User Guide

Product notice

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

Not all features are available in all editions of Windows. This computer may require upgraded and/or separately purchased hardware, drivers and/or software to take full advantage of Windows functionality. Go to http://www.microsoft.com for details.

To access the latest user guide, go to http://www.hp.com/support, and select your country. Select **Drivers & Downloads**, and then follow the on-screen instructions.

Software terms

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 come into contact with 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).

Processor configuration setting (select models only)

IMPORTANT: Select computer models are configured with an Intel® Pentium® N35xx series or a Celeron® N28xx/N29xx series processor and a Windows® operating system. **If your computer is configured as described, do not change the processor configuration setting in msconfig.exe from 4 or 2 processors to 1 processor.** If you do so, your computer will not restart. You will have to perform a factory reset to restore the original settings.

Table of contents

1 Starting right

This computer is a powerful tool designed to enhance your work and entertainment. Read this chapter to learn about best practices after you set up your computer and about where to find additional HP resources.

Best practices

After you set up and register the computer, we recommend the following steps to get the most out of your smart investment:

●   Back up your hard drive by creating recovery discs or a recovery flash drive. See Backing up, restoring, and recovering on page 37.

●   If you haven't already done so, connect to a wired or wireless network. See details in Connecting to a network on page 10.

●   Become familiar with the computer hardware and software. For more information, see Getting to know your computer on page 3 and Enjoying entertainment features on page 13.

●   Update or purchase antivirus software.

More HP resources

You have already used *Setup Instructions* to turn on the computer and locate this guide. For product details, how-to information, and more, use this table.

Resource	Contents
Setup Instructions	● Overview of computer setup and features.
Help and Support To access Help and Support, select **Start > Help and Support**. For U.S. support, go to http://www.hp.com/go/contactHP. For worldwide support, go to http://welcome.hp.com/country/us/en/wwcontact_us.html.	● A broad range of how-to information and troubleshooting tips.
Worldwide support To get support in your language, go to http://welcome.hp.com/country/us/en/wwcontact_us.html.	● Chat online with an HP technician ● Support telephone numbers ● HP service center locations
Safety & Comfort Guide To access this guide, select **Start > HP Support Assistant > Next > My computer > User Guides**. – or – Go to http://www.hp.com/ergo.	● Proper workstation setup ● Guidelines for posture and work habits that increase your comfort and decrease your risk of injury ● Electrical and mechanical safety information
Regulatory, Safety and Environmental Notices To access this guide, select **Start > HP Support Assistant > Next > My computer > User Guides**.	● Important regulatory notices, including proper battery disposal information
Limited Warranty* To access this guide, select **Start > HP Support Assistant > Next > My computer > User Guides**. – or – Go to http://www.hp.com/go/orderdocuments.	● Specific warranty information about this computer

*You can find the expressly provided HP Limited Warranty applicable to your product located with the user guides on your computer and/or on the CD/DVD provided in the box. In some countries/regions, HP may provide a printed HP Limited Warranty in the box. For countries/regions where the warranty is not provided in printed format, you may request a printed copy from http://www.hp.com/go/orderdocuments or write to:

- **North America**: Hewlett-Packard, MS POD, 11311 Chinden Blvd., Boise, ID 83714, USA

- **Europe, Middle East, Africa**: Hewlett-Packard, POD, Via G. Di Vittorio, 9, 20063, Cernusco s/Naviglio (MI), Italy

- **Asia Pacific**: Hewlett-Packard, POD, P.O. Box 200, Alexandra Post Office, Singapore 911507

When you request a printed copy of your warranty, please include your product number, warranty period (found on your service label), name, and postal address.

IMPORTANT: Do NOT return your HP product to the addresses above. For U.S. support, go to http://www.hp.com/go/contactHP. For worldwide support, go to http://welcome.hp.com/country/us/en/wwcontact_us.html.

2 Getting to know your computer

Finding your hardware and software information

Locating hardware

To find out what hardware is installed on your computer:

1. Select **Start > Control Panel**.

2. Select **System and Security**, select **System**, and then click **Device Manager** in the left column.

   A list displays all the devices installed on your computer.

To find out information about system hardware components and the system BIOS version number, press fn +esc.

Locating software

To find out what software is installed on your computer:

▲ Select **Start > Control Panel > Programs and Features**.

Identifying components

Depending on the model, your computer may have some of the following components. To see which components are specific to your model, refer to the *Setup Instructions* poster provided in the computer box.

Component		Description
⚡	AC adapter light	● Amber: The battery is charging.
		● White: The AC adapter is connected and the battery is charged.
		● Off: The computer is using battery power.
	Action keys	Execute frequently used system functions.
		NOTE: On select models, the f5 action key turns the radiance backlight keyboard (also known as keyboard backlight) feature off or on.
✈	Airplane mode key (also referred to as the wireless button)	Turns the airplane mode and wireless feature on or off.
		NOTE: A wireless network must be set up before a wireless connection is possible.
🎧	Audio-out (headphone)/Audio-in (microphone) jack	Connects optional powered stereo speakers, headphones, earbuds, a headset, or a television audio cable. Also connects an optional headset microphone. This jack does not support optional microphone-only devices.
		WARNING! To reduce the risk of personal injury, adjust the volume before putting on headphones, earbuds, or a headset. For additional safety information, see the *Regulatory, Safety, and Environmental Notices*. To access the user guides, select **Start > Help and Support > User Guides**.
		NOTE: When a device is connected to the jack, the computer speakers are disabled.
		NOTE: Be sure that the device cable has a 4-conductor connector that supports both audio-out (headphone) and audio-in (microphone).
	Battery bay	Holds the battery.
🔒	Battery lock	Locks the battery in the battery bay.
	Battery release latch	Releases the battery.
	Caps lock light	On: Caps lock is on, which switches the keys to all capital letters.
	esc key	Displays system information when pressed in combination with the fn key.
	Fingerprint reader	Allows a fingerprint logon to Windows, instead of a password logon.
	fn key	Executes frequently used system functions when pressed in combination with the esc key, or on select models, the b key or the spacebar.
⬢	Hard drive light	● Blinking white: The hard drive is being accessed.
		● Amber: HP 3D DriveGuard has temporarily parked the hard drive.

Component		Description
HDMI	HDMI port	Connects an optional video or audio device, such as a high-definition television, any compatible digital or audio component, or a high-speed High-Definition Multimedia Interface (HDMI) device.
	HP Triple Bass Reflex Subwoofer	Provides superior bass sound.
	Integrated numeric keypad	When num lock is on, it can be used like an external numeric keypad.
	Internal display switch	Turns off the display and initiates Sleep if the display is closed while the power is on.
		NOTE: The internal display switch is not visible from the outside of the computer.
	Internal microphones	Record sound.
	Left control zone	Textured area that allows you to perform additional gestures.
	Left TouchPad button	Functions like the left button on an external mouse.
	Memory card reader	Reads optional memory cards that enable you to store, manage, share or access information.
		To insert a card:
		▲ Hold the card label-side up, with connectors facing the slot, insert the card into the slot, and then push in on the card until it is firmly seated.
		To remove a card:
		▲ Press in on the card it until it pops out.
	Mute light	● Amber: Computer sound is off.
		● Off: Computer sound is on.
	num lock key	Alternates between the navigational and numeric functions on the integrated numeric keypad.
	Optical drive	Depending on your computer model, reads an optical disc or reads and writes to an optical disc.
		NOTE: For disc compatibility information, go to the Help and Support web page. Select **Drivers & Downloads**, and then follow the on-screen instructions.
	Power button	● When the computer is off, press the button to turn on the computer.
		● When the computer is on, press the button briefly to initiate Sleep.
		● When the computer is in the Sleep state, press the button briefly to exit Sleep.
		● When the computer is in Hibernation, press the button briefly to exit Hibernation.
		CAUTION: Pressing and holding down the power button will result in the loss of unsaved information.
		If the computer has stopped responding and Windows shutdown procedures are ineffective, press and hold the power button down for at least 5 seconds to turn off the computer.

Component		Description
		To learn more about your power settings: Select **Start > Control Panel > System and Security > Power Options**.
	Power connector	Connects an AC adapter.
⚡	Power light	- On: The computer is on. - Blinking: The computer is in the Sleep state, a power-saving state. The computer shuts off power to the display and other components. - Off: The computer is off or in Hibernation. Hibernation is a power-saving state that uses the least amount of power.
	Right control zone	Textured area that allows you to perform additional gestures.
	Right TouchPad button	Functions like the right button on an external mouse.
⊹⊹⊹	RJ-45 (network) jack/status lights	Connects a network cable. - White: The network is connected. - Amber: Activity is occurring on the network.
🔒	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.
	Speakers	Produce sound.
	TouchPad zone	Reads your finger gestures to move the pointer or activate items on the screen. **NOTE:** The TouchPad also supports edge-swipe gestures.
SS⚡	USB 3.0 charging (powered) port	Connects an optional USB device, such as a keyboard, mouse, external drive, printer, scanner or USB hub. Standard USB ports will not charge all USB devices or will charge using a low current. Some USB devices require power and require you to use a powered port. **NOTE:** USB charging ports can also charge select models of cell phones and MP3 players, even when the computer is off.
SS⇔	USB 3.0 port	Connects an optional USB device, such as a keyboard, mouse, external drive, printer, scanner or USB hub.
	Vents	Enable airflow to cool internal components. **NOTE:** The computer fan starts up automatically to cool internal components and prevent overheating. The number of vents varies depending on the computer model. It is normal for the internal fan to cycle on and off during routine operation.
	Webcam	Records video and captures photographs. Some models allow you to video conference and chat online using streaming video. For information on using the webcam, select **Start > All Programs > Communication and Chat > Cyberlink YouCam**.
	Webcam light	Send and receive wireless signals to communicate with wireless local area networks (WLANs). **NOTE:** Depending on your computer model, the number of antennas may vary.

Component		Description
	Windows application key	Displays options for a selected object.
	Windows key	Returns you to the Start screen from an open app or the Windows desktop. **NOTE:** Pressing the Windows key again will return you to the previous screen.
	WLAN antennas	Send and receive wireless signals to communicate with wireless local area networks (WLANs). **NOTE:** Depending on your computer model, the number of antennas may vary.

Labels

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

IMPORTANT: Check the following locations for the labels described in this section: the bottom of the computer, inside the battery bay, under the removable service door, or on the back of the display.

- Service label—Provides important information to identify your computer. When contacting support, you will probably be asked for the serial number, and possibly for the product number or the model number. Locate these numbers before you contact support.

  Your service label will resemble one of the examples shown below. Refer to the illustration that most closely matches the service label on your computer.

Component	
(1)	Serial number
(2)	Product number

Component	
(3)	Warranty period
(4)	Model number (select models only)

- Microsoft® Certificate of Authenticity label (select models only prior to Windows 8)—Contains the Windows Product Key. You may need the Product Key to update or troubleshoot the operating system. HP platforms with Windows 8 or Windows 8.x preinstalled do not have the physical label. Instead a Digital Product Key is electronically installed.

  NOTE: The Digital Product Key is automatically recognized and activated by Microsoft operating systems when a Windows 8 or Windows 8.x operating system is reinstalled using HP-approved recovery methods.

- Regulatory label(s)—Provide(s) regulatory information about the computer.

- Wireless certification label(s)—Provide(s) information about optional wireless devices and the approval markings for the countries or regions in which the devices have been approved for use.

Using the action keys

Depending on the model, your computer may have the function key features as described in this table.

An action key performs an assigned function. The icon on each of the action keys illustrates the assigned function for that key.

To use an action key function, press and hold the key.

CAUTION: Use extreme care when making changes in Setup Utility (BIOS). Errors can prevent the computer from operating properly.

NOTE: The action key feature is enabled at the factory. You can disable this feature in Setup Utility (BIOS). Refer to Help and Support for additional information.

After you have disabled the action key feature, you can still perform each function by pressing the fn key in combination with the appropriate action key.

Icon	Description
?	Opens Help and Support, which provides tutorials, information about the Windows operating system and your computer, answers to questions, and updates to your computer.
	Help and Support also provides automated troubleshooting tools and access to support.
☀	Decreases the screen brightness incrementally as long as you hold down the key.
☀	Increases the screen brightness incrementally as long as you hold down the key.
|□|	Switches the screen image between display devices connected to the system. For example, if a monitor is connected to the computer, repeatedly pressing this key alternates the screen image from the computer display to the monitor display to a simultaneous display on both the computer and the monitor.
░▪▪▪	Turns the radiance backlight keyboard (also known as keyboard backlight) feature off or on. **NOTE:** To conserve battery power, turn off this feature.
🔇	Mutes or restores speaker sound.

Icon	Description
◀−	Decreases speaker volume incrementally while you hold down the key.
◀+	Increases speaker volume incrementally while you hold down the key.
⏮◀◀	Plays the previous track of an audio CD or the previous section of a DVD or a BD.
▶❚❚	Begins, pauses, or resumes playback of an audio CD, a DVD, or a BD.
▶▶❚	Plays the next track of an audio CD or the next section of a DVD or a BD.
✈	Turns the airplane mode and wireless feature on or off. **NOTE:** The airplane mode key is also referred to as the wireless button. **NOTE:** A wireless network must be set up before a wireless connection is possible.

3 Connecting to a network

Your computer can travel with you wherever you go. But even at home, you can explore the globe and access information from millions of websites using your computer and a wired or wireless network connection. This chapter will help you get connected to that world.

Connecting to a wireless network

Your computer may be equipped with one or more of the following wireless devices:

- 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, the mobile wireless device in your computer communicates with a wireless router or a wireless access point.

- Bluetooth device—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.

For more information about wireless technology, the Internet, and networking, see the information and website links provided in Help and Support.

For more information about wireless technology, the Internet, and networking, see the information and website links provided in Help and Support. Select **Start > Help and Support**.

Using the wireless controls

You can control the wireless devices in your computer using one or more of these features:

- Wireless button or wireless key (also called the airplane mode key) (referred to in this chapter as the wireless button)
- Operating system controls

Wireless button

The computer has a wireless button, one or more wireless devices, and, on select models, one or two wireless lights. All the wireless devices on your computer are enabled at the factory. If your computer has a wireless light, the wireless light is on (white) when your computer is on.

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

Operating system controls

The Network and Sharing Center allows you to set up a connection or network, connect to a network, and diagnose and repair network problems.

To use operating system controls:

To use operating system controls, select **Start > Control Panel > Network and Internet > Network and Sharing Center**.

For more information, see the information provided in Help and Support.

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

Connecting to a WLAN

To connect to a WLAN, follow these steps:

1. Be sure that the WLAN device is on.

2. From the Start screen or the Windows desktop, point to the upper-right or lower-right corner of the display to reveal the charms.

3. Click the network status icon in the notification area, at the far right of the taskbar

4. Select your WLAN from the list.

5. Click **Connect**.

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

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

    NOTE: If you do not see the WLAN you want to connect to, from the Windows desktop, right-click the network status icon, and then select **Open Network and Sharing Center**. Click **Set up a new connection or network**. A list of options is displayed, allowing you to manually search for and connect to a network or to create a new network connection.

6. Follow the on-screen instructions to complete the connection.

After the connection is made, place the mouse pointer over the network status 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.

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)

● Phones (cellular, cordless, smartphone)

● Imaging devices (printer, camera)

● Audio devices (headset, speakers)

● Mouse

● External keyboard

Bluetooth devices provide peer-to-peer capability that allows you to set up a PAN of Bluetooth devices. For information about configuring and using Bluetooth devices, see the Bluetooth software Help.

Connecting to a wired network—LAN (select models only)

Use a LAN connection if you want to connect the computer directly to a router in your home (instead of working wirelessly), or if you want to connect to an existing network at your office.

Connecting to a LAN requires an 8-pin, RJ-45 (network) cable and a network jack on the computer.

To connect the network cable, follow these steps:

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

2. Plug the other end of the network cable into a network wall jack **(2)** or router.

> **NOTE:** If the network cable contains noise suppression circuitry **(3)**, which prevents interference from TV and radio reception, orient the circuitry end of the cable toward the computer.
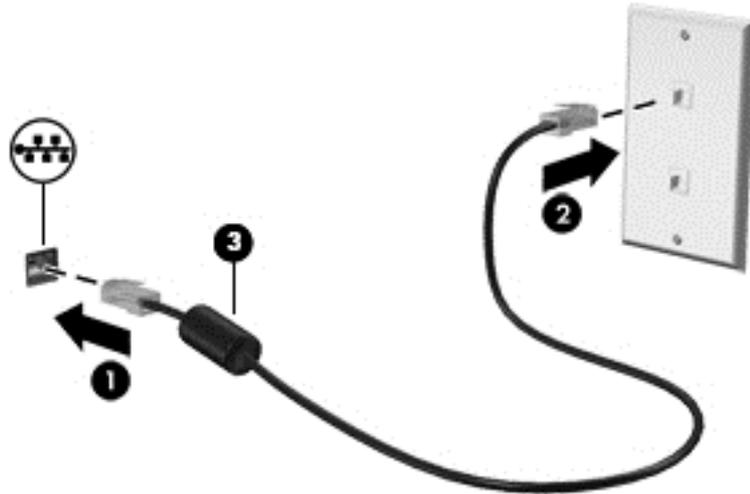
Sharing data and drives and accessing software

When your computer is part of a network, you are not limited to using only the information that is stored in your computer. Computers connected to the network can exchange software and data with each other.

For more information about sharing files, folders, or drives, see the information provided in Help and Support.

1. From the computer you are sharing, select **Start > Computer**.

2. Right-click what you want to share, and click **Properties**.

3. Select the **Sharing** tab, and then select **Advanced Sharing**.

4. Select the **Share this folder** check box.

5. Type a name in the **Share name** text box.

6. Click **Apply**, and then click **OK**.

7. To view the shared drive:

   ▲ Select **Start > Control Panel > Network and Internet > Network and Sharing Center**.

> **NOTE:** When a disc like a DVD movie or game is copy-protected, it cannot be shared.

4   Enjoying entertainment features

Use your HP computer as an entertainment hub to socialize via the webcam, enjoy and manage your music, and download and watch movies. Or, to make your computer an even more powerful entertainment center, connect external devices like a monitor, projector, or TV, or speakers and headphones.

Using a webcam (select models only)

The computer has an integrated webcam that records video and captures photographs. Some models may allow you to video conference and chat online using streaming video.

▲   To start the webcam, select **Start > All Programs > Communication and Chat > CyberLink YouCam**.

For details about using the webcam, select **Start > Help and Support**.

Using audio

On your computer, or on select models using an external optical drive, you can play music CDs, download and listen to music, stream audio content from the web (including radio), record audio, or mix audio and video to create multimedia. To enhance your listening enjoyment, attach external audio devices such as speakers or headphones.

Connecting speakers

You can attach wired speakers to your computer by connecting them to a USB port or to the audio-out (headphone) jack on your computer or on a docking station.

To connect wireless speakers to your computer, follow the device manufacturer's instructions. To connect high-definition speakers to the computer, see Setting up HDMI audio on page 15. Before connecting speakers, lower the volume setting.

Connecting headsets

⚠ **WARNING!**   To reduce the risk of personal injury, lower the volume setting before putting on headphones, earbuds, or a headset. For additional safety information, see the *Regulatory, Safety and Environmental Notices*. To access this guide, select **Start > HP Support Assistant > Next > My computer > User Guides**.

Headphones combined with a microphone are called *headsets*. You can connect wired headsets to the audio-out (headphone)/audio-in (microphone) jack on your computer.

To connect *wireless* headsets to your computer, follow the device manufacturer's instructions.

Using Beats Audio (select models only)

Beats Audio is an enhanced audio feature that provides a deep, controlled bass while maintaining a clear sound. You can experience Beats Audio through the computer's internal speakers, through external speakers connected to a USB port, or through Beats Audio headphones connected to the headphone jack.

Accessing Beats Audio Control Panel

Use Beats Audio Control Panel to view and manually control audio and bass settings.

▲ To open Beats Audio Control Panel, select **Start > Control Panel > Hardware and Sound > Beats Audio Control Panel**.

Enabling and disabling Beats Audio

▲ To enable or disable Beats Audio, press the fn key in combination with the b key.

Using video

Your computer is a powerful video device that enables you to watch streaming video from your favorite websites and download video and movies to watch on your computer when you are not connected to a network.

To enhance your viewing enjoyment, use one of the video ports on the computer to connect an external monitor, projector, or TV.

IMPORTANT: Be sure that the external device is connected to the correct port on the computer, using the correct cable. Follow the device manufacturer's instructions.

For information on using your video features, refer to Help and Support.

Connecting video devices using an HDMI cable (select models only)

NOTE: To connect an HDMI device to your computer, you need an HDMI cable, purchased separately.

To see the computer screen image on a high-definition TV or monitor, connect the high-definition device according to the following instructions:

1. Connect one end of the HDMI cable to the HDMI port on the computer.
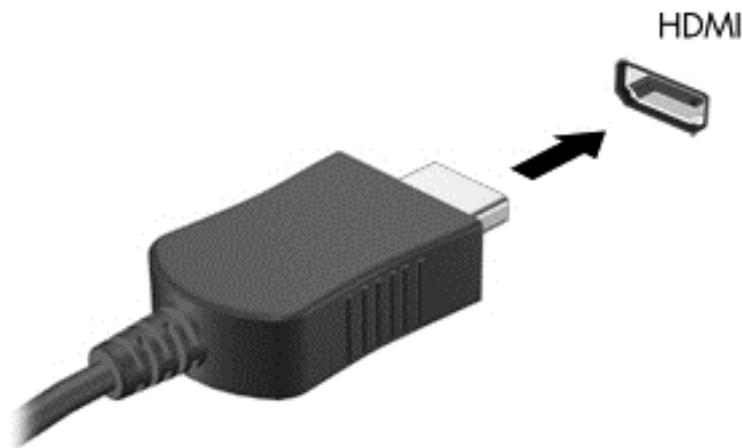
2. Connect the other end of the cable to the high-definition TV or monitor.

3. Press f4 to alternate the computer screen image between 4 display states:

   ● **PC screen only:** View the screen image on the computer only.

   ● **Duplicate:** View the screen image simultaneously on both the computer and the external device.

   ● **Extend:** View the screen image extended across the computer and the external device.

   ● **Second screen only:** View the screen image on the external device only.

Each time you press f4, the display state changes.

Setting up HDMI audio

HDMI is the only video interface that supports high-definition video and audio. After you connect an HDMI TV to the computer, you can then turn on HDMI audio by following these steps:

1. From the Windows desktop, right-click the **Speakers** icon in the notification area, at the far right of the taskbar, and then select **Playback devices**.

2. On the **Playback** tab, select the name of the digital output device.

3. Click **Set Default**, and then click **OK**.

To return the audio stream to the computer speakers:

1. From the Windows desktop, 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**.

5 Navigating the screen

To quickly return to the Start screen, press the Windows key ▣ on a keyboard or the Windows button

▣ on a tablet.

You can navigate the computer screen in the following ways:

- Touch gestures
- Keyboard and optional mouse (purchased separately)

NOTE: An external USB mouse (purchased separately) can be connected to a USB ports on the computer.

Using the TouchPad and touch screen gestures

The TouchPad helps you navigate the computer screen and control the pointer using simple touch gestures. To navigate the touchscreen, you can use the left and right TouchPad buttons as you would use the corresponding buttons on an external mouse. You can also customize gestures and view demonstrations of how they work.

Select **Start > Control Panel > Hardware and Sound > Synaptics ClickPad**.

NOTE: Most of the gestures shown here can be used on either the TouchPad or touchscreen. TouchPad gestures are not supported in all apps.

Tap

Use the tap/double-tap gesture to select or open an item on the screen.

- Point to an item on the screen, and then tap one finger on the TouchPad zone select it. Double-tap an item to open it.

Two-finger scroll

Use the two-finger scroll gesture to move up, down, or sideways on a page or image.

● Place two fingers slightly apart on the TouchPad zone and then drag them up, down, left, or right.
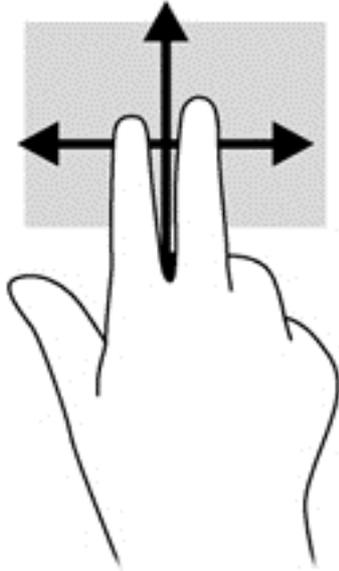
Two-finger pinch zoom

Use the two-finger pinch zoom to zoom out or in on images or text.

● Zoom out by placing two fingers apart on the TouchPad zone and then moving your fingers together.

● Zoom in by placing two fingers together on the TouchPad zone and then moving your fingers apart.
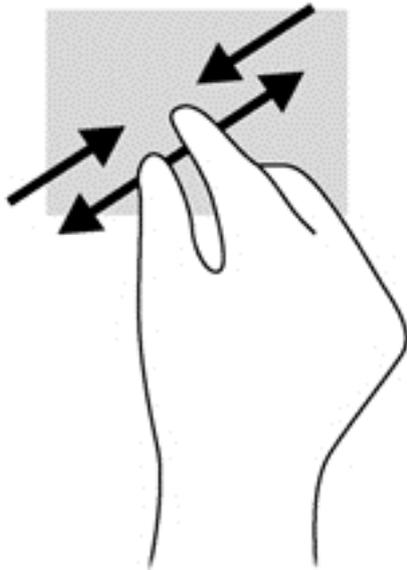
Two-finger click

Use the two-finger click gesture to open the menu for an object on the screen.

NOTE: The two-finger click performs the same function as right-clicking with the mouse.

● Place two fingers on the TouchPad zone and press down to open the options menu for the selected object.
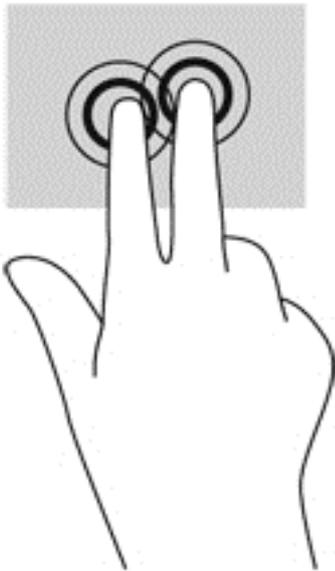
One-finger slide (touch screen only)

Use the one-finger slide to pan or scroll through lists and pages, or to move an object.

● To scroll across the screen, lightly slide one finger across the screen in the direction you want to move.

● To drag, press and hold an object, and then drag the object to move it.
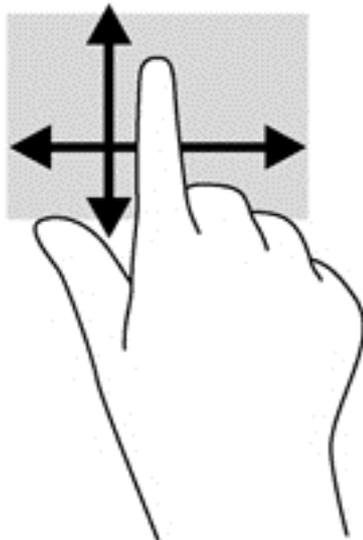
Using a keyboard and optional mouse

A keyboard and optional external mouse allow you to type, select items, scroll, and perform similar functions as you do touch gestures. For details, refer to Getting to know your computer on page 3.

6   Managing power

Your computer can operate on either battery power or external power. When the computer is running on battery power only and an AC power source is not available to charge the battery, it is important to monitor and conserve the battery charge.

Initiating and exiting Sleep and Hibernation

Windows has two power-saving states, Sleep and Hibernation.

- Sleep—The Sleep state is automatically initiated after a period of inactivity. Your work is saved to memory, allowing you to resume your work very quickly. You can also initiate Sleep manually. For more information, see Manually initiating and exiting Sleep on page 20.

- Hibernation—The Hibernation state is automatically initiated if the battery reaches a critical level. In the Hibernation state, your work is saved to a hibernation file and the computer powers down. You can also initiate Hibernation manually. For more information, see Manually initiating and exiting Hibernation (select models only) on page 20.

⚠ **CAUTION:**   To reduce the risk of possible audio and video degradation, loss of audio or video playback functionality, or loss of information, do not initiate the Sleep state 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 the Hibernation state.

Manually initiating and exiting Sleep

You can initiate Sleep in any of the following ways:

- Close the display.

- From the Start screen, point to the upper-right or lower-right corner of the screen to reveal the charms. Click **Settings**, click the **Power** icon, and then click **Sleep**.

To exit Sleep:

- Briefly press the power button.

- If the display is closed, open the display.

- Press a key on the keyboard.

- Tap or swipe the TouchPad.

When the computer exits Sleep, the power lights turn on and your work returns to the screen.

NOTE: If you have set a password to be required on wakeup, you must enter your Windows password before the computer will return to the screen.

Manually initiating and exiting Hibernation (select models only)

You can enable user-initiated Hibernation and change other power settings and timeouts using Power Options.

1. From the Start icon, click **Control Panel**, and then select **Power options**.

2. In the left pane, click **Choose what the power button does**.

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

4. In the **When I press the power button** area, select **Hibernate**.

5. Click **Save changes**.

When the computer exits Hibernation, the power lights turn on and your work returns to the screen.

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.

Setting password protection on wakeup (exiting Sleep or Hibernation)

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

1. From the Start icon, click **Control Panel**, and then select **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**.

Using the power meter and power settings

The power meter is located on the Windows desktop. The power meter allows you to quickly access power settings and view the remaining battery charge.

- To view the percentage of remaining battery charge and the current power plan, place the mouse pointer over the power meter icon.

- To access Power Options, or to change the power plan, click the Power Meter icon and select an item from the list.

Different power meter icons indicate whether the computer is running on battery or external power. Placing the mouse pointer over the icon reveals a message if the battery has reached a low or critical battery level.

Running on 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 off and unplugged from external power, the battery in the computer slowly discharges. The computer will display a message when the battery reaches a low or critical battery level.

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

User-replaceable battery (select models only)

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

CAUTION: Removing a user-replaceable battery that is the sole power source for the computer can cause loss of information. To prevent loss of information, save your work or shut down the computer through Windows before removing the battery.

To remove the user-replaceable battery (select models only), refer to the steps and illustration that most closely match your computer:

1. Turn the computer upside down on a flat surface.

2. Slide the battery lock **(1)** to unlock the battery, and then slide the battery release latch **(2)** to release the battery.

   NOTE: The battery release latch automatically returns to its original position.

3. Pivot the battery **(3)** upward and remove it from the computer **(4)**.
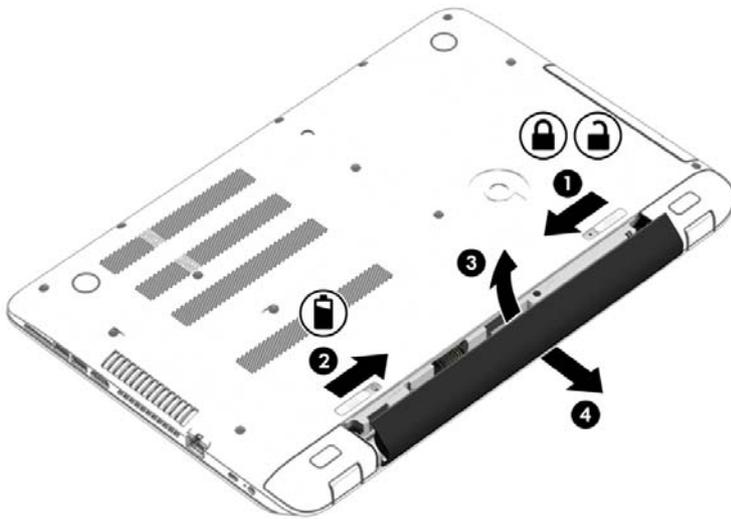
Finding battery information

To monitor the status of your battery, or if the battery is no longer holding a charge, run Battery Check in HP Support Assistant. To access battery information, select **Start > HP Support Assistant > Next > Battery and performance > Power and battery > HP Battery Check**.

HP Support Assistant provides the following tools and information about the battery:

- Battery test
- Information about battery types, specifications, life cycles, and capacity

Conserving battery power

To conserve battery power and maximize battery life:

- Lower the brightness of the display.
- Select the **Power saver** setting in Power Options.
- If the computer will be unused and unplugged from external power for more than 2 weeks, remove the user-replaceable battery from the computer and store it separately in a cool, dry place.
- Turn off wireless devices when you are not using them.
- Disconnect unused external devices that are not plugged into an external power source, such as an external hard drive connected to a USB port.
- Stop, disable, or remove any external media cards that you are not using.
- Before you leave your work, initiate Sleep or shut down the computer.

Resolving a low battery level

Resolving a low battery level when external power is available

Connect one of the following to the computer and to external power:

- AC adapter
- Optional docking or expansion device
- Optional power adapter purchased as an accessory from HP

Resolving a low battery level when no power source is available

Save your work and shut down the computer.

Resolving a low battery level when the computer cannot exit Hibernation

1. Replace the discharged user-replaceable battery with a charged battery, or connect the AC adapter to the computer and to external power.

2. Exit Hibernation by pressing the power button.

Storing a user-replaceable battery (select models only)

⚠ **CAUTION:** To reduce the risk of 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 in a cool, dry place to prolong the battery charge.

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.

Disposing of a user-replaceable battery (select models only)

⚠ **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.

See the *Regulatory, Safety and Environmental Notices* for proper battery disposal.

See the *Regulatory, Safety and Environmental Notices* for proper battery disposal. To access this guide, select **Start > HP Support Assistant > Next > My computer > User Guides**.

Running on AC power

For information about connecting to AC power, refer to the *Setup Instructions* poster provided in the computer box.

The computer does not use battery power when the computer is connected to AC power with an approved AC adapter or an optional docking/expansion device.

⚠ **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.

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

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

- When charging or calibrating a battery
- When installing or modifying system software
- When writing information to a disc (select models only)

- When running Disk Defragmenter on computers with internal hard drives

- When performing a backup or recovery

When you connect the computer to AC power:

- The battery begins to charge.

- The screen brightness increases.

- The power meter icon on the Windows desktop changes appearance.

When you disconnect AC power:

- The computer switches to battery power.

- The screen brightness automatically decreases to save battery life.

- The power meter icon on the Windows desktop changes appearance.

Troubleshooting power problems

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

- The computer does not turn on.

- The display does not turn on.

- The power lights do not turn on.

To test the AC adapter:

1. Shut down the computer.

2. Connect the AC adapter to the computer, and then plug it into an AC outlet.

3. Turn on the computer.

    - If the power lights turn *on*, the AC adapter is working properly.

    - If the power lights remain *off*, check the connection from the AC adapter to the computer and the connection from the AC adapter to the AC outlet to be sure that the connections are secure.

    - If the connections are secure and the power lights remain *off*, the AC adapter is not functioning and should be replaced.

Contact support for information about obtaining a replacement AC power adapter.

Shutting down (turning off) the computer

⚠ **CAUTION:** Unsaved information is lost when the computer shuts down. Be sure to save your work before shutting down the computer.

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 or video port

- When the computer will be unused and disconnected from external power for an extended period

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

NOTE: If the computer is in the Sleep state or in Hibernation, first exit Sleep or Hibernation by briefly pressing the power button.

1. Save your work and close all open programs.

2. Click the **Start** button in the lower-left corner of the screen, select **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, click the **Power** icon, and then select **Shut Down**.

● Press and hold the power button for at least 5 seconds.

● Disconnect the computer from external power.

● On models with a user-replaceable battery, remove the battery.

7   Maintaining your computer

It is important to perform regular maintenance to keep your computer in optimal condition. This chapter explains how to use tools like Disk Defragmenter and Disk Cleanup. It also provides instructions for updating programs and drivers, steps to clean the computer, and tips for traveling with (or shipping) the computer.

Improving performance

You can improve the performance of your computer by performing regular maintenance tasks with tools such as Disk Defragmenter and Disk Cleanup.

Using Disk Defragmenter

HP recommends using Disk Defragmenter to defragment your hard drive at least once a month.

> **NOTE:**   It is not necessary to run Disk Defragmenter on solid-state drives.

To run Disk Defragmenter:

1.   Connect the computer to AC power.

2.   Select **Start > All Programs > Accessories > System Tools > Disk Defragmenter**.

3.   Follow the on-screen instructions.

For additional information, access the Disk Defragmenter software Help.

Using Disk Cleanup

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

To run Disk Cleanup:

1.   Select `Start` and type `disk` in the search window, and then select one of the following:

    ●   **Free up disk space on this PC**

    ●   **Uninstall apps to free up disk space**

    ●   **Free up disk space by deleting unnecessary files**

2.   Follow the on-screen instructions.

Updating programs and drivers

HP recommends that you update your programs and drivers on a regular basis. Updates can resolve issues and bring new features and options to your computer. For example, older graphics components might not work well with the most recent gaming software. Without the latest driver, you would not be getting the most out of your equipment.

Go to http://www.hp.com/support to download the latest versions of HP programs and drivers. In addition, register to receive automatic notifications when updates become available.

Cleaning your computer

Use the following products to safely clean your computer:

● Dimethyl benzyl ammonium chloride 0.3 percent maximum concentration (for example, disposable wipes, which come in a variety of brands)

● Alcohol-free glass-cleaning fluid

● Solution of water and mild soap

● Dry microfiber cleaning cloth or a chamois (static-free cloth without oil)

● Static-free cloth wipes

CAUTION: Avoid strong cleaning solvents that can permanently damage your computer. If you are not sure that a cleaning product is safe for your computer, check the product contents to make sure that ingredients such as alcohol, acetone, ammonium chloride, methylene chloride, and hydrocarbons are not included in the product.

Fibrous materials, such as paper towels, can scratch the computer. Over time, dirt particles and cleaning agents can get trapped in the scratches.

Cleaning procedures

Follow the procedures in this section to safely clean your computer.

WARNING! To prevent electric shock or damage to components, do not attempt to clean your computer while it is on.

1. Turn off the computer.

2. Disconnect AC power.

3. Disconnect all powered external devices.

CAUTION: To prevent damage to internal components, do not spray cleaning agents or liquids directly on any computer surface. Liquids dripped on the surface can permanently damage internal components.

Cleaning the display

Gently wipe the display using a soft, lint-free cloth moistened with an alcohol-free glass cleaner. Be sure that a display is dry before you close the computer.

Cleaning the sides or cover

To clean the sides or cover, use a soft microfiber cloth or chamois moistened with one of the cleaning solutions listed previously, or use an acceptable disposable wipe.

NOTE: When cleaning the cover of the computer, use a circular motion to aid in removing dirt and debris.

Cleaning the TouchPad, keyboard, or mouse (select models only)

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.

CAUTION: To prevent damage to internal components, do not allow liquids to drip between the keys.

- To clean the TouchPad, keyboard, or mouse, use a soft microfiber cloth or a chamois moistened with one of the cleaning solutions listed previously or use an acceptable disposable wipe.

- To prevent keys from sticking and to remove dust, lint, and particles from the keyboard, use a can of compressed air with a straw extension.

Traveling with or shipping your computer

If you have to travel with or ship your computer, follow these tips to keep your equipment safe.

- Prepare the computer for traveling or shipping:

  ◦ Back up your information to an external drive.

  ◦ Remove all discs and all external media cards, such as memory cards.

  ◦ Turn off and then disconnect all external devices.

  ◦ Shut down the computer.

- Take along a backup of your information. Keep the backup separate from the computer.

- When traveling by air, carry the computer as hand luggage; do not check it in with the rest of your luggage.

  ⚠ **CAUTION:** Avoid exposing a drive to magnetic fields. Security devices with magnetic fields include airport walk-through devices and security wands. Airport conveyer belts and similar security devices that check carry-on baggage use X-rays instead of magnetism and do not damage drives.

- If you plan to use the computer during a flight, listen for the in-flight announcement that tells you when you are allowed to use your computer. In-flight computer use is at the discretion of the airline.

- If you are shipping the computer or a drive, use suitable protective packaging and label the package "FRAGILE."

- The use of wireless devices may be restricted in some environments. Such restrictions may apply aboard aircraft, in hospitals, near explosives, and in hazardous locations. If you are uncertain of the policy that applies to the use of a wireless device in your computer, ask for authorization to use your computer before you turn it on.

- If you are traveling internationally, follow these suggestions:

  ◦ Check the computer-related customs regulations for each country or region on your itinerary.

  ◦ Check the power cord and adapter requirements for each location in which you plan to use the computer. Voltage, frequency, and plug configurations vary.

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

8 Securing your computer and information

Computer security is essential for protecting the confidentiality, integrity, and availability of your information. Standard security solutions provided by the Windows operating system, HP applications, the non-Windows Setup Utility (BIOS), and other third-party software can help protect your computer from a variety of risks, such as viruses, worms, and other types of malicious code.

IMPORTANT: Some security features listed in this chapter may not be available on your computer.

Using passwords

A password is a group of characters that you choose to secure your computer information and to protect online transactions. Several types of passwords can be set. For example, when you set up your computer for the first time, you were asked to create a user password to secure your computer. Additional passwords can be set in Windows or in the HP Setup Utility (BIOS) that is preinstalled on your computer.

You may find it helpful to use the same password for a Setup Utility (BIOS) feature and for a Windows security feature.

To create and save passwords, use the following tips:

- To reduce the risk of being locked out of the computer, record each password and store it in a secure place away from the computer. Do not store passwords in a file on the computer.

- When creating passwords, follow requirements set by the program.

- Change your passwords at least every 3 months.

- An ideal password is long and has letters, punctuation, symbols, and numbers.

- Before you send your computer for service, back up your files, delete confidential files, and then remove all password settings.

For additional information about Windows passwords, such as screen-saver passwords:

For additional information about Windows passwords, such as screen-saver passwords, select **Start > Help and Support**.

Setting Windows passwords

Password	Function
User password	Protects access to a Windows user account.
Administrator password	Protects administrator-level access to computer contents. **NOTE:** This password cannot be used to access Setup Utility (BIOS) contents.

Setting Setup Utility (BIOS) passwords

Password	Function
Administrator password	● Must be entered each time you access Setup Utility (BIOS). ● If you forget your administrator password, you cannot access Setup Utility (BIOS).
Power-on password	● Must be entered each time you turn on or restart the computer. ● If you forget your power-on password, you cannot turn on or restart the computer.

To set, change, or delete an administrator or power-on password in Setup Utility (BIOS):

⚠ **CAUTION:** Use extreme care when making changes in Setup Utility (BIOS). Errors can prevent the computer from operating properly.

📝 **NOTE:** If your tablet has a keyboard base, connect the tablet to the keyboard base before beginning these steps.

1. Start Setup Utility (BIOS):

   ● Computers or tablets with keyboards:

      ▲ Turn on or restart the computer, quickly press esc, and then press f10.

2. Select **Security**, and then follow the on-screen instructions.

Your changes take effect when the computer restarts.

Using the fingerprint reader (select models only)

Integrated fingerprint readers are available on select computer models.

📝 **NOTE:** For the location of the fingerprint reader on your computer, see Identifying components on page 4.

To use the fingerprint reader, you must set up a user account and password on the computer and then register one or more fingerprints using HP SimplePass software.

To register fingerprints with HP SimplePass:

1. Swipe a finger on the fingerprint sensor to launch HP SimplePass.

2. When the HP SimplePass welcome screen is revealed, click **Get Started**.

3. HP SimplePass prompts you to swipe your right index finger over the sensor.

4. Swipe your finger 3 times to finish the registration.

   If registration is successful, a green circle appears on the corresponding finger in the illustration.

5. Repeat steps 1 through 4 to register an additional fingerprint.

Using Internet security software

When you use your computer to access email, a network, or the Internet, you potentially expose your computer to computer viruses, spyware, and other online threats. To help protect your computer, Internet

security software that includes antivirus and firewall features may be preinstalled on your computer as a trial offer. To provide ongoing protection against newly discovered viruses and other security risks, security software must be kept up to date. It is strongly recommended that you upgrade the security software trial offer or purchase the software of your choice in order to fully protect your computer.

Using antivirus software

Computer viruses can disable programs, utilities, or the operating system, 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.

An antivirus program may be preinstalled on your computer. It is strongly recommended that you use the antivirus program of your choice in order to fully protect your computer.

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

Using firewall software

Firewalls are designed to prevent unauthorized access to a system or network. A firewall can be software you install on your computer and/or network, or it can be a combination of both hardware and software.

There are two types of firewalls to consider:

- Host-based firewalls—Software that protects only the computer it is installed on.
- Network-based firewalls—Installed between your DSL or cable modem and your home network to protect all the computers on the network.

When a firewall is installed on a system, all data sent to and from the system is monitored and compared with a set of user-defined security criteria. Any data that does not meet those criteria is blocked.

Installing software updates

HP, Windows, and third-party software installed on your computer should be regularly updated to correct security problems and improve software performance. For more information, see Updating programs and drivers on page 26.

Installing critical security updates

⚠ **CAUTION:** Microsoft sends out 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.

You can choose whether updates are installed automatically. To change the settings, select **Start > Control Panel > System and Security > Windows Update > Change settings**, and then follow the on-screen instructions.

Securing your wireless network

When you set up a WLAN or access an existing WLAN, always enable security features to protect your network from unauthorized access. WLANs in public areas (hotspots) like coffee shops and airports may not provide any security.

# Backing up your software applications and information

Regularly back up your software applications and information to protect them from being permanently lost or damaged through a virus attack or a software or hardware failure.

Using an optional security cable lock

A security cable lock, purchased separately, is designed to act as a deterrent, but it may not prevent the computer from being mishandled or stolen. Security cable locks are only one of several methods that should be employed as part of a complete security solution to help maximize theft protection.

The security cable slot on your computer may look slightly different from the illustration in this section. For the location of the security cable slot on your computer, see the setup poster that came with your computer.

1. Loop the security cable lock around a secured object.

2. Insert the key **(1)** into the security cable lock **(2)**.

3. Insert the security cable lock into the security cable slot on the computer **(3)**, and then lock the security cable lock with the key.
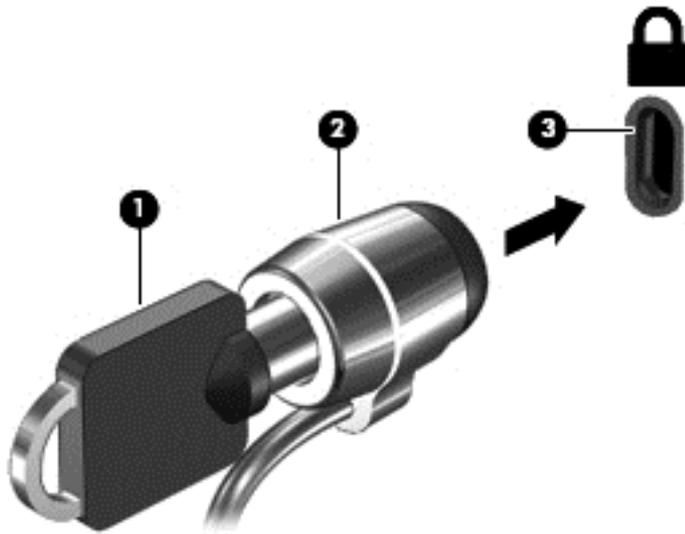
4. Remove the key and keep it in a safe place.

9 Using Setup Utility (BIOS)

Setup Utility, or Basic Input/Output System (BIOS), controls communication between all the input and output devices on the system (such as disk drives, display, keyboard, mouse, and printer). Setup Utility (BIOS) includes settings for the types of devices installed, the startup sequence of the computer, and the amount of system and extended memory.

Starting Setup Utility (BIOS)

⚠ CAUTION: Use extreme care when making changes in Setup Utility (BIOS). Errors can prevent the computer from operating properly.

📝 NOTE: If your tablet has a keyboard base, connect the tablet to the keyboard base before beginning the steps in this chapter.

- Computers or tablets with keyboards:

  ▲ Turn on or restart the computer, quickly press esc, and then press f10.

Updating the BIOS

Updated versions of the BIOS may be available on the HP website.

Most BIOS updates on the HP website 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.

Determining the BIOS version

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

BIOS version information (also known as *ROM date* and *System BIOS*) can be revealed by using Setup Utility (BIOS).

1. Start Setup Utility (BIOS) (see Starting Setup Utility (BIOS) on page 33).

2. Select **Main**, and then make note of your BIOS version.

3. Select **Exit**, select **Exit Discarding Changes**, and then follow the on-screen instructions.

Downloading a BIOS update

⚠ **CAUTION:** To reduce the risk of 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.

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

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

1. Select **Start > Help and Support > Maintain**.

2. Follow the on-screen instructions 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 on-screen instructions 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 is 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 appear on the screen after the download is complete. If no instructions appear, 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 on-screen instructions.

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

10 Using HP PC Hardware Diagnostics (UEFI)

HP PC Hardware Diagnostics is a Unified Extensible Firmware Interface (UEFI) that allows you to run diagnostic tests to determine whether the computer hardware is functioning properly. The tool runs outside the operating system so that it can isolate hardware failures from issues that are caused by the operating system or other software components.

To start HP PC Hardware Diagnostics (UEFI):

1. Start Setup Utility:

    ● Computers or tablets with keyboards:

        ▲ Turn on or restart the computer, quickly press esc.

2. Press or tap **f2**.

    The BIOS searches 3 places for the diagnostic tools, in the following order:

    a. Connected USB drive

        NOTE: To download the HP PC Hardware Diagnostics (UEFI) tool to a USB drive, see Downloading HP PC Hardware Diagnostics (UEFI) to a USB device on page 35.

    b. Hard drive

    c. BIOS

3. When the diagnostic tool opens, use the keyboard arrow keys to select the type of diagnostic test you want to run, and then follow the on-screen instructions.

NOTE: If you need to stop a diagnostic test, press or tap esc.

Downloading HP PC Hardware Diagnostics (UEFI) to a USB device

NOTE: Instructions for downloading HP PC Hardware Diagnostics (UEFI) are provided in English only.

There are two options to download HP PC Hardware Diagnostics to a USB device:

Option 1: HP PC Diagnostics homepage— Provides access to the latest UEFI version

1. Go to http://hp.com/go/techcenter/pcdiags.

2. Click the UEFI **Download** link, and then select **Run**.

Option 2: Support and Drivers pages—Provide downloads for a specific product for earlier and later versions

1. Go to http://www.hp.com.

2. Point to **Support**, located at the top of the page, and then click **Download Drivers**.

3. In the text box, enter the product name, and then click **Go**.

    – or –

    Click **Find Now** to let HP automatically detect your product.

4. Select your computer model, and then select your operating system.

5. In the **Diagnostic** section, click **HP UEFI Support Environment**.

– or –

Click **Download**, and then select **Run**.

11 Backing up, restoring, and recovering

Your computer includes tools provided by the operating system and HP to help you safeguard your information and retrieve it if ever needed.

Creating backups

1. Use HP Recovery Manager to create recovery media immediately after you set up the working computer.

2. As you add hardware and software programs, create system restore points.

3. As you add photos, video, music, and other personal files, create a backup of your system and personal information.

Creating recovery media to recover the original system

After you successfully set up the computer, you should create recovery discs or a recovery flash drive using HP Recovery Manager. You will need these recovery discs or recovery flash drive to perform a system recovery should the hard drive become corrupted. A system recovery reinstalls the original operating system, and then configures the settings for the default programs.

What you need to know

- Only one set of recovery media can be created. Handle these recovery tools carefully, and keep them in a safe place.

- HP Recovery Manager examines the computer and determines the required storage capacity for the flash drive or the number of blank DVD discs that will be required.

  Use DVD-R, DVD+R, DVD-R DL, DVD+R DL discs or a flash drive. Do not use rewriteable discs such as CD±RW, DVD±RW, double-layer DVD±RW, and BD-RE (rewritable Blu-ray) discs; they are not compatible with HP Recovery Manager software.

- If your computer does not include an integrated optical drive, you can use an optional external optical drive (purchased separately) to create recovery discs, or you can obtain recovery discs for your computer from the HP website. If you use an external optical drive, it must be connected directly to a USB port on the computer, not to a USB port on an external device, such as a USB hub.

- Be sure that the computer is connected to AC power before you begin creating the recovery media.

- The creation process can take up to an hour or more. Do not interrupt the creation process.

- Store the recovery media in a safe location, separate from the computer.

- If necessary, you can exit the program before you have finished creating the recovery media. The next time you open HP Recovery Manager, you will be prompted to continue the process.

Creating the recovery media

1. Select **Start** and type `recovery` in the search field. Select **Recovery Manager** from the list. Allow the action to continue, if prompted.

2. Click **Recovery Media Creation**.

3. Follow the on-screen instructions to continue.

To recover, see .

Creating system restore points

A system restore point is a snapshot of certain hard drive contents saved by Windows System Restore at a specific time. A restore point contains information such as registry settings that Windows uses. Restoring to a previous restore point allows you to reverse changes that have been made to the system since the restore point was created.

Restoring to an earlier system restore point does not affect data files saved or emails created since the last restore point, but it does affect software you may have installed.

For example, if you download a photo from a digital camera and then restore the computer to the state it was on the previous day, the photo remains on the computer.

However, if you install photo viewing software and then restore your computer to the state it was on the previous day, the software will be uninstalled, and you won't be able to use it.

What you need to know

- If you restore to a restore point and then change your mind, you can undo the restoration.

- You should create system restore points:
  - Before you add or change software or hardware
  - Periodically, whenever the computer is running normally

- System Restore also saves shadow copies of files that have been changed since the last restore point was created. For more information about using shadow copies to restore, see Help and Support.

Creating 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. Click **Create**, and follow the on-screen instructions.

To restore, see .

Backing up system and personal information

Your computer stores information that is important to you, such as files, emails, and photos, and you will want to keep that information even if you download a virus or the system stops working properly. How completely you are able to recover your files depends on how recent your backup is. As you add new software and data files, you should create backups on a regular basis.

Tips for a successful backup

- Number backup discs before inserting them into the optical drive.

- Store personal files in the Documents, Music, Pictures, and Videos libraries, and back up these folders periodically.

- 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 re-enter your preferences.

To create a screen shot:

1. Display the screen you want to save.

2. Copy the screen image:

   To copy only the active window, press alt+prt sc.

   To copy the entire screen, press prt sc.

3. Open a word-processing document or graphics editing program, and then select **Edit > Paste**. The screen image is added to the document.

4. Save and print the document.

What you need to know

- You can back up your information to an optional external hard drive, a flash drive, a network drive, or discs.

- Connect the computer to AC power during backups.

- Allow enough time for the backup. Depending on files sizes, it may take more than an hour.

- Verify the amount of free space on your backup storage device before you back up.

- You should back up:

  ◦ Before adding or changing software or hardware.

  ◦ Before the computer is repaired or restored.

  ◦ On a regular schedule to be sure you have recent copies of personal information.

  ◦ After you add many files—for example, if you saved videos from a birthday party.

  ◦ Before using antivirus software to remove a malicious program.

  ◦ After adding information that is hard to replace, such as pictures, videos, music, project files, or data records.

Creating a backup using Windows Backup and Restore

Windows allows you to back up files using Windows Backup and Restore. You can select the level you want to back up, from individual folders to drives. The backups are compressed to save space. To back up:

1. Select **Start > Control Panel > System and Security > Backup and Restore**.

2. Follow the on-screen instructions to schedule and create a backup.

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

To restore, see Restoring specific files using Windows Backup and Restore on page 40.

Restore and recovery

Restoring to a previous system restore point

Sometimes installing a software program causes your computer or Windows to behave unpredictably. Usually uninstalling the software fixes the problems. If uninstalling does not fix the problems, you can restore the computer to a previous system restore point (created at an earlier date and time).

To restore to a previous system restore point, when the computer was running correctly:

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**, and follow the on-screen instructions.

Restoring specific files

If files are accidentally deleted from the hard disk and they can no longer be restored from the Recycle Bin, or if files become corrupt, restoring specific files is useful. Restoring specific files is also useful if you ever choose to recover the original system using HP Recovery Manager. You can only restore specific files that you have backed up before.

Restoring specific files using Windows Backup and Restore

Windows allows you to restore files that were backed up using Windows Backup and Restore:

1. Select **Start > Control Panel > System and Security > Backup and Restore**.

2. Follow the on-screen instructions to restore your backup.

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

Recovering the original system using HP Recovery Manager

HP Recovery Manager software allows you to repair or recover the computer to its original factory state.

What you need to know

-   HP Recovery Manager recovers only software that was installed at the factory. For software not provided with this computer, you must either download the software from the manufacturer's website or reinstall the software from the disc provided by the manufacturer.

-   A system recovery should be used as a final attempt to correct computer issues. If you have not already tried restore points (see Restoring to a previous system restore point on page 40) and partial restores (see Restoring specific files on page 40), try them before using HP Recovery Manager to recover your system.

-   A system recovery must be performed if the computer hard drive fails or if all attempts to correct any functional computer issues fail.

- If the recovery media do not work, you can obtain recovery discs for your system from the HP website.

- The Minimized Image Recovery option is recommended for advanced users only. All hardware-related drivers and software are re-installed, but other software applications are not. Do not interrupt the process until it is complete, otherwise the recovery will fail.

Recovering using HP Recovery partition (select models only)

The HP Recovery partition (select models only), allows you to restore your system without the need for recovery discs or a recovery flash drive. This type of recovery can only be used if the hard drive is still working.

To check for the presence of a recovery partition, select **Start**, right-click **Computer** then select **Manage > Disk Management**. If the recovery partition is present, a Recovery drive is listed in the window.

NOTE: Recovery discs have been included if your computer did not ship with a recovery partition.

1. Access HP Recovery Manager in either of the following ways:

    - Select **Start** and type `recovery` in the search field. Select **Recovery Manager** from the list.

        – 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 "F11 (System Recovery)" message is displayed on the screen.

2. Click **System Recovery** in the **HP Recovery Manager** window.

3. Follow the on-screen instructions.

Recovering using the recovery media

1. If possible, back up all personal files.

2. Insert the first recovery disc into the optical drive on your computer or an optional external optical drive, and then restart the computer.

    – or –

    Insert the recovery flash drive into a USB port on your computer, and then restart the computer.

    NOTE: If the computer does not automatically restart in HP Recovery Manager, change the computer boot order. See .

3. Press f9 at system bootup.

4. Select the optical drive or the flash drive.

5. Follow the on-screen instructions.

Changing the computer boot order

To change the boot order for recovery discs:

1. Restart the computer.

2. Press esc while the computer is restarting, and then press f9 for boot options.

3. Select **Internal CD/DVD ROM Drive** from the boot options window.

To change the boot order for a recovery flash drive:

1. Insert the flash drive into a USB port.

2. Restart the computer.

3. Press esc while the computer is restarting, and then press f9 for boot options.

4. Select the flash drive from the boot options window.

12 Specifications

Input power

The power information in this section may be helpful if you plan to travel internationally with the computer.

The computer operates on DC power, which can be supplied by an AC or a DC power source. The AC power source must be rated at 100–240 V, 50–60 Hz. Although the computer can be powered from a standalone DC power source, it should be powered only with an AC adapter or a DC power source that is supplied and approved by HP for use with this computer.

The computer can operate on DC power within the following specifications. Operating voltage and current varies by platform.

Input power	Rating
Operating voltage and current	19.5 V dc @ 2.31 A – 45 W
	19.5 V dc @ 3.33 A – 65W
	19.5 V dc @ 4.62 A – 90 W
DC plug of external HP power supply	

NOTE: This product is designed for IT power systems in Norway with phase-to-phase voltage not exceeding 240 V rms.

NOTE: The computer operating voltage and current can be found on the system regulatory label.

Operating environment

Factor	Metric	U.S.
Temperature		
Operating	**5℃ to 35℃**	41°F to 95°F
Nonoperating	**-20℃ to 60℃**	-4°F to 140°F
Relative humidity (noncondensing)		
Operating	**10% to 90%**	10% to 90%
Nonoperating	**5% to 95%**	5% to 95%
Maximum altitude (unpressurized)		
Operating	**-15 m to 3,048 m**	-50 ft to 10,000 ft
Nonoperating	**-15 m to 12,192 m**	-50 ft to 40,000 ft

13 Electrostatic Discharge

Electrostatic discharge is the release of static electricity when two objects come into contact—for example, the shock you receive when you walk across the carpet and touch a metal door knob.

A discharge of static electricity from fingers or other electrostatic conductors may damage electronic components. To prevent damage to the computer, damage to a drive, or loss of information, observe these precautions:

- If removal or installation instructions direct you to unplug the computer, first be sure that it is properly grounded.

- Keep components in their electrostatic-safe containers until you are ready to install them.

- Avoid touching pins, leads, and circuitry. Handle electronic components as little as possible.

- Use nonmagnetic tools.

- Before handling components, discharge static electricity by touching an unpainted metal surface.

- If you remove a component, place it in an electrostatic-safe container.

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