HP 2533t Mobile Thin Client
End-User Reference Guide

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Safety warning notice

⚠ **WARNING!** To reduce the possibility of heat-related injuries or of overheating the computer, do not place the computer directly on your lap or obstruct the computer air vents. Use the computer only on a hard, flat surface. Do not allow another hard surface, such as an adjoining optional printer, or a soft surface, such as pillows or rugs or clothing, to block airflow. Also, do not allow the AC adapter to contact the skin or a soft surface, such as pillows or rugs or clothing, during operation. The computer and the AC adapter comply with the user-accessible surface temperature limits defined by the International Standard for Safety of Information Technology Equipment (IEC 60950).

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1 Notebook tour

Identifying the hardware

Components included with the computer may vary by region and model. The illustrations in this chapter identify the standard features on most computer models.

Top components

Pointing devices

Component		Description
(1)	Left TouchPad button*	Functions like the left button on an external mouse.
(2)	TouchPad*	Moves the pointer and selects or activates items on the screen.
(3)	Left pointing stick button*	Functions like the left button on an external mouse.
(4)	Pointing stick*	Moves the pointer and selects or activates items on the screen.
(5)	TouchPad on/off button	Turns the TouchPad on or off.

(6)	Right pointing stick button*	Functions like the right button on an external mouse.
(7)	TouchPad scroll zone	Scrolls up or down.
(8)	Right TouchPad button*	Functions like the right button on an external mouse.

*This table describes factory settings. To view or change pointing device preferences, select **Start > Control Panel > Printers and Other Hardware > Mouse**.

Lights

Component		Description
(1)	Power lights* (2)	• On: The computer is on. • Blinking: The computer is in Standby. • Off: The computer is off.
(2)	Wireless lights† (2)	• Blue: An integrated wireless device, such as a wireless local area network (WLAN) device, is on. • Off: All wireless devices are off.
(3)	TouchPad on/off light	• Turquoise: TouchPad is on. • Amber: TouchPad is off.
(4)	Caps lock light	On: Caps lock is on.
(5)	Num lock light	On: Num lock is on.

Component		Description
(6)	Volume mute light	• Turquoise: Computer sound is on. • Amber: Computer sound is off.
(7)	Battery light	• Amber: A battery is charging. • Turquoise: A battery is close to full charge capacity. • Blinking amber: A battery that is the only available power source has reached a low battery level. When the battery reaches a critical battery level, the battery light begins blinking rapidly. • Off: If the computer is plugged into an external power source, the light turns off when all batteries in the computer are fully charged. If the computer is not plugged into an external power source, the light stays off until the battery reaches a low battery level.
(8)	Drive light	Blinking: The flash drive or optional optical drive is being accessed.

*The 2 power lights display the same information. The light on the power button is visible only when the computer is open. The power light on the front of the computer is visible whether the computer is open or closed.

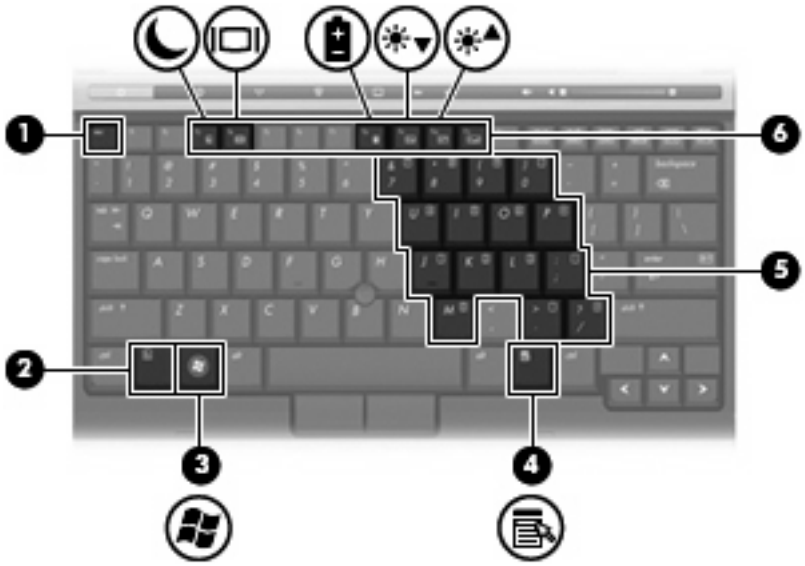
†The 2 wireless lights display the same information. The light on the wireless button is visible only when the computer is open. The wireless light on the front of the computer is visible whether the computer is open or closed.

Buttons and switches

Component		Description
(1)	Power button	• When the computer is off, press the button to turn on the computer. • When the computer is on, press the button to turn off the computer. • When the computer is in Standby, press the button briefly to exit Standby.

Component		Description
		If the computer has stopped responding and Windows® shutdown procedures are ineffective, press and hold the power button for at least 5 seconds to turn off the computer. To learn more about your power settings, right-click the **Power Meter** icon in the notification area, and then click **Adjust Power Properties**
(2)	Info button	Launches Info Center.
(3)	Internal display switch	Turns off the display if the display is closed while the power is on.
(4)	Wireless button	Turns the wireless feature on or off, but does not establish a wireless connection. **NOTE:** A wireless network must be set up in order to establish a wireless connection.
(5)	Presentation button	Opens the Presentation Options window, where you can start a frequently used presentation, file, program, or Web site. You can also adjust display settings for optimum viewing.
(6)	TouchPad on/off button	Turns the TouchPad on or off.
(7)	Volume mute button	Mutes and restores computer sound.
(8)	Volume scroll zone	Adjusts speaker volume. Slide your finger to the left to decrease volume and to the right to increase volume.

Keys



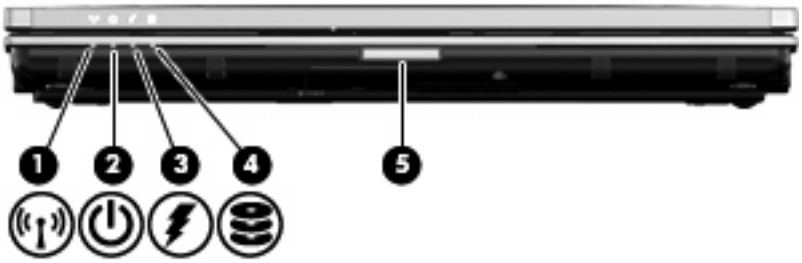
Component		Description
(1)	esc key	Displays system information when pressed in combination with the fn key.

Component		Description
(2)	fn key	Executes frequently used system functions when pressed in combination with a function key or the esc key.
(3)	Windows logo key	Displays the Windows Start menu.
(4)	Windows applications key	Displays a shortcut menu for items beneath the pointer.
(5)	Embedded numeric keypad keys	Can be used like the keys on an external numeric keypad.
(6)	Function keys	Execute frequently used system functions when pressed in combination with the fn key.

Display

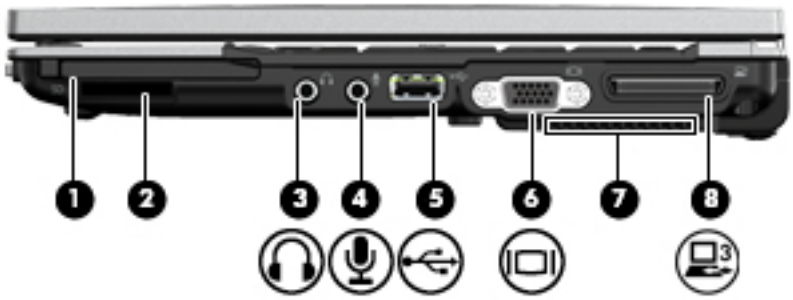
Component	Description
Internal microphone	Records sound.

Front components



Component		Description
(1)	Wireless light	• Blue: An integrated wireless device, such as a wireless local area network (WLAN) device, is on. • Off: All wireless devices are off.
(2)	Power light	• On: The computer is on. • Blinking: The computer is in Standby. • Off: The computer is off.
(3)	Battery light	• Amber: A battery is charging. • Turquoise: A battery is close to full charge capacity. • Blinking amber: A battery that is the only available power source has reached a low battery level. When the battery reaches a critical battery level, the battery light begins blinking rapidly. • Off: If the computer is plugged into an external power source, the light turns off when all batteries in the computer are fully charged. If the computer is not plugged into an external power source, the light stays off until the battery reaches a low battery level.
(4)	Drive light	Blinking: The flash drive or optional optical drive is being accessed.
(5)	Display release latch	Opens the computer.

Right-side components

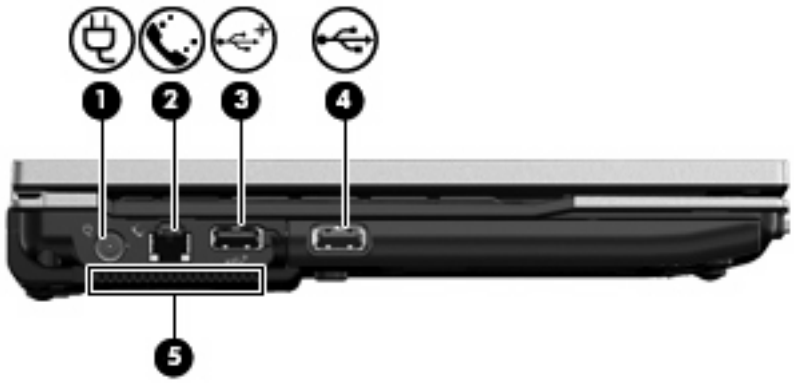


Component		Description
(1)	PC Card slot*	Supports optional Type I and Type II 32-bit (CardBus) or 16-bit PC Cards.
(2)	SD Card Reader*	Supports the Secure Digital (SD) Memory Card and MultiMediaCard (MMC) optional digital card formats.
(3)	Audio-out (headphone) jack	Produces sound when connected to optional powered stereo speakers, headphones, ear buds, a headset, or television audio.
(4)	Audio-in (microphone) jack	Connects an optional computer headset microphone, stereo array microphone, or monaural microphone.
(5)	USB port*	Connects an optional USB device.
(6)	External monitor port	Connects an external VGA monitor or projector.
(7)	Vent	Enables airflow to cool internal components.
(8)	Expansion port 3	Connects an optional docking device.

*For information regarding the status of the PC Card slot, SD Card Reader, and USB port, contact your network administrator.

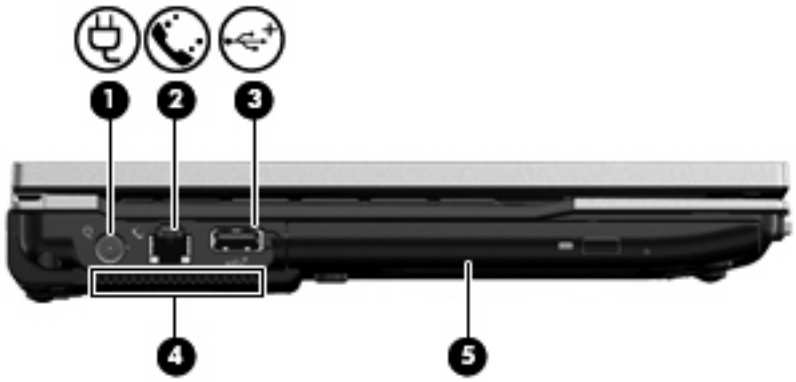
Left-side components

NOTE: Refer to the illustration that most closely matches your computer.



Component		Description
(1)	Power connector	Connects an AC adapter.
(2)	RJ-11 (modem) jack	Connects a modem cable.
(3)	Powered USB port*	Provides power to an external device if used with a powered USB cable.
(4)	USB port*	Connects an optional USB device.
(5)	Vent	Enables airflow to cool internal components.

*For information regarding the status of the USB ports, contact your network administrator.



Component		Description
(1)	Power connector	Connects an AC adapter.
(2)	RJ-11 (modem) jack	Connects a modem cable.
(3)	USB port*	Connects an optional USB device.
(4)	Vent	Enables airflow to cool internal components.

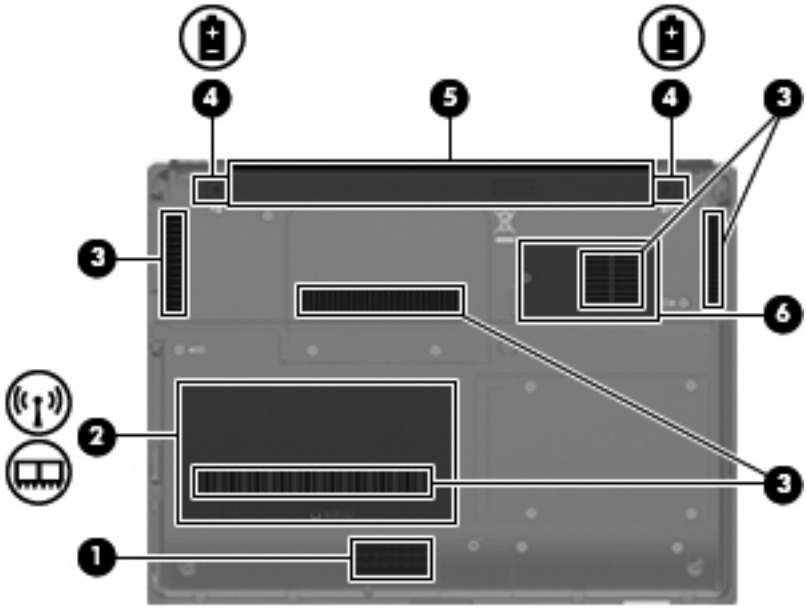
Component		Description
(5)	Optical drive (select models only)	Reads an optical disc.

*For information regarding the status of the USB port, contact your network administrator.

Rear components

Components		Description
(1)	RJ-45 (network) jack	Connects a network cable.
(2)	Security cable slot	Attaches an optional security cable to the computer. **NOTE:** The security cable is designed to act as a deterrent, but it may not prevent the computer from being mishandled or stolen.

Bottom components



Component		Description
(1)	Speaker	Produces sound.
(2)	Memory module compartment	Contains a memory module slot and a WLAN module slot. **CAUTION:** To prevent an unresponsive system, replace the wireless module only with a wireless module authorized for use in the computer by the governmental agency that regulates wireless devices in your country or region. If you replace the module and then receive a warning message, remove the module to restore computer functionality.
(3)	Vents (5)	Enable airflow to cool internal components.
(4)	Battery release latches (2)	Release the battery from the battery bay.
(5)	Battery bay	Holds the battery.
(6)	Flash drive bay	Holds the flash drive.

Wireless antennae

Wireless antennae send and receive signals from one or more wireless devices. These antennae are not visible from the outside of the computer.

NOTE: For optimal transmission, keep the areas immediately around the antennae free from obstructions.

To see wireless regulatory notices, refer to the section of the *Regulatory, Safety and Environmental Notices* that applies to your country or region. These notices are located in the printed *Getting Started* guide.

Identifying the labels

The labels affixed to the computer provide information you may need when you troubleshoot system problems or travel internationally with the computer:

- Service tag—Provides important information including the following: the product brand and series name, serial number (s/n), and product number (p/n) of your computer.

  - Product name **(1)**. This is the product name affixed to the front of your computer.
  - Serial number (s/n) **(2)**. This is an alphanumeric number that is unique to each product.
  - Part number/Product number (p/n) **(3)**. This number provides specific information about the product's hardware components. The part number helps a service technician to determine what components and parts are needed.
  - Model description **(4)**. This is the number you need to locate documents, drivers, and support for your computer.
  - Warranty period **(5)**. This number describes the duration of the warranty period for this computer.

  Have this information available when you contact technical support. The service tag label is affixed to the bottom of the computer.

- Regulatory label—Provides regulatory information about the computer. The regulatory label is affixed inside the battery bay.
- Modem approval label—Provides regulatory information about the modem and lists the agency approval markings required by some of the countries in which the modem has been approved for use. You may need this information when traveling internationally. The modem approval label is affixed inside the memory module compartment.
- Wireless certification label(s)—Provide information about wireless devices and the approval markings of some of the countries in which the devices have been approved for use. If your computer model includes one or more wireless devices, one or more certification labels are included with your computer. You may need this information when traveling internationally. Wireless certification labels are affixed inside the memory module compartment.

2 Enhanced Write Filter

The Enhanced Write Filter (EWF) provides a secure environment for your computer by protecting it from undesired flash memory writes. In order to save changes to your system configuration settings, you must commit your changes in the EWF. Otherwise, the new settings will be lost when the computer is shut down or restarted.

NOTE: For additional information on the EWF, see your network administrator.

3 Applications

Citrix Program Neighborhood

Citrix Program Neighborhood is a feature of ICA introduced with MetaFrame 1.8 that enables users to connect to MetaFrame and WinFrame servers and published applications. Program Neighborhood allows complete administrative control over application access and provides a seamless desktop integration.

For additional information on the ICA client application, go to the Citrix Corporation Web site at http://www.citrix.com.

Remote Desktop Connection

The Remote Desktop Connection utility allows you to establish connections to a Windows Terminal Server or to access remote applications using Microsoft RDP.

For additional information on how to use the Microsoft Remote Desktop Connection utility, go to the Microsoft Web site at http://www.microsoft.com.

HP PC Session Allocation Manager (SAM) Client

The Consolidated Client Infrastructure (CCI) solution from HP centralizes computing and storage resources into easily managed, highly secure data centers, while providing end users the convenience and familiarity of a traditional environment. Additionally, companies have long used server-based computing (SBC) to create virtual instances of desktop applications on a server that multiple remote users can access. HP CCI offers a new alternative for virtualizing the desktop.

Part of the CCI solution is the HP PC Session Allocation Manager (HP SAM), which is an extension of the HP SAM client.

- To access HP SAM, select **Start > All Programs**.

HP SAM becomes the control point in managing a CCI deployment. Specifically, it manages the assignment of Microsoft Remote Desktop connections from a user's access device (computer) to Remote Desktop sessions (blade PCs). Whether the session resides on a dedicated physical blade or resides together with other sessions on a virtual hardware platform, the HP SAM system can make these sessions available to users as they are needed.

For more information about PC SAM, go to http://h71028.www7.hp.com/enterprise/cache/323204-0-0-225-121.html.

TeemNT Terminal Emulation

All computer models include terminal emulation software to support computing on legacy platforms. The software uses the Telnet protocol to communicate with the computing platform. Refer to the terminal emulation documentation (supplied separately) for instructions.

- To access the TeemNT Connection Wizard and the TeemNT Emulator, select **Start > All Programs**.

Altiris Client Agent

The Altiris Client Agent allows the Altiris server to discover valid clients that are added to the network. The agent carries out assignments and reports the status of individual computers to the Altiris server. For additional information about Altiris Client Agent, go to the HP Web site at http://www.hp.com/support.

HP DHCP Settings Update Client

The HP DHCP Settings Update Client is a utility located in the Control Panel. It allows an IT Administrator to apply settings to an HP XP Embedded operating system.

The settings are applied through an .ini file that uses a subset of parameters from Microsoft's sysprep.inf as well as several XPe/HP-specific keys. XPePrep can run by specifying a local .ini file to be processed, or it can be used in conjunction with DHCP and FTP servers to automatically apply settings across multiple clients on a network.

For detailed information, refer to the *Using the HP DHCP Settings Update Client* document on the HP Web site at http://welcome.hp.com/country/us/en/support.html.

HP ThinState Capture

The HP ThinState Capture tool is a wizard-based utility that you can use to capture an HP XP Embedded image, which you can then deploy to another HP computer of identical model and hardware.

Microsoft Internet Explorer

Version 7.0 of the Microsoft Internet Explorer browser is installed locally on the computer. The Internet options settings for the browser have been preselected at the factory to limit writing to the flash memory. These settings should not be modified. You can access another browser through an ICA or RDP account if you need more browser resources.

Service Pack 2 improves Microsoft Internet Explorer 7.0 security by providing more control over the execution of all content, including a built-in facility to manage pop-up windows. Service Pack 2 also prevents scripts from moving or resizing windows and status bars to hide them from view or obscure other windows.

Windows XPe Service Pack 2 added a feature to Windows Messenger that blocks unsafe file transfers. For a list of files generally considered unsafe, see the white paper titled “Information About the Unsafe File List in Internet Explorer 6” on the Microsoft Web site at http://go.microsoft.com/fwlink/.

Windows Media Player 11

Version 11 of Windows Media Player contains security, performance, and functionality improvements. For more information about improvements to Windows Media Player, go to the Microsoft Web site at http://www.microsoft.com/windows/windowsmedia/player/11/ default.aspx.

Macromedia Flash Player

Macromedia Flash Player is the agent for rich Web experiences across multiple platforms. With Macromedia Flash Player, you can view and interact with content developed in Macromedia Flash.

Some Web sites require newer versions of the player. To install newer players, the administrator must temporarily increase the RamDisk to 64MB using the HP RamDisk control panel utility.

4 Keyboard

Using pointing devices

Setting pointing device preferences

Use Mouse Properties in Windows to customize settings for pointing devices, such as button configuration, click speed, and pointer options.

To access Mouse Properties, select **Start > Control Panel > Printers and Other Hardware > Mouse**.

Using the TouchPad

To move the pointer, slide your finger across the TouchPad surface in the direction you want the pointer to go. Use the TouchPad buttons like the corresponding buttons on an external mouse. To scroll up and down using the TouchPad vertical scroll zone, slide your finger up or down over the lines.

NOTE: If you are using the TouchPad to move the pointer, you must lift your finger off the TouchPad before moving it to the scroll zone. Simply sliding your finger from the TouchPad to the scroll zone will not activate the scrolling function.

Using the pointing stick

Press the pointing stick in the direction you want to move the pointer on the screen. Use the left and right pointing stick buttons as you would the left and right buttons on an external mouse.

Connecting an external mouse

You can connect an external USB mouse to the computer using one of the USB ports on the computer. A USB mouse can also be connected to the computer using the ports on an optional docking device.

Using hotkeys

Hotkeys are combinations of the fn key **(1)** and either the esc key **(2)** or one of the function keys **(3)**.

The icons on the f3, f4, and f8 through f10 keys represent the hotkey functions. Hotkey functions and procedures are discussed in the following sections.

Function	Hotkey
Display system information.	fn+esc
Initiate Standby.	fn+f3
Switch the image.	fn+f4
Display battery information	fn+f8
Decrease screen brightness.	fn+f9
Increase screen brightness.	fn+f10

To use a hotkey command on the computer keyboard, follow either of these steps:

- Briefly press the fn key, and then briefly press the second key of the hotkey command.

  – or –

- Press and hold down the fn key, briefly press the second key of the hotkey command, and then release both keys at the same time.

Displaying system information (fn+esc)

Press fn+esc to display information about system hardware components and the system BIOS version number.

In the Windows fn+esc display, the version of the system BIOS (basic input-output system) is displayed as the BIOS date. On some computer models, the BIOS date is displayed in decimal format. The BIOS date is sometimes called the system ROM version number.

Initiating Standby (fn+f3)

Press fn+f3 to initiate Standby.

When Standby is initiated, the power lights blink and the screen clears. Your computer is disconnected from the network.

△ **CAUTION:** To reduce the risk of information loss, save your work before initiating Standby.

The computer must be on before you can initiate Standby.

To exit Standby, press the power button or any key on the keyboard.

NOTE: In all Windows operating system windows, references to the *Sleep button* apply to the fn+f3 hotkey.

Switching the screen image (fn+f4)

Press fn+f4 to switch the screen image among display devices connected to the system. For example, if a monitor is connected to the computer, pressing fn+f4 alternates the screen image from computer display to monitor display to simultaneous display on both the computer and the monitor.

Most external monitors receive video information from the computer using the external VGA video standard. The fn+f4 hotkey can also alternate images among other devices receiving video information from the computer.

The following video transmission types, with examples of devices that use them, are supported by the fn+f4 hotkey:

- LCD (computer display)
- External VGA (most external monitors)

Viewing battery charge information (fn+f8)

Press fn+f8 to display charge information for all installed batteries. The display indicates which batteries are charging and reports the amount of charge remaining in each battery.

Decreasing screen brightness (fn+f9)

Press fn+f9 to decrease screen brightness. Hold down the hotkey to decrease the brightness level incrementally.

Increasing screen brightness (fn+f10)

Press fn+f10 to increase screen brightness. Hold down the hotkey to increase the brightness level incrementally.

Using the HP Quick Launch Buttons

The HP Quick Launch Buttons enable you to quickly open programs, files, or Web sites you use frequently. You can use the factory settings, which are described in the following table. Or you can reprogram the buttons by opening the Q Menu in the Quick Launch Buttons control panel.

The Quick Launch Buttons include the info button **(1)** and the presentation button **(2)**.

The following table describes the factory settings for the Quick Launch Buttons.

NOTE: Button functions vary, depending on the software installed on your computer.

	Component	Description
(1)	Info button	Launches Info Center.
(2)	Presentation button	Opens the Presentation Options window, where you can start a frequently used presentation, file, program, or Web site. You can also adjust display settings for optimum viewing.

Accessing the Quick Launch Buttons control panel

The Q Menu in the Quick Launch Buttons control panel enables you to set your own preferences for the info button and the presentation button. Both buttons can be used to launch frequently used programs.

You can open the Quick Launch Buttons control panel in any of the following ways:

- Select **Start > Control Panel > Printers and Other Hardware > Quick Launch Buttons**.

  – or –

- Double-click the **HP Quick Launch Buttons** icon in the notification area, at the far right of the taskbar.

  NOTE: The icon looks like a rocket ship.

  – or –

- Right-click the **HP Quick Launch Buttons** icon in the notification area, and then select one of the following tasks:

  - Adjust HP Quick Launch Buttons Properties
  - Launch Q Menu
  - Turn Presentation On

Displaying the Q Menu

The Q Menu provides quick access to the Quick Launch Button settings.

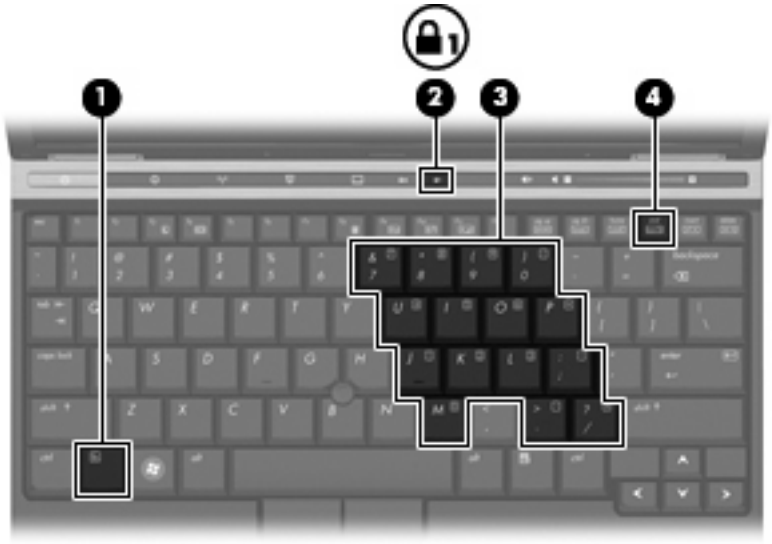
To display the Q Menu on the desktop:

- Right-click the **HP Quick Launch Buttons** icon in the notification area, at the far right of the taskbar and select **Launch Q Menu**.

NOTE: For more information about the Q Menu, refer to the software Help.

Using the keypads

The computer has an embedded numeric keypad and also supports an optional external numeric keypad or an optional external keyboard that includes a numeric keypad.



Component		Description
(1)	fn key	Executes frequently used system functions when pressed in combination with a function key or the esc key.
(2)	Num lock light	On: Num lock is on.
(3)	Embedded numeric keypad	Can be used like the keys on an external numeric keypad.
(4)	num lk key	Enables the embedded numeric keypad when pressed in combination with the fn key.

Using the embedded numeric keypad

The 15 keys of the embedded numeric keypad can be used like the keys on an external keypad. When the embedded numeric keypad is enabled, each key on the keypad performs the function indicated by the icon in the upper-right corner of the key.

Enabling and disabling the embedded numeric keypad

Press fn+num lk to enable the embedded numeric keypad. Press fn+num lk again to return the keys to their standard keyboard functions.

NOTE: The embedded numeric keypad will not function while an external keyboard or numeric keypad is connected to the computer or an optional docking device.

Switching key functions on the embedded numeric keypad

You can temporarily alternate the functions of keys on the embedded numeric keypad between their standard keyboard functions and their keypad functions by using the fn key or the fn+shift key combination.

- To change the function of a keypad key to keypad functions while the keypad is disabled, press and hold the fn key while pressing the keypad key.
- To use the keypad keys temporarily as standard keys while the keypad is enabled:
  - Press and hold the fn key to type in lowercase.
  - Press and hold fn+shift to type in uppercase.

Using an optional external numeric keypad

Keys on most external numeric keypads function differently according to whether num lock is on or off (num lock is turned off at the factory):

- When num lock is on, most keypad keys type numbers.
- When num lock is off, most keypad keys function like the arrow, page up, or page down keys.

When num lock on an external keypad is turned on, the num lock light on the computer is turned on. When num lock on an external keypad is turned off, the num lock light on the computer is turned off.

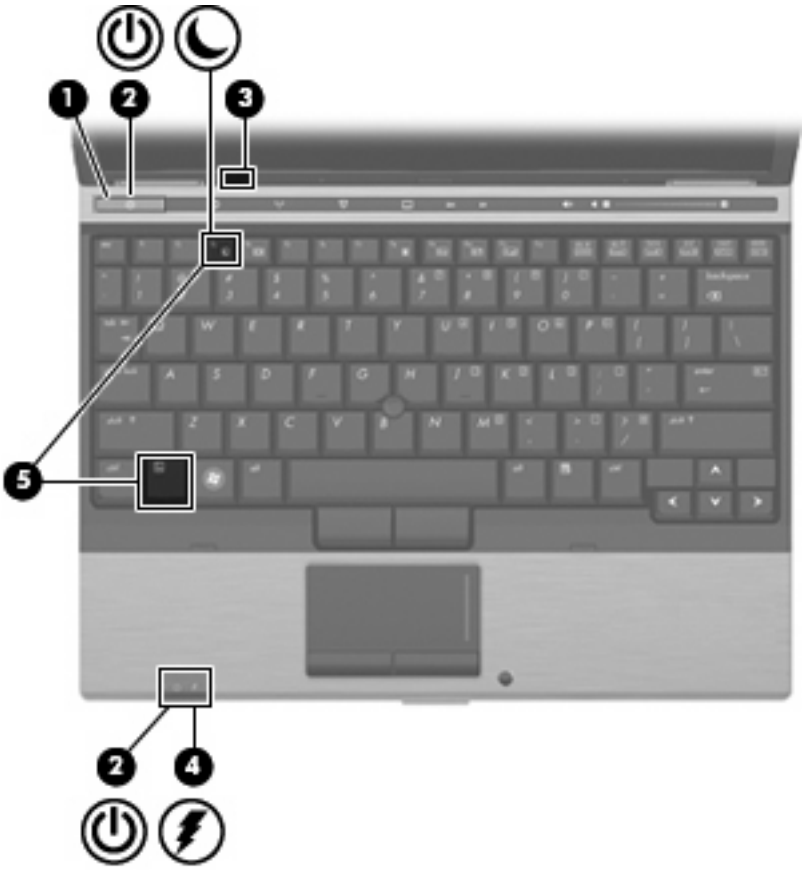
To turn num lock on or off on an external keypad as you work:

▲ Press the num lk key on the external keypad, not on the computer.

5 Power

Power control and light locations

The following illustration and table identify and describe the power control and light locations.



Component		Description
(1)	Power button	• When the computer is off, press the button to turn on the computer. • When the computer is on, press the button to turn off the computer. • When the computer is in Standby, press the button briefly to exit Standby.

Component		Description
		If the computer has stopped responding and Windows shutdown procedures are ineffective, press and hold the power button for at least 5 seconds to turn off the computer. To learn more about your power settings, right-click the **Power Meter** icon in the notification area, and then click **Adjust Power Properties**.
(2)	Power lights* (2)	• On: The computer is on. • Blinking: The computer is in Standby. • Off: The computer is off.
(3)	Internal display switch	Turns off the display if the display is closed while the computer is on.
(4)	Battery light	• Amber: A battery is charging. • Turquoise: A battery is close to full charge capacity. • Blinking amber: A battery that is the only available power source has reached a low battery level. When the battery reaches a critical battery level, the battery light begins blinking rapidly. • Off: If the computer is plugged into an external power source, the light turns off when all batteries in the computer are fully charged. If the computer is not plugged into an external power source, the light stays off until the battery reaches a low battery level.
(5)	fn+f3	Initiates Standby.

*The 2 power lights display the same information. The light on the power button is visible only when the computer is open. The power light on the front of the computer is visible whether the computer is open or closed.

Shutting down the computer

△ **CAUTION:** Unsaved information will be lost when the computer is shut down.

The Shut Down command closes all open programs, including the operating system, and then turns off the display and computer.

Shut down the computer under any of the following conditions:

- When you need to replace the battery or access components inside the computer
- When you are connecting an external hardware device that does not connect to a USB port
- When the computer will be unused and disconnected from external power for an extended period

To shut down the computer, follow these steps:

1. Save your work and close all open programs.
2. Select **Start > Turn Off Computer > Turn Off**.

NOTE: If you have been registered to a network domain, the button you click will be called Shut Down instead of Turn Off Computer.

If the computer is unresponsive and you are unable to use the preceding shutdown procedures, try the following emergency procedures in the sequence provided:

- Press and hold the power button for at least 5 seconds.
- Disconnect the computer from external power and remove the battery.

Setting power options

Using power-saving states

The computer has one power-saving state enabled at the factory: Standby.

When Standby is initiated, the power lights blink and the screen clears. Your computer is disconnected from the network.

△ **CAUTION:** To prevent possible audio and video degradation, loss of audio or video playback functionality, or loss of information, do not initiate Standby while reading from a disc or an external media card.

NOTE: Hibernation is disabled at the factory.

NOTE: You cannot initiate any type of networking connection or perform any computer functions while the computer is in Standby.

Initiating and exiting Standby

NOTE: Power settings and timeouts can be changed in Power Options.

With the computer on, you can initiate Standby in any of the following ways:

- Press fn+f3.
- Click **Start > Turn Off Computer > Stand By**.

  If Stand by is not displayed, follow these steps:

  a. Click the down arrow.

  b. Click **Stand by** from the list.

  c. Click **OK**.

To exit Standby:

- Press the power button.

  When the computer exits Standby, the power lights turn on and your work returns to the screen where you stopped working.

NOTE: If you have set a password to be required when the computer exits Standby, you must enter your Windows password before your work will return to the screen.

Using the battery meter

The battery meter is located in the notification area, at the far right of the taskbar. The battery meter allows you to quickly access power settings, view remaining battery charge, and select a different power plan:

- To display the percentage of remaining battery charge and the current power plan, move the pointer over the battery meter icon.
- To access Power Options, or to change the power plan, click the battery meter icon and select an item from the list.

Different battery meter icons indicate whether the computer is running on battery or external power. The icon also displays a message if the battery has reached a critical battery level.

To hide or display the battery meter icon:

1. Right-click the taskbar, and then click **Properties**.
2. Click the **Notification Area** tab.
3. Under **System icons**, clear the **Power** check box to hide the battery meter icon, or select the **Power** check box to display the battery meter icon.
4. Click **OK**.

NOTE: You must commit these changes in order for them to be saved. Refer to Chapter 2, “Enhanced Write Filter,” for additional information.

Setting password protection upon exiting Standby

To set the computer to prompt for a password when the computer exits Standby, follow these steps:

1. Right-click the **Power Meter** icon in the notification area, and then click **Adjust Power Properties**.
2. Click the **Advanced** tab.
3. Select the **Prompt for password when computer resumes from standby** check box.
4. Click **Apply**.

NOTE: You must commit these changes in order for them to be saved. Refer to Chapter 2, “Enhanced Write Filter,” for additional information.

Using battery power

When a charged battery is in the computer and the computer is not plugged into external power, the computer runs on battery power. When the computer is plugged into external AC power, the computer runs on AC power.

If the computer contains a charged battery and is running on external AC power supplied through the AC adapter, the computer switches to battery power if the AC adapter is disconnected from the computer.

NOTE: The display brightness is decreased to save battery life when you disconnect AC power. To increase display brightness, use the fn+f10 hotkey or reconnect the AC adapter.

You can keep a battery in the computer or in storage, depending on how you work. Keeping the battery in the computer whenever the computer is plugged into AC power charges the battery and also protects your work in case of a power outage. However, a battery in the computer slowly discharges when the computer is off and unplugged from external power.

⚠ **WARNING!** To reduce potential safety issues, use only the battery provided with the computer, a replacement battery provided by HP, or a compatible battery purchased from HP.

Computer battery life varies, depending on power management settings, programs running on the computer, display brightness, external devices connected to the computer, and other factors.

Displaying the remaining battery charge

▲ Double-click the **Power Meter** icon in the notification area, at the far right of the taskbar.

Most charge indicators report battery status as both a percentage and as the number of minutes of charge remaining:

- The percentage indicates the approximate amount of charge remaining in the battery.
- The time indicates the approximate running time remaining on the battery *if the battery continues to provide power at the current level.* For example, the time remaining will decrease when a DVD is playing and will increase when a DVD stops playing.

When a battery is charging, a lightning bolt icon may be superimposed over the battery icon on the Power Meter screen.

Inserting or removing the battery

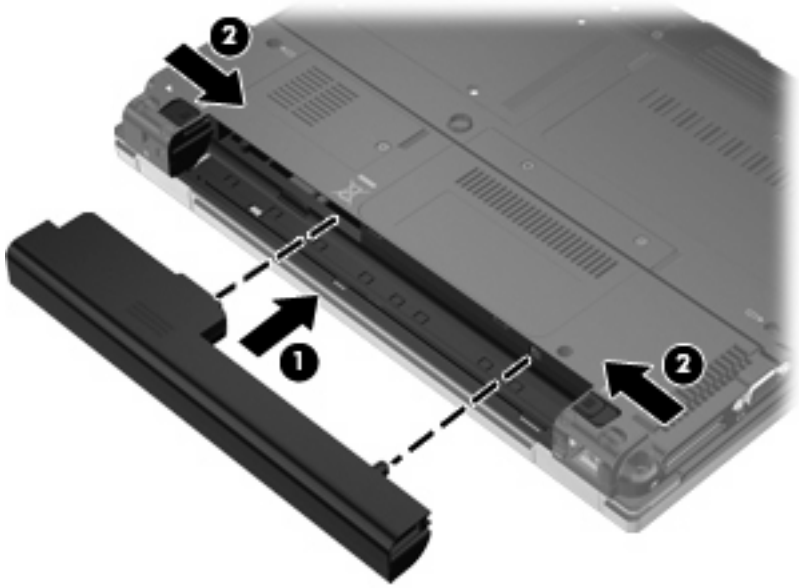
△ **CAUTION:** Removing a battery that is the sole power source can cause loss of information. To prevent loss of information, shut down the computer through Windows before removing the battery.

To insert the battery:

1. Turn the computer upside down on a flat surface, with the battery bay toward you.

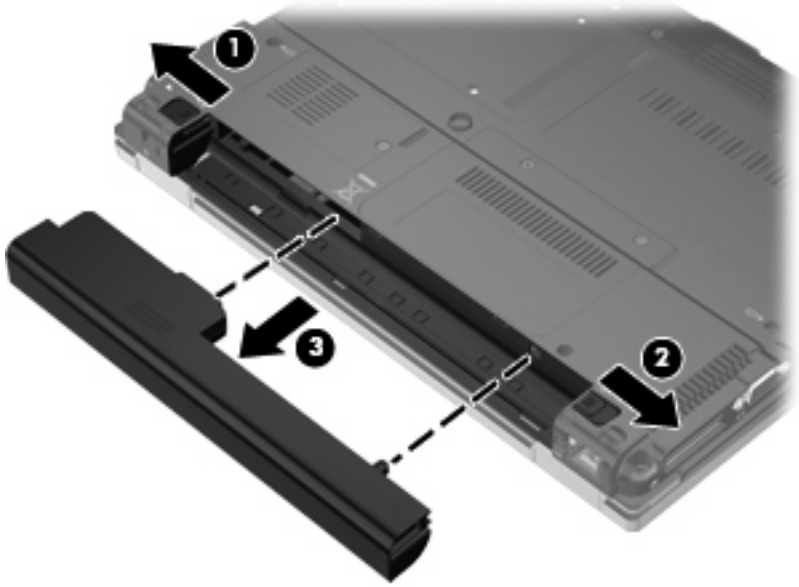
2. Insert the battery into the battery bay **(1)** until it is seated.

   The battery release latches **(2)** automatically lock the battery into place.



To remove the battery:

1. Turn the computer upside down on a flat surface, with the battery bay toward you.
2. Slide the left battery release latch **(1)** until it locks into place.
3. Slide the right battery release latch **(2)** to release the battery.
4. Remove the battery **(3)**.



Charging a battery

⚠ **WARNING!** Do not charge the computer battery while you are onboard aircraft.

The battery charges whenever the computer is plugged into external power through an AC adapter, an optional power adapter, or an optional docking device.

The battery charges whether the computer is off or in use, but it charges faster when the computer is off.

Charging may take longer if a battery is new, has been unused for 2 weeks or more, or is much warmer or cooler than room temperature.

To prolong battery life and optimize the accuracy of battery charge displays, follow these recommendations:

- If you are charging a new battery, charge it fully before turning on the computer.
- Charge the battery until the battery light turns off.

  NOTE: If the computer is on while the battery is charging, the battery meter in the notification area may show 100 percent charge before the battery is fully charged.

- Allow the battery to discharge below 5 percent of a full charge through normal use before charging it.
- If the battery has been unused for one month or more, calibrate the battery instead of simply charging it.

The battery light displays charge status:

- Amber: The battery is charging.
- Turquoise: The battery is close to full charge capacity.
- Blinking amber: The battery has reached a low battery level or critical battery level and is not charging.
- Off: The battery is fully charged, in use, or not installed.

Managing low battery levels

The information in this section describes the alerts and system responses set at the factory. Some low-battery alerts and system responses can be changed in Power Options. Preferences set using Power Options do not affect lights.

Identifying low battery levels

When a battery that is the sole power source for the computer reaches a low battery level, the battery light blinks.

If a low battery level is not resolved, the computer enters a critical battery level, and the battery light begins blinking rapidly. If the computer is on or in Standby, the computer remains briefly in Standby, and then shuts down and loses any unsaved information.

Resolving a low battery level

△ **CAUTION:** To reduce the risk of losing information when the computer reaches a critical battery level, do not restore power until the power lights turn off.

Resolving a low battery level when external power is available

▲ Connect one of the following devices:

- AC adapter
- Optional docking device
- Optional power adapter

Resolving a low battery level when a charged battery is available

1. Turn off the computer.
2. Remove the discharged battery, and then insert a charged battery.
3. Turn on the computer.

Resolving a low battery level when no power source is available

▲ Save your work and shut down the computer.

Conserving battery power

- Select low power-use settings through Power Options.
- Turn off wireless and local area network (LAN) connections and exit modem applications when you are not using them.
- Disconnect external devices that are not plugged into an external power source, when you are not using them.
- Stop, disable, or remove any external media cards that you are not using.
- Use the fn+f9 and fn+f10 hotkeys to adjust screen brightness as needed.
- If you leave your work, initiate Standby or shut down the computer.

Storing a battery

△ **CAUTION:** To prevent damage to a battery, do not expose it to high temperatures for extended periods of time.

If a computer will be unused and unplugged from external power for more than 2 weeks, remove the battery and store it separately.

To prolong the charge of a stored battery, place it in a cool, dry place.

Calibrate a battery before using it if it has been stored for one month or more.

Disposing of a used battery

⚠ **WARNING!** To reduce the risk of fire or burns, do not disassemble, crush, or puncture a battery; short the external contacts on a battery; or dispose of a battery in fire or water. Do not expose a battery to temperatures above 60˚C (140˚F). Replace the battery only with a battery approved for this computer.

Refer to the *Regulatory, Safety and Environmental Notices* for battery disposal information. These notices are located in the printed *Getting Started* guide.

Using external AC power

External AC power is supplied through one of the following devices:

⚠ **WARNING!** To reduce potential safety issues, use only the AC adapter provided with the computer, a replacement AC adapter provided by HP, or a compatible AC adapter purchased from HP.

- Approved AC adapter
- Optional docking device

Connect the computer to external AC power under any of the following conditions:

⚠ **WARNING!** Do not charge the computer battery while you are onboard aircraft.

- When you are charging or calibrating a battery
- When you are modifying system software

When you connect the computer to external AC power, the following events occur:

- The battery begins to charge.
- If the computer is turned on, the battery meter icon in the notification area changes appearance.

When you disconnect external AC power, the following events occur:

- The computer switches to battery power.
- The display brightness is automatically decreased to save battery life. To increase display brightness, press the fn+f10 hotkey or reconnect the AC adapter.

Connecting the AC adapter

⚠ **WARNING!** To reduce the risk of electric shock or damage to the equipment:

Plug the power cord into an AC outlet that is easily accessible at all times.

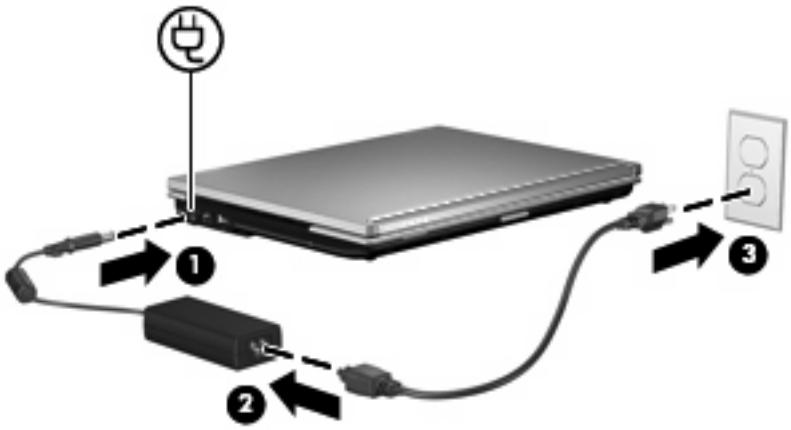
Disconnect power from the computer by unplugging the power cord from the AC outlet (not by unplugging the power cord from the computer).

If provided with a 3-pin attachment plug on the power cord, plug the cord into a grounded (earthed) 3-pin outlet. Do not disable the power cord grounding pin, for example, by attaching a 2-pin adapter. The grounding pin is an important safety feature.

To connect the computer to external AC power, follow these steps:

1. Plug the AC adapter into the power connector **(1)** on the computer.
2. Plug the power cord into the AC adapter **(2)**.

3. Plug the other end of the power cord into an AC outlet **(3)**.



6 Multimedia

Using multimedia hardware

Using the audio features

The following illustration and table describe the audio features of the computer.

Component		Description
(1)	Volume mute button	Mutes and restores computer sound.
(2)	Internal microphone	Records sound.
(3)	Volume scroll zone	Adjusts speaker volume. Slide your finger to the left to decrease volume and to the right to increase volume.
(4)	Audio-in (microphone) jack	Connects an optional computer headset microphone, stereo array microphone, or monaural microphone.
(5)	Audio-out (headphone) jack	Connects optional powered stereo speakers, headphones, ear buds, a headset, or television audio.
(6)	Speaker	Produces sound.

Using the audio-in (microphone) jack

The computer is equipped with a stereo (dual-channel) microphone jack that supports an optional stereo array or monaural microphone. Using sound recording software with external microphones allows for stereo recordings.

When connecting a microphone to the microphone jack, use a microphone with a 3.5-mm plug.

Using the audio-out (headphone) jack

⚠ **WARNING!** To reduce the risk of personal injury, adjust the volume before putting on headphones, earbuds, or a headset. For additional safety information, refer to the *Regulatory, Safety and Environmental Notices*. These notices are located in the printed *Getting Started* guide.

△ **CAUTION:** To prevent possible damage to an external device, do not plug a single sound channel (monaural) connector into the headphone jack.

In addition to connecting headphones, the headphone jack is used to connect the audio-out function of an audio device such as external powered speakers or a stereo system.

When connecting a device to the headphone jack, use only a 3.5-mm stereo plug.

When a device is connected to the headphone jack, the speakers are disabled.

Adjusting the volume

You can adjust the volume using the following controls:

- Computer volume buttons:
  - Volume mute button
  - Volume scroll zone
- Windows volume control:

  a. Click the **Volume** icon in the notification area, at the far right of the taskbar.

  b. Increase or decrease the volume by moving the slider up or down. Select the **Mute** check box to mute the volume.

  – or –

  a. Double-click the **Volume** icon in the notification area.

  b. In the Master Volume column, you can increase or decrease the volume by moving the **Volume** slider up or down. You can also adjust the balance or mute the volume.

  If the Volume icon is not displayed in the notification area, follow these steps to add it:

  a. Select **Start > Control Panel > Sounds, Speech, and Audio Devices > Sounds and Audio Devices > Volume** tab.

  b. Select the **Place volume icon in the taskbar** check box.

  c. Click **Apply**.

  NOTE: You must commit these changes in order for them to be saved. Refer to Chapter 2, “Enhanced Write Filter,” for additional information.

- Program volume control:

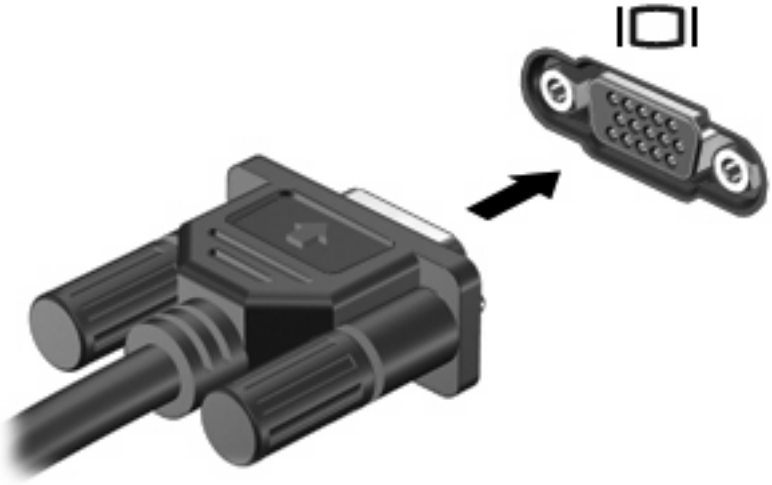
  Volume can also be adjusted within some programs.

Using the video features

Using the external monitor port

The external monitor port connects an external display device, such as an external monitor or a projector, to the computer.

▲ To connect a display device, connect the device cable to the external monitor port.



NOTE: If a properly connected external display device does not display an image, press fn+f4 to transfer the image to the device. Repeatedly pressing fn+f4 alternates the screen image between the computer display, the device, and simultaneous display on both the computer display and the device.

Using multimedia software

The computer includes preinstalled multimedia software.

Depending on the hardware and software included with the computer, you can play digital media, including audio and video CDs, audio and video DVDs, and Internet radio.

NOTE: For information about using software included with the computer, refer to the software manufacturer's instructions, which may be provided on disc, in the software Help, or on the software manufacturer's Web site.

Opening preinstalled multimedia software

1. Select **Start > All Programs**.
2. Click the program that you want to open.

Using multimedia software

1. Select **Start > All Programs**, and then open the multimedia program you want to use. For example, if you want to use Windows Media Player to play an audio CD, click **Windows Media Player**.

   NOTE: Some programs may be located in subfolders.

2. Insert the media disc, such as an audio CD, into the optical drive.
3. Follow the instructions on the screen.

– or –

1. Insert the media disc, such as an audio CD, into the optical drive.
2. Click a multimedia task from the list of tasks.

Preventing playback disruptions

To reduce the possibility of playback disruption:

- Save your work and close all open programs before playing a CD or a DVD.
- Do not connect or disconnect hardware while playing a disc.

Do not initiate Standby while playing a disc. Otherwise, you may see a warning message asking if you want to continue. If this message is displayed, click **No**. After you click No, the computer may behave in either of the following ways:

- Playback may resume.

  – or –

- The playback window in the multimedia program may close. To return to playing the CD or DVD, click the **Play** button in your multimedia program to restart the disc. In rare cases, you may need to exit the program and then restart it.

Observing the copyright warning

It is a criminal offense, under applicable copyright laws, to make unauthorized copies of copyright-protected material, including computer programs, films, broadcasts, and sound recordings. Do not use this computer for such purposes.

7 Wireless

About integrated wireless devices

Wireless technology transfers data across radio waves instead of wires. Your computer may be equipped with a wireless local area network (WLAN) device. This device connects the computer to wireless local area networks (commonly referred to as Wi-Fi networks, wireless LANs, or WLANs) in corporate offices, your home, and public places such as airports, restaurants, coffee shops, hotels, and universities. In a WLAN, each mobile wireless device communicates with a wireless router or a wireless access point.

Using wireless controls

You can control the wireless devices in your computer using these methods:

- Wireless button
- Operating system controls

Using the wireless button

The computer has a wireless button, one or more wireless devices, and two wireless lights. All of the wireless devices on your computer are enabled at the factory, so the wireless light is on (blue) when you turn on the computer.

The wireless light indicates the overall power state of your wireless devices, not the status of individual devices. If the wireless light is blue, at least one wireless device is on. If the wireless light is off, all wireless devices are off.

Because the wireless devices are enabled at the factory, you can use the wireless button to turn on or turn off the wireless devices simultaneously.

Using operating system controls

Some operating systems also offer a way to manage integrated wireless devices and the wireless connection. For more information, refer to the user guide for your operating system.

Using WLAN

With a WLAN device, you can access a wireless local area network, which is composed of other computers and accessories that are linked by a wireless router or a wireless access point.

NOTE: The terms *wireless router* and *wireless access point* are often used interchangeably.

- A large-scale WLAN, such as a corporate or public WLAN, typically uses wireless access points that can accommodate a large number of computers and accessories and can separate critical network functions.
- A home or small office WLAN typically uses a wireless router, which allows several wireless and wired computers to share an Internet connection, a printer, and files without requiring additional pieces of hardware or software.

NOTE: To use the WLAN device in your computer, you must connect to a WLAN infrastructure (provided through a service provider or a public or corporate network).

Computers with WLAN devices support one or more of the following IEEE industry standards:

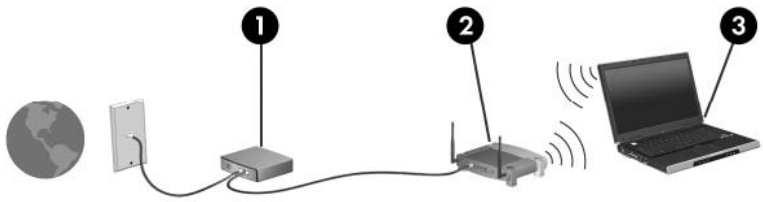
- 802.11b, the first popular standard, supports data rates of up to 11 Mbps and operates at a frequency of 2.4 GHz.
- 802.11g supports data rates of up to 54 Mbps and operates at a frequency of 2.4 GHz. An 802.11g WLAN device is backward compatible with 802.11b devices, so they can operate on the same network.
- 802.11a supports data rates of up to 54 Mbps and operates at a frequency of 5 GHz.

Setting up a WLAN

To set up a WLAN and connect to the Internet, you need the following equipment:

- A broadband modem (either DSL or cable) **(1)** and high-speed Internet service purchased from an Internet service provider (ISP)
- A wireless router (purchased separately) **(2)**
- The wireless computer **(3)**

The illustration below shows an example of a wireless network installation that is connected to the Internet.



As your network grows, additional wireless and wired computers can be connected to the network to access the Internet.

For help in setting up your WLAN, refer to the information provided by your router manufacturer or your ISP.

Connecting to a WLAN

To connect to a WLAN, follow these steps:

1. Verify that the WLAN device is turned on. If it is on, the wireless light is on. If the wireless light is off, press the wireless button.
2. Open Connect to a Network by selecting **Start > Network Connections**.
3. Double-click your wireless network in the list.
4. Type the encryption key.

NOTE: You must commit these changes in order for them to be saved. Refer to Chapter 2, “Enhanced Write Filter,” for additional information.

NOTE: The functional range (how far your wireless signals travel) depends on WLAN implementation, router manufacturer, and interference from other electronic devices or structural barriers such as walls and floors.

More information about using a WLAN is available through your ISP and the user guide included with your wireless router and other WLAN equipment.

For a list of public WLANs near you, contact your ISP or search the Web. Web sites that list public WLANs include Cisco Internet Mobile Office Wireless Locations, Hotspotlist, and Geektools. Check with each public WLAN location for cost and connection requirements.

Using wireless security features

When you set up a WLAN or access an existing WLAN, always enable security features to protect your network from unauthorized access. The most common security levels are Wi-Fi Protected Access (WPA)-Personal and Wired Equivalent Privacy (WEP).

When setting up a network, use one or more of the following security measures:

- Enable WPA-Personal or WEP security encryption on the router.
- Change the default network name (SSID) and password.
- Use a firewall.
- Set security on your Web browser.

For more information about WLAN security, see the HP Web site at http://www.hp.com/go/wireless (English only).

Identifying a WLAN device

If you have a problem connecting to a wireless network, confirm that the integrated WLAN device is properly installed on your computer:

1. Select **Start > HP System Information**.
2. Identify the WLAN device from the Hardware information list. The listing for a WLAN device may include the term *wireless*, *wireless LAN*, *WLAN*, or *802.11*.

   If no WLAN device is listed, either your computer does not have an integrated WLAN device, or the driver for the WLAN device is not properly installed.

8 Modem and LAN

Using a modem

The modem must be connected to an analog telephone line using a 6-pin, RJ-11 modem cable (purchased separately). In some countries, a country-specific modem cable adapter is also required. Jacks for digital PBX systems may resemble analog telephone jacks, but they are not compatible with the modem.

⚠ **WARNING!** Connecting the internal analog modem to a digital line can permanently damage the modem. Immediately disconnect the modem cable if you accidentally connect it to a digital line.

If the modem cable contains noise suppression circuitry **(1)**, which prevents interference from TV and radio reception, orient the circuitry end **(2)** of the cable toward the computer.

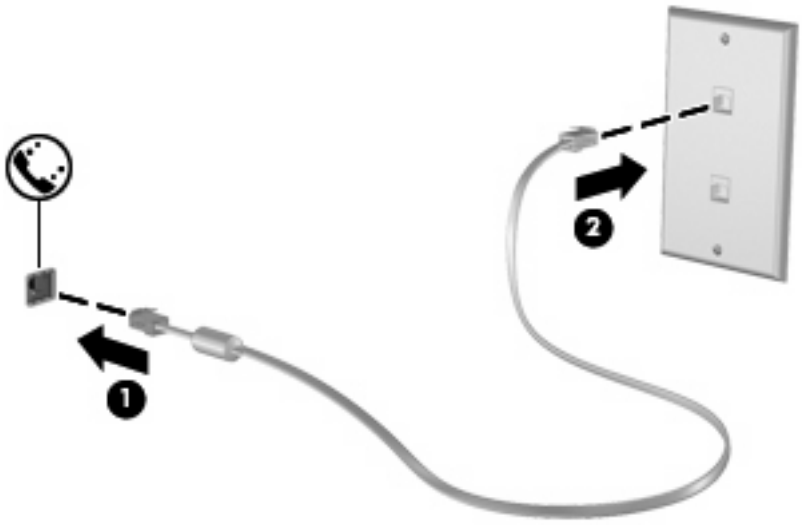
Connecting a modem cable

⚠ **WARNING!** To reduce the risk of electric shock, fire, or damage to the equipment, do not plug a modem or telephone cable into the RJ-45 (network) jack.

To connect a modem cable:

1. Plug the modem cable into the modem jack **(1)** on the computer.

2. Plug the modem cable into the RJ-11 telephone wall jack **(2)**.

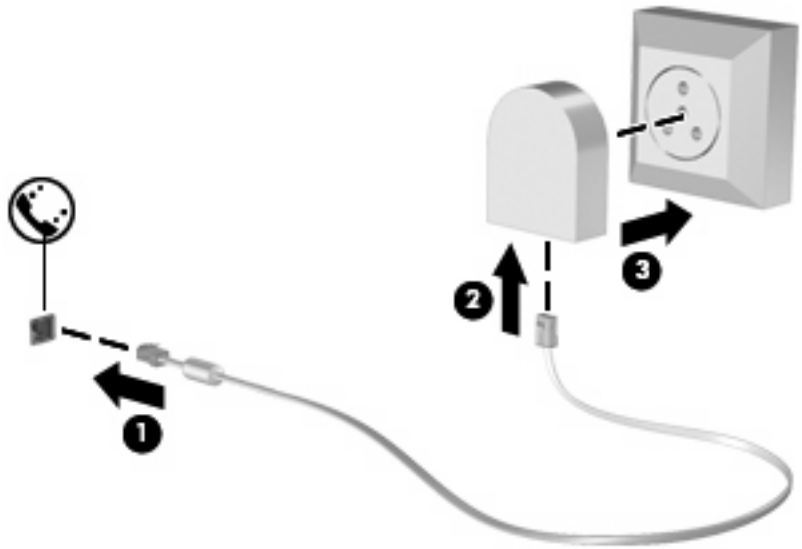


Connecting a country-specific modem cable adapter

Telephone jacks vary by country. To use the modem and the modem cable outside the country in which you purchased the computer, you must obtain a country-specific modem cable adapter.

To connect the modem to an analog telephone line that does not have an RJ-11 telephone jack, follow these steps:

1. Plug the modem cable into the modem jack **(1)** on the computer.
2. Plug the modem cable into the country-specific modem cable adapter **(2)**.
3. Plug the country-specific modem cable adapter **(3)** into the telephone wall jack.



Selecting a location setting

Viewing the current location selection

To view the current location setting for the modem, follow these steps:

1. Select **Start > Control Panel**.
2. Click **Date, Time, Language, and Regional Options**.
3. Click **Regional and Language Options**.
4. Your location is displayed under Location.

NOTE: You must commit these changes in order for them to be saved. Refer to Chapter 2, “Enhanced Write Filter,” for additional information.

Adding new locations when traveling

By default, the only location setting available to the modem is a location setting for the country in which you purchased the computer. As you travel to different countries, set the internal modem to a location setting that meets the operating standards of the country in which you are using the modem.

As you add new location settings, they are saved by the computer so that you can switch among settings at any time. You can add multiple location settings for any country.

△ **CAUTION:** To prevent losing your home country settings, do not delete your current modem country settings. To enable modem use in other countries while preserving your home country configuration, add a new configuration for each location in which you will use the modem.

CAUTION: To prevent configuring the modem in a way that violates the telecommunications regulations and laws of the country you are visiting, select the country in which the computer is located. The modem may not function properly if the correct country selection is not made.

To add a location setting for the modem, follow these steps:

1. Select **Start > Control Panel > Printers and Other Hardware > Phone and Modem Options**.
2. Then click the **Dialing Rules** tab.
3. Click **New**.

   The New Location window is displayed.
4. In the **Location name** box, type a name (such as “home” or “work”) for the new location setting.
5. Select a country or region from the **Country/region** drop-down list. (If you select a country or region that is not supported by the modem, the country/region selection for *USA* or *UK* is displayed by default.)
6. Enter the area code, a carrier code (if necessary), and the number to access an outside line (if necessary).
7. Next to **Dial using**, click **Tone** or **Pulse**.
8. Click **OK** to save your new location setting.

   The Phone and Modem Options window is displayed.
9. Do one of the following:
   - To set your new location setting as the current location, click **OK**.
   - To select another location setting as the current location setting, select your preference from the settings in the **Location** list, and then click **OK**.

NOTE: You must commit these changes in order for them to be saved. Refer to Chapter 2, “Enhanced Write Filter,” for additional information.

NOTE: You can use the preceding procedure to add location settings for places within your own country as well as in other countries. For example, you could add a setting named “Work” that includes dialing rules for accessing an outside line.

Solving travel connection problems

If you experience modem connection problems when using the computer outside of the country in which you purchased it, try the following suggestions.

- **Check the telephone line type.**

  The modem requires an analog, not a digital, telephone line. A line described as a PBX line is usually a digital line. A telephone line described as a data line, fax machine line, modem line, or standard telephone line is usually an analog line.

- **Check for pulse or tone dialing.**

  An analog telephone line supports one of 2 dialing modes: pulse dialing or tone dialing. These dialing mode options are selected in the Phone and Modem Options settings. The dialing mode option selected must match the dialing mode supported by the telephone line in your location.

  To determine the dialing mode supported by a telephone line, dial a few digits on the telephone, and then listen for clicks (pulses) or tones. Clicks indicate that the telephone line supports pulse dialing. Tones indicate that the telephone line supports tone dialing.

  To change the dialing mode in your current modem location setting, follow these steps:

  1. Select **Start > Control Panel > Printers and Other Hardware > Phone and Modem Options**.
  2. Then click the **Dialing Rules** tab.
  3. Select your modem location setting.
  4. Click **Edit**.
  5. Click either **Tone** or **Pulse**.
  6. Click **OK** twice.

NOTE: You must commit these changes in order for them to be saved. Refer to Chapter 2, “Enhanced Write Filter,” for additional information.

- **Check the telephone number you are dialing and the response of the remote modem.**

  Dial a telephone number, make sure there is a response from the remote modem, and then hang up.

- **Set the modem to ignore dial tones.**

  If the modem receives a dial tone it does not recognize, it does not dial and displays a “No Dial Tone” error message.

  To set the modem to ignore all dial tones before dialing, follow these steps:

  1. Select **Start > Control Panel > Printers and Other Hardware > Phone and Modem Options**.
  2. Then click the **Modems** tab.
  3. Click the listing for the modem.
  4. Click **Properties**.

5. Click **Modem**.
6. Clear the check box for **Wait for dial tone before dialing**.
7. Click **OK** twice.

NOTE: You must commit these changes in order for them to be saved. Refer to Chapter 2, “Enhanced Write Filter,” for additional information.

Connecting to a local area network

Connecting to a local area network (LAN) requires an 8-pin, RJ-45 network cable (purchased separately). If the network cable contains noise suppression circuitry **(1)**, which prevents interference from TV and radio reception, orient the circuitry end of the cable **(2)** toward the computer.

To connect the network cable:

1. Plug the network cable into the network jack **(1)** on the computer.
2. Plug the other end of the cable into a network wall jack **(2)**.

WARNING! To reduce the risk of electric shock, fire, or damage to the equipment, do not plug a modem or telephone cable into the RJ-45 (network) jack.

9 Security

Protecting the computer

NOTE: Security solutions are designed to act as deterrents. These deterrents may not prevent a product from being mishandled or stolen.

Your computer is designed for security. All information is saved to the network and no user information can be stored on the computer.

Additional security features provided with your computer can protect the computer and your data from a variety of risks. The way you use your computer will determine which security features you need to use.

The Windows operating system offers certain security features. Additional security features are listed in the following table. Most of these additional security features can be configured in the Computer Setup utility (referred to hearafter as Computer Setup).

NOTE: Computer Setup is a non-Windows utility accessed by pressing f10 when the computer is turned on or restarted. When using Computer Setup, you must use the keys on your computer to navigate and make selections.

To protect against	Use this security feature
Unauthorized use of the computer	Power-on authentication using passwords • Administrator passwords • User passwords
Unauthorized access to Computer Setup (f10)	Setup password in Computer Setup
Unauthorized reset of Computer Setup (f10) passwords	Stringent security feature in Computer Setup
Unauthorized access to data	Microsoft Windows Firewall—An improved Microsoft Windows Firewall (previously known as Internet Connection Firewall, or ICF) that prevents outside requests for data from entering the computer, unless specifically allowed by the user. **NOTE:** Microsoft Windows Firewall is turned off at the factory. **NOTE:** For additional information on Microsoft Windows Firewall, contact your network administrator.
Unauthorized access to Computer Setup settings and other system identification information	Setup password in Computer Setup
Unauthorized removal of the computer	Security cable slot (used with an optional security cable)

Using passwords

Most security features use passwords. Whenever you set a password, write down the password and store it in a secure location away from the computer. Note the following password considerations:

- Setup and power-on passwords are set in Computer Setup and are managed by the system BIOS.
- Windows passwords are set only in the Windows operating system.
- If you forget the setup password set in Computer Setup, you will not be able to access the utility.
- If you have the stringent security feature enabled in Computer Setup and you forget the setup password or the power-on password, the computer is inaccessible and can no longer be used.
- If you forget both the power-on password and the setup password set in Computer Setup, you cannot turn on the computer.

You can use the same password for a Computer Setup feature and for a Windows security feature. You can also use the same password for more than one Computer Setup feature.

Use the following tips for creating and saving passwords:

- When creating passwords, follow requirements set by the program.
- Write down your passwords and store them in a secure place away from the computer.
- Do not store passwords in a file on the computer.

The following tables list commonly used passwords and describe their functions.

Setting passwords in Windows

Windows passwords	Function
Administrator password	Protects access to a Windows administrator-level account.
User password	Protects access to a Windows user account.

Using a setup password

The Computer Setup setup password protects the configuration settings and system identification information in Computer Setup. After this password is set, it must be entered to access Computer Setup and to make changes using Computer Setup.

Note the following characteristics of the setup password:

- It is not interchangeable with a Windows administrator password, although both passwords can be identical.
- It is not displayed as it is set, entered, changed, or deleted.
- It must be set and entered with the same keys. For example, a setup password set with keyboard number keys will not be recognized if you enter it thereafter with embedded numeric keypad number keys.
- It can include any combination of up to 32 letters and numbers and is not case sensitive.

Managing a setup password

A setup password is set, changed, and deleted in Computer Setup.

To set, change, or delete this password, follow these steps:

1. Open Computer Setup by turning on or restarting the computer, and then pressing f10 while the “F10 = ROM Based Setup” message is displayed in the lower-left corner of the screen.
2. Use the arrow keys to select **Security > Setup password**, and then press enter.
   - To set a setup password, type your password in the **New password** and **Verify new password** fields, and then press f10.
   - To change a setup password, type your current password in the **Old password** field, type a new password in the **New password** and **Verify new password** fields, and then press f10.
   - To delete a setup password, type your current password in the **Old password** field, and then press f10.
3. To save your changes, use the arrow keys to select **File > Save changes and exit**. Then follow the on-screen instructions.

Your changes go into effect when the computer restarts.

Entering a setup password

At the **Setup password** prompt, type your setup password (using the same kind of keys you used to set the password), and then press enter. After 3 unsuccessful attempts to enter the setup password, you must restart the computer and try again.

Using a power-on password

The Computer Setup power-on password prevents unauthorized use of the computer. After this password is set, it must be entered each time the computer is turned on.

Note the following characteristics of a power-on password:

- It is not displayed as it is set, entered, changed, or deleted.
- It must be set and entered with the same keys. For example, a power-on password set with keyboard number keys will not be recognized if you enter it thereafter with embedded numeric keypad number keys.
- It can include any combination of up to 32 letters and numbers and is not case sensitive.

Managing a power-on password

A power-on password is set, changed, and deleted in Computer Setup.

To set, change, or delete this password, follow these steps:

1. Open Computer Setup by turning on or restarting the computer, and then pressing f10 while the “F10 = ROM Based Setup” message is displayed in the lower-left corner of the screen.
2. Use the arrow keys to select **Security > Power-On password**, and then press enter.
   - To set a power-on password, type the password in the **New password** and **Verify new password** fields, and then press f10.
   - To change a power-on password, type the current password in the **Old password** field, type the new password in the **New password** and **Verify new password** fields, and then press f10.
   - To delete a power-on password, type the current password in the **Old password** field, and then press f10.
3. To save your changes, use the arrow keys to select **File > Save changes and exit**. Then follow the on-screen instructions.

Your changes go into effect when the computer restarts.

Entering a power-on password

At the **Power-on Password** prompt, type your password (using the same kind of keys you used to set the password), and then press enter. After 3 unsuccessful attempts to enter the password, you must turn off the computer, turn it back on, and then try again.

Requiring a power-on password at restart

In addition to requiring that a power-on password be entered each time the computer is turned on, you can also require that a power-on password be entered each time the computer is restarted.

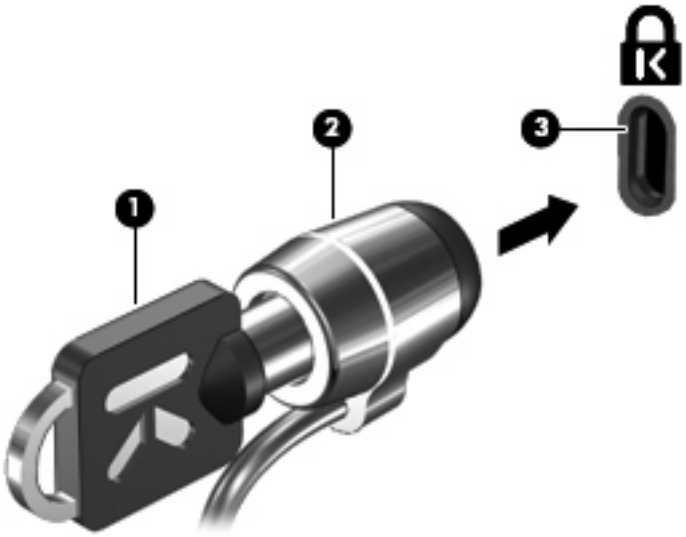
To enable and disable this feature in Computer Setup, follow these steps:

1. Open Computer Setup by turning on or restarting the computer, and then pressing f10 while the “F10 = ROM Based Setup” message is displayed in the lower-left corner of the screen.
2. Use the arrow keys to select **Security > Password options**, and then press enter.
3. Use the arrow keys to select **Enable** or **Disable** in the **Require password on restart** box, and then press f10.
4. To save your changes, use the arrow keys to select **File > Save changes and exit**. Then follow the on-screen instructions.

Installing a security cable

NOTE: The security cable (purchased separately) is designed to act as a deterrent, but it may not prevent the computer from being mishandled or stolen.

1. Loop the security cable around a secured object.
2. Insert the key **(1)** into the cable lock **(2)**.
3. Insert the cable lock into the security cable slot on the computer **(3)**, and then lock the cable lock with the key.



NOTE: Your computer may look different from the illustration. The location of the security cable slot varies by model.

10 Hardware upgrades

Using a USB device

Universal Serial Bus (USB) is a hardware interface that can be used to connect an optional external device, such as a USB keyboard, mouse, drive, printer, scanner, or hub. Devices can be connected to the computer or an optional docking device.

Some USB devices may require additional support software, which is usually included with the device. For more information about device-specific software, refer to the manufacturer's instructions.

The computer may have up to 3 USB ports. The USB port on the right side of the computer is a standard USB port. Depending on your computer model, the USB port on the left side of the computer is either a standard USB port or a powered USB port. A powered USB port provides power to an external device if used with a powered USB cable. The USB ports on the computer support USB 1.0, USB 1.1, and USB 2.0 devices. An optional docking device or USB hub provides additional USB ports that can be used with the computer.

NOTE: For information regarding the status of the USB ports, contact your network administrator.

Connecting a USB device

△ **CAUTION:** To prevent damage to a USB connector, use minimal force to connect a USB device.

▲ To connect a USB device to the computer, connect the USB cable for the device to the USB port.

Removing a USB device

△ **CAUTION:** To prevent damage to a USB connector, do not pull on the cable to remove the USB device.

To remove a USB device, safely remove the device from the USB port.

Using the expansion port

The expansion port connects the computer to an optional docking device or expansion product, so that additional ports and connectors can be used with the computer.

NOTE: The computer has only one expansion port. The term *expansion port 3* describes the type of expansion port.

Using PC Cards

NOTE: For information regarding the status of the PC Card slot, contact your network administrator.

Inserting and removing a PC Card

CAUTION: To prevent damage to the computer and external media cards, do not insert an ExpressCard into a PC Card slot.

CAUTION: To prevent damage to the connectors:

Use minimal force when inserting a PC Card.

Do not move or transport the computer when a PC Card is in use.

The PC Card slot may contain a protective insert. The insert must be removed before you can insert a PC Card.

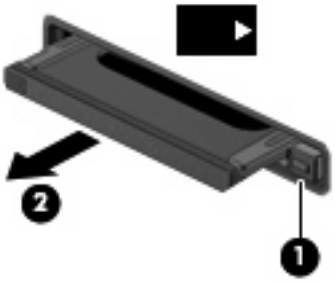
To release and remove the protective insert, follow these steps:

1. Press the PC Card eject button **(1)**.

   This action extends the button into position for releasing the insert.

2. Press the PC Card eject button again to release the insert.

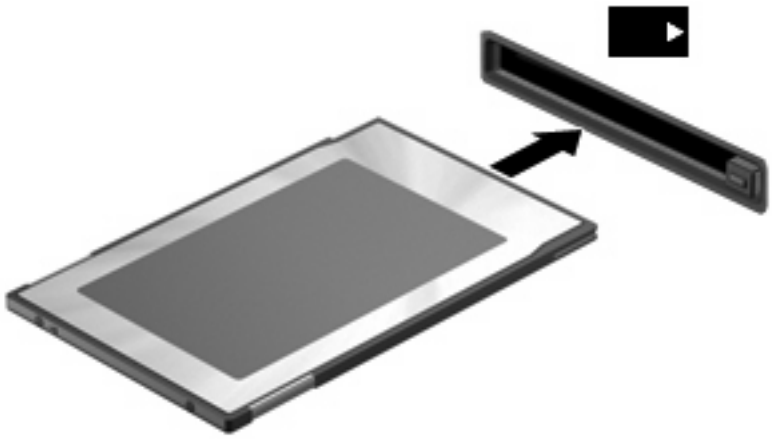
3. Pull the insert out of the slot **(2)**.



To insert a PC Card, follow these steps:

1. Hold the card label-side up, with the connectors facing the computer.

2. Insert the card into the PC Card slot, and then push in on the card until it is firmly seated.



NOTE: An inserted PC Card uses power even when idle. To conserve power, stop or remove a PC Card when it is not in use.

To remove a PC Card, follow these steps:

1. Close all programs and complete all activities that are associated with the PC Card.

NOTE: To stop a data transfer, click **Cancel** in the operating system Copying window.

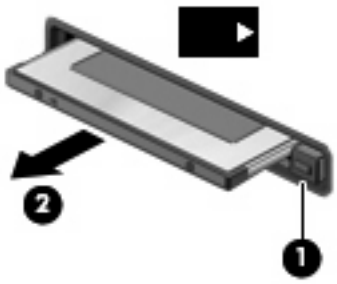
2. Release and remove the PC Card:

   a. Press the PC Card eject button **(1)**.

      This action extends the button into position for releasing the PC Card.

   b. Press the PC Card eject button again to release the PC Card.

   c. Pull the PC Card **(2)** out of the slot.



Using SD Card Reader cards

Optional digital cards provide secure data storage and convenient data sharing. These cards are often used with digital media–equipped cameras and PDAs as well as with other computers.

The SD Card Reader supports the following digital card formats:

- MultiMediaCard (MMC)
- Secure Digital (SD) Memory Card

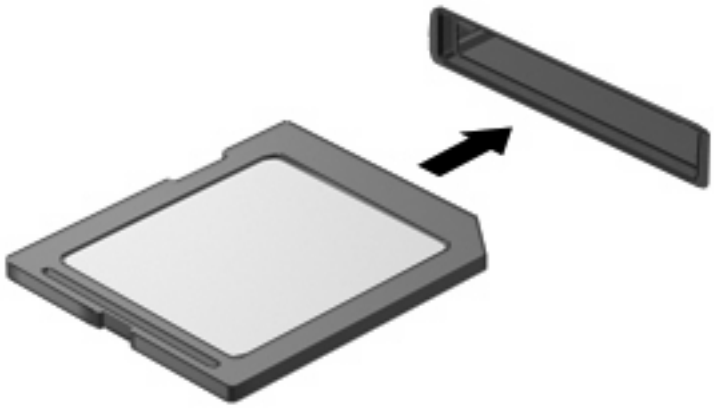
NOTE: For information regarding the status of the SD Card Reader, contact your network administrator.

Inserting a digital card

CAUTION: To avoid damaging the digital card or the computer, do not insert any type of adapter into the SD Card Reader.

CAUTION: To prevent damage to the digital card connectors, use minimal force to insert a digital card.

1. Hold the digital card label-side up, with the connectors facing the computer.
2. Insert the card into the SD Card Reader, and then push in on the card until it is firmly seated.

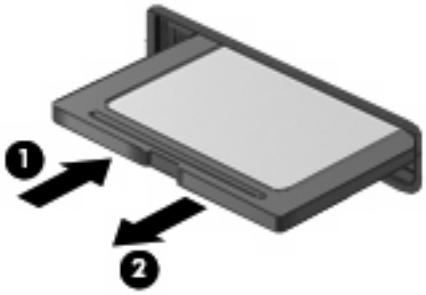


Removing a digital card

1. Save your information and close all programs associated with the digital card.

NOTE: To stop a data transfer, click **Cancel** in the operating system Copying window.

2. To eject the digital card, press in on the digital card **(1)**, and then remove it from the slot **(2)**.



11 Drives

Identifying installed drives

To view the drives installed on the computer, select **Start > HP System Information**.

NOTE: Windows includes the User Account Control feature to improve the security of your computer. You may be prompted for your permission or password for tasks such as running utilities or changing Windows settings. Refer to Windows Help for more information.

Handling drives

Drives are fragile computer components that must be handled with care. Refer to the following cautions before handling drives. Additional cautions are included with the procedures to which they apply.

CAUTION: To reduce the risk of damage to the computer, damage to a drive, or loss of information, observe these precautions:

Before you move a computer or external hard drive from one location to another, initiate Standby, and allow the screen to clear.

Before handling a drive, discharge static electricity by touching the unpainted metal surface of the drive.

Do not touch the connector pins on a removable drive or on the computer.

Handle a drive carefully; do not drop a drive or place items on it.

When the battery is the only source of power, be sure that the battery is sufficiently charged before writing to media.

Avoid exposing a drive to temperature or humidity extremes.

Avoid exposing a drive to liquids. Do not spray the drive with cleaning products.

Remove media from a drive before removing the drive from the drive bay, or traveling with, shipping, or storing a drive.

If a drive must be mailed, place the drive in a bubble-pack mailer or other suitable protective packaging and label the package “FRAGILE.”

Avoid exposing a drive to magnetic fields. Security devices with magnetic fields include airport walk-through devices and security wands. The airport security devices that use x-rays to check luggage moving on conveyor belts will not damage a drive.

Using optical drives (select models only)

An optical drive, such as a DVD-ROM drive, supports optical discs (CDs and DVDs). These discs store or transport information and play music and movies. DVDs have a higher storage capacity than CDs.

All optical drives can read from optical discs, as described in the following table.

Optical drive type	Read from CD and DVD-ROM discs	Write to CD-RW discs	Write to DVD±RW discs	Write to DVD+R DL discs
DVD-ROM	Yes	No	No	No

△ **CAUTION:** To prevent possible audio and video degradation, or loss of audio or video playback functionality, do not initiate Standby while reading from a CD or DVD.

If Standby is initiated during playback of a disc, you may experience the following behaviors:

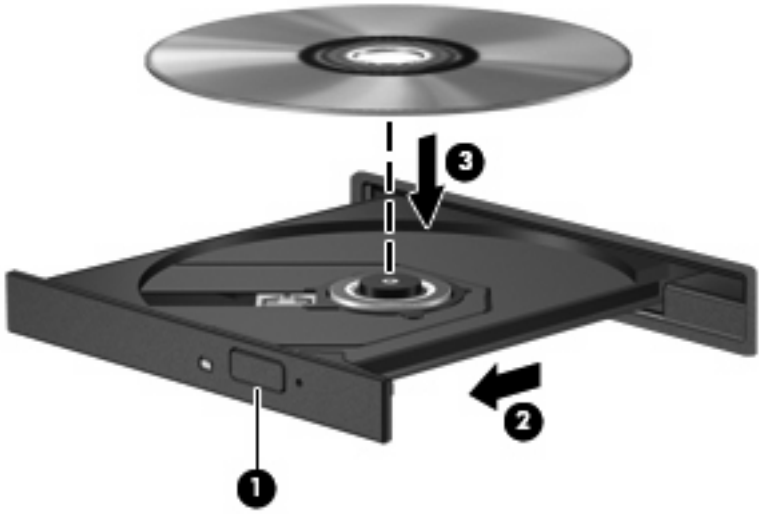
- Your playback may be interrupted.
- You may see a warning message asking if you want to continue. If this message is displayed, click **No**.
- You may need to restart the CD or DVD to resume audio and video playback.

Inserting an optical disc (CD or DVD)

1. Turn on the computer.
2. Press the release button **(1)** on the drive bezel to release the disc tray.
3. Pull out the tray **(2)**.
4. Hold the disc by the edges to avoid touching the flat surfaces and position the disc label-side up over the tray spindle.

NOTE: If the tray is not fully accessible, tilt the disc carefully to position it over the spindle.

5. Gently press the disc **(3)** down onto the tray spindle until the disc snaps into place.



6. Close the disc tray.

NOTE: After you insert a disc, a short pause is normal before playback begins.

Removing an optical disc (CD or DVD)

There are 2 ways to remove a disc, depending on whether the disc tray opens normally or not.

When the disc tray opens

1. Press the release button **(1)** on the drive bezel to release the disc tray, and then gently pull out the tray **(2)** until it stops.

2. Remove the disc **(3)** from the tray by gently pressing down on the spindle while lifting the outer edges of the disc. Hold the disc by the edges and avoid touching the flat surfaces.

NOTE: If the tray is not fully accessible, tilt the disc carefully as you remove it.

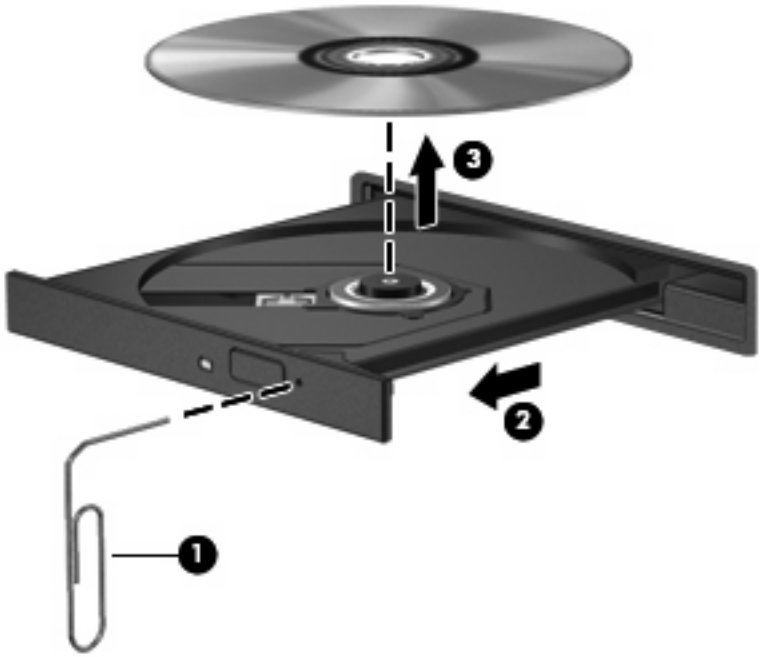
3. Close the disc tray and place the disc in a protective case.

When the disc tray does not open

1. Insert the end of a paper clip **(1)** into the release access in the front bezel of the drive.
2. Press in gently on the paper clip until the tray is released, and then pull out the tray **(2)** until it stops.

3. Remove the disc **(3)** from the tray by gently pressing down on the spindle while lifting the outer edges of the disc. Hold the disc by the edges and avoid touching the flat surfaces.

NOTE: If the tray is not fully accessible, tilt the disc carefully as you remove it.



4. Close the disc tray and place the disc in a protective case.

A Routine care

Cleaning the display

△ **CAUTION:** To prevent permanent damage to the computer, never spray water, cleaning fluids, or chemicals on the display.

To remove smudges and lint, frequently clean the display with a soft, damp, lint-free cloth. If the screen requires additional cleaning, use premoistened antistatic wipes or an antistatic screen cleaner.

Cleaning the keyboard

⚠ **WARNING!** To reduce the risk of electric shock or damage to internal components, do not use a vacuum cleaner attachment to clean the keyboard. A vacuum cleaner can deposit household debris on the keyboard surface.

Clean the keyboard regularly to prevent keys from sticking and to remove dust, lint, and particles that can become trapped beneath the keys. A can of compressed air with a straw extension can be used to blow air around and under the keys to loosen and remove debris.

Traveling and shipping

The computer is built to go with you. For best results, follow the traveling and shipping tips described here:

- To prepare the computer for traveling and shipping, follow these steps:
  1. Back up your information.
  2. Be sure that the optical drive and PC Card slot are empty.

     △ **CAUTION:** To reduce the risk of damage to the computer, damage to a drive, or loss of information, remove discs from a drive before removing the drive from a drive bay, and before shipping, storing, or traveling with a drive.
  3. Turn off and then disconnect all external devices.
  4. Shut down the computer.
- Take along a backup of your information. Keep the backup separate from the computer.
- When traveling by air, carry the computer as hand luggage, and do not check it in with the rest of your bags.

△ **CAUTION:** Avoid exposing a drive to magnetic fields. Security devices with magnetic fields include airport walk-through devices and security wands. Security devices that use x-rays to check luggage moving on conveyor belts will not damage drives.

- If you plan to use the computer during a flight, check with the airline in advance. In-flight computer use is at the discretion of the airline.
- If the computer will be unused and disconnected from external power for more than 2 weeks, remove the battery and store it separately.
- If you are shipping the computer or a drive, place it in a bubble-pack mailer or other suitable protective packaging and label the package “FRAGILE.”
- If the computer has a wireless device or a cell phone device installed, such as an 802.11b/g, a Global System for Mobile Communications (GSM), or a General Packet Radio Service (GPRS) device, note that the use of these devices may be restricted in some environments. Such restrictions may apply onboard aircraft, in hospitals, near explosives, in hazardous locations, and so on. If you are uncertain of the policy that applies to the use of a particular device, ask for authorization to use it before you turn it on.
- If you are traveling internationally, follow these suggestions:
  - Check the computer-related customs regulations for each country or region on your itinerary.
  - Contact technical support to discuss power cord and adapter requirements for each location in which you plan to use the computer. Voltage, frequency, and plug configurations vary.

    ⚠ **WARNING!** To reduce the risk of electric shock, fire, or damage to the equipment, do not attempt to power the computer with a voltage converter kit sold for appliances.

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