

Dell™ OptiPlex™ GX60 Systems User's Guide

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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 [Glossary](#).

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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Models: DHS, DHP, and DHM

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Booting to a USB Device

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

Memory Key

1. Insert the memory key into a USB port and restart the computer.
2. 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.

3. From the boot menu, select the number that appears next to the USB device.

The computer boots to the USB device.

Floppy Drive

1. Disable the integrated floppy controller by entering system setup, going to integrated devices, and setting the diskette interface to **Off**.
 2. Connect the USB floppy drive, insert a bootable diskette, and restart the computer.
-

Hyper-Threading

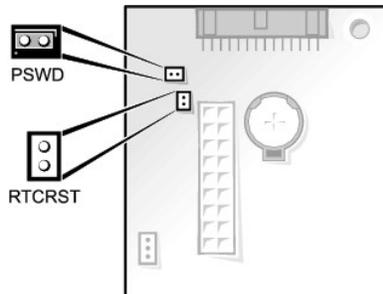
Hyper-Threading is an Intel® technology that can enhance overall computer performance by allowing one physical processor to function as two logical processors, capable of performing certain tasks simultaneously. It is recommended that you use the Microsoft® Windows® XP Service Pack 1 (SP1) operating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

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

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

You can enable or disable Hyper-Threading through system setup.

Jumper Settings



NOTICE: Ensure that your computer is turned off and unplugged before you change the jumper settings. Otherwise, damage to your computer or unpredictable results can occur.

To change a jumper setting, pull the plug off its pin(s) and carefully fit it down onto the pin(s) indicated.

System Board Jumper Settings

Jumper	Setting	Description
PSWD (green jumper)	 (default)	Password features are enabled.
		Password features are disabled.
RTCRST		Real-time clock reset

 jumpered
  unjumpered

LegacySelect Technology Control

LegacySelect technology control offers legacy-full, legacy-reduced, or legacy-free solutions based on common platforms, hard-drive images, and help desk procedures. Control is provided to the administrator through system setup, Dell OpenManage™ IT Assistant, or Dell™ custom preinstalled integration.

LegacySelect allows administrators to electronically activate or deactivate connectors and media devices that include serial and USB connectors, a parallel connector, a floppy drive, PCI slots, and PS/2 connectors. Connectors and media devices that are deactivated make resources available. You must restart the computer to effect the changes.

Manageability

Alert Standard Format

ASF is a DMTF management standard that specifies "pre-operating system" or "operating system-absent" alerting techniques. It is designed to generate an alert on potential security and fault conditions when the operating system is in a sleep state or the system is powered down. ASF is designed to supersede previous operating system-absent alerting technologies.

The OptiPlex GX60 supports the following ASF version 1.0 alerts and remote capabilities:

Alert	Description
-------	-------------

Chassis: Chassis Intrusion - Physical Security Violation/Chassis Intrusion - Physical Security Violation Event Cleared	The computer chassis has been opened or the chassis intrusion alert has been cleared.
BIOS: Corrupt BIOS/Corrupt BIOS Cleared	The BIOS has been corrupted or the BIOS corruption has been resolved.
Boot: Failure to Boot to BIOS	The BIOS did not complete loading upon initiation.
Password: System Password Violation	The system password is invalid (alert occurs after three failed attempts).
CPU: CPU DOA Alert/CPU DOA Alert Cleared	The processor is not functioning.
Heartbeats: Entity Presence	Periodic heartbeats have been transmitted to verify system presence.
Temperature: Generic Critical Temperature Problem/Generic Critical Temperature Problem Cleared	The computer temperature is out of limits or the computer temperature problem has been resolved.
Voltage: Generic Critical Voltage Problem/Generic Critical Voltage Problem Cleared	The voltage from integrated voltage regulators is out of limits or the voltage problem has been resolved.
Power Supply: Critical Power Supply Problem/Critical Power Supply Problem Cleared	The computer power supply voltage is out of limits or the computer power supply voltage problem has been resolved.
Cooling Device: Generic Critical Fan Failure/Generic Critical Fan Failure Cleared	The fan speed (rpm) is out of limits or the fan speed (rpm) problem has been resolved.
Connectivity: Ethernet Connectivity Enabled/Ethernet Connectivity Disabled	The Ethernet connectivity is enabled or the Ethernet connectivity is disabled.

For more information about Dell's ASF implementation, see the *ASF User's Guide* and the *ASF Administrator's Guide*, which are available on the Dell Support website at support.dell.com.

Dell OpenManage IT Assistant

IT Assistant configures, manages, and monitors computers and other devices on a corporate network. IT Assistant manages assets, configurations, events (alerts), and security for computers equipped with industry-standard management software. It supports instrumentation that conforms to SNMP, DMI, and CIM industry standards.

Dell OpenManage Client instrumentation, which is based on DMI and CIM, is available for your computer. For information about IT Assistant, see the *Dell OpenManage IT Assistant User's Guide* available on the Dell Support website at support.dell.com.

Dell OpenManage Client Instrumentation

Dell OpenManage Client Instrumentation is software that enables remote management programs such as IT Assistant to do the following:

- 1 Access information about your computer, such as how many processors it has and what operating system it is running
- 1 Monitor the status of your computer, such as listening for thermal alerts from temperature probes or hard-drive failure alerts from storage devices
- 1 Change the state of your computer, such as updating its BIOS or shutting it down remotely

A managed system is one that has Dell OpenManage Client Instrumentation set up on a network that uses IT Assistant. For information about Dell OpenManage Client Instrumentation, see the *Dell OpenManage Client Instrumentation User's Guide* available on the Dell Support website at support.dell.com.

Password Protection

- ➡ **NOTICE:** Although passwords provide security for the data on your computer, they are not foolproof. If your data requires more security, it is your responsibility to obtain and use additional forms of protection, such as data encryption programs.

System Password

- ➡ **NOTICE:** If you leave your computer running and unattended without having a system password assigned, or if you leave your computer unlocked so that someone can disable the password by changing a jumper setting, anyone can access the data stored on your hard drive.

Option Settings

You cannot change or enter a new system password if either of the following two options is displayed:

- 1 **Enabled** — A system password is assigned.
- 1 **Disabled** — The system password is disabled by a jumper setting on the system board.

You can only assign a system password when the following option is displayed:

- 1 **Not Enabled** — No system password is assigned, and the password jumper on the system board is in the enabled position (the default).

Assigning a System Password

To escape from the field without assigning a system password, press <Tab> or the <Shift><Tab> key combination to move to another field, or press <Esc> at any time before you complete step 5.

1. Enter system setup (see "[System Setup](#)") and verify that **Password Status** is set to **Unlocked**.
2. Highlight **System Password**, and then press the left- or right-arrow key.

The option heading changes to **Enter Password**, followed by an empty 32-character field in square brackets.

3. Type your new system password.

You can use up to 32 characters. To erase a character when entering your password, press <Backspace> or the left-arrow key. The password is not case sensitive.

Certain key combinations are not valid. If you enter one of these combinations, the computer emits a beep.

As you press each character key (or the spacebar for a blank space), a placeholder appears in the field.

4. Press <Enter>.

If the new system password is less than 32 characters, the whole field fills with placeholders. The option heading changes to **Verify Password**, followed by another empty 32-character field in square brackets.

5. To confirm your password, type it a second time, and then press <Enter>.

The password setting changes to **Enabled**.

6. Exit system setup.

Password protection takes effect when you restart the computer.

Typing Your System Password

When you start or restart your computer, one of the following prompts appears on the screen.

If **Password Status** is set to **Unlocked**:

```
Type in the password and
- press <ENTER> to leave password security enabled.
- press <CTRL><ENTER> to disable password security.
Enter password:
```

If **Password Status** is set to **Locked**:

Type the password and press <Enter>.

If you have assigned a setup password, the computer accepts your setup password as an alternate system password.

If you type a wrong or incomplete system password, the following message appears on the screen:

```
** Incorrect password. **
```

If you again type an incorrect or incomplete system password, the same message appears on the screen. The third and subsequent times you type an incorrect or incomplete system password, the computer displays the following message:

```
** Incorrect password. **  
Number of unsuccessful password attempts: 3  
System halted! Must power down.
```

Even after your computer is turned off and on, the previous message is displayed each time you type an incorrect or incomplete system password.

 **NOTE:** You can use **Password Status** with **System Password** and **Setup Password** to further protect your computer from unauthorized changes.

Deleting or Changing an Existing System Password

1. Enter system setup (see "[System Setup](#)") and verify that **Password Status** is set to **Unlocked**.
2. Restart your computer.
3. When prompted, type the system password.
4. Press <Ctrl><Enter> to disable the existing system password.
5. Confirm that **Not Enabled** is displayed for the **System Password** option.

If **Not Enabled** is displayed, the system password is deleted. If **Not Enabled** is not displayed, press <Alt> to restart the computer, and then repeat steps 3 through 5.

To assign a new password, follow the procedure in "[Assigning a System Password](#)."

6. Exit system setup.

Setup Password

Option Settings

- 1 **Enabled** — Does not allow assignment of setup passwords; users must enter a setup password to make changes to system setup.
- 1 **Not Enabled** — Allows assignment of setup passwords; password feature is enabled but no password is assigned.

Assigning a Setup Password

The setup password can be the same as the system password.

 **NOTE:** If the two passwords are different, the setup password can be used as an alternate system password. However, the system password cannot be used in place of the setup password.

1. Enter system setup (see "[System Setup](#)") and verify that **Setup Password** is set to **Not Enabled**.
2. Highlight **Setup Password** and press the left- or right-arrow key.

The computer prompts you to type and verify the password. If a character is not permitted, the computer emits a beep.

3. Type and then verify the password.

After you verify the password, the **Setup Password** setting changes to **Enabled**. The next time you enter system setup, the computer prompts you for the setup password.

4. Exit system setup.

A change to **Setup Password** becomes effective immediately (no need to restart the computer).

Operating Your Computer With a Setup Password Enabled

When you enter system setup, the **Setup Password** option is highlighted, prompting you to type the password.

If you do not type the correct password, the computer allows you to view, but not modify, system setup options.

 **NOTE:** You can use **Password Status** with **System Password** and **Setup Password** to further protect your computer from unauthorized changes.

Deleting or Changing an Existing Setup Password

To change an existing setup password, you must know the setup password.

1. Enter system setup.
2. Type the setup password at the prompt.
3. Highlight **Setup Password** and press the left- or right-arrow key to delete the existing setup password.

The setting changes to **Not Enabled**.

To assign a new setup password, perform the steps in "[Assigning a System Password](#)."

4. Exit system setup.

Disabling a Forgotten Password and Setting a New Password

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

 **CAUTION:** Before you open the computer cover, see the [safety instructions](#).

1. Open the computer cover.
2. Remove the jumper plug labeled PSWD from the jumper.

See "[Jumper Settings](#)" to locate the password jumper.

3. Close the computer cover.
4. Reconnect your computer and devices to electrical outlets and turn them on.

This disables the existing password(s).

5. Enter system setup and verify that **Setup Password** is set to **Disabled**.
6. Exit system setup.

 **CAUTION:** Before you open the computer cover, follow the [safety instructions](#).

7. Open the computer cover.
8. Replace the PSWD jumper plug.
9. Close the computer cover and reconnect the computer and devices to electrical outlets and turn them on.

This reenables the password feature. When you enter system setup, both password options appear as **Not Enabled**—the password feature is enabled but no password is assigned.

10. Assign a new system and/or setup password.

Power Button

 **NOTICE:** To turn off your computer, perform an orderly computer shutdown when possible.

You can use the ACPI feature to configure the function of the Windows 2000 and Windows XP operating systems.

Power Button Functions With ACPI Enabled

Action	Results		
	Computer Turned On and ACPI Enabled	Computer in Standby Mode	Computer Turned Off
Press power button	Computer goes into standby mode or turns off (depending on the operating system setup)	Computer turns on	Boots and computer turns on
Hold power button for 6 seconds*	Computer turns off	Computer turns off	Boots and computer turns on

NOTE: Pressing or holding the power button to shut down the computer may result in data loss. Use the power button to shut down the computer only if the operating system is not responding.

Power Button Functions With ACPI Disabled

Action	Results		
	Computer Turned On and ACPI Disabled	Computer in Suspend Mode	Computer Turned Off
Press power button	Computer turns off immediately	Computer turns off immediately	Boots and computer turns on
Hold power button for 6 seconds*	Computer turns off	Computer turns off	Boots and computer turns on

NOTE: Pressing or holding the power button to shut down the computer may result in data loss. Use the power button to shut down the computer only if the operating system is not responding.

Power Management

Your computer can be set to use less power when you are not working. You control the power usage through the operating system installed on your computer and certain option settings in [system setup](#). These periods of reduced power are called "sleep states":

1. **Standby.** In this sleep state, power is reduced or turned off for most components, including the cooling fans. However, system memory remains active.

This state is not supported by Microsoft Windows NT® 4.0.

 **NOTE:** All components installed in the computer must support this feature and have the appropriate drivers loaded to enter standby. For more information, see the manufacturer's documentation for each component.

1. **Hibernate.** This sleep state reduces power consumption to a minimum by writing all data in system memory to a hard drive and then removing system power. Waking up from this state restarts the computer, and the memory contents are restored. Operation then resumes where the computer left off when it entered the hibernation state.

This state is not supported by Windows NT 4.0.

 **NOTE:** All components installed in the computer must support this feature and have the appropriate drivers loaded to enter hibernation. For more information, see the manufacturer's documentation for each component.

- 1 **Shutdown.** This sleep state removes all power from the computer except a small auxiliary amount. As long as the computer remains connected to an electrical outlet, it can be automatically or remotely started. For example, the Auto Power On option in [system setup](#) allows the computer to automatically start at a specified time. Also, your network administrator can remotely start your computer using a power management event such as Remote Wake Up.

The following table lists the sleep states and the methods you can use to wake the computer from each state.

Sleep State	Wake-Up Methods (Windows 2000 and XP)
Standby	<ul style="list-style-type: none">1 Press the power button1 Auto power on1 Move or click the mouse1 Type on the keyboard1 USB device activity1 Power management event
Hibernate	<ul style="list-style-type: none">1 Press the power button1 Auto power on1 Power management event
Shutdown	<ul style="list-style-type: none">1 Press the power button1 Auto power on1 Power management event

 **NOTE:** For more information on power management, see your operating system documentation.

Security

Chassis Intrusion Detection

 **NOTE:** When the setup password is enabled, you must know the setup password before you can reset the **Chassis Intrusion** setting.

This feature detects that the chassis was opened and alerts the user. To change the **Chassis Intrusion** setting:

1. Enter system setup (see "[System Setup](#)").
2. Press the down-arrow key to move to the **System Security** option.
3. Press <Enter> to access the **System Security** option's pop-up menu.
4. Press the down-arrow key to move to the **Chassis Intrusion** setting.
5. Press the spacebar to select an option setting.
6. Exit system setup.

Option Settings

- 1 **Enabled** — If the computer cover is opened, the setting changes to **Detected**, and the following alert message displays during the boot routine at the next computer start-up:

```
Alert! Cover was previously removed.
```

To reset the **Detected** setting, [enter system setup](#). In the **Chassis Intrusion** option, press the left- or right-arrow key to select **Reset**, and then choose **Enabled**, **Enabled-Silent**, or **Disabled**.

- 1 **Enabled-Silent** (default) — If the computer cover is opened, the setting changes to **Detected**. No alert message appears during the boot sequence at the next computer start-up.
- 1 **Disabled** — No intrusion monitoring occurs and no messages appear.

Padlock Ring and Security Cable Slot

Use one of the following methods to secure your computer:

- 1 Use a padlock alone or a padlock and looped security cable with the padlock ring.

A padlock alone prevents the computer from being opened.

A security cable looped around a stationary object is used in conjunction with a padlock to prevent unauthorized movement of the computer.

- 1 Attach a commercially available antitheft device to the security cable slot on the back of the computer.

 **NOTE:** Before you purchase an antitheft device, make sure that it works with the security cable slot on your computer.

Antitheft devices usually include a segment of metal-stranded cable with an attached locking device and key. The documentation that comes with the device contains instructions for installing it.

System Setup

Use system setup settings as follows:

- 1 To set user-selectable options such as date and time or system password
- 1 To read the current amount of memory or set the type of hard drive installed

Dell recommends that you print the system setup screens (by pressing <Print Screen>) or record the information for future reference.

Before you use system setup, you must know the kind of floppy drive(s) and hard drive(s) installed in your computer. To confirm this information, see the Manufacturing Test Report that came with your computer, or find this information in the online **Dell Accessories** folder.

Entering System Setup

1. Turn on or restart your computer.
2. When **Press <F2> to Enter Setup** appears in the upper-right corner of the screen, press <F2> immediately.

If you wait too long and the Microsoft® Windows® logo appears, continue to wait until you see the Windows desktop, then shut down your computer and try again.

 **NOTE:** To ensure an orderly computer shutdown, consult the documentation that came with your operating system.

System Setup Screens

System setup screens display current configuration information for your computer. Information on the screen is organized into four areas:

- 1 **Title** — The box at the top of all screens that lists the computer name
- 1 **Computer data** — Two boxes below the title box that display your computer processor, L2 cache, service tag, and the version number of the BIOS
- 1 **Options** — A scrollable box listing options that define the configuration of your computer, including installed hardware, power conservation, and security features

Fields to the right of the option titles contain settings or values. The fields that you can change appear bright on the screen. The fields that you cannot change (because they are set by the computer) appear less bright. When <Enter> appears to the right of an option title, press <Enter> to access a pop-up menu of additional options.

- 1 **Key functions** — A line of boxes across the bottom of all screens that lists keys and their functions within system setup

Keys	Action
<Tab> or down arrow	Moves to the next field.
<Shift>, <Tab> or up arrow	Moves to the previous field.
back arrow or forward arrow	Cycles through the options in a field. In many fields, you can also type the appropriate value.
<Page Down> or <Page Up>	Scrolls through help information.
<Enter>	Enters the selected field's pop-up options menu.
spacebar, <=> or <->	In the selected field's pop-up options menu, cycles through the options in a field.
<Alt> <x>	Exits system setup without restarting the computer and returns the computer to the boot routine.
<Alt> 	Exits system setup and restarts the computer, implementing any changes you have made.
<Alt> <d>	Resets the selected option to the default setting.
<Alt> <f>	Restores all system settings to the default configuration.

Boot Sequence

This feature allows users to change the sequence of devices from which the computer boots.

Option Settings

1. **Normal** — (Available only for the current boot process) The computer attempts to boot from the sequence of devices specified in [system setup](#).
1. **Diskette Drive** — The computer attempts to boot from the floppy drive. If the floppy disk in the drive is not bootable, or if no floppy disk is in the drive, 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. **PXE** — As the computer boots, press <F3> to display a menu 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 system attempts to boot from the next device in the boot sequence list.
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 key and adds the USB key option to the boot menu.

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

Changing Boot Sequence for the Current Boot

You can use this feature, for example, to tell the computer to boot from the CD drive so you can run the Dell Diagnostics, but specify that the computer boots from the hard drive when the diagnostic tests are complete.

If you wait too long and the Windows logo appears, continue to wait until you see the Windows desktop, then shut down your computer and try again.

1. Turn on or restart your computer.
2. When F2 = Setup, F12 = Boot Menu appears in the upper-right corner of the screen, press <F12>.

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

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

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 pop-up menu.

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

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

5. Press plus (+) or minus (-) to move a selected device up or down the list.

System Setup Options

<p>AC Power Recovery — Determines what happens when AC power is restored to the computer</p> <ul style="list-style-type: none">1 Off (default) — Computer remains off when AC power is restored1 On — Computer starts when AC power is restored1 Last — Computer returns to the AC power state existing at the time that AC power was lost
<p>Asset Tag — Displays the customer-programmable asset tag number for the computer if an asset tag number is assigned</p>
<p>Auto Power On — Sets time and days of week to turn on the computer automatically. Choices are every day or every Monday through Friday.</p> <p>Time is kept in a 24-hour format (<i>hours:minutes</i>). Change the start-up time by pressing the right- or left-arrow keys to increase or decrease the numbers or type numbers in both the date and time fields.</p> <p>Disabled is the default.</p> <p>This feature does not work if you turn off your computer using a power strip or surge protector.</p>
<p>CPU Information</p> <ul style="list-style-type: none">1 CPU Speed — Processor speed at which the computer boots <p>Press the left- or right-arrow key to toggle the CPU Speed option between the resident processor's rated speed (the default) and a lower compatibility speed. A change to this option takes effect immediately (no restart is necessary).</p> <p>To toggle between the rated processor speed and the compatibility speed while the computer is running in real mode, press <Ctrl><Alt><\>. (For keyboards that do not use American English, press <Ctrl><Alt><#>.)</p> <ul style="list-style-type: none">1 Bus Speed — Speed of the processor's system bus1 Processor ID — Manufacturer's identification code(s) for the installed processor1 Clock Speed — Core speed at which the processor(s) operates1 Cache Size — Size of the processor's L2 cache1 Hyper-Threading — The setting that allows you to enable or disable Hyper-Threading technology for operating systems that support Hyper-Threading. The default setting is Disabled. <p>NOTE: If your computer has a processor capable of supporting Hyper-Threading, the Hyper-Threading option is the first selection in the list.</p>
<p>Drive Configuration —</p> <ul style="list-style-type: none">1 Diskette Drive A — Type of floppy drive(s) installed in the computer. With the standard cabling configuration, Diskette Drive A (the boot floppy drive) is the 3.5-inch floppy drive installed in the top externally accessible drive bay. The two options are 3.5 Inch, 1.44 MB and Not Installed. <p>Tape drives are not reflected in the Diskette Drive A option. For example, if a single floppy drive and a tape drive are attached to the floppy drive interface cable, set Diskette Drive A to 3.5 Inch, 1.44 MB.</p> <ul style="list-style-type: none">1 Primary Drive 0 — Identifies the IDE hard drive attached to the IDE1 connector on the system board.1 Primary Drive 1 — Identifies the IDE device attached to the IDE2 connector on the system board.1 Secondary Drive 0 — Identifies the device that is cabled with the drive on the IDE1 data cable.1 Secondary Drive 1 — Identifies the device that is cabled with the device on the IDE2 data cable.1 IDE Drive UDMA — Sets the mode for all installed hard drives. <p>NOTE: You must have an IDE device connected to the primary IDE interface if you have an IDE device connected to the secondary IDE interface.</p> <p>If you have a problem, see "Hard drive problems."</p>
<p>Fastboot</p> <ul style="list-style-type: none">1 On (default) — Your computer boots in 10 seconds or less, skipping certain configurations and tests.1 Off — Your computer does not skip certain configurations and tests during the boot process.
<p>Hard-Disk Drive Sequence</p> <p>If you insert a boot device and restart, this option appears in the system setup menu.</p> <ul style="list-style-type: none">1 System BIOS boot device1 USB Device — To boot from a USB memory device, select the USB device and move it so it becomes the first device in the list.
<p>IDE Hard Drive Acoustics Mode</p> <ul style="list-style-type: none">1 Quiet (default) — The hard drive operates at its quietest level.1 Performance — The hard drive operates at its maximum speed. <p>NOTE: Switching to Performance mode may cause the drive to be noisier, but its performance is not affected.</p> <ul style="list-style-type: none">1 Bypass — Your computer does not test or change the current acoustics mode setting.1 Suggested — The hard drive operates at the level suggested by the hard-drive manufacturer. <p>NOTE: Changing the acoustics setting does not alter your hard-drive image.</p>
<p>Integrated Devices — Configures the following devices integrated with the system board:</p>

- 1 **Sound** — Settings are **On** (default) or **Off**.
- 1 **USB Controller** — Settings are **On** (default) or **Off**.
- 1 **USB Emulation** — Settings are **On** (default) or **Off**.
- 1 **Network Interface Controller** — Settings are **On** (default), **Off**, or **On w/ PXE**.
- 1 **Mouse Port** — Settings are **On** (default) or **Off**.
- 1 **PCI Slots** — Settings are **Enabled** (default) or **Off**.
- 1 **Serial Port 1 and Serial Port 2** — Settings are **Off** and **Auto** (default). (Serial Port 2 appears as an option if you have a serial port card installed.)

Auto automatically configures a connector to a particular designation (**COM1** or **COM3** for **Serial Port 1**; **COM2** or **COM4** for **Serial Port 2**).

If you set a serial connector to **Auto** and add a card containing a connector configured to the same designation, the computer automatically remaps the integrated port to the next available connector designation that shares the same IRQ setting as follows:

COM1 (I/O address 3F8h), which shares IRQ4 with **COM3**, is remapped to **COM3** (I/O address 3E8h).

COM2 (I/O address 2F8h), which shares IRQ3 with **COM4**, is remapped to **COM4** (I/O address 2E8h).

NOTE: When two COM connectors share an IRQ setting, you can use either connector as necessary, but you may not be able to use them both at the same time. If you are running the Windows 95 or IBM® OS/2® operating system, you cannot use both serial connectors at the same time. If the second connector (COM3 or COM4) is also in use, the integrated connector is turned off.

- 1 **Parallel Port** — Settings are **Mode**, **I/O Address**, and **DMA Channel**.

Mode settings are **PS/2**, **EPP**, **ECP**, **AT**, or **Off**. Set the **Mode** option according to the type of device connected to the parallel connector. To determine the correct mode to use, see the documentation that came with the device.

I/O Address settings are **378h** (default), **278h**, or **3BCh**. The settings are not available when **Mode** is set to **Off**.

NOTE: You cannot set the parallel connector to **3BCh** if **Mode** is set to **EPP**.

DMA Channel appears only when **Mode** is set to **ECP**. Settings are **DMA 1**, **DMA 3**, or **Off**.

- 1 **IDE Drive Interface** — Settings are **Off** and **Auto** (default).

Auto turns off the IDE interface when necessary to accommodate a controller card installed in an expansion slot.

- 1 **Diskette Interface** — Settings are **Auto** (default), **Read Only**, and **Off**.

Auto turns off the integrated floppy drive controller when necessary to accommodate a controller card installed in an expansion slot.

Read Only prevents the computer's integrated floppy drive controller from writing to floppy drives and activates **Auto**.

- 1 **Primary Video Controller** — The settings are **Auto** (default) and **Onboard**.

Auto (default) — If only an AGP card is installed, the computer uses the AGP card; if only a PCI card is installed, the computer uses the PCI card; if *both* AGP and PCI cards are installed, the computer uses both cards.

Onboard — The computer uses the AGP card.

Keyboard NumLock — Settings are **On** and **Off** (does not apply to 84-key keyboards).

On — Activates the rightmost bank of keys so they provide the mathematical and numeric functions shown at the top of each key.

Off — Activates the rightmost bank of keys so they provide cursor-control functions shown by the label on the bottom of each key.

Memory Information — Indicates amount of installed memory, computer memory speed, amount of video memory, size of the display cache, and channel mode (dual or single).

Advanced Troubleshooting

Dell™ OptiPlex™ GX60 Systems User's Guide

- [Dell Diagnostics](#)
 - [Reinstalling Drivers and Utilities](#)
 - [Using Microsoft® Windows® XP System Restore](#)
 - [Reinstalling Microsoft® Windows® XP](#)
 - [Reinstalling Microsoft Windows 2000](#)
 - [Resolving Software and Hardware Incompatibilities](#)
-

Dell Diagnostics

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

When to Use the Dell Diagnostics

If you experience a problem with your computer, perform the checks in "[Solving Problems](#)" and run the Dell Diagnostics before you contact Dell for technical assistance.

It is recommended that you print these procedures before you begin.

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

[Enter system setup](#), review your computer's configuration information, and ensure that the device you want to test displays in system setup and is active.

Start the Dell Diagnostics from either your [hard drive](#) or from the [Drivers and Utilities CD](#) (also known as the *ResourceCD*).

Starting the Dell Diagnostics From Your Hard Drive

1. Shut down and restart the computer.
2. When the DELL™ logo appears, press <F12> immediately.

 **NOTE:** If you see a message stating that no diagnostics utility partition has been found, run the Dell Diagnostics from your [Drivers and Utilities CD](#).

If you wait too long and the Microsoft® Windows® logo appears, continue to wait until you see the Windows desktop. Then shut down your computer through the **Start** menu and try again.

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

Starting the Dell Diagnostics From the Drivers and Utilities CD

1. Insert the *Drivers and Utilities CD*.
2. Shut down and restart the computer.

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

If you wait too long and the Windows® logo appears, continue to wait until you see the Windows desktop. Then shut down your computer through the **Start** menu and try again.

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

- When the boot device list appears, highlight **IDE CD-ROM Device** and press <Enter>.
- Select the **IDE CD-ROM Device** option from the CD boot menu.
- Select the **Boot from CD-ROM** option from the menu that appears.
- Type 1 to start the ResourceCD menu.
- Type 2 to start the Dell Diagnostics.
- Select **Run the 32 Bit Dell Diagnostics** from the numbered list. If multiple versions are listed, select the version appropriate for your platform.
- When the Dell Diagnostics Main Menu appears, select the test you want to run.

Dell Diagnostics Main Menu

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

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

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

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

If you cannot resolve the error condition, [contact Dell](#).

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

Tab	Function
Results	Displays the results of the test and any error conditions encountered.
Errors	Displays error conditions encountered, error codes, and problem description.
Help	Describes the test and may indicate requirements for running the test.
Configuration	Displays your hardware configuration for the selected device. The Dell Diagnostics obtains configuration information for all devices from system setup, memory, and various internal tests and displays it in the device list in the left pane of the screen. The device list may not display the names of all the components installed on your computer or all devices attached to your computer.
Parameters	Allows you to customize the test by changing the test settings.

- When the tests are completed, if you are running the Dell Diagnostics from the *Drivers and Utilities* CD, remove the CD.
- Close the test screen to return to the **Main Menu** screen. To exit the Dell Diagnostics and restart the computer, close the **Main Menu** screen.

Reinstalling Drivers and Utilities

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

Using Windows XP Device Driver Rollback

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

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

4. In the **System Properties** window, click the **Hardware** tab.
5. Click **Device Manager**.
6. Right-click the device for which the new driver was installed and click **Properties**.
7. Click the **Drivers** tab.
8. Click **Roll Back Driver**.

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

Using the Drivers and Utilities CD

If using Device Driver Rollback or System Restore does not resolve the problem, then reinstall the driver from the *Drivers and Utilities* CD (also known as the Resource CD).

 **NOTE:** To access device drivers and user documentation, you must use the *Drivers and Utilities* CD while your computer is running Windows.

1. Insert the *Drivers and Utilities* CD.

If this is your first time to use the *Drivers and Utilities* CD, the Installation window opens to inform you that the CD will begin the installation. Click **OK** and respond to the installation program prompts to complete the installation.

2. Click **Next** at the **Welcome Dell System Owner** screen.
3. Choose the appropriate selections for System Model, Operating System, Device Type, and Topic.
4. Click **My Drivers** in the **Topic** drop-down menu.

The *Drivers and Utilities* CD scans your computer's hardware and operating system and then displays a list of device drivers for your system configuration.

5. Click the appropriate driver and follow the instructions to download the driver for your computer.

To view a list of all available drivers for your computer, click **Drivers** in the **Topic** drop-down menu.

To access the help files on the *Drivers and Utilities* CD, click the question mark button or the **Help** link at the top of the screen.

Using Microsoft® Windows® XP System Restore

The Microsoft Windows XP operating system provides System Restore to allow you to return your computer to an earlier operating state (without affecting data files) if changes to the hardware, software, or other system settings have left the computer in an undesirable operating state. See the Windows Help and Support Center for information on using System Restore.

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

Creating a Restore Point

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

Restoring the Computer to an Earlier Operating State

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

1. Click the **Start** button, point to **All Programs**→ **Accessories**→ **System Tools**, and then click **System Restore**.
2. Ensure that **Restore my computer to an earlier time** is selected and click **Next**.
3. Click a calendar date to which you want to restore your computer.

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

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

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

5. Click **Next**.

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

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

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

Undoing the Last System Restore

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

1. Click the **Start** button, point to **All Programs**→ **Accessories**→ **System Tools**, and then click **System Restore**.
2. Click **Undo my last restoration** and click **Next**.
3. Click **Next**.

The System Restore screen appears and the computer restarts.

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

Enabling System Restore

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

1. Click the **Start** button and click **Control Panel**.
2. Click **Performance and Maintenance**.
3. Click **System**.
4. Click the **System Restore** tab.
5. Ensure that **Turn off System Restore** is unchecked.

Reinstalling Microsoft® Windows® XP

Before You Begin

If you are considering reinstalling the Windows XP operating system to correct a problem with a newly installed driver, first try using Windows XP Device Driver Rollback. If Device Driver Rollback does not resolve the problem, then use System Restore to return your operating system to the operating state it was in

before you installed the new device driver.

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

To reinstall Windows XP, you need the following items:

- 1 Dell™ *Operating System* CD
- 1 Dell *Drivers and Utilities* CD

- 📄 **NOTE:** The *Drivers and Utilities* CD contains drivers that were installed during assembly of the computer. Use the *Drivers and Utilities* CD to load any required drivers, including the drivers required if your computer has a RAID controller.

- 1 Product Key (Product ID Number)

- 📄 **NOTE:** The Product Key is the bar code number on the sticker that is located on the external side cover of your computer. You may be prompted for the Product Key when you use the *Operating System* CD under certain conditions.

Reinstalling Windows XP

To reinstall Windows XP, perform all the steps in the following sections in the order in which they are listed.

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

- ➡ **NOTICE:** The *Operating System* CD provides options for reinstalling Windows XP. The options can overwrite files and possibly affect programs installed on your hard drive. Therefore, do not reinstall Windows XP unless a Dell technical support representative instructs you to do so.
- ➡ **NOTICE:** To prevent conflicts with Windows XP, disable any virus protection software installed on your computer before you reinstall Windows XP. See the documentation that came with the software for instructions.

Booting From the Operating System CD

1. Save and close any open files and exit any open programs.
2. Insert the *Operating System* CD. If any program starts automatically, exit the program before proceeding.
3. Restart the computer.
4. Press <F12> immediately after the DELL™ logo appears.

If the operating system logo appears, wait until you see the Windows desktop, and then shut down the computer and try again.

5. Press the arrow keys to select **CD-ROM**, and press <Enter>.
6. When the **Press any key to boot from CD** message appears, press any key.

Windows XP Setup

1. When the **Windows XP Setup** screen appears, press <Enter> to select **To set up Windows now**.
2. Read the information on the **Microsoft Windows Licensing Agreement** screen, and press <F8> to accept the license agreement.
3. If your computer already has Windows XP installed and you want to recover your current Windows XP data, type **r** to select the repair option, and remove the CD.
4. If you want to install a new copy of Windows XP, press <Esc> to select that option.
5. Press <Enter> to select the highlighted partition (recommended), and follow the instructions on the screen.

The **Windows XP Setup** screen appears, and the operating system begins to copy files and install the devices. The computer automatically restarts multiple times.

- 📄 **NOTE:** The time required to complete the setup depends on the size of the hard drive and the speed of your computer.

- ➡ **NOTICE:** Do not press any key when the following message appears: **Press any key to boot from the CD**.

6. When the **Regional and Language Options** screen appears, select the settings for your location and click **Next**.
7. Enter your name and organization (optional) in the **Personalize Your Software** screen, and click **Next**.
8. At the **Computer Name and Administrator Password** window, enter a name for your computer (or accept the one provided) and a password, and click **Next**.
9. If the **Modem Dialing Information** screen appears, enter the requested information and click **Next**.
10. Enter the date, time, and time zone in the **Date and Time Settings** window, and click **Next**.
11. If the **Networking Settings** screen appears, click **Typical** and click **Next**.
12. If you are reinstalling Windows XP Professional and you are prompted to provide further information regarding your network configuration, enter your selections. If you are unsure of your settings, accept the default selections.

Windows XP installs the operating system components and configures the computer. The computer automatically restarts.

 **NOTICE:** Do not press any key when the following message appears: Press any key to boot from the CD.

13. When the **Welcome to Microsoft** screen appears, click **Next**.
14. When the **How will this computer connect to the Internet?** message appears, click **Skip**.
15. When the **Ready to register with Microsoft?** screen appears, select **No, not at this time** and click **Next**.
16. When the **Who will use this computer?** screen appears, you can enter up to five users.
17. Click **Next**.
18. Click **Finish** to complete the setup, and remove the CD.
19. Reinstall the appropriate drivers with the *Drivers and Utilities* CD.
20. Reinstall your virus protection software.

Reinstalling Microsoft Windows 2000

Before You Begin

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

To reinstall Windows 2000, you need the following items:

- 1 Dell™ *Operating System* CD
- 1 Dell *Drivers and Utilities* CD

 **NOTE:** The *Drivers and Utilities* CD contains drivers that were installed during assembly of the computer. Use the *Drivers and Utilities* CD to load any required drivers., including those drivers required if your computer has a RAID controller.

- 1 Product Key (Product ID Number)

 **NOTE:** The Product Key is the bar code number on the sticker that is located on the external side cover of your computer. You may be prompted for the Product Key when using the *Operating System* CD under certain conditions.

Reinstalling Windows 2000

To reinstall Windows 2000, perform all the steps in the following section in the order in which they are listed.

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

 **NOTICE:** The *Operating System* CD provides options for reinstalling Windows 2000. The options can overwrite files and possibly affect programs installed on your hard drive. Therefore, do not reinstall Windows 2000 unless a Dell technical support representative instructs you to do so.



NOTICE: To prevent conflicts with Windows 2000, disable any virus protection software installed on your computer before you reinstall Windows 2000. See the documentation that came with the software for instructions.

Booting From the Operating System CD

1. Save and close any open files and exit any open programs.
2. Insert the *Operating System* CD. If any program starts automatically, exit the program before proceeding.
3. Restart the computer.
4. Press <F12> immediately after the DELL™ logo appears.
5. If the operating system logo appears, wait until you see the Windows desktop, and then shut down the computer and try again.
6. Press the arrow keys to select **CD-ROM**, and press <Enter>.
7. When the Press any key to boot from CD message appears, press any key.

Windows 2000 Setup

1. When the **Windows 2000 Setup** window appears, ensure that **To setup Win2000 now, press ENTER** is highlighted. Then press <Enter>.
2. When the **Windows 2000 Professional Setup** window appears, press the arrow keys to select the Windows 2000 partition option that you want. Then press the key for the partition option you chose.
3. When the **Windows 2000 Professional Setup** window reappears, press the arrow keys to select the type of file system that you want Windows 2000 to use, and press <Enter>.
4. Press <Enter> again to restart your computer.
5. When the **Welcome to the Windows 2000 Setup Wizard** window appears, click **Next**.
6. When the **Regional Settings** window appears, select your region and click **Next**.
7. Enter your name and organization in the **Personalize Your Software** window, and click **Next**.
8. Enter the Windows product key, which is printed on the Microsoft label on your computer, and click **Next**.
9. When the **Computer Name and Administrator Password** window appears, enter a name for your computer and a password, if desired. Then click **Next**.
10. Enter the date and time in the **Date and Time Settings** window, and click **Next**.

Windows 2000 installs components and configures the computer.

11. When the **Completing the Windows 2000 Setup Wizard** window appears, remove the CD from the drive and click **Finish**.

The computer automatically restarts.

12. Reinstall the appropriate drivers with the *Drivers and Utilities* CD.
13. Reinstall your virus protection software.

Resolving Software and Hardware Incompatibilities

Windows XP

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

To check for conflicts on a computer running Windows XP:

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

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

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

Resolve these conflicts before checking specific devices.

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

The **Properties** window appears.

8. Resolve any IRQ conflicts, as described in step 5.

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

You can also use the Windows XP Hardware Troubleshooter. To use the troubleshooter, click the **Start** button and click **Help and Support**. Type *hardware troubleshooter* in the **Search** field, and then click the arrow to start the search. Click **Hardware Troubleshooter** in the **Search Results** list. In the **Hardware Troubleshooter** list, click **I need to resolve a hardware conflict on my computer**, and then click **Next**.

Windows 2000

To check for conflicts on a computer running Windows 2000:

1. Click the **Start** button, point to **Settings**, and click **Control Panel**.
2. In the **Control Panel** window, double-click **System**.
3. Click the **Hardware** tab.
4. Click **Device Manager**.
5. Click **View**, and then click **Resources by connection**.
6. Double-click **Interrupt request (IRQ)** to view the IRQ assignments.

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

7. Double-click any conflicting device listed to display the **Properties** window to determine what needs to be reconfigured or removed from the Device Manager. Resolve these conflicts before checking specific devices.
8. Double-click the malfunctioning device type in the **Device Manager** list.
9. Double-click the icon for the specific device in the expanded list.

The **Properties** window appears.

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

You can also use the Windows 2000 Hardware Troubleshooter. To use the troubleshooter, click the **Start** button and click **Help**. Click **Troubleshooting and Maintenance** on the **Contents** tab, click **Windows 2000 troubleshooters**, and then click **Hardware**. In the **Hardware Troubleshooter** list, click **I need to resolve a hardware conflict on my computer**, and then click **Next**.

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Battery

Dell™ OptiPlex™ GX60 Systems User's Guide

Replacing the Battery

 **CAUTION:** Before you begin this procedure, follow the [safety instructions](#).

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

The battery may need replacing if an incorrect time or date is displayed during the boot routine along with a message such as:

```
Time-of-day not set - please run SETUP program
```

or

```
Invalid configuration information -  
please run SETUP program
```

or

```
Strike the F1 key to continue,  
F2 to run the setup utility
```

To determine whether you need to replace the battery, reenter the time and date in system setup and exit the program to save the information. Turn off your computer and disconnect it from the electrical outlet for a few hours, then reconnect the computer, turn it on, and enter system setup. If the date and time are not correct in system setup, replace the battery.

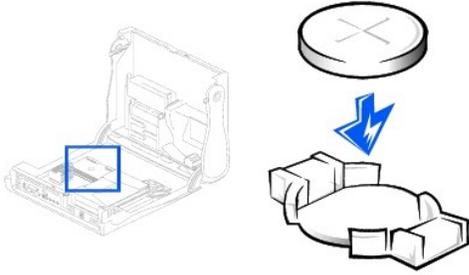
You can operate your computer without a battery; however, without a battery, the configuration information is erased if the computer is turned off or unplugged from the electrical outlet. In this case, you must enter system setup and reset the configuration options.

 **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.

1. If you have not already done so, make a copy of your configuration information, found in system setup (see "[System Setup](#)").
2. Follow the procedures in "[Before You Begin](#)."
3. Locate the battery socket labeled BATTERY (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.



➡ **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, and plug your computer and devices into electrical outlets.
7. Attach the computer stand, if it is used.
8. After you open and close the cover, the chassis intrusion detector, if enabled, causes the following message to appear on the screen at the next computer start-up:

ALERT! Cover was previously removed.

9. [Reset the chassis intrusion detector](#) by changing **Chassis Intrusion** to **Enabled** or **Enabled-Silent**.

🔧 **NOTE:** If a setup password has been assigned by someone else, contact your network administrator for information on resetting the chassis intrusion detector.

10. [Enter system setup](#) and restore the settings you recorded in step 1.
11. Properly dispose of the old battery.

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Before You Begin

Dell™ OptiPlex™ GX60 Systems User's Guide

- [Recommended Tools](#)
- [Shutting Down Your Computer](#)

This section 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 "[Shutting Down Your Computer](#)."
- 1 You have read the [safety instructions](#).

Recommended Tools

The procedures in this document may require the following tools:

- 1 Small flat-blade screwdriver
- 1 Phillips screwdriver
- 1 Flash BIOS update program floppy disk or CD

Shutting Down Your Computer

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

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

 **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.

 **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:** 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. Shut down the computer.
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 computer, turn them off now.

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

3. Disconnect any telephone or telecommunication lines from the computer.
4. Disconnect your computer and all attached devices from their electrical outlets, and then press the power button to ground the system board.
5. Remove the computer stand, if it is attached.

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

6. Open the computer cover (see the [index](#) for links to instructions to open your 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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Chassis Intrusion Switch

Dell™ OptiPlex™ GX60 Systems User's Guide

- [Replacing the Chassis Intrusion Switch](#)
 - [Resetting the Chassis Intrusion Detector](#)
-

Replacing the Chassis Intrusion Switch

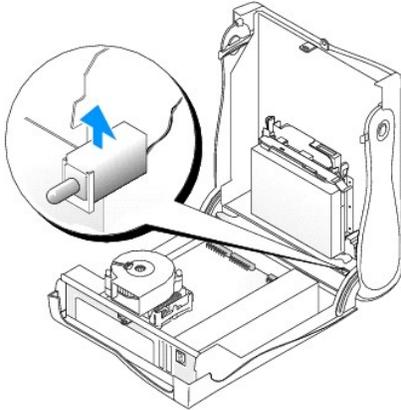
⚠ CAUTION: Before you begin any of the procedures in this section, follow the [safety instructions](#).

1. Follow the procedures in "[Before You Begin](#)."
2. Disconnect the chassis intrusion switch cable from the control panel on the front of the computer.

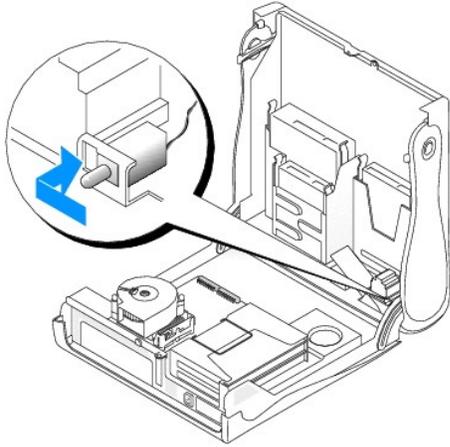
Note the routing of the chassis intrusion cable as you remove it from the chassis. Chassis hooks may hold the cable in place inside the chassis.

3. Slide the chassis intrusion switch out of its slot, and remove the switch and its attached cable from the computer.

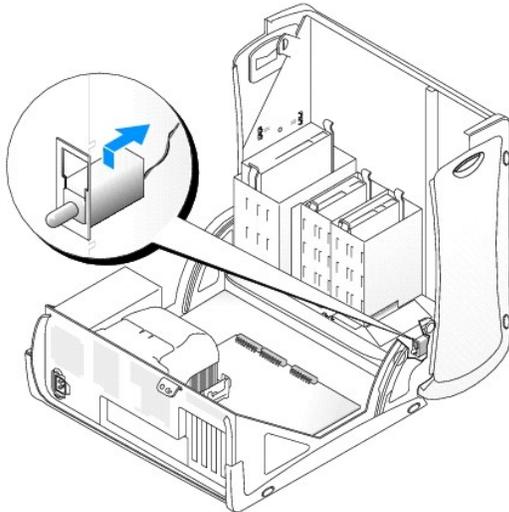
Small Form-Factor Computer



Small Desktop Computer



Small Mini-Tower Computer



4. Slide the chassis intrusion switch into its slot and reconnect the cable to the connector on the control panel.
5. Close the computer cover.
6. [Attach the computer stand](#), if it is used.

 **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.

Resetting the Chassis Intrusion Detector

1. [Enter system setup](#) by pressing <F2> when the computer starts.
2. Under the **System Security** tab, reset the **Chassis Intrusion** option by pressing the left- or right-arrow key to select **Reset**. Change the setting to **Enabled**, **Enabled-Silent**, or **Disabled**.

 **NOTE:** The default is **Enabled-Silent**.

 **NOTE:** If a setup password has been assigned by someone else, contact the network administrator for information on resetting the chassis intrusion detector.

3. Press <Alt> to restart the computer and implement your changes.

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Cleaning Your Computer

Dell™ OptiPlex™ GX60 Systems User's Guide

- [Computer, Keyboard, and Monitor](#)
 - [Mouse](#)
 - [Floppy Drive](#)
 - [CDs and DVDs](#)
-

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

Computer, Keyboard, and Monitor

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

- 1 Use a vacuum cleaner with a brush attachment to gently remove dust from the slots and holes on your computer and from between the keys on the keyboard.

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

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

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

Mouse

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

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

Floppy Drive

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

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

CDs and DVDs

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

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

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

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

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

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

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Control Panel

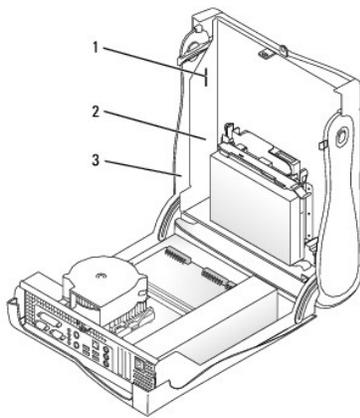
Dell™ OptiPlex™ GX60 Systems User's Guide

⚠ CAUTION: Before you begin any of the procedures in this section, follow the steps in the [safety instructions](#).

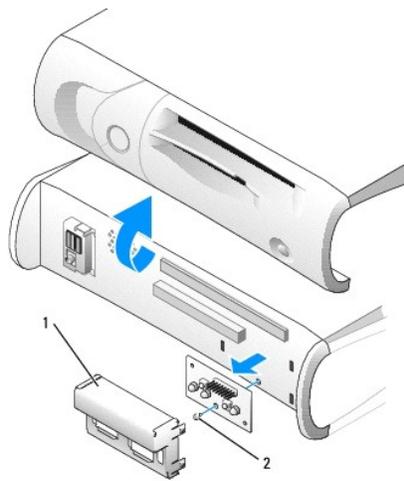
Removing the Control Panel

Small Form-Factor Computer

1. Follow the procedures in "[Before You Begin](#)."
2. Using a flat-blade screwdriver, release the four tabs from the inside of the computer, and remove the computer cover from the computer.



1	tabs (2 on each side)
2	computer
3	computer cover

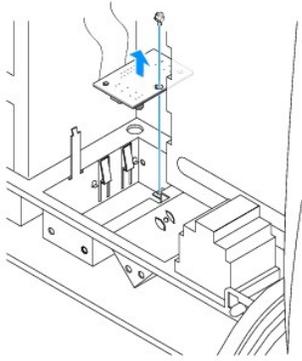


1	metal control-panel shield
2	screw

3. Remove the metal control-panel shield.
4. Remove the screw that holds the control panel to the computer, and remove the control panel.

Small Desktop Computer

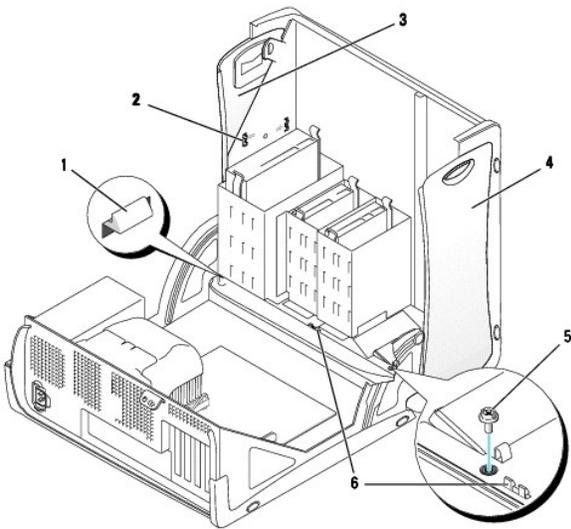
1. Follow the procedures in "[Before You Begin](#)."
2. [Remove the front I/O panel](#).



3. Using an 8-inch #2 Phillips screwdriver, remove the screw that secures the control panel to the computer, and lift the panel away from the computer.

Small Mini-Tower Computer

1. Follow the procedures in "[Before You Begin](#)."
2. To remove the top and bottom panels of the computer, remove any installed CD drives and release all the tabs on each panel.

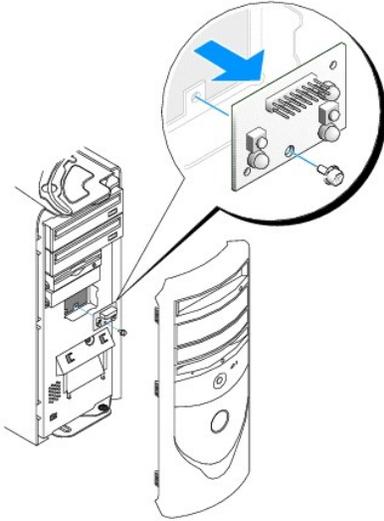


1	computer cover tab (remove the CD drive to access this tab)	4	bottom panel
2	top-panel tabs	5	computer cover screw
3	top panel	6	computer cover tabs (2)

3. To prepare the computer cover for removal, release the three computer cover tabs (one tab is located by the CD drive and two tabs are located by the I/O panel).

 **NOTE:** To release the tab located by the CD drive, you can pry the computer cover away from the computer and pull out the tab.

4. If necessary, remove the computer cover screw.
5. Close the computer and remove the computer cover.
6. Remove the screw that secures the control panel to the computer, and pull the control panel away from the computer.



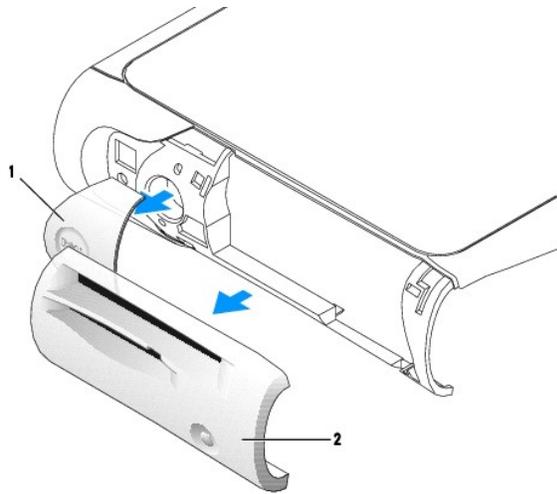
Replacing the Control Panel

Small Form-Factor Computer

1. Replace the control panel and the control-panel shield.
2. Replace the computer cover. Ensure that the two metal hooks and tabs are securely in place.

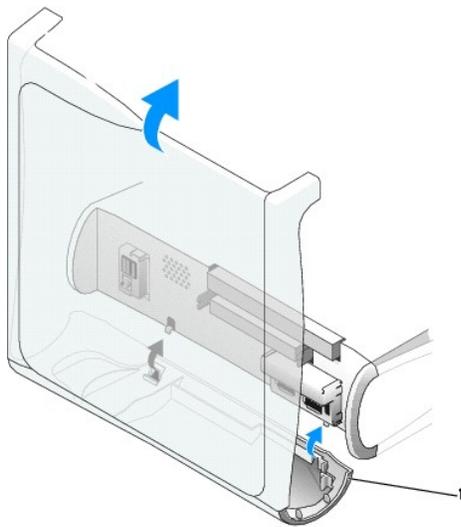
To help replace the computer cover, remove the accent door and front mask from the computer cover:

- a. Remove the front mask by releasing the tabs on the inside of the computer cover.
- b. Remove the accent door by pressing the middle of the door while you lift away the sides of the door.



1	accent door
2	front mask

3. Replace the computer cover and ensure that the two metal hooks and tabs are securely in position.



1	metal hooks (2)
---	-----------------

4. To replace the front mask and accent door, press them into position.

Small Desktop Computer

Follow the steps in the "[Removing the Control Panel](#)" procedure in the reverse order, ensuring that all tabs are secure.

Small Mini-Tower Computer

Follow the steps in the "[Removing the Control Panel](#)" procedure in the reverse order, ensuring that all tabs are secure.



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Closing the Computer Cover

Dell™ OptiPlex™ GX60 Systems User's Guide

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

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. Close the cover:
 - a. Pivot the cover down.
 - b. Press down on the right side of the cover until it closes.
 - c. Press down on the left side of the cover until it closes.
 - d. Ensure that both sides of the cover are locked. If not, repeat this step.

 **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.

After you open and close the cover, the chassis intrusion detector, if enabled, causes the following message to appear on the screen at the next computer start-up:

ALERT! Cover was previously removed.

5. [Reset the chassis intrusion detector](#) by changing **Chassis Intrusion** to **Enabled** or **Enabled-Silent**.

 **NOTE:** If a setup password has been assigned by someone else, contact your network administrator for information on resetting the chassis intrusion detector.

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Documentation for Your Computer

Dell™ OptiPlex™ GX60 Systems User's Guide

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Ergonomic Computing Habits

Dell™ OptiPlex™ GX60 Systems User's Guide

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

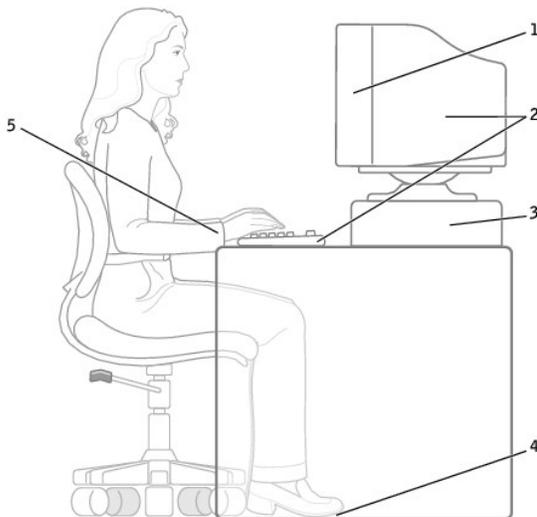
⚠ CAUTION: Viewing the monitor screen for extended periods of time may result in eye strain.

For comfort and efficiency, observe the following ergonomic guidelines when setting up and using your computer workstation:

- 1 Position your computer so that the monitor and keyboard are directly in front of you as you work. Special shelves are commercially available to help you correctly position your keyboard.
- 1 Set the monitor at a comfortable viewing distance (usually 450 to 610 millimeters [18 to 24 inches] from your eyes).
- 1 Make sure the monitor screen is at eye level or slightly lower when you are sitting in front of the monitor.
- 1 Adjust the tilt of the monitor, its contrast and brightness settings, and the lighting around you (such as overhead lights, desk lamps, and the curtains or blinds on nearby windows) to minimize reflections and glare on the monitor screen.
- 1 Use a chair that provides good lower back support.
- 1 Keep your forearms horizontal with your wrists in a neutral, comfortable position while using the keyboard or mouse.
- 1 Always leave space to rest your hands while using the keyboard or mouse.
- 1 Let your upper arms hang naturally at your sides.
- 1 Ensure that your feet are resting flat on the floor.
- 1 When sitting, make sure the weight of your legs is on your feet and not on the front of your chair seat. Adjust your chair's height or use a footrest, if necessary, to maintain proper posture.
- 1 Vary your work activities. Try to organize your work so that you do not have to type for extended periods of time. When you stop typing, try to do things that use both hands.

For more information about ergonomic computing habits, see the BSR/HFES 100 standard, which can be purchased on the Human Factors and Ergonomics Society (HFES) website at: www.hfes.org/publications/HFES100.html

Example:



1	monitor screen at or below eye level	4	feet flat on the floor
2	monitor and keyboard positioned directly in front of the user	5	wrists relaxed and flat
3	monitor stand		

References:

1. American National Standards Institute. *ANSI/HFES 100: American National Standards for Human Factors Engineering of Visual Display Terminal Workstations*. Santa Monica, CA: Human Factors Society, Inc., 1988.

2. Human Factors and Ergonomics Society. *BSR/HFES 100 Draft standard for trial use: Human Factors Engineering of Computer Workstations*. Santa Monica, CA: Human Factors and Ergonomics Society, 2002.

3. International Organization for Standardization (ISO). *ISO 9241 Ergonomics requirements for office work with visual display terminals (VDTs)*. Geneva, Switzerland: International Organization for Standardization, 1992.

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Finding Information for Your Computer

Dell™ OptiPlex™ GX60 Systems User's Guide

What are you looking for?	Find It Here
<ul style="list-style-type: none"> 1 A diagnostic program for my computer 1 Drivers for my computer 1 My computer documentation 1 My device documentation 	<p>Drivers and Utilities CD (also known as the ResourceCD)</p> <p>Documentation and drivers are already installed on your computer. You can use the CD to reinstall drivers, run the Dell Diagnostics, or access your documentation.</p>  <p>Readme files may be included on your CD to provide last-minute updates about technical changes to your computer or advanced technical-reference material for technicians or experienced users.</p>
<ul style="list-style-type: none"> 1 How to set up my computer 1 Troubleshooting information 1 Tools and utilities 1 Warranty information 	<p>Setup and Quick Reference Guide</p>  <p>NOTE: This document is available as a PDF at support.dell.com.</p>
<ul style="list-style-type: none"> 1 How to remove and replace parts 1 Technical specifications 1 How to configure system settings 1 How to troubleshoot and solve problems 	<p>User's Guide</p> <p><i>Windows XP Help and Support Center</i></p> <ol style="list-style-type: none"> 1. Click the Start button and click Help and Support. 2. Click User's and system guides and click User's guides. <p><i>Microsoft Windows 2000</i></p>  <p>Double-click the User's Guides icon on your desktop.</p>
<ul style="list-style-type: none"> 1 How to use Windows XP 1 Documentation for my computer 1 Documentation for devices (such as a modem) 	<p>Windows Help and Support Center</p> <ol style="list-style-type: none"> 1. Click the Start button and click Help and Support. 2. Type a word or phrase that describes your problem and click the arrow icon. 3. Click the topic that describes your problem. 4. Follow the instructions on the screen.
<ul style="list-style-type: none"> 1 Service Tag and Express Service Code 1 Microsoft Windows License Label 	<p>Service Tag and Microsoft Windows License</p>  <p>These labels are located on your computer.</p> <ol style="list-style-type: none"> 1 Use the Service Tag to identify your computer when you use support.dell.com or contact technical support. 1 Enter the Express Service Code to direct your call when contacting technical support. The Express Service Code is not available in all countries. 1 Use the number on the Microsoft Windows License Label if you reinstall your operating system.
<ul style="list-style-type: none"> 1 Latest drivers for my computer 1 Answers to technical service and support questions 1 Online discussions with other users and technical support 1 Documentation for my computer 	<p>Dell Support Website — support.dell.com</p> <p>The Dell Support website provides several online tools, including:</p> <ol style="list-style-type: none"> 1 Solutions — Troubleshooting hints and tips, articles from technicians, and online courses 1 Community — Online discussion with other Dell customers 1 Upgrades — Upgrade information for components, such as memory, the hard drive, and the operating system 1 Customer Care — Contact information, order status, warranty, and repair information 1 Downloads — Drivers, patches, and software updates 1 Reference — Computer documentation, product specifications, and white papers
<ul style="list-style-type: none"> 1 Service call status and support history 1 Top technical issues for my computer 1 Frequently asked questions 1 File downloads 	<p>Dell Premier Support Website — premiersupport.dell.com</p> <p>The Dell Premier Support website is customized for corporate, government, and education customers. This website may not be available in all regions.</p>

<ul style="list-style-type: none">1 Details on my computer configuration1 Service contract for my computer	
<ul style="list-style-type: none">1 How to reinstall my operating system	<p>Operating System CD</p> <p>The operating system is already installed on your computer. To reinstall your operating system, use the <i>Operating System CD</i>.</p>  <p>After you reinstall your operating system, use the Drivers and Utilities CD to reinstall drivers for the devices that came with your computer.</p> <p>Your operating system product key label is located on your computer.</p>

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Getting Help

Dell™ OptiPlex™ GX60 Systems User's Guide

- [Technical Assistance](#)
 - [Problems With Your Order](#)
 - [Product Information](#)
 - [Returning Items for Warranty Repair or Credit](#)
 - [Before You Call](#)
 - [Contacting Dell](#)
-

Technical Assistance

If you need help with a technical problem, Dell is ready to assist you.

If you need to remove the computer covers, first disconnect the computer power and modem cables from all electrical outlets.

1. Complete the procedures in "[Solving Problems](#)."
2. Run the [Dell Diagnostics](#).
3. Make a copy of the [Diagnostics Checklist](#), and fill it out.
4. Use Dell's extensive suite of online services available at Dell Support ([support.dell.com](#)) for help with installation and troubleshooting procedures.
5. If the preceding steps have not resolved the problem, contact Dell.

When prompted by Dell's automated telephone system, enter your Express Service Code to route the call directly to the proper support personnel. If you do not have an Express Service Code, open the **Dell Accessories** folder, double-click the **Express Service Code** icon, and follow the directions.

 **NOTE:** Call technical support from a telephone near or at the computer so that technical support can assist you with any necessary procedures.

 **NOTE:** Dell's Express Service Code system may not be available in all countries.

 **NOTE:** Some of the following services are not always available in all locations outside the continental U.S. Call your local Dell representative for information on availability.

Online Services

You can access Dell Support at [support.dell.com](#). Select your region on the **WELCOME TO DELL SUPPORT** page, and fill in the requested details to access help tools and information.

- 1 World Wide Web

[www.dell.com/](#)

[www.dell.com/ap/](#) (Asian/Pacific countries only)

[www.euro.dell.com](#) (Europe only)

[www.dell.com/la/](#) (Latin American countries)

[www.dell.ca](#) (Canada only)

- 1 Anonymous file transfer protocol (FTP)

ftp.dell.com/

Log in as user: `anonymous`, and use your e-mail address as your password.

I Electronic Support Service

mobile_support@us.dell.com

support@us.dell.com

apsupport@dell.com (Asian/Pacific countries only)

support.euro.dell.com (Europe only)

I Electronic Quote Service

sales@dell.com

apmarketing@dell.com (Asian/Pacific countries only)

sales_canada@dell.com (Canada only)

I Electronic Information Service

info@dell.com

Dell's automated technical support service—AutoTech—provides recorded answers to the questions most frequently asked by Dell customers about their portable and desktop computers.

When you call AutoTech, use your touch-tone telephone to select the subjects that correspond to your questions.

The AutoTech service is available 24 hours a day, 7 days a week. You can also access this service through the technical support service. For the telephone number to call, see the [contact numbers](#) for your region.

Automated Order-Status Service

To check on the status of any Dell™ products that you have ordered, you can go to [support.dell.com](#), or you can call the automated order-status service. A recording prompts you for the information needed to locate and report on your order. For the telephone number to call, see the [contact numbers](#) for your region.

Technical Support Service

Dell's technical support service is available 24 hours a day, 7 days a week, to answer your questions about Dell hardware. Our technical support staff uses computer-based diagnostics to provide fast, accurate answers.

To contact Dell's technical support service, see "[Technical Assistance](#)" and then call the number for your country as listed in the [contact numbers](#) list.

Problems With Your Order

If you have a problem with your order, such as missing parts, wrong parts, or incorrect billing, contact Dell for customer assistance. Have your invoice or packing slip handy when you call. For the telephone number to call, see the [contact numbers](#) for your region.

Product Information

If you need information about additional products available from Dell, or if you would like to place an order, visit the Dell website at www.dell.com. For the telephone number to call to speak to a sales specialist, see the [contact numbers](#) for your region.

Returning Items for Warranty Repair or Credit

Prepare all items being returned, whether for repair or credit, as follows:

1. Call Dell to obtain a Return Material Authorization Number, and write it clearly and prominently on the outside of the box.

For the telephone number to call, see the [contact numbers](#) for your region.

2. Include a copy of the invoice and a letter describing the reason for the return.
3. Include a copy of the [Diagnostics Checklist](#) indicating the tests you have run and any error messages reported by the Dell Diagnostics.
4. Include any accessories that belong with the item(s) being returned (power cables, software floppy disks, guides, and so on) if the return is for credit.
5. Pack the equipment to be returned in the original (or equivalent) packing materials.

You are responsible for paying shipping expenses. You are also responsible for insuring any product returned, and you assume the risk of loss during shipment to Dell. Collect On Delivery (C.O.D.) packages are not accepted.

Returns that are missing any of the preceding requirements will be refused at Dell's receiving dock and returned to you.

Before You Call

NOTE: Have your Express Service Code ready when you call. The code helps Dell's automated-support telephone system direct your call more efficiently.

Remember to fill out the [Diagnostics Checklist](#). If possible, turn on your computer before you call Dell for technical assistance and call from a telephone at or near the computer. You may be asked to type some commands at the keyboard, relay detailed information during operations, or try other troubleshooting steps possible only at the computer itself. Ensure that the computer documentation is available.

 **CAUTION:** Before working inside your computer, read the [safety instructions](#).

Diagnostics Checklist
Name:
Date:
Address:
Phone number:
Service Tag (bar code on the back of the computer):
Express Service Code:
Return Material Authorization Number (if provided by Dell support technician):
Operating system and version:

Devices:
Expansion cards:
Are you connected to a network? Yes No
Network, version, and network adapter:
Programs and versions:
See your operating system documentation to determine the contents of the system's start-up files. If the computer is connected to a printer, print each file. Otherwise, record the contents of each file before calling Dell.
Error message, beep code, or diagnostic code:
Description of problem and troubleshooting procedures you performed:

Contacting Dell

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

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

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

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

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

Country (City) International Access Code Country Code City Code	Department Name or Service Area, Website and E-Mail Address	Area Codes, Local Numbers, and Toll-Free Numbers
Anguilla	General Support	toll-free: 800-335-0031
Antigua and Barbuda	General Support	1-800-805-5924
Argentina (Buenos Aires)	Website: www.dell.com.ar	
International Access Code: 00	Tech Support and Customer Care	toll-free: 0-800-444-0733
Country Code: 54	Sales	0-810-444-3355
City Code: 11	Tech Support Fax	11 4515 7139
	Customer Care Fax	11 4515 7138
Aruba	General Support	toll-free: 800-1578
Australia (Sydney)	E-mail (Australia): au_tech_support@dell.com	
International Access Code: 0011	E-mail (New Zealand): nz_tech_support@dell.com	
Country Code: 61	Home and Small Business	1-300-65-55-33
City Code: 2	Government and Business	toll-free: 1-800-633-559
	Preferred Accounts Division (PAD)	toll-free: 1-800-060-889
	Customer Care	toll-free: 1-800-819-339
	Corporate Sales	toll-free: 1-800-808-385
	Transaction Sales	toll-free: 1-800-808-312
	Fax	toll-free: 1-800-818-341
Austria (Vienna)	Website: support.euro.dell.com	
International Access Code: 900	E-mail: tech_support_central_europe@dell.com	
Country Code: 43	Home/Small Business Sales	0820 240 530 00
City Code: 1	Home/Small Business Fax	0820 240 530 49
	Home/Small Business Customer Care	0820 240 530 14
	Preferred Accounts/Corporate Customer Care	0820 240 530 16
	Home/Small Business Technical Support	0820 240 530 14
	Preferred Accounts/Corporate Technical Support	0660 8779
	Switchboard	0820 240 530 00

Bahamas	General Support	toll-free: 1-866-278-6818
Barbados	General Support	1-800-534-3066
Belgium (Brussels)	Website: support.euro.dell.com	
International Access Code: 00	E-mail: tech_be@dell.com	
Country Code: 32	E-mail for French Speaking Customers: support.euro.dell.com/be/fr/emaildell/	
City Code: 2	Technical Support	02 481 92 88
	Customer Care	02 481 91 19
	Corporate Sales	02 481 91 00
	Fax	02 481 92 99
	Switchboard	02 481 91 00
Bermuda	General Support	1-800-342-0671
Bolivia	General Support	toll-free: 800-10-0238
Brazil	Website: www.dell.com/br	
International Access Code: 00	Customer Support, Technical Support	0800 90 3355
Country Code: 55	Tech Support Fax	51 481 5470
City Code: 51	Customer Care Fax	51 481 5480
	Sales	0800 90 3390
British Virgin Islands	General Support	toll-free: 1-866-278-6820
Brunei	Customer Technical Support (Penang, Malaysia)	604 633 4966
Country Code: 673	Customer Service (Penang, Malaysia)	604 633 4949
	Transaction Sales (Penang, Malaysia)	604 633 4955
Canada (North York, Ontario)	Online Order Status: www.dell.ca/ostatus	
International Access Code: 011	AutoTech (automated technical support)	toll-free: 1-800-247-9362
	TechFax	toll-free: 1-800-950-1329
	Customer Care (Home Sales/Small Business)	toll-free: 1-800-847-4096
	Customer Care (med./large business, government)	toll-free: 1-800-326-9463
	Technical Support (Home Sales/Small Business)	toll-free: 1-800-847-4096
	Technical Support (med./large bus., government)	toll-free: 1-800-387-5757
	Sales (Home Sales/Small Business)	toll-free: 1-800-387-5752
	Sales (med./large bus., government)	toll-free: 1-800-387-5755
	Spare Parts Sales & Extended Service Sales	1 866 440 3355
Cayman Islands	General Support	1-800-805-7541
Chile (Santiago)	Sales, Customer Support, and Technical Support	toll-free: 1230-020-4823
Country Code: 56		
City Code: 2		
China (Xiamen)	Tech Support website: support.ap.dell.com/china	
Country Code: 86	Tech Support E-mail: cn_support@dell.com	
City Code: 592	Tech Support Fax	818 1350
	Home and Small Business Technical Support	toll-free: 800 858 2437
	Corporate Accounts Technical Support	toll-free: 800 858 2333
	Customer Experience	toll-free: 800 858 2060
	Home and Small Business	toll-free: 800 858 2222
	Preferred Accounts Division	toll-free: 800 858 2062
	Large Corporate Accounts GCP	toll-free: 800 858 2055
	Large Corporate Accounts Key Accounts	toll-free: 800 858 2628
	Large Corporate Accounts North	toll-free: 800 858 2999
	Large Corporate Accounts North Government and Education	toll-free: 800 858 2955
	Large Corporate Accounts East	toll-free: 800 858 2020
	Large Corporate Accounts East Government and Education	toll-free: 800 858 2669
	Large Corporate Accounts Queue Team	toll-free: 800 858 2572
	Large Corporate Accounts South	toll-free: 800 858 2355
	Large Corporate Accounts West	toll-free: 800 858 2811
	Large Corporate Accounts Spare Parts	toll-free: 800 858 2621
Colombia	General Support	980-9-15-3978
Costa Rica	General Support	0800-012-0435
Czech Republic (Prague)	Website: support.euro.dell.com	
International Access Code: 00	E-mail: czech_dell@dell.com	

Country Code: 420 City Code: 2	Technical Support	02 2186 27 27
	Customer Care	02 2186 27 11
	Fax	02 2186 27 14
	TechFax	02 2186 27 28
	Switchboard	02 2186 27 11
Denmark (Copenhagen)	Website: support.euro.dell.com	
International Access Code: 00	E-mail Support (portable computers): den_nbk_support@dell.com	
	E-mail Support (desktop computers): den_support@dell.com	
Country Code: 45	E-mail Support (servers): Nordic_server_support@dell.com	
	Technical Support	7023 0182
	Customer Care (Relational)	7023 0184
	Home/Small Business Customer Care	3287 5505
	Switchboard (Relational)	3287 1200
	Fax Switchboard (Relational)	3287 1201
	Switchboard (Home/Small Business)	3287 5000
	Fax Switchboard (Home/Small Business)	3287 5001
Dominica	General Support	toll-free: 1-866-278-6821
Dominican Republic	General Support	1-800-148-0530
Ecuador	General Support	toll-free: 999-119
El Salvador	General Support	01-899-753-0777
Finland (Helsinki)	Website: support.euro.dell.com	
International Access Code: 990	E-mail: fin_support@dell.com	
	E-mail Support (servers): Nordic_support@dell.com	
Country Code: 358	Technical Support	09 253 313 60
	Technical Support Fax	09 253 313 81
City Code: 9	Relational Customer Care	09 253 313 38
	Home/Small Business Customer Care	09 693 791 94
	Fax	09 253 313 99
	Switchboard	09 253 313 00
France (Paris) (Montpellier)	Website: support.euro.dell.com	
International Access Code: 00	E-mail: support.euro.dell.com/fr/fr/emaildell/	
	Home and Small Business	
Country Code: 33	Technical Support	0825 387 270
	Customer Care	0825 823 833
City Codes: (1) (4)	Switchboard	0825 004 700
	Switchboard (calls from outside of France)	04 99 75 40 00
	Sales	0825 004 700
	Fax	0825 004 701
	Fax (calls from outside of France)	04 99 75 40 01
	Corporate	
	Technical Support	0825 004 719
	Customer Care	0825 338 339
	Switchboard	01 55 94 71 00
	Sales	01 55 94 71 00
Fax	01 55 94 71 01	
Germany (Langen)	Website: support.euro.dell.com	
International Access Code: 00	E-mail: tech_support_central_europe@dell.com	
	Technical Support	06103 766-7200
Country Code: 49	Home/Small Business Customer Care	0180-5-224400
	Global Segment Customer Care	06103 766-9570
City Code: 6103	Preferred Accounts Customer Care	06103 766-9420
	Large Accounts Customer Care	06103 766-9560
	Public Accounts Customer Care	06103 766-9555
	Switchboard	06103 766-7000
Greece	Website: support.euro.dell.com	
International Access Code: 00	E-mail: support.euro.dell.com/gr/en/emaildell/	
	Technical Support	080044149518
Country Code: 30	Gold Technical Support	08844140083
	Switchboard	2108129800

	Sales	2108129800
	Fax	2108129812
Grenada	General Support	toll-free: 1-866-540-3355
Guatemala	General Support	1-800-999-0136
Guyana	General Support	toll-free: 1-877-270-4609
Hong Kong International Access Code: 001 Country Code: 852	Website: support.ap.dell.com	
	E-mail: ap_support@dell.com	
	Technical Support (Dimension™ and Inspiron™)	296 93188
	Technical Support (OptiPlex™, Latitude™, and Dell Precision™)	296 93191
	Customer Service (non-technical, post-sales issues)	800 93 8291
	Transaction Sales	toll-free: 800 96 4109
	Large Corporate Accounts HK	toll-free: 800 96 4108
	Large Corporate Accounts GCP HK	toll-free: 800 90 3708
India	Technical Support	1600 33 8045
	Sales	1600 33 8044
Ireland (Cherrywood) International Access Code: 16 Country Code: 353 City Code: 1	Website: support.euro.dell.com	
	E-mail: dell_direct_support@dell.com	
	Ireland Technical Support	1850 543 543
	U.K. Technical Support (dial within U.K. only)	0870 908 0800
	Home User Customer Care	01 204 4014
	Small Business Customer Care	01 204 4014
	U.K. Customer Care (dial within U.K. only)	0870 906 0010
	Corporate Customer Care	1850 200 982
	Corporate Customer Care (dial within U.K. only)	0870 907 4499
	Ireland Sales	01 204 4444
	U.K. Sales (dial within U.K. only)	0870 907 4000
	Fax/SalesFax	01 204 0103
	Switchboard	01 204 4444
Italy (Milan) International Access Code: 00 Country Code: 39 City Code: 02	Website: support.euro.dell.com	
	E-mail: support.euro.dell.com/it/it/emaiddell/	
	Home and Small Business	
	Technical Support	02 577 826 90
	Customer Care	02 696 821 14
	Fax	02 696 821 13
	Switchboard	02 696 821 12
	Corporate	
	Technical Support	02 577 826 90
	Customer Care	02 577 825 55
	Fax	02 575 035 30
	Switchboard	02 577 821
	Jamaica	General Support (dial from within Jamaica only)
Japan (Kawasaki) International Access Code: 001 Country Code: 81 City Code: 44	Website: support.jp.dell.com	
	Technical Support (servers)	toll-free: 0120-198-498
	Technical Support outside of Japan (servers)	81-44-556-4162
	Technical Support (Dimension™ and Inspiron™)	toll-free: 0120-198-226
	Technical Support outside of Japan (Dimension and Inspiron)	81-44-520-1435
	Technical Support (Dell Precision™, OptiPlex™, and Latitude™)	toll-free: 0120-198-433
	Technical Support outside of Japan (Dell Precision, OptiPlex, and Latitude)	81-44-556-3894
	Faxbox Service	044-556-3490
	24-Hour Automated Order Service	044-556-3801
	Customer Care	044-556-4240
	Business Sales Division (up to 400 employees)	044-556-1465
	Preferred Accounts Division Sales (over 400 employees)	044-556-3433
	Large Corporate Accounts Sales (over 3500 employees)	044-556-3430
	Public Sales (government agencies, educational institutions, and medical institutions)	044-556-1469
	Global Segment Japan	044-556-3469
	Individual User	044-556-1760
Switchboard	044-556-4300	

Korea (Seoul) International Access Code: 001 Country Code: 82 City Code: 2	Technical Support	toll-free: 080-200-3800
	Sales	toll-free: 080-200-3600
	Customer Service (Seoul, Korea)	toll-free: 080-200-3800
	Customer Service (Penang, Malaysia)	604 633 4949
	Fax	2194-6202
Latin America	Switchboard	2194-6000
	Customer Technical Support (Austin, Texas, U.S.A.)	512 728-4093
	Customer Service (Austin, Texas, U.S.A.)	512 728-3619
	Fax (Technical Support and Customer Service) (Austin, Texas, U.S.A.)	512 728-3883
	Sales (Austin, Texas, U.S.A.)	512 728-4397
SalesFax (Austin, Texas, U.S.A.)	512 728-4600	
		or 512 728-3772
Luxembourg International Access Code: 00 Country Code: 352	Website: support.euro.dell.com	
	E-mail: tech_be@dell.com	
	Technical Support (Brussels, Belgium)	3420808075
	Home/Small Business Sales (Brussels, Belgium)	toll-free: 080016884
	Corporate Sales (Brussels, Belgium)	02 481 91 00
	Customer Care (Brussels, Belgium)	02 481 91 19
	Fax (Brussels, Belgium)	02 481 92 99
Macao Country Code: 853	Switchboard (Brussels, Belgium)	02 481 91 00
	Technical Support	toll-free: 0800 582
	Customer Service (Penang, Malaysia)	604 633 4949
Malaysia (Penang) International Access Code: 00 Country Code: 60 City Code: 4	Transaction Sales	toll-free: 0800 581
	Technical Support	toll-free: 1 800 888 298
	Customer Service	04 633 4949
	Transaction Sales	toll-free: 1 800 888 202
Mexico International Access Code: 00 Country Code: 52	Corporate Sales	toll-free: 1 800 888 213
	Customer Technical Support	001-877-384-8979 or 001-877-269-3383
	Sales	50-81-8800 or 01-800-888-3355
	Customer Service	001-877-384-8979 or 001-877-269-3383
	Main	50-81-8800 or 01-800-888-3355
Montserrat	General Support	toll-free: 1-866-278-6822
Netherlands Antilles	General Support	001-800-882-1519
Netherlands (Amsterdam) International Access Code: 00 Country Code: 31 City Code: 20	Website: support.euro.dell.com	
	E-mail (Technical Support):	
	(Enterprise): nl_server_support@dell.com	
	(Latitude): nl_latitude_support@dell.com	
	(Inspiron): nl_inspiron_support@dell.com	
	(Dimension): nl_dimension_support@dell.com	
	(OptiPlex): nl_optiplex_support@dell.com	
	(Dell Precision): nl_workstation_support@dell.com	
	Technical Support	020 674 45 00
	Technical Support Fax	020 674 47 66
	Home/Small Business Customer Care	020 674 42 00
	Relational Customer Care	020 674 4325
	Home/Small Business Sales	020 674 55 00
Relational Sales	020 674 50 00	
Home/Small Business Sales Fax	020 674 47 75	
Relational Sales Fax	020 674 47 50	

	Switchboard	020 674 50 00
	Switchboard Fax	020 674 47 50
New Zealand	E-mail (New Zealand): nz_tech_support@dell.com	
International Access Code: 00	E-mail (Australia): au_tech_support@dell.com	
Country Code: 64	Home and Small Business	0800 446 255
	Government and Business	0800 444 617
	Sales	0800 441 567
	Fax	0800 441 566
Nicaragua	General Support	001-800-220-1006
Norway (Lysaker)	Website: support.euro.dell.com	
International Access Code: 00	E-mail Support (portable computers):	
Country Code: 47	nor_nbk_support@dell.com	
	E-mail Support (desktop computers):	
	nor_support@dell.com	
	E-mail Support (servers):	
	nordic_server_support@dell.com	
	Technical Support	671 16882
	Relational Customer Care	671 17514
	Home/Small Business Customer Care	23162298
	Switchboard	671 16800
	Fax Switchboard	671 16865
Panama	General Support	001-800-507-0962
Peru	General Support	0800-50-669
Poland (Warsaw)	Website: support.euro.dell.com	
International Access Code: 011	E-mail: pl_support_tech@dell.com	
Country Code: 48	Customer Service Phone	57 95 700
City Code: 22	Customer Care	57 95 999
	Sales	57 95 999
	Customer Service Fax	57 95 806
	Reception Desk Fax	57 95 998
	Switchboard	57 95 999
Portugal	Website: support.euro.dell.com	
International Access Code: 00	E-mail: support.euro.dell.com/pt/en/emaildell/	
Country Code: 351	Technical Support	707200149
	Customer Care	800 300 413
	Sales	800 300 410 or 800 300 411 or 800 300 412 or 21 422 07 10
	Fax	21 424 01 12
Puerto Rico	General Support	1-800-805-7545
St. Kitts and Nevis	General Support	toll-free: 1-877-441-4731
St. Lucia	General Support	1-800-882-1521
St. Vincent and the Grenadines	General Support	toll-free: 1-877-270-4609
Singapore (Singapore)	Technical Support	toll-free: 800 6011 051
International Access Code: 005	Customer Service (Penang, Malaysia)	604 633 4949
Country Code: 65	Transaction Sales	toll-free: 800 6011 054
	Corporate Sales	toll-free: 800 6011 053
South Africa (Johannesburg)	Website: support.euro.dell.com	
International Access Code: 09/091	E-mail: dell_za_support@dell.com	
Country Code: 27	Technical Support	011 709 7710
City Code: 11	Customer Care	011 709 7707
	Sales	011 709 7700
	Fax	011 706 0495
	Switchboard	011 709 7700
Southeast Asian and Pacific Countries	Customer Technical Support, Customer Service, and Sales (Penang, Malaysia)	604 633 4810
Spain (Madrid)	Website: support.euro.dell.com	
International Access Code: 00	E-mail: support.euro.dell.com/es/es/emaildell/	
	Home and Small Business	

Country Code: 34 City Code: 91	Technical Support	902 100 130
	Customer Care	902 118 540
	Sales	902 118 541
	Switchboard	902 118 541
	Fax	902 118 539
	Corporate	
	Technical Support	902 100 130
	Customer Care	902 118 546
	Switchboard	91 722 92 00
	Fax	91 722 95 83
Sweden (Upplands Vasby) International Access Code: 00 Country Code: 46 City Code: 8	Website: support.euro.dell.com	
	E-mail: swe_support@dell.com	
	E-mail Support for Latitude and Inspiron: Swe-nbk_kats@dell.com	
	E-mail Support for OptiPlex: Swe_kats@dell.com	
	E-mail Support for Servers: Nordic_server_support@dell.com	
	Technical Support	08 590 05 199
	Relational Customer Care	08 590 05 642
	Home/Small Business Customer Care	08 587 70 527
	Employee Purchase Program (EPP) Support	20 140 14 44
	Fax Technical Support	08 590 05 594
Sales	08 590 05 185	
Switzerland (Geneva) International Access Code: 00 Country Code: 41 City Code: 22	Website: support.euro.dell.com	
	E-mail: swisstech@dell.com	
	E-mail for French-speaking HSB and Corporate Customers: support.euro.dell.com/ch/fr/emaildell/	
	Technical Support (Home and Small Business)	0844 811 411
	Technical Support (Corporate)	0844 822 844
	Customer Care (Home and Small Business)	0848 802 202
	Customer Care (Corporate)	0848 821 721
	Fax	022 799 01 90
	Switchboard	022 799 01 01
Taiwan International Access Code: 002 Country Code: 886	Technical Support (portable and desktop computers)	toll-free: 00801 86 1011
	Technical Support (servers)	toll-free: 0080 60 1256
	Transaction Sales	toll-free: 0080 651 228 or 0800 33 556
	Corporate Sales	toll-free: 0080 651 227 or 0800 33 555
Thailand International Access Code: 001 Country Code: 66	Technical Support	toll-free: 0880 060 07
	Customer Service (Penang, Malaysia)	604 633 4949
	Sales	toll-free: 0880 060 09
Trinidad/Tobago	General Support	1-800-805-8035
Turks and Caicos Islands	General Support	toll-free: 1-866-540-3355
U.K. (Bracknell) International Access Code: 00 Country Code: 44 City Code: 1344	Website: support.euro.dell.com	
	Customer Care website: support.euro.dell.com/uk/en/ECare/Form/Home.asp	
	E-mail: dell_direct_support@dell.com	
	Technical Support (Corporate/Preferred Accounts/PAD [1000+ employees])	0870 908 0500
	Technical Support (direct/PAD and general)	0870 908 0800
	Global Accounts Customer Care	01344 373 186
	Home and Small Business Customer Care	0870 906 0010
	Corporate Customer Care	01344 373 185
	Preferred Accounts (500-5000 employees) Customer Care	0870 906 0010
	Central Government Customer Care	01344 373 193
	Local Government & Education Customer Care	01344 373 199
Health Customer Care	01344 373 194	
Home and Small Business Sales	0870 907 4000	

	Corporate/Public Sector Sales	01344 860 456
Uruguay	General Support	toll-free: 000-413-598-2521
U.S.A. (Austin, Texas) International Access Code: 011 Country Code: 1	Automated Order-Status Service	toll-free: 1-800-433-9014
	AutoTech (portable and desktop computers)	toll-free: 1-800-247-9362
	Consumer (Home and Home Office)	
	Technical Support	toll-free: 1-800-624-9896
	Customer Service	toll-free: 1-800-624-9897
	DellNet™ Service and Support	toll-free: 1-877-Dellnet (1-877-335-5638)
	Employee Purchase Program (EPP) Customers	toll-free: 1-800-695-8133
	Financial Services website: www.dellfinancialservices.com	
	Financial Services (lease/loans)	toll-free: 1-877-577-3355
	Financial Services (Dell Preferred Accounts [DPA])	toll-free: 1-800-283-2210
	Business	
	Customer Service and Technical Support	toll-free: 1-800-822-8965
	Employee Purchase Program (EPP) Customers	toll-free: 1-800-695-8133
	Projectors Technical Support	toll-free: 1-877-459-7298
	Public (government, education, and healthcare)	
	Customer Service and Technical Support	toll-free: 1-800-456-3355
	Employee Purchase Program (EPP) Customers	toll-free: 1-800-234-1490
	Dell Sales	toll-free: 1-800-289-3355 or toll-free: 1-800-879-3355
	Dell Outlet Store (Dell refurbished computers)	toll-free: 1-888-798-7561
	Software and Peripherals Sales	toll-free: 1-800-671-3355
	Spare Parts Sales	toll-free: 1-800-357-3355
	Extended Service and Warranty Sales	toll-free: 1-800-247-4618
	Fax	toll-free: 1-800-727-8320
Dell Services for the Deaf, Hard-of-Hearing, or Speech-Impaired	toll-free: 1-877-DELLTTY (1-877-335-5889)	
U.S. Virgin Islands	General Support	1-877-673-3355
Venezuela	General Support	8001-3605

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Glossary

Dell™ OptiPlex™ GX60 Systems User's Guide

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A

AC — alternating current — The form of electricity that powers your computer when you plug the AC adapter power cable into an electrical outlet.

ACPI — Advanced Configuration and Power Interface — A Microsoft® Windows® operating system utility that can be set up to put a computer in standby or hibernate mode to conserve battery or electrical power.

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

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

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

B

backup — A copy of a program or data file on a floppy disk, tape, CD, or hard drive. As a precaution, you should back up the data files on your hard drive regularly.

battery — An internal power source used to operate portable computers when not connected to an AC adapter and an electrical outlet.

BIOS — basic input/output system — A program (or utility) that serves as an interface between the computer hardware and the operating system. Unless you understand what effect the settings have on the computer, do not change the settings for this program. Also referred to as the system setup program.

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

boot sequence — Allows you to specify the order of the devices from which the computer attempts to boot.

bootable CD — A CD that you can use to start your computer. In case your hard drive is damaged or your computer has a virus, ensure that you always have a bootable CD or bootable disk available.

bootable disk — A disk that you can use to start your computer. In case your hard drive is damaged or your computer has a virus, ensure that you always have a bootable disk or bootable CD available.

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

BTU — British thermal unit — A unit of heat equal to about 252 calories.

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

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

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

C

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

cache — An area where data or instructions are stored for quick retrieval. The cache enhances the efficiency of many processor operations. There are two types of cache:

- 1 L1 cache — fast, primary cache stored inside the processor.
- 1 L2 cache — also called secondary cache; sometimes refers to cache memory external to the processor, although more recent processors incorporate the L2 cache in their architecture.

CD drive — A drive that uses optical technology to read data from CDs.

CD player — The software used to play music CDs. The CD player displays a window with buttons you use to play a CD.

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

clock speed — The speed, given in MHz, that indicates how fast computer components that are connected to the system bus operate. Components that are synchronized with the clock speed can run faster or slower, but their speed is determined by multiplying or dividing a factor by the clock speed.

cm — centimeter — A metric unit of measure equal to 0.39 inch.

cm/sec — centimeters per second

Control Panel — Part of the computer console that contains indicators and controls, such as the power switch, hard-drive access indicator, and power indicator.

controller — Chips that control the transfer of data between the processor and memory or between the processor and devices.

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

D

DDR SDRAM — double-data-rate SDRAM — A type of SDRAM that can theoretically improve memory clock speed to at least 200 MHz.

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

device driver — See driver.

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

DMA — direct memory access — A channel that allows certain types of data transfer between RAM and a device to bypass the processor.

DRAM — dynamic random-access memory — Memory that stores information in integrated circuits containing capacitors.

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

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

DVD — digital versatile disc — A disc usually used to store movies. DVDs are double-sided, whereas CDs are single-sided. DVD drives read most CD media as well.

DVD drive — A drive that uses optical technology to read data from DVDs and CDs.

DVD player — The software used to watch DVD movies. The DVD player displays a window with buttons you use to watch a movie.

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

DVI — digital video interface — A standard for digital transmission between a computer and a digital video display.

DVI Adapter — The DVI adapter, working with the integrated graphics controller on your system, provides a DVI port for your computer. The DVI port provides a direct, digital connection to a digital display, such as a digital flat panel display. Operating system control of the DVI adapter is handled through the integrated graphics driver's user interface, which is located under the Control Panel in Windows operating systems.

E

ECC — error checking and correction — A type of memory that includes special circuitry for testing the accuracy of data as it passes in and out of memory.

ECP — extended capabilities port — A parallel port design that provides improved bidirectional data transmission. Similar to EPP, it uses direct memory access to transfer data and often improves performance.

EIDE — Enhanced integrated device electronics — an improved version of the IDE interface for hard drives and CD drives.

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

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

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

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

F

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

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

floppy drive — A disk drive that can read and write to floppy disks.

folder — A place to organize and group files on a disk or drive. Files in a folder can be viewed and ordered in various ways, such as alphabetically, by date, and by size.

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

ft — foot — A unit of measurement for length that equals 12 inches.

G

G — gravity — A measurement of weight and force.

GB — gigabyte — A unit of data that equals 1024 MB (1,073,741,824 bytes) and measures drive storage capacity.

GHz — gigahertz — A measurement of frequency that equals one thousand million Hz, or one thousand MHz.

graphics accelerator — A type of specialized video processor that boosts graphics performance.

graphics mode — A video mode that can be defined as x horizontal pixels by y vertical pixels by z colors. Graphics modes can display an unlimited variety of shapes and fonts.

H

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

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

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

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

I

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

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

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

IRQ — interrupt request — An electronic pathway assigned to a specific device so that the device can communicate with the processor. Each device connection must be assigned an IRQ. For example, the first serial port in your computer is typically assigned to IRQ4. Although two devices can share the same IRQ assignment, you cannot operate both devices simultaneously.

K

KB — kilobyte — A unit of data that equals 1,024 bytes but is often referred to as 1,000 bytes.

keyboard shortcut — A command requiring you to press multiple keys at the same time. Also referred to as key combination.

kg — kilogram — A unit measuring mass that equals 1,000 grams.

L

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

LOM — LAN on motherboard — A system board with integrated networking silicon, which eliminates the need for an add-in network card and enables advanced management technologies requiring signals to and from the system board.

M

MB — megabyte — A storage unit equal to 1,048,576 bytes; however, when used to refer to hard drive storage, the term is often rounded to mean 1,000,000 bytes.

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

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

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

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

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

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

mm — millimeter — A unit of length that equals one thousandth of a meter or 1/25 inch.

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

mouse — A pointing device that controls the movement of the cursor on your screen. Typically you roll the mouse along a hard, flat surface to move the pointer or cursor on your screen.

N

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

NVRAM — nonvolatile random access memory

A type of memory that stores data when the computer is turned off or loses its external power source.

O

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

P

parallel connector — An I/O port often used to connect a parallel printer to your computer.

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

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

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

Plug and Play — An industry-standard specification that makes it easier to add devices to your computer. Plug and Play provides automatic installation and configuration and compatibility with existing hardware.

processor — The primary computational chip inside the computer. As the "brains" of the computer, this chip controls the interpretation and execution of arithmetic and logic functions. Sometimes, the processor is referred to as the microprocessor or the CPU (central processing unit).

program — Any software that processes data for you, including spreadsheet, word processor, database, and game packages. Programs require an operating system to run.

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

R

RAM — random-access memory — The primary temporary storage area for program instructions and data. Any information stored in RAM is lost when you turn off your computer.

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

read-only — Data and/or files you can view but cannot edit or delete. A file can have read-only status if:

- 1 It resides on a physically write-protected floppy disk.
- 1 It is located on a network in a directory and the system administrator has assigned read-only rights to you.

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

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

ROM — read-only memory — Memory that stores data and programs that cannot be deleted or written to by the computer. ROM, unlike RAM, retains its contents even after you turn off your computer. Some programs essential to the operation of your computer reside in ROM.

S

SDRAM — synchronous dynamic random-access memory — A type of DRAM that is synchronized with the optimal clock speed of the processor.

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

service tag — A bar code label on your computer that identifies your computer when you access Dell | Support at support.dell.com or when you call Dell for customer or technical support.

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

shutdown — The process of closing windows and programs, exiting the operating system, and turning off your computer. You can lose data if you turn off your computer before completing a shutdown.

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

surge protectors — A device that prevents voltage spikes, which occur during electrical storms or following power interruptions, from entering a computer through the electrical outlet. Many surge protectors have a telephone jack for modem protection. Some surge protectors provide warranty coverage for certain types of damage.

Most surge protectors do not protect against lightning strikes, so you should disconnect your computer when lightning is near. Surge protectors also do not offer protection against power interruptions (power fluctuations), which occur when the voltage drops more than 20 percent.

Network connections cannot be protected by surge protectors. Always disconnect the network cable from the network connector during electrical storms.

SVGA — super video graphics array — A video standard for video cards and controllers. Typical SVGA resolutions are 800 x 600 and 1024 x 768.

The number of colors and resolution that a program displays depends on the capabilities of the monitor, the video controller and its drivers, and the amount of video memory installed in the computer.

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

system setup program — A program (or utility) that serves as an interface between the computer hardware and the operating system. Unless you understand what effect the settings have on the computer, do not change the settings for this program.

U

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

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

V

V — voltage

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

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

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

video resolution — See resolution.

virus — A program that is designed to inconvenience you or to destroy data stored on your computer. A virus program moves from one computer to another via an infected disk, software downloaded from the Internet, or e-mail attachments. When an infected program starts, its embedded virus also starts.

A virus cannot be attached to data. It must be attached to a program that is downloaded into or installed on the computer. When the virus-attached program is run, the virus is activated. Macro viruses, although hidden within documents (data), are similar. It is in the execution of the macro that the damage is done.

A common type of virus is a boot virus, which is stored in the boot sectors of a floppy disk. If the floppy disk is left in the drive when the computer is shut down and then turned on, the computer is infected when it reads the boot sectors of the floppy disk expecting to find the operating system. If the computer is infected, the boot virus may replicate itself onto all of the floppy disks that are read or written in that computer until the virus is eradicated.

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

W

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

Z

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

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

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I/O Panel

Dell™ OptiPlex™ GX60 Systems User's Guide

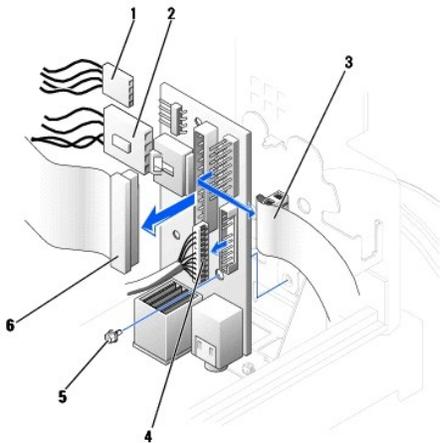
Removing the I/O Panel

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

1. Follow the procedures in "[Before You Begin](#)."
2. If you have installed a padlock through the padlock ring on the back panel, remove the padlock.

Small Form-Factor Computer

1. To access the screw that holds the I/O panel to the computer, [remove the hard drive](#).



1	internal speaker cable	4	front audio cable
2	chassis intrusion switch cable	5	mounting screw
3	control-panel cable	6	I/O cable

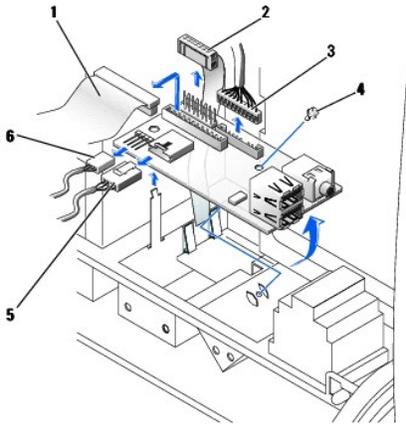
2. Disconnect the control-panel cable from the control-panel connector on the I/O panel. Disconnect the I/O cable from the I/O panel.
3. Remove all cables that are connected to the I/O panel, such as the chassis intrusion switch and internal speaker cables.
4. From inside the computer cover, remove the mounting screw that secures the I/O panel to the computer.
5. Remove the I/O panel from the computer.

Small Desktop Computer

1. Disconnect the hard-drive data cable.
2. Disconnect the control-panel cable from the control-panel connector on the I/O panel. Disconnect the I/O cable from the I/O panel.

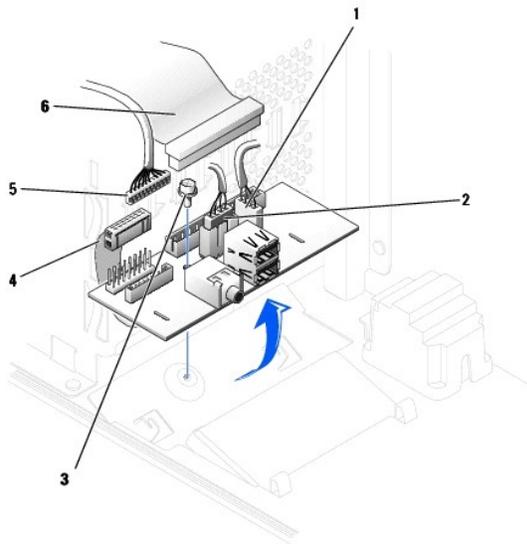
Note the routing of the control-panel cable as you remove it from the computer so that you can replace it correctly.

3. Remove all cables that are connected to the I/O panel, such as the chassis intrusion switch and internal speaker cables.
4. Remove the mounting screw that secures the I/O panel to the computer.
5. Remove the I/O panel from the computer.



1	I/O cable	4	mounting screw
2	control-panel cable	5	chassis intrusion switch cable
3	front audio cable	6	internal speaker cable

Small Mini-Tower Computer



1	internal speaker cable	4	control-panel cable
2	chassis intrusion switch cable	5	front audio cable
3	mounting screw	6	I/O cable

1. Disconnect the control-panel cable from the control-panel connector on the I/O panel. Disconnect the I/O cable from the I/O panel.

Note the routing of the control-panel cable as you remove it from the computer so that you can replace it correctly.

2. Remove all cables that are connected to the I/O panel, such as the chassis intrusion switch and internal speaker cables.

3. From inside the chassis cover, remove the mounting screw that secures the I/O panel to the chassis.
4. Remove the I/O panel from the chassis.

Replacing the I/O Panel

To replace the I/O panel, follow the removal procedures in reverse.

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Memory

Dell™ OptiPlex™ GX60 Systems User's Guide

- [DDR Memory Overview](#)
- [Installing Memory](#)
- [Removing Memory](#)

For information on the type of memory supported by your computer, look under "[Memory](#)" in the "Technical Specifications" section.

➔ **NOTICE:** Before you install new memory modules, download the most recent BIOS for your computer from the Dell Support website at support.dell.com.

DDR Memory Overview

- 1 See the label in the upper-right corner of the module to determine the module's capacity.



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

- 1 The recommended memory configurations are:
 - o A memory module installed in connector DIMM_A
 - or
 - o A pair of matched memory modules installed in connectors DIMM_A and DIMM_B

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

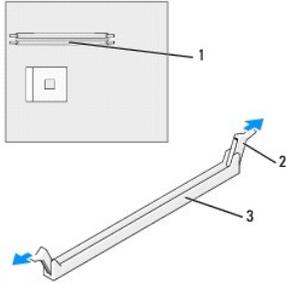
- 1 If you install mixed pairs of PC2100 (DDR 266-MHz) and PC2700 (DDR 333-MHz) memory, the modules function at the slowest speed installed.
 - 1 Be sure to install a single memory module in DIMM_A, the connector closest to the processor, before you install modules in the other connector(s).
 - 1 The actual speed of the SDRAM memory channel will depend on the speed of the processor's front side bus.
-

Installing Memory

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

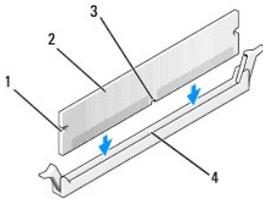
➔ **NOTICE:** To prevent static damage to components inside your computer, discharge static electricity from your body before you touch any of your computer's electronic components. You can do so by touching an unpainted metal surface on the computer chassis.

1. Follow the procedures in "[Before You Begin](#)."
2. Press out the securing clip at each end of the memory module connector.



1	memory connector closest to processor
2	securing clips (2)
3	connector

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

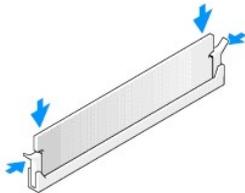


1	cutouts (2)
2	memory module
3	notch
4	crossbar

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

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

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



5. Close the computer cover.
6. Attach the computer stand, if it is used.

⚠ **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.

After you open and close the cover, the chassis intrusion detector, if enabled, causes the following message to appear on the screen at the next computer start-up:

ALERT! Cover was previously removed.

8. [Reset the chassis intrusion detector](#) by changing **Chassis Intrusion** to **Enabled** or **Enabled-Silent**.

 **NOTE:** If a setup password has been assigned by someone else, contact your network administrator for information on resetting the chassis intrusion detector.

9. The computer detects that the new memory does not match the existing configuration information and generates the following message:

The amount of system memory has changed.
Strike the F1 key to continue, F2 to run the setup utility

10. Press <F2> to enter system setup and check the value for **System Memory**.

The computer should have changed the value of **System Memory** to reflect the newly installed memory. Verify the new total. If it is correct, skip to [step 12](#).

11. If the memory total is incorrect, turn off and disconnect your computer and devices from their electrical outlets. Open the computer cover and check the installed memory modules to ensure that they are seated properly in their sockets. Then repeat steps [5](#), [6](#), and [7](#).
12. When the **System Memory** total is correct, press <Esc> to exit system setup.
13. Run the Dell Diagnostics to verify that the memory modules are operating properly.

Removing Memory

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

 **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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Power Supply

Dell™ OptiPlex™ GX60 Systems User's Guide

- [Removing the Power Supply](#)
 - [Replacing the Power Supply](#)
 - [DC Power Connectors](#)
-

Removing the Power Supply

- **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.

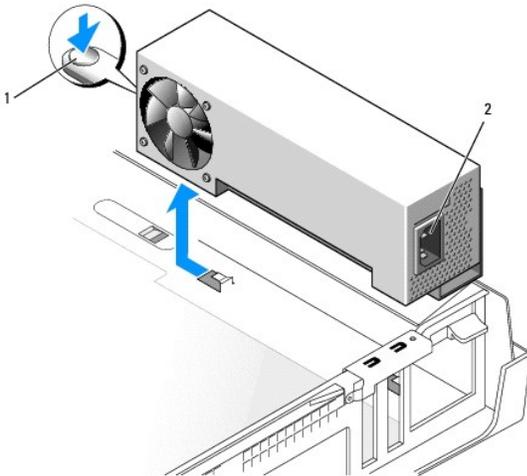
Small Form-Factor Computer

- **CAUTION:** Before you begin any of the procedures in this section, follow the [safety instructions](#).

1. Follow the procedures in "[Before You Begin](#)."
2. Disconnect the DC power cables from the system board and the drives.

Note the routing of the DC power cables underneath the tabs in the computer frame as you remove them from the system board and drives. You must route these cables properly when you replace them to prevent their being pinched or crimped.

3. Press the release button located on the floor of the computer frame.



1	release button
2	AC power connector

4. Slide the power supply toward the front of the computer approximately 1 inch.
5. Lift the power supply up and out of the computer.

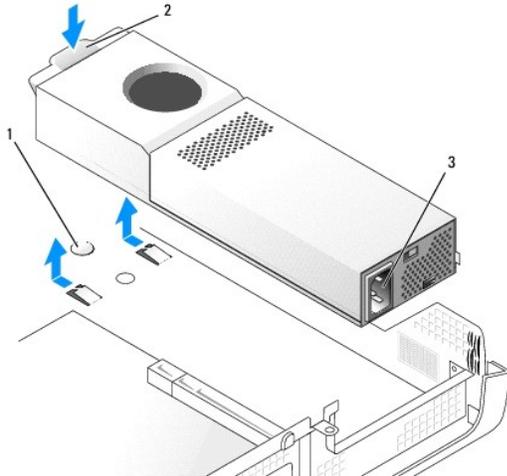
Small Desktop Computer

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

1. Follow the procedures in "[Before You Begin](#)."
2. Disconnect the DC power cables from the system board and the drives.

Note the routing of the DC power cables underneath the tabs in the computer frame as you remove them from the system board and drives. You must route these cables properly when you replace them to prevent their being pinched or crimped.

3. Remove the expansion-card cage and remove the power cables from the side of the hard drive. To remove the power cables, use the cables as leverage and pull away from the clips while you pull on the metal clips with your fingers.
4. Press down on the handle, which in turn presses the release button.



1	release button
2	handle
3	AC power connector

5. Slide the power supply toward the front of the computer approximately 1 inch.
6. Lift the power supply up and out of the computer.

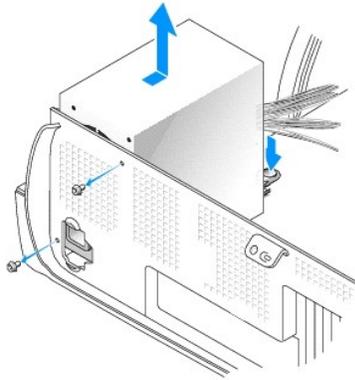
Small Mini-Tower Computer

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

1. Follow the procedures in "[Before You Begin](#)."
2. Disconnect the DC power cables from the system board and the drives.

Note the routing of the DC power cables underneath the tabs in the computer frame as you remove them from the system board and drives. You must route these cables properly when you replace them to prevent their being pinched or crimped.

3. Remove the two screws that attach the power supply to the back of the computer frame.
4. Press the release button located on the floor of the computer frame.



5. Slide the power supply toward the front of the computer approximately 1 inch.
6. Lift the power supply up and out of the computer.

Replacing the Power Supply

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

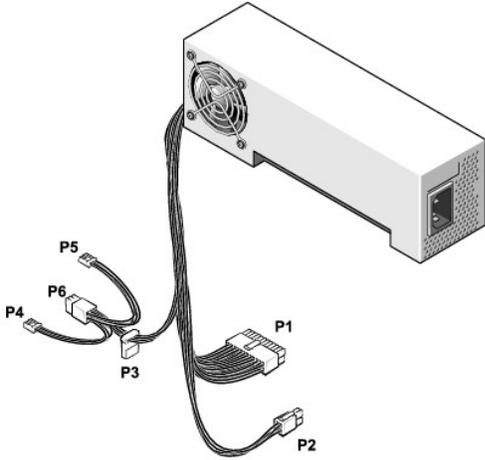
1. Slide the power supply into place.
2. On the small mini-tower computer, replace the two screws that secure the power supply to the back of the computer frame.
3. Reconnect the DC power cables.
4. Connect the AC power cable to the connector.
5. On the small desktop computer, reattach the power cables to the side of the hard drive and replace the expansion-card cage.
6. Run the cables underneath the clips, and press the clips to close them over the cables.
7. Close the computer cover.
8. Attach the computer stand, if it is used.

➡ 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.

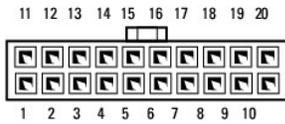
DC Power Connectors

Small Form-Factor Power Supply DC Connector Pin Assignments



NOTE: Your power supply may have an SATA connector, which is not used with any component in your computer.

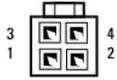
DC Power Connector P1



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

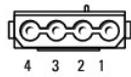
* Use 22-AWG wire instead of 18-AWG wire.

DC Power Connector P2



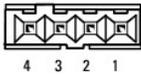
Pin Number	Signal Name	18-AWG Wire
1	COM	Black
2	COM	Black
3	+12 VDC	Yellow
4	+12 VDC	Yellow

DC Power Connector P3



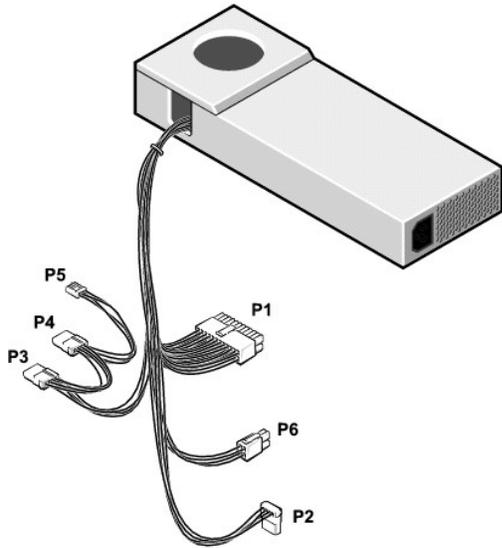
Pin Number	Signal Name	18-AWG Wire
1	+12 VDC	Yellow
2	COM	Black
3	COM	Black
4	+5 VDC	Red

DC Power Connectors P4 and P5



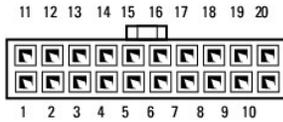
Pin Number	Signal Name	22-AWG Wire
1	+5 VDC	Red
2	COM	Black
3	COM	Black
4	+12 VDC	Yellow

Small Desktop Power Supply DC Connector Pin Assignments



NOTE: Your power supply may have an SATA connector, which is not used with any component in your computer.

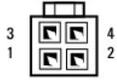
DC Power Connector P1



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

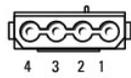
* Use 22-AWG wire instead of 18-AWG wire.

DC Power Connector P6



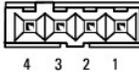
Pin Number	Signal Name	18-AWG Wire
1	COM	Black
2	COM	Black
3	+12 VDC	Yellow
4	+12 VDC	Yellow

DC Power Connectors P2, P3, and P4



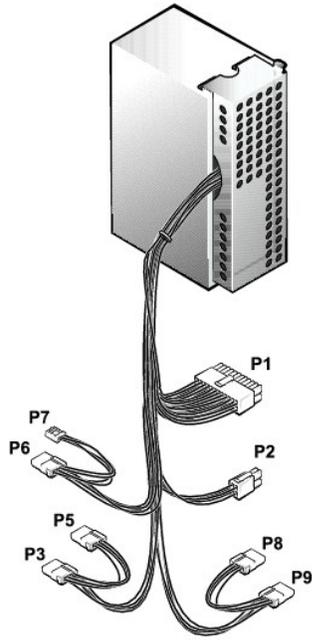
Pin Number	Signal Name	18-AWG Wire
1	+12 VDC	Yellow
2	COM	Black
3	COM	Black
4	+5 VDC	Red

DC Power Connector P5



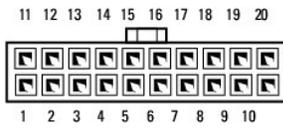
Pin Number	Signal Name	22-AWG Wire
1	+5 VDC	Red
2	COM	Black
3	COM	Black
4	+12 VDC	Yellow

Small Mini-tower Power Supply DC Connector Pin Assignments



NOTE: Your power supply may have an SATA connector, which is not used with any component in your computer.

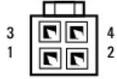
DC Power Connector P1



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

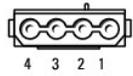
*Sense connector.

DC Power Connector P2



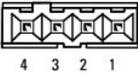
Pin Number	Signal Name	18-AWG Wire
1	COM	Black
2	COM	Black
3	+12 VDC	Yellow
4	+12 VDC	Yellow

DC Power Connectors P3, P5, P6, P8, and P9



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

DC Power Connector P7



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

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Regulatory Notices

Dell™ OptiPlex™ GX60 Systems User's Guide

Electromagnetic Compatibility (EMC) is the ability of items of electronic equipment to function properly together in the electronic environment. While this computer system has been designed and determined to be compliant with regulatory agency limits for EMI, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause interference with radio communications services, which can be determined by turning the equipment off and on, you are encouraged to try to correct the interference by one or more of the following measures:

- 1 Reorient the receiving antenna.
- 1 Relocate the computer with respect to the receiver.
- 1 Move the computer away from the receiver.
- 1 Plug the computer into a different outlet so that the computer and the receiver are on different branch circuits.

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

Dell™ computer systems are designed, tested, and classified for their intended electromagnetic environment. These electromagnetic environment classifications generally refer to the following harmonized definitions:

- 1 Class A is typically for business or industrial environments.
- 1 Class B is typically for residential environments.

Information Technology Equipment (ITE), including peripherals, expansion cards, printers, input/output (I/O) devices, monitors, and so on, that are integrated into or connected to the system should match the electromagnetic environment classification of the computer system.

A Notice About Shielded Signal Cables: Use only shielded cables for connecting peripherals to any Dell device to reduce the possibility of interference with radio communications services. Using shielded cables ensures that you maintain the appropriate EMC classification for the intended environment. For parallel printers, a cable is available from Dell. If you prefer, you can order a cable from Dell on the World Wide Web at accessories.us.dell.com/sna/category.asp?category_id=4117.

Most Dell computer systems are classified for Class B environments. However, the inclusion of certain options can change the rating of some configurations to Class A. To determine the electromagnetic classification for your system or device, see the following sections specific for each regulatory agency. Each section provides country-specific EMC/EMI or product safety information.

FCC Notices (U.S. Only)

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

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

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

- 1 This device may not cause harmful interference.
- 1 This device must accept any interference received, including interference that may cause undesired operation.

Class A

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

Class B

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

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

FCC Identification Information

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

Model numbers: DHS, DHP, and DHM

- 1 Company name:
Dell Inc.
One Dell Way
Round Rock, Texas 78682 USA
512-338-4400

IC Notice (Canada Only)

Most Dell computer systems (and other Dell digital apparatus) are classified by the Industry Canada (IC) Interference-Causing Equipment Standard #3 (ICES-003) as **Class B digital devices**. To determine which classification (Class A or B) applies to your computer system (or other Dell digital apparatus), examine all registration labels located on the bottom, side, or the back panel of your computer (or other digital apparatus). A statement in the form of "IC Class A ICES-003" or "IC Class B ICES-003" will be located on one of these labels. Note that Industry Canada regulations provide that changes or modifications not expressly approved by Dell could void your authority to operate this equipment.

This Class B (or Class A, if so indicated on the registration label) digital apparatus meets the requirements of the Canadian Interference-Causing Equipment Regulations.
Cet appareil numérique de la Classe B (ou Classe A, si ainsi indiqué sur l'étiquette d'enregistrement) respecte toutes les exigences du Règlement sur le Matériel Brouilleur du Canada.

CE Notice (European Union)

Marking by the symbol **CE** indicates compliance of this Dell computer to the EMC Directive and the Low Voltage Directive of the European Union. Such marking is indicative that this Dell system meets the following technical standards:

- 1 EN 55022 — "Information Technology Equipment — Radio Disturbance Characteristics — Limits and Methods of Measurement."
- 1 EN 55024 — "Information Technology Equipment - Immunity Characteristics - Limits and Methods of Measurement."
- 1 EN 61000-3-2 — "Electromagnetic Compatibility (EMC) - Part 3: Limits - Section 2: Limits for Harmonic Current Emissions (Equipment Input Current Up to and Including 16 A Per Phase)."
- 1 EN 61000-3-3 — "Electromagnetic Compatibility (EMC) - Part 3: Limits - Section 3: Limitation of Voltage Fluctuations and Flicker in Low-Voltage Supply Systems for Equipment With Rated Current Up to and Including 16 A."
- 1 EN 60950 — "Safety of Information Technology Equipment."

For -48 volt-direct-current (VDC) powered systems, the following set of standards applies. See the "Declaration of Conformity" to determine whether a particular system meets EN 50082-1 or EN 50082-2 requirements.

Set 2: For -48-VDC powered systems

- 1 EN 55022 — "Information Technology Equipment — Radio Disturbance Characteristics — Limits and Methods of Measurement."
- 1 EN 50082-1 — "Electromagnetic Compatibility - Generic Immunity Standard - Part 1: Residential, Commercial and Light Industry."
- 1 EN 50082-2 — "Electromagnetic Compatibility - Generic Immunity Standard - Part 2: Industrial Environment."
- 1 EN 60950 — "Safety of Information Technology Equipment."

NOTE: EN 55022 emissions requirements provide for two classifications:

- 1 Class A is for typical commercial areas.
- 1 Class B is for typical domestic areas.

This Dell device is classified for use in a typical Class B domestic environment.

A "Declaration of Conformity" in accordance with the preceding directives and standards has been made and is on file at Dell Inc. Products Europe BV, Limerick, Ireland.

Simplified Chinese Class A Warning Notice (China Only)

On Class A systems, the following warning will appear near the regulatory label:

Warning: This is a Class A product. In a domestic environment this product may cause radio interference, in which case the user may be required to take adequate measures.

声明

此为A级产品，在生活环境中，该产品可能会造成无线电干扰。在这种情况下，可能需要用户对其干扰采取切实可行的措施。

EN 55022 Compliance (Czech Republic Only)

This device belongs to Class B devices as described in EN 55022, unless it is specifically stated that it is a Class A device on the specification label. The following applies to devices in Class A of EN 55022 (radius of protection up to 30 meters). The user of the device is obliged to take all steps necessary to remove sources of interference to telecommunication or other devices.

Pokud není na typovém štítku počítače uvedeno, že spadá do třídy A podle EN 55022, spadá automaticky do třídy B podle EN 55022. Pro zařízení zařazená do třídy A (ochranné pásmo 30m) podle EN 55022 platí následující. Dojde-li k rušení telekomunikačních nebo jiných zařízení, je uživatel povinen provést taková opatření, aby rušení odstranil.

VCCI Notice (Japan Only)

Most Dell computer systems are classified by the Voluntary Control Council for Interference (VCCI) as Class B information technology equipment (ITE). However, the inclusion of certain options can change the rating of some configurations to Class A. ITE, including peripherals, expansion cards, printers, input/output (I/O) devices, monitors, and so on, integrated into or connected to the system should match the electromagnetic environment classification (Class A or B) of the computer system.

To determine which classification applies to your computer system, examine the regulatory labels/markings located on the bottom, side, or back panel of your computer. Once you have determined your system's VCCI classification, read the appropriate VCCI notice (see "VCCI Class A ITE Regulatory Mark" or "VCCI Class B ITE Regulatory Mark").

Class A ITE

この装置は、情報処理装置等電波障害自主規制協議会 (VCCI) の基準に基づくクラス A 情報技術装置です。この装置を家庭環境で使用すると電波妨害を引き起こすことがあります。この場合には使用者が適切な対策を講ずるよう要求されることがあります。

This is a Class A product based on the standard of the Voluntary Control Council for Interference (VCCI) for information technology equipment. If this equipment is used in a domestic environment, radio disturbance may arise. When such trouble occurs, the user may be required to take corrective actions.

VCCI Class A ITE Regulatory Mark

If the regulatory label includes the following marking, your computer is a Class A product:

VCCI

Class B ITE

この装置は、情報処理装置等電波障害自主規制協議会 (VCCI) の基準に基づくクラス B 情報技術装置です。この装置は家庭環境で使用することを目的としています。ラジオやテレビジョン受信機に近接して使用されると、受信障害を引き起こすことがあります。取扱説明書に従って正しい取り扱いをしてください。

This is a Class B product based on the standard of the Voluntary Control Council for Interference (VCCI) for information technology equipment. If this equipment is used near a radio or television receiver in a domestic environment, it may cause radio interference. Install and use the equipment according to the instruction manual.

VCCI Class B ITE Regulatory Mark

If the regulatory label includes the following marking, your computer is a Class B product:



MIC Notice (Republic of Korea Only)

To determine which classification (Class A or B) applies to your computer (or other Dell digital device), examine the Republic of Korean Ministry of Information and Communications (MIC) registration labels located on your computer (or other Dell digital device). The MIC label may be located separately from the other regulatory marking applied to your product. Line two of the label identifies the emissions class for the product—"A" for Class A products or "B" for Class B products.

NOTE: MIC emissions requirements provide for two classifications:

- 1 Class A devices are for business purposes.
- 1 Class B devices are for nonbusiness purposes.

Class A Device

기종별	사용자안내문
A급 기기 (업무용 정보통신기기)	이 기기는 업무용으로 전자파적합등록을 한 기기이오니 판매자 또는 사용자는 이 점을 주의하시기 바라며 만약 잘못 판매 또는 구입하였을 때에는 가정용으로 교환하시기 바랍니다.

Please note that this device has been approved for business purposes with regard to electromagnetic interference. If you find that this device is not suitable for your use, you may exchange it for a nonbusiness-purpose device.

MIC Class A Regulatory Label

If the regulatory label includes the following marking, your computer is a Class A product:



1. 기기의 명칭(모델명):
2. 인증번호:(A)
3. 인증받은 자의 상호:
4. 제조년월일:
5. 제조자/제조국가:

Class B Device

기종별	사용자안내문
8급 기기 (가정용 정보통신기기)	이 기기는 가정용으로 전자파적합등록을 한 기기로서 주거지역에서는 물론 모든 지역에서 사용할 수 있습니다.

Please note that this device has been approved for non-business purposes and may be used in any environment, including residential areas.

MIC Class B Regulatory Label

If the regulatory label includes the following marking, your computer is a Class B product:



1. 기기의 명칭(모델명):
2. 인증번호:(B)
3. 인증받은 자의 상호:
4. 제조년월일:
5. 제조자/제조국가:

Polish Center for Testing and Certification Notice

The equipment should draw power from a socket with an attached protection circuit (a 3-prong socket). All equipment that works together (computer, monitor, printer, and so on) should have the same power supply source.

The phasing conductor of the room's electrical installation should have a reserve short-circuit protection device in the form of a fuse with a nominal value no larger than 16 amperes (A).

To completely switch off the equipment, the power supply cable must be removed from the power supply socket, which should be located near the equipment and easily accessible.

A protection mark "B" confirms that the equipment is in compliance with the protection usage requirements of standard PN-EN 55022: 1996.

Wymagania Polskiego Centrum Badań i Certyfikacji

Urządzenie powinno być zasilane z gniazda z przyłączonym obwodem ochronnym (gniazdo z kołkiem). Współpracujące ze sobą urządzenia (komputer, monitor, drukarka) powinny być zasilane z tego samego źródła.

Instalacja elektryczna pomieszczenia powinna zawierać w przewodzie fazowym rezerwową ochronę przed zwarciami, w postaci bezpiecznika o wartości znamionowej nie większej niż 16A (amperów).

W celu całkowitego wyłączenia urządzenia z sieci zasilania, należy wyjąć wtyczkę kabla zasilającego z gniazdka, które powinno znajdować się w pobliżu urządzenia i być łatwo dostępne. Znak bezpieczeństwa "B" potwierdza zgodność urządzenia z wymaganiami bezpieczeństwa użytkownika zawartymi w PN-EN 60950:2000 i PN-EN 55022:2000.

Jeżeli na tabliczce znamionowej umieszczono informacje, że urządzenie jest klasy A, to oznacza, że urządzenie w środowisku mieszkalnym może powodować zakłócenia radioelektryczne. W takich przypadkach można zadecydować od jego użytkownika zastosowania odpowiednich środków zaradczych.

Pozostałe instrukcje bezpieczeństwa

- Nie należy używać wtyczek adapterowych lub usuwać kołka obwodu ochronnego z wtyczki. Jeżeli konieczne jest użycie przedłużacza to należy użyć przedłużacza 3-żyłowego z prawidłowo połączonym przewodem ochronnym.
- System komputerowy należy zabezpieczyć przed nagłymi, chwilowymi wzrostami lub spadkami napięcia, używając eliminatora przepięć, urządzenia dopasowującego lub bezzakłócenowego źródła zasilania.
- Należy upewnić się, aby nie leżało na kablach systemu komputerowego, oraz aby kable nie były umieszczone w miejscu, gdzie można byłoby na nie nadeptywać lub potykać się o nie.
- Nie należy rozlewać napojów ani innych płynów na system komputerowy.
- Nie należy wpychać żadnych przedmiotów do otworów systemu komputerowego, gdyż może to spowodować pożar lub porażenie prądem, poprzez zwarcie elementów wewnętrznych.
- System komputerowy powinien znajdować się z dala od grzejników i źródeł ciepła. Ponadto, nie należy blokować otworów wentylacyjnych. Należy unikać kładzenia luźnych papierów pod komputer oraz umieszczania komputera w ciasnym miejscu bez możliwości cyrkulacji powietrza wokół niego.

BSMI Notice (Taiwan Only)

If you find a  or  mark on the regulatory label on the bottom, side, or back panel of your computer, the following section is applicable:

BSMI 通告 (僅限於台灣)

大多數的 Dell 電腦系統被 BSMI (經濟部標準檢驗局) 劃分為乙類數位裝置。但是，使用某些選件會使有些組態的等級變成甲類。若要確定您的電腦系統適用等級，請檢查所有位於電腦底部或背面板、擴充卡安裝托架，以及擴充卡上的 BSMI 註冊標籤。如果其中有一甲類標籤，即表示您的系統為甲類數位裝置。如果只有 BSMI 的檢驗號碼標籤，則表示您的系統為乙類數位裝置。

一旦確定了系統的 BSMI 等級，請閱讀相關的 BSMI 通告。請注意，BSMI 通告規定凡是未經 Dell Inc. 明確批准的擅自變更或修改，將導致您失去此設備的使用權。

此裝置符合 BSMI (經濟部標準檢驗局) 的規定，使用時須符合以下兩項條件：

- 此裝置不會產生有害干擾。
- 此裝置必須能接受所接收到的干擾，包括可能導致無法正常作業的干擾。

甲類

此設備經測試證明符合 BSMI (經濟部標準檢驗局) 之甲類數位裝置的限制規定。這些限制的目的是為了在商業環境中使用此設備時，能提供合理的保護以防止有害的干擾。此設備會產生、使用並散發射頻能量；如果未遵照製造廠商的指導手冊來安裝和使用，可能會干擾無線電通訊。但是，這並不保證在個別安裝中不會產生干擾。您可以透過關閉和開啟此設備來判斷它是否會對廣播和電視訊造成干擾；如果確實如此，我們建議您嘗試以下列一種或多種方法來排除干擾：

警告使用者：
這是甲類的資訊產品，在居住的環境中使用時，可能會造成射頻干擾，
在這種情況下，使用者會被要求採取某些適當的對策。

乙類

此設備經測試證明符合 BSMI (經濟部標準檢驗局) 之乙類數位裝置的限制規定。這些限制的目的是為了在住宅區安裝時，能防止有害的干擾，提供合理的保護。此設備會產生、使用並散發射頻能量；如果未遵照製造廠商的指導手冊來安裝和使用，可能會干擾無線電通訊。但是，這並不保證在個別安裝中不會產生干擾。您可以透過關閉和開啟此設備來判斷它是否會對廣播和電視訊造成干擾；如果確實如此，我們建議您嘗試以下列一種或多種方法來排除干擾：

- 重新調整天線的接收方向或重新放置接收天線。
- 增加設備與接收器的距離。
- 將設備連接至不同的插座，使設備與接收器連接在不同的電路上。
- 請向經銷商或有經驗的無線電 / 電視技術人員查詢，以獲得幫助。

NOM Information (Mexico Only)

The following information is provided on the device(s) described in this document in compliance with the requirements of the official Mexican standards (NOM):

Exporter:	Dell Inc. One Dell Way Round Rock, TX 78682
Importer:	Dell Computer de México, S.A. de C.V. Paseo de la Reforma 2620 - 11º Piso Col. Lomas Altas 11950 México, D.F.
Ship to:	Dell Computer de México, S.A. de C.V. al Cuidado de Kuehne & Nagel de México S. de R.L. Avenida Soles No. 55 Col. Peñon de los Baños 15520 México, D.F.
Model numbers:	DHP, DHS, and DHM
Supply voltage:	115/230 VAC
Frequency:	60/50 Hz
Input current rating:	DHP 2.0/1.0A, DHS 2.0/1.0A, DHM 6.0/3.0A

ENERGY STAR® Compliance

Certain configurations of Dell computers comply with the requirements set forth by the Environmental Protection Agency (EPA) for energy-efficient computers. If the front panel of your computer bears the ENERGY STAR® Emblem, or if an ENERGY STAR® Emblem screen appears when you turn on your computer, your original configuration complies with these requirements and all ENERGY STAR® power management features of the computer are enabled.

NOTE: Any Dell computer bearing the ENERGY STAR® Emblem on the computer or on a start-up screen is certified to comply with EPA ENERGY STAR® requirements as configured when shipped by Dell. Any changes you make to this configuration (such as installing additional expansion cards or drives) may increase the computer's power consumption beyond the limits set by the EPA's ENERGY STAR® Computers program.

ENERGY STAR® Emblem



The EPA's ENERGY STAR® Computers program is a joint effort between the EPA and computer manufacturers to reduce air pollution by promoting energy-efficient computer products. The EPA estimates that use of ENERGY STAR® computer products can save computer users up to two billion dollars annually in electricity costs. In turn, this reduction in electricity usage can reduce emissions of carbon dioxide, the gas primarily responsible for the greenhouse effect, and sulfur dioxide and nitrogen oxides, the primary causes of acid rain.

You can also help reduce electricity usage and its side effects by turning off your computer when it is not in use for extended periods of time, particularly at night and on weekends.

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System Board

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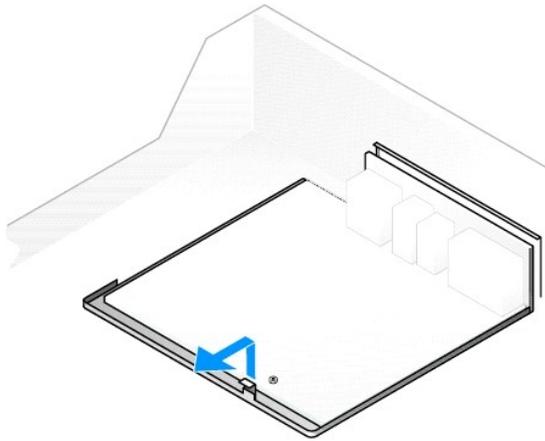
⚠ CAUTION: Before you begin any of the procedures in this section, follow the [safety instructions](#).

🔧 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](#)."

🔧 NOTICE: The system board and metal tray are connected and are removed as one piece.

2. Remove any components that restrict access to the system board.
3. Disconnect all cables from the system board.
4. Before you remove the existing system board assembly, visually compare the replacement system board to the existing system board to make sure that you have the correct part.
5. Pull up on the tab and slide the system board assembly toward the front of the computer, and then lift it up and away.



6. Place the system board assembly that you just removed next to the replacement system board.
7. 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 processor and heat-sink assembly can get hot. To avoid burns, ensure that the processor and assembly have had sufficient time to cool before you touch them.

- b. Remove the heat-sink assembly and processor from the existing system board and transfer them to the replacement system board.
8. Configure the settings of the replacement system board.
 9. [Set the jumpers](#) on the replacement system board so they are identical to the ones on the existing board.

🔧 NOTE: Some components and connectors on the replacement system board may be in different locations than the corresponding connectors on the existing system board.

10. Orient the replacement board by aligning the notches on the bottom to the tabs on the computer.
11. Slide the system board assembly toward the back of the computer until it clicks into place.
12. Replace any components and cables that you removed from the system board.
13. Reconnect all cables to their connectors at the back of the computer.
14. [Close the computer cover](#).

15. Attach the computer stand, if used.

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

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

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CAUTION: Safety Instructions

Dell™ OptiPlex™ GX60 Systems User's Guide

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

SAFETY: General

- 1 Do not attempt to service the computer yourself unless you are a trained service technician. Always follow installation instructions closely.
- 1 To help prevent electric shock, plug the computer and device power cables into properly grounded electrical outlets. These cables are equipped with 3-prong plugs to help ensure proper grounding. Do not use adapter plugs or remove the grounding prong from a cable. If you must use an extension cable, use a 3-wire cable with properly grounded plugs.
- 1 To help avoid the potential hazard of electric shock, do not use your computer during an electrical storm.
- 1 To help avoid the potential hazard of electric shock, do not connect or disconnect any cables or perform maintenance or reconfiguration of this product during an electrical storm.
- 1 If your computer includes a modem, the cable used with the modem should be manufactured with a minimum wire size of 26 American wire gauge (AWG) and an FCC-compliant RJ-11 modular plug.
- 1 Before you clean your computer, disconnect the computer from the electrical outlet. Clean your computer with a soft cloth dampened with water. Do not use liquid or aerosol cleaners, which may contain flammable substances.
- 1 To help avoid possible damage to the system board, wait 5 seconds after turning off the computer before disconnecting a device from the computer.
- 1 To avoid shorting out your computer when disconnecting a network cable, first unplug the cable from the network adapter on the back of your computer, and then from the network jack. When reconnecting a network cable to your computer, first plug the cable into the network jack, and then into the network adapter.
- 1 To help protect your computer from sudden, transient increases and decreases in electrical power, use a surge suppressor, line conditioner, or uninterruptible power supply (UPS).
- 1 Ensure that nothing rests on your computer's cables and that the cables are not located where they can be stepped on or tripped over.
- 1 Do not push any objects into the openings of your computer. Doing so can cause fire or electric shock by shorting out interior components.
- 1 Keep your computer away from radiators and heat sources. Also, do not block cooling vents. Avoid placing loose papers underneath your computer; do not place your computer in a closed-in wall unit or on a bed, sofa, or rug.
- 1 Do not spill food or liquids on your computer. If the computer gets wet, consult the procedures in "[Solving Problems](#)."



SAFETY: When Using Your Computer

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



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

- 1 Your computer is equipped with one of the following:
 - o A fixed-voltage power supply — Computers with a fixed-voltage power supply do not have a voltage selection switch on the back panel and operate at only one voltage (see the regulatory label on the outside of the computer for its operating voltage).
 - o An auto-sensing voltage circuit — Computers with an auto-sensing voltage circuit do not have a voltage selection switch on the back panel and automatically detect the correct operating voltage.
 - o A manual voltage selection switch — Computers with a voltage selection switch on the back panel must be manually set to operate at the correct operating voltage. Set the switch to the position that most closely matches the voltage used in your location.



NOTICE: To help avoid damaging a computer with a manual voltage selection switch, set the switch for the voltage that most closely matches the AC power available in your location. For Japan, the voltage selection switch must be set to the 115-V position even though the AC power available in Japan is 100 V. Also, ensure that your monitor and attached devices are electrically rated to operate with the AC power available in your location.

- 1 Before working inside the computer, unplug the computer to help prevent electric shock or system board damage. Certain system board components continue to receive power any time the computer is connected to AC power.

SAFETY: When Working Inside Your Computer

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

 **CAUTION:** Do not attempt to service the computer yourself, except as explained in your online Dell™ documentation or in instructions otherwise provided to you by Dell. Always follow installation and service instructions closely.

 **NOTICE:** To help avoid possible damage to the system board, wait 5 seconds after turning off the computer before removing a component from the system board or disconnecting a device from the computer.

1. Perform an orderly computer shutdown using the operating system menu.
2. Turn off your computer and any devices connected to the computer.
3. Ground yourself by touching an unpainted metal surface on the chassis, such as the metal around the card-slot openings at the back of the computer, before touching anything inside your computer.

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

4. Disconnect your computer and devices, including the monitor, from their electrical outlets. Also, disconnect any telephone or telecommunication lines from the computer.

Doing so reduces the potential for personal injury or shock.

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

1. 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 disconnecting 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.
1. 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 chip by its edges, not by its pins.

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

SAFETY: Protecting Against Electrostatic Discharge

Static electricity can harm delicate components inside your computer. To prevent static damage, discharge static electricity from your body before you touch any of your computer's electronic components, such as the processor. You can do so by touching an unpainted metal surface on the computer chassis.

As you continue to work inside the computer, periodically touch an unpainted metal surface to remove any static charge your body may have accumulated.

You can also take the following steps to prevent damage from electrostatic discharge (ESD):

1. Do not remove components from their antistatic packing material until you are ready to install the component in your computer. Just before unwrapping the antistatic packaging, discharge static electricity from your body.
1. When transporting an electrostatic sensitive component, first place it in an antistatic container or packaging.
1. Handle all electrostatic sensitive components in a static-safe area. If possible, use antistatic floor pads and workbench pads.

SAFETY: Ergonomic Computing Habits

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

 **CAUTION:** Viewing the monitor screen for extended periods of time may result in eye strain.

For comfort and efficiency, observe the [ergonomic guidelines](#) when setting up and using your computer.

SAFETY: Battery Disposal



Your computer uses a lithium battery. The lithium battery is a long-life battery, and it is very possible that you will never need to replace it. However, should you need to replace it, see "[Battery](#)."

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

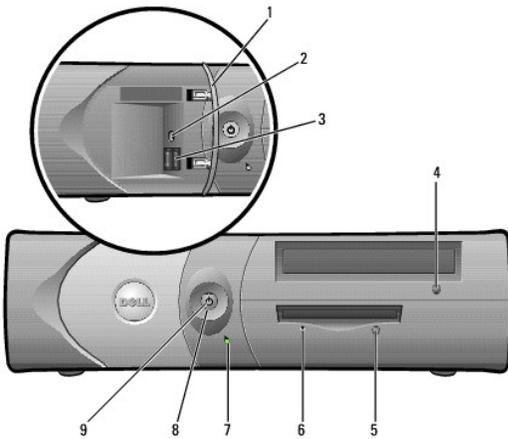
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About Your Computer

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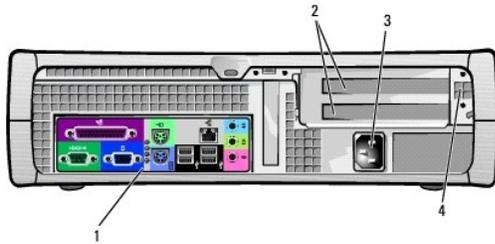
- [Front View](#)
- [Back View](#)
- [Inside Your Computer](#)
- [Attaching and Removing the Computer Stand](#)

Front View

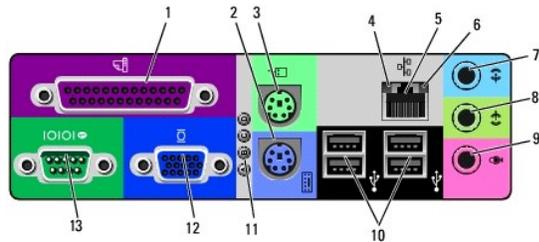


1	front panel door	Open the door to use the front panel connectors.
2	headphone connector	Use the headphone connector to attach headphones and most kinds of speakers.
3	USB 2.0 connectors (2)	Use the front USB connectors for devices that you connect occasionally, such as joysticks or cameras, or for bootable USB devices (see "Booting to a USB Device" for more information). It is recommended that you use the back USB connectors for devices that typically remain connected, such as printers and keyboards.
4	CD/DVD drive eject button	Press to eject a CD or DVD from the drive.
5	floppy-drive eject button	Press to eject a floppy disk from the floppy drive.
6	floppy-drive activity light	The floppy drive light is on when the computer reads data from or writes data to the floppy drive. Wait until this light turns off before you remove the floppy disk from the drive.
7	hard-drive activity light	The hard drive light is on when the computer reads data from or writes data to the hard drive. The light might also be on when a device such as your CD player is operating.
8	power button	Press to turn on the computer. <p> NOTICE: To avoid losing data, do not turn off the computer by pressing the power button for 6 seconds or longer. Instead, perform an operating system shutdown.</p> <p>NOTE: If your operating system has ACPI enabled, when you press the power button the computer will perform an operating system shutdown.</p>
9	power light	The power light illuminates and blinks or remains solid to indicate different states: <ul style="list-style-type: none"> 1 No light — The computer is in the off state (S4, S5, or mechanical OFF). 1 Steady green — The computer is in the normal operating state. 1 Blinking green — The computer is in a power-saving state (S1 or S3). <p>To exit from a power-saving state, press the power button or click or move the mouse.</p> <p>See "Diagnostic Lights" for a description of light codes that can help you troubleshoot problems with your computer.</p>

Back View



1	back-panel connectors	The connectors for your computer.
2	card slots	The slot for PCI cards or a second serial port card.
3	power connector	The connection for the power cable.
4	voltage selection switch (may not be available on all computers)	See the safety instructions for more information.



1	parallel connector	Connect a parallel device, such as a printer, to the parallel connector. If you have a USB printer, plug it into a USB connector. NOTE: The integrated parallel connector is automatically disabled if the computer detects an installed card containing a parallel connector configured to the same address. For more information, see " System Setup Options ."
2	keyboard connector	If you have a standard keyboard, plug it into the purple Keyboard connector. If you have a USB keyboard, plug it into a USB connector.
3	mouse connector	Plug a standard mouse into the green mouse connector. Turn off the computer and any attached devices before you connect a mouse to the computer. If you have a USB mouse, plug it into a USB connector. If your computer is running Windows 2000 or Windows XP, Dell installed the necessary mouse drivers on your hard drive.
4	link integrity light	<ul style="list-style-type: none"> 1 Green — A good connection exists between a 10-Mbps network and the computer. 1 Orange — A good connection exists between a 100-Mbps network and the computer. 1 Off — The computer is not detecting a physical connection to the network.
5	network adapter	Attach the UTP cable to an RJ45 jack wall plate or to an RJ45 port on a UTP concentrator or hub and press the other end of the UTP cable into the network adapter connector until the cable snaps securely into place. Dell recommends the use of Category 5 wiring and connectors for our customers' networks.
6	network activity light	The yellow light flashes when the computer is transmitting or receiving network data. A high volume of network traffic may make this light appear to be in a steady "on" state.
7	line-in connector	Use the blue line-in connector (available on computers with integrated sound) to attach a record/playback device such as a cassette player, CD player, or VCR. On computers with a sound card, the line-in connector is on the card.
8	line-out connector	Use the green line-out connector (available on computers with integrated sound) to attach headphones and most speakers with integrated amplifiers. On computers with a sound card, the line-in connector is on the card.
9	microphone connector	Use the pink microphone connector (available on computers with integrated sound) to attach a personal computer microphone for voice or musical input into a sound or telephony program. On computers with a sound card, the microphone connector is on the card.
10	USB connectors	Connect USB devices such as a mouse, keyboard, printer, joystick, and computer speakers into any of the USB connectors.
11	diagnostic lights	Use the lights to help you troubleshoot a computer problem based on the diagnostic code. For more information, see " Diagnostic Lights ."

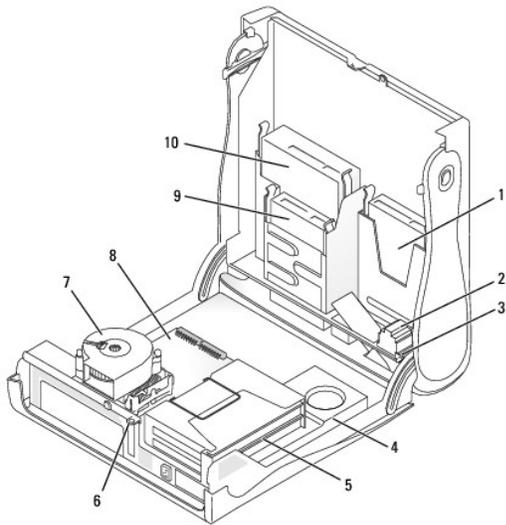
12	video connector	Plug the cable from your VGA-compatible monitor into the blue connector.
13	serial connector	Connect a serial device, such as a handheld device, to the serial port. If you have a second serial connector card installed, you can connect a second device to that connector. For more information, see " System Setup Options ."

Inside Your Computer

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

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

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



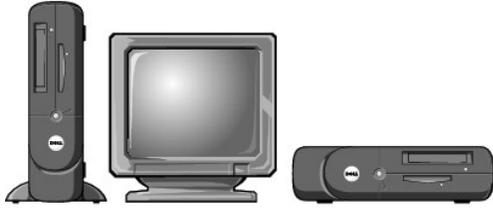
1	hard drive	6	padlock ring
2	chassis intrusion switch	7	heat sink and blower assembly
3	internal speaker	8	system board
4	power supply	9	floppy drive
5	card cage	10	CD/DVD drive

Cable Colors

Hard drive	Blue pull tab
Floppy drive	Black pull tab
CD/DVD drive	Orange pull tab

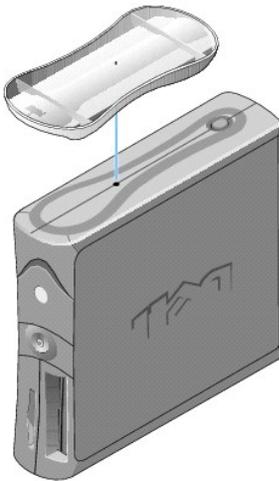
Attaching and Removing the Computer Stand

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



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

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



To remove the stand:

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

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Small Desktop Computer

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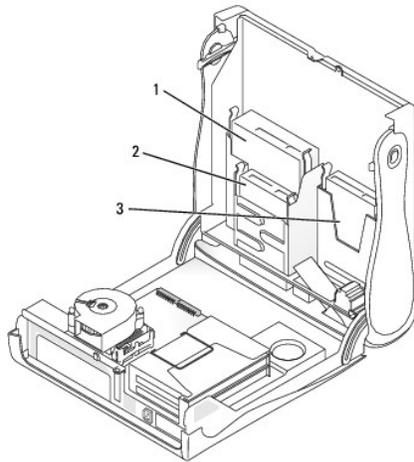
Drives

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- [General Installation Guidelines](#)
 - [Hard Drive](#)
 - [Front-Panel Inserts](#)
 - [Floppy Drive](#)
 - [CD/DVD Drive](#)
-

Your computer supports:

- 1 One hard drive
- 1 One floppy or optional Zip drive
- 1 One optional CD or DVD drive



1	CD/DVD drive
2	floppy drive
3	hard drive

General Installation Guidelines

Connect hard drives to the connector labeled "IDE1," and connect CD/DVD drives to the connector labeled "IDE2."

IDE Drive Addressing

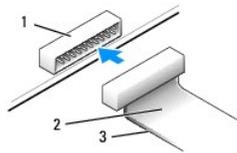
When you connect two IDE devices to a single IDE interface cable and configure them for the cable select setting, the device attached to the last connector on the interface cable is the master or boot device (drive 0), and the device attached to the middle connector on the interface cable is the slave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

Connecting Drive Cables

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

IDE Drive Connector

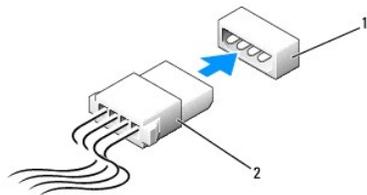


1	interface connector
2	interface cable
3	colored stripe on cable

Most interface connectors are keyed for correct insertion; that is, a notch or a missing pin on one connector matches a tab or a filled-in hole on the other connector. Keyed connectors ensure that the pin-1 wire in the cable (indicated by the colored stripe along one edge of the cable) goes to the pin-1 end of the connector. The pin-1 end of a connector on a board or a card is usually indicated by a silk-screened "1" printed directly on the board or card.

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

Power Cable Connector



1	power input connector
2	power cable

Connecting and Disconnecting Drive Cables

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

Hard Drive

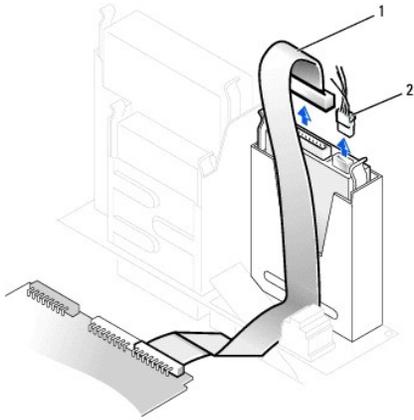
CAUTION: Before you begin any of the procedures in this section, follow the [safety instructions](#).

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

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](#)."

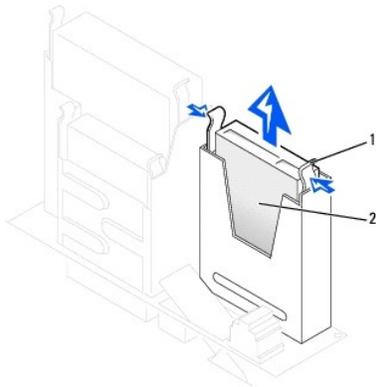
Removing a Hard Drive

1. Disconnect the power and hard-drive cables from the drive.



1	hard-drive cable
2	power cable

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



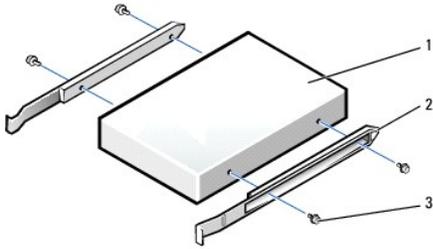
1	tabs (2)
2	hard drive

Installing a Hard Drive

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

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

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

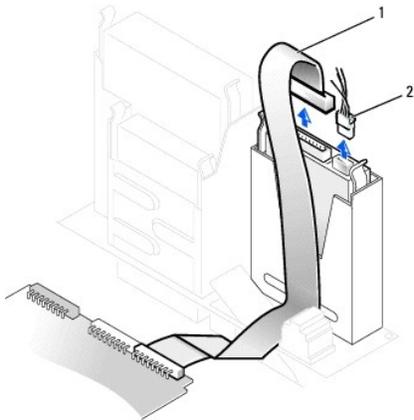


1	drive
2	bracket rails (2)
3	screws (4)

4. Install the hard drive into the computer by gently sliding the drive into place until you hear it securely click.

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

5. Connect the power and hard-drive cables to the drive.



1	hard-drive cable
2	power cable

6. Check all connectors to be certain that they are properly cabled and firmly seated.

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

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

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

9. Connect your computer and devices to 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.

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 **Primary Drive** option (**0** or **1**).

13. Exit system setup, and reboot the computer.

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

For instructions, see the documentation that came with your operating system.

15. Test the hard drive by running the [Dell Diagnostics](#).
16. If the drive you just installed is the primary drive, install your operating system on the hard drive.

For instructions, see the documentation that came with your operating system.

After you open and close the cover, the chassis intrusion detector, if enabled, causes the following message to appear on the screen at the next computer start-up:

ALERT! Cover was previously removed.

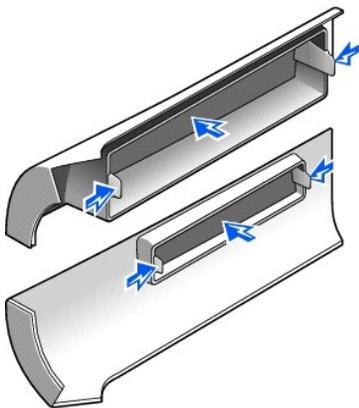
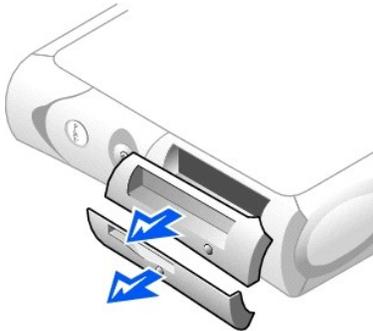
17. [Reset the chassis intrusion detector](#) by changing **Chassis Intrusion** to **Enabled** or **Enabled- Silent**.

 **NOTE:** If a setup password has been assigned by someone else, contact your network administrator for information on resetting the chassis intrusion detector.

Front-Panel Inserts

If you are installing a new floppy or CD/DVD drive rather than replacing a drive, remove the front-panel inserts:

1. Facing the front of the computer, use your fingers to remove the front-panel cover.



2. Press the inserts until they pop free of the front-panel cover.
-

Floppy Drive

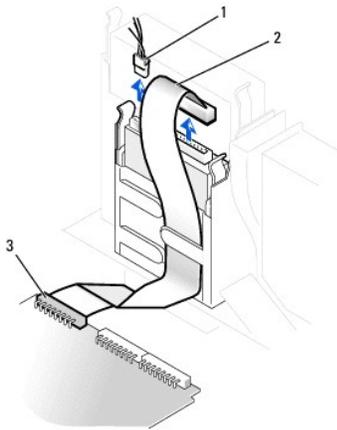
⚠ CAUTION: Before you begin any of the procedures in this section, follow the [safety instructions](#).

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

1. Follow the procedures in "[Before You Begin](#)."
2. If you are installing a new floppy drive rather than replacing a drive, [remove the front-panel inserts](#).

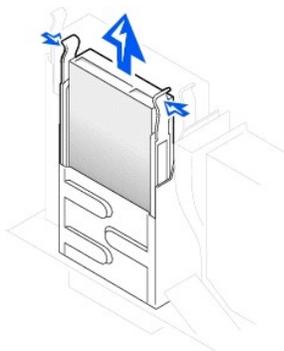
Removing a Floppy Drive

1. Disconnect the power and data cables from the CD/DVD drive located above the floppy drive.
2. Disconnect the power and floppy-drive cables from the back of the floppy drive.
3. Disconnect the floppy-drive cable from the system board connector (labeled DSKT).



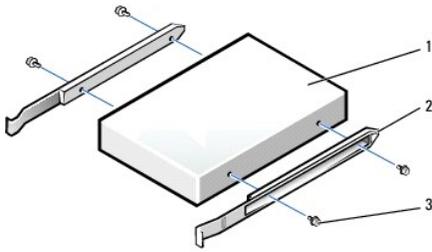
1	power cable
2	floppy-drive cable
3	floppy-drive connector (DSKT)

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



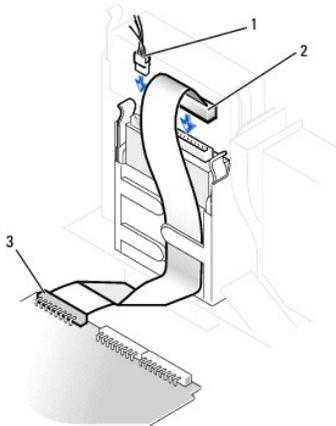
Installing a Floppy Drive

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



1	drive
2	bracket rails (2)
3	screws (4)

2. Gently slide the drive into place until the tabs securely click into position.
3. Attach the power and floppy-drive cables to the floppy drive.
4. Connect the other end of the floppy-drive cable to the connector labeled DSKT on the system board.



1	power cable
2	floppy-drive cable
3	floppy-drive connector (DSKT)

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

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

9. Connect your computer and devices to 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.

10. [Enter system setup](#) and update the appropriate **Diskette Drive A** option to reflect the size and capacity of your new floppy drive.

After you open and close the cover, the chassis intrusion detector, if enabled, causes the following message to appear on the screen at the next computer start-up:

ALERT! Cover was previously removed.

11. [Reset the chassis intrusion detector](#) by changing **Chassis Intrusion** to **Enabled** or **Enabled- Silent**.

 **NOTE:** If a setup password has been assigned by someone else, contact your network administrator for information on resetting the chassis intrusion detector.

12. Verify that your computer works correctly by running the [Dell Diagnostics](#).
-

CD/DVD Drive

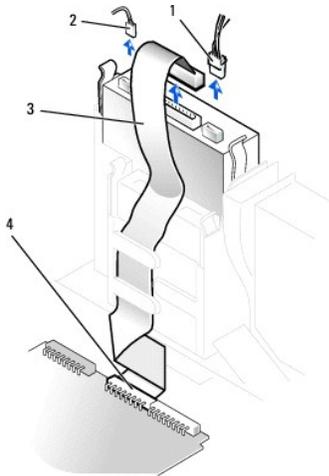
 **CAUTION:** Before you begin any of the procedures in this section, follow the [safety instructions](#).

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

1. Follow the procedures in "[Before You Begin](#)."
2. If you are installing a new CD/DVD drive rather than replacing a drive, [remove the front-panel inserts](#).

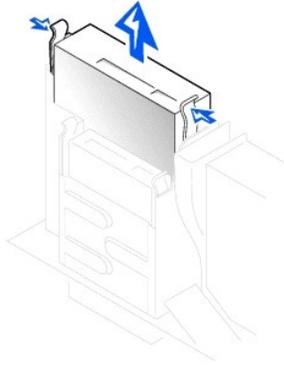
Removing a CD/DVD Drive

1. Disconnect the power, audio, and CD/DVD drive cables from the back of the drive.
2. Disconnect the other end of the CD/DVD drive cable from the system board connector (IDE2).



1	power cable
2	audio cable
3	CD/DVD drive cable
4	IDE2 connector

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

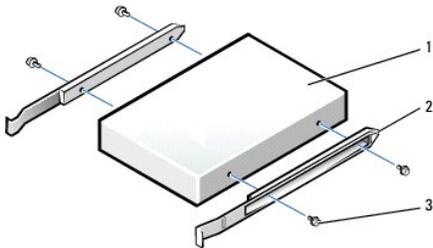


Installing a CD/DVD Drive

1. Unpack the drive and prepare it for installation.

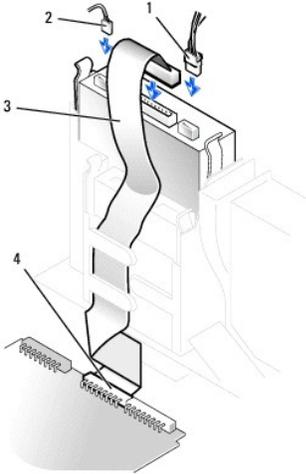
Check the documentation that accompanied the drive to verify that the drive is configured for your computer. If you are installing an IDE drive, configure the drive for the cable select setting.

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



1	drive
2	bracket rails (2)
3	screws (4)

3. Gently slide the drive into place until the tabs securely click into position.
4. Connect the power, audio, and CD/DVD drive cables to the drive.
5. Connect the other end of the CD/DVD drive cable to the IDE2 system board connector.



1	power cable
2	audio cable
3	CD/DVD drive cable
4	IDE2 connector

6. If you are installing a drive that has its own controller card, install the controller card in a card slot.
7. Check all cable connections, and fold cables out of the way to provide airflow for the fan and cooling vents.
8. If the CD/DVD drive bay was previously empty, [remove the front-panel inserts](#).
9. [Close the computer cover](#).
10. [Attach the computer stand](#) (optional).

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

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. Update your configuration information by setting the appropriate **Drive** option (**0** or **1**) under **Drives: Secondary** to **Auto**. See "[Drive Configuration](#)" for more information.

After you open and close the cover, the chassis intrusion detector, if enabled, causes the following message to appear on the screen at the next computer start-up:

ALERT! Cover was previously removed.

13. [Reset the chassis intrusion detector](#) by changing **Chassis Intrusion** to **Enabled** or **Enabled- Silent**.

📌 **NOTE:** If a setup password has been assigned by someone else, contact your network administrator for information on resetting the chassis intrusion detector.

14. Verify that your computer works correctly by running the [Dell Diagnostics](#).

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PCI Cards and Serial Port Adapters

Dell™ OptiPlex™ GX60 Systems User's Guide

- [PCI Cards](#)
- [Serial Port Adapters](#)

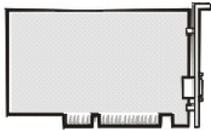
⚠ CAUTION: Before you begin any of the procedures in this section, follow the [safety instructions](#).

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

Your Dell™ computer provides slots for up to two 32-bit, 33-MHz PCI cards, or one PCI card and one serial port adapter.

PCI Cards

📌 NOTE: Your Dell computer uses only PCI slots. ISA cards are not supported.

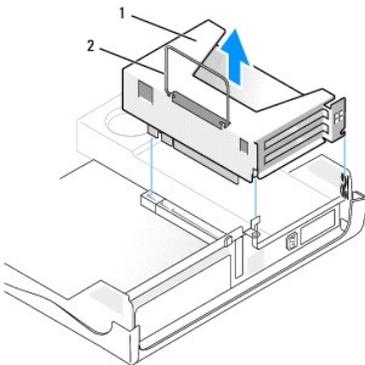


If you are installing or replacing a card, follow the procedures in the next section. If you are removing but not replacing a card, skip to "[Removing a PCI Card](#)."

1. If you are replacing a card, remove the current driver for the card from the operating system.
2. Follow the procedures in "[Before You Begin](#)."

Installing a PCI Card

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



1	card cage
2	handle

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

If you are replacing a card that is already installed in the computer, remove the card. If necessary, disconnect any cables connected to the card. Grasp the card by its top corners, and ease it out of its connector.

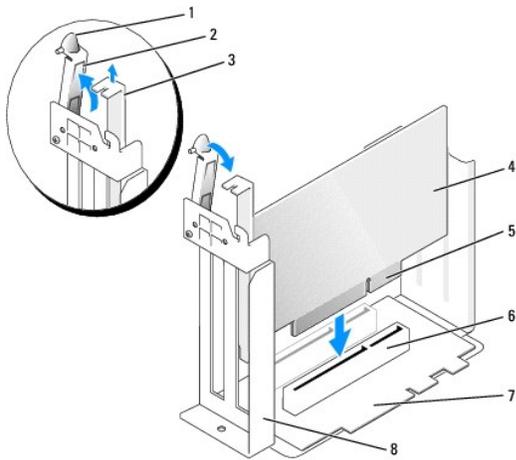
3. Prepare the card for installation.

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.

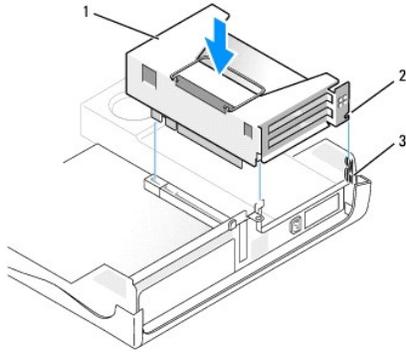
4. Insert the card into the card connector.

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



1	lever	5	card-edge connector
2	retention arm	6	card connector
3	filler bracket	7	riser board
4	card	8	card cage

5. Lower the retention arm and press it into place, securing the card(s) in the computer.
6. Replace the card cage:
 - a. Align the tabs in the side of the card cage with the slots on the side of the computer, and slide the card cage down into place.
 - b. Ensure that the riser board is fully seated in the connector on the system board.



1	card cage
2	tabs (2)
3	slots (2)

7. Reconnect any cables that you removed in [step 1](#) in the previous procedure.
8. Connect any cables that should be attached to the card.

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

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

9. Close the computer cover.
10. [Attach the computer stand](#) (optional).

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

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

After you open and close the cover, the chassis intrusion detector, if enabled, causes the following message to appear on the screen at the next computer start-up:

ALERT! Cover was previously removed.

12. [Reset the chassis intrusion detector](#) by changing **Chassis Intrusion** to **Enabled** or **Enabled-Silent**.

NOTE: If a setup password has been assigned by someone else, contact your network administrator for information on resetting the chassis intrusion detector.

13. If you installed a sound card:
 - a. [Enter system setup](#), select **Integrated Devices**, and change the setting for **Sound** to **Off**.
 - b. Connect external audio devices to the sound card's connectors. Do not connect external audio devices to the microphone, speaker/headphone, or line-in connectors on the [back panel](#).
14. If you installed an add-in network adapter:
 - a. [Enter system setup](#), select **Integrated Devices** and change the setting for **Network Interface Card** to **Off**.
 - b. Connect the network cable to the add-in network adapter's connectors. Do not connect the network cable to the integrated connector on the [back panel](#).
15. Install any drivers required for the card as described in the card documentation.

Removing a PCI Card

1. Follow the procedures in ["Before You Begin,"](#)
2. Remove the card cage (see [step 1](#) of the previous procedure).
3. Press the lever on the retention arm and raise the retention arm.

4. If necessary, disconnect any cables connected to the card.
5. Grasp the card by its top corners, and 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](#).

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

7. Lower the retention arm and press it into place.

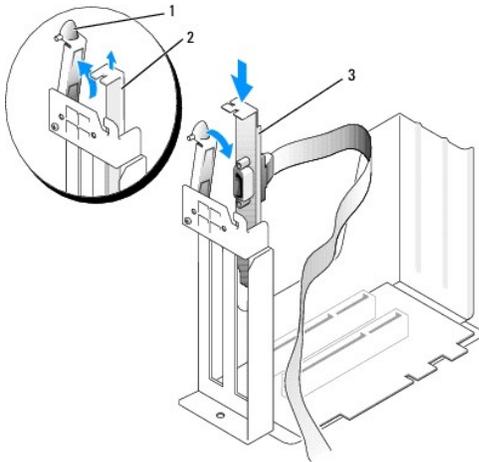
Serial Port Adapters

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

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

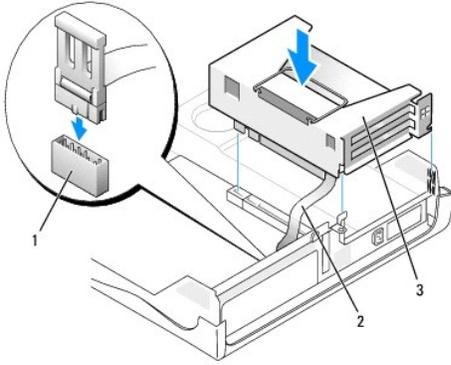
Installing a Serial Port Adapter

1. Follow the procedures in "[Before You Begin](#)."
2. Remove the card cage (see [step 1](#) in the first procedure).
3. Press the lever on the retention arm and raise the retention arm.
4. Remove the filler bracket.
5. Slide the adapter bracket down over the card slot opening, and lower the retention arm, securing the adapter bracket.



1	retention arm
2	filler bracket
3	card bracket

6. Route the serial card cable under the card cage, and attach the cable to the connector on the system board (labeled SER2).



1	serial card system board connector (SER2)
2	serial adapter cable
3	card cage

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

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

After you open and close the cover, the chassis intrusion detector, if enabled, causes the following message to appear on the screen at the next computer start-up:

ALERT! Cover was previously removed.

8. [Reset the chassis intrusion detector](#) by changing **Chassis Intrusion** to **Enabled** or **Enabled-Silent**.

➡ **NOTICE:** If a setup password has been assigned by someone else, contact your network administrator for information on resetting the chassis intrusion detector.

Removing a Serial Port Adapter

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

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

1. Follow the procedures in "[Before You Begin](#)."
2. Disconnect the serial adapter cable from the connector on the system board.
3. Remove the card cage (see [step 1](#) in the first procedure).
4. Press the lever on the retention arm and raise the retention arm.
5. Lift and remove the card bracket.
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](#).

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

7. Lower the retention arm and press it into place.

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

8. Close the computer cover, reconnect the computer and devices to their electrical outlets, and turn them on.

After you open and close the cover, the chassis intrusion detector, if enabled, causes the following message to appear on the screen at the next computer start-up:

ALERT! Cover was previously removed.

9. [Reset the chassis intrusion detector](#) by changing **Chassis Intrusion** to **Enabled** or **Enabled-Silent**.



NOTE: If a setup password has been assigned by someone else, contact your network administrator for information on resetting the chassis intrusion detector.

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Adding and Removing Parts

Dell™ OptiPlex™ GX60 Systems User's Guide

- [Before You Begin](#)
- [Opening the Computer Cover](#)
- [Battery](#)
- [Chassis Intrusion Switch](#)
- [Control Panel](#)
- [Drives](#)
- [I/O Panel](#)
- [Memory](#)
- [PCI Cards and Serial Port Adapters](#)
- [Power Supply](#)
- [Processor](#)
- [System Board](#)
- [Telephony Applications Programming Interface \(TAPI\)](#)
- [Closing the Computer Cover](#)

Opening the Computer Cover

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

1. Perform an orderly computer shutdown using the operating system menu.

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

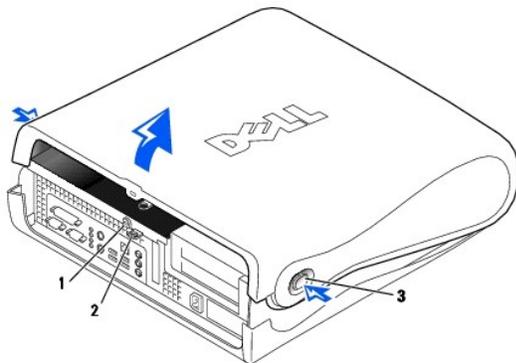
2. Turn off any attached devices and disconnect them from their electrical outlets.
3. Disconnect the computer power cable from the wall outlet, and then press the power button to ground the system board.
4. [Remove the computer stand](#), if it is attached.
5. If you have installed a padlock through the padlock ring on the back panel, remove the padlock.

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

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

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

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



1	security cable slot
2	padlock ring
3	two release buttons (one on each side)

Processor

Dell™ OptiPlex™ GX60 Systems User's Guide

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

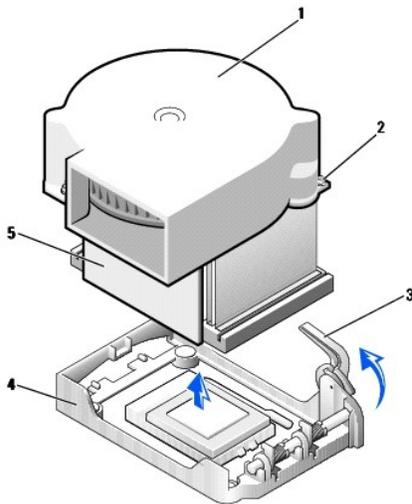
⚠ CAUTION: To guard against electrical shock, always unplug your computer from the electrical outlet before opening the cover.

1. 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 12-volt power cable from the [12VPOWER connector](#) on the system board.

➡ NOTICE: Before you remove the heat sink, gently rock the heat sink and then slightly twist it as you lift it from the system board.

4. Remove the heat sink/blower assembly:
 - a. The heat sink is attached to the blower. Press and lower the green lever on the retention mechanism until it is parallel to the system board.
 - b. Gently rock the heat sink and then slightly twist it as you lift it from the processor.

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



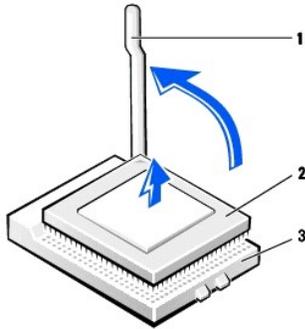
1	blower	4	retention base
2	screws (2)	5	heat sink
3	lever		

5. Lift the heat sink/blower assembly away from the processor.
6. Remove the two screws on the blower to remove it from the heat sink.

➡ NOTICE: Do not discard the blower. You will reuse it. 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 when you install your new processor.

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

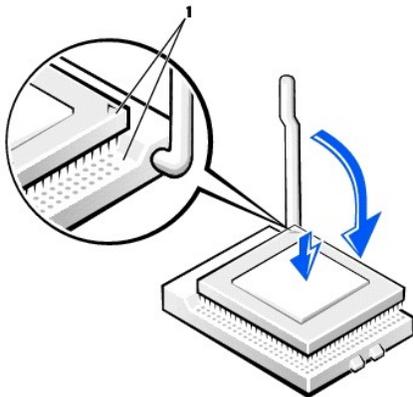
7. Pull the release lever straight up until the processor is released, and then remove the processor from the socket.



1	release lever
2	processor
3	socket

- ➔ **NOTICE:** Ground yourself by touching an unpainted metal surface on the back of the computer.
 - ➔ **NOTICE:** Be careful not to bend any of the pins when you unpack the processor. Bending the pins can permanently damage the processor.
8. Unpack the new processor.

If any of the pins on the processor appear to be bent, [contact Dell](#) for instructions on obtaining technical assistance.



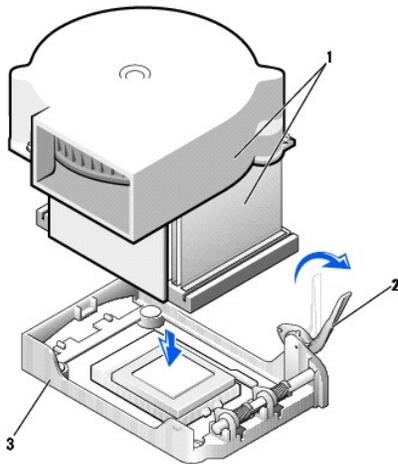
1	pin-1 corners of processor and socket aligned
---	---

- ➔ **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.
9. If the release lever on the socket is not fully extended, move it to that position.
10. Align the pin-1 corners of the processor and socket.
- ➔ **NOTICE:** When you place the processor in the socket, ensure that all of the pins fit into the corresponding holes on the socket. Be careful not to bend the pins.
11. Set the processor lightly in the socket and ensure that all pins are headed into the correct holes. Do not use force, which could bend the pins if the processor is misaligned. When the processor is positioned correctly, press it with minimal pressure to seat it.
12. When the processor is fully seated in the socket, pivot the release lever back toward the socket until it snaps into place to secure the processor.
- ➔ **NOTICE:** Ground yourself by touching an unpainted metal surface on the back of the computer.

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

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

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



1	heat sink/blower assembly
2	lever
3	retention base

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

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

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

After you open and close the cover, the chassis intrusion detector, if enabled, causes the following message to appear on the screen at the next computer start-up:

ALERT! Cover was previously removed.

21. [Reset the chassis intrusion detector](#) by changing the **Chassis Intrusion** option to **Enabled** or **Enabled-Silent**.

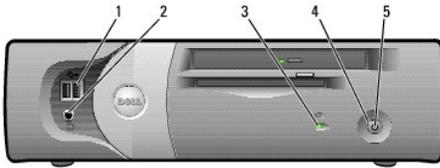
🔍 **NOTE:** If a setup password has been assigned by someone else, contact your network administrator for information on resetting the chassis intrusion detector.

About Your Computer

Dell™ OptiPlex™ GX60 Systems User's Guide

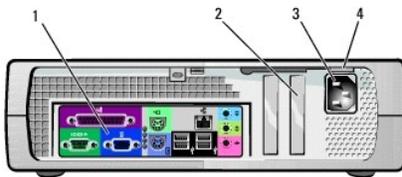
- [Front View](#)
- [Back View](#)
- [Inside Your Computer](#)
- [Attaching and Removing the Computer Stand](#)

Front View

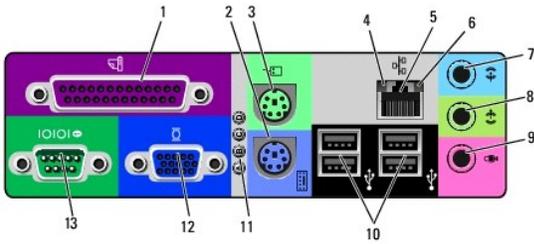


1	USB connectors	Connect USB devices such as a mouse, keyboard, printer, joystick, and computer speakers into any of the USB connectors.
2	headphone connector	Attach headphones.
3	hard-drive access light	The hard-drive access light is on when the computer reads data from or writes data to the hard drive. The light might also be on when devices such as your CD player are operating.
4	power button	<p>Press this button to turn on the computer.</p> <p>NOTICE: To avoid losing data, do not use the power button to turn off the computer. Instead, perform a Microsoft® Windows® shutdown.</p> <p>NOTE: If your operating system has ACPI enabled, when you press the power button the computer will perform an operating system shutdown.</p>
5	power light	<p>The power light illuminates and blinks or remains solid to indicate different states:</p> <ul style="list-style-type: none"> 1 No light — The computer is in the off state (S4, S5, or mechanical OFF). 1 Steady green — The computer is in a normal operating state. 1 Blinking green — The computer is in a power-saving state (S1 or S3). <p>To exit from a power-saving state, press the power button or click or move the mouse.</p> <p>See "Diagnostic Lights" for a description of light codes that can help you troubleshoot problems with your computer.</p>

Back View



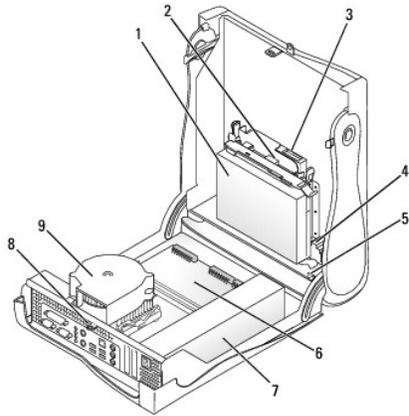
1	back-panel connectors	The connectors for your computer.
2	card slot	The slot for half-height PCI cards or a second serial port card.
3	power connector	The connection for the power cable.
4	voltage selection switch (may not be available on all computers)	See the safety instructions for more information.



1	parallel connector	Connect a parallel device, such as a printer, to the parallel connector. If you have a USB printer, plug it into a USB connector. NOTE: The integrated parallel connector is automatically disabled if the computer detects an installed card containing a parallel connector configured to the same address. For more information, see " System Setup Options ."
2	keyboard connector	If you have a standard keyboard, plug it into the purple keyboard connector. If you have a USB keyboard, plug it into a USB connector.
3	mouse connector	Plug a standard mouse into the green mouse connector. Turn off the computer and any attached devices before you connect a mouse to the computer. If you have a USB mouse, plug it into a USB connector. If your computer is running Windows 2000 or Windows XP, Dell installed the necessary mouse drivers on your hard drive.
4	link integrity light	<ul style="list-style-type: none"> 1 Green — A good connection exists between a 10-Mbps network and the computer. 1 Orange — A good connection exists between a 100-Mbps network and the computer. 1 Off — The computer is not detecting a physical connection to the network.
5	network adapter	Attach the UTP cable to an RJ45 jack wall plate or to an RJ45 port on a UTP concentrator or hub and press the other end of the UTP cable into the network adapter connector until the cable snaps securely into place. Dell recommends the use of Category 5 wiring and connectors for our customers' networks.
6	network activity light	The yellow light flashes when the computer is transmitting or receiving network data. A high volume of network traffic may make this light appear to be in a steady "on" state.
7	line-in connector	Use the blue line-in connector (available on computers with integrated sound) to attach a record/playback device such as a cassette player, CD player, or VCR. On computers with a sound card, the line-in connector is on the card.
8	line-out connector	Use the green line-out connector (available on computers with integrated sound) to attach headphones and most speakers with integrated amplifiers. On computers with a sound card, the line-in connector is on the card.
9	microphone connector	Use the pink microphone connector (available on computers with integrated sound) to attach a personal computer microphone for voice or musical input into a sound or telephony program. On computers with a sound card, the microphone connector is on the card.
10	USB connectors	Connect USB devices such as a mouse, keyboard, printer, joystick, and computer speakers into any of the USB connectors.
11	diagnostic lights	Use the lights to help you troubleshoot a computer problem based on the diagnostic code. For more information, see " Diagnostic Lights ."
12	video connector	Plug the cable from your VGA-compatible monitor into the blue connector.
13	serial connector	Connect a serial device, such as a handheld device, to the serial connector. If you have a second serial connector card installed, you can connect a second device to that connector. For more information, see " System Setup Options ."

Inside Your Computer

-  **CAUTION:** Before you begin any of the procedures in this section, follow the [safety instructions](#).
-  **CAUTION:** To avoid electrical shock, always unplug your computer from the electrical outlet before opening the cover.
-  **NOTICE:** Be careful when opening the computer cover to ensure that you do not accidentally disconnect cables from the system board.



1	hard drive	6	system board
2	floppy drive	7	power supply
3	CD/DVD drive	8	padlock ring
4	internal speaker	9	heat sink and blower assembly
5	chassis intrusion switch		

Cable Colors

Hard drive	Blue pull tab
Floppy drive	Black pull tab
CD/DVD drive	Orange pull tab

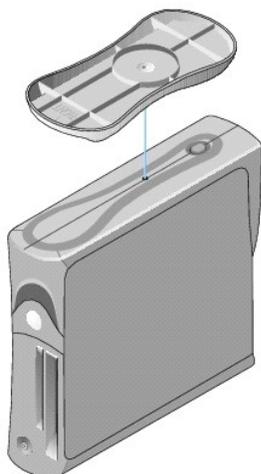
Attaching and Removing the Computer Stand

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



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

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



To remove the computer stand:

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

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Small Form-Factor Computer

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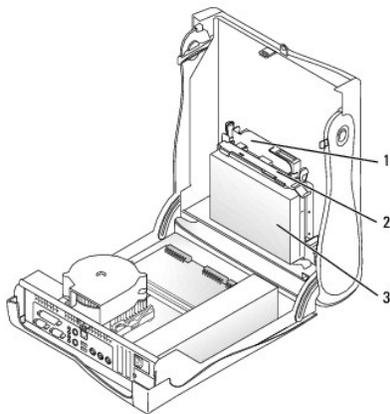
Drives

Dell™ OptiPlex™ GX60 Systems User's Guide

- [General Installation Guidelines](#)
 - [Hard Drive](#)
 - [Front-Panel Inserts](#)
 - [Floppy Drive](#)
 - [CD/DVD Drive](#)
-

Your computer supports:

- 1 One hard drive
- 1 One floppy or optional Zip drive
- 1 One optional CD or DVD drive



1	CD/DVD drive
2	floppy drive
3	hard drive

General Installation Guidelines

Connect hard drives to the connector labeled "IDE1," and connect CD/DVD drives to the connector labeled "IDE2."

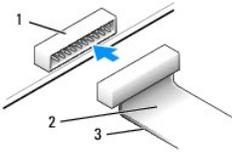
IDE Drive Addressing

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

Connecting Drive Cables

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

IDE Drive Connector

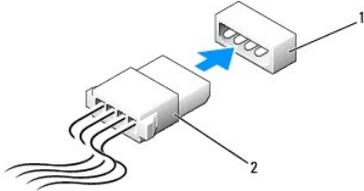


1	interface connector
2	interface cable
3	colored stripe on cable

Most interface connectors are keyed for correct insertion: that is, a notch or a missing pin on one connector matches a tab or a filled-in hole on the other connector. Keyed connectors ensure that the pin-1 wire in the cable (indicated by the colored stripe along one edge of the cable) goes to the pin-1 end of the connector. The pin-1 end of a connector on a board or a card is usually indicated by a silk-screened "1" printed directly on the board or card.

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

Power Cable Connector



1	power input connector
2	power cable

Connecting and Disconnecting Drive Cables

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

Hard Drive

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

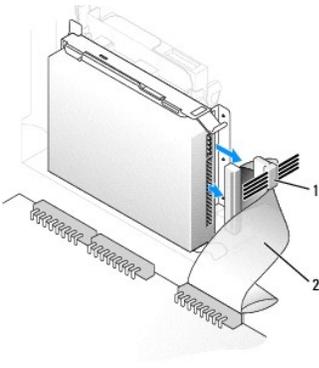
⚠ **CAUTION:** To guard against electrical shock, always unplug your computer from the electrical outlet before opening the cover.

➡ **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. Check the documentation for the drive to verify that it is configured for your computer.
3. Follow the procedures in "[Before You Begin](#)."

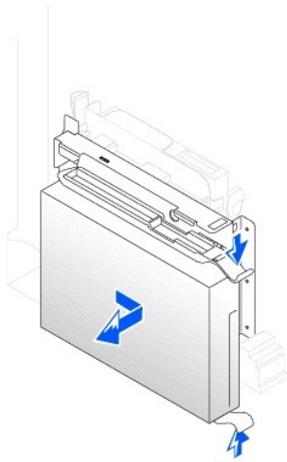
Removing a Hard Drive

1. Disconnect the power cable and hard-drive cable from the drive.



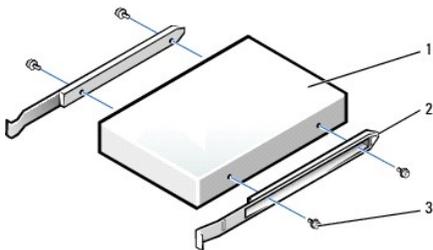
1	power cable
2	hard-drive cable

2. Press in on the tabs on each side of the drive and slide the drive toward the I/O panel and remove it from the computer.



Installing a Hard Drive

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

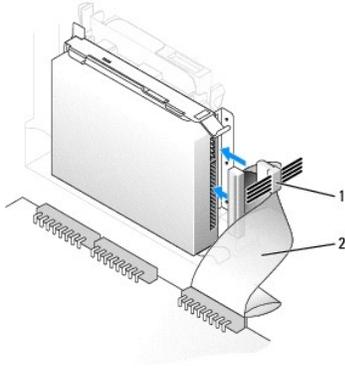


1	drive
2	bracket rails (2)
3	screws (4)

3. Install the hard drive into the computer by gently sliding the drive into place until you hear it securely click.

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

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



1	power cable
2	hard-drive cable

5. Check all connectors to be certain that they are properly cabled and firmly seated.
6. [Close the computer cover.](#)
7. [Attach the computer stand](#) (optional).

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

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

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

9. If the drive you just installed is the primary drive, insert a bootable floppy disk into drive A.
10. Turn on the computer.
11. [Enter system setup](#), and update the appropriate **Primary Drive** option (**0** or **1**).
12. Exit system setup, and reboot the computer.
13. Partition and logically format your drive before you proceed to the next step.

For instructions, see the documentation that came with your operating system.

14. Test the hard drive by running the [Dell Diagnostics](#).
15. If the drive you just installed is the primary drive, install your operating system on the hard drive.

For instructions, see the documentation that came with your operating system.

After you open and close the cover, the chassis intrusion detector, if enabled, causes the following message to appear on the screen at the next computer start-up:

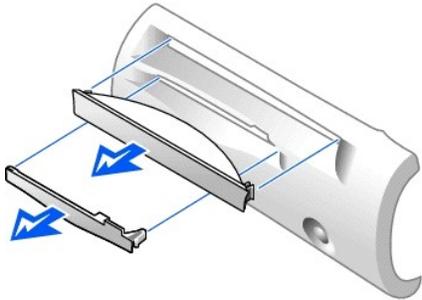
ALERT! Cover was previously removed.

16. [Reset the chassis intrusion detector](#) by changing **Chassis Intrusion** to **Enabled** or **Enabled-Silent**.

🔍 **NOTE:** If a setup password has been assigned by someone else, contact your network administrator for information on resetting the chassis intrusion detector.

Front-Panel Inserts

If you are installing a new floppy or CD/DVD drive rather than replacing a drive, remove the front-panel insert.



Floppy Drive

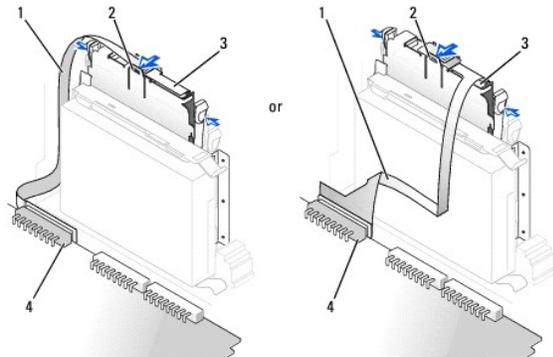
⚠ CAUTION: Before you begin any of the procedures in this section, follow the [safety instructions](#).

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

1. Follow the procedures in "[Before You Begin](#)."
2. If you are installing a new floppy drive rather than replacing a drive, [remove the front-panel inserts](#).

Removing a Floppy Drive

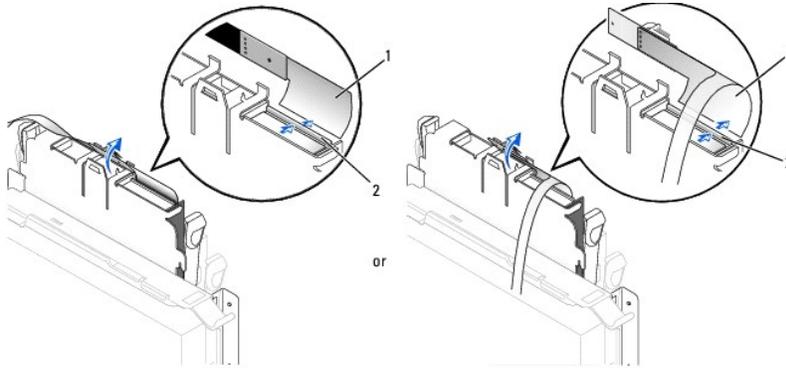
1. Disconnect the floppy-drive cable from the system board connector (DSKT).
2. Remove the power cable from the interposer board.
3. [Disconnect the CD/DVD drive cable](#) and the power cable from the CD/DVD drive.
4. Remove or raise the drive by pressing the green tabs on either side of the drive and lifting the drive up.
5. Remove the floppy-drive cable from the floppy drive:
 - a. Remove the interposer board from the floppy drive by pressing the tab and rotating the interposer board.



1	floppy-drive cable
---	--------------------

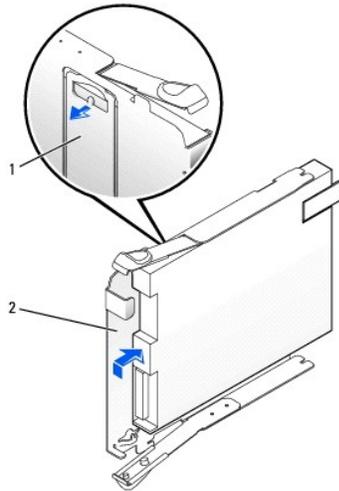
2	tab
3	interposer board
4	system board floppy-drive connector (DSKT)

- b. To release the floppy-drive cable from the connector, slide the lever until it is fully extended, and then lift the cable away.



1	floppy-drive cable
2	lever

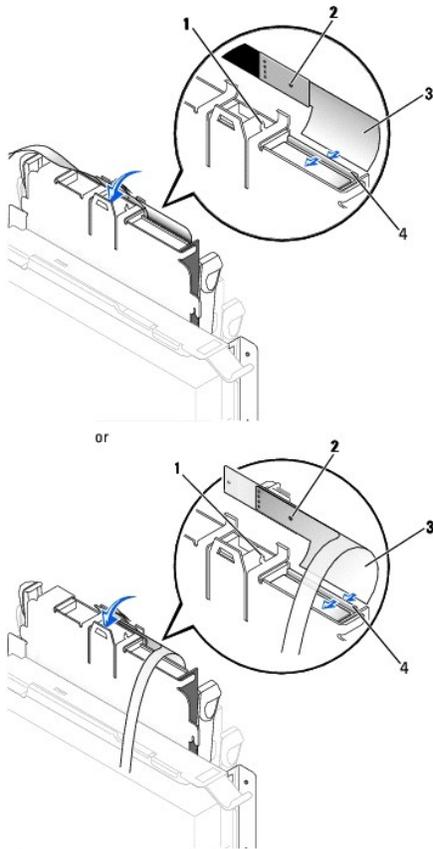
6. Remove the floppy drive from its sled by pulling the sled tab out while pushing the drive up and then sliding the drive out of the sled.



1	sled tab
2	sled

Installing a Floppy Drive

1. Snap the replacement drive into the sled and ensure that it is secure in the sled.
2. Connect the interposer board to the floppy drive:
 - a. Slide the floppy-drive cable into the connector.
 - b. Close the lever so that the cable is secure in the connector.
 - c. Line up the hole on the bottom of the interposer board with the notch on the connector, and snap the interposer board onto the drive.
3. Gently slide the drive into the computer until the tabs securely click into position.



1	connector notch
2	interposer board alignment hole
3	floppy-drive cable
4	lever

4. Attach the power cable to the interposer board on the floppy drive.
5. [Attach the CD/DVD drive cable](#) and the power cable to the CD/DVD drive.
6. Connect the floppy-drive cable to the DSKT connector on the system board.
7. Check all cable connections, and fold cables out of the way to provide airflow for the fan and cooling vents.
8. [Close the computer cover](#) and [attach the computer stand](#) (optional).

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

9. Reconnect your computer and devices to their electrical outlets, and turn them on.
10. [Enter system setup](#) and update the appropriate **Diskette Drive A** option to reflect the size and capacity of your new floppy drive.

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

After you open and close the cover, the chassis intrusion detector, if enabled, causes the following message to appear on the screen at the next computer start-up:

ALERT! Cover was previously removed.

11. [Reset the chassis intrusion detector](#) by changing **Chassis Intrusion** to **Enabled** or **Enabled-Silent**.

 **NOTE:** If a setup password has been assigned by someone else, contact your network administrator for information on resetting the chassis intrusion detector.

12. Verify that your computer works correctly by running the [Dell Diagnostics](#).
-

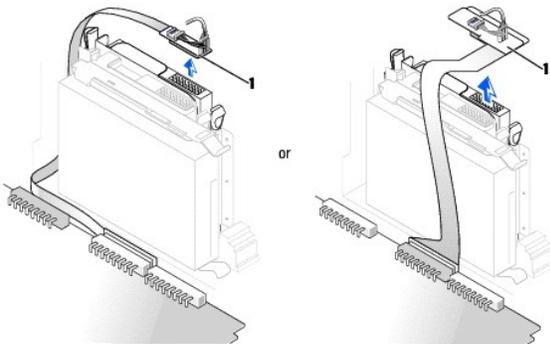
CD/DVD Drive

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

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

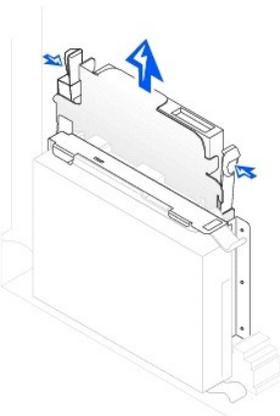
Removing a CD/DVD Drive

1. Follow the procedures in "[Before You Begin](#)."
2. Disconnect the power and audio cables from the interposer board.
3. Remove the interposer board from the drive.



1 interposer board

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



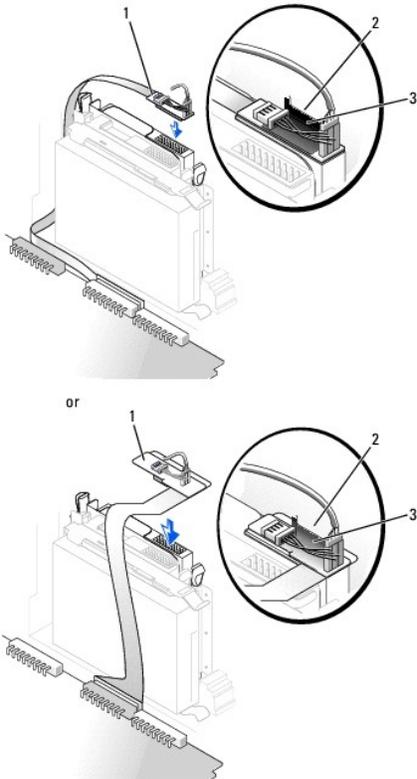
Installing a CD/DVD Drive

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

2. 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.

3. Gently slide the drive into place until the tabs securely click into position.
4. Connect the interposer board to the CD drive:
 - a. Ensure that the interposer board tab fits securely under the notch on the inside of the cover.
 - b. Attach the power and audio cables to the interposer board.



1	interposer board
2	notch on inside of cover
3	interposer board tab

If your computer came with an IDE CD drive, use the spare connector on the existing interface cable. Otherwise, use the IDE interface cable provided in the drive kit.

5. If you are installing a drive that has its own controller card, install the controller card in an expansion slot.
6. Check all cable connections, and fold cables out of the way to provide airflow for the fan and cooling vents.
7. If the CD/DVD drive bay was previously empty, remove the front-panel inserts (see "[Front-Panel Inserts](#)").
8. [Close the computer cover](#) and [attach the computer stand](#) (optional).

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

9. Connect your computer and devices to 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.

10. Update your configuration information by setting the appropriate **Drive** option (**0 or 1**) under **Drives: Secondary** to **Auto**. See "[Drive Configuration](#)" for more information.

After you open and close the cover, the chassis intrusion detector, if enabled, causes the following message to appear on the screen at the next computer start-up:

ALERT! Cover was previously removed.

11. [Reset the chassis intrusion detector](#) by changing **Chassis Intrusion** to **Enabled** or **Enabled-Silent**.

 **NOTE:** If a setup password has been assigned by someone else, contact your network administrator for information on resetting the chassis intrusion detector.

12. Verify that your computer works correctly by running the [Dell Diagnostics](#).

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PCI Cards and Serial Port Adapters

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[PCI Cards](#)

[Serial Port Adapters](#)

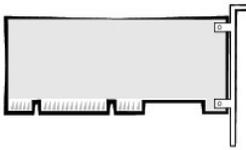
CAUTION: Before you begin any of the procedures in this section, follow the [safety instructions](#).

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

NOTICE: 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 an expansion slot for one low-profile, 32-bit, 33-MHz PCI card or serial port adapter.

PCI Cards



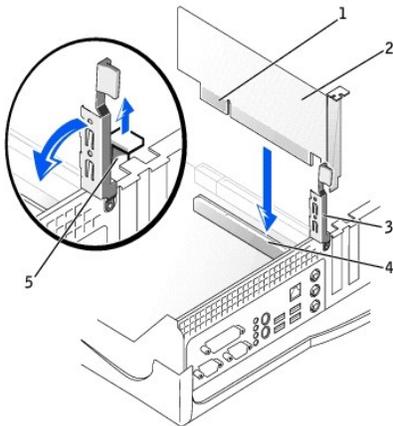
NOTE: Your Dell computer uses only PCI slots. ISA cards are not supported.

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

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

Installing a PCI Card

1. Follow the procedures in ["Before You Begin."](#)
2. Raise the retention arm.



1	card	4	card connector
2	edge connector	5	filler bracket
3	retention arm		

3. If you are installing a new card, remove the filler bracket to create an empty card-slot opening, then continue with [step 5](#).
4. If you are replacing a card that is already installed in the computer, remove the card (see "[Removing a PCI Card](#)").

If necessary, disconnect any cables connected to the card. Grasp the card by its top corners, and ease it out of its connector.

5. Prepare the card for installation.

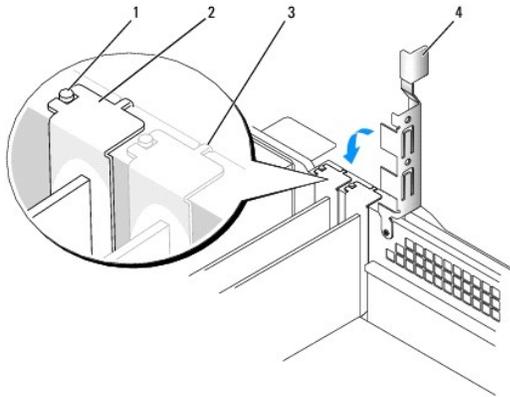
See the documentation that came with the card for information on configuring the card, making internal connections, or otherwise customizing it for your computer.

⚠ CAUTION: Some network adapters automatically start the computer when they are connected to a network. To guard against electrical shock, be sure to unplug your computer from its electrical outlet before installing any cards. Verify that the standby power light on the system board is off. To locate this light, see "[System Board Components](#)."

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

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

7. Before you lower the retention arm, ensure that:
 - 1 The tops of all cards and filler brackets are flush with the alignment bar.
 - 1 The notch in the top of the card or filler bracket fits around the alignment guide.
8. Press the arm into place, securing the card(s) in the computer.



1	alignment guide
2	filler bracket
3	alignment bar
4	retention arm

👉 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 wall jack, and then plug it into the computer.

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

After you open and close the cover, the chassis intrusion detector, if enabled, causes the following message to appear on the screen at the next computer start-up:

ALERT! Cover was previously removed.

11. [Reset the chassis intrusion detector](#) by changing **Chassis Intrusion** to **Enabled** or **Enabled-Silent**.

 **NOTE:** If a setup password has been assigned by someone else, contact your network administrator for information on resetting the chassis intrusion detector.

12. If you installed a sound card:

- a. [Enter system setup](#), select **Integrated Devices**, and change the setting for **Sound** 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 I/O panel.

13. If you installed an add-in network adapter:

- a. [Enter system setup](#), select **Integrated Devices**, and change the setting for **Network Interface Card** 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 I/O panel.

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

Removing a PCI Card

 **CAUTION:** Before you perform this procedure, follow the [safety instructions](#).

1. Follow the procedures in "[Before You Begin](#)."
2. Press the lever on the card retention arm and raise the retention arm.
3. If necessary, disconnect any cables connected to the card.
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](#).

 **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.

6. Lower the retention arm and press it into place.

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

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

After you open and close the cover, the chassis intrusion detector, if enabled, causes the following message to appear on the screen at the next computer start-up:

ALERT! Cover was previously removed.

8. [Reset the chassis intrusion detector](#) by changing **Chassis Intrusion** to **Enabled** or **Enabled-Silent**.

 **NOTE:** If a setup password has been assigned by someone else, contact your network administrator for information on resetting the chassis intrusion detector.

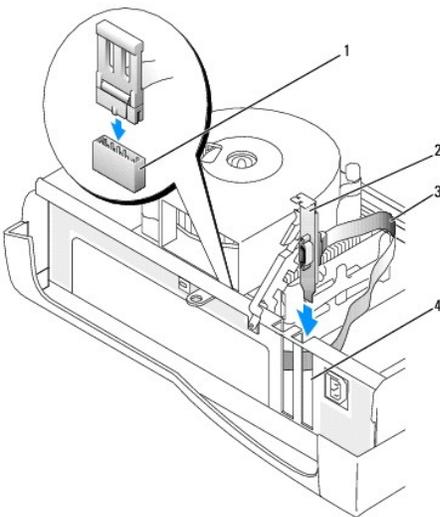
9. Remove the card's driver from the operating system.

Serial Port Adapters

Installing a Serial Port Adapter

⚠ CAUTION: Before you perform this procedure, follow the [safety instructions](#).

1. Follow the procedures in "[Before You Begin](#)."
2. Raise the retention arm.
3. Remove the filler bracket.
4. Slide the adapter bracket down over the card slot opening, and lower the retention arm, ensuring that:
 - 1 The tops of all cards and filler brackets are flush with the alignment bar.
 - 1 The notch in the top of the card or filler bracket fits around the alignment guide (see [step 8](#) of the previous procedure).
5. Attach the serial card cable to the connector on the system board (labeled SER2).



1	SER2 system board connector
2	card bracket
3	serial card cable
4	card slot opening

6. Lower the retention arm into place, securing the card(s) in the computer.
7. Proceed with [step 7](#) in the next procedure.

Removing a Serial Port Adapter

⚠ CAUTION: Before you perform this procedure, follow the [safety instructions](#).

1. Follow the procedures in "[Before You Begin](#)."
2. Disconnect the serial adapter cable from the connector on the system board.
3. Raise the retention arm.
4. Lift and remove the card bracket.

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](#).

 **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.

6. Lower the retention arm and press it into place.

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

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

After you open and close the cover, the chassis intrusion detector, if enabled, causes the following message to appear on the screen at the next computer start-up:

ALERT! Cover was previously removed.

8. [Reset the chassis intrusion detector](#) by changing **Chassis Intrusion** to **Enabled** or **Enabled-Silent**.

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Adding and Removing Parts

Dell™ OptiPlex™ GX60 Systems User's Guide

- [Before You Begin](#)
- [Opening the Computer Cover](#)
- [Battery](#)
- [Chassis Intrusion Switch](#)
- [Control Panel](#)
- [Drives](#)
- [I/O Panel](#)
- [Memory](#)
- [PCI Cards and Serial Port Adapters](#)
- [Power Supply](#)
- [Processor](#)
- [System Board](#)
- [Telephony Applications Programming Interface \(TAPI\)](#)
- [Closing the Computer Cover](#)

Opening the Computer Cover

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

1. Perform an orderly computer shutdown using the operating system menu.

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

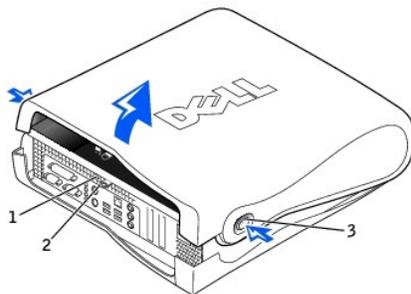
2. Turn off any attached devices and disconnect them from their electrical outlets.
3. Disconnect the computer power cable from the wall outlet, and then press the power button to ground the system board.
4. [Remove the computer stand](#), if it is attached.
5. If you have installed a padlock through the padlock ring on the back panel, remove the padlock.

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

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

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

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



1	security cable slot
2	padlock ring
3	two release buttons (one on each side)

Processor

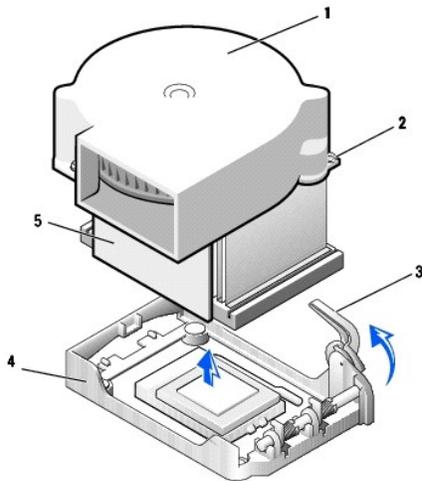
Dell™ OptiPlex™ GX60 Systems User's Guide

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

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

1. 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 12-volt power cable from the [12VPOWER connector](#) on the system board.
4. Remove the heat sink/blower assembly:
 - a. The heat sink is attached to the blower. Press and lower the green lever on the retention mechanism until it is parallel to the system board.
 - b. Gently rock the heat sink, and then slightly twist it as you lift it from the processor.

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



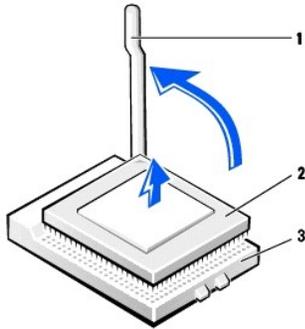
1	blower	4	retention base
2	screws (2)	5	heat sink
3	lever		

5. Lift the heat sink/blower assembly away from the processor.
6. Remove the two screws on the blower to remove it from the heat sink.

➡ NOTICE: Do not discard the blower. You will reuse it. 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 when you install your new processor.

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

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



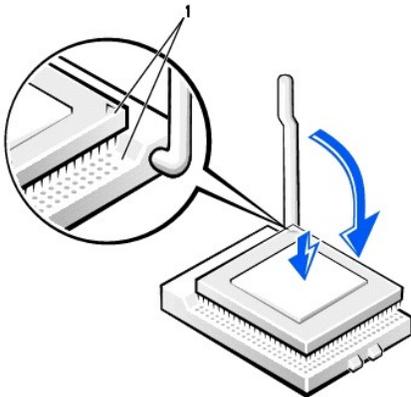
1	release lever
2	processor
3	socket

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

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

8. Unpack the new processor.

If any of the pins on the processor appear to be bent, [contact Dell](#) for instructions on obtaining technical assistance.



1	pin-1 corners of processor and socket aligned
---	---

➔ **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.

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

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

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

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

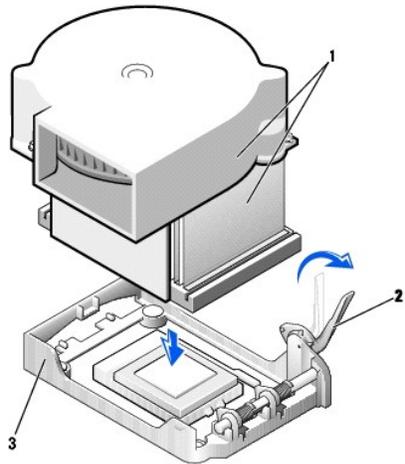
12. When the processor is fully seated in the socket, pivot the release lever back toward the socket until it snaps into place to secure the processor.

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

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

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

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



1	heat sink/blower assembly
2	lever
3	retention base

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

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

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

After you open and close the cover, the chassis intrusion detector, if enabled, causes the following message to appear on the screen at the next computer start-up:

ALERT! Cover was previously removed.

21. [Reset the chassis intrusion detector](#) by changing the **Chassis Intrusion** option to **Enabled** or **Enabled-Silent**.

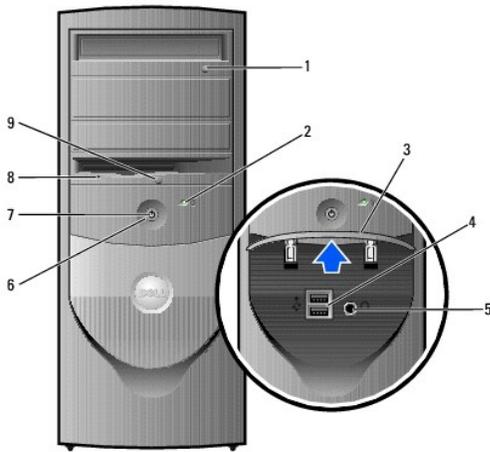
🔍 **NOTE:** If a setup password has been assigned by someone else, contact your network administrator for information on resetting the chassis intrusion detector.

About Your Computer

Dell™ OptiPlex™ GX60 Systems User's Guide

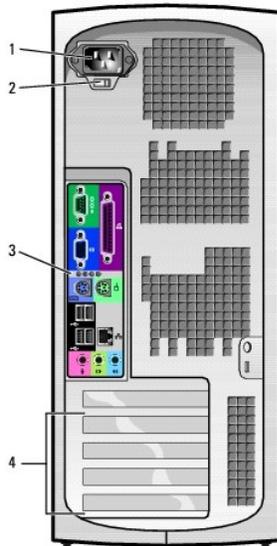
- [Front View](#)
- [Back View](#)
- [Inside Your Computer](#)

Front View

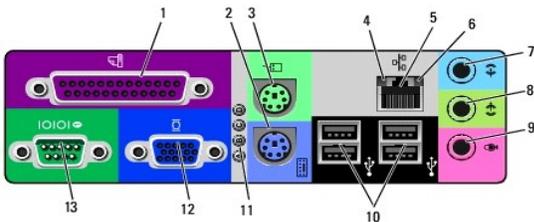


1	CD-drive eject button	Press this button to eject your CD from the CD drive.
2	hard-drive activity light	The hard drive light is on when the computer reads data from or writes data to the hard drive. The light might also be on when a device such as your CD player is operating.
3	front panel door	Open the door to use the front panel connectors.
4	USB 2.0 connectors (2)	Use the front USB connectors for devices that you connect occasionally, such as joysticks or cameras, or for bootable USB devices (see " Booting to a USB Device " for more information). It is recommended that you use the back USB connectors for devices that typically remain connected, such as printers and keyboards.
5	headphone connector	Use the headphone connector to attach headphones and most kinds of speakers.
6	power button	Press to turn on the computer.  NOTICE: To avoid losing data, do not turn off the computer by pressing the power button for 6 seconds or longer. Instead, perform an operating system shutdown. NOTE: If your operating system has ACPI enabled, when you press the power button the computer will perform an operating system shutdown.
7	power light	The power light illuminates and blinks or remains solid to indicate different states: <ul style="list-style-type: none"> 1 No light — The computer is in the off state (S4, S5, or mechanical OFF). 1 Steady green — The computer is in a normal operating state. 1 Blinking green — The computer is in a power-saving state (S1 or S3). To exit from a power-saving state, press the power button or click or move the mouse. See " Diagnostic Lights " for a description of light codes that can help you troubleshoot problems with your computer.
8	floppy-drive activity light	The floppy drive light is on when the computer reads data from or writes data to the floppy drive. Wait until this light turns off before you remove the floppy disk from the drive.
9	floppy-drive eject button	Press to eject a floppy disk from the floppy drive.

Back View



1	power connector	The connection for the power cable.
2	voltage selection switch (may not be available on all computers)	See the safety instructions for more information.
3	back-panel connectors	The connectors for your computer.
4	card slots	The slots for PCI cards or a second serial port card.



1	parallel connector	Connect a parallel device, such as a printer, to the parallel connector. If you have a USB printer, plug it into a USB connector. NOTE: The integrated parallel connector is automatically disabled if the computer detects an installed card containing a parallel connector configured to the same address. For more information, see " System Setup Options ."
2	keyboard connector	If you have a standard keyboard, plug it into the purple keyboard connector. If you have a USB keyboard, plug it into a USB connector.
3	mouse connector	Plug a standard mouse into the green mouse connector. Turn off the computer and any attached devices before you connect a mouse to the computer. If you have a USB mouse, plug it into a USB connector. If your computer is running Windows 2000 or Windows XP, Dell installed the necessary mouse drivers on your hard drive.
4	link integrity light	<ul style="list-style-type: none"> 1 Green — A good connection exists between a 10-Mbps network and the computer. 1 Orange — A good connection exists between a 100-Mbps network and the computer. 1 Off — The computer is not detecting a physical connection to the network.
5	network adapter	Attach the UTP cable to an RJ45 jack wall plate or to an RJ45 port on a UTP concentrator or hub and press the other end of the UTP cable into the network adapter connector until the cable snaps securely into place. Dell recommends the use of Category 5 wiring and connectors for our customers' networks.
6	network activity light	The yellow light flashes when the computer is transmitting or receiving network data. A high volume of network traffic may make this light appear to be in a steady "on" state.
7	line-in connector	Use the blue line-in connector (available on computers with integrated sound) to attach a record/playback device such as a cassette player, CD player, or VCR.

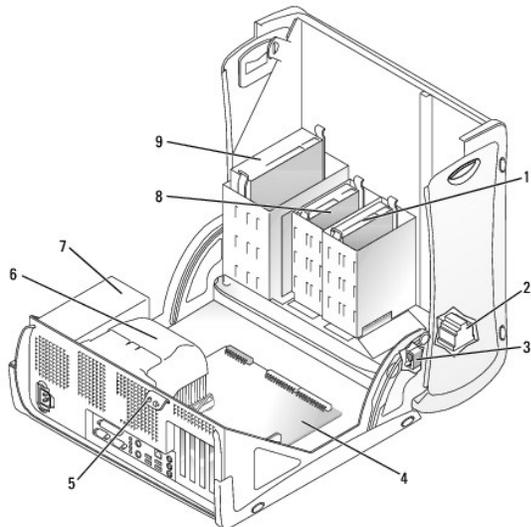
		On computers with a sound card, the line-in connector is on the card.
8	line-out connector	Use the green line-out connector (available on computers with integrated sound) to attach headphones and most speakers with integrated amplifiers. On computers with a sound card, the line-in connector is on the card.
9	microphone connector	Use the pink microphone connector (available on computers with integrated sound) to attach a personal computer microphone for voice or musical input into a sound or telephony program. On computers with a sound card, the microphone connector is on the card.
10	USB connectors	Connect USB devices such as a mouse, keyboard, printer, joystick, and computer speakers into any of the USB connectors.
11	diagnostic lights	Use the lights to help you troubleshoot a computer problem based on the diagnostic code. For more information, see " Diagnostic Lights ."
12	video connector	Plug the cable from your VGA-compatible monitor into the blue connector.
13	serial connector	Connect a serial device, such as a handheld device, to the serial port. If you have a second serial connector card installed, you can connect a second device to that connector. For more information, see " System Setup Options ."

Inside Your Computer

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

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

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



1	hard drive	6	heat sink and blower assembly
2	internal speaker	7	power supply
3	chassis intrusion switch	8	floppy drive
4	system board	9	CD/DVD drive
5	padlock ring		

Cable Colors

Hard drive	Blue pull tab
Floppy drive	Black pull tab
CD/DVD drive	Orange pull tab

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Small Mini-Tower Computer

Dell™ OptiPlex™ GX60 Systems User's Guide

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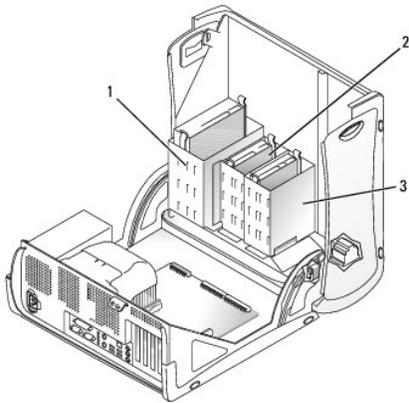
Drives

Dell™ OptiPlex™ GX60 Systems User's Guide

- [General Installation Guidelines](#)
 - [Hard Drive](#)
 - [Front-Panel Inserts](#)
 - [Floppy Drive](#)
 - [CD/DVD Drive](#)
-

Your computer supports:

- 1 Two hard drives
- 1 Two floppy or optional Zip drives
- 1 Two CD or DVD drives



1	CD/DVD drive(s)
2	floppy drive(s)
3	hard drive(s)

General Installation Guidelines

Connect hard drives to the connector labeled "IDE1," and connect CD/DVD drives to the connector labeled "IDE2."

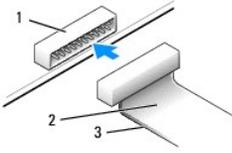
IDE Drive Addressing

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

Connecting Drive Cables

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

IDE Drive Connector

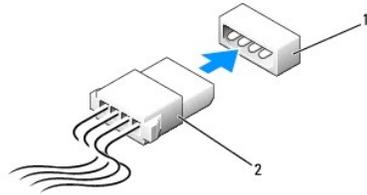


1	interface connector
2	interface cable
3	colored stripe on cable

Most interface connectors are keyed for correct insertion: that is, a notch or a missing pin on one connector matches a tab or a filled-in hole on the other connector. Keyed connectors ensure that the pin-1 wire in the cable (indicated by the colored stripe along one edge of the cable) goes to the pin-1 end of the connector. The pin-1 end of a connector on a board or a card is usually indicated by a silk-screened "1" printed directly on the board or card.

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

Power Cable Connector



1	power input connector
2	power cable

Connecting and Disconnecting Drive Cables

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

Hard Drive

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

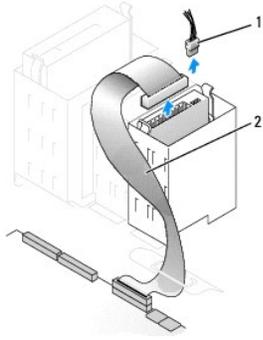
⚠ **CAUTION:** To guard against electrical shock, always unplug your computer from the electrical outlet before opening the cover.

➡ **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. Check the documentation for the drive to verify that it is configured for your computer.
3. Follow the procedures in "[Before You Begin](#)."

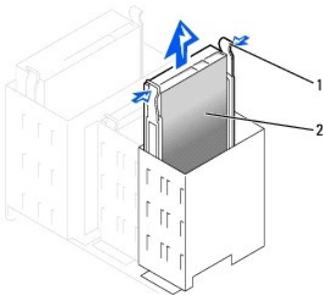
Removing a Hard Drive

1. Disconnect the power and hard-drive cables from the drive.



1	power cable
2	hard-drive cable

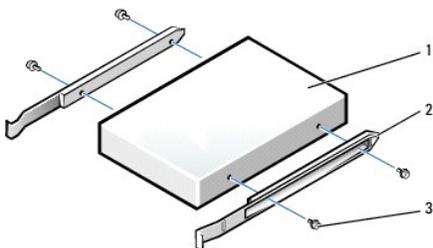
2. Press in on the tabs on each side of the drive and slide the drive up and out.



1	tabs (2)
2	hard drive

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

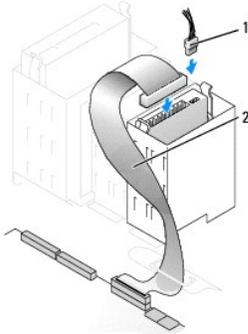


1	drive
2	bracket rails (2)
3	screws (4)

4. Install the hard drive into the computer by gently sliding the drive into place until you hear it securely click.

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

5. Connect the power and hard-drive cables to the drive.



1	power cable
2	hard-drive cable

6. Check all connectors to be certain that they are properly cabled and firmly seated.
7. [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.

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

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

9. If the drive you just installed is the primary drive, insert a bootable floppy disk into drive A.
10. Turn on the computer.
11. [Enter system setup](#), and update the appropriate **Primary Drive** option (**0** or **1**).
12. Exit system setup, and reboot the computer.
13. Partition and logically format your drive before you proceed to the next step.

See the documentation for your operating system for instructions.

14. Test the hard drive by running the [Dell Diagnostics](#).
15. If the drive you just installed is the primary drive, install your operating system on the hard drive.

After you open and close the cover, the chassis intrusion detector, if enabled, causes the following message to appear on the screen at the next computer start-up:

ALERT! Cover was previously removed.

16. [Reset the chassis intrusion detector](#) by changing **Chassis Intrusion** to **Enabled** or **Enabled-Silent**.

🔍 **NOTE:** If a setup password has been assigned by someone else, contact your network administrator for information on resetting the chassis intrusion detector.

Adding a Second Hard Drive

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

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

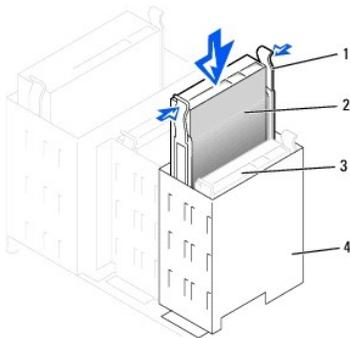
➡ NOTICE: To avoid damage to the drive, do not set it on a hard surface. Instead, set the drive on a surface, such as a foam pad, that will sufficiently cushion it.

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 two green plastic rails from the inside of the hard-drive bay by gently pulling the rails up and out of the bay.
4. Attach the rails to the hard drive using the two screws attached to the rails.

Ensure that the rail tabs are positioned at the back of the hard drive.

➡ NOTICE: Do not install any drive into the lower hard-drive bay until you have removed the green drive rails from the inside of the hard-drive bay.

5. Remove the first hard drive from the upper bay and install it in the lower bay:
 - a. Disconnect the power and the hard-drive cables from the back of the first hard drive.
 - b. Press in the two green rail tabs and pull the first hard drive out of the upper bay.
 - c. Gently slide the first hard drive into the lower bay until you hear a click.
 - d. Reconnect the power and hard-drive cables to the back of the first hard drive.
6. Gently slide the new hard drive into the upper bay until you hear a click.



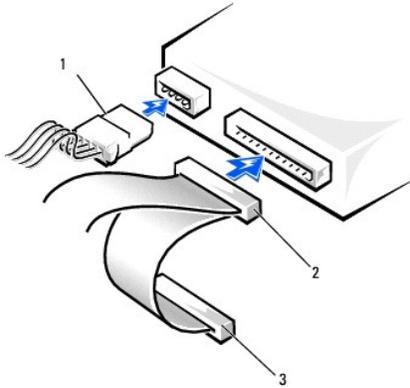
1	rail tabs (2)
2	second hard drive in upper bay
3	first hard drive in lower bay
4	hard-drive bay

7. Connect a power cable to the drive.

➡ NOTICE: Match the colored strip on the cable with pin 1 on the drive.

8. Locate the extra connector on the drive cable that is attached to your first hard drive and attach the connector to the second hard drive.

Your computer uses cable-select drive cables. This means that the device connected to the end connector of the drive cable is the master device and the device connected to the middle connector is the slave device. Be sure that the jumper setting on the new device is set for "cable select" (see the documentation that came with the drive for information).



1	power cable
2	second hard-drive cable (secondary drive)
3	first hard-drive cable (primary boot drive)

9. [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.

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.

After you open and close the cover, the chassis intrusion detector, if enabled, causes the following message to appear on the screen at the next computer start-up:

ALERT! Cover was previously removed.

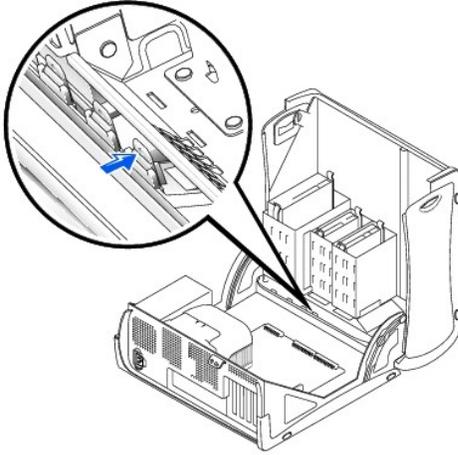
11. [Reset the chassis intrusion detector](#) by changing **Chassis Intrusion** to **Enabled** or **Enabled-Silent**.

NOTE: If a setup password has been assigned by someone else, contact your network administrator for information on resetting the chassis intrusion detector.

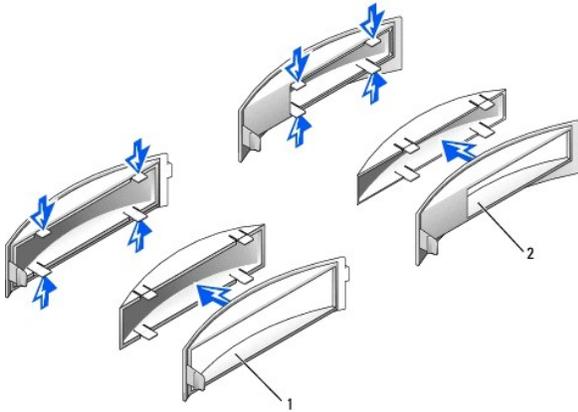
Front-Panel Inserts

If you are installing a new floppy or CD/DVD drive rather than replacing a drive, remove the front-panel inserts.

1. Open the cover to a 90-degree angle.
2. Locate the insert that is in front of the drive bay that you want to use.
3. From inside the computer, press in the release tab of the insert.



4. From the outside of the computer, pull the insert away from the computer's front panel.
5. Remove the insert from the insert frame by pressing on the four tabs.



1	insert frame for CD/DVD drive bay
2	insert frame for floppy drive bay

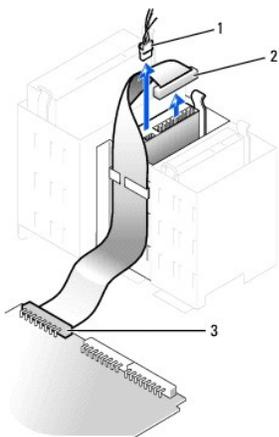
Floppy Drive

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

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

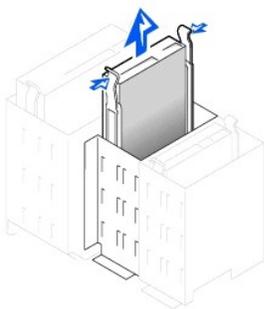
Removing a Floppy Drive

1. Follow the procedures in "[Before You Begin](#)."
2. Disconnect the power and floppy-drive cables from the back of the floppy drive.
3. Disconnect the other end of the floppy-drive cable from the system board (labeled DSKT).



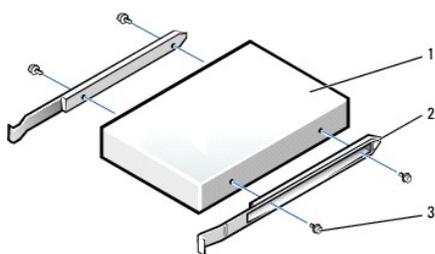
1	power cable
2	floppy-drive cable
3	floppy-drive connector (DSKT)

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



Installing a Floppy Drive

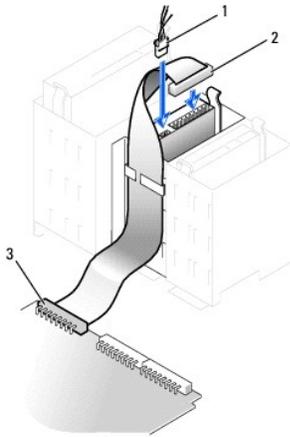
1. If you are replacing a drive and the new drive does not have the bracket rails attached, remove the rails from the old drive by removing the two screws that secure each rail to the drive. Attach the bracket to the new drive by aligning the screw holes on the drive with the screw holes on the bracket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



1	drive
2	bracket rails (2)
3	screws (4)

2. Gently slide the drive into place until the tabs securely click into position.

3. Attach the power and floppy-drive cables to the floppy drive.
4. Connect the other end of the floppy-drive cable to the connector labeled DSKT on the system board.



1	power cable
2	floppy-drive cable
3	floppy-drive connector (DSKT)

5. If you are installing a new floppy drive rather than replacing a drive, [remove the front-panel inserts](#).
6. Check all cable connections, and fold cables out of the way to provide airflow for the fan and cooling vents.
7. [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.

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

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

9. [Enter system setup](#) and update the appropriate **Diskette Drive A** option to reflect the size and capacity of your new floppy drive.

After you open and close the cover, the chassis intrusion detector, if enabled, causes the following message to appear on the screen at the next computer start-up:

ALERT! Cover was previously removed.

10. [Reset the chassis intrusion detector](#) by changing **Chassis Intrusion** to **Enabled** or **Enabled-Silent**.

🔧 **NOTE:** If a setup password has been assigned by someone else, contact your network administrator for information on resetting the chassis intrusion detector.

11. Verify that your computer works correctly by running the [Dell Diagnostics](#).

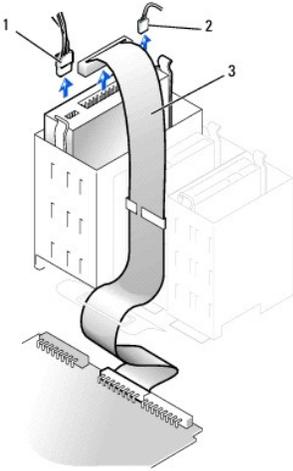
CD/DVD Drive

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

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

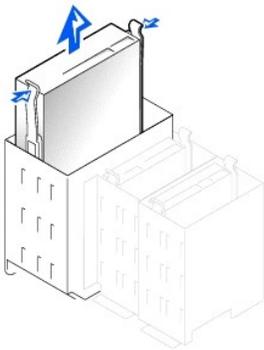
Removing a CD/DVD Drive

1. Follow the procedures in "[Before You Begin](#)."
2. Disconnect the power, audio, and CD/DVD drive cables from the back of the drive.



1	power cable
2	audio cable
3	CD/DVD drive cable

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

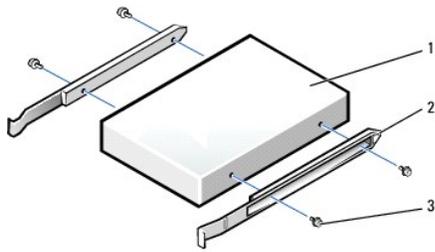


Installing a CD/DVD Drive

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

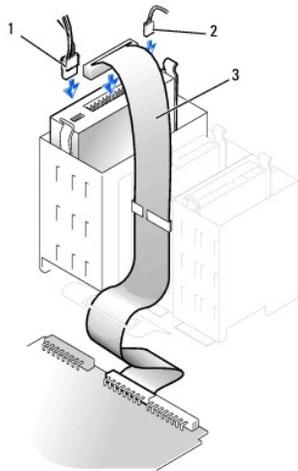
Check the documentation that accompanied the drive to verify that the drive is configured for your computer. If you are installing an IDE drive, configure the drive for the cable select setting.

2. Connect the new drive to the set of rails that are attached to the inside of the cover. If a set of rails is not attached inside the cover, [contact Dell](#).
3. If you are installing a replacement drive and the new drive does not have the bracket rails attached, remove the rails from the old drive by removing the two screws that secure each rail to the drive. Attach the bracket to the new drive by aligning the screw holes on the drive with the screw holes on the bracket rails and then inserting and tightening all four screws (two screws on each rail).



1	drive
2	bracket rails (2)
3	screws (4)

4. Gently slide the drive into place until the tabs securely click into position.
5. Connect the power, audio, and CD/DVD drive cables to the drive.



1	power cable
2	audio cable
3	CD/DVD drive cable

6. If you are installing a new CD/DVD drive rather than replacing a drive, [remove the front-panel inserts](#).
7. If you are installing a drive that has its own controller card, install the controller card in a card slot.
8. Check all cable connections, and fold cables out of the way to provide airflow for the fan and cooling vents.
9. [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.

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. Update your configuration information by setting the appropriate **Drive** option (0 or 1) under **Drives: Secondary** to **Auto**.

See "[Drive Configuration](#)" for more information.

After you open and close the cover, the chassis intrusion detector, if enabled, causes the following message to appear on the screen at the next

computer start-up:

ALERT! Cover was previously removed.

12. [Reset the chassis intrusion detector](#) by changing **Chassis Intrusion** to **Enabled** or **Enabled-Silent**.

 **NOTE:** If a setup password has been assigned by someone else, contact your network administrator for information on resetting the chassis intrusion detector.

13. Verify that your computer works correctly by running the [Dell Diagnostics](#).

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PCI Cards and Serial Port Adapters

Dell™ OptiPlex™ GX60 Systems User's Guide

● [PCI Cards](#)

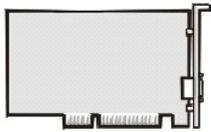
● [Serial Port Adapters](#)

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

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

Your Dell™ computer provides slots for up to four 32-bit, 33-MHz PCI cards, or three PCI cards and a serial port adapter.

PCI Cards



📌 NOTE: Your Dell computer uses only PCI slots. ISA cards are not supported.

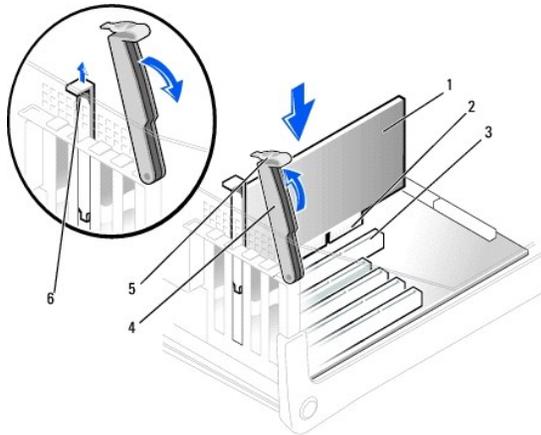
If you are installing or replacing a card, follow the procedures in the next section. If you are removing but not replacing a card, see ["Removing a PCI Card."](#)

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

Installing a PCI Card

⚠ CAUTION: Before you perform this procedure, follow the [safety instructions](#).

1. Follow the procedures in ["Before You Begin."](#)
2. Press the lever on the card retention arm and raise the retention arm.



1	card	4	retention arm
2	edge connector	5	lever
3	card connector	6	filler bracket

3. If you are installing a new card, remove the filler bracket to create a card-slot opening, and then continue with [step 5](#).
4. If you are replacing a card that is already installed in the computer, remove the card.

If necessary, disconnect any cables connected to the card. Grasp the card by its top corners, and ease it out of its connector.

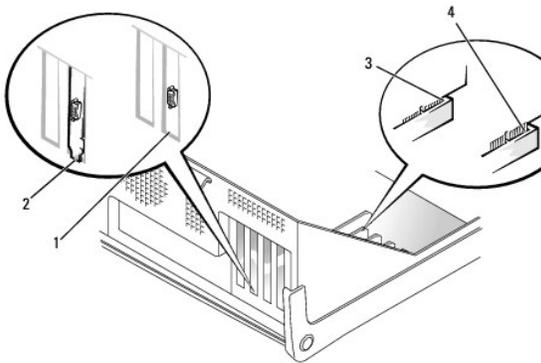
5. Prepare the card for installation.

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

⚠ CAUTION: Some network adapters automatically start the computer when they are connected to a network. To guard against electrical shock, be sure to unplug your computer from its electrical outlet before installing any cards. Verify that the standby power light on the system board is off. To locate this light, see "[System Board Components](#)."

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

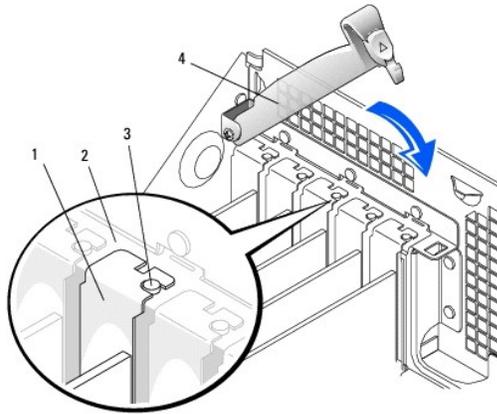
If the card is full-length, insert the end of the card into the card guide bracket as you lower the card toward its connector on the system board. Insert the card firmly into the card connector on the system board.



1	bracket caught outside of slot
2	bracket within slot
3	fully seated card
4	not fully seated card

7. Before you lower the retention arm, ensure that:
 - 1 The tops of all cards and filler brackets are flush with the alignment bar.
 - 1 The notch in the top of the card or filler bracket fits around the alignment guide.

Press the arm into place, securing the card(s) in the computer.



1	filler bracket
2	alignment bar
3	alignment guide
4	retention arm

➡ **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.

8. 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 wall jack, and then plug it into the computer.

9. Close the computer cover, reconnect the computer and devices to their electrical outlets, and turn them on.

After you open and close the cover, the chassis intrusion detector, if enabled, causes the following message to appear on the screen at the next computer start-up:

ALERT! Cover was previously removed.

10. [Reset the chassis intrusion detector](#) by changing **Chassis Intrusion** to **Enabled** or **Enabled-Silent**.

📌 **NOTE:** If a setup password has been assigned by someone else, contact your network administrator for information on resetting the chassis intrusion detector.

11. If you installed a sound card:
 - a. [Enter system setup](#), select **Integrated Devices**, and change the setting for **Sound** 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 I/O panel (see "[Back View](#)").
12. If you installed an add-in network adapter:
 - a. [Enter system setup](#), select **Integrated Devices**, and change the setting for **Network Interface Card** 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 I/O panel (see "[Back View](#)").
13. Install any drivers required for the card as described in the card documentation.

Removing a PCI Card

⚠ **CAUTION:** Before you perform this procedure, follow the [safety instructions](#).

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

2. Press the lever on the card retention arm and raise the retention arm (see [step 2](#) in the previous procedure).
3. If necessary, disconnect any cables connected to the card.
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](#).

 **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.

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

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

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

After you open and close the cover, the chassis intrusion detector, if enabled, causes the following message to appear on the screen at the next computer start-up:

```
ALERT! Cover was previously removed.
```

8. Reset the chassis intrusion detector by changing **Chassis Intrusion** to **Enabled** or **Enabled-Silent**.

 **NOTE:** If a setup password has been assigned by someone else, contact your network administrator for information on resetting the chassis intrusion detector.

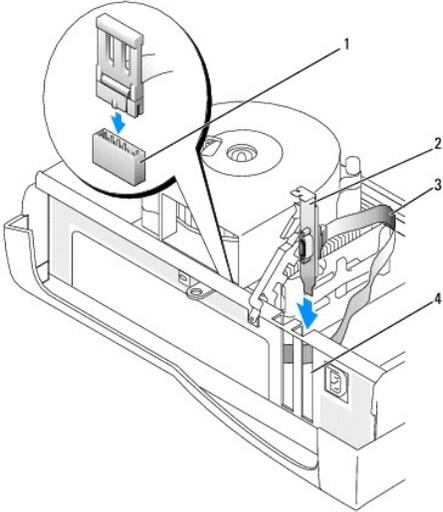
9. Remove the card's driver from the operating system.
-

Serial Port Adapters

Installing a Serial Port Adapter

 **CAUTION:** Before you perform this procedure, follow the [safety instructions](#).

1. Follow the procedures in "[Before You Begin](#)."
2. Raise the retention arm.
3. Remove the filler bracket.
4. Slide the adapter bracket down over the card-slot opening, and lower the retention arm, ensuring that:
 1. The tops of all cards and filler brackets are flush with the alignment bar.
 1. The notch in the top of the adapter or filler bracket fits around the alignment guide (see [step 7](#) of the previous procedure).



1	SER2 system board connector
2	card bracket
3	serial card cable
4	card slot opening

5. Attach the serial adapter cable to the serial port connector on the system board (labeled SER2).

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 their electrical outlets, and turn them on.

After you open and close the cover, the chassis intrusion detector, if enabled, causes the following message to appear on the screen at the next computer start-up:

ALERT! Cover was previously removed.

7. [Reset the chassis intrusion detector](#) by changing **Chassis Intrusion** to **Enabled** or **Enabled-Silent**.

NOTE: If a setup password has been assigned by someone else, contact your network administrator for information on resetting the chassis intrusion detector.

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Adding and Removing Parts

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- [Before You Begin](#)
- [Opening the Computer Cover](#)
- [Battery](#)
- [Chassis Intrusion Switch](#)
- [Control Panel](#)
- [Drives](#)
- [I/O Panel](#)
- [Memory](#)
- [PCI Cards and Serial Port Adapters](#)
- [Power Supply](#)
- [Processor](#)
- [System Board](#)
- [Telephony Applications Programming Interface \(TAPI\)](#)
- [Closing the Computer Cover](#)

Opening the Computer Cover

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

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

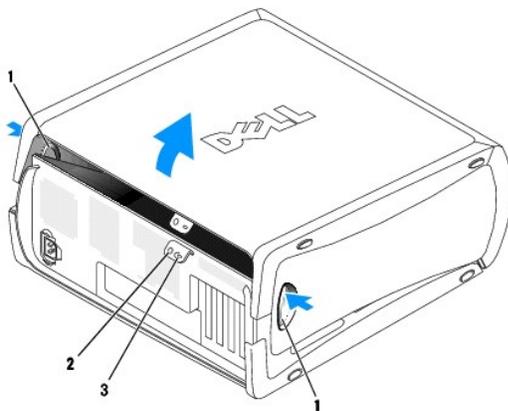
1. Perform an orderly computer shutdown using the operating system menu.

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

2. Turn off any attached devices and disconnect them from their electrical outlets.
3. Disconnect the computer power cable from the wall outlet, and then press the power button to ground the system board.
4. If you have installed a padlock through the padlock ring on the back panel, remove the padlock.

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

5. Lay the computer on its side as shown in the illustration.
6. Open the cover:
 - a. Facing the back of the computer, press the release button on the right side of the computer with one hand while pulling up on the top of the cover with the other hand.
 - b. Press the release button on the left side of the computer with one hand while pulling up on the top of the cover with the other hand.
 - c. Hold the bottom of the computer with one hand, and then pull open the cover with the other hand.



1	release buttons (2)
2	security cable slot
3	padlock ring

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Processor

Dell™ OptiPlex™ GX60 Systems User's Guide

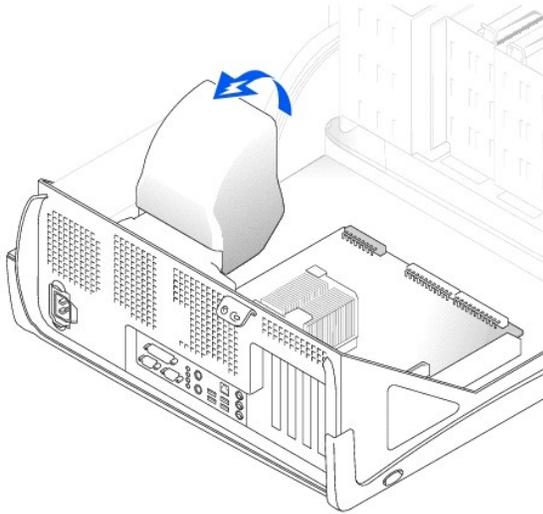
- [Removing the Processor](#)
- [Installing the Processor](#)

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

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

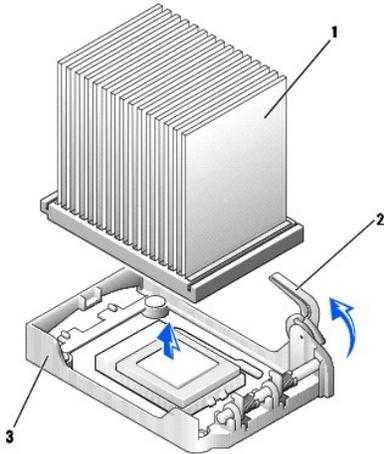
Removing the Processor

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 [12VPOWER 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. Press and lower the green lever on the retention mechanism until it is parallel to the system board.
 - b. Gently rock the heat sink and then slightly twist it as you lift it from the processor.



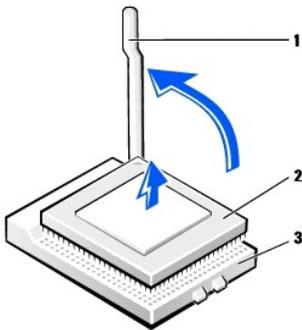
1	heat sink
2	lever
3	retention base

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

➡ **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. Pull the release lever straight up until the processor is released.

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



1	release lever
2	processor
3	socket

7. Remove the processor from the socket.

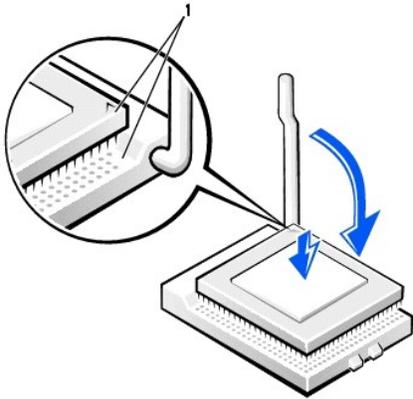
Leave the release lever extended in the release position so that the socket is ready for the new processor.

Installing the Processor

➡ **NOTICE:** You must position the processor correctly in the socket to avoid permanent damage to the processor and the computer.

1. If the release lever is not extended to the release position, move it to that position.

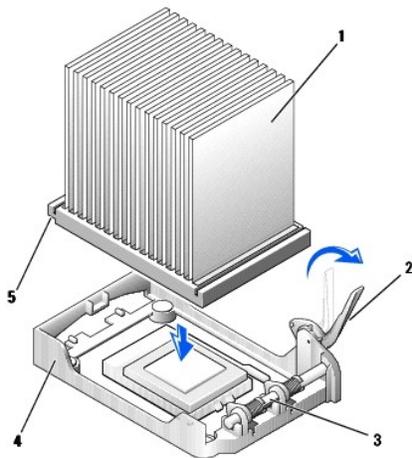
2. Align pin 1 (the imprinted corner) of the processor and pin 1 of the socket.



1 pin-1 corners of processor and socket aligned

➔ **NOTICE:** Processor pins are delicate. To avoid damage, ensure that the processor aligns properly with the socket, and do not use excessive force when you install the processor.

3. Carefully set the processor in the socket and press it down lightly to seat it.
4. Rotate the release lever back toward the system board until it snaps into place, securing the processor.
5. Install the heat sink:
 - a. Insert the notched end of the heat sink onto the end of the retention base that is opposite the hinge.
 - b. Lower the heat sink until it fits securely in the base.
6. Raise the retention lever and press until the heat sink is secured. You will feel the lever pause once it is at a 90-degree angle. Keep pressing the lever another 30 degrees, ensuring that it is in the locked position.



1	heat sink
2	lever
3	hinge
4	retention base
5	notch

7. Lower the airflow shroud over the heat sink.

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.

8. Reconnect the cooling fan power cable to the [FAN connector](#) on the system board.
9. Reconnect the power cable to the [12VPOWER connector](#) on the system board.
10. 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.

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

After you open and close the cover, the chassis intrusion detector, if enabled, causes the following message to appear on the screen at the next computer start-up:

ALERT! Cover was previously removed.

12. [Reset the chassis intrusion detector](#) by changing the **Chassis Intrusion** option to **Enabled** or **Enabled-Silent**.

 **NOTE:** If a setup password has been assigned by someone else, contact your network administrator for information on resetting the chassis intrusion detector.

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Solving Problems

Dell™ OptiPlex™ GX60 Systems User's Guide

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- [Card Problems](#)
- [Clearing NVRAM and Restoring Default Settings](#)
- [Diagnostic Lights](#)
- [Drive Problems](#)
- [Error Messages](#)
- [Keyboard Problems](#)
- [Lockups and Software Problems](#)
- [Memory Problems](#)
- [Mouse Problems](#)
- [Network Problems](#)
- [Power Problems](#)
- [Printer Problems](#)
- [Serial or Parallel Device Problems](#)
- [Sound and Speaker Problems](#)
- [Video and Monitor Problems](#)
- [Wet Computer](#)

Battery Problems

Fill out the [Diagnostics Checklist](#) as you complete these checks.

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

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

Replace the battery — If you have to repeatedly reset time and date information after turning on the computer, or if an incorrect time or date displays during start-up, [replace the battery](#). If the battery still does not work properly, [contact Dell](#).

Card Problems

Fill out the [Diagnostics Checklist](#) as you complete these checks.

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

Check the card seating and cable —

1. Turn off the computer and devices, disconnect them from their electrical outlets, wait 10 to 20 seconds, and then open the computer cover.
2. Ensure that each card is firmly seated in its connector. Reseat any loose cards.
3. Ensure that all cables are firmly connected to their corresponding connectors on the cards. If any cables appear loose, reconnect them.

For instructions on which cables should be attached to specific connectors on a card, see the card's documentation.

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

Test the graphics card —

1. Turn off the computer and devices, disconnect them from their electrical outlets, wait 10 to 20 seconds, and then open the computer cover.
2. Remove all cards except the graphics card.

If your primary hard drive is connected to a drive controller card and not to one of the system board IDE connectors, leave the drive controller card installed in the computer.

3. Close the computer cover, reconnect the computer and devices to electrical outlets, and then turn them on.
4. Run the [Dell Diagnostics](#).

Test the cards —

1. Turn off the computer and devices, disconnect them from their electrical outlets, wait 10 to 20 seconds, and then open the computer cover.
2. Reinstall one of the cards that you removed previously.
3. Close the computer cover, reconnect the computer and devices to electrical outlets, and then turn them on.
4. Run the [Dell Diagnostics](#).

If any of the tests fail, the card you just reinstalled is faulty and needs to be replaced.

5. Repeat this process until you have reinstalled all cards.

Clearing NVRAM and Restoring Default Settings

Clear the computer's non-volatile random access memory (NVRAM) and restore the computer's system settings to their default values

1. Turn on or restart your computer.
2. When Press <F2> to Enter Setup appears in the upper-right corner of the screen, press <F2> immediately.
3. If you wait too long and the Microsoft® Windows® logo appears, continue to wait until you see the Windows desktop. Then shut down your computer through the Start menu and try again.
4. Toggle the <Caps Lock>, <Scroll Lock>, and <Num Lock> keys, ensuring that the status lights for all three functions are lit.

NOTE: The <Num Lock> key is often on by default, so toggling that key may turn the Num Lock feature off. Before clearing the NVRAM, ensure that the Num Lock function is on and that the keyboard light displays.

5. Simultaneously press <Alt> and <e>.

The computer emits a beep tone to indicate that the NVRAM has been cleared.

6. Simultaneously press <Alt> and <f> to restore the computer's original default settings.

NOTE: After restoring the computer's default settings, ensure that all IDE devices are present and properly enabled. Also, check or reset the date and time.

7. Press <Esc> and then press <Enter> to save the changes and restart your computer.

Diagnostic Lights

To help you troubleshoot a problem, your computer is equipped with four lights on the back panel labeled "A," "B," "C," and "D." These lights can be yellow or green. When the computer starts up normally, the lights flash. After the computer starts, the lights remain green. If the computer malfunctions, the color and sequence of the lights identify the problem.

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

Back Panel Diagnostic Light Codes

Light pattern		Problem Description	Suggested Resolution
	off off off off	Normal off condition or possible pre-BIOS failure	Verify that the computer is plugged into a working outlet and that you have pressed the power button.
	green yellow yellow yellow	Possible BIOS failure: the computer is in the recovery mode	Run the BIOS Recovery utility, wait for recovery completion, and restart the computer to retest.
	yellow green yellow yellow	Possible processor failure	Reseat the processor, and restart the computer to retest.
	green green yellow yellow	Possible memory failure	Reseat all memory modules and restart the computer to retest.
	yellow yellow green yellow	Possible expansion card failure	Remove each expansion card individually, and restart the computer to retest. Reinstall the expansion card(s) one at a time, and restart the computer to retest. Move each expansion card one at a time to another PCI slot, and restart the computer to retest.
	green yellow green yellow	Possible video card failure or bad on-board video	If you have a video card, reseat it and restart the computer to retest. If you have video integrated, you must replace the system board.
	yellow green green yellow	Possible floppy or hard drive failure	Reseat all power and data cables, and restart the computer to retest.
	green green green yellow	Possible USB failure	Reseat all USB devices and cables, and restart the computer to retest.

D C B A		yellow yellow yellow green	No memory detected	Reseat all memory modules and restart the computer. If the problem still exists, to eliminate the possibility of a faulty memory connector, install one memory module (if the computer supports a single module), and restart the computer. Then move the module to another connector and restart the computer.
D C B A		yellow green yellow green	Memory is detected, but a memory configuration or compatibility error exists	Be sure that the memory modules are compatible with your computer. If necessary, replace the memory modules.
D C B A		yellow green green green	Other failure	Check the computer message that appears on your monitor screen.
D C B A		green green green green	Normal operating condition after POST	None.

Drive Problems

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

Fill out the [Diagnostics Checklist](#) as you complete these checks.

<p>Test the drive —</p> <ul style="list-style-type: none"> 1 Insert another floppy disk, CD, or DVD to eliminate the possibility that the original one is defective. 1 Insert a bootable floppy disk and restart the computer.
<p>Clean the drive or disk — See "Cleaning Your Computer."</p>
<p>Check the cable connections</p>
<p>Check for interrupt request conflicts</p>
<p>Run the Dell Diagnostics</p>

CD and DVD drive problems

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

<p>Adjust the Windows volume control —</p> <ul style="list-style-type: none"> 1 Click the speaker icon in the lower-right corner of your screen. 1 Ensure that the volume is turned up by clicking the slider and dragging it up. 1 Ensure that the sound is not muted by clicking any boxes that are checked.
<p>Check the speakers and subwoofer — See "Sound and Speaker Problems."</p>

Problems writing to a CD/DVD-RW drive

<p>Close other programs — The CD/DVD-RW drive must receive a steady stream of data when writing. If the stream is interrupted, an error occurs. Try closing all programs before you write to the CD/DVD-RW.</p>
<p>Turn off Standby mode in Windows before writing to a CD/DVD-RW disc — See your computer documentation for information on power management modes.</p>

Hard drive problems

<p>Running the Dell IDE Hard Drive Diagnostics —</p> <p>The Dell IDE Hard Drive Diagnostics is a utility that tests the hard drive to troubleshoot or confirm a hard drive failure.</p> <ul style="list-style-type: none"> 1. Turn on your computer (if your computer is already on, restart it). 2. When F2 = Setup appears in the upper-right corner of the screen, press <Ctrl><Alt><d>. 3. Follow the instructions on the screen.
<p>Run Check Disk —</p> <p><i>Windows XP</i></p> <ul style="list-style-type: none"> 1. Click the Start button and click My Computer. 2. Right-click Local Disk C:. 3. Click Properties.

4. Click the **Tools** tab.
5. Under **Error-checking**, click **Check Now**.
6. Click **Scan for and attempt recovery of bad sectors**.
7. Click **Start**.

Windows 2000

1. Double-click **My Computer** on the Windows desktop.
2. Click the **Tools** tab.
3. Under **Error-checking**, click **Check Now**.
4. Click **Start**.

MS-DOS ®

Type scandisk x: at an MS-DOS prompt, where x is the hard drive letter, and then press <Enter>. Click the **Start** button and click **My Computer**.

Error Messages

Fill out the [Diagnostics Checklist](#) as you complete these checks.

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

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

A filename cannot contain any of the following characters: \ / : * ? " < > — Do not use these characters in filenames.
A required .DLL file was not found — The program that you are trying to open is missing an essential file. To remove and then reinstall the program: <ol style="list-style-type: none"> 1. Click the Start button, click Control Panel, and then click Add or Remove Programs. 2. Select the program you want to remove. 3. Click the Change or Remove Program icon. 4. See the program documentation for installation instructions.
Alert! Previous attempts at booting this system have failed at checkpoint [nnnn]. For help in resolving this problem, please note this checkpoint and contact Dell Technical Support — Contact Dell and report the checkpoint code (nnnn) to the support technician.
Attachment failed to respond — See " Drive Problems ."
Bad command or file name — Ensure that you spelled the command correctly, put spaces in the proper place, and used the correct pathname.
Bad error-correction code (ECC) on disk read — See " Drive Problems ."
Controller has failed — See " Drive Problems ."
Data error — See " Drive Problems ."
Decreasing available memory — See " Lockups and Software Problems ."
Diskette drive 0 seek failure — See " Drive Problems ."
Diskette read failure — See " Drive Problems ."
Diskette subsystem reset failed — Run the Dell Diagnostics .
Diskette write protected — Slide the write-protect notch to the open position.
Drive not ready — Put a floppy disk in the drive.
Gate A20 failure — See " Lockups and Software Problems ."
Hard-disk configuration error — Hard-disk controller failure — Hard-disk drive failure — Hard-disk drive failure — See " Drive Problems ."
Insert bootable media — Insert a bootable floppy disk or CD.
Invalid configuration information - please run SETUP program — Enter system setup and correct the computer configuration information.
Keyboard failure — See " Keyboard Problems ."
Memory address line failure at address, read value expecting value — See " Lockups and Software Problems ."
Memory allocation error — <ol style="list-style-type: none"> 1. Turn off the computer, wait 30 seconds, and then restart the computer. 2. Try to run the program again. 3. If the error message appears again, see the software documentation for additional troubleshooting suggestions.
Memory data line failure at address, read value expecting value — Memory double word logic failure at address, read value expecting value — Memory odd/even logic failure at address, read value expecting value — Memory write/read failure at address, read value expecting value — Memory size in CMOS invalid — See " Lockups and Software Problems ."
No boot device available — <ol style="list-style-type: none"> 1. If the floppy drive is your boot device, ensure that a bootable floppy disk is in the drive. 1. If the hard drive is your boot device, ensure that the cables are connected and that the drive is installed properly and partitioned as a

boot device. 1 Enter system setup and ensure that the boot sequence information is correct.
No boot sector on hard-disk drive — Enter system setup and ensure that the computer configuration information for the hard drive is correct.
No timer tick interrupt — Run the Dell Diagnostics .
Non-system disk or disk error — Replace the floppy disk with one that has a bootable operating system or remove the floppy disk from drive A and restart the computer.
Not a boot diskette — Insert a bootable floppy disk and restart your computer.
Not enough memory or resources. Close some programs and try again — Close all windows and open the program that you want to use. In some cases, you might have to restart your computer to restore computer resources. If so, run the program that you want to use first.
Operating system not found — Contact Dell .
Plug and Play Configuration Error — 1. Turn your computer off, unplug it from the electrical outlet, and then remove all but one of the cards. 2. Plug in your computer and reboot it. 3. If the message reappears, the installed card might be malfunctioning. If the message does not reappear, turn off the computer and reinsert one of the other cards. 4. Repeat this process until you identify which card is malfunctioning.
Read fault — Requested sector not found — Reset failed — See " Drive Problems ."
Sector not found — 1 Run the Windows error-checking utility to check the file structure on the floppy disk or hard drive. See Windows Help for instructions. 1 If a large number of sectors are defective, back up the data (if possible), and then reformat the floppy disk or hard drive.
Seek error — See " Drive Problems ."
Shutdown failure — Run the Dell Diagnostics .
Time-of-day clock stopped — Time-of-day not set—please run the System Setup program — Enter system setup and correct the date or time. If the problem persists, replace the battery .
Timer chip counter 2 failed — Run the Dell Diagnostics .
Unexpected interrupt in protected mode — Run the Dell Diagnostics .
WARNING: Dell's Disk Monitoring System has detected that drive [0/1] on the [primary/secondary] EIDE controller is operating outside of normal specifications. It is advisable to immediately back up your data and replace your hard drive by calling your support desk or Dell — If no replacement drive is immediately available and the drive is not the only bootable drive, enter system setup and change the appropriate drive setting to None . Then remove the drive from the computer.
Write fault — Write fault on selected drive — See " Drive Problems ."
x:\ is not accessible. The device is not ready — The floppy drive cannot read the disk. Insert a floppy disk into the drive and try again.

--

Keyboard Problems

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

Check the keyboard cable — 1 Ensure that the keyboard cable is firmly connected to the computer. 1 Shut down the computer, reconnect the keyboard cable as shown in the <i>Setup and Quick Reference Guide</i> for your computer, and then restart the computer. 1 Check the cable connector for bent or broken pins and for damaged or frayed cables. Straighten bent pins. 1 Remove keyboard extension cables and connect the keyboard directly to the computer.
Test the keyboard — Connect a properly working keyboard to the computer, and try using the keyboard. If the new keyboard works, the original keyboard is faulty.
Run the Dell Diagnostics
Check for interrupt request conflicts

Lockups and Software Problems

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

The computer does not start up

Check the [Diagnostic Lights](#)

Ensure that the power cable is firmly connected to the computer and to the electrical outlet

The computer stops responding

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

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

A program stops responding

End the program —

Windows XP, Windows 2000

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

A program crashes repeatedly

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

Check the software documentation — If necessary, uninstall and then reinstall the program.

A solid blue screen appears

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

Other software problems

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

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

Back up your files immediately

Use a virus-scanning program to check the hard drive, floppy disks, or CDs

Save and close any open files or programs and shut down your computer through the Start menu

Run the [Dell Diagnostics](#) — If all tests run successfully, the error condition is related to a software problem.

Memory Problems

Fill out the [Diagnostics Checklist](#) as you complete these checks.

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

If you receive an insufficient memory message —

1. Save and close any open files and exit any open programs you are not using to see if that resolves the problem.
1. See the software documentation for minimum memory requirements. If necessary, install additional memory.
1. Reseat the memory modules to ensure that your computer is successfully communicating with the memory.
1. Run the [Dell Diagnostics](#).

If you experience other memory problems —

1. Reseat the memory modules to ensure that your computer is successfully communicating with the memory.
1. Ensure that you are following the memory installation guidelines.
1. Run the [Dell Diagnostics](#).

Mouse Problems

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

Check the mouse cable —

1. Ensure that the mouse cable is firmly connected to the computer.
1. Check the cable connector for bent or broken pins and for damaged or frayed cables. Straighten bent pins.

Restart the computer —

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

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

Check the mouse settings —

Windows XP

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

Windows 2000

1. Click the **Start** button, point to **Settings**, and then click **Control Panel**.
2. Double-click the **Mouse** icon.
3. Try adjusting the settings.

If you are using a PS/2 mouse

1. [Enter system setup](#) and ensure that **Mouse Port** under the **Integrated Devices** option is set to **On**.
2. Exit system setup and restart the computer.

Reinstall the mouse driver — See "[Reinstalling Drivers and Utilities](#)" for information on reinstalling drivers.

Run the [Dell Diagnostics](#)

Check for interrupt request conflicts

Network Problems

Fill out the [Diagnostics Checklist](#) as you complete these checks.

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

Check the network cable connector — Ensure that the network cable is firmly inserted into both the network connector on the back of the computer and the network jack.

Check the network lights on the back of the computer — No light indicates that no network communication exists. Replace the network cable.

Restart the computer and log on to the network again

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

Check for interrupt request conflicts

Power Problems

Fill out the [Diagnostics Checklist](#) as you complete these checks.

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

If the power light is green and the computer is not responding — See "[Diagnostic Lights](#)."

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

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

1. Reseat the power cable into both the power connector on the back of the computer and the electrical outlet.
1. If the computer is plugged into a power strip, ensure that the power strip is plugged into an electrical outlet and that the power strip is turned on. Also bypass power protection devices, power strips, and power extension cables to verify that the computer turns on properly.

<ul style="list-style-type: none"> 1 Ensure that the electrical outlet is working by testing it with another device, such as a lamp. 1 Ensure that the main power cable and front panel cable are securely connected to the system board.
<p>If the power light is amber and green or steady amber — The computer is receiving electrical power, but an internal power problem might exist.</p> <ul style="list-style-type: none"> 1 Ensure that the voltage selection switch is set to match the AC power at your location (if applicable). 1 Ensure that the processor power cable is securely connected to the system board.
<p>If the power light is blinking amber — A device might be malfunctioning or incorrectly installed.</p> <ul style="list-style-type: none"> 1 Remove and then reinstall the memory modules. 1 Remove and then reinstall any cards. 1 Remove and then reinstall the graphics card, if applicable.
<p>Eliminate interference — Some possible causes of interference are:</p> <ul style="list-style-type: none"> 1 Power, keyboard, and mouse extension cables 1 Too many devices on a power strip 1 Multiple power strips connected to the same electrical outlet

Printer Problems

Fill out the [Diagnostics Checklist](#) as you complete these checks.

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

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

<p>Check the printer documentation — See the printer documentation for setup and troubleshooting information.</p>
<p>Ensure that the printer is turned on</p>
<p>Check the printer cable connections —</p> <ul style="list-style-type: none"> 1 See the printer documentation for cable connection information. 1 Ensure that the printer cables are securely connected to the printer and the computer.
<p>Test the electrical outlet — Ensure that the electrical outlet is working by testing it with another device, such as a lamp.</p>
<p>Verify that the printer is recognized by Windows —</p> <p><i>Windows XP</i></p> <ol style="list-style-type: none"> 1. Click the Start button, click Control Panel, and then click Printers and Other Hardware. 2. Click View installed printers or fax printers. <p>If the printer is listed, right-click the printer icon.</p> <ol style="list-style-type: none"> 3. Click Properties and click the Ports tab. For a parallel printer, ensure that the Print to the following port(s): setting is LPT1 (Printer Port). For a USB printer, ensure that the Print to the following port(s): setting is USB. <p><i>Windows 2000</i></p> <ol style="list-style-type: none"> 1. Click the Start button, point to Settings, and then click Printers. <p>If the printer is listed, right-click the printer icon.</p> <ol style="list-style-type: none"> 2. Click Properties and click the Ports tab. <p>For a parallel printer, ensure that the Print to the following port(s): setting is LPT1 (Printer Port). For a USB printer, ensure that the Print to the following port(s): setting is USB.</p>
<p>Reinstall the printer driver — See the printer documentation for instructions.</p>

Serial or Parallel Device Problems

Fill out the [Diagnostics Checklist](#) as you complete these checks.

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

 **NOTE:** If you are having a problem with a printer, see "[Printer Problems](#)."

<p>Check the option setting — See the device's documentation for the recommended settings. Then enter system setup and go to the Integrated Devices option settings. Ensure that the Serial Port setting or the Parallel Port setting matches the recommended settings.</p>
<p>Run the Dell Diagnostics</p>

Sound and Speaker Problems

Fill out the [Diagnostics Checklist](#) as you complete these checks.

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

No sound from speakers

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

Check the speaker cable connections — Ensure that the speakers are connected as shown on the setup diagram supplied with the speakers. If you purchased an audio card, ensure that the speakers are connected to the card.
Ensure that the subwoofer and the speakers are turned on — See the setup diagram supplied with the speakers. If your speakers have volume controls, adjust the volume, bass, or treble to eliminate distortion.
Adjust the Windows volume control — Click or double-click the speaker icon in the lower-right corner of your screen. Ensure that the volume is turned up and that the sound is not muted.
Disconnect headphones from the headphone connector — Sound from the speakers is automatically disabled when headphones are connected to the computer's front-panel headphone connector.
Test the electrical outlet — Ensure that the electrical outlet is working by testing it with another device, such as a lamp.
Enable digital mode — Your speakers do not work if the CD drive is operating in analog mode. <i>Windows XP</i> <ol style="list-style-type: none">1. Click the Start button, click Control Panel, and then click Sounds, Speech, and Audio Devices.2. Click Sounds and Audio Devices.3. Click the Hardware tab.4. Double-click the name of your CD drive.5. Click the Properties tab.6. Check the Enable digital CD audio for this CD-ROM device box. <i>Windows 2000</i> <ol style="list-style-type: none">1. Click the Start button, point to Settings→ Control Panel, and then click Sounds and Multimedia.2. Click the Hardware tab.3. Click the name of your CD drive and click Properties.4. Click the Properties tab.5. Check the Enable digital CD audio for this CD-ROM device box.
Eliminate possible interference — Turn off nearby fans, fluorescent lights, or halogen lamps to check for interference.
Run the speaker diagnostics
Reinstall the audio driver — See " Reinstalling Drivers and Utilities " for information on reinstalling drivers.
Check the device option setting — Enter system setup and ensure that Sound under the Integrated Devices option is set to On . Exit system setup and restart your computer.
Run the Dell Diagnostics
Check for interrupt request conflicts

No sound from headphones

Check the headphone cable connection — Ensure that the headphone cable is securely inserted into the headphone connector.
Disable digital mode — Your headphones do not work if the CD drive is operating in digital mode. <i>Windows XP</i> <ol style="list-style-type: none">1. Click the Start button, click Control Panel, and then click Sounds, Speech, and Audio Devices.2. Click Sounds and Audio Devices.3. Click the Hardware tab.4. Double-click the name of your CD drive.5. Click the Properties tab.6. Uncheck the Enable digital CD audio for this CD-ROM device box. <i>Windows 2000</i> <ol style="list-style-type: none">1. Click the Start button, point to Settings→ Control Panel, and then click Sounds and Multimedia.2. Click the Hardware tab.3. Click the name of your CD drive and click Properties.4. Click the Properties tab.5. Uncheck the Enable digital CD audio for this CD-ROM device box.
Adjust the Windows volume control — Click or double-click the speaker icon in the lower-right corner of your screen. Ensure that the volume is turned up and that the sound is not muted.

Video and Monitor Problems

Fill out the [Diagnostics Checklist](#) as you complete these checks.

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

If the screen is blank

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

Check the monitor cable connection — <ol style="list-style-type: none">1 If you purchased a graphics card, ensure that the monitor is connected to the card.1 Ensure that your monitor is properly connected (see the <i>Setup and Quick Reference Guide</i> that came with your computer).1 If you are using a graphics extension cable and removing the cable solves the problem, the cable is defective.1 Swap the computer and monitor power cables to determine if the power cable is defective.1 Check the connector for bent or broken pins. (It is normal for monitor cable connectors to have missing pins.)
Check the monitor power light — If the power light is off, firmly press the button to ensure that the monitor is turned on. If the power light is lit or blinking, the monitor has power. If the power light is blinking, press a key on the keyboard or move the mouse.
Test the electrical outlet — Ensure that the electrical outlet is working by testing it with another device, such as a lamp.
Test the monitor — Connect a properly working monitor to the computer, and try using the monitor. If the new monitor works, the original monitor is faulty.
Check the Diagnostic Lights
Check the card setting — Enter system setup and ensure that Primary Video Controller under the Integrated Devices option is set correctly. For an AGP card, set Primary Video Controller to AGP . For a PCI card, set Primary Video Controller to Auto . Exit system setup and restart your computer.
Run the Dell Diagnostics

If the screen is difficult to read

Check the monitor settings — See the monitor documentation for instructions on adjusting the contrast and brightness, demagnetizing (degaussing) the monitor, and running the monitor self-test.
Move the subwoofer away from the monitor — If your speaker system includes a subwoofer, ensure that the subwoofer is at least 60 cm (2 ft) away from the monitor.
Move the monitor away from external power sources — Fans, fluorescent lights, halogen lamps, and other electrical devices can cause the screen image to appear "shaky." Turn off nearby devices to check for interference.
Adjust the Windows display settings — <i>Windows XP</i> <ol style="list-style-type: none">1. Click the Start button, click Control Panel, and then click Appearance and Themes.2. Click Display and click the Settings tab.3. Try different settings for Screen resolution and Color quality. <i>Windows 2000</i> <ol style="list-style-type: none">1. Click the Start button, point to Settings, and then click Control Panel.2. Double-click the Display icon and click the Settings tab.3. Try different settings for Screen area or Desktop area.

Wet Computer

Fill out the [Diagnostics Checklist](#) as you complete these checks.

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

 **NOTE:** Spills, splashes, and excessive humidity can cause damage to the computer. If an external device, such as a printer or modem, gets wet, contact the manufacturer of the device for instructions.

Repair the Wet Computer — <ol style="list-style-type: none">1. Turn off the computer and devices, disconnect them from their electrical outlets, wait 10 to 20 seconds, and then open the computer cover.2. Let the computer dry for at least 24 hours. Ensure that it is thoroughly dry before you proceed.3. Remove all cards that are installed in the computer, except graphics cards. If your primary hard drive is connected to a drive controller card instead of one of the system board connectors, leave the drive controller card installed in the computer.4. Close the computer cover, reconnect the computer and devices to electrical outlets, and then turn them on.5. If your computer has power, go to step 6. If not, contact Dell for technical assistance.6. Turn off the computer and devices, disconnect them from their electrical outlets, wait 10 to 20 seconds, and then open the computer cover.7. Reinstall all cards.8. Close the computer cover, reconnect the computer and devices to electrical outlets, and then turn them on.9. Run the Dell Diagnostics.10. If any of the tests fail, contact Dell for technical assistance.

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Technical Specifications

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- [Processor](#)
- [Memory](#)
- [Computer Information](#)
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- [Drives](#)
- [Ports](#)
- [Key Combinations](#)
- [Controls and Lights](#)
- [Power](#)
- [Physical](#)
- [Environmental](#)

Processor	
Processor type	Intel® Celeron® processors. Design provides for future Dell-supported upgrades.
Level 1 (L1) cache	8 KB
Level 2 (L2) cache	128 KB
Math coprocessor	internal to processor
Memory	
Architecture	845GV chipset: 266- or 333-megahertz* double-data rate (DDR) synchronous dynamic random-access memory (SDRAM) 845GL chipset: 266-MHz DDR SDRAM *NOTE: 333-MHz memory will run as 266-MHz if your processor's front-side bus is 400-MHz.
Dual in-line memory module (DIMM) sockets	two non-error checking and correction (non-ECC)
DIMM capacities	128, 256, 512 MB, and 1 GB
Minimum random-access memory (RAM)	128 MB
Maximum RAM	2 GB (field upgradeable)
Basic input/output system (BIOS) address	F0000h
Computer Information	
Computer chip set	Intel 845GV or 845GL
Data bus width	64 bits
Address bus width	32 bits
Direct memory access (DMA) channels	7
Interrupt levels	24
Computer BIOS	4-Mb flash chip
System bus speed	<ul style="list-style-type: none"> 1 845GV chipset: 533- or 400-MHz quad-data rate; 133- or 100-MHz clock (matches external bus speed) 1 845GL chipset: 400-MHz quad-data rate; 100 MHz clock (matches external bus speed)
Network interface controller	Integrated PCI Network Interface with ASF (Alert Standards Format) support as defined by DMTF. Capable of 10/100 communication: <ul style="list-style-type: none"> 1 Green — A good connection exists between a 10-Mbps network and the computer. 1 Orange — A good connection exists between a 100-Mbps network and the computer. 1 Off — The computer is not detecting a physical connection to the network or the controller is disabled in system setup.
Audio	
Audio type	AC97, Sound Blaster emulation
Audio controller	Integrated AC97 Codec
Stereo conversion	16-bit analog-to-digital; 20-bit digital-to-analog
Interfaces:	
Internal	PCI bus/AC97
External	stereo line-in minijack, microphone-in minijack, line-out minijack on the rear input/output (I/O) panel; headphones minijack on the front panel
Expansion Bus	
Bus types	PCI 2.2 and USB 2.0
Bus speed	PCI: 33 MHz

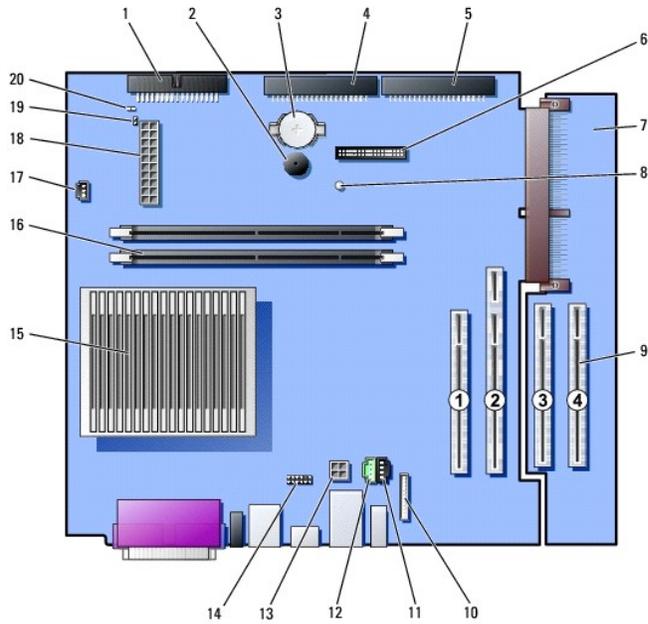
Small form-factor computer expansion-card connector	one PCI slot; low-profile cards are supported (card size = 6.35 cm [2.5 inches] high by 16.76 cm [6.6 inches] long)
Small desktop computer expansion-card connectors:	two PCI slots; half-length cards are supported (card size = 10.67 cm [4.2 inches] high by 17.65 cm [6.95 inches] long)
Small mini-tower computer expansion-card connectors:	four PCI slots (card sizes = three PCI slots support cards up to 10.67 cm [4.2 inches] high by 27.9 cm [11 inches] long, and one PCI slot supports cards up to 10.67 cm [4.2 inches] high by 22.9 cm [9 inches] long)
PCI expansion-card connector size	120 pins
PCI expansion-card connector data width (maximum)	32 bits
Memory module connector size	DDR — 184 pins
Drives	
Externally accessible bays:	
Small form-factor computer	one bay for a slimline floppy drive one bay for a slimline optical drive
Small desktop computer	one bay for a 3.5-inch floppy drive one bay for a 5.25-inch device drive
Small mini-tower computer	two bays for two 3.5-inch floppy drives two bays for two 5.25-inch device drives
Internally accessible bays:	
Small form-factor computer	one bay for a 1-inch-high IDE hard drive
Small desktop computer	one bay for a 1-inch-high IDE hard drive
Small mini-tower computer	two bays for 1-inch high IDE hard drives
Ports	
Externally accessible:	
Serial (data terminal equipment [DTE])	one 9-pin (second optional) connector; 16550-compatible on the back I/O panel
Parallel	one 25-hole connector (bidirectional) on the back I/O panel
Video	15-hole VGA connector on the back I/O panel
Integrated network adapter	RJ45 connector on the back I/O panel
Personal System/2 (PS/2)-style keyboard	6-pin mini-Deutsche Industrie Norm (DIN) on the back I/O panel
PS/2-compatible mouse	6-pin mini-DIN on the back I/O panel
Universal Serial Bus (USB)	four USB 2.0-compliant connectors on the back I/O panel; two on the front panel
Internally accessible:	
Primary IDE hard drive	40-pin connector on PCI local bus
Secondary IDE hard drive (on small mini-tower computers)	40-pin connector on PCI local bus
Floppy drive	34-pin connector
CD drive audio interface	4-pin connector
Telephony	4-pin connector
Fan	3-pin connector
PCI	120-pin connector
Serial	12-pin connector for optional 2nd serial port card
Front audio	10-pin connector
Front panel	34-pin connector
Key Combinations	
<Ctrl><Alt>	restarts (reboots) the computer
<Ctrl><Alt><\>	toggles processor speeds on 101-key keyboard (in MS-DOS® real mode only)
<Ctrl><Alt><#>	toggles processor speeds on 102-key keyboard (in MS-DOS real mode only)
<F2> or <Ctrl><Alt><Enter>	starts embedded system setup (during start-up only)
<F3>	automatically starts the computer from the network environment specified by the remote boot environment (PXE) rather than from one of the devices in the system setup Boot Sequence option (during start-up only)
<F12> or <Ctrl><Alt><F8>	displays a one-time boot menu that allows the user to enter a device for a single boot (during start-up only)
<Ctrl><Alt><F10>	launches the utility partition (if installed) during computer start-up

<Ctrl><Alt><D>	launches the hard-drive diagnostics utility during computer start-up
Controls and Lights	
Power control	push button
Power lights	green light on power button—blinking green in sleep state; solid green for power-on state
Hard drive access light	green light
Link integrity light (on integrated network adapter)	green light for 10-Mb operation; orange light for 100-Mb operation
Activity light (on integrated network adapter)	yellow blinking light
Diagnostic lights	four lights on back I/O panel
Standby power light	AUX_LED on the system board
Power	
DC power supply:	
Wattage	small form-factor computer: 160 W small desktop computer: 180 W small mini-tower computer: 250 W
Heat dissipation	small form-factor computer: 455 BTU/hr (average) small desktop computer: 500 BTU/hr (average) small mini-tower computer: 910 BTU/hr (average)
Voltage	90 to 135 V at 60 Hz; 180 to 265 V at 50 Hz
Backup battery	3-V CR2032 lithium coin cell
Physical	
Small form-factor computer:	
Height	9.0 cm (3.57 inches)
Width	31.9 cm (12.54 inches)
Depth	35.4 cm (13.93 inches)
Weight	6 kg (14 lbs)
Small desktop computer:	
Height	10.6 cm (4.2 inches)
Width	38.9 cm (15.3 inches)
Depth	43.2 cm (17 inches)
Weight	9.9 kg (22 lbs)
Small mini-tower computer:	
Height	42.5 cm (16.7 inches)
Width	18.1 cm (7.1 inches)
Depth	44.7 cm (17.6 inches)
Weight	12.7 kg (28 lbs)
Environmental	
Temperature:	
Operating	10° to 35°C (50° to 95°F)
Storage	-40° to 65°C (-40° to 149°F)
Relative humidity	20% to 80% (non-condensing)
Maximum vibration:	
Operating	0.25 gravities (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	-16 to 3048 m (-50 to 10,000 ft)
Storage	-16 to 10,600 m (-50 to 35,000 ft)

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System Board Components

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1	floppy drive connector (DSKT)	11	CD drive audio cable connector (CD_IN)
2	internal speaker (SPEAKER)	12	telephony connector (MODEM)
3	battery socket (BATTERY)	13	power connector (12VPOWER)
4	CD/DVD drive connector (IDE2)	14	second serial connector (SER2)
5	hard-drive connector (IDE1)	15	processor and heat-sink connector (CPU)
6	front-panel connector (FRONTPANEL)	16	memory module connectors (DIMM A and DIMM B)
7	PCI riser (small mini-tower computer only)	17	processor fan connector (FAN)
8	standby power light (AUX_PWR)	18	power connector (POWER)
9	PCI card connectors (PCI1, PCI2, PCI3, and PCI4)	19	RTC reset jumper (RTCST)
10	front-panel audio cable connector (FRONTAUDIO)	20	password jumper (PSWD)

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Telephony Applications Programming Interface (TAPI)

Dell™ OptiPlex™ GX60 Systems User's Guide

● [Installing a TAPI-Compliant Modem Card](#)

● [Installing a TAPI Sound Card](#)

 **NOTE:** See the documentation that came with the TAPI-compliant card for more information on using TAPI devices and to verify that the card works with your computer.

Your computer supports TAPI-compliant modem cards using the standard TAPI connector (the green connector labeled MODEM or TELEPHONY). If your modem supports voice features, you can connect your modem to the TAPI connector and then use your audio speakers and microphone as an answering machine or speakerphone. The microphone carries your voice into the computer and then through the TAPI system board connector to your modem card. The caller's voice enters through the modem card to the TAPI system board connector and then out to the speakers. You can also use this configuration to record and play audio files over the telephone by using third-party software.

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

 **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.

Installing a TAPI-Compliant Modem Card

1. Follow the procedures in "[Before You Begin](#)."
2. Install the TAPI-compliant modem card:
 - a. Connect the 4-pin TAPI cable to the TAPI system board connector.

To locate the TAPI connector on the system board, see "[System Board Components](#)."

- b. Connect the other end of the cable to the TAPI connector on the modem card.

To locate the TAPI connector on the card, see the manufacturer's documentation.

3. Close the computer cover.
4. Attach the computer stand, if it is used.
5. Reconnect the computer and devices to electrical outlets, and turn them on.

If enabled, the chassis intrusion detector causes the following message to appear on the screen at the next computer start-up:

ALERT! Cover was previously removed.

6. [Reset the chassis intrusion detector](#) by changing **Chassis Intrusion** to **Enabled** or **Enabled-Silent**.

 **NOTE:** If a setup password has been assigned by someone else, contact your network administrator for information on resetting the chassis intrusion detector.

7. Install the appropriate modem driver and voice program.

For more information, see the manufacturer's documentation and your Microsoft® Windows® documentation.

Installing a TAPI Sound Card

You can connect your modem to a TAPI-compliant sound card connector (typically labeled TAD) and then use the audio capabilities as a speakerphone.

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

 **CAUTION:** 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. Install the TAPI-compliant sound card.
3. 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 front or back panel of your computer.
4. Connect the 4-pin TAPI cable to the TAPI sound card connector.

To locate the TAPI connector on the sound card, see the manufacturer's documentation.

5. Connect the other end of the cable to the TAPI connector on the modem card.

To locate the TAPI connector on the card, see the manufacturer's documentation.

6. Close the computer cover.
7. Attach the computer stand, if it is used.
8. Reconnect the computer and devices to electrical outlets, and turn them on.

If enabled, the chassis intrusion detector causes the following message to appear on the screen at the next computer start-up:

ALERT! Cover was previously removed.

9. [Reset the chassis intrusion detector](#) by changing **Chassis Intrusion** to **Enabled** or **Enabled-Silent**.

 **NOTE:** If a setup password has been assigned by someone else, contact your network administrator for information on resetting the chassis intrusion detector.

10. Enter system setup, click **Integrated Devices**, and change the setting for **Sound** to **Off**.
11. Install the appropriate drivers for the new devices.

For more information, see the manufacturer's documentation and your Windows documentation.

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Warranty and Return Policy

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Dell Inc. ("Dell") manufactures its hardware products from parts and components that are new or equivalent to new in accordance with industry-standard practices. For information about the Dell warranty for your computer, see the *Setup and Quick Reference Guide* or separate paper warranty document that shipped with your computer.

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