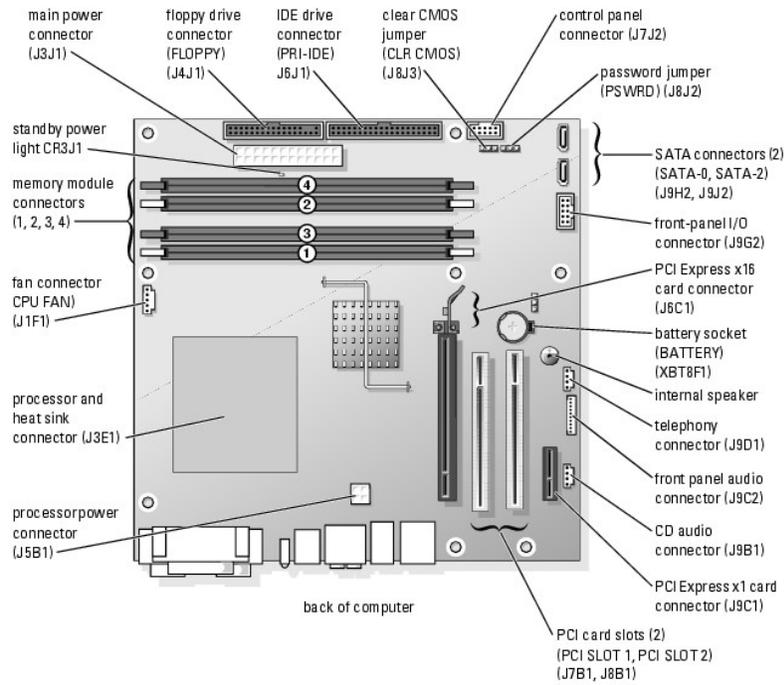
**⚠ CAUTION:** To guard against electrical shock, always unplug your computer from the electrical outlet before opening the computer cover.



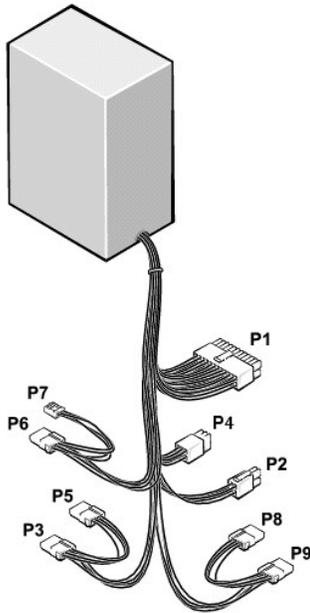
\*May not be present on all computers.

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## System Board Components



## Power Supply DC Connector Pin Assignments



The 305-W power supply can operate from an AC power source of 115 VAC or 230 VAC at 50 - 60 Hz. The power supply provides the DC operating voltages and currents listed in the following table.

Output Voltage	Minimum Current (A)	Maximum Current (A) <sup>1</sup>
+5 VDC	0.3	22.0
+3.3 VDC	0.3 <sup>2</sup>	17.0

+12A VDC	0.0	18.0 <sup>3,4</sup>
+12B VDC	0.0	18.0 <sup>3,4</sup>
-12 VDC	0.0	1.0
+5 VFP	0.0	2.0

<sup>1</sup>Maximum continuous total DC output cannot exceed 305 W. Maximum continuous combined load on +5-VDC and +3.3-VDC outputs cannot exceed 150 W.

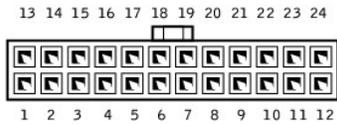
<sup>2</sup>In system applications where +3.3 VDC is not used, these values may be 0 A without affecting the regulation of the other outputs.

<sup>3</sup>Maximum +12A and +12B VDC output (up to 19.0 A) will not exceed 15 seconds in duration. Under this condition, tolerance on the +12A and +12B VDC output, may be +/- 10%.

<sup>4</sup>+12A VDC and +12B VDC maximum combined power may not exceed 264W.

## DC Power Connector P1

 **NOTE:** The +3.3 VDC output wires (orange) must be 16 AWG. All other output wires must be 18 AWG.



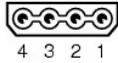
Pin Number	Signal name	Wire Color
1	+3.3 VDC	Orange
2	+3.3 VDC	Orange
3	COM	Black
4	+5 VDC	Red
5	COM	Black
6	+5 VDC	Red
7	COM	Black
8	POK	Gray
9	+5 VFP	Purple
10	+12B VDC	White
11	+12B VDC	White
12	+3.3 VDC	Orange
13	+3.3 VDC	Orange
14	-12 VDC	Blue
15	COM	Black
16	PS_ON	Green
17	COM	Black
18	COM	Black
19	COM	Black
20	N/C	N/C
21	+5 VDC	Red
22	+5 VDC	Red
23	+5 VDC	Red
24	COM	Black

## DC Power Connector P2



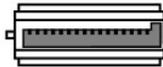
Pin Number	Signal Name	18-AWG Wire Color
1	COM	Black
2	COM	Black
3	+12 VDC	Yellow
4	+12 VDC	Yellow

### DC Power Connectors P8 and P9



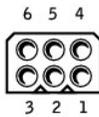
Pin Number	Signal Name	18-AWG Wire Color
1	+12B VDC	White
2	COM	Black
3	COM	Black
4	+5 VDC	Red

### DC Power Connectors P3 and P5 (for SATA drives)



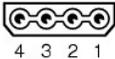
Signal Name	18-AWG Wire Color
+3.3 VDC	Orange
COM	Black
+5 VDC	Red
COM	Black
+12B VDC	White

### DC Power Connector P4



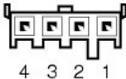
Pin Number	Signal Name	18-AWG Wire Color
1	-	No connect
2	COM	Black
3	COM	Black
4	+3.3 VDC	Orange
5	+5VDC	Red
6	+12B VDC	White

**DC Power Connector P6**



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

**DC Power Connector P7**



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

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## Dell Dimension 4700 Series Service Manual

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### Notes, Notices, and Cautions

-  **NOTE:** A NOTE indicates important information that helps you make better use of your computer.
  -  **NOTICE:** A NOTICE indicates either potential damage to hardware or loss of data and tells you how to avoid the problem.
  -  **CAUTION:** A CAUTION indicates a potential for property damage, personal injury, or death.
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### Abbreviations and Acronyms

For a complete list of abbreviations and acronyms, see the *Dell Dimension Help* file. If you purchased a Dell n Series computer, any references in this document to Microsoft® Windows® operating systems are not applicable.

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Model DMC

June 2004 Rev. A00

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