

Notebook PC User Guide

© Copyright 2009 Hewlett-Packard
Development Company, L.P.

ATI and ATI Mobility Radeon are trademarks of Advanced Micro Devices, Inc. Bluetooth is a trademark owned by its proprietor and used by Hewlett-Packard Company under license. Intel is a trademark of Intel Corporation in the U.S. and other countries. Microsoft and Windows are U.S. registered trademarks of Microsoft Corporation. SD Logo is a trademark of its proprietor.

The information contained herein is subject to change without notice. The only warranties for HP products and services are set forth in the express warranty statements accompanying such products and services. Nothing herein should be construed as constituting an additional warranty. HP shall not be liable for technical or editorial errors or omissions contained herein.

First Edition: December 2009

Document Part Number: 590542-001

Product notice

This user guide describes features that are common to most models. Some features may not be available on your computer.

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).
-

Table of contents

1 Using HP QuickWeb (select models only)

Starting HP QuickWeb	2
Disabling and enabling HP QuickWeb	2

2 Features

Identifying hardware	3
Components	4
Top components	4
TouchPad	4
Lights	5
Buttons, speakers, and fingerprint reader	7
Keys	8
Display	9
Front components	10
Rear component	10
Right-side components	11
Left-side components	12
Bottom components	13
Wireless antennas	14
Additional hardware components	15
Labels	16

3 Wireless, local area network, and modem

Using wireless devices	17
Identifying wireless and network status icons	18
Using the wireless controls	18
Using the wireless button	19
Using HP Wireless Assistant	19
Using HP Connection Manager (select models only)	20
Using operating system controls	20
Using a WLAN	21
Setting up a WLAN	21
Protecting your WLAN	22
Connecting to a WLAN	23

Roaming to another network	23
Using HP Mobile Broadband (select models only)	24
Inserting a SIM	25
Removing a SIM	26
Using Bluetooth wireless devices (select models only)	27
Bluetooth and Internet Connection Sharing (ICS)	27
Troubleshooting wireless connection problems	28
Cannot connect to a WLAN	28
Cannot connect to a preferred network	29
Network icon is not displayed	29
Current network security codes are unavailable	29
WLAN connection is very weak	30
Cannot connect to the wireless router	30
Using the modem (select models only)	31
Connecting a modem cable	31
Connecting a country-specific modem cable adapter	32
Selecting a location setting	32
Viewing the current location selection	32
Adding new locations when traveling	33
Solving travel connection problems	34
Connecting to a local area network	35

4 Pointing devices and keyboard

Using the TouchPad	36
Setting TouchPad preferences	37
Connecting an external mouse	37
Using keyboard hotkeys	38
Displaying system information	39
Opening Help and Support	39
Opening the Print Options window	40
Opening a Web browser	40
Switching the screen image	40
Initiating Sleep	41
Initiating QuickLock	41
Decreasing screen brightness	41
Increasing screen brightness	41
Playing, pausing or resuming an audio CD or a DVD	42
Stopping an audio CD or a DVD	42
Playing previous track or section of an audio CD or a DVD	42
Playing next track or section of an audio CD or a DVD	42
Using keypads	43
Using the embedded numeric keypad	44
Enabling and disabling the embedded numeric keypad	44

Switching key functions on the embedded numeric keypad	44
Using an optional external numeric keypad	44
Cleaning the TouchPad and keyboard	45

5 Multimedia

Multimedia features	46
Identifying your multimedia components	47
Using the MediaSmart button (select models only)	48
Adjusting the volume	49
Using the media activity hotkeys	50
Multimedia software	51
Using HP MediaSmart software	51
Using other preinstalled multimedia software	51
Installing multimedia software from a disc	51
Audio	52
Connecting external audio devices	52
Checking your audio functions	52
Video	53
Connecting an external monitor or projector	53
Connecting an HDMI device	54
Configuring audio for HDMI	55
Watching TV (select models only)	56
Webcam	57
Troubleshooting	58
The optical disc tray does not open for removal of a CD, DVD, or BD	58
The computer does not detect the optical drive	59
A disc does not play	60
A disc does not play automatically	60
A DVD movie stops, skips, or plays erratically	61
A DVD movie is not visible on an external display	61
The process of burning a disc does not begin, or it stops before completion	61
A DVD playing in Windows Media Player produces no sound or display	62
A device driver must be reinstalled	62
Obtaining the latest HP device drivers	63
Obtaining the latest Windows device drivers	63

6 HP Mobile Remote Control (Select Models Only)

Component functions	64
Button quick reference	65
Inserting or replacing the battery	68
Troubleshooting	69

7 HP Media Remote Control (Select Models Only)

Component functions	70
Button quick reference	71
Inserting or replacing the battery	75
Troubleshooting	76

8 Power management

Setting power options	77
Using power-saving states	77
Initiating and exiting Sleep	77
Initiating and exiting Hibernation	78
Using the battery meter	78
Using power plans	79
Viewing the current power plan	79
Selecting a different power plan	79
Customizing power plans	79
Setting password protection on wakeup	79
Switching between graphics modes (select models only)	80
Using external AC power	81
Connecting the AC adapter	82
Testing an AC adapter	83
Using battery power	84
Finding battery information in Help and Support	84
Using Battery Check	84
Displaying the remaining battery charge	85
Inserting or removing the battery	85
Charging a battery	86
Maximizing battery discharge time	87
Managing low battery levels	87
Identifying low battery levels	87
Resolving a low battery level	88
Resolving a low battery level when external power is available	88
Resolving a low battery level when a charged battery is available	88
Resolving a low battery level when no power source is available	88
Resolving a low battery level when the computer cannot exit Hibernation	88
Calibrating a battery	89
Step 1: Fully charge the battery	89
Step 2: Disable Hibernation and Sleep	89
Step 3: Discharge the battery	90
Step 4: Fully recharge the battery	90
Step 5: Reenable Hibernation and Sleep	90

Conserving battery power	91
Storing a battery	91
Disposing of a used battery	91
Replacing the battery	91
Shutting down the computer	92

9 Drives

Handling drives	93
Optical drive	94
Identifying the installed optical drive	94
Using optical discs	95
Selecting the right disc	96
CD-R discs	96
CD-RW discs	96
DVD±R discs	96
DVD±RW discs	96
LightScribe DVD+R discs	97
Blu-ray Disc	97
Playing a CD, DVD, or BD	97
Configuring AutoPlay	98
Changing DVD region settings	98
Observing the copyright warning	99
Copying a CD or DVD	99
Creating (burning) a CD or DVD	100
Removing an optical disc (CD, DVD, or BD)	101
Using external drives	102
Improving hard drive performance	103
Using Disk Defragmenter	103
Using Disk Cleanup	103
Using HP ProtectSmart Hard Drive Protection (select models only)	104
Identifying HP ProtectSmart Hard Drive Protection status	104
Using HP ProtectSmart Hard Drive Protection software	105
Replacing the hard drive	106
Replacing a drive in the SmartBay	110

10 External devices

Using a USB device	112
Connecting a USB device	112
Removing a USB device	113
Using an eSATA device	114
Connecting an eSATA device	114
Removing an eSATA device	115
Using the expansion port	115

11 External media cards

Using Digital Media Slot cards	116
Inserting a digital card	116
Removing a digital card	117
Using ExpressCards	118
Configuring an ExpressCard	118
Inserting an ExpressCard	118
Removing an ExpressCard	120

12 Memory modules

13 Security

Protecting the computer	125
Using passwords	126
Setting passwords in Windows	126
Setting passwords in Setup Utility	127
Administrator password	127
Managing an administrator password	127
Entering an administrator password	128
Power-on password	128
Managing a power-on password	128
Entering a power-on password	128
Using antivirus software	129
Using firewall software	129
Installing critical security updates	130
Installing an optional security cable	130
Using the fingerprint reader (select models only)	131
Locating the fingerprint reader	131
Registering fingerprints	132
Using your registered fingerprint to log on to Windows	133

Appendix A Setup Utility (BIOS)


Starting Setup Utility	134
Using Setup Utility	135
Changing the language of Setup Utility	135
Navigating and selecting in Setup Utility	135
Displaying system information	136
Restoring default settings in Setup Utility	136
Exiting Setup Utility	137
Setup Utility menus	137
Main menu	137
Security menu	137
System Configuration menu	138

Diagnostics menu	138
Appendix B Software updates	
Updating the BIOS	140
Determining the BIOS version	140
Downloading a BIOS update	141
Updating programs and drivers	142
Appendix C Backup and recovery	
Creating recovery discs	144
Backing up your information	145
Using Windows Backup and Restore	146
Using system restore points	147
When to create restore points	147
Create a system restore point	147
Restore to a previous date and time	147
Performing a recovery	148
Recovering from the recovery discs	148
Recovering from the dedicated recovery partition (select models only)	148
Index	149

1 Using HP QuickWeb (select models only)

Your computer's main operating system is Windows®. Your computer may also feature HP QuickWeb (select models only).

- The Microsoft® Windows operating system displays the desktop on the display and controls your computer's hardware, peripherals, and software programs.
- If your computer includes HP QuickWeb, it allows you to quickly browse the Internet, view digital photos, listen to music, or keep in touch using e-mail, instant messages, or Skype (select models only), without having to start your main operating system. HP QuickWeb is also referred to as Instant-On Software (IOS).

 **NOTE:** You can access the software Help when you are in HP QuickWeb by clicking the Help icon in the notification area.

Starting HP QuickWeb

To start HP QuickWeb:

1. Turn on your computer. The HP QuickWeb screen opens.
2. Click an icon on the HP QuickWeb screen to start a program.

To start HP QuickWeb from Microsoft Windows:

- ▲ Select **Start**, click the arrow next to the Shut down button, and then click **Restart**. Your computer restarts and displays the HP QuickWeb home page.



NOTE: To learn more about HP QuickWeb, refer to the HP QuickWeb software Help.

Disabling and enabling HP QuickWeb

To disable or reenble HP QuickWeb from within the Windows operating system:

1. Click **Start**, click **All Programs**, and then click **HP QuickWeb**. The **HP QuickWeb Installer** folder displays. Click **HP QuickWeb Configuration Tool**.
2. Select the Enable **HP QuickWeb** check box.
3. Click **OK**.



NOTE: The HP QuickWeb Configuration Tool can also be accessed by clicking **Start**, clicking **Control Panel**, and then clicking the **View by** arrow. Select **Large icons** or **Small icons** to locate the HP QuickWeb Configuration Tool.


2 Features

Identifying hardware

To see a list of hardware installed in the computer, follow these steps:

- ▲ Select **Start > Control Panel > System and Security**. Then in the **System** area, click **Device Manager**.

You can also add hardware or modify device configurations using Device Manager.

 **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 installing software, running utilities, or changing Windows settings. Refer to Help and Support for more information.

Components

Top components

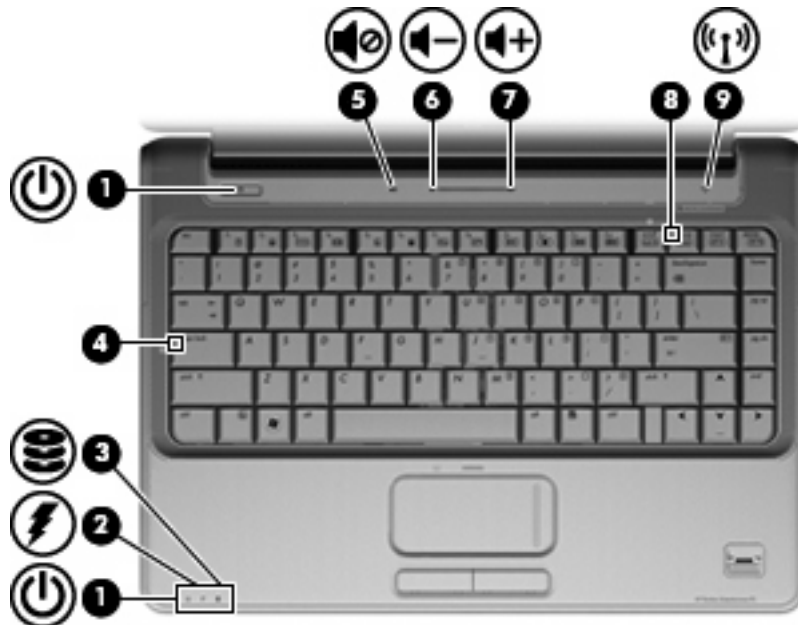
TouchPad



Component	Description
(1) TouchPad light	<ul style="list-style-type: none">• White: TouchPad is enabled.• Amber: TouchPad is disabled.
(2) TouchPad*	Moves the pointer and selects or activates items on the screen.
(3) Left TouchPad button*	Functions like the left button on an external mouse.
(4) TouchPad on/off button	Enables/disables the TouchPad.
(5) TouchPad vertical scroll zone	Scrolls up or down.
(6) Right TouchPad button*	Functions like the right button on an external mouse.

*This table describes factory settings. To view or change TouchPad preferences, select **Start > Devices and Printers**. Then, right-click the device representing your computer, and select **Mouse settings**.

Lights

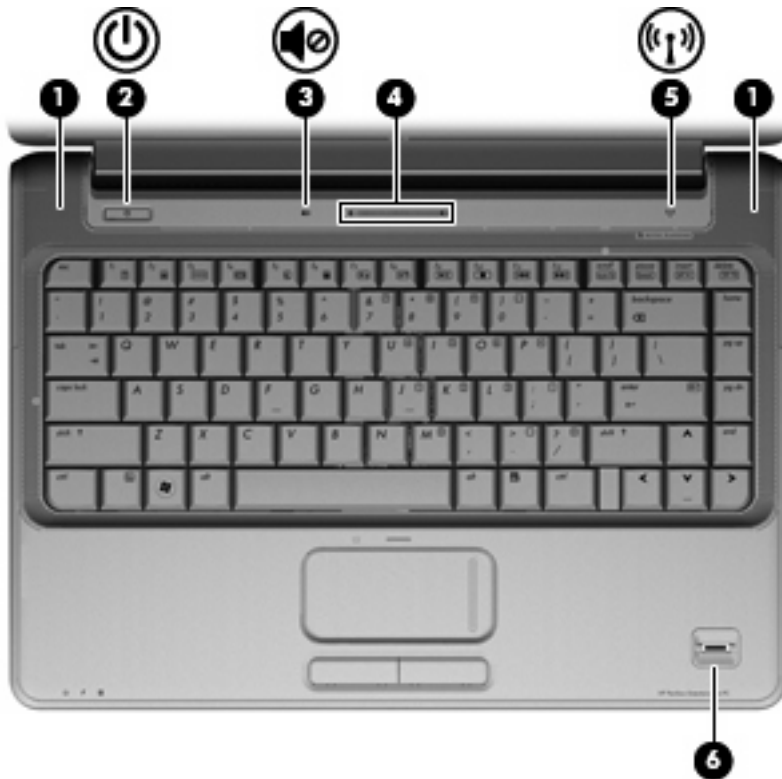


Component	Description
(1) Power lights (2)*	<ul style="list-style-type: none"> On: The computer is on. Blinking: The computer is in the Sleep state. Off: The computer is off or in Hibernation.
(2) Battery light	<ul style="list-style-type: none"> On: A battery is charging. Blinking: A battery that is the only available power source has reached a low battery level or a critical battery level. Off: If the computer is plugged into an external power source, the light is turned 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.
(3) Drive light	<ul style="list-style-type: none"> Blinking: The hard drive or optical drive is being accessed. On: HP ProtectSmart Hard Drive Protection has temporarily parked the internal hard drive, and if present, the hard drive in the SmartBay.
(4) Caps lock light	On: Caps lock is on.
(5) Volume mute light	<ul style="list-style-type: none"> White: Computer sound is turned on. Amber: Computer sound is turned off.
(6) Volume down light	On: The volume scroll zone is being used to decrease speaker volume.
(7) Volume up light	On: The volume scroll zone is being used to increase speaker volume.

Component	Description
(8) Num lock light	<p>On: The embedded numeric keypad is enabled.</p> <p>– or –</p> <p>Num lock is enabled on a connected optional numeric keypad.</p>
(9) Wireless light	<ul style="list-style-type: none"> • Blue: An integrated wireless device, such as a wireless local area network (WLAN) device and/or a Bluetooth® device, is on. • Amber: All wireless devices are off.

*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.

Buttons, speakers, and fingerprint reader



Component	Description
(1) Speakers (2)	Produce sound.
(2) Power button*	<ul style="list-style-type: none"> When the computer is off, press the button to turn on the computer. When the computer is on, briefly press the button to initiate Sleep. When the computer is in the Sleep state, briefly press the button to exit Sleep. When the computer is in Hibernation, briefly press the button to exit Hibernation. <p>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.</p> <p>To learn more about your power settings, select Start > Control Panel > System and Security > Power Options.</p>
(3) Volume mute button	Mutes and restores speaker sound.
(4) Volume scroll zone	Adjusts speaker volume. Slide your finger to the left to decrease volume and to the right to increase volume. You can also tap the minus sign on the scroll zone to decrease volume, or tap the plus sign on the scroll zone to increase volume.

Component	Description
(5) 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.
(6) Fingerprint reader (select models only)	Allows a fingerprint logon to Windows, instead of a password logon.

*This table describes factory settings. For information about changing factory settings, refer to the user guides located in Help and Support.

Keys



Component	Description
(1) <code>esc</code> key	Displays system information when pressed in combination with the <code>fn</code> key.
(2) <code>fn</code> key	Executes frequently used system functions when pressed in combination with a function key or the <code>esc</code> 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 <code>fn</code> key.

Display



Component	Description
(1) Internal display switch	Turns off the display if the display is closed while the computer is turned on.
(2) Internal digital dual-array microphones (2)	Record sound.
(3) Integrated webcam light	On: The integrated webcam is in use.
(4) Integrated webcam	Records video and captures still photographs.

Front components



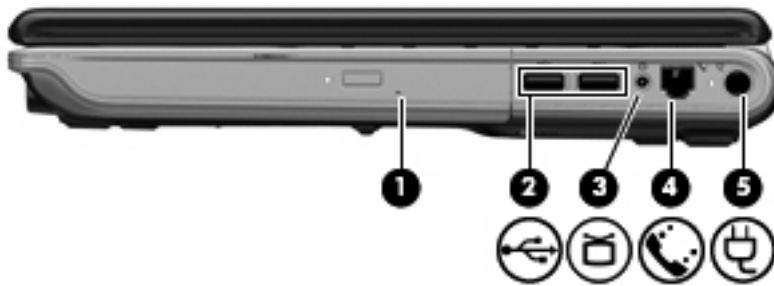
Component	Description
(1) Power light	<ul style="list-style-type: none"> On: The computer is on. Blinking: The computer is in the Sleep state. Off: The computer is off or in Hibernation.
(2) Battery light	<ul style="list-style-type: none"> On: A battery is charging. Blinking: A battery that is the only available power source has reached a low battery level or a critical battery level. Off: If the computer is plugged into an external power source, the light is turned 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.
(3) Drive light	<ul style="list-style-type: none"> Blinking: The hard drive or optical drive is being accessed. On: HP ProtectSmart Hard Drive Protection has temporarily parked the internal hard drive, and if present, the hard drive in the SmartBay.
(4) Consumer infrared lens	Receives a signal from the HP Remote Control.
(5) Audio-in (microphone) jack	Connects an optional computer headset microphone, stereo array microphone, or monaural microphone.
(6) Audio-out (headphone) jacks (2)	Produce sound when connected to optional powered stereo speakers, headphones, earbuds, a headset, or television audio.

Rear component



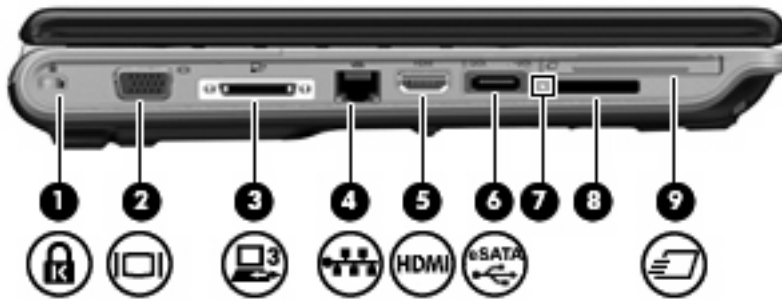
Component	Description
Vent	<p>Enables airflow to cool internal components.</p> <p>NOTE: The computer fan starts up automatically to cool internal components and prevent overheating. It is normal for the internal fan to cycle on and off during routine operation.</p>

Right-side components



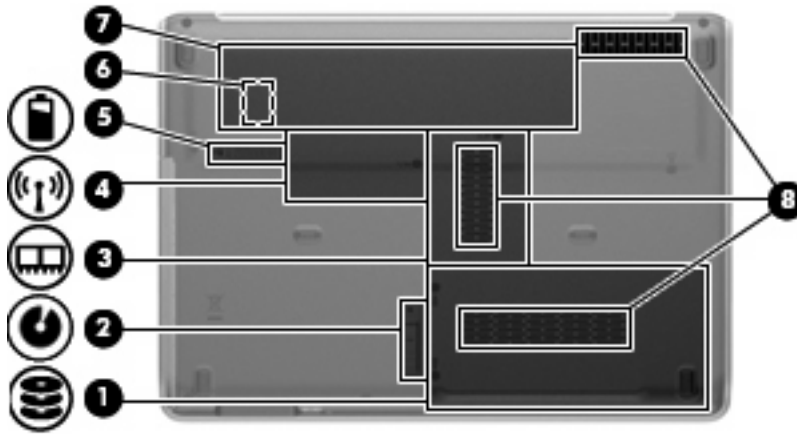
Component	Description
(1) SmartBay	Supports an optical drive or hard drive.
(2) USB ports (2)	Connect optional USB devices.
(3) TV antenna/cable jack (select models only)	Connects a TV antenna, a digital cable device, or a satellite device that receives standard or high-definition TV broadcasts.
(4) RJ-11 (modem) jack (select models only)	Connects a modem cable.
(5) Power connector	Connects an AC adapter.

Left-side components



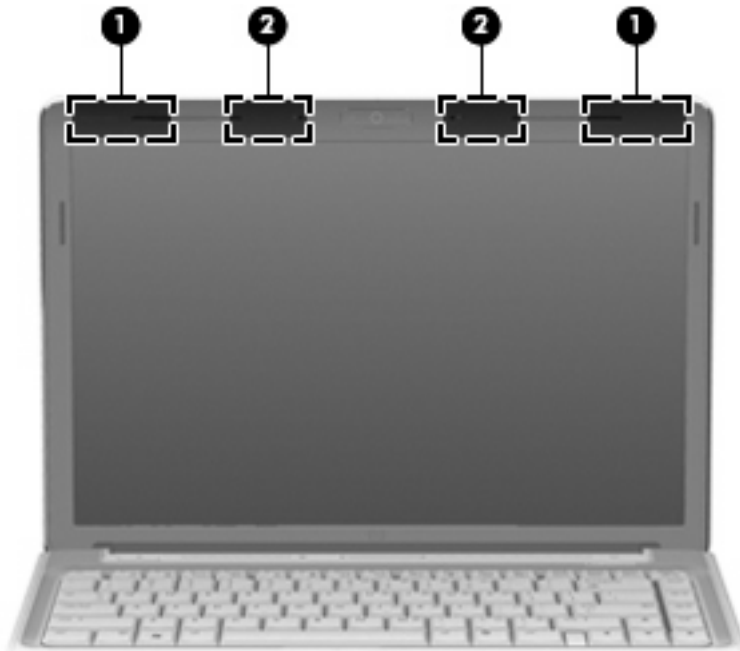
Component	Description
(1) Security cable slot	Attaches an optional security cable to the computer. NOTE: The security cable is designed to act as a deterrent, but it may not prevent the computer from being mishandled or stolen.
(2) External monitor port	Connects an external VGA monitor or projector.
(3) Expansion port 3	Connects the computer to an optional docking device or optional expansion product. NOTE: The computer has only one expansion port. The term <i>expansion port 3</i> describes the type of expansion port.
(4) RJ-45 (network) jack	Connects a network cable.
(5) HDMI port	Connects an optional video or audio device, such as a high-definition television, or any compatible digital or audio component.
(6) eSATA/USB port	Connects a high-performance eSATA component, such as an eSATA external hard drive, or connects an optional USB device.
(7) Digital Media Slot light	On: A digital card is being accessed.
(8) Digital Media Slot	Supports the following optional digital card formats: <ul style="list-style-type: none"> • Memory Stick (MS) • Memory Stick Pro (MSP) • MultiMediaCard (MMC) • Secure Digital (SD) Memory Card • xD-Picture Card (XD)
(9) ExpressCard slot	Supports optional ExpressCard/54 cards.

Bottom components



Component	Description
(1) Hard drive bay	<p>Holds the hard drive and the wireless LAN (WLAN) module.</p> <p>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, and then contact technical support through Help and Support.</p>
(2) SmartBay release latch	Releases the SmartBay module.
(3) Memory module compartment	Contains the 2 memory module slots.
(4) Mini Card compartment	<p>Holds the RTC battery and, on select models, holds a wireless WAN (WWAN) module or a TV tuner card.</p> <p>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, and then contact technical support through Help and Support.</p>
(5) Battery release latch	Releases the battery from the battery bay.
(6) SIM slot (select models only)	Contains a subscriber identity module (SIM). The SIM slot is located inside the battery bay.
(7) Battery bay	Holds the battery.
(8) Vents (3)	<p>Enable airflow to cool internal components.</p> <p>NOTE: The computer fan starts up automatically to cool internal components and prevent overheating. It is normal for the internal fan to cycle on and off during routine operation.</p>

Wireless antennas



Component	Description
(1) WWAN antennas (2)* (select models only)	Send and receive wireless signals to communicate with wireless wide-area networks (WWAN).
(2) WLAN antennas (2)*	Send and receive wireless signals to communicate with wireless local area networks (WLAN).

*The antennas are not visible from the outside of the computer. For optimal transmission, keep the areas immediately around the antennas 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 Help and Support.

Additional hardware components



Component	Description
(1) Power cord*	Connects an AC adapter to an AC outlet.
(2) AC adapter	Converts AC power to DC power.
(3) Battery*	Powers the computer when the computer is not plugged into external power.

*Batteries and power cords vary in appearance by country or region.

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:



- Product name **(1)**. This is the product name affixed to the front of your notebook.
- Serial number (s/n) **(2)**. This is an alphanumeric identifier 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 alphanumeric identifier used to locate documents, drivers, and support for your notebook.
- 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.

- Microsoft® Certificate of Authenticity—Contains the Windows® Product Key. You may need the Product Key to update or troubleshoot the operating system. This certificate 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 (select models only)—Provides regulatory information about the modem and lists the agency approval markings required by some of the countries or regions 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 hard drive bay.
- Wireless certification label(s)—Provide information about optional wireless devices and the approval markings of some of the countries or regions in which the devices have been approved for use. An optional device may be a wireless local area network (WLAN) device or an optional Bluetooth® device. 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 Mini Card compartment.
- SIM (subscriber identity module) label (select models only)—Provides the ICCID (Integrated Circuit Card Identifier) of your SIM. This label is located inside the battery bay.
- HP Mobile Broadband Module serial number label (select models only)—Provides the serial number of your HP Mobile Broadband Module. This label is located inside the battery bay.

3 Wireless, local area network, and modem

Using wireless devices

Wireless technology transfers data across radio waves instead of wires. Your computer may be equipped with one or more of the following wireless devices:

- Wireless local area network (WLAN) 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.
- HP Mobile Broadband Module (select models only)—A wireless wide area network (WWAN) device that provides access to information wherever mobile network operator service is available. In a WWAN, each mobile device communicates to a mobile network operator's base station. Mobile network operators install networks of base stations (similar to cell phone towers) throughout large geographic areas, effectively providing coverage across entire states, regions, or even countries.
- Bluetooth® device (select models only)—Creates a personal area network (PAN) to connect to other Bluetooth-enabled devices such as computers, phones, printers, headsets, speakers, and cameras. In a PAN, each device communicates directly with other devices, and devices must be relatively close together—typically within 10 meters (approximately 33 feet) of each other.

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.

 **NOTE:** 802.11a is not compatible with 802.11b and 802.11g.

- 802.11n supports data rates of up to 450 Mbps and may operate at 2.4 GHz or 5 GHz, making it backward compatible with 802.11a, b, and g.

For more information on wireless technology, refer to the information and Web site links provided in Help and Support.

Identifying wireless and network status icons

Icon	Name	Description
	Wireless (connected)	Identifies the location of the wireless lights and the wireless buttons on the computer. Also identifies the HP Wireless Assistant software on the computer and indicates that one or more of the wireless devices are on.
	Wireless (disconnected)	Identifies the HP Wireless Assistant software on the computer and indicates that all of the wireless devices are off.
	HP Connection Manager	Opens HP Connection Manager, which enables you to create a connection with an HP Mobile Broadband device (select models only).
	Wired network (connected)	Indicates that one or more network drivers are installed, and one or more network devices are connected to a wired network.
	Wired network (disabled/ disconnected)	Indicates that one or more network drivers are installed, but no network devices are connected (or all network devices are disabled in Windows® Control Panel).
	Network (connected)	Indicates that one or more network drivers are installed, and one or more network devices are connected to a wireless network.
	Network (disconnected)	Indicates that one or more network drivers are installed and wireless connections are available, but no network devices are connected to a wireless network.
	Network (disabled/ disconnected)	Indicates that one or more network drivers are installed, but no wireless connections are available (or all wireless network devices are disabled by the wireless button or HP Wireless Assistant).

Using the wireless controls

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

- Wireless button or wireless switch (referred to in this guide as the wireless button)
- HP Wireless Assistant software
- HP Connection Manager software (select models only)
- Operating system controls

Using the wireless button

The computer has a wireless button, one or more wireless devices, and one or two wireless lights, depending on the model. 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.

 **NOTE:** On some models, the wireless light is amber when 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. Individual wireless devices can be controlled through HP Wireless Assistant.

Using HP Wireless Assistant

A wireless device can be turned on or off using HP Wireless Assistant. If a wireless device is disabled by Setup Utility, it must be reenabled by Setup Utility before it can be turned on or off using Wireless Assistant.

 **NOTE:** Enabling or turning on a wireless device does not automatically connect the computer to a network or a Bluetooth-enabled device.

To view the state of the wireless devices, click the **Show hidden icons** icon, the arrow at the left of the notification area, and position the mouse pointer over the wireless icon.

If the wireless icon is not displayed in the notification area, complete the following steps to change Wireless Assistant properties:

1. Select **Start > Control Panel > Hardware and Sound > Windows Mobility Center**.
2. Click the wireless icon in the Wireless Assistant tile, which is located in the bottom row of Windows® Mobility Center. Wireless Assistant opens.
3. Click **Properties**.
4. Select the check box next to **HP Wireless Assistant icon in notification area**.
5. Click **Apply**.
6. Click **Close**.

For more information, refer to the Wireless Assistant software Help:

1. Open Wireless Assistant by clicking the wireless icon in Windows Mobility Center.
2. Click the **Help** button.

Using HP Connection Manager (select models only)

You can use HP Connection Manager to connect to WWANs using the HP Mobile Broadband device in your computer (select models only).

To start Connection Manager, click the **Connection Manager** icon in the notification area, at the far right of the taskbar.

– or –

Select **Start > All Programs > HP Connection Manager > HP Connection Manager**.

For more details about using Connection Manager, refer to the Connection Manager software Help.

Using operating system controls


Some operating systems also offer a way to manage integrated wireless devices and the wireless connection. For example, Windows provides the Network and Sharing Center that allows you to set up a connection or network, connect to a network, manage wireless networks, and diagnose and repair network problems.

To access the Network and Sharing Center, select **Start > Control Panel > Network and Internet > Network and Sharing Center**.

For more information, select **Start > Help and Support**.

Using a WLAN

With a WLAN device, you can access a wireless local area network (WLAN), 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.

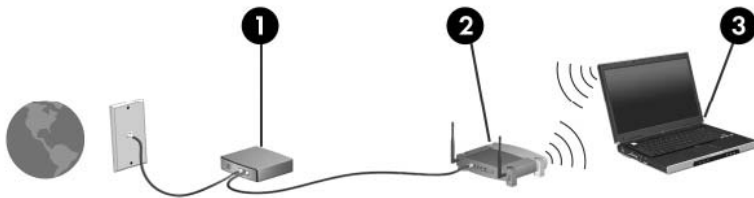
To use the WLAN device in your computer, you must connect to a WLAN infrastructure (provided through a service provider or a public or corporate network).

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.

Protecting your WLAN

Because the WLAN standard was designed with only limited security capabilities—basically to foil casual eavesdropping rather than more powerful forms of attack—it is essential to understand that WLANs are vulnerable to well-known and well-documented security weaknesses.

WLANs in public areas, or “hotspots,” like coffee shops and airports may not provide any security. New technologies are being developed by wireless manufacturers and hotspot service providers that make the public environment more secure and anonymous. If you are concerned about the security of your computer in a hotspot, limit your network activities to noncritical e-mail and basic Internet surfing.

When you set up a WLAN or access an existing WLAN, always enable security features to protect your network from unauthorized access. The common security levels are Wi-Fi Protected Access (WPA)-Personal and Wired Equivalent Privacy (WEP). Because wireless radio signals travel outside the network, other WLAN devices can pick up unprotected signals and either connect to your network (uninvited) or capture information being sent across it. However, you can take precautions to protect your WLAN:

- **Use a wireless transmitter with built-in security**

Many wireless base stations, gateways, or routers provide built-in security features such as wireless security protocols and firewalls. With the correct wireless transmitter, you can protect your network from the most common wireless security risks.

- **Work behind a firewall**

A firewall is a barrier that checks both data and requests for data that are sent to your network, and discards any suspicious items. Firewalls are available in many varieties, both software and hardware. Some networks use a combination of both types.

- **Use wireless encryption**


A variety of sophisticated encryption protocols is available for your WLAN. Find the solution that works best for your network security:

- **Wired Equivalent Privacy (WEP)** is a wireless security protocol that encodes or encrypts all network data before it is transmitted using a WEP key. Usually, you can allow the network to assign the WEP key. Alternatively, you can set up your own key, generate a different key, or choose other advanced options. Without the correct key, others will not be able to use the WLAN.
- **WPA (Wi-Fi Protected Access)**, like WEP, uses security settings to encrypt and decrypt data that is transmitted over the network. However, instead of using one static security key for encryptions as WEP does, WPA uses “temporal key integrity protocol” (TKIP) to dynamically generate a new key for every packet. It also generates different sets of keys for each computer on the network.

Connecting to a WLAN


To connect to the WLAN, follow these steps:

1. Be sure that the WLAN device is on. If it is on, the wireless light is on. If the wireless light is off, press the wireless button.

 **NOTE:** On some models, the wireless light is amber when all wireless devices are off.


2. Click the network icon in the notification area, at the far right of the taskbar.
3. Select your WLAN from the list.
4. Click **Connect**.

If the network is a security-enabled WLAN, you are prompted to enter a network security key, which is a security code. Type the code, and then click **OK** to complete the connection.

 **NOTE:** If no WLANs are listed, you are out of range of a wireless router or access point.

NOTE: If you do not see the network you want to connect to, click **Open Network and Sharing Center**, and then click **Set up a new connection or network**. A list of options is displayed. You can choose to manually search for and connect to a network or to create a new network connection.

After the connection is made, place the mouse pointer over the network icon in the notification area, at the far right of the taskbar, to verify the name and status of the connection.

 **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 the following resources:

- Information from your ISP and the user guides included with your wireless router and other WLAN equipment
- Information and Web site links provided in Help and Support

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 Geekttools. Check with each public WLAN location for cost and connection requirements.

Roaming to another network

When you move your computer within range of another WLAN, Windows attempts to connect to that network. If the attempt is successful, your computer is automatically connected to the new network. If Windows does not recognize the new network, follow the same procedure you used initially to connect to your WLAN.

Using HP Mobile Broadband (select models only)

HP Mobile Broadband enables your computer to use wireless wide area networks (WWANs) to access the Internet from more places and over larger areas than it can by using WLANs. Using HP Mobile Broadband requires a network service provider (called a *mobile network operator*), which in most cases is a mobile phone network operator. Coverage for HP Mobile Broadband is similar to mobile phone voice coverage.

When used with mobile network operator service, HP Mobile Broadband gives you the freedom to stay connected to the Internet, send e-mail, or connect to your corporate network whether you are on the road or outside the range of Wi-Fi hotspots.

HP Mobile Broadband supports the following technologies:

- HSPA (High Speed Packet Access), which provides access to networks based on the Global System for Mobile Communications (GSM) telecommunications standard.
- EV-DO (Evolution Data Optimized), which provides access to networks based on the code division multiple access (CDMA) telecommunications standard.

You may need the HP Mobile Broadband Module serial number to activate mobile broadband service. The serial number is printed on a label inside the battery bay of your computer.

Some mobile network operators require the use of a subscriber identity module (SIM). A SIM contains basic information about you, such as a personal identification number (PIN), as well as network information. Some computers include a SIM that is preinstalled in the battery bay. If the SIM is not preinstalled, it may be provided in the HP Mobile Broadband information provided with your computer, or the mobile network operator may provide it separately from the computer.

For information on inserting and removing the SIM, refer to the “Inserting a SIM” and “Removing a SIM” sections in this chapter.

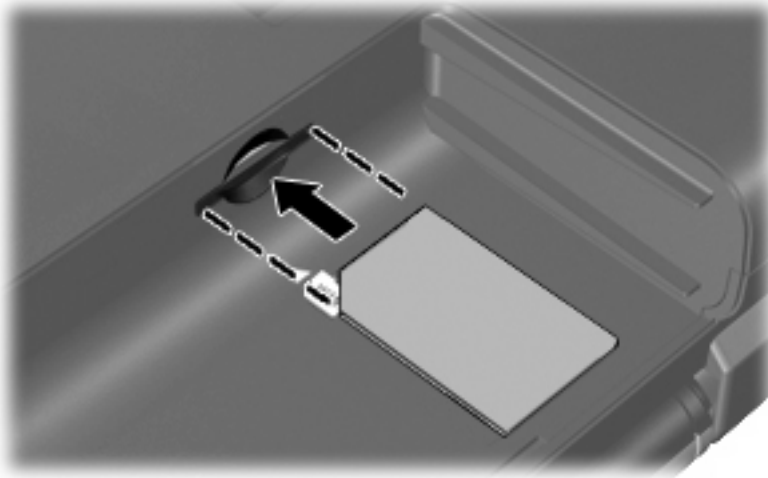
For information on HP Mobile Broadband and how to activate service with a preferred mobile network operator, refer to the HP Mobile Broadband information included with your computer. For additional information, see the HP Web site at <http://www.hp.com/go/mobilebroadband> (US only).

Inserting a SIM

△ **CAUTION:** To prevent damage to the connectors, use minimal force when inserting a SIM.

To insert a SIM:

1. Shut down the computer. If you are not sure whether the computer is off or in Hibernation, turn the computer on by pressing the power button. Then shut down the computer through the operating system.
2. Close the display.
3. Disconnect all external devices connected to the computer.
4. Unplug the power cord from the AC outlet.
5. Turn the computer upside down on a flat surface, with the battery bay toward you.
6. Remove the battery.
7. Insert the SIM into the SIM slot, and gently push the SIM into the slot until it is firmly seated.



8. Replace the battery.

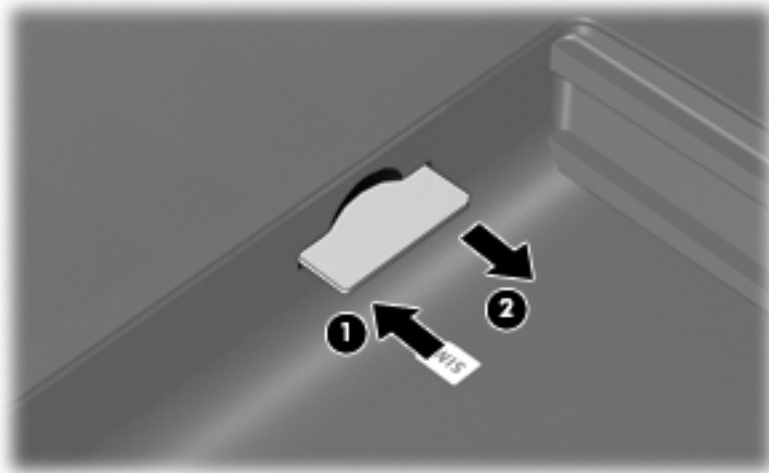
📄 **NOTE:** HP Mobile Broadband will be disabled if the battery is not replaced.

9. Reconnect external power.
10. Reconnect external devices.
11. Turn on the computer.

Removing a SIM

To remove a SIM:

1. Shut down the computer. If you are not sure whether the computer is off or in Hibernation, turn the computer on by pressing the power button. Then shut down the computer through the operating system.
2. Close the display.
3. Disconnect all external devices connected to the computer.
4. Unplug the power cord from the AC outlet.
5. Turn the computer upside down on a flat surface, with the battery bay toward you.
6. Remove the battery.
7. Press in on the SIM (1), and then remove it from the slot (2).



8. Replace the battery.
9. Reconnect external power.
10. Reconnect external devices.
11. Turn on the computer.

Using Bluetooth wireless devices (select models only)

A Bluetooth device provides short-range wireless communications that replace the physical cable connections that traditionally link electronic devices such as the following:

- Computers (desktop, notebook, PDA)
- Phones (cellular, cordless, smart phone)
- Imaging devices (printer, camera)
- Audio devices (headset, speakers)

Bluetooth devices provide peer-to-peer capability that allows you to set up a personal area network (PAN) of Bluetooth devices. For information on configuring and using Bluetooth devices, refer to the Bluetooth software Help.

Bluetooth and Internet Connection Sharing (ICS)


HP does **not** recommend setting up one computer with Bluetooth as a host and using it as a gateway through which other computers may connect to the Internet. When two or more computers are connected using Bluetooth, and Internet Connection Sharing (ICS) is enabled on one of the computers, the other computers may not be able to connect to the Internet using the Bluetooth network.

The strength of Bluetooth is in synchronizing information transfers between your computer and wireless devices including cellular phones, printers, cameras, and PDAs. The inability to consistently connect two or more computers to share the Internet through Bluetooth is a limitation of Bluetooth and the Windows operating system.

Troubleshooting wireless connection problems

Some possible causes for wireless connection problems include the following:

- Network configuration (SSID or security) has been changed.
- Wireless device is not installed correctly or has been disabled.
- Wireless device or router hardware has failed.
- Wireless device encountered interference from other devices.


 **NOTE:** Wireless networking devices are included with select computer models only. If wireless networking is not listed in the feature list on the side of the original computer package, you may add wireless networking capability to the computer by purchasing a wireless networking device.

Before working your way through the sequence of possible solutions to your network connection problem, be sure that device drivers are installed for all wireless devices.

Use the procedures in this chapter to diagnose and repair a computer that does not connect to the network you want to use.

Cannot connect to a WLAN

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

 **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 installing software, running utilities, or changing Windows settings. Refer to Help and Support for more information.

1. Select **Start > Control Panel > System and Security**.
2. In the **System** area, click **Device Manager**.
3. Click the arrow next to **Network adapters** to expand the list and show all adapters.
4. Identify the WLAN device from the Network adapters list. The listing for a WLAN device may include the term *wireless*, *wireless LAN*, *WLAN*, *Wi-Fi*, 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.

For more information on troubleshooting WLANs, refer to the Web site links provided in Help and Support.

Cannot connect to a preferred network

Windows can automatically repair a corrupted WLAN connection:

- If there is a network icon in the notification area, at the far right of the taskbar, right-click the icon, and then click **Troubleshoot problems**.

Windows resets your network device and attempts to reconnect to one of the preferred networks.

- If there is no network icon in the notification area, follow these steps:
 1. Select **Start > Control Panel > Network and Internet > Network and Sharing Center**.
 2. Click **Troubleshoot problems** and select the network you wish to repair.


Network icon is not displayed

If the network icon is not displayed in the notification area after you configure the WLAN, the software driver is either missing or corrupted. A Windows “Device not Found” error message may also be displayed. The driver must be reinstalled.

Get the latest version of the WLAN device software and drivers for your computer from the HP Web site at <http://www.hp.com>. If the WLAN device you are using was purchased separately, consult the manufacturer's Web site for the latest software.

To get the latest version of the WLAN device software for your computer, follow these steps:

1. Open your Web browser and go to <http://www.hp.com/support>.
2. Select your country or region.
3. Click the option for software and driver downloads, and then type your computer model number in the search box.
4. Press **enter**, and then follow the on-screen instructions.

 **NOTE:** If the WLAN device you are using was purchased separately, consult the manufacturer's Web site for the latest software.

Current network security codes are unavailable

If you are prompted for a network key or a name (SSID) when connecting to a WLAN, the network is protected by security. You must have the current codes to make a connection on a secure network. The SSID and network key are alphanumeric codes that you enter into your computer to identify your computer to the network.

- For a network connected to your personal wireless router, review the router user guide for instructions on setting up the same codes on both the router and the WLAN device.
- For a private network, such as a network in an office or at a public Internet chat room, contact the network administrator to obtain the codes, and then enter the codes when prompted to do so.


Some networks change the SSID or network keys used in their routers or access points on a regular basis to improve security. You must change the corresponding code in your computer accordingly.

If you are provided with new wireless network keys and SSID for a network, and if you have previously connected to that network, follow the steps below to connect to the network:

1. Select **Start > Control Panel > Network and Internet > Network and Sharing Center**.
2. In the left panel, click **Manage wireless networks**.

A list showing the available WLANs is displayed. If you are in a hotspot where several WLANs are active, several will be displayed.

3. Select the network in the list, right-click the network, and then click **Properties**.

 **NOTE:** If the network you want is not listed, check with the network administrator to be sure that the router or access point is operating.

4. Click the **Security** tab and enter the correct wireless encryption data into the **Network security key** box.
5. Click **OK** to save these settings.

WLAN connection is very weak

If the connection is very weak, or if your computer cannot make a connection to a WLAN, minimize interference from other devices, as follows:

- Move your computer closer to the wireless router or access point.
- Temporarily disconnect devices such as a microwave, cordless phone, or cellular phone to be sure that other wireless devices are not interfering.

If the connection does not improve, try forcing the device to reestablish all connection values:

1. Select **Start > Control Panel > Network and Internet > Network and Sharing Center**.
2. In the left panel, click **Manage wireless networks**.

A list showing the available WLANs is displayed. If you are in a hotspot where several WLANs are active, several will be displayed.

3. Click a network, and then click **Remove**.

Cannot connect to the wireless router

If you are trying to connect to the wireless router and are unsuccessful, reset the wireless router by removing power from the router for 10 to 15 seconds.

If the computer still cannot make a connection to a WLAN, restart the wireless router. For details, refer to the router manufacturer's instructions.

Using the modem (select models only)

The modem must be connected to an analog telephone line using a 6-pin, RJ-11 modem cable (included with select models only). In some countries, a country-specific modem cable adapter (included with select models only) 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.

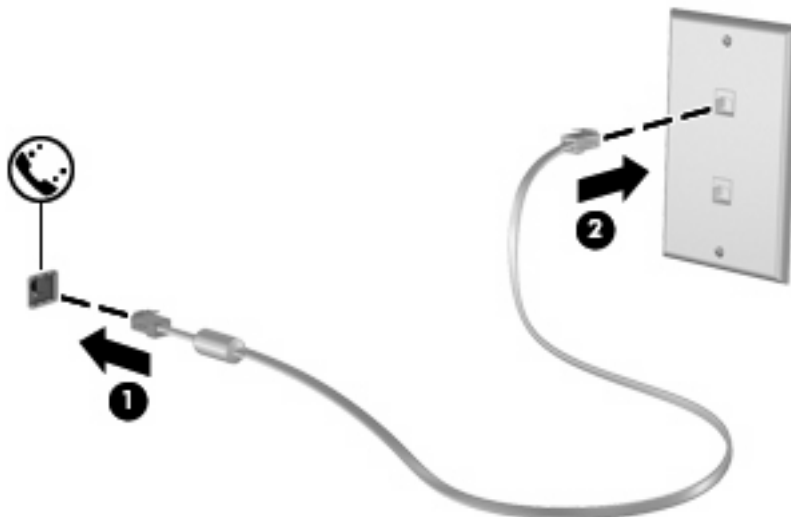


Connecting a modem cable

⚠ **WARNING!** To reduce the risk of electric shock, fire, or damage to the equipment, do not plug a modem cable (included with select models only) 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)**.

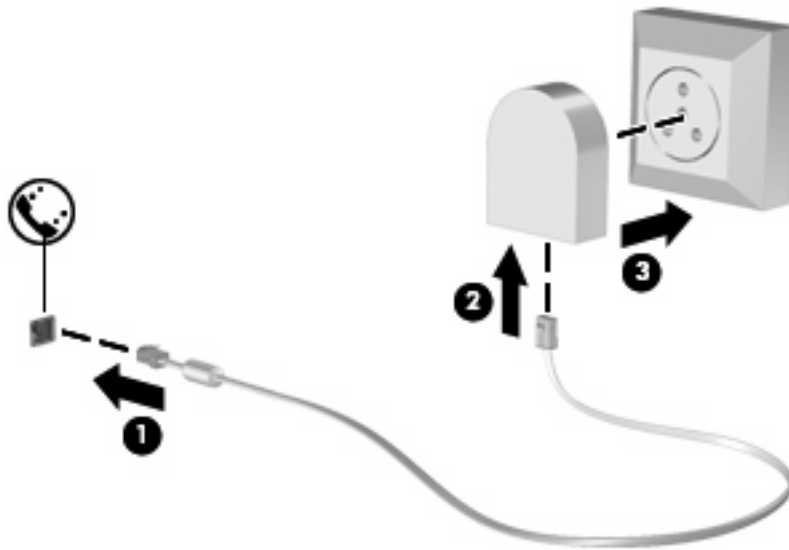


Connecting a country-specific modem cable adapter

Telephone jacks vary by country. To use the modem and the modem cable (included with select models only) outside the country in which you purchased the computer, you must obtain a country-specific modem cable adapter (included with select models only).

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 **Clock, Language, and Region**.
3. Click **Region and Language**.
4. Click the **Location** tab to display your location.

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 > Devices and Printers**.
2. Right-click the device that represents your computer, and click **Modem settings**.

 **NOTE:** You must set up an initial (current) location area code before you can view the Dialing Rules tab. If you do not have a location set up, you will be prompted to enter the location when you click Modem settings.

3. Click the **Dialing Rules** tab.
4. Click **New**. The New Location window is displayed.
5. In the **Location name** box, type a name such as “home” or “work” for the new location setting.
6. 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.)
7. Enter the area code, a carrier code (if necessary), and the number to access an outside line (if necessary).
8. Next to **Dial using**, click **Tone** or **Pulse**.
9. Click **OK** to save your new location setting. The Phone and Modem window is displayed.
10. 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 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 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 > Devices and Printers**.
2. Right-click the device that represents your computer, and click **Modem settings**.
3. Click the **Dialing Rules** tab.
4. Select your modem location setting.
5. Click **Edit**.
6. Click either **Tone** or **Pulse**.
7. Click **OK** twice.

- **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 > Devices and Printers**.
2. Right-click the device that represents your computer, and click **Modem settings**.
3. Click the **Modems** tab.
4. Click the listing for the modem.
5. Click **Properties**.
6. Click **Modem**.

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

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.

4 Pointing devices and keyboard

Using the TouchPad


The following illustration and table describe the computer TouchPad.



Component	Description
(1) TouchPad light	<ul style="list-style-type: none">• White: TouchPad is enabled.• Amber: TouchPad is disabled.
(2) TouchPad*	Moves the pointer and selects or activates items on the screen.
(3) Left TouchPad button*	Functions like the left button on an external mouse.
(4) TouchPad on/off button	Enables/disables the TouchPad.
(5) TouchPad scroll zone	Scrolls up or down.
(6) Right TouchPad button*	Functions like the right button on an external mouse.

*This table describes factory settings. To view or change TouchPad preferences, select **Start > Devices and Printers**. Then, right-click the device representing your computer, and select **Mouse settings**.

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

 **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.

Setting TouchPad 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 > Devices and Printers**. Then, right-click the device representing your computer, and select **Mouse settings**.

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 system using the ports on an optional docking device or optional expansion product.

Using keyboard 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 **f1** through **f12** keys represent the hotkey functions. Hotkey functions and procedures are discussed in the following sections.



Function	Hotkey
Display system information.	fn+esc
Open Help and Support.	fn+f1
Open the Print Options window.	fn+f2
Open a Web browser.	fn+f3
Switch the screen image.	fn+f4
Initiate Sleep.	fn+f5
Initiate QuickLock.	fn+f6
Decrease screen brightness.	fn+f7
Increase screen brightness.	fn+f8
Play, pause, or resume an audio CD or a DVD.	fn+f9
Stop an audio CD or a DVD.	fn+f10
Play the previous track or section on an audio CD or a DVD.	fn+f11
Play the next track on an audio CD or a DVD.	fn+f12

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

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.

Opening Help and Support

Press **fn+f1** to open Help and Support.

In addition to providing information about your Windows operating system, Help and Support provides the following information and tools:

- Information about your computer, such as model and serial number, installed software, hardware components, and specifications
- Answers to questions about using your computer
- Tutorials to help you learn to use the computer and Windows features
- Updates for the Windows operating system, drivers, and the software provided on your computer
- Checkups for computer functionality
- Automated and interactive troubleshooting, repair solutions, and system recovery procedures
- Links to support specialists

Opening the Print Options window

Press **fn+f2** to open the Print Options window of the active Windows application.

Opening a Web browser

Press **fn+f3** to open your Web browser.

Until you have set up your Internet or network services, the **fn+f3** hotkey opens the Windows Internet Connection Wizard.

After you have set up your Internet or network services and your Web browser home page, you can press **fn+f3** to quickly access your home page and the Internet.


Switching the screen image

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)
- S-Video (televisions, camcorders, DVD players, VCRs, and video capture cards with S-Video-in jacks)
- HDMI (televisions, camcorders, DVD players, VCRs, and video capture cards with HDMI ports)
- Composite video (televisions, camcorders, DVD players, VCRs, and video capture cards with composite-video-in jacks)

 **NOTE:** Composite video devices can be connected to the system only by using an optional docking device or optional expansion product.


Initiating Sleep

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

Press **fn+f5** to initiate Sleep.


When Sleep is initiated, your information is stored in system memory, the screen is cleared, and power is conserved. While the computer is in the Sleep state, the power lights blink.

The computer must be on before you can initiate Sleep.

 **NOTE:** If a critical battery level occurs while the computer is in the Sleep state, the computer initiates Hibernation and the information stored in memory is saved to the hard drive. The factory setting for critical battery action is Hibernate, but this setting can be changed using Power Options in Windows Control Panel.

To exit Sleep, briefly press the power button.


The function of the **fn+f5** hotkey can be changed. For example, you can set the **fn+f5** hotkey to initiate Hibernation instead of Sleep.

 **NOTE:** In all Windows operating system windows, references to the *sleep button* apply to the **fn+f5** hotkey.

Initiating QuickLock

Press **fn+f6** to initiate the QuickLock security feature.

QuickLock protects your information by displaying the operating system Log On window. While the Log On window is displayed, the computer cannot be accessed until a Windows user password or a Windows administrator password is entered.

 **NOTE:** Before you can use QuickLock, you must set a Windows user password or a Windows administrator password. For instructions, refer to Help and Support.

To use QuickLock, press **fn+f6** to display the Log On window and lock the computer. Then follow the instructions on the screen to enter your Windows user password or your Windows administrator password and access the computer.

Decreasing screen brightness

Press **fn+f7** to decrease screen brightness. Hold down the hotkey to decrease the brightness level incrementally.

Increasing screen brightness

Press **fn+f8** to increase screen brightness. Hold down the hotkey to increase the brightness level incrementally.

Playing, pausing or resuming an audio CD or a DVD

The **fn+f9** hotkey functions only when an audio CD or a DVD is inserted:

- If the audio CD or the DVD is not playing, press **fn+f9** to begin or resume the play.
- If the audio CD or the DVD is playing, press **fn+f9** to pause the play.

Stopping an audio CD or a DVD

Press **fn+f10** to stop the play of an audio CD or a DVD.

Playing previous track or section of an audio CD or a DVD

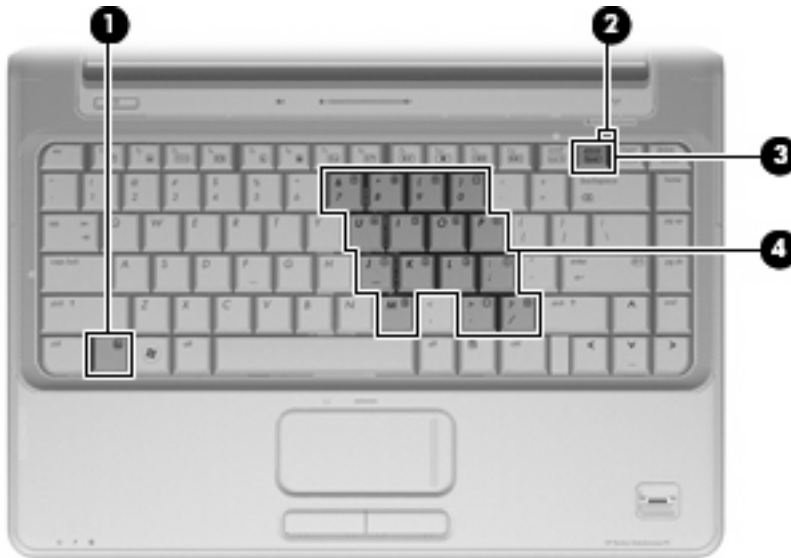
While an audio CD or a DVD is playing, press **fn+f11** to play the previous track of the CD or the previous section of the DVD.

Playing next track or section of an audio CD or a DVD

While an audio CD or a DVD is playing, press **fn+f12** to play the next track of the CD or the next section of the DVD.

Using 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	Enables/disables the embedded numeric keypad when pressed in combination with the num lk key.
(2) Num lock light	On: The embedded numeric keypad is enabled. – or – Num lock is enabled on a connected optional numeric keypad.
(3) num lk key	Enables/disables the embedded numeric keypad when pressed in combination with the fn key. – or – Enables/disables num lock for a connected optional numeric keypad.
(4) Embedded numeric keypad	When the keypad had been enabled, it can be used like an external numeric keypad.

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 turned on, 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. The num lock light is turned on. 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 to an optional docking device or optional expansion product.

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 off, press and hold the **fn** key while pressing the keypad key.
- To use the keypad keys temporarily as standard keys while the keypad is on:
 - 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.

Cleaning the TouchPad and keyboard

Dirt and grease on the TouchPad can cause the pointer to jump around on the screen. To avoid this, clean the TouchPad with a damp cloth, and wash your hands frequently when using the computer.

⚠ **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.



5 Multimedia

Multimedia features

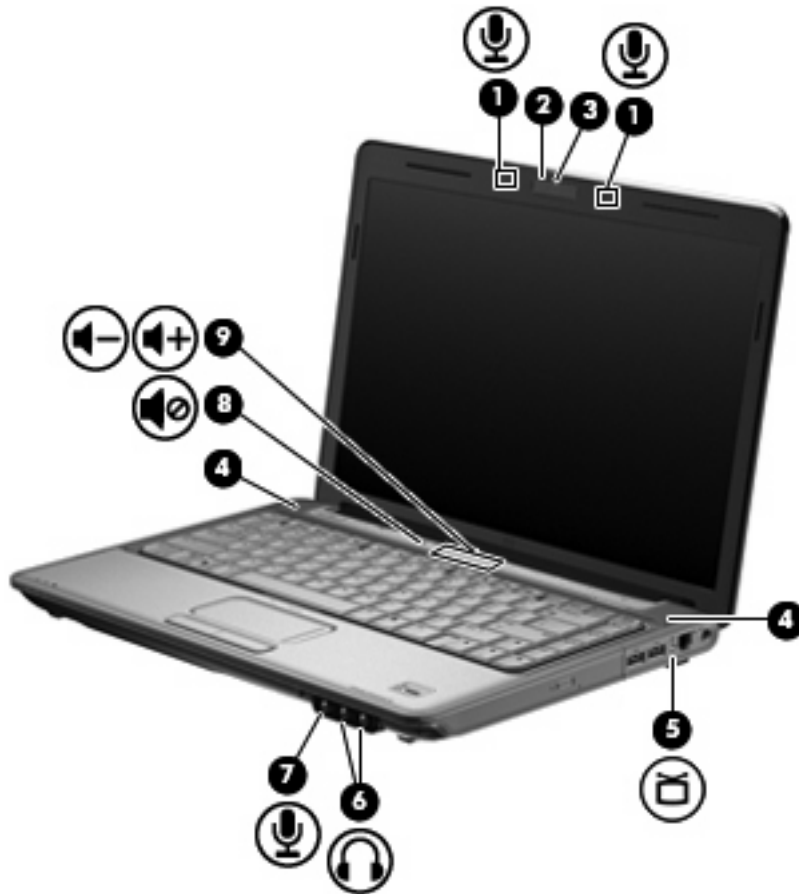
Your computer includes multimedia features that allow you to listen to music, watch movies, and view pictures. Your computer includes the following multimedia components:

- Optical drive for playing audio and video discs
- Integrated speakers for listening to music
- Integrated microphone for recording your own audio
- Integrated webcam that allows you to capture and share video
- Preinstalled multimedia software that allows you to play and manage your music, movies, and pictures
- Multimedia buttons and hotkeys that provide fast access to multimedia tasks

The following sections explain how to identify and use the multimedia components included with your computer.

Identifying your multimedia components

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

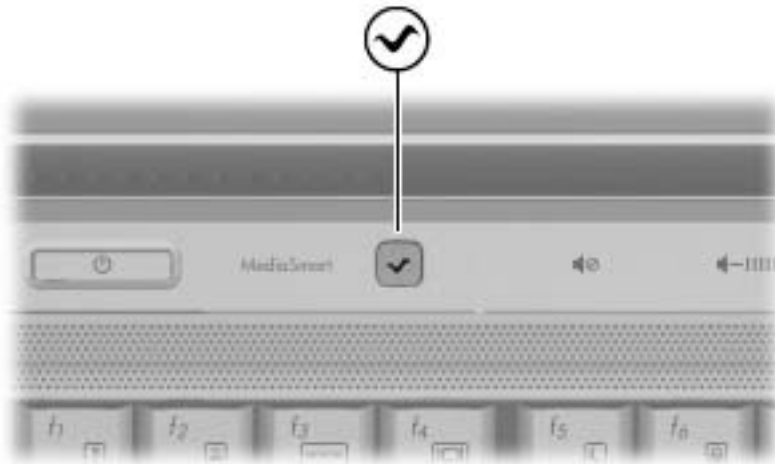


Component	Description
(1) Internal digital dual-array microphones (2)	Record sound.
(2) Webcam light	Turns on when video software accesses the webcam.
(3) Webcam	Records video and captures still photographs.
(4) Speakers (2)	Produce sound.
(5) TV antenna/cable jack (select models only)	Connects a TV antenna, a digital cable device, or a satellite device that receives standard or high-definition TV broadcasts.
(6) Audio-out (headphone) jacks (2)	Produce sound when connected to optional powered stereo speakers, headphones, earbuds, a headset, or television audio. 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 <i>Regulatory, Safety and Environmental Notices</i> .
(7) Audio-in (microphone) jack	Connects an optional computer headset microphone, stereo array microphone, or monaural microphone.

Component	Description
(8) Volume mute button	Mutes and restores speaker sound.
(9) Volume scroll zone	Adjusts speaker volume. Slide your finger to the left to decrease volume and to the right to increase volume. You can also tap the minus sign on the scroll zone to decrease volume, or tap the plus sign on the scroll zone to increase volume.

Using the MediaSmart button (select models only)

The function of the MediaSmart button varies by model and installed software. With this button, you can watch movies, listen to music, and view pictures.



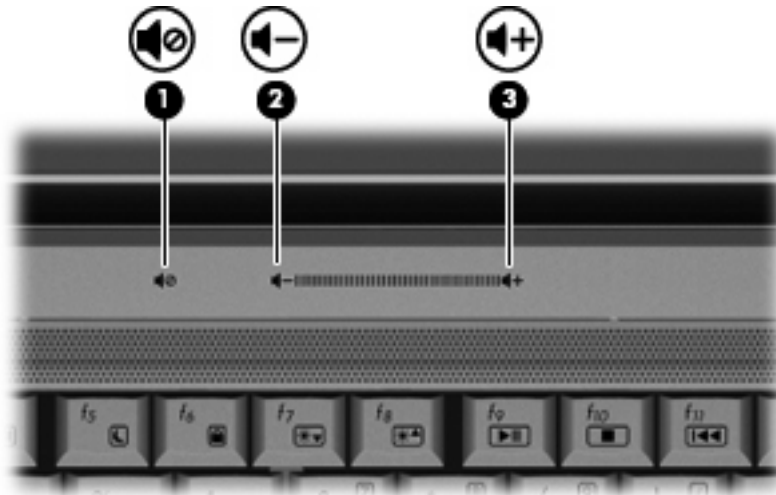
Pressing the MediaSmart button launches the HP MediaSmart program.

NOTE: If the computer has been set up to require a logon password, you may be asked to log on to Windows. MediaSmart launches after you log on. Refer to Help and Support for more information.

Adjusting the volume

You can adjust the volume using the following controls:

- Computer volume buttons (select models only):
 - To mute or restore volume, press the mute button **(1)**.
 - To decrease volume, slide your finger across the volume scroll zone from right to left, or press the volume down button **(2)**.
 - To increase volume, slide your finger across the volume scroll zone from left to right, or press the volume up button **(3)**.



- Windows® volume control:
 - a. Click the **Speakers** 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. Click the **Mute Speakers** icon to mute the volume.

– or –

 - a. Right-click the **Speakers** icon in the notification area, and then click **Open Volume Mixer**.
 - b. In the Speakers column, you can increase or decrease the volume by moving the slider up or down. You can also mute the volume by clicking the **Mute Speakers** icon.

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

 - a. Right-click the **Show hidden icons** icon (the arrow at the left side of the notification area).
 - b. Click **Customize notification icons**.
 - c. Under **Behaviors**, select **Show icon and notifications** for the Volume icon.
 - d. Click **OK**.
- Program volume control:

Volume can also be adjusted within some programs.

Using the media activity hotkeys

A media activity hotkey is a combination of the **fn** key (1) and a function key (2).

- When an audio CD or a DVD is not playing, press **fn+f9** (3) to play the disc.
- When an audio CD or a DVD is playing, use the following hotkeys:
 - To pause or resume playing the disc, press **fn+f9** (3).
 - To stop the disc, press **fn+f10** (4).
 - To play the previous track of an audio CD or the previous chapter of a DVD, press **fn+f11** (5).
 - To play the next track of an audio CD or the next chapter of a DVD, press **fn+f12** (6).



Multimedia software

Your computer includes preinstalled multimedia software that allows you to play music, watch movies, and view pictures. The following sections provide details about MediaSmart and other preinstalled multimedia software.

Using HP MediaSmart software

MediaSmart turns your computer into a mobile entertainment center. With MediaSmart, you can enjoy music and DVD movies. You can also play and sing along with karaoke CDs and view and record live TV (select models only). MediaSmart includes the following features:

- Internet TV—Classic oldies, a range of TV shows and channels, as well as the HP-TV channel streamed in full-screen to computers with an Internet connection.
- Playlist upload support:
 - Upload your MediaSmart photo playlists to Internet photo albums, such as Snapfish.
 - Upload your MediaSmart video playlists to YouTube.
 - Export your MediaSmart playlist to the CyberLink DVD Suite.
- Pandora Internet radio (North America only)—Listen to music selected just for you, streamed from the Internet.

To start MediaSmart:


- ▲ Press the MediaSmart button on your computer.

For more information on using MediaSmart, refer to Help and Support.

Using other preinstalled multimedia software

To locate other preinstalled multimedia software:


- ▲ 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.

Installing multimedia software from a disc

To install any multimedia software from a CD or DVD, follow these steps:

1. Insert the disc into the optical drive.
2. When the installation wizard opens, follow the on-screen instructions.
3. Restart the computer if you are prompted to do so.


 **NOTE:** For details 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 manufacturer's Web site.

Audio

Your computer enables you to use a variety of audio features:


- Play music using your computer speakers and/or connected external speakers
- Record sound using the internal microphone or connect an external microphone
- Download music from the Internet
- Create multimedia presentations using audio and images
- Transmit sound and images with instant messaging programs
- Stream radio programs (select models only) or receive FM radio signals
- Create or “burn” audio CDs

Connecting external audio devices

 **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*.

To connect external devices such as external speakers, headphone, or a microphone, refer to the information provided with the device. For best results, remember the following tips:

- Be sure that the device cable is securely connected to the correct jack on your computer. (Cable connectors are normally color-coded to match the corresponding jacks on the computer.)
- Be sure to install any drivers required by the external device.

 **NOTE:** A driver is a required program that acts like a translator between the device and the programs that use the device.

Checking your audio functions


To check the system sound on your computer, follow these steps:

1. Select **Start > Control Panel**.
2. Click **Hardware and Sound**.
3. Click **Sound**.
4. When the Sound window opens, click the **Sounds** tab. Under **Program Events**, select any sound event, such as a beep or alarm, and click the **Test** button.

You should hear sound through the speakers or through connected headphones.

To check the record functions of the computer, follow these steps:

1. Select **Start > All Programs > Accessories > Sound Recorder**.
2. Click **Start Recording** and speak into the microphone. Save the file to your desktop.
3. Open Windows Media Player or MediaSmart and play back the sound.

 **NOTE:** For best results when recording, speak directly into the microphone and record sound in a setting free of background noise.

To confirm or change the audio settings on your computer, select **Start > Control Panel > Hardware and Sound > Sound**.

Video

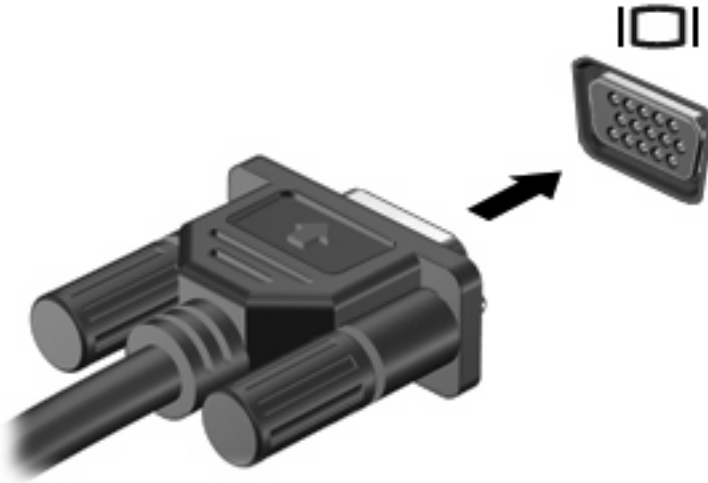
Your computer enables you to use a variety of video features:


- Watch movies
- Play games over the Internet
- Edit pictures and video to create presentations
- Connect external video devices
- Watch TV, including high-definition TV (select models only)

Connecting an external monitor or projector

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 and the device.

Connecting an HDMI device

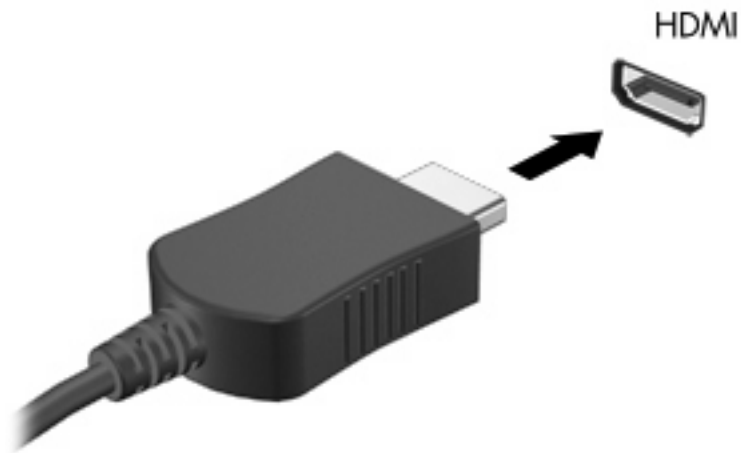
The computer includes an HDMI (High Definition Multimedia Interface) port. The HDMI port connects the computer to an optional video or audio device, such as a high-definition television, or any compatible digital or audio component.

The computer can support one HDMI device connected to the HDMI port, while simultaneously supporting an image on the computer display or any other supported external display.

 **NOTE:** To transmit video signals through the HDMI port, you need an HDMI cable (purchased separately), available from most electronic retailers.

To connect a video or audio device to the HDMI port:

1. Connect one end of the HDMI cable to the HDMI port on the computer.



2. Connect the other end of the cable to the video device, according to the device manufacturer's instructions.
3. Press **fn+f4** on the computer to switch the image between the display devices connected to the computer.

Configuring audio for HDMI

To configure HDMI audio, first connect an audio or video device, such as a high-definition TV, to the HDMI port on your computer. Then configure the default audio playback device as follows:

1. Right-click the **Speakers** icon in the notification area, at the far right of the taskbar, and then click **Playback devices**.
2. On the **Playback** tab, click either **Digital Output** or **Digital Output Device (HDMI)**.
3. Click **Set Default**, and then click **OK**.

To return audio to the computer speakers, follow these steps:

1. Right-click the **Speakers** icon in the notification area, at the far right of the taskbar, and then click **Playback devices**.
2. On the **Playback** tab, click **Speakers**.
3. Click **Set Default**, and then click **OK**.


Watching TV (select models only)

Your computer may have an integrated TV tuner (select models only), or you may have an optional external TV tuner, that enables you to watch, record, and pause live TV on the computer. In addition, if your computer includes an integrated TV tuner, then two remote controls are included in the box with the computer.

- **HP Mobile Remote Control**—Provides remote control of some features such as audio and video disc playback and can be stored in the ExpressCard slot.
- **HP Media Remote Control**—Provides more comprehensive remote control of features such as viewing TV and is a larger remote than the HP Mobile Remote Control.

Before you can watch TV on the computer, be sure that you have set up the TV tuner according to the instructions provided in the printed *Notebook Essentials* guide included with the computer or in the user guide included with your optional external TV tuner.

You can view TV in the MediaSmart TV mode, using a TV tuner or live streaming over the Internet. You can also schedule recordings and view recorded TV shows on your computer.

 **NOTE:** Some features of MediaSmart TV mode, such as Internet streaming, may not be available in all regions, and may also require additional hardware or services, such as a high-speed Internet connection.


MediaSmart TV mode supports the following options:

- **Slingbox (select models only)**—Plays current TV broadcasts from your home TV.
- **EPG**—Displays the EPG (electronic program guide).
- **Live TV**—Plays live TV broadcasts.
- **Recorded TV**—Displays programs recorded from the TV.
- **Schedule**—Displays all current recording schedules.
- **Internet TV**—Plays current TV broadcasts from the Internet.

This section explains how to watch TV using the HP Media Remote Control.

To view live television, follow these steps:


1. Press the TV button on the HP Media Remote Control to open the MediaSmart TV mode.
2. Use the arrow keys to select the source name, and then press the OK button. The TV broadcast begins to play in the preview window.
3. To watch in full-screen format, press the right arrow to move the cursor to the preview window, and then press the OK button.

 **NOTE:** You can also use the keyboard to perform these steps.

To view a previously recorded TV program, follow these steps:

1. Press the TV button on the HP Media Remote Control to open the MediaSmart TV mode.
2. Use the arrow keys to select Recorded TV, and then press the OK button. The console is refreshed to display a list of any programs you have recorded.

3. Use the arrow keys to select the program you want to view, and then press the OK button. The recorded program begins to play in the preview window.
4. To watch in full-screen format, press the right arrow to move the cursor to the preview window and then press the OK button.

 **NOTE:** You can also use the keyboard to perform these steps.

For more information on using MediaSmart to watch TV, refer to Help and Support.

Webcam

Your computer includes an integrated webcam, located at the top of the display. The webcam is an input device that allows you to capture and share video.

To use the webcam, click the **HP MediaSmart** icon on the desktop, select the video icon on the MediaSmart SmartMenu, and then click **Webcam**.

 **NOTE:** For more information on using HP MediaSmart, click **Start > Help and Support**, and type `MediaSmart` in the Search field.

For optimum performance, observe the following guidelines while using the webcam:


- If you are having trouble viewing or sending multimedia files to someone on another LAN or outside your network firewall, temporarily disable the firewall, perform the task you want to perform, and then reenable the firewall. To permanently resolve the problem, reconfigure the firewall as necessary, and adjust the policies and settings of other intrusion detection systems.
- Whenever possible, place bright light sources behind the camera and out of the picture area.

Troubleshooting

The following sections describe several common issues and resolutions.

The optical disc tray does not open for removal of a CD, DVD, or BD

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 disc 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.

The computer does not detect the optical drive

If Windows does not detect an installed device, the device driver software may be missing or corrupted. If you suspect that the optical drive is not being detected, verify that the optical drive is listed in the Device Manager utility.

1. Remove any discs from the optical drive.
2. Click **Start > Control Panel > System and Security**. Then in the **System** area, click **Device Manager**.
3. In the Device Manager window, click the arrow next to DVD/CD-ROM drives to expand the list to show all of the installed drives.
4. Right-click the optical device listing to perform the following tasks:
 - Update driver software
 - Disable
 - Uninstall
 - Scan for hardware changes. Windows scans your system for installed hardware and installs any required drivers.
 - Click **Properties** to see if the device is working properly:
 - The Properties window provides details about the device to help you troubleshoot issues.
 - Click the **Driver** tab to update, disable, or uninstall drivers for this device.

A disc does not play

- Save your work and close all open programs before playing a CD or a DVD.
- Log off the Internet before playing a CD or a DVD.
- Be sure that you insert the disc properly.
- Be sure that the disc is clean. If necessary, clean the disc with filtered water and a lint-free cloth. Wipe from the center of the disc to the outer edge.
- Check the disc for scratches. If you find scratches, treat the disc with an optical disc repair kit available at many electronics stores.
- Disable Sleep mode before playing the disc.

Do not initiate Hibernation or Sleep 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 disc, 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.
- Increase system resources:
 - Turn off external devices such as printers and scanners. Disconnecting these devices frees up valuable system resources and results in better playback performance.
 - Change desktop color properties. Because the human eye cannot easily tell the difference between colors beyond 16 bits, you should not notice any loss of color while watching a movie if you lower system color properties to 16-bit color, as follows:
 1. Right-click on a blank area of the computer desktop, and select **Screen resolution**.
 2. Select **Advanced Settings > Monitor** tab.
 3. Select **High Color (16 bit)**, if this setting is not already selected.
 4. Click **OK**.

A disc does not play automatically

1. Click **Start > Default Programs > Change AutoPlay Settings**.
2. Select the check box for **Use AutoPlay for all media and devices**.
3. Click **Save**.


A CD or DVD should now start automatically when it is inserted into the optical drive.

A DVD movie stops, skips, or plays erratically

- Clean the disc.
- Conserve system resources by trying the following suggestions:
 - Log off the Internet.
 - Change the color properties of the desktop:
 1. Right-click on a blank area of the computer desktop, and select **Screen resolution**.
 2. Select **Advanced Settings > Monitor** tab.
 3. Select **High Color (16 bit)**, if this setting is not already selected.
 4. Click **OK**.
 - Disconnect external devices, such as a printer, scanner, camera, or handheld device.

A DVD movie is not visible on an external display

1. If both the computer display and an external display are turned on, press **fn+f4** one or more times to switch between the 2 displays.
2. Configure the monitor settings to make the external display primary:
 - a. Right-click on a blank area of the computer desktop, and select **Screen resolution**.
 - b. Specify a primary display and a secondary display.

 **NOTE:** When using both displays, the DVD image will not appear on any display designated as the secondary display.

To get information about a multimedia question not covered in this guide, go to **Start > Help and Support**.

The process of burning a disc does not begin, or it stops before completion


- Be sure that all other programs are closed.
- Turn off Sleep mode and Hibernation.
- Be sure that you are using the right kind of disc for your drive. See your user guides for more information about disc types.
- Be sure that the disc is inserted properly.
- Select a slower write speed and try again.
- If you are copying a disc, save the information on the source disc to your hard drive before trying to burn the contents to a new disc, and then burn from your hard drive.
- Reinstall the disc-burning device driver located in the DVD/CD-ROM drives category in Device Manager.

A DVD playing in Windows Media Player produces no sound or display

Use DVD Play to play a DVD. DVD Play is installed on the computer, and is also available from the HP Web site at <http://www.hp.com>.

A device driver must be reinstalled

1. Remove any discs from the optical drive.
2. Select **Start > Control Panel > System and Security**. Then in the **System** area, click **Device Manager**.
3. In the Device Manager window, click the arrow next to the type of driver you want to uninstall and then reinstall (for example, DVD/CD-ROMs, Modems, and so on).
4. Right-click the device listing and click **Uninstall**. When prompted, confirm that you want to delete the device, but do not restart the computer. Repeat for any other drivers you want to delete.
5. In the Device Manager window, click **Action**, and then click **Scan for hardware changes**. Windows scans your system for installed hardware and installs default drivers for any devices requiring drivers.

 **NOTE:** If you are prompted to restart the computer, save all open files, and then continue with the restart.

6. Reopen Device Manager, if necessary, and then verify that the drivers are once again listed.
7. Try running your program again.

If uninstalling and reinstalling the device drivers does not correct the problem, you may need to update your drivers using the procedures in the following sections.

Obtaining the latest HP device drivers

1. Open your Web browser, go to <http://www.hp.com/support>, and select your country or region.
2. Click the option for software and driver downloads, type your computer model number in the search box, and then press **enter**.

– or –

If you want a specific SoftPaq, enter the SoftPaq number in the **Search** box, press **enter**, and follow the instructions provided. Proceed to step 6.

3. Click your specific product from the models listed.
4. Click the Windows 7 operating system.
5. When the list of drivers is displayed, click an updated driver to open a window containing additional information.
6. Click **Install now** to install the updated driver without downloading the file.

– or –

Click **Download only** to save the file to your computer. When prompted, click **Save** and then select a storage location on your hard drive.

After the file is downloaded, navigate to the folder where the file was stored, and double-click the file to install.


7. If prompted to do so, restart your computer after the installation is complete, and then verify the operation of the device.

Obtaining the latest Windows device drivers

You can obtain the latest Windows device drivers by using Windows Update. This feature can be set to automatically check for and install updates for the Windows operating system and other Microsoft products.

To use Windows Update:


1. Click **Start > All Programs > Windows Update**.

 **NOTE:** If you have not previously set up Windows Update, you will be prompted to enter settings before you can check for updates.

2. Click **Check for updates**.
3. Follow the on-screen instructions.

6 HP Mobile Remote Control (Select Models Only)


Component functions

 **NOTE:** Your computer may include an updated remote control that functions differently than described in this guide. For the latest user guide for your remote control, go to the product support page for your computer at <http://www.hp.com/support/>.

The infrared lens on the remote control links the remote control to the computer. The link requires a line-of-sight path between the infrared lens on the remote control and the infrared lens on the computer.

Things to remember:

- The remote control operates within the Windows® operating system, within MediaSmart. ScrollSmart dial and button functions may vary, depending on the active program.

 **NOTE:** For information on using MediaSmart, refer to the MediaSmart software Help.


- Some remote control buttons perform the same functions as computer buttons. For example, the power button on the remote control and the power button on the computer have the same functions and can be used interchangeably.
- Some remote control buttons perform the same functions as computer hotkeys. Refer to the computer user guides for information on supported hotkeys.









To access the user guides, select **Start > Help and Support > User Guides**.












- Other remote control buttons provide functions that are not duplicated by computer buttons or preset hotkeys.





Button quick reference

This section provides information on the button functions of the remote control.

 **NOTE:** The position of the buttons may vary, depending on your remote control model.

Button	Function
Power 	<ul style="list-style-type: none">When the computer is on, press the button to emulate the computer power button. Refer to the computer user guides for information. To access the user guides, select Start > Help and Support > User Guides. <p>NOTE: The remote control cannot be used when the computer is off.</p> <ul style="list-style-type: none">When the computer is in the Sleep state, briefly press the button to exit Sleep.When the computer is in Hibernation, briefly press the button to exit Hibernation.
DVD 	<ul style="list-style-type: none">If a DVD is playing, press the button to open the DVD disc menu.If a DVD is not playing, press the button to open the default DVD player. <p>NOTE: If the computer has been set up to require a logon password, you may be asked to log on to Windows.</p> <p>NOTE: The DVD button is included on select remote controls only.</p>
MediaSmart 	Press the button to launch MediaSmart. <p>NOTE: If the computer has been set up to require a logon password, you may be asked to log on to Windows.</p>
Switch screens 	Press the button to switch the computer image between the computer display and an external display.
Windows Media Center 	If the computer uses Windows Vista® Premium or Windows Vista Ultimate, press the button to open the Windows Media Center main menu. The Windows Media Center button has no function with other operating systems. <p>NOTE: Refer to the label on the bottom of the computer to determine the operating system.</p>
Channel/page up 	<ul style="list-style-type: none">Press to emulate the pg up key on a keyboard.Press to change channels in ascending order.
Stop 	Press the button to stop the current media activity.
Rewind 	<ul style="list-style-type: none">Press the button to rewind the selected media. <p>NOTE: The button does not work with some media files.</p> <ul style="list-style-type: none">Press the rewind button and then press the play button to activate play.

Button	Function
Play/pause 	<ul style="list-style-type: none"> When media is not playing, press the button to play the selected media. When media is playing, press the button to pause the media.
Fast-forward 	<ul style="list-style-type: none"> Press the button to fast-forward the selected media. <p>NOTE: The button does not work with some media files.</p> <ul style="list-style-type: none"> Press the fast-forward button and then press the play button to activate play.
Channel/ page down 	<ul style="list-style-type: none"> Press to emulate the pg dn key on a keyboard. Press to change channels in descending order.
Previous 	Press the button to jump from one area, menu, or button to the previous one.
Up 	Navigation. Press the button to move up between menus, windows, or activities.
Next 	Press the button to jump from one area, menu, or button to the next one.
Left 	Navigation. Press the button to move left between menus, windows, or activities.
OK 	Navigation: Press the OK button to select the desired action. The OK button functions like the enter key on the computer keyboard.
Right 	Navigation. Press the button to move right between menus, windows, or activities.
Back 	Press the button to emulate the “back” function of the backspace key in the active program.
Down 	Navigation. Press the button to move down between menus, windows, or activities.

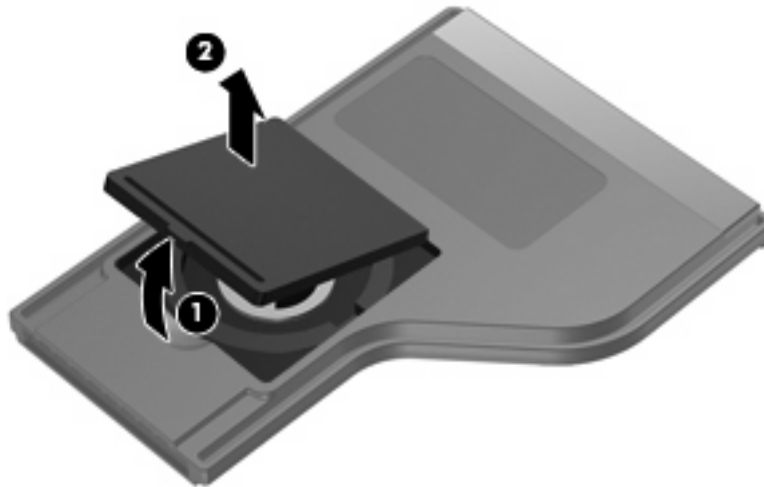
Button	Function
Settings 	Press to display system information. The button may also be used to display settings menus for some multimedia software.
Volume down 	Press the button to decrease speaker volume.
Mute 	<ul style="list-style-type: none">• Press the button to mute speaker volume.• If the volume is muted, press the button to restore speaker volume.
Volume up 	Press the button to increase speaker volume.

Inserting or replacing the battery

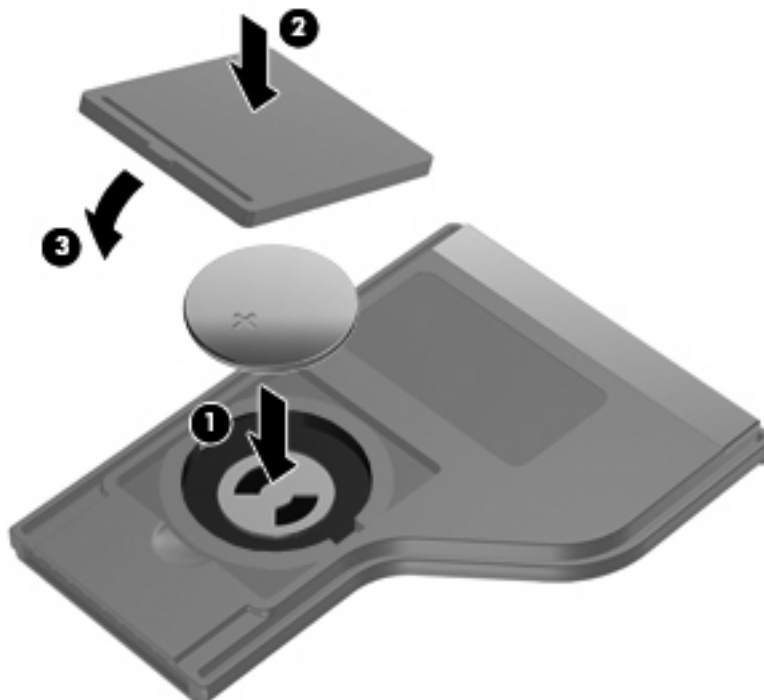
⚠ WARNING! Dispose of used batteries according to the instructions in the *Regulatory, Safety and Environmental Notices* located on a user guide disc or in Help and Support. To access the notices, select **Start > Help and Support > User Guides**.

To insert or replace the battery in the remote control, follow these instructions:

1. On the back of the remote control, lift the battery compartment cover (1) and remove it (2).



2. With the positive side of the battery facing up, insert the battery into the compartment (1).
3. Align the battery compartment cover (2) with the battery compartment and press down to close the cover (3).




Troubleshooting

Try the following solutions if your remote control does not function properly:

- Be sure that you have a clear line of sight from the remote control to the infrared port on the computer or optional docking device.
- Be sure that you are within range of the infrared port on the computer or optional docking device.
- Be sure that the battery is properly installed and has a charge. Replace the battery if necessary.
- Be sure that you are using the remote control with a supported computer or optional docking device.

7 HP Media Remote Control (Select Models Only)


Component functions

 **NOTE:** Your computer may include an updated remote control that functions differently than described in this guide. For the latest user guide for your remote control, go to the product support page for your computer at <http://www.hp.com/support/>.

The infrared lens on the remote control links the remote control to the computer. The link requires a line-of-sight path between the infrared lens on the remote control and the infrared lens on the computer.

Things to remember:

- The remote control operates within the Windows® operating system, within HP MediaSmart. Button functions may vary, depending on the active program.

 **NOTE:** For information on using MediaSmart, refer to the MediaSmart software Help.


- Some remote control buttons perform the same functions as computer buttons. For example, the power button on the remote control and the power button on the computer have the same functions and can be used interchangeably.
- Some remote control buttons perform the same functions as computer hotkeys. Refer to the computer user guides for information on supported hotkeys.



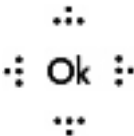





To access the user guides, select **Start > Help and Support > User Guides**.










- Other remote control buttons provide functions that are not duplicated by computer buttons or hotkeys.









Button quick reference


This section provides information on the functions of the remote control buttons.

 **NOTE:** The position of the buttons may vary, depending on your remote control model.

Button	Function
Power 	<ul style="list-style-type: none">When the computer is on, press the button to emulate the computer power button. Refer to the computer user guides for information. To access the user guides, select Start > Help and Support > User Guides. <p>NOTE: The remote control cannot be used when the computer is off.</p> <ul style="list-style-type: none">When the computer is in the Sleep state, briefly press the button to exit Sleep.When the computer is in Hibernation, briefly press the button to exit Hibernation.
Recorded TV 	In Live TV mode, press the button to start recording the current program.
Arrows, OK 	<ul style="list-style-type: none">Press an arrow to move between menus, windows, or activities.Press the OK button to select a desired action. The OK button functions like the enter button.
Guide 	Press the button to open the Windows Media Center electronic program guide.
Back 	Press the button to emulate the “back” function of the backspace key in the active program.
Mute 	<ul style="list-style-type: none">Press the button to mute speaker volume.If the volume is muted, press the button to restore speaker volume.
Volume up 	Press the button to increase speaker volume.
Volume down 	Press the button to decrease speaker volume.

Button	Function
Previous 	Press the button to jump from one area, menu, or button to the previous one.
Play/pause 	<ul style="list-style-type: none"> When media is not playing, press the button to play the selected media. When media is playing, press the button to pause the media.
Rewind 	<ul style="list-style-type: none"> Press the button to rewind the selected media. <p>NOTE: The button does not work with some media files.</p> <ul style="list-style-type: none"> Press the rewind button and then press the play button to activate play.
Keypad	Press the button to change channels or enter text into a text box.
Clear	Press the button to clear or delete the last character entered.
Print 	<p>NOTE: The print button is included on select remote controls only.</p> <p>Press the button to print pictures that you select in the My Pictures window.</p>
Switch screens 	<p>NOTE: The switch screens button is included on select remote controls only.</p> <p>Press the button to switch the computer image between the computer display and an external display.</p>
Snapshot 	<p>NOTE: The snapshot button is included on select remote controls only.</p> <p>Press the button to capture a picture of the computer screen and save it to the clipboard.</p>
Zoom 	<p>NOTE: The zoom button is included on select remote controls only.</p> <p>Press the button to alternate between various aspect modes in TV.</p>
MediaSmart 	Press the button to launch MediaSmart.
Live TV 	<ul style="list-style-type: none"> Press the button to move a TV program forward to the end of the pause buffer and resume playing live TV. When you pause a TV program, press the button to resume playing live TV. Press the button to open the multimedia software and then begin playing live TV in full-screen mode.

Button	Function
DVD 	<p>NOTE: The DVD button is included on select remote controls only.</p> <ul style="list-style-type: none"> • If a DVD is playing, press the button to open the DVD disc menu. • If a DVD is not playing, press the button to open the default DVD player. <p>NOTE: If the computer has been set up to require a logon password, you may be asked to log on to Windows.</p>
Teletext 	<p>NOTE: The Teletext button is included on select remote controls only.</p> <p>Enables Teletext, when available, during Live TV.</p> <p>NOTE: This button does not function when Teletext is not supported.</p>
Red	<p>NOTE: The red button is included on select remote controls only.</p> <p>Opens Teletext button links marked in red on the Teletext screen.</p>
Green	<p>NOTE: The green button is included on select remote controls only.</p> <p>Opens Teletext button links marked in green on the Teletext screen.</p>
Yellow	<p>NOTE: The yellow button is included on select remote controls only.</p> <p>Opens Teletext button links marked in yellow on the Teletext screen.</p>
Blue	<p>NOTE: The blue button is included on select remote controls only.</p> <p>Opens Teletext button links marked in blue on the Teletext screen.</p>
Settings 	<p>Press to display system information. The button may also be used to display settings menus for some multimedia software.</p>
Windows Media Center 	<p>If the computer uses Windows Vista® Premium or Windows Vista Ultimate, press the button to open the Windows Media Center main menu. The Windows Media Center button has no function with other operating systems.</p> <p>NOTE: Refer to the label on the bottom of the computer to determine the operating system.</p>
Channel/page up 	<ul style="list-style-type: none"> • Press to emulate the pg up key on a keyboard. • Press to change channels in ascending order.
Channel/page down 	<ul style="list-style-type: none"> • Press to emulate the pg dn key on a keyboard. • Press to change channels in descending order.
Next 	<p>Press the button to jump from one area, menu, or button to the next one.</p>
Stop 	<p>Press the button to stop the current media activity.</p>

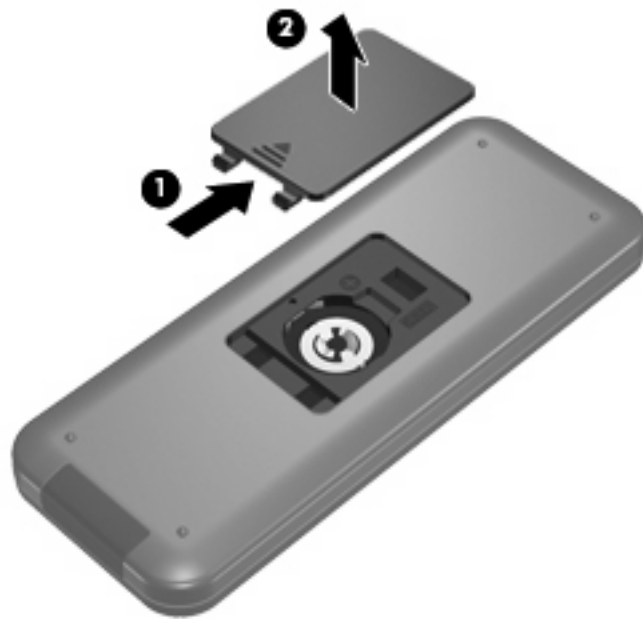
Button	Function
Fast-forward 	<ul style="list-style-type: none">• Press the button to fast- forward the selected media. <p>NOTE: The button does not work with some media files.</p> <ul style="list-style-type: none">• Press the fast-forward button and then press the play button to activate play.
Enter	Press the button to enter or select the desired action, menu, or window option.

Inserting or replacing the battery

⚠ **WARNING!** Dispose of used batteries according to the instructions in the *Regulatory, Safety and Environmental Notices* located in Help and Support. To access the notices, select **Start > Help and Support > User Guides**.

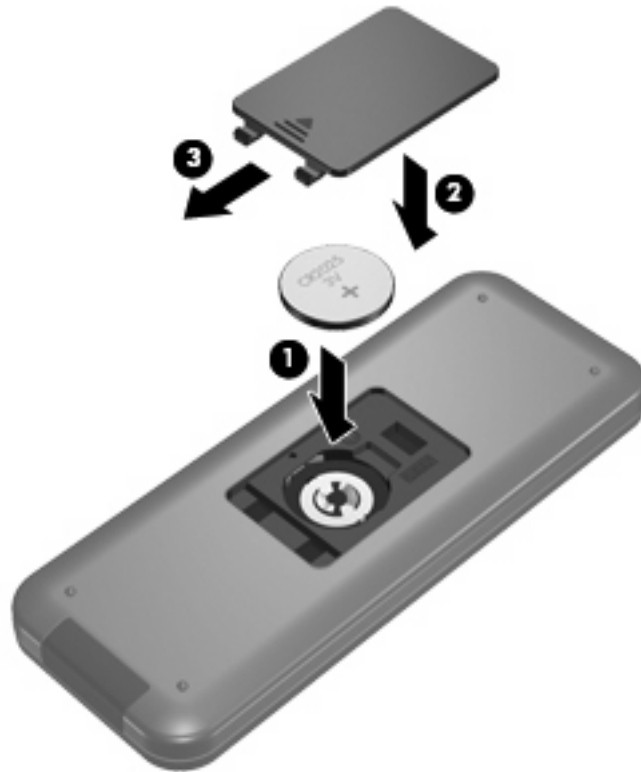
To insert or replace the battery in the remote control, follow these instructions:

1. On the back of the remote control, slide the battery compartment cover in the direction of the arrow (1), and then lift the cover to remove it (2).



2. With the positive side of the battery facing up, insert the battery into the compartment (1).

3. Align the battery compartment cover with the battery compartment (2), and then slide the cover to close it (3).



Troubleshooting

Try the following solutions if your remote control does not function properly:

- Be sure that you have a clear line of sight from the remote control to the infrared port on the computer or optional docking device.
- Be sure that you are within range of the infrared port on the computer or optional docking device.
- Be sure that the battery is properly installed and has a charge. Replace the battery if necessary.
- Be sure that you are using the remote control with a supported computer or optional docking device.

8 Power management

Setting power options

Using power-saving states

The computer has two power-saving states enabled at the factory: Sleep and Hibernation.

When Sleep is initiated, the power lights blink and the screen clears. Your work is saved to memory, letting you exit Sleep faster than exiting Hibernation. If the computer is in the Sleep state for an extended period or if the battery reaches a critical battery level while in the Sleep state, the computer initiates Hibernation.

When Hibernation is initiated, your work is saved to a hibernation file on the hard drive and the computer turns off.

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

📝 **NOTE:** You cannot initiate any type of networking connection or perform any computer functions while the computer is in the Sleep state or in Hibernation.

Initiating and exiting Sleep

The system is set at the factory to initiate Sleep after 15 minutes of inactivity when running on battery power and 30 minutes of inactivity when running on external power.

Power settings and timeouts can be changed using Power Options in Windows® Control Panel.

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


- Press **fn+f5**.
- Briefly press the power button.
- Close the display.
- Click **Start**, click the arrow next to the Shut down button, and then click **Sleep**.

You can exit Sleep in any of the following ways:

- Briefly press the power button.
- If the display is closed, open the display.

- Press a key on the keyboard or button on the remote control.
- Activate the TouchPad.

When the computer exits Sleep, 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 on wakeup, you must enter your Windows password before your work will return to the screen.

Initiating and exiting Hibernation

The system is set at the factory to initiate Hibernation after 1,080 minutes (18 hours) of inactivity when running on both battery power and external power, or when the battery reaches a critical battery level.

Power settings and timeouts can be changed using Power Options in Windows Control Panel.


To initiate Hibernation:

- ▲ Click **Start**, click the arrow next to the Shut down button, and then click **Hibernate**.

To exit Hibernation:

- ▲ Briefly press the power button.

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 on wakeup, 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 low battery level, critical battery level, or reserve battery level.

To hide or display the battery meter icon:

1. Right-click the **Show hidden icons** icon (the arrow at the left side of the notification area).
2. Click **Customize notification icons**.
3. Under **Behaviors**, select **Show icons and notifications** for the Power icon.
4. Click **OK**.

Using power plans

A power plan is a collection of system settings that manages how the computer uses power. Power plans can help you conserve power or maximize performance.

You can change power plan settings or create your own power plan.

Viewing the current power plan

▲ Click the battery meter icon in the notification area, at the far right of the taskbar.

– or –

Select **Start > Control Panel > System and Security > Power Options**.

Selecting a different power plan

▲ Click the battery meter icon in the notification area, and then select a power plan from the list.

– or –

Select **Start > Control Panel > System and Security > Power Options**, and then select a power plan from the list.

Customizing power plans

1. Click the battery meter icon in the notification area and then click **More power options**.

– or –

Select **Start > Control Panel > System and Security > Power Options**.

2. Select a power plan, and then click **Change plan settings**.

3. Change the settings as needed.

4. To change additional settings, click **Change advanced power settings** and make your changes.

Setting password protection on wakeup


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

1. Select **Start > Control Panel > System and Security > Power Options**.

2. In the left pane, click **Require a password on wakeup**.

3. Click **Change Settings that are currently unavailable**.

4. Click **Require a password (recommended)**.

 **NOTE:** If you need to create a user account password or change your current user account password, click **Create or change your user account password**, and then follow the on-screen instructions. If you do not need to create or change a user account password, go to step 5.

5. Click **Save changes**.

Switching between graphics modes (select models only)

Your computer is equipped with ATI™ Switchable Graphics technology and has two modes for processing graphics. When you switch from AC power to battery power, the computer can conserve battery power by switching from ATI Mobility Radeon™ Premium graphics to Intel® integrated graphics. Similarly, when you switch from battery power to AC power, the computer can switch back to the high-performance graphics mode.

When you switch between AC and battery power, you are notified that the computer is about to switch graphics modes. If you prefer, you can choose to continue using the same graphics mode. While the computer switches modes, the screen goes blank for a few seconds. When the switch is complete, a notification appears in the system tray, and the screen image reappears.

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 or optional expansion product

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 installing or modifying system software
- When you are writing information to a CD or DVD

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+f8** 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:

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)**.



Testing an AC adapter

Test the AC adapter if the computer exhibits any of the following symptoms when it is connected to AC power:

- The computer will not turn on.
- The display does not turn on.
- The power light is off.

To test the AC adapter:

1. Remove the battery from the computer.
 - a. Turn the computer upside down on a flat surface.
 - b. Slide the battery release latch (1) to release the battery.
 - c. Pivot the battery (2) upward and remove the battery from the computer (3).




2. Connect the AC adapter to the computer, and then plug it into an AC outlet.
3. Turn on the computer.
 - If the power light turns **on**, the AC adapter is functioning properly.
 - If the power light remains **off**, the AC adapter is not functioning and should be replaced.

Contact technical support for information on obtaining a replacement AC power adapter. Select **Start > Help and Support > Get assistance**.


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+f8** 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.

Finding battery information in Help and Support

Help and Support provides the following tools and information about the battery:

- Battery Check tool to test battery performance
- Information on calibration, power management, and proper care and storage to maximize battery life
- Information on battery types, specifications, life cycles, and capacity

To access Battery information:

- ▲ Select **Start > Help and Support > Learn > Power Plans: Frequently Asked Questions**.

Using Battery Check

Help and Support provides information on the status of the battery installed in the computer.

To run Battery Check:

1. Connect the AC adapter to the computer.

 **NOTE:** The computer must be connected to external power for Battery Check to function properly.

2. Select **Start > Help and Support > Troubleshoot > Power, Thermal and Mechanical**.
3. Click the **Power** tab, and then click **Battery Check**.

Battery Check examines the battery and its cells to see if they are functioning properly, and then reports the results of the examination.

Displaying the remaining battery charge

- ▲ Move the pointer over the battery meter icon in the notification area, at the far right of the taskbar.

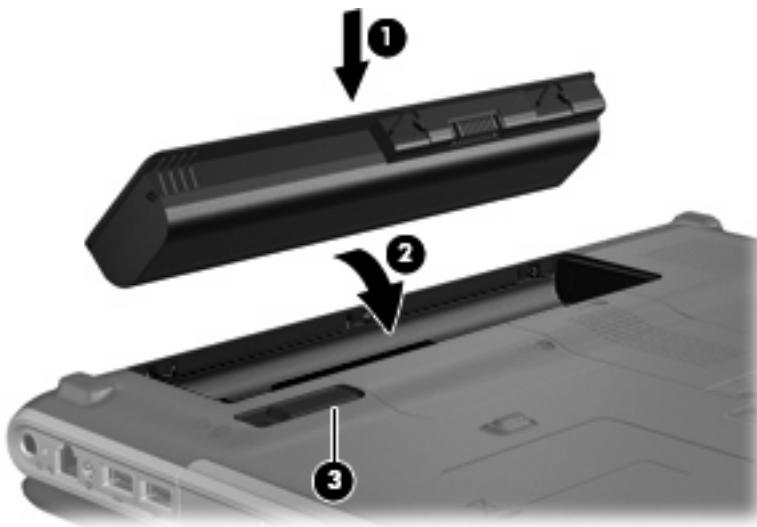
Inserting or removing the battery

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

To insert the battery:

1. Turn the computer upside down on a flat surface.
2. Insert the battery into the battery bay (1) and rotate it downward until it is seated (2).

The battery release latch (3) automatically locks the battery into place.



To remove the battery:

1. Turn the computer upside down on a flat surface.
2. Slide the battery release latch (1) to release the battery.

3. Pivot the battery (2) upward and remove the battery from the computer (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, an optional expansion product, 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:

- On: The battery is charging.
- Blinking: 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.

Maximizing battery discharge time

Battery discharge time varies depending on the features you use while on battery power. Maximum discharge time gradually shortens, as the battery storage capacity naturally degrades.

Tips for maximizing battery discharge time:

- Lower the brightness on the display.
- Check the **Power saver** setting in Power Options.
- Remove the battery from the computer when it is not being used or charged.
- Store the battery in a cool, dry location.

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 using Power Options in Windows Control Panel. 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 continues to blink.

The computer takes the following actions for a critical battery level:

- If Hibernation is enabled and the computer is on or in the Sleep state, the computer initiates Hibernation.
- If Hibernation is disabled and the computer is on or in the Sleep state, the computer remains briefly in the Sleep state, 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 and has initiated Hibernation, 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 expansion product or docking device
 - Optional power adapter

Resolving a low battery level when a charged battery is available

1. Turn off the computer or initiate Hibernation.
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

- ▲ Initiate Hibernation.
 - or –
 - Save your work and shut down the computer.

Resolving a low battery level when the computer cannot exit Hibernation

When the computer lacks sufficient power to exit Hibernation, follow these steps:

1. Insert a charged battery or plug the computer into external power.
2. Exit Hibernation by pressing the power button.


Calibrating a battery


Calibrate a battery under the following conditions:

- When battery charge displays seem inaccurate
- When you observe a significant change in battery run time

Even if a battery is heavily used, it should not need to be calibrated more than once a month. It is also not necessary to calibrate a new battery.

Step 1: Fully charge the battery

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

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

To fully charge the battery:

1. Insert the battery into the computer.
2. Connect the computer to an AC adapter, optional power adapter, or optional expansion product, and then plug the adapter or device into external power.

The battery light on the computer turns on.

3. Leave the computer plugged into external power until the battery is fully charged.

The battery light on the computer turns off.

Step 2: Disable Hibernation and Sleep

1. Click the battery meter icon in the notification area, and then click **More power options**.

– or –

Select **Start > Control Panel > System and Security > Power Options**.

2. Under the current power plan, click **Change plan settings**.
3. Record the **Turn off the display** settings listed in the **On battery** column so that you can reset them after the calibration.
4. Change the **Turn off the display** settings to **Never**.
5. Click **Change advanced power settings**.
6. Click the plus sign next to **Sleep**, and then click the plus sign next to **Hibernate after**.
7. Record the **On battery** setting under **Hibernate after** so that you can reset it after the calibration.
8. Change the **On battery** setting to **Never**.
9. Click **OK**.
10. Click **Save changes**.

Step 3: Discharge the battery

The computer must remain on while the battery is being discharged. The battery can discharge whether or not you are using the computer, but the battery will discharge faster while you are using it.

- If you plan to leave the computer unattended during the discharge, save your information before beginning the discharge procedure.
- If you use the computer occasionally during the discharge procedure and have set energy-saving timeouts, expect the following performance from the system during the discharge process:
 - The monitor will not turn off automatically.
 - Hard drive speed will not decrease automatically when the computer is idle.
 - System-initiated Hibernation will not occur.

To discharge a battery:

1. Unplug the computer from its external power source, but do *not* turn off the computer.
2. Run the computer on battery power until the battery is discharged. The battery light begins to blink when the battery has discharged to a low battery level. When the battery is discharged, the battery light turns off and the computer shuts down.

Step 4: Fully recharge the battery

To recharge the battery:

1. Plug the computer into external power and maintain external power until the battery is fully recharged. When the battery is recharged, the battery light on the computer turns off.

You can use the computer while the battery is recharging, but the battery will charge faster if the computer is off.

2. If the computer is off, turn it on when the battery is fully charged and the battery light has turned off.

Step 5: Reenable Hibernation and Sleep

△ **CAUTION:** Failure to reenable Hibernation after calibration may result in a full battery discharge and information loss if the computer reaches a critical battery level.

1. Click the battery meter icon in the notification area, and then click **More power options**.

– or –

Select **Start > Control Panel > System and Security > Power Options**.

2. Under the current power plan, click **Change plan settings**.
3. Reenter the settings that you recorded for the items in the **On battery** column.
4. Click **Change advanced power settings**.
5. Click the plus sign next to **Sleep**, and then click the plus sign next to **Hibernate after**.
6. Reenter the setting that you recorded for **On battery**.

7. Click **OK**.
8. Click **Save changes**.

Conserving battery power

- Select **Start > Control Panel > System and Security > Power Options > Power saver**.
- 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+f7** and **fn+f8** hotkeys to adjust screen brightness as needed.
- If you leave your work, initiate Sleep or Hibernation, 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.

📝 **NOTE:** A stored battery should be checked every 6 months. If the capacity is less than 50 percent, recharge the battery before returning it to storage.

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; do not short external contacts; do not dispose of in fire or water.

For additional information, refer to the *Regulatory, Safety and Environmental Notices* included with this computer.


Replacing the battery

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.

Battery Check notifies you to replace the battery when an internal cell is not charging properly, or when the battery storage capacity has reached a "weak" condition. A message refers you to the HP Web site for more information about ordering a replacement battery. If the battery is possibly covered by an HP warranty, instructions include a warranty ID.

📝 **NOTE:** To ensure that you always have battery power when you need it, HP recommends purchasing a new battery when the storage capacity indicator turns green-yellow.

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

Although you can shut down the computer with the power button, the recommended procedure is to use the Windows Shut down command.

To shut down the computer:

 **NOTE:** If the computer is in the Sleep state or in Hibernation, you must first exit Sleep or Hibernation before shutdown is possible.

1. Save your work and close all open programs.
2. Click **Start**.
3. Click **Shut down**.

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 **ctrl+alt+delete**, and then click the **Power** button.
- Press and hold the power button for at least 5 seconds.
- Disconnect the computer from external power and remove the battery.

9 Drives

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 that is connected to an external hard drive, initiate Sleep and allow the screen to clear, or properly disconnect the external hard drive.

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.

Before removing or inserting a drive, shut down the computer. If you are unsure whether the computer is off, in the Sleep state, or in Hibernation, turn the computer on and then shut it down through the operating system.

Do not use excessive force when inserting a drive into a drive bay.

Do not type on the keyboard or move the computer while the optical drive is writing to a disc. The write process is sensitive to vibration.

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 check carry-on luggage, such as conveyor belts, use X-rays instead of magnetism and will not damage a drive.

Optical drive


Your computer includes an optical drive that expands the functionality of the computer. Identify what kind of device is installed in your computer to see its capabilities. The optical drive allows you to read data discs, play music, and watch movies. If your computer includes a Blu-ray Disc ROM Drive, then you can also watch high-definition video from disc.

Identifying the installed optical drive

▲ Select **Start > Computer**.

You will see a list of all the devices installed in your computer, including your optical drive. You may have one of the following types of drives:


- DVD±RW and CD-RW SuperMulti Double-Layer Combo Drive
- DVD±RW and CD-RW SuperMulti Double-Layer Combo Drive with LightScribe
- Blu-ray ROM DVD±R/RW SuperMulti Double-Layer Drive
- Blu-ray ROM with LightScribe DVD±R/RW SuperMulti Double-Layer Drive

 **NOTE:** Some of the drives listed above may not be supported by your computer.

Using optical discs


An optical drive supports optical discs. Your optical drive can read standard CD and DVD discs, and if it is a Blu-ray Disc ROM Drive, it can also read Blu-ray Discs (BDs).

These discs store information, such as music, photos, and movies. DVDs have a larger storage capacity than CDs, and BDs have the largest capacity of all.

 **NOTE:** Some of the optical drives listed may not be supported by your computer. The listed drives are not necessarily all of the supported optical drives.


Some optical drives can also write to optical discs as described in the following table.

Optical drive type	Write to CD-RW	Write to DVD±RW/R	Write to DVD±R DL	Write label to LightScribe CD or DVD±RW/R
DVD±RW and CD-RW SuperMulti DL Combo Drive	Yes	Yes	Yes	No
DVD±RW and CD-RW SuperMulti DL Combo Drive with LightScribe	Yes	Yes	Yes	Yes
Blu-ray ROM DVD±R/RW SuperMulti DL Drive	Yes	Yes	Yes	No
Blu-ray ROM with LightScribe DVD±R/RW SuperMulti DL Drive	Yes	Yes	Yes	Yes

 **CAUTION:** To prevent possible audio and video degradation, loss of information, or loss of audio or video playback functionality, do not initiate Sleep or Hibernation while reading or writing to a disc.

Selecting the right disc

An optical drive supports optical discs (CDs, DVDs, and BDs). CDs, used to store digital data, are also used for commercial audio recordings and are convenient for your personal storage needs. DVDs and BDs are used primarily for movies, software, and data backup purposes. DVDs and BDs are the same form factor as CDs, but DVDs have 6 to 7 times the storage capacity of CDs, and BDs have 5 to 6 times the storage capacity of DVDs.

 **NOTE:** The optical drive on your computer may not support all the types of optical discs discussed in this section.

CD-R discs

CD-R (write-once) discs are widely used for creating a permanent copy of data that can be shared as needed. Typical uses include the following:

- Distributing large presentations
- Sharing scanned and digital photos, video clips, and written data
- Making your own music CDs
- Keeping permanent archives of computer files and scanned home records
- Offloading files from your hard drive to free up disk space

After data is recorded, it cannot be erased or written over.

CD-RW discs

Use a CD-RW disc (a rewritable version of a CD) to store large projects that must be updated frequently. Typical uses include the following:

- Developing and maintaining large documents and project files
- Transporting work files
- Making weekly backups of hard drive files
- Updating photos, video, audio, and data continuously

DVD±R discs

Use blank DVD±R discs to permanently store large amounts of information. After data is recorded, it cannot be erased or written over.

DVD±RW discs

Use DVD±RW discs if you want to be able to erase or write over data that you saved earlier. This type of disc is ideal for testing audio or video recordings before you burn them to a CD or DVD that cannot be changed.

LightScribe DVD+R discs

Use LightScribe DVD+R discs for sharing and storing data, home videos, and photos. These discs are read-compatible with most DVD-ROM drives and DVD video players. With a LightScribe-enabled drive and LightScribe software, you can write data to the disc and then add a designer label to the outside of the disc.

Blu-ray Disc


Also called BD, Blu-ray Disc is a high-density optical disc format for the storage of digital information, including high-definition video. A single-layer Blu-ray Disc can store 25 GB, over 5 times the capacity of a single-layer DVD at 4.7 GB. A dual-layer Blu-ray Disc can store 50 GB, almost 6 times the capacity of a dual-layer DVD at 8.5 GB.

Typical uses include the following:

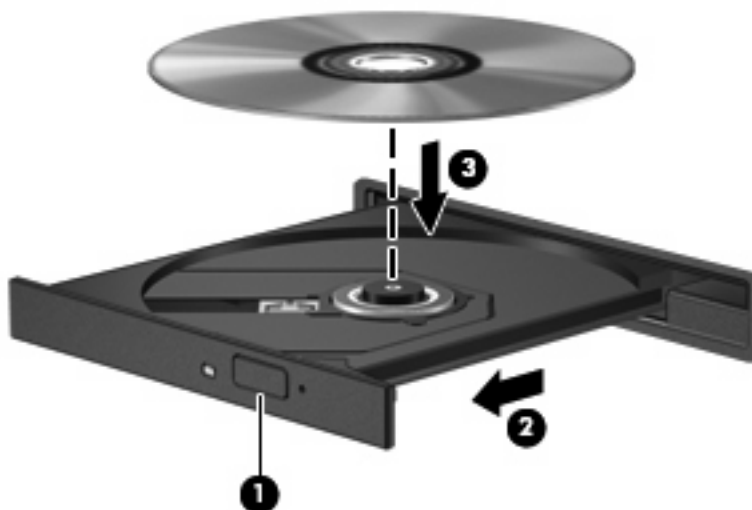
- Storage of large amounts of data
- High-definition video playback and storage

Playing a CD, DVD, or BD

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.

If you have not yet configured AutoPlay, as described in the following section, an AutoPlay dialog box opens. It prompts you to select how you want to use the media content.

Configuring AutoPlay

1. Select **Start > Default Programs > Change AutoPlay settings**.
2. Confirm that the **Use AutoPlay for all media and devices** check box at the upper left of the computer screen is selected.
3. Click **Choose a default**, and then select one of the available options for each media type listed.
4. Click **Save**.

 **NOTE:** For more information about AutoPlay, refer to Help and Support.

Changing DVD region settings

Most DVDs that contain copyrighted files also contain region codes. The region codes help protect copyrights internationally.

You can play a DVD containing a region code only if the region code on the DVD matches the region setting on your DVD drive.


△ **CAUTION:** The region settings on your DVD drive can be changed only 5 times.

The region setting you select the fifth time becomes the permanent region setting on the DVD drive.

The number of region changes remaining is displayed on the DVD Region tab.

To change settings through the operating system:

1. Select **Start > Control Panel > System and Security**. Then in the **System** area, click **Device Manager**.

 **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 installing software, running utilities, or changing Windows settings. Refer to Help and Support for more information.

2. Click the arrow next to **DVD/CD-ROM drives** to expand the list to show all of the installed drives.
3. Right-click the DVD drive for which you want to change region settings, and then click **Properties**.
4. Make the desired changes on the **DVD Region** tab.
5. Click **OK**.

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.


△ **CAUTION:** To prevent loss of information or damage to a disc, observe the following guidelines:

Before writing to a disc, connect the computer to a reliable external power source. Do not write to a disc while the computer is running on battery power.

Before writing to a disc, close all open programs except the disc software you are using.

Do not copy directly from a source disc to a destination disc or from a network drive to a destination disc. Save the information to your hard drive, and then burn from your hard drive to the destination disc.

Do not use the computer keyboard or move the computer while the computer is writing to a disc. The write process is sensitive to vibration.

 **NOTE:** For details 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 manufacturer's Web site.

Copying a CD or DVD

1. Select **Start > All Programs > CyberLink DVD Suite > Power2Go**.

2. Insert the disc you want to copy into the optical drive.

3. Click **Copy** at the bottom right of the screen.

Power2Go reads the source disc and copies the data to a temporary folder on your hard drive.

4. When prompted, remove the source disc from the optical drive and insert a blank disc into the drive.

After the information is copied, the disc you created ejects automatically.

Creating (burning) a CD or DVD

If your computer includes a CD-RW, DVD-RW, or DVD±RW optical drive, you can use software such as Windows Media Player or CyberLink Power2Go to burn data and audio files, including MP3 and WAV music files. To burn video files to a CD or DVD, use MyDVD.

Observe the following guidelines when burning a CD or DVD:

- Before burning a disc, save and close any open files and close all programs.
- A CD-R or DVD-R is usually best for burning audio files because after the information is copied, it cannot be changed.



NOTE: You cannot create an audio DVD with CyberLink Power2Go.

- Because some home and car stereos will not play CD-RWs, use CD-Rs to burn music CDs.
- A CD-RW or DVD-RW is generally best for burning data files or for testing audio or video recordings before you burn them to a CD or DVD that cannot be changed.
- DVD players used in home systems usually do not support all DVD formats. Refer to the user guide that came with your DVD player for a list of supported formats.
- An MP3 file uses less space than other music file formats, and the process for creating an MP3 disc is the same as the process for creating a data file. MP3 files can be played only on MP3 players or on computers with MP3 software installed.

To burn a CD or DVD, follow these steps:

1. Download or copy the source files into a folder on your hard drive.
2. Insert a blank CD or DVD into the optical drive.
3. Select **Start > All Programs**, and then select the name of the program you want to use.



NOTE: Some programs may be located in subfolders.


4. Select the kind of CD or DVD you want to create—data, audio, or video.
5. Right-click **Start**, click **Open Windows Explorer**, and navigate to the folder where the source files are stored.
6. Open the folder, and then drag the files to the drive that contains the blank optical disc.
7. Initiate the burning process as directed by the program you have selected.

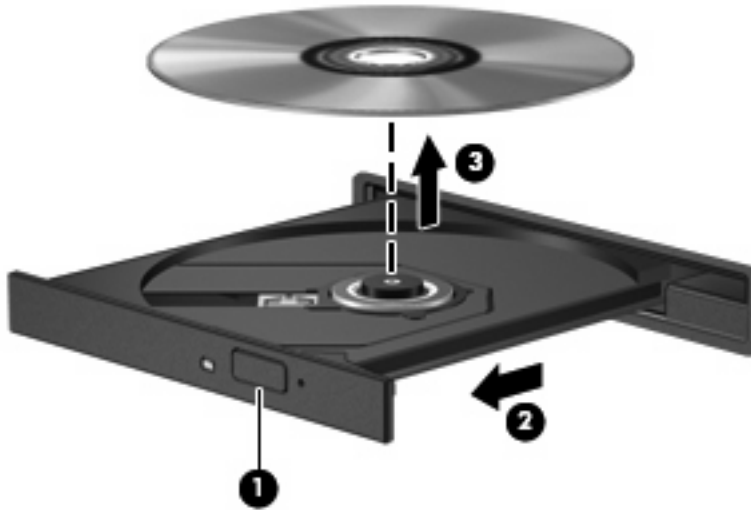
For specific instructions, refer to the software manufacturer's instructions, which may be provided with the software, on disc, or on the manufacturer's Web site.

-
- △ **CAUTION:** Observe 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.
-

Removing an optical disc (CD, DVD, or BD)

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.

Using external drives

Removable external drives expand your options for storing and accessing information. A USB drive can be added by connecting the drive to a USB port on the computer or on an optional docking device or optional expansion product.

USB drives include the following types:

- 1.44-megabyte diskette drive
- Hard drive module (a hard drive with an adapter attached)
- DVD-ROM Drive
- DVD/CD-RW Combo Drive
- DVD±RW and CD-RW Combo Drive

 **NOTE:** For more information about required software and drivers, or to learn which computer port to use, refer to the manufacturer's instructions.

To connect an external drive to the computer:

△ **CAUTION:** To reduce the risk of damage to the equipment when connecting a powered drive, be sure that the AC power cord is unplugged.

1. Connect the drive to the computer.
2. If you are connecting a powered drive, plug the drive power cord into a grounded AC outlet.

To disconnect a powered drive, disconnect it from the computer, and then unplug the AC power cord.

Improving hard drive performance

Using Disk Defragmenter


As you use the computer, files on the hard drive become fragmented. Disk Defragmenter consolidates the fragmented files and folders on the hard drive so that the system can run more efficiently.

After you start Disk Defragmenter, it works without supervision. Depending on the size of your hard drive and the number of fragmented files, Disk Defragmenter may take more than an hour to complete. You may want to set it to run during the night or another time when you do not need access to your computer.

HP recommends defragmenting your hard drive at least once a month. You may set Disk Defragmenter to run on a monthly schedule, but you can defragment your computer manually at any time.

To run Disk Defragmenter:

1. Select **Start > All Programs > Accessories > System Tools > Disk Defragmenter**.
2. Click **Defragment disk**.

 **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 installing software, running utilities, or changing Windows settings. Refer to Help and Support for more information.

For additional information, refer to the Disk Defragmenter software Help.

Using Disk Cleanup

Disk Cleanup searches the hard drive for unnecessary files that you can safely delete to free up disk space and help the computer to run more efficiently.

To run Disk Cleanup:


1. Select **Start > All Programs > Accessories > System Tools > Disk Cleanup**.
2. Follow the on-screen instructions.

Using HP ProtectSmart Hard Drive Protection (select models only)

HP ProtectSmart Hard Drive Protection protects the hard drive by parking the drive and halting I/O requests under either of the following conditions:

- You drop the computer.
- You move the computer with the display closed while the computer is running on battery power.

A short time after the end of one of these events, HP ProtectSmart Hard Drive Protection returns the hard drive to normal operation.


 **NOTE:** If the SmartBay contains a hard drive, the hard drive is protected by HP ProtectSmart Hard Drive Protection. Hard drives that are in an optional docking device or are connected to a USB port are not protected by HP ProtectSmart Hard Drive Protection.

For more information, refer to the HP ProtectSmart Hard Drive Protection software Help.

Identifying HP ProtectSmart Hard Drive Protection status


The drive light on the computer turns on to show that the drive is parked. To determine whether drives are currently protected or whether a drive is parked, select **Start > Control Panel > Hardware and Sound > Windows Mobility Center**. The Mobility Center also indicates HP ProtectSmart Hard Drive Protection status:

- If the software is enabled, a green check mark is superimposed over the hard drive icon.
- If the software is disabled, a white diagonal line is superimposed over the hard drive icon.
- If the drives are parked, a yellow moon is superimposed over the hard drive icon.

 **NOTE:** The icon in the Mobility Center may not show the most up-to-date status for the drive. For immediate updates after a change in status, you need to enable the notification area icon.

To enable the notification area icon:


1. Select **Start > Control Panel > Hardware and Sound > HP ProtectSmart Hard Drive Protection**.

 **NOTE:** If prompted by User Account Control, click **Yes**.

2. On the **Icon in System Tray** row, click **Show**.
3. Click **OK**.

If HP ProtectSmart Hard Drive Protection has parked the drive, the computer will behave in the following ways:

- The computer will not shut down.
- The computer will not initiate Sleep or Hibernation, except as described in the following Note.


 **NOTE:** If the computer is running on battery power and reaches a critical battery level, HP ProtectSmart Hard Drive Protection allows the computer to initiate Hibernation.

Before you move the computer, HP recommends that you either shut it down or initiate Sleep or Hibernation.

Using HP ProtectSmart Hard Drive Protection software

The HP ProtectSmart Hard Drive Protection software enables you to perform the following tasks:

- Enable and disable HP ProtectSmart Hard Drive Protection.

 **NOTE:** Depending on your user privileges, you may not be able to enable or disable HP ProtectSmart Hard Drive Protection. Additionally, members of an Administrator group can change the privileges for non-Administrator users.


- Determine whether a drive in the system is supported.

To open the software and change settings, follow these steps:

1. In Mobility Center, click the hard drive icon to open the HP ProtectSmart Hard Drive Protection window.

– or –

Select **Start > Control Panel > Hardware and Sound > HP ProtectSmart Hard Drive Protection**.

 **NOTE:** If prompted by User Account Control, click **Yes**.

2. Click the appropriate button to change settings.
3. Click **OK**.

Replacing the hard drive

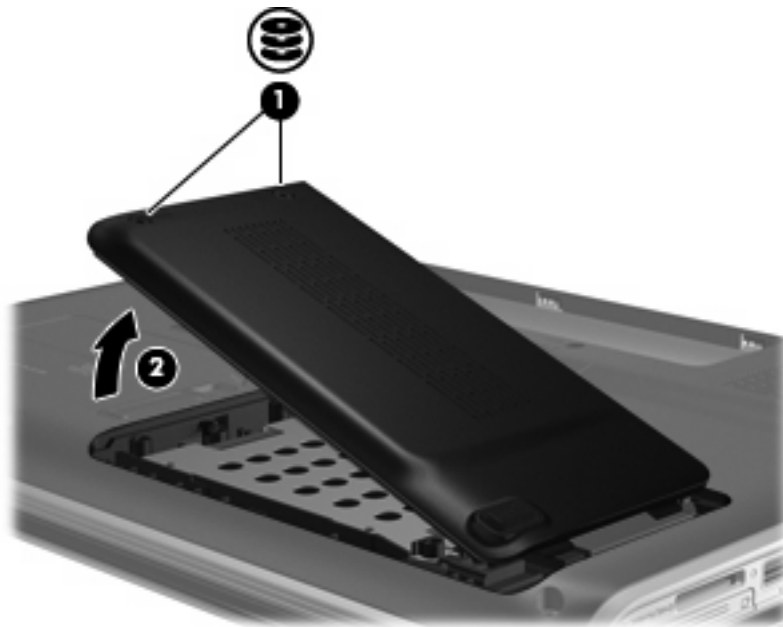
△ **CAUTION:** To prevent information loss or an unresponsive system:

Shut down the computer before removing the hard drive from the hard drive bay. Do not remove the hard drive while the computer is on, in the Sleep state, or in Hibernation.

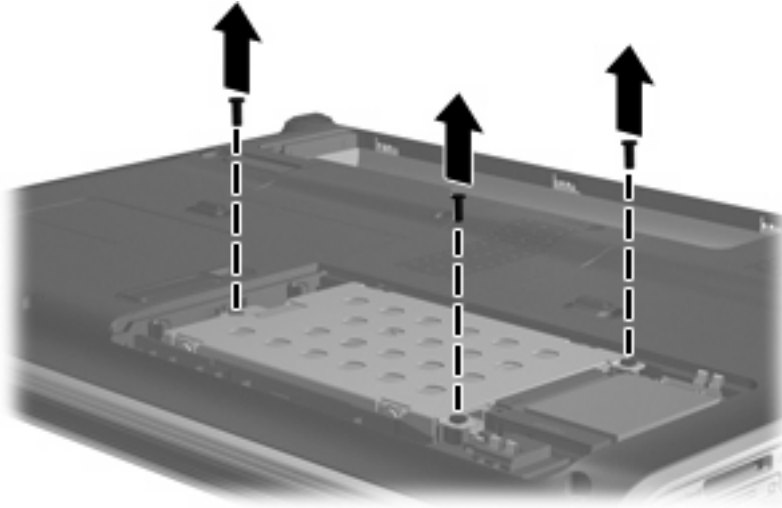
If you are not sure whether the computer is off or in Hibernation, turn the computer on by pressing the power button. Then shut down the computer through the operating system.

To remove the hard drive:

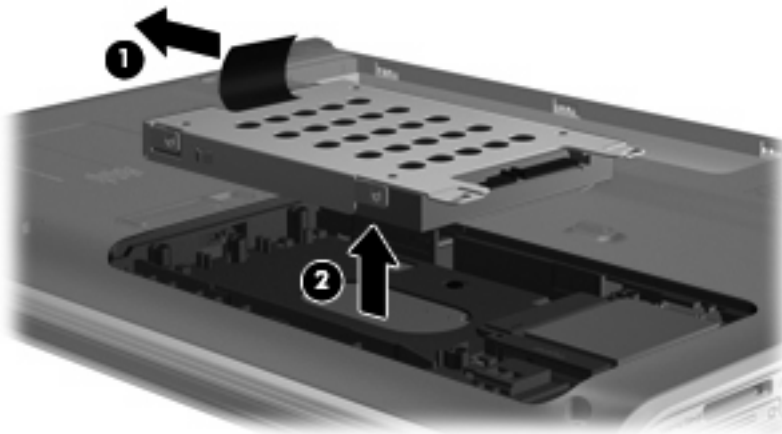
1. Save your work.
2. Shut down the computer and close the display.
3. Disconnect all external devices connected to the computer.
4. Unplug the power cord from the AC outlet.
5. Turn the computer upside down on a flat surface.
6. Remove the battery from the computer.
7. With the hard drive bay toward you, loosen the 2 hard drive cover screws (1).
8. Lift the hard drive cover away from the computer (2).



9. Remove the 3 hard drive screws.



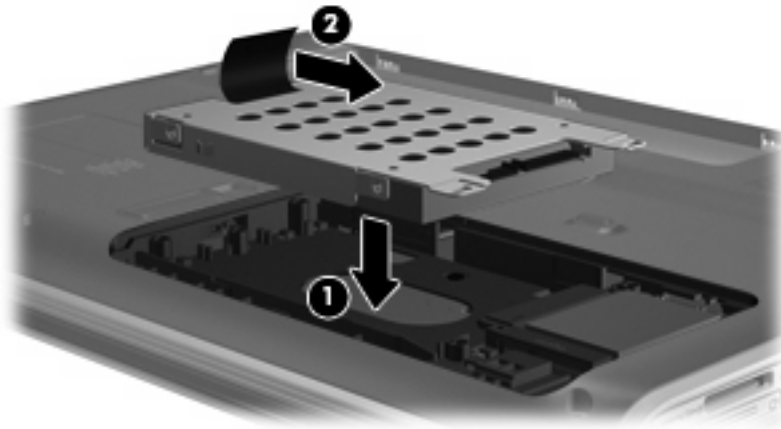
10. Pull the hard drive tab to the left (1), and then lift the hard drive away from the computer (2).



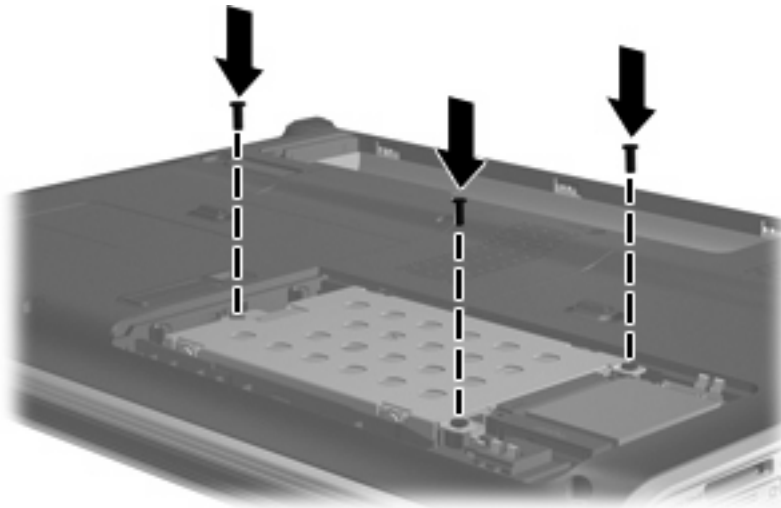
To install a hard drive:

1. Insert the hard drive into the hard drive bay (1).

2. Slide the hard drive to the right until it snaps into place (2).

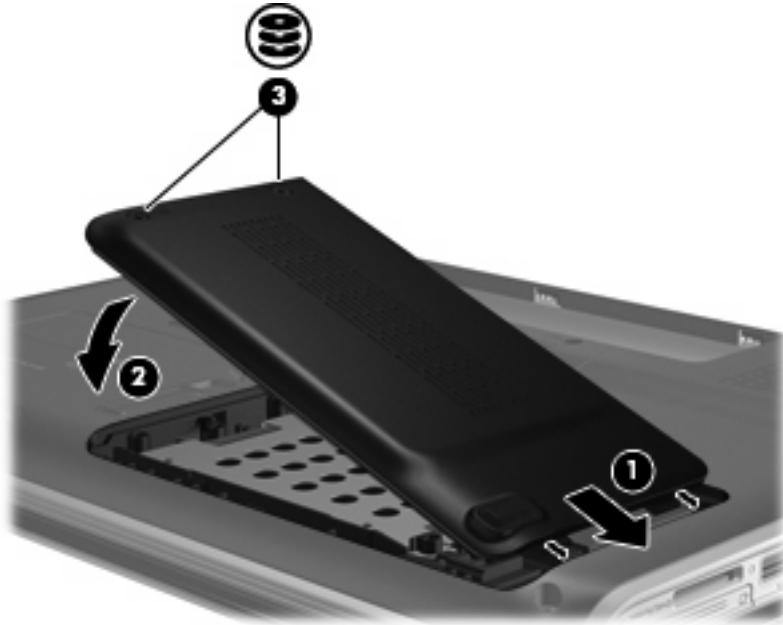


3. Replace the 3 hard drive screws.



4. Align the tabs (1) on the hard drive cover with the notches on the computer.
5. Close the cover (2).

6. Tighten the hard drive cover screws (3).



Replacing a drive in the SmartBay

The SmartBay can hold either an optical drive or a hard drive.

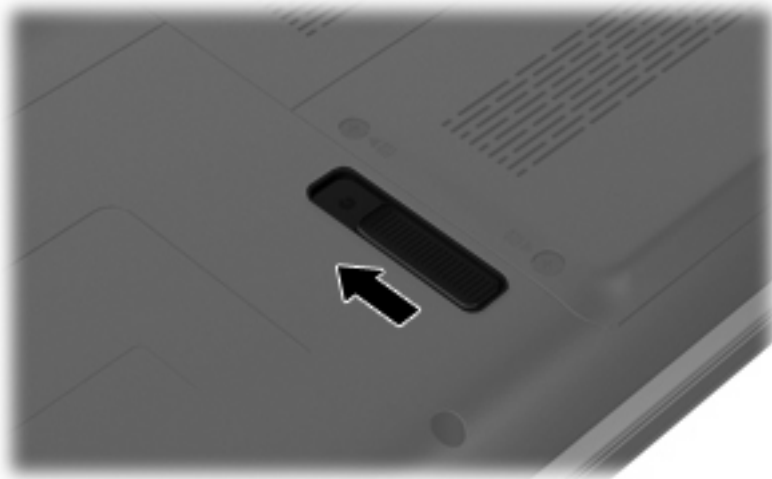
△ **CAUTION:** To prevent information loss or an unresponsive system:

Shut down the computer before removing the drive from the SmartBay. Do not remove the drive while the computer is on, in the Sleep state, or in Hibernation.

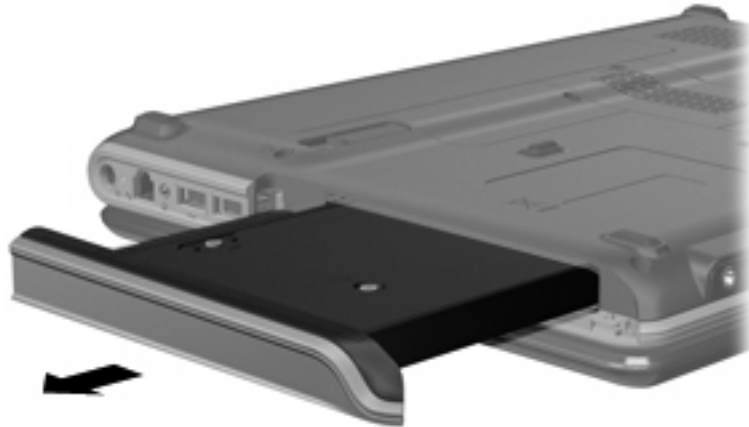
If you are not sure whether the computer is off or in Hibernation, turn the computer on by pressing the power button. Then shut down the computer through the operating system.

To remove a drive from the SmartBay:

1. Save your work.
2. Shut down the computer and close the display.
3. Disconnect all external devices connected to the computer.
4. Unplug the power cord from the AC outlet.
5. Turn the computer upside down on a flat surface.
6. Remove the battery from the computer.
7. Slide the SmartBay release latch to release the drive.



8. Remove the drive from the SmartBay.



To insert a drive in the SmartBay:

- ▲ Insert the drive into the SmartBay and push in until it snaps into place.



10 External devices

Using a USB device

A USB port connects an optional external device, such as a USB keyboard, mouse, drive, printer, scanner, or hub, to the computer or to an optional expansion product.

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 has 3 USB ports, which support USB 1.0, USB 1.1, and USB 2.0 devices. To add more USB ports, connect an optional hub or optional expansion product.

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.



You will hear a sound when the device has been detected.

📄 **NOTE:** The first time you connect a USB device, the "Installing device driver software" message is displayed in the notification area, at the far right of the taskbar.


Removing a USB device

- △ **CAUTION:** To prevent loss of information or an unresponsive system, use the following procedure to safely remove 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:

1. Click the **Safely Remove Hardware and Eject Media** icon in the notification area, at the far right of the taskbar.

 **NOTE:** To display the Safely Remove Hardware and Eject Media icon, click the **Show hidden icons** icon (the arrow at the left of the notification area).

2. Click the name of the device in the list.


 **NOTE:** You are prompted that it is safe to remove the device.

3. Remove the device.

Using an eSATA device

An eSATA port connects an optional high-performance eSATA component, such as an eSATA external hard drive.

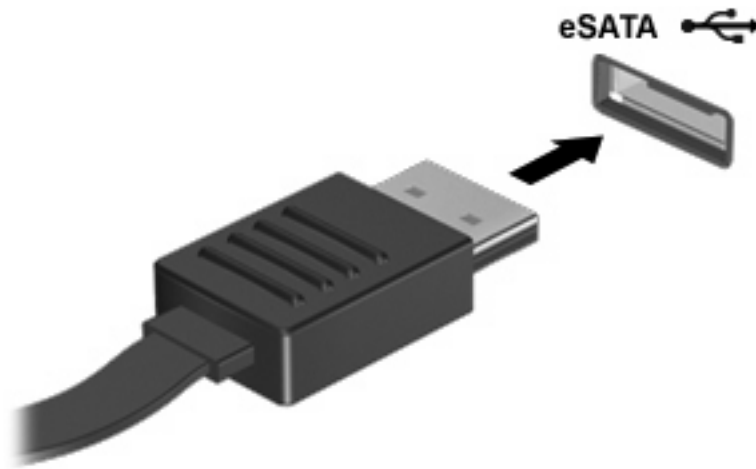
Some eSATA devices may require additional support software, which is usually included with the device. For more information about device-specific software, refer to the manufacturer's instructions.

 **NOTE:** The eSATA port also supports an optional USB device.

Connecting an eSATA device

△ **CAUTION:** To prevent damage to an eSATA port connector, use minimal force to connect an eSATA device.

▲ To connect an eSATA device to the computer, connect the eSATA cable for the device to the eSATA port.



You will hear a sound when the device has been detected.

Removing an eSATA device

△ **CAUTION:** To prevent loss of information or an unresponsive system, use the following procedure to safely remove an eSATA device.

CAUTION: To prevent damage to an eSATA connector, do not pull on the cable to remove the eSATA device.

To remove an eSATA device:

1. Click the **Safely Remove Hardware and Eject Media** icon in the notification area, at the far right of the taskbar.

📄 **NOTE:** To display the Safely Remove Hardware and Eject Media icon, click the **Show hidden icons** icon (the arrow at the left of the notification area).

2. Click the name of the device in the list.

📄 **NOTE:** You are prompted that it is safe to remove the device.

3. Remove the device.

Using the expansion port

The expansion port connects the computer to an optional docking device or optional 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.



11 External media cards

Using Digital Media Slot 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 Digital Media Slot supports the following digital card formats:

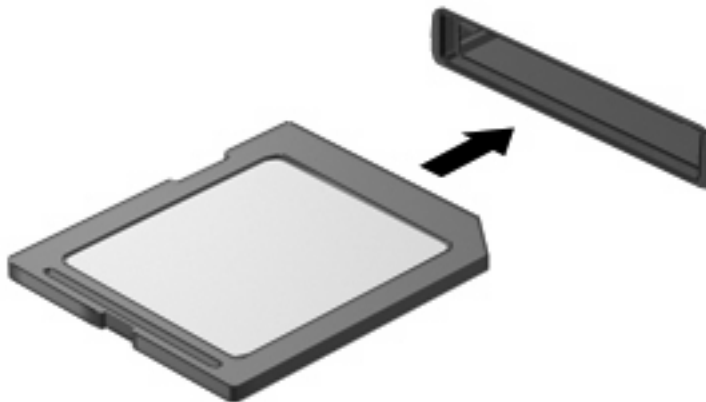
- Memory Stick (MS)
- Memory Stick Pro (MSP)
- MultiMediaCard (MMC)
- Secure Digital (SD) Memory Card
- xD-Picture Card (XD)

Inserting a digital card

△ **CAUTION:** To avoid damaging the digital card or the computer, do not insert any type of adapter into the Digital Media Slot.

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 Digital Media Slot, and then push in on the card until it is firmly seated.



You will hear a sound when the device has been detected, and a menu of options may be displayed.

Removing a digital card

- △ **CAUTION:** To prevent loss of data or an unresponsive system, use the following procedure to safely remove the digital card.

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.

To remove a digital card:

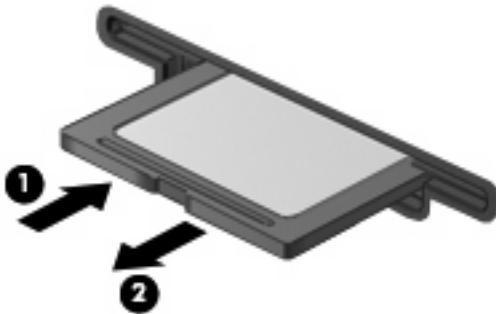
1. Click the **Safely Remove Hardware and Eject Media** icon in the notification area, at the far right of the taskbar.

- 📝 **NOTE:** To display the Safely Remove Hardware and Eject Media icon, click the **Show hidden icons** icon (the arrow at the left side of the notification area).

2. Click the name of the digital card in the list.

- 📝 **NOTE:** You are prompted that it is safe to remove the hardware device.

3. Press in on the digital card **(1)**, and then remove the card from the slot **(2)**.



Using ExpressCards

An ExpressCard is a high-performance PC Card that is inserted into the ExpressCard slot.

Like standard PC Cards, ExpressCards are designed to conform to the standard specifications of the Personal Computer Memory Card International Association (PCMCIA).

Configuring an ExpressCard

Install only the software required for your device. If you are instructed by the ExpressCard manufacturer to install device drivers:

- Install only the device drivers for your operating system.
- Do not install other software, such as card services, socket services, or enablers, supplied by the ExpressCard manufacturer.

Inserting an ExpressCard

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

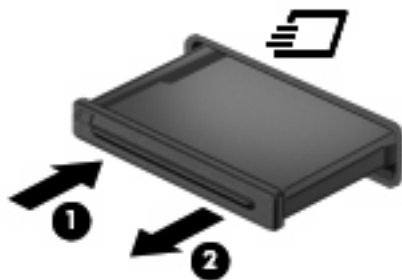
CAUTION: To prevent damage to the connectors:

Use minimal force when inserting an ExpressCard.

Do not move or transport the computer when an ExpressCard is in use.

The ExpressCard slot may contain a protective insert. To remove the insert:

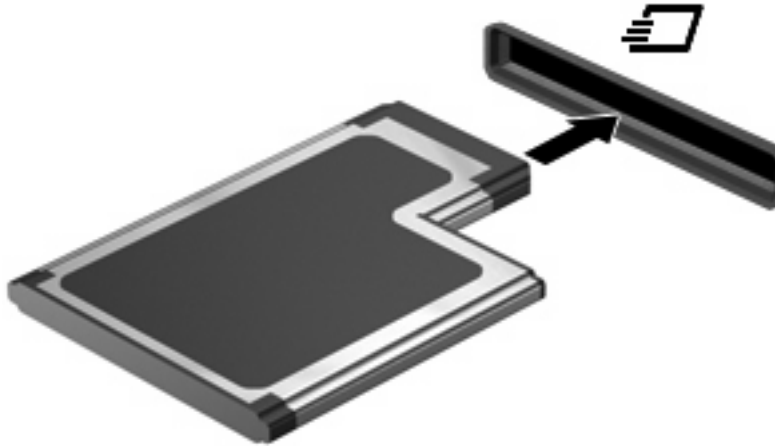
1. Press in on the insert **(1)** to unlock it.
2. Pull the insert out of the slot **(2)**.




To insert an ExpressCard:


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

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



You will hear a sound when the device has been detected, and a menu of options may be displayed.

 **NOTE:** The first time you insert an ExpressCard, the "Installing device driver software" message is displayed in the notification area, at the far right of the taskbar.

 **NOTE:** An inserted ExpressCard uses power even when idle. To conserve power, stop or remove an ExpressCard when it is not in use.

Removing an ExpressCard

△ **CAUTION:** To prevent loss of data or an unresponsive system, use the following procedure to safely remove the ExpressCard.

Save your information and close all programs associated with the ExpressCard.

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

To remove an ExpressCard:

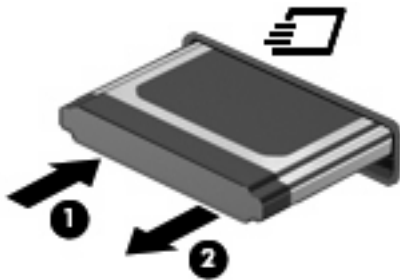
1. Click the **Safely Remove Hardware and Eject Media** icon in the notification area, at the far right of the taskbar.

📝 **NOTE:** To display the Safely Remove Hardware and Eject Media icon, click the **Show hidden icons** icon (the arrow at the left side of the notification area).

2. Click the name of the ExpressCard in the list.

📝 **NOTE:** You are prompted that it is safe to remove the hardware device.

3. Release and remove the ExpressCard:
 - a. Gently press in on the ExpressCard **(1)** to unlock it.
 - b. Pull the ExpressCard out of the slot **(2)**.



12 Memory modules

The computer has one memory module compartment, which is located on the bottom of the computer. The memory capacity of the computer can be upgraded by adding a memory module to the vacant expansion memory module slot or by upgrading the existing memory module in the primary memory module slot.

-
- ⚠ **WARNING!** To reduce the risk of electric shock and damage to the equipment, unplug the power cord and remove all batteries before installing a memory module.
 - ⚠ **CAUTION:** Electrostatic discharge (ESD) can damage electronic components. Before beginning any procedure, ensure that you are discharged of static electricity by touching a grounded metal object.
 - 📝 **NOTE:** To use a dual-channel configuration when adding a second memory module, be sure that both memory modules are the same size.
-

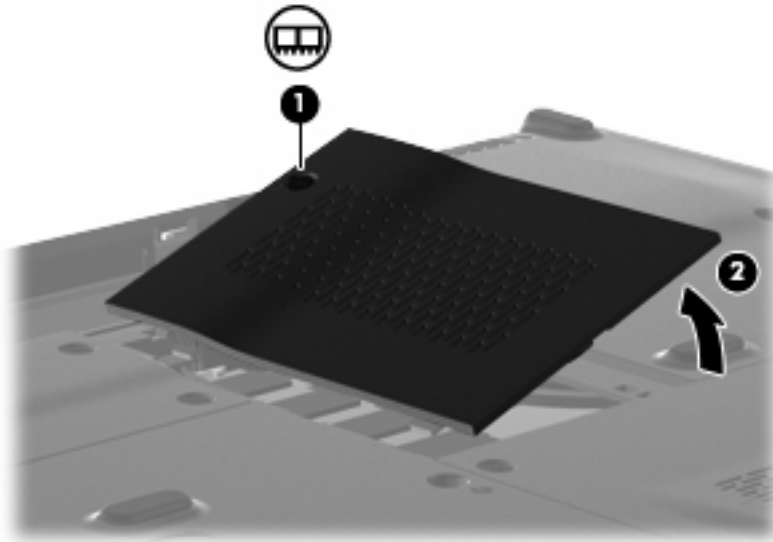
To add or replace a memory module:

1. Save your work.
2. Shut down the computer and close the display.

If you are not sure whether the computer is off or in Hibernation, turn the computer on by pressing the power button. Then shut down the computer through the operating system.

3. Disconnect all external devices connected to the computer.
4. Unplug the power cord from the AC outlet.
5. Turn the computer upside down on a flat surface.
6. Remove the battery from the computer.
7. Loosen the memory module compartment screw **(1)**.

8. Lift the memory module compartment cover (2) away from the computer.

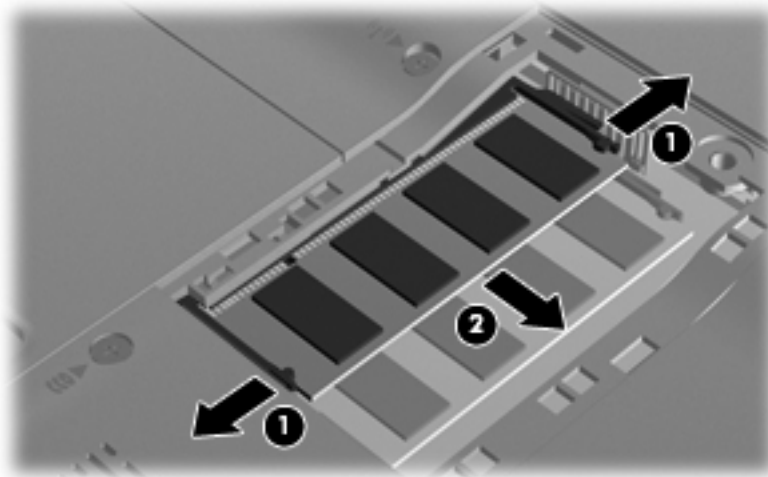


9. If you are replacing a memory module, remove the existing memory module:
 - a. Pull away the retention clips (1) on each side of the memory module.

The memory module tilts up.

△ **CAUTION:** To prevent damage to the memory module, hold the memory module by the edges only. Do not touch the components on the memory module, and do not bend the memory module.

- b. Grasp the edge of the memory module (2), and gently pull the module out of the memory module slot.

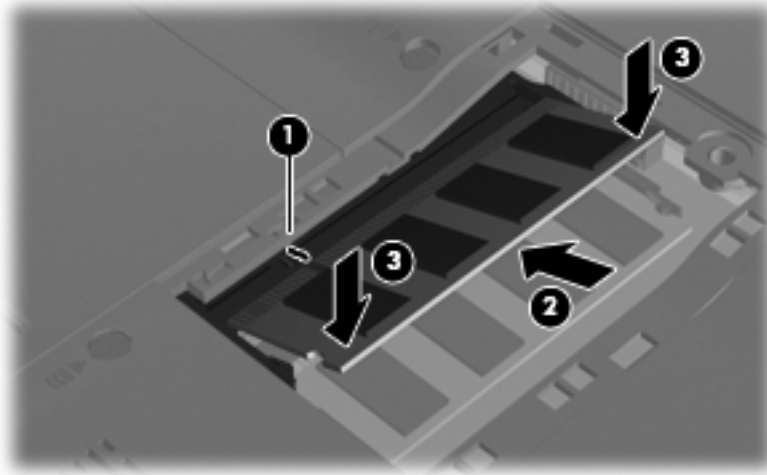


To protect a memory module after removal, place it in an electrostatic-safe container.

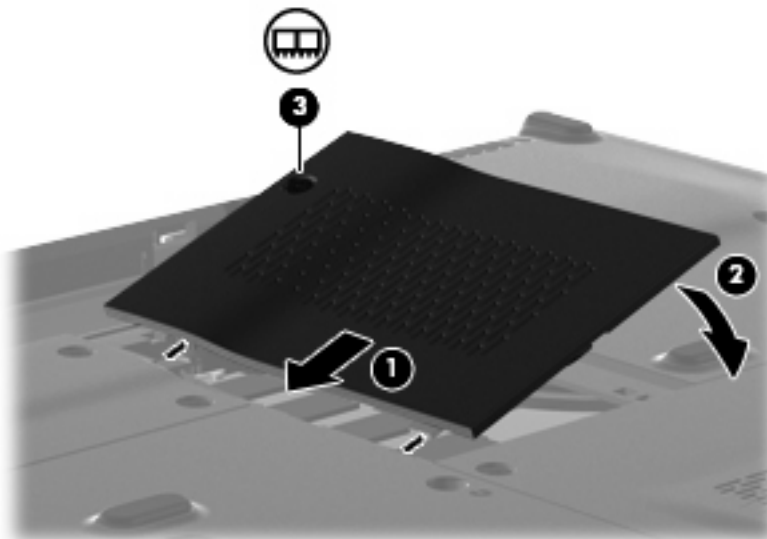
10. Insert a new memory module:

△ **CAUTION:** To prevent damage to the memory module, hold the memory module by the edges only. Do not touch the components on the memory module, and do not bend the memory module.

- a. Align the notched edge (1) of the memory module with the tab in the memory module slot.
- b. With the memory module at a 45-degree angle from the surface of the memory module compartment, press the module (2) into the memory module slot until it is seated.
- c. Gently press the memory module (3) down, applying pressure to both the left and right edges of the memory module, until the retention clips snap into place.



11. Align the tabs (1) on the memory module compartment cover with the notches on the computer.
12. Close the cover (2).
13. Tighten the memory module compartment screw (3).



14. Replace the battery.

15. Turn the computer right-side up, and then reconnect external power and external devices.
16. Turn on the computer.


13 Security

Protecting the computer

Standard security features provided by the Windows® operating system and the non-Windows Setup Utility can protect your personal settings and data from a variety of risks.

Follow the procedures in this guide to use the following features:

- Passwords
- Antivirus software
- Firewall software
- Critical security updates
- Optional security cable
- Fingerprint reader (select models only)

 **NOTE:** Security solutions are designed to act as deterrents, but they may not deter software attacks or prevent the computer from being mishandled or stolen.

NOTE: Before you send your computer for service, remove all password and fingerprint settings.

Computer risk	Security feature
Unauthorized use of the computer	<ul style="list-style-type: none">• QuickLock• Power-on password
Computer viruses	Norton Internet Security software
Unauthorized access to data	<ul style="list-style-type: none">• Firewall software• Windows updates
Unauthorized access to Setup Utility, BIOS settings, and other system identification information	Administrator password
Ongoing or future threats to the computer	Critical security updates from Microsoft
Unauthorized access to a Windows user account	User password
Unauthorized removal of the computer	Security cable slot (used with an optional security cable)

Using passwords

A password is a group of characters that you choose to secure your computer information. Several types of passwords can be set, depending on how you want to control access to your information. Passwords can be set in Windows or in the non-Windows Setup Utility preinstalled on the computer.

- △ **CAUTION:** To prevent being locked out of the computer, record each password you set. Because most passwords are not displayed as they are set, changed, or deleted, it is essential to record each password immediately and store it in a secure place.

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

Use the following guidelines when setting a password in Setup Utility:

- A password can be any combination of up to 8 letters and numbers and is case sensitive.
- A password set in Setup Utility must be entered at a Setup Utility prompt. A password set in Windows must be entered at a Windows prompt.

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.
- Do not use your name or other personal information that could be easily discovered by an outsider.

The following sections list Windows and Setup Utility passwords and describe their functions. For additional information about Windows passwords, such as screen-saver passwords, select **Start > Help and Support**.

Setting passwords in Windows

Password	Function
Administrator password	Protects administrator-level access to computer contents. NOTE: This password cannot be used to access Setup Utility contents.
User password	Protects access to a Windows user account. It also protects access to the computer contents and must be entered when you exit Sleep or Hibernation.
QuickLock	Protects the computer by requiring a password to be entered in the Windows Log On dialog box before you access the computer. After you set a user or administrator password, follow these steps: <ol style="list-style-type: none">1. Initiate QuickLock by pressing fn+f6.2. Exit QuickLock by entering your Windows user or administrator password.

Setting passwords in Setup Utility

Password	Function
Administrator password*	<ul style="list-style-type: none">• Protects access to Setup Utility.• After this password is set, it must be entered each time you access Setup Utility. <p>CAUTION: If you forget your administrator password, you cannot access Setup Utility.</p>
Power-on password*	<ul style="list-style-type: none">• Protects access to the computer contents.• After this password is set, it must be entered each time you turn on or restart the computer, or exit Hibernation. <p>CAUTION: If you forget your power-on password, you cannot turn on or restart the computer, or exit Hibernation.</p>

*For details about each of these passwords, refer to the following topics.

Administrator password

Your administrator password protects the configuration settings and system identification information in Setup Utility. After this password is set, you must enter it each time you access Setup Utility.

Your administrator password is not interchangeable with an administrator password set in Windows, nor is it displayed as it is set, entered, changed, or deleted. Be sure that you record your password and store it in a safe place.

Managing an administrator password

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

1. Open Setup Utility by turning on or restarting the computer. While the “Press the ESC key for Startup Menu” message is displayed in the lower left corner of the screen, press **f10**.
– or –
Open Setup Utility by turning on or restarting the computer. While the “Press the ESC key for Startup Menu” message is displayed in the lower left corner of the screen, press **esc**. When the Startup Menu is displayed, press **f10**.
2. Use the arrow keys to select **Security > Set Administrator Password**, and then press **enter**.
 - To set an administrator password, type your password in the **Enter New Password** and **Confirm New Password** fields, and then press **enter**.
 - To change an administrator password, type your current password in the **Enter Current Password** field, type a new password in the **Enter New Password** and **Confirm New Password** fields, and then press **enter**.
 - To delete an administrator password, type your current password in the **Enter Password** field, and then press **enter** 4 times.
3. To save your changes and exit Setup Utility, use the arrow keys to select **Exit > Exit Saving Changes**.

Your changes go into effect when the computer restarts.

Entering an administrator password

At the **Enter Password** prompt, type your administrator password, and then press [enter](#). After 3 unsuccessful attempts to enter the administrator password, you must restart the computer and try again.

Power-on password

Your power-on password prevents unauthorized use of the computer. After this password is set, it must be entered each time you turn on or restart the computer, or exit Hibernation. A power-on password is not displayed as it is set, entered, changed, or deleted.

Managing a power-on password

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

1. Open Setup Utility by turning on or restarting the computer. While the “Press the ESC key for Startup Menu” message is displayed in the lower left corner of the screen, press [f10](#).

– or –

Open Setup Utility by turning on or restarting the computer. While the “Press the ESC key for Startup Menu” message is displayed in the lower left corner of the screen, press [esc](#). When the Startup Menu is displayed, press [f10](#).

2. Use the arrow keys to select **Security > Set Power-On Password**, and then press [enter](#).
 - To set a power-on password, type your password in the **Enter New Password** and **Confirm New Password** fields, and then press [enter](#).
 - To change a power-on password, type your current password in the **Enter Current Password** field, type a new password in the **Enter New Password** and **Confirm New Password** fields, and then press [enter](#).
 - To delete a power-on password, type your current password in the **Enter Current Password** field, and then press [enter](#) 4 times.
3. To save your changes and exit Setup Utility, use the arrow keys to select **Exit > Exit Saving Changes**.

Your changes go into effect when the computer restarts.

Entering a power-on password

At the **Enter Password** prompt, type your password, and then press [enter](#). After 3 unsuccessful attempts to enter the password, you must restart the computer and try again.

Using antivirus software

When you use the computer to access e-mail, a network, or the Internet, you expose it to computer viruses. Computer viruses can disable the operating system, programs, or utilities, or cause them to function abnormally.

Antivirus software can detect most viruses, destroy them, and in most cases, repair any damage they have caused. To provide ongoing protection against newly discovered viruses, antivirus software must be kept up to date.


Norton Internet Security, an antivirus program, is preinstalled on the computer. The software includes 60 days of free updates. It is strongly recommended that you protect the computer against new viruses beyond 60 days by purchasing extended update service. Instructions for using and updating Norton Internet Security software and for purchasing extended update service are provided within the program. To view and access Norton Internet Security, select **Start > All Programs > Norton Internet Security**.

For more information about computer viruses, type `viruses` in the Search box in Help and Support.

Using firewall software

When you use the computer for e-mail, network, or Internet access, unauthorized persons may be able to gain access to the computer, your personal files, and information about you. Use the firewall software preinstalled on the computer to protect your privacy.

Firewall features include logging and reporting of network activity, and automatic monitoring of all incoming and outgoing traffic. Refer to the firewall user guide or contact your firewall manufacturer for more information.

 **NOTE:** Under some circumstances a firewall can block access to Internet games, interfere with printer or file sharing on a network, or block authorized e-mail attachments. To temporarily resolve the problem, disable the firewall, perform the task that you want to perform, and then reenable the firewall. To permanently resolve the problem, reconfigure the firewall.

Installing critical security updates

△ **CAUTION:** Microsoft sends alerts regarding critical updates. To protect the computer from security breaches and computer viruses, install all critical updates from Microsoft as soon as you receive an alert.

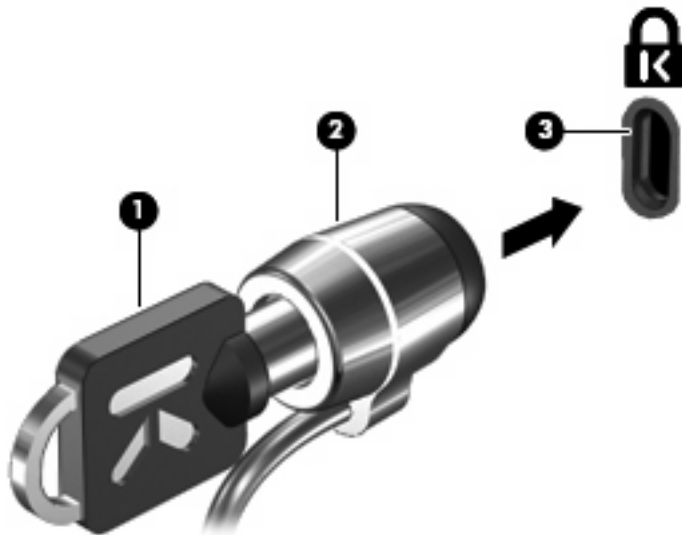
Updates to the operating system and other software may have become available after the computer was shipped. To be sure that all available updates are installed on the computer, observe these guidelines:

- Run Windows Update as soon as possible after you set up your computer. Use the update link at **Start > All Programs > Windows Update**.
- Run Windows Update monthly thereafter.
- Obtain updates to Windows and other Microsoft® programs, as they are released, from the Microsoft Web site and through the updates link in Help and Support.

Installing an optional security cable


📝 **NOTE:** A security cable is designed to act as a deterrent, but it may not prevent the computer from being mishandled or stolen.

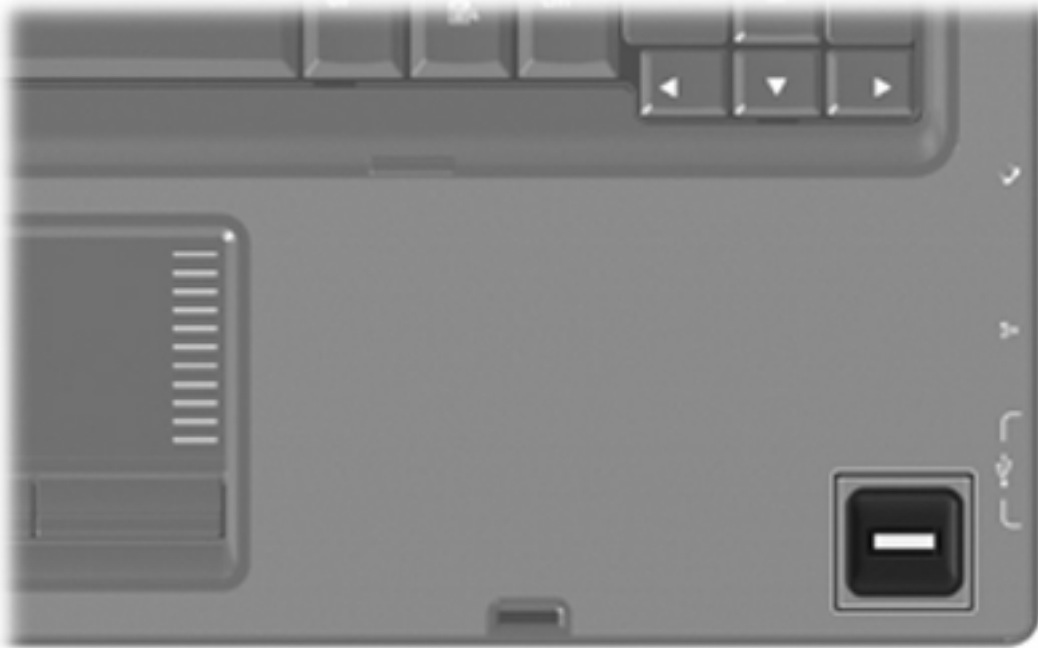
1. Loop the security cable around a secured object.
2. Insert the key (1) into the cable lock (2).
3. Insert the cable lock into the security cable slot on the computer (3), and then lock the cable lock with the key.



📝 **NOTE:** The location of the security cable slot varies by computer model.

Using the fingerprint reader (select models only)

 **NOTE:** The location of the fingerprint reader varies by computer model.



Locating the fingerprint reader

The fingerprint reader is a small metallic sensor that is located in one of the following areas of your computer:

- Near the bottom of the TouchPad
- On the right side of the keyboard
- On the upper-right side of the display
- On the left side of the display

Depending on your computer model, the fingerprint reader may be oriented horizontally or vertically. Both orientations require that you swipe your finger perpendicular to the metallic sensor.



Registering fingerprints

A fingerprint reader allows you to log on to Windows using a fingerprint that you have registered using DigitalPersona Personal software, instead of using a Windows password.


To register one or more fingerprints, follow these steps:

1. In Windows, click the **DigitalPersona Personal** icon in the notification area, at the far right of the taskbar.

2. Read the welcome text, and then click **Next**.

The “Verify Your Identity” page opens.

3. Type your Windows password, if one has been established, and then click **Next**.

 **NOTE:** If you do not have a Windows password, the “Protect Your Windows Account” page opens. You can create a Windows password at this time, or you can skip this step by clicking **Next**. However, setting a Windows password optimizes the security of your computer.

The “Fingerprint Registration Training” page opens.


4. View the demonstration, and then click **Next**.

The “Register a Fingerprint” page opens.

5. Click the finger on the screen that corresponds to the finger you want to register.

The next page opens, outlining that finger in green.

6. Slowly swipe your chosen finger over the fingerprint sensor.

 **NOTE:** If the swipe is not completed correctly, a message explains why the swipe was unsuccessful.

NOTE: For best results, swipe the same finger in the same direction each time you use the fingerprint reader.

7. Continue swiping the same finger over the fingerprint sensor until you have completed 4 successful swipes.

When the fingerprint is registered successfully, the “Register a Fingerprint” page opens again, allowing you to register more fingerprints. Repeat steps 5 through 7 to register additional fingerprints.

8. When you are finished registering fingerprints, click **Next**.

If you register only one fingerprint, a message recommends that you register additional fingerprints. Click **Yes** to register more fingerprints, and then repeat steps 1 through 8 for each fingerprint registered.

– or –

Click **No** if you do not want to register additional fingerprints. The “Registration Complete” page opens.

9. Click **Finish**.

 **NOTE:** Each user who wants fingerprint access to the computer must repeat steps 1 through 9.

Using your registered fingerprint to log on to Windows


To log on to Windows using your fingerprint, follow these steps:

1. Immediately after you have registered your fingerprints, restart Windows.
2. Swipe any of your registered fingers to log on to Windows.

A Setup Utility (BIOS)

Starting Setup Utility

Setup Utility is a ROM-based information and customization utility that can be used even when your Windows® operating system is not working.

 **NOTE:** The fingerprint reader (select models only) cannot be used to access Setup Utility.

The utility reports information about the computer and provides settings for startup, security, and other preferences.

To start Setup Utility:

▲ Open Setup Utility by turning on or restarting the computer. While the “Press the ESC key for Startup Menu” message is displayed in the lower left corner of the screen, press **f10**.

– or –

1. Open Setup Utility by turning on or restarting the computer. While the “Press the ESC key for Startup Menu” message is displayed in the lower left corner of the screen, press **esc**.
2. When the Startup Menu is displayed, press **f10**.

Using Setup Utility

Changing the language of Setup Utility

The following procedure explains how to change the language of Setup Utility. If Setup Utility is not already running, begin at step 1. If Setup Utility is already running, begin at step 2.

1. Open Setup Utility by turning on or restarting the computer. While the “Press the ESC key for Startup Menu” message is displayed in the lower left corner of the screen, press **f10**.

– or –

Open Setup Utility by turning on or restarting the computer. While the “Press the ESC key for Startup Menu” message is displayed in the lower left corner of the screen, press **esc**. When the Startup Menu is displayed, press **f10**.

2. Use the arrow keys to select **System Configuration > Language**, and then press **enter**.
3. Use the arrow keys to select a language, and then press **enter**.
4. When a confirmation prompt with your language selected is displayed, press **enter**.
5. To save your change and exit Setup Utility, use the arrow keys to select **Exit > Exit Saving Changes**, and then press **enter**.

Your change goes into effect immediately.

Navigating and selecting in Setup Utility

Because Setup Utility is not Windows-based, it does not support the TouchPad. Navigation and selection are by keystroke.

- To choose a menu or a menu item, use the arrow keys.
- To choose an item in a list or to toggle a field, for example an Enable/Disable field, use either the arrow keys or **f5** or **f6**.
- To select an item, press **enter**.
- To close a text box or return to the menu display, press **esc**.
- To display additional navigation and selection information while Setup Utility is open, press **f1**.

Displaying system information

You can use Setup Utility to view such information as the system time and date and information that identifies the computer. The following procedure explains how to do this. If Setup Utility is not open, begin at step 1. If Setup Utility is open, begin at step 2.

1. Open Setup Utility by turning on or restarting the computer. While the “Press the ESC key for Startup Menu” message is displayed in the lower left corner of the screen, press **f10**.

– or –

Open Setup Utility by turning on or restarting the computer. While the “Press the ESC key for Startup Menu” message is displayed in the lower left corner of the screen, press **esc**. When the Startup Menu is displayed, press **f10**.

2. Select the **Main** menu.
3. To exit Setup Utility without changing any settings, use the arrow keys to select **Exit > Exit Discarding Changes**, and then press **enter**.

Restoring default settings in Setup Utility

The following procedure explains how to restore Setup Utility default settings. If Setup Utility is not already running, begin at step 1. If Setup Utility is already running, begin at step 2.


1. Open Setup Utility by turning on or restarting the computer. While the “Press the ESC key for Startup Menu” message is displayed in the lower left corner of the screen, press **f10**.

– or –

Open Setup Utility by turning on or restarting the computer. While the “Press the ESC key for Startup Menu” message is displayed in the lower left corner of the screen, press **esc**. When the Startup Menu is displayed, press **f10**.

2. Use the arrow keys to select **Exit > Load Setup Defaults**, and then press **enter**.
3. When the Setup Confirmation is displayed, press **enter**.
4. To save your change and exit Setup Utility, use the arrow keys to select **Exit > Exit Saving Changes**, and then press **enter**.

Setup Utility default settings go into effect when the computer restarts.

 **NOTE:** Your password, security, and language settings are not changed when you restore the factory default settings.

Exiting Setup Utility

You can exit Setup Utility with or without saving changes.

- To exit Setup Utility and save your changes from the current session:

If the Setup Utility menus are not visible, press **esc** to return to the menu display. Then use the arrow keys to select **Exit > Exit Saving Changes**, and then press **enter**.


- To exit Setup Utility without saving your changes from the current session:

If the Setup Utility menus are not visible, press **esc** to return to the menu display. Then use the arrow keys to select **Exit > Exit Discarding Changes**, and then press **enter**.

After either choice, the computer restarts in Windows.

Setup Utility menus

The menu tables in this section provide an overview of Setup Utility options.

 **NOTE:** Some of the Setup Utility menu items listed in this chapter may not be supported by your computer.

Main menu

Select	To do this
System information	<ul style="list-style-type: none">• View and change the system time and date.• View identification information about the computer.• View specification information about the processor, memory size, system BIOS, and keyboard controller version (select models only).

Security menu

Select	To do this
Administrator password	Enter, change, or delete an administrator password.
Power-On Password	Enter, change, or delete a power-on password.

System Configuration menu

Select	To do this
Language Support	Change the language of Setup Utility.
Button Sound (select models only)	Enable/disable the capacitive button tapping sound.
Virtualization Technology (select models only)	Enable/disable the processor Virtualization Technology.
Processor C6 State (select models only)	Enable/disable the processor C6 sleep state.
LAN Power Saving (select models only)	Enable/disable LAN Power Saving. When enabled, saves power when the computer is in DC mode.
Card Reader/1394 Power Saving (select models only)	Enable/disable Card Reader/1394 Power Saving.
Fan Always On	Enabled/disable Fan Always On. When enabled, the computer fan will always be on.
Boot Options	<p>Set the following boot options:</p> <ul style="list-style-type: none">• POST (power-on self test) f10 and f12 Delay (sec.)—Set the delay for the f10 and f12 functions of Setup Utility in intervals of 5 seconds each (0, 5, 10, 15, 20).• HP QuickWeb—Enable/disable the HP QuickWeb Boot Menu during POST.<ul style="list-style-type: none">◦ Delay to boot Windows—Set the delay for the HP QuickWeb Boot Menu to 2, 3, 5, 10, 15, or 30 seconds.• CD-ROM Boot—Enable/disable boot from CD-ROM.• Floppy Boot—Enable/disable boot from diskette.• Internal Network Adapter Boot—Enable/disable boot from the internal network adapter.• Boot Order—Set the boot order for:<ul style="list-style-type: none">◦ Notebook Hard Drive◦ Internal CD/DVD ROM Drive◦ USB Diskette on Key/USB Hard Drive◦ USB CD/DVD ROM Drive◦ USB Floppy◦ Network Adapter

Diagnostics menu

Select	To do this
Primary Hard Disk Self Test	Run a comprehensive self-test on the hard drive.
Secondary Hard Disk Self Test (select models only)	Run a comprehensive self-test on a secondary hard drive.
Memory Test	Run a diagnostic test on the system memory.

B Software updates

Updated versions of the software provided with your computer may be available on the HP Web site.


Most software and BIOS updates on the HP Web site are packaged in compressed files called *SoftPaqs*.

Some download packages contain a file named Readme.txt, which contains information regarding installing and troubleshooting the file.

To update the software, follow these steps, which are explained in the remainder of this guide:

1. Identify your computer model, product category, and series or family. Prepare for a system BIOS update by identifying the BIOS version currently installed on the computer.

If your computer is connected to a network, consult the network administrator before installing any software updates, especially system BIOS updates.

 **NOTE:** The computer system BIOS is stored on the system ROM. The BIOS initializes the operating system, determines how the computer will interact with the hardware devices, and provides for data transfer among hardware devices, including the time and date.

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 installing software, running utilities, or changing Windows settings. Refer to Help and Support for more information.

2. Access the updates on the HP Web site at <http://www.hp.com>.
3. Install the updates.

Updating the BIOS

To update the BIOS, first determine what BIOS version you currently have and then download and install the new BIOS.

Determining the BIOS version

To determine whether available BIOS updates contain later BIOS versions than those currently installed on the computer, you need to know the version of the system BIOS currently installed.

BIOS version information (also known as *ROM date* and *System BIOS*) can be displayed by pressing **fn+esc** (if you are already in Windows) or by opening Setup Utility.

To use Setup Utility for displaying BIOS information:

1. Open Setup Utility by turning on or restarting the computer. While the “Press the ESC key for Startup Menu” message is displayed in the lower left corner of the screen, press **f10**.
2. If Setup Utility does not open with the system information displayed, use the arrow keys to select the **Main** menu.

When the Main menu is selected, BIOS and other system information is displayed.

3. To exit Setup Utility, use the arrow keys to select **Exit > Exit Discarding Changes**, and then press **enter**.

Downloading a BIOS update

- △ **CAUTION:** To prevent damage to the computer or an unsuccessful installation, download and install a BIOS update only when the computer is connected to reliable external power using the AC adapter. Do not download or install a BIOS update while the computer is running on battery power, docked in an optional docking device, or connected to an optional power source. During the download and installation, follow these instructions:

Do not disconnect power from the computer by unplugging the power cord from the AC outlet.


Do not shut down the computer or initiate Sleep or Hibernation.

Do not insert, remove, connect, or disconnect any device, cable, or cord.

To download a BIOS update:

1. Access the page on the HP Web site that provides software for your computer:
Select **Start > Help and Support > Maintain > Software Updates**.
2. Follow the instructions on the screen to identify your computer and access the BIOS update you want to download.
3. At the download area, follow these steps:
 - a. Identify the BIOS update that is later than the BIOS version currently installed on your computer. Make a note of the date, name, or other identifier. You may need this information to locate the update later, after it has been downloaded to your hard drive.
 - b. Follow the instructions on the screen to download your selection to the hard drive.

Make a note of the path to the location on your hard drive where the BIOS update will be downloaded. You will need to access this path when you are ready to install the update.

-  **NOTE:** If you connect your computer to a network, consult the network administrator before installing any software updates, especially system BIOS updates.
-


BIOS installation procedures vary. Follow any instructions that are displayed on the screen after the download is complete. If no instructions are displayed, follow these steps:

1. Open Windows Explorer by selecting **Start > Computer**.
2. Double-click your hard drive designation. The hard drive designation is typically Local Disk (C:).
3. Using the hard drive path you recorded earlier, open the folder on your hard drive that contains the update.
4. Double-click the file that has an .exe extension (for example, *filename.exe*).

The BIOS installation begins.

5. Complete the installation by following the instructions on the screen.

The system automatically shuts down after the BIOS has successfully updated.

-  **NOTE:** After a message on the screen reports a successful installation, you can delete the downloaded file from your hard drive.
-

Updating programs and drivers

To download and install software other than a BIOS update, follow these steps:


To use the HP Web site:

1. Open your Web browser, go to <http://www.hp.com/support>, and select your country or region.
2. Click the option for software and driver downloads, type your computer model number in the Search box, and then press **enter**.

– or –

If you want a specific SoftPaq, enter the SoftPaq number in the Search box, press **enter**, and follow the instructions provided. Proceed to step 6.

3. Click your specific product from the models listed.
4. Select your operating system.
5. When the list of drivers is displayed, click an updated driver to open a window containing additional information.
6. Click **Install now** to install the updated driver.

 **NOTE:** In some locations you may be able to download the driver and install it later. To do this, click **Download only** to save the file to your computer. When prompted, click **Save** and then select a storage location on your hard drive. After the file is downloaded, navigate to the folder where the file was stored, and double-click the file to install.


7. If prompted to do so, restart your computer after the installation is complete, and then verify the operation of the device.

C Backup and recovery

Recovery after a system failure is as complete as your most current backup. HP recommends that you create recovery discs immediately after software setup. As you add new software and data files, you should continue to back up your system on a regular basis to maintain a reasonably current backup.

Tools provided by the operating system and HP Recovery Manager software are designed to help you with the following tasks for safeguarding your information and restoring it in case of a system failure:


- Creating a set of recovery discs (Recovery Manager software feature). Recovery discs are used to start up (boot) your computer and restore the operating system and software programs to factory settings in case of system failure or instability.
- Backing up your information regularly to protect your important system files.
- Creating system restore points (operating system feature). System restore points allow you to reverse undesirable changes to your computer by restoring the computer to an earlier state.
- Recovering a program or driver (Recovery Manager software feature). This feature helps you reinstall a program or driver without performing a full system recovery.
- Performing a full system recovery (Recovery Manager software feature). With Recovery Manager, you can recover your full factory image if you experience system failure or instability. Recovery Manager works from a dedicated recovery partition (select models only) on the hard drive or from recovery discs you create.

 **NOTE:** Computers with a solid-state drive (SSD) may not have a recovery partition. Recovery discs have been included for computers that do not have a partition. Use these discs to recover your operating system and software. To check for the presence of a recovery partition, select **Start**, right-click **Computer**, click **Manage**, and then click **Disk Management**. If the partition is present, an HP Recovery drive is listed in the window.

Creating recovery discs


HP recommends that you create recovery discs to be sure that you can restore your system to its original factory state if you experience serious system failure or instability. Create these discs after setting up the computer for the first time.

Handle these discs carefully and keep them in a safe place. The software allows the creation of only one set of recovery discs.

 **NOTE:** If your computer does not include an internal optical drive, you can use an optional external optical drive (purchased separately) to create recovery discs, or you can purchase recovery discs for your computer from the HP Web site.

Note the following guidelines before creating recovery discs:

- You will need high-quality DVD-R, DVD+R, BD-R (writable Blu-ray), or CD-R discs. All these discs are purchased separately. DVDs and BDs have a much higher capacity than CDs. If you use CDs, up to 20 discs may be required, whereas only a few DVDs or BDs are required.

 **NOTE:** Read-write discs, such as CD-RW, DVD±RW, double-layer DVD±RW, and BD-RE (rewritable Blu-ray) discs, are not compatible with the Recovery Manager software.

- The computer must be connected to AC power during this process.
- Only one set of recovery discs can be created per computer.
- Number each disc before inserting it into the optical drive.
- If necessary, you can exit the program before you have finished creating the recovery discs. The next time you open Recovery Manager, you will be prompted to continue the disc creation process.


To create a set of recovery discs:

1. Select **Start > All Programs > Recovery Manager > Recovery Disc Creation**.
2. Follow the on-screen instructions.

Backing up your information

As you add new software and data files, you should back up your system on a regular basis to maintain a reasonably current backup. Back up your system at the following times:

- At regularly scheduled times

 **NOTE:** Set reminders to back up your information periodically.


- Before the computer is repaired or restored
- Before you add or modify hardware or software

Note the following when backing up:

- Create system restore points using the Windows® System Restore feature, and periodically copy them to disc.
- Store personal files in the Documents library and back up this folder periodically.
- Back up templates stored in their associated programs.
- Save customized settings in a window, toolbar, or menu bar by taking a screen shot of your settings. The screen shot can be a time-saver if you have to reset your preferences.

To copy the screen and paste it into a word-processing document, follow these steps:


1. Display the screen.
 2. Copy the screen:
 - To copy only the active window, press **alt+fn+prt sc**.
 - To copy the entire screen, press **fn+prt sc**.
 3. Open a word-processing document, and then select **Edit > Paste**.
 4. Save the document.
- You can back up your information to an optional external hard drive, a network drive, or discs.
 - When backing up to discs, use any of the following types of discs (purchased separately): CD-R, CD-RW, DVD+R, DVD-R, or DVD±RW. The discs you use will depend on the type of optical drive installed in your computer.

 **NOTE:** DVDs store more information than CDs, so using them for backup reduces the number of recovery discs required.

- When backing up to discs, number each disc before inserting it into the optical drive of the computer.


Using Windows Backup and Restore

To create a backup using Windows Backup and Restore, follow these steps:

 **NOTE:** Be sure that the computer is connected to AC power before you start the backup process.


NOTE: The backup process may take over an hour, depending on file size and the speed of the computer.

1. Select **Start > All Programs > Maintenance > Backup and Restore**.
2. Follow the on-screen instructions to set up and create a backup.

 **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 installing software, running utilities, or changing Windows settings. Refer to Help and Support for more information.

Using system restore points


When you back up your system, you are creating a system restore point. A system restore point allows you to save and name a snapshot of your hard drive at a specific point in time. You can then recover back to that point if you want to reverse subsequent changes made to your system.

 **NOTE:** Recovering to an earlier restore point does not affect data files saved or e-mails created since the last restore point.

You also can create additional restore points to provide increased protection for your system files and settings.

When to create restore points

- Before you add or extensively modify software or hardware
- Periodically, whenever the system is performing optimally

 **NOTE:** If you revert to a restore point and then change your mind, you can reverse the restoration.

Create a system restore point


1. Select **Start > Control Panel > System and Security > System**.
2. In the left pane, click **System Protection**.
3. Click the **System Protection** tab.
4. Under **Protection Settings**, select the disk for which you want to create a restore point.
5. Click **Create**.
6. Follow the on-screen instructions.

Restore to a previous date and time


To revert to a restore point (created at a previous date and time), when the computer was functioning optimally, follow these steps:

1. Select **Start > Control Panel > System and Security > System**.
2. In the left pane, click **System protection**.
3. Click the **System Protection** tab.
4. Click **System Restore**.
5. Follow the on-screen instructions.

Performing a recovery

 **NOTE:** You can recover only files that you have previously backed up. HP recommends that you use HP Recovery Manager to create a set of recovery discs (entire drive backup) as soon as you set up your computer.

Recovery Manager software allows you to repair or restore the system if you experience system failure or instability. Recovery Manager works from recovery discs or from a dedicated recovery partition (select models only) on the hard drive. However, if your computer includes a solid-state drive (SSD), you may not have a recovery partition. If that is the case, recovery discs have been included with your computer. Use these discs to recover your operating system and software.

 **NOTE:** Windows has its own built-in repair features, such as System Restore. If you have not already tried these features, try them before using Recovery Manager.


NOTE: Recovery Manager recovers only software that was preinstalled at the factory. Software not provided with this computer must be downloaded from the manufacturer's Web site or reinstalled from the disc provided by the manufacturer.

Recovering from the recovery discs

To restore the system from the recovery discs:

1. Back up all personal files.
2. Insert the first recovery disc into the optical drive and restart the computer.
3. Follow the on-screen instructions.

Recovering from the dedicated recovery partition (select models only)

 **NOTE:** Computers with an SSD may not have a recovery partition. If the computer does not have a recovery partition, you will not be able to recover using this procedure. Recovery discs have been included for computers that do not have a partition. Use these discs to recover your operating system and software.

On some models, you can perform a recovery from the partition on the hard drive, accessed by pressing either the Start button or **f11**. This restores the computer to its factory condition.

To restore the system from the partition, follow these steps:

1. Access Recovery Manager in either of the following ways:
 - Select **Start > All Programs > Recovery Manager > Recovery Manager**.
 - or –
 - Turn on or restart the computer, and then press **esc** while the “Press the ESC key for Startup Menu” message is displayed at the bottom of the screen. Then, press **f11** while the “Press <F11> for recovery” message is displayed on the screen.
2. Click **System Recovery** in the **Recovery Manager** window.
3. Follow the on-screen instructions.

Index

Symbols/Numerics

1394 Power Saving 138

A

AC adapter

connecting 82

identifying 15

testing 83

administrator password

creating 127

entering 128

managing 127

airport security devices 93

antennas 14

antivirus software 129

applications key, Windows 8

arrow buttons 71

audio devices, connecting

external 52

audio features 52

audio functions, checking 52

audio-in (microphone) jack,

identifying 10, 47

audio-out (headphone) jacks,

identifying 10, 47

AutoPlay 98

B

back button 66, 71

backing up

customized window, toolbar,
and menu bar settings 145

personal files 145

templates 145

battery

calibrating 89

charging 86, 89

conserving power 91

discharging 87

disposing 91

inserting 85

low battery levels 87

recharging 90

removing 85

replacing 91

storing 91

battery bay, identifying 13

Battery Check 84

battery light 5, 10, 86, 87

battery power 84

battery release latch,

identifying 13, 85

battery temperature 91

battery, identifying 15

battery, inserting 68, 75

bays

battery 13, 16

hard drive 13

BIOS, updating 140

Blu-ray Disc

playing 97

removing 101

Bluetooth device 17, 27

Bluetooth label 16

boot options 138

boot order 138

button sound 138

buttons

arrow 71

back 66, 71

change/page up 73

channel/page down 66, 73

channel/page up 65

clear 72

down 66

DVD 65, 73

enter 74

fast-forward 66

forward 74

guide 71

information 67, 73

keypad 72

left 66

live TV 72

MediaSmart 48, 65, 72

mute 67, 71

next 66, 73

OK 66, 71

play 72

play/pause 66

power 7, 65, 71

previous 66, 72

print 72

quick reference 65, 71

recorded TV 71

rewind 65, 72

right 66

snapshot 72

stop 65, 73

switch screens 65, 72

Teletext 73

TouchPad on/off 4, 36

TouchPad right/left 4, 36

up 66

volume down 67, 71

volume mute 7, 48, 49

volume up 67, 71

Windows Media Center 65,

73

wireless 8

zoom 72

C

cables

eSATA 114

LAN 35

modem 31

security 130

USB 112

- calibrating battery 89
 - caps lock light, identifying 5
 - Card Reader Power Saving 138
 - CD
 - copying 99
 - playing 97
 - removing 101
 - CD drive 95, 102
 - Certificate of Authenticity label 16
 - change/page up button 73
 - changing the language of Setup Utility 135
 - channel/page down button 66, 73
 - channel/page up button 65
 - charging batteries 86, 89
 - checking audio functions 52
 - clear button 72
 - compartments
 - memory module 13
 - Mini Card 13
 - components
 - additional hardware 15
 - bottom 13
 - front 10
 - left-side 12
 - rear 10
 - right-side 11
 - top 4
 - composite video 40
 - configuring ExpressCards 118
 - connecting to a WLAN 23
 - Connection Manager icon 18
 - connection, external power 82
 - connector, power 11
 - conservation, power 91
 - copyright warning 99
 - cord, power 15
 - corporate WLAN connection 23
 - country-specific modem cable adapter 32
 - critical battery level 87
 - critical updates, software 130
- D**
- device drivers
 - HP drivers 63
 - Windows drivers 63
 - Diagnostics menu 138
 - digital card
 - defined 116
 - inserting 116
 - removing 117
 - stopping 117
 - Digital Media Slot light, identifying 12
 - Digital Media Slot, identifying 12
 - Disk Cleanup software 103
 - Disk Defragmenter software 103
 - disk performance 103
 - diskette drive 102
 - display
 - image, switching 40
 - screen brightness hotkeys 41
 - display switch, identifying 9
 - displaying system information 136
 - down button 66
 - drive light, identifying 5, 10
 - drive light, indicating protection status 104
 - drive media 77
 - drives
 - boot order 138
 - caring for 93
 - DVD
 - changing region setting 98
 - copying 99
 - playing 97
 - removing 101
 - DVD button 65, 73
 - DVD drive 95, 102
 - DVD region settings 98
- E**
- earbuds 47
 - encryption 22
 - enter button 74
 - entering a power-on password 128
 - entering an administrator password 128
 - eSATA cable, connecting 114
 - eSATA devices
 - connecting 114
 - removing 115
 - eSATA/USB port, identifying 12, 114
 - esc key, identifying 8
 - exiting Setup Utility 137
 - expansion port, identifying 12, 115
 - ExpressCard
 - configuring 118
 - inserting 118
 - removing 120
 - removing insert 118
 - stopping 120
 - ExpressCard slot, identifying 12, 118
 - external audio devices, connecting 52
 - external drive 102
 - external monitor port, identifying 12, 53
- F**
- f11 148
 - fan always on 138
 - fast-forward button 66
 - fingerprint reader, identifying 8, 131
 - firewall 22
 - firewall software 129
 - fn key, identifying 8, 38
 - forward button 74
 - full system recovery 143
 - function keys, identifying 8, 38
- G**
- graphics modes, switching 80
 - guide button 71
- H**
- hard drive
 - HP ProtectSmart Hard Drive Protection 104
 - installing 107
 - removing 106
 - replacing 106
 - hard drive bay, identifying 13
 - hard drive self test 138
 - HDMI 12, 40, 54
 - headphone (audio-out) jacks 10, 47
 - Help and Support hotkey 39
 - Hibernation
 - exiting 78

- initiated during critical battery level 87
- initiating 78
- high-definition devices, connecting 54
- hotkeys
 - audio CD or DVD controls 42
 - decreasing screen brightness 41
 - description 38
 - displaying system information 39
 - increasing screen brightness 41
 - initiating QuickLock 41
 - initiating Sleep 41
 - opening Help and Support 39
 - opening Print Options window 40
 - opening Web browser 40
 - switching screen image 40
 - using 38
- HP Connection Manager software 20
- HP Mobile Broadband Module 24, 25
- HP ProtectSmart Hard Drive Protection 104
- HP QuickWeb Setup Utility 138
- using 1
- hubs 112

I

- icons
 - Connection Manager 18
 - network 18, 29
 - wired network 18
 - wireless 18
- information button 67, 73
- infrared lens 64, 70
- infrared lens, identifying 10
- inserting battery 68, 75
- interference, minimizing 30
- internal display switch, identifying 9
- Internet connection setup 21
- issues, resolving 58

J

- jacks
 - audio-in (microphone) 10, 47
 - audio-out (headphone) 10, 47
 - RJ-11 (modem) 11
 - RJ-45 (network) 12
 - TV antenna/cable 11, 47

K

- keyboard hotkeys, identifying 38
- keypad buttons 72
- keypad keys, identifying 8
- keypad, embedded
 - enabling and disabling 44
 - identifying 43
 - switching key functions 44
 - using 44
- keypad, external
 - num lock 44
 - using 44
- keys
 - esc 8
 - fn 8
 - function 8
 - keypad 8
 - Windows applications 8
 - Windows logo 8

L

- labels
 - Bluetooth 16
 - HP Mobile Broadband 16
 - Microsoft Certificate of Authenticity 16
 - modem approval 16
 - regulatory 16
 - service tag 16
 - SIM 16
 - wireless certification 16
 - WLAN 16
- LAN Power Saving 138
- language support 138
- latches
 - battery release 13
 - SmartBay release 13
- left button 66
- lights
 - battery 5, 10
 - caps lock 5

- Digital Media Slot 12
- drive 5, 10, 104
- num lock 6, 43
- power 5, 10
- TouchPad 4
- volume down 5
- volume mute 5
- volume up 5
- webcam 9
- wireless 6
- live TV button 72
- local area network (LAN)
 - cable required 35
 - connecting cable 35
- low battery level 87

M

- Main menu 137
- maintenance
 - Disk Cleanup 103
 - Disk Defragmenter 103
- managing a power-on password 128
- managing an administrator password 127
- media controls, hotkeys 38, 42, 50
- MediaSmart
 - starting 48, 51
 - using 51
- MediaSmart button 48, 65, 72
- MediaSmart software 51
- memory module
 - inserting 122
 - removing 122
- memory module compartment cover
 - removing 122
 - replacing 123
- memory module compartment, identifying 13
- memory test 138
- microphone (audio-in) jack 10
- microphones (internal), identifying 9, 47
- Microsoft Certificate of Authenticity label 16
- Mini Card compartment, identifying 13
- minimizing interference 30

- modem approval label 16
 - modem cable
 - connecting 31
 - country-specific cable adapter 32
 - noise suppression circuitry 31
 - modem software
 - setting/adding location 32
 - travel connection problems 34
 - monitor port, external 12
 - monitor, connecting 53
 - mouse, external
 - connecting 37
 - setting preferences 37
 - multimedia components, identifying 47
 - multimedia software 51
 - mute button 67, 71
 - mute button, identifying 7, 48, 49
- N**
- navigating in Setup Utility 135
 - network cable
 - connecting 35
 - noise suppression circuitry 35
 - network icons 18, 29
 - network key 29
 - network security codes
 - network key 29
 - SSID 29
 - next button 66, 73
 - noise suppression circuitry
 - modem cable 31
 - network cable 35
 - num lock light, identifying 6, 43
 - num lock, external keypad 44
- O**
- OK button 71
 - Ok button 66
 - operating system
 - Microsoft Certificate of Authenticity label 16
 - Product Key 16
 - optical disc
 - Blu-ray Disc 97
 - CD-R 96
 - CD-RW 96
 - DVD±R 96
 - DVD±RW 96
 - LightScribe DVD+R 97
 - removing 101
 - using 95
 - optical drive 94
- P**
- passwords
 - administrator 127
 - power-on 128
 - set in Setup Utility 127
 - set in Windows 126
 - performing a recovery 148
 - play/pause button 66, 72
 - ports
 - eSATA/USB 12
 - expansion 12, 115
 - external monitor 12, 53
 - HDMI 12, 54
 - USB 11, 12, 112
 - power
 - connecting 82
 - conserving 91
 - power button 65, 71
 - power button, identifying 7
 - power connector, identifying 11
 - power cord, identifying 15
 - power lights, identifying 5, 10
 - power-on password
 - creating 128
 - entering 128
 - managing 128
 - previous button 66, 72
 - print button 72
 - Print Options window hotkey 40
 - Processor C6 State 138
 - Product Key 16
 - product name and number, computer 16
 - programs, updating 142
 - projector, connecting 53
 - public WLAN connection 23
- Q**
- QuickLock 126
 - QuickLock hotkey 41
- R**
- readable media 77
 - recorded TV button 71
 - recovering a program or driver 143
 - recovering from the dedicated recovery partition 148
 - recovering from the recovery discs 148
 - recovery discs 143, 144
 - Recovery Manager 143, 148
 - recovery partition 143
 - recovery, system 148
 - region codes, DVD 98
 - registering fingerprints 132
 - regulatory information
 - modem approval label 16
 - regulatory label 16
 - wireless certification labels 16
 - restore points 147
 - restoring default settings 136
 - rewind button 65, 72
 - right button 66
 - RJ-11 (modem) jack, identifying 11
 - RJ-45 (network) jack, identifying 12
- S**
- S-Video 40
 - screen brightness hotkeys 41
 - screen image, switching 40
 - scroll zone, TouchPad 4, 36
 - secondary hard drive self test 138
 - security
 - features 125
 - passwords 126
 - security cable 130
 - security cable slot, identifying 12
 - Security menu 137
 - security, wireless 22
 - selecting in Setup Utility 135
 - serial number, computer 16
 - service tag 16
 - setup of WLAN 21
 - Setup Utility, passwords set in 127
 - shutting down 92
 - SIM
 - inserting 25
 - removing 26
 - SIM label 16

- SIM slot, identifying 13
- Sleep
 - exiting 77
 - initiating 77
- Sleep hotkey 41
- slots
 - Digital Media 12
 - ExpressCard 12
 - memory module 13
 - security cable 12
 - SIM 13
- SmartBay
 - identifying 11
 - inserting a drive 110
 - replacing a drive 110
- SmartBay release latch, identifying 13
- snapshot button 72
- software
 - antivirus 129
 - critical updates 130
 - Disk Cleanup 103
 - Disk Defragmenter 103
 - firewall 129
 - HP Connection Manager 20
 - MediaSmart 51
 - multimedia 51
 - Windows Media Player 51
 - Wireless Assistant 19
 - WWAN 20
- solid-state drive (SSD) 143, 148
- speakers, identifying 7, 47
- starting Setup Utility 134
- stop button 65, 73
- storing battery 91
- supported discs 144
- switch screens button 65, 72
- switchable graphics 80
- System Configuration menu 138
- system failure or instability 143
- system information 137
- system information hotkey 39
- system recovery 148
- system restore points 143, 147

T

- Teletext button 73
- temperature 91

- TouchPad
 - buttons 4
 - identifying 4, 36
 - lights 4
 - scroll zone 4
 - setting preferences 37
- TouchPad light, identifying 4, 36
- TouchPad on/off button, identifying 4, 36
- TouchPad right/left buttons, identifying 36
- TouchPad scroll zone, identifying 36
- traveling with the computer
 - modem approval label 16
 - wireless certification labels 16
- troubleshooting
 - disc burning 61
 - disc play 60
 - DVD movie play 61
 - external display 61
 - HP device drivers 63
 - modems 34
 - optical disc tray 58
 - optical drive detection 59
 - Windows device drivers 63
- turning off the computer 92
- TV antenna/cable jack, identifying 11, 47
- TV, watching 56

U

- unresponsive system 92
- up button 66
- USB cable, connecting 112
- USB devices
 - connecting 112
 - description 112
 - removing 113
- USB hubs 112
- USB ports, identifying 11, 12, 112
- using Setup Utility 135
- using system restore 147

V

- vents, identifying 10, 13
- video transmission types 40
- video, using 53
- Virtualization Technology 138

- volume down button 49, 67, 71
- volume down light, identifying 5
- volume mute button, identifying 7, 48, 49
- volume mute light, identifying 5
- volume scroll zone, identifying 7
- volume up button 67, 71
- volume up light, identifying 5
- volume, adjusting 49

W

- watching TV 56
- Web browser hotkey 40
- webcam
 - identifying 9, 47
 - using 57
- webcam light, identifying 9, 47
- Windows applications key, identifying 8
- Windows logo key, identifying 8
- Windows Media Center button 65, 73
- Windows, passwords set in 126
- wireless antennas 14
- Wireless Assistant software 18, 19
- wireless button
 - identifying 8
 - using 19
- wireless certification label 16
- wireless controls
 - button 18
 - Connection Manager software 18
 - operating system 18
 - Wireless Assistant software 18
- wireless devices, types 17
- wireless icon 18
- wireless light 6, 18
- wireless network (WLAN)
 - connecting 23
 - corporate WLAN connection 23
 - described 17
 - equipment needed 21
 - functional range 23
 - public WLAN connection 23
 - security 22
- WLAN label 16

WLAN module 13
writable media 77
WWAN module 13, 24
WWAN software 20

Z

zoom button 72

