

User Guide

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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. See <http://www.microsoft.com> for details.

To obtain the latest user guides, contact 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.

Software terms

By installing, copying, downloading, or otherwise using any software product preinstalled on this computer, you agree to be bound by the terms of the HP End User License Agreement (EULA). If you do not accept these license terms, your sole remedy is to return the entire unused product (hardware and software) within 14 days for a refund subject to the refund policy of your place of purchase.

For any further information or to request a full refund of the computer, please contact your local point of sale (the seller).

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).

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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, fun things to do with your computer, and where to find additional HP resources.


Revert to the familiar Start screen (select models only)

HP Quick Start gives you the option to use the familiar Start menu from the Windows desktop. Quick Start functions like the traditional Windows Start menu and enables you to conveniently open files and programs using the Windows desktop.

- To open HP Quick Start, go the Windows desktop, and then click the HP Quick Start  icon on the taskbar.

Visit the HP Apps Store

The HP Apps Store offers a wide choice of popular games, entertainment and music apps, productivity apps, and apps exclusive to HP that you can download to the Start screen. The selection is updated regularly and includes regional content and country-specific offers. Be sure to check the HP Apps Store frequently for new and updated features.

 **IMPORTANT:** You must be connected to the Internet to access the HP Apps Store.



To view and download an app:

1. From the Start screen, select the **Store** app.
2. Select **HP Picks** to view all the available apps.
3. Select the app you want to download, and then follow the on-screen instructions. When the download is complete, the app appears on the Start screen.

Best practices

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

- If you haven't already done so, connect to a wireless network. See details in [Connecting to a network on page 22](#)
- Take a minute to browse the printed *Windows Basics* guide to explore the new Windows® features.

 **TIP:** To quickly return to the computer Start screen from an open app or the Windows desktop, press the Windows button on the tablet or the Windows key  on your keyboard. Pressing the Windows button or key again will return you to the previous screen.

- Become familiar with the computer hardware and software. For more information, see [Finding your hardware and software information on page 4](#).

- Update or purchase antivirus software. Learn more at [Using Internet security software on page 58](#).
- Back up your hard drive by creating a recovery flash drive. See [Creating recovery media and backups on page 64](#)

Fun things to do

- You know that you can watch a YouTube video on the computer. But did you know that you can also connect your computer to a television or gaming console? For more information, see [Connecting video devices by using an HDMI cable on page 32](#).
- You know you can listen to music on the computer. But did you know that you can also stream live radio to the computer and listen to music or talk radio from all over the world? See [Enjoying entertainment features on page 27](#).
- Use the TouchPad and the new Windows touch gestures for smooth control of images and pages of text. See [Using TouchPad gestures on page 35](#) and [Using touch screen gestures on page 17](#).

More HP resources

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

Resource	Contents
<i>Setup Instructions</i>	<ul style="list-style-type: none">• Overview of computer setup and features
<i>Windows Basics</i> guide	<ul style="list-style-type: none">• Overview of using Windows®
Help and Support To access Help and Support, from the Start screen, type <code>help</code> , and then from the Search window, select 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 .	<ul style="list-style-type: none">• A broad range of how-to information and troubleshooting tips
<i>Safety & Comfort Guide</i> To access this guide, from the Start screen, type <code>support</code> , select the HP Support Assistant app, select My computer , and then select User guides , or go to http://www.hp.com/ergo .	<ul style="list-style-type: none">• Proper workstation setup• Guidelines for posture and work habits that increase your comfort and decrease your risk of injury• Electrical and mechanical safety information
Worldwide support web page To get support in your language, go to http://welcome.hp.com/country/us/en/wwcontact_us.html .	<ul style="list-style-type: none">• Online chat with an HP technician• Email support• Support telephone numbers• HP service center locations
<i>Regulatory, Safety and Environmental Notices</i> To access this guide, from the Start screen, type <code>support</code> , select the HP Support Assistant app, select My computer , and then select User guides .	<ul style="list-style-type: none">• Important regulatory notices, including proper battery disposal information
<i>Limited Warranty*</i> To access this guide, from the Start screen, type <code>support</code> , select the HP Support Assistant app, select My computer , and then select Warranty and services , or go to http://www.hp.com/go/orderdocuments .	<ul style="list-style-type: none">• 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. From the Start screen, type **c**, and then select **Control Panel**.
2. Select **System and Security**, and then in the System area, click **Device Manager**.

A list reveals all the devices installed on your computer.

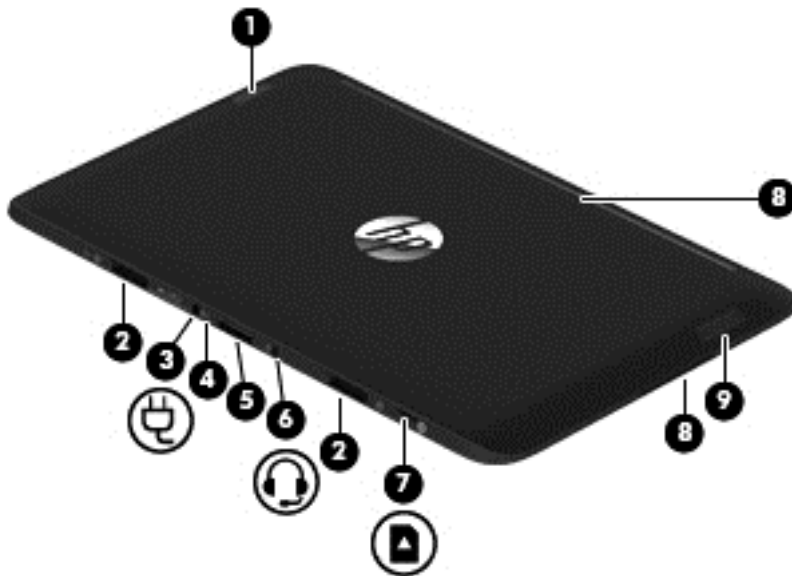
To find out information about system hardware components and the system BIOS version number, press **fn+esc**.





Locating software



To find out what software is installed on your computer:

1. From the Start screen, right-click using the mouse
– or –
Swipe from the top of the TouchPad to reveal all apps.
2. Select the **All apps** icon.

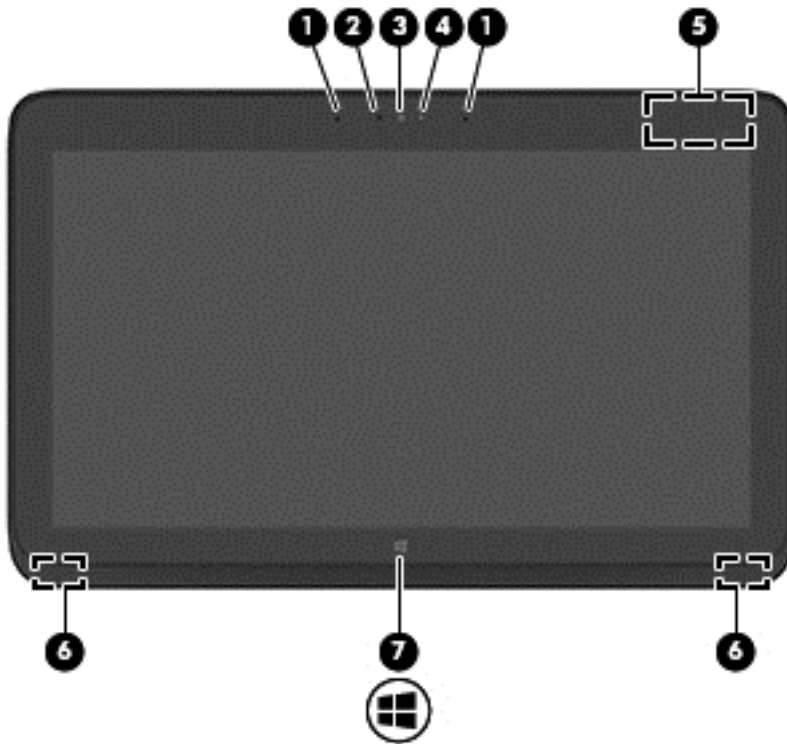
Tablet edge components






Components	Description
(1)  Power button	<ul style="list-style-type: none"> • When the computer is off, press the button to turn on the tablet. • 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. <p>CAUTION: Pressing and holding down the power button results in the loss of unsaved information.</p> <p>NOTE: If the computer has stopped responding and Microsoft® Windows® shutdown procedures are ineffective, press and hold the power button down for at least 5 seconds to turn off the tablet.</p> <p> To learn more about your power settings, see your power options. Swipe from the right edge of the TouchPad or touch screen to display the charms, tap Search, and then tap the search box. In the search box, type <code>power</code>, tap Settings, and then tap Power options, or see Managing power on page 43.</p> <p>– or –</p> <p> On the Start screen, type <code>power</code>, select Power and sleep settings, and then select Power and sleep from the list of applications.</p>
(2) Alignment post connectors (2)	Align and attach the tablet to the keyboard dock.
(3)  Power connector	Connects an AC adapter.
(4) AC adapter/battery light	<ul style="list-style-type: none"> • White: The AC adapter is connected and the battery is charged. • Blinking white: The battery has reached a low battery level. • Amber: The AC adapter is connected and the battery is charging. • Off: The computer is using DC power.
(5) Docking port	Connects the tablet to the keyboard dock.

Components	Description
<p>(6)  Audio-out (headphone) jack/Audio-in (microphone) jack</p>	<p>Connects optional powered stereo speakers, headphones, earbuds, a headset, or a television audio cable.</p> <p>WARNING! To reduce the risk of personal injury, adjust the volume before using headphones, earbuds, or a headset. For additional safety information, see the <i>Regulatory, Safety and Environmental Notices</i>.</p> <p>NOTE: When a device is connected to the jack, the computer speakers are disabled.</p> <p>NOTE: Be sure that the device cable has a 4-conductor connector that supports both audio-out (headphone) and audio-in (microphone).</p> <p>NOTE: Stand-alone microphones and headphones with separate microphone jacks are not supported.</p>
<p>(7)  Micro memory card reader</p>	<p>Supports micro Secure Digital (SD) memory cards.</p>
<p>(8) Vents</p>	<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>
<p>(9) Volume button</p>	<p>Controls speaker volume on the tablet.</p> <ul style="list-style-type: none"> • To increase speaker volume, press the + edge of the button. • To decrease speaker volume, press the – edge of the button.

Display



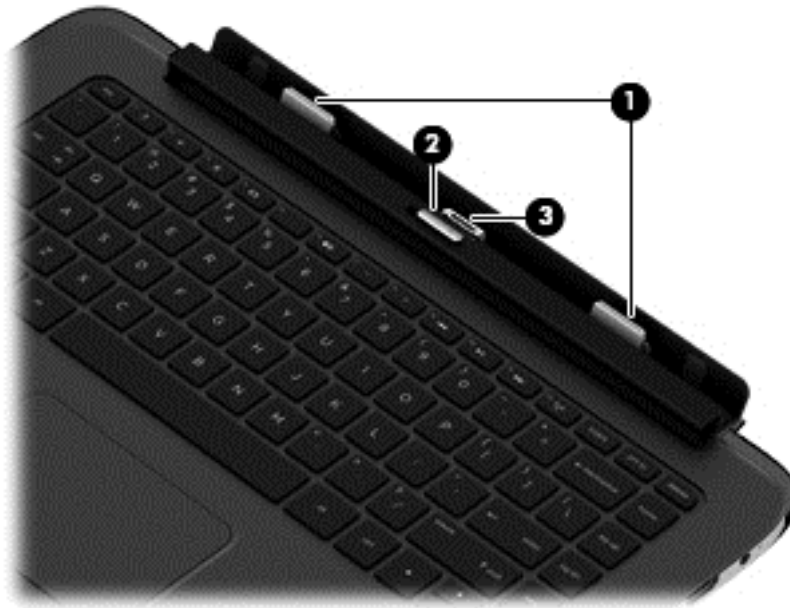
Component	Description
(1)	Internal microphones (2) Record audio, automatically filtering out the noise around you and cancelling echoes.
(2)	Webcam light On: The webcam is on.
(3)	Webcam Records video and captures photographs. Some models may allow you to video conference and chat online using streaming video.
	 Swipe from the right edge of the TouchPad or touch screen to display the charms, tap Search , and then tap the search box. Type <code>camera</code> , and then tap Camera from the list of applications. – or –  From the Start screen, type <code>camera</code> , and then select Camera from the list of applications.
(4)	Ambient light sensor Automatically adjusts the display brightness based on the lighting conditions in your environment.
(5)	WLAN antenna* Sends and receives wireless signals to communicate with wireless local area networks (WLANs).
(6)	Speakers (2) Produce sound.

Component	Description
(7)  Windows button	Returns you to the Start screen from an open app or the Windows desktop. NOTE: Pressing the Windows button again returns you to the previous screen.

*The antenna is not visible from the outside of the computer. For optimal transmission, keep the areas immediately around the antenna free from obstructions. For wireless regulatory notices, see the section of the *Regulatory, Safety, and Environmental Notices* that applies to your country or region.

Keyboard dock

Top



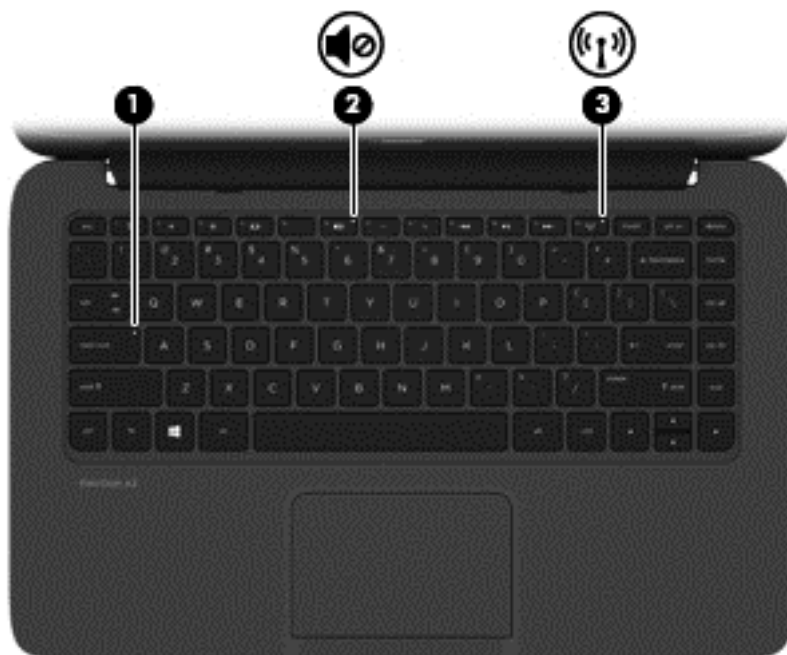
Component	Description
(1)	Alignment posts
(2)	Release latch
(3)	Docking connector



TouchPad



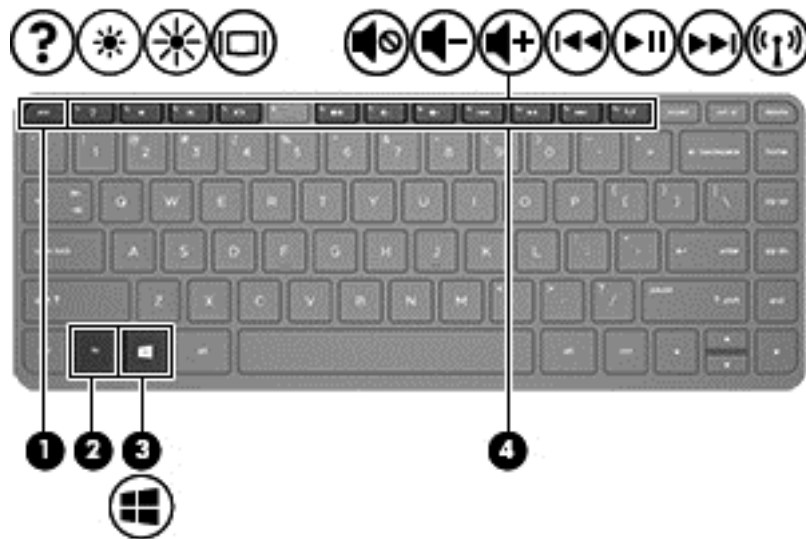
Component	Description
(1) TouchPad zone	Reads your finger gesture to move the pointer or activate items on the screen. NOTE: The TouchPad also supports edge-swipe gestures. For more information, see Using TouchPad gestures on page 35 .
(2) Left TouchPad button	Functions like the left button of an external mouse.
(3) Right TouchPad button	Functions like the right button on an external mouse.


Lights



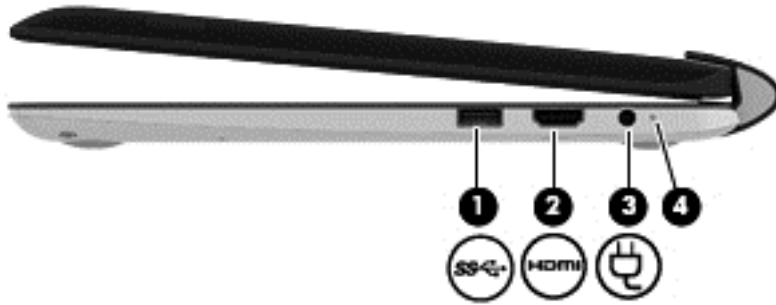
Component	Description
(1) Caps lock light	<ul style="list-style-type: none">• White: Caps lock is on, which switches the keys to all capital letters.• Off: Caps lock is off.
(2)  Mute light	<ul style="list-style-type: none">• Amber: Computer sound is off.• Off: Computer sound is on.
(3)  Wireless light	<ul style="list-style-type: none">• White: 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.




Keys



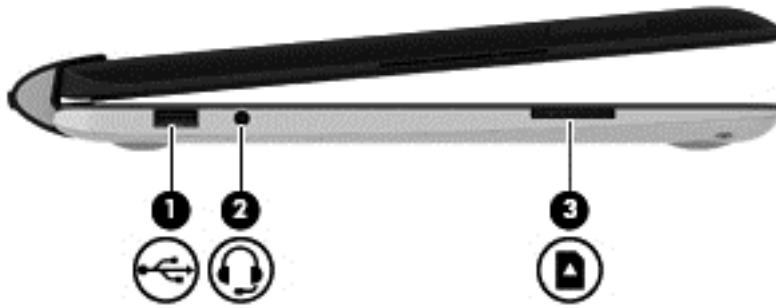
Component	Description
(1) <code>esc</code> key	Displays system information when pressed in combination with the <code>fn</code> key.
(2) <code>fn</code> key	Displays system information when pressed in combination with the <code>esc</code> key.
(3)  Windows key	Returns you to the Start screen from an open app or the Windows desktop. NOTE: Pressing the Windows key again returns you to the previous screen.
(4) Action keys	Execute frequently used system functions. NOTE: Action keys do not display or function from the on-screen tablet keyboard.




Right side



Component	Description
(1)  USB 3.0 port	Connect optional USB 3.0 devices and provide enhanced USB power performance. NOTE: For details about different types of USB ports, see Using a USB device on page 50 .
(2)  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 HDMI device.
(3)  Power connector	Connects an AC adapter.
(4) AC adapter/battery light	<ul style="list-style-type: none">• White: The AC adapter is connected and the battery is charged.• Blinking white: The battery has reached a low battery level.• Amber: The AC adapter is connected and the battery is charging.• Off: The computer is using battery power.

Left side



Component	Description
(1)  USB 2.0 port	Connects an optional USB device. NOTE: For details about different types of USB ports, see Using a USB device on page 50 .
(2)  Audio-out (headphone) jack/Audio-in (microphone) jack	Connects optional powered stereo speakers, headphones, earbuds, a headset, or a television audio cable. Also connects an optional headset microphone. WARNING! To reduce the risk of personal injury, adjust the volume before using headphones, earbuds, or a headset. For additional safety information, see the <i>Regulatory, Safety and Environmental Notices</i> . 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). NOTE: Stand-alone microphones and headphones with separate microphone jacks are not supported.
(3)  Memory card reader	Reads data from and writes data to memory cards such as SD.

Releasing the tablet from the keyboard dock



To release the tablet from the keyboard dock, follow these steps:

1. Slide the release latch on the keyboard dock to the left **(1)**.
2. Lift and remove the tablet **(2)**.

Locating system information

Important system information is located on the bottom edge of the tablet. You may need the information when travelling internationally or when you contact support:

- Serial number
- Product number
- Warranty period
- Regulatory and wireless certification information

Using Windows, briefly press the **fn+esc** key combination to display the System Information screen, which provides the product name and serial number of your computer, as well as information about the memory, processor, BIOS, and keyboard.

Changing your tablet's settings

You can change view and screen brightness.

Changing your tablet's view

Your tablet's orientation, or view, changes automatically from landscape to portrait view, or from portrait to landscape view.

1. To change the view of your tablet from landscape view to portrait view:
Hold the tablet vertically, and then turn it 90 degrees to the right (in a clockwise direction).
2. To change the view of your tablet from portrait view to landscape view:
Hold the tablet vertically, and then turn it 90 degrees to the left (in a counter-clockwise direction).

Adjusting your tablet's autorotate lock

To adjust your tablet's autorotate lock when the tablet is undocked:

1. Swipe from the right edge of the TouchPad or touch screen to display the charms, and then tap **Settings**.
2. Tap the **Screen** icon at the bottom right. Tap the **Autorotate Lock** icon to lock your current tablet screen in place and to prevent rotation. The icon displays a lock symbol when autorotate lock is active. To turn off the autorotate lock, tap the **Autorotate Lock** icon again.

Adjusting your tablet's screen brightness

To adjust the screen brightness:


1. Swipe from the right edge of the TouchPad or touch screen to display the charms, and then tap **Settings**.
2. Tap the **Screen** icon at the bottom right. A vertical slider displays that controls the screen brightness.



NOTE: From the Windows desktop, you can also tap the **Power Meter** icon in the notification area at the far right of the taskbar, tap **Adjust screen brightness**, and then move the slider next to **Screen brightness** at the bottom of the screen.

Using touch screen gestures


A touch screen computer allows you to control items on the screen directly with your fingers.

 **TIP:** On touch screen computers, you can perform the gestures on the screen or on the TouchPad. You can also perform on-screen actions with the keyboard and mouse.

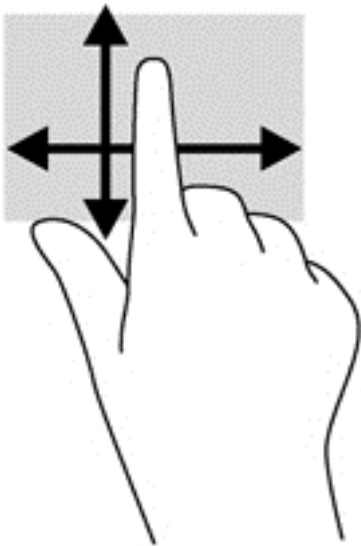
One-finger slide

The one-finger slide is mostly used to pan or scroll through lists and pages, but you can use it for other interactions, too, such as moving an object.

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

 **NOTE:** When many apps are displayed on the Start screen, you can slide your finger to move the screen left or right.


- To drag, press and hold an object, and then drag the object to move it.



Tapping

To make an on-screen selection, use the tap function.

- Use one finger to tap an object on the screen to make a selection. Double-tap an item to open it.

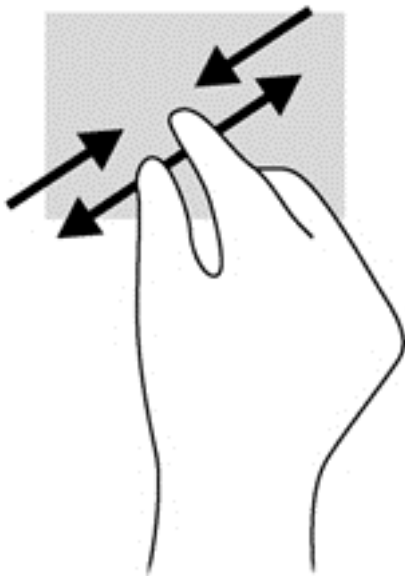
 **NOTE:** Press and hold your finger on an object to open a help screen that provides information about the object.



Pinching/stretching

Pinching and stretching allows you to zoom out or in on images or text.


- Zoom in by placing two fingers together on the display and then move your fingers apart.
- Zoom out by placing two fingers apart on the display and then move your fingers together.

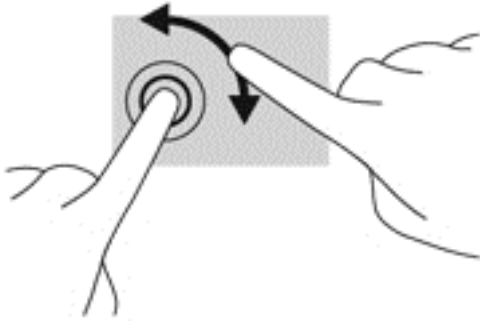


Rotating (select models only)

Rotating allows you to turn items such as photos.

- Anchor the forefinger of your left hand on the object you want to rotate. Using your right hand, slide your forefinger around in a sweeping motion from 12 o'clock to 3 o'clock. To reverse the rotation, move your forefinger from 3 o'clock to 12 o'clock.

 **NOTE:** Rotate is intended for specific apps where you can manipulate an object or image. Rotate may not be functional for all apps.



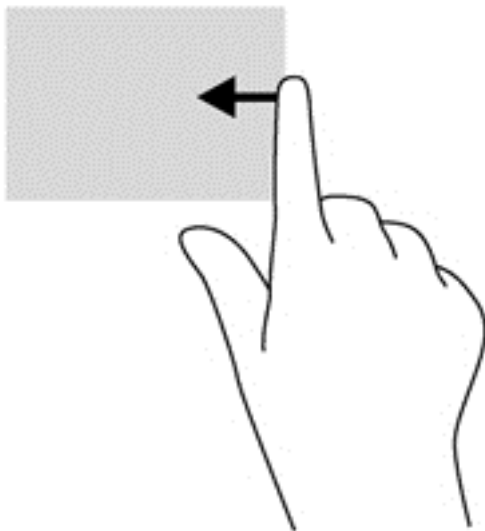
Edge swipes

With edge swipes you can perform tasks such as changing settings and finding or using apps.

Right-edge swipe

The right-edge swipe reveals the charms, which let you search, share, start apps, access devices, or change settings.

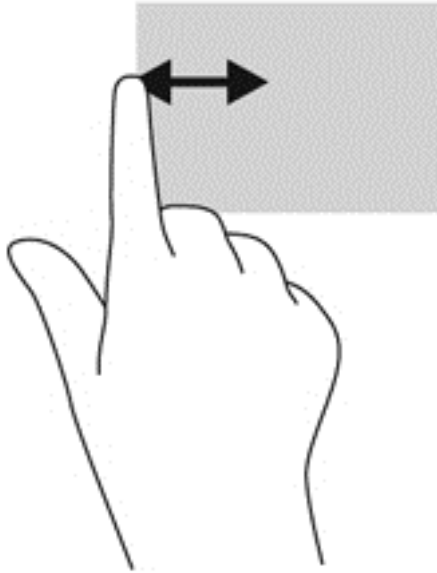
- Gently swipe your finger inward from the right edge of the display bezel onto the screen to display the charms.



Left-edge swipe


The left-edge swipe accesses your recently opened apps so that you can switch between them quickly.

- Gently swipe your finger inward from the left edge of the display bezel to switch between recently-opened apps.
- Without lifting your finger, swipe back toward the left edge to display all recently opened apps.

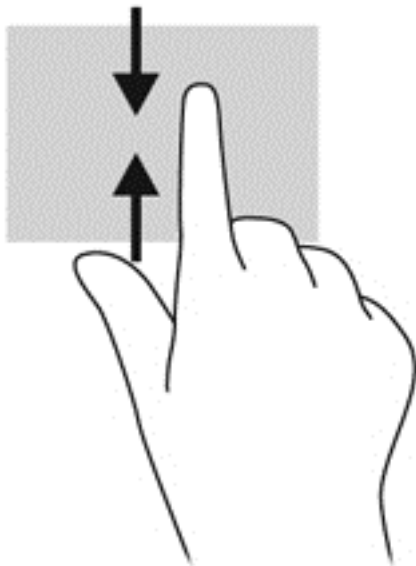


Top or bottom-edge swipe



The top or bottom-edge swipe displays app command options that allow you to customize apps.

 **IMPORTANT:** When an app is open, the top or bottom-edge gesture varies depending on the app.

- ▲ Gently swipe your finger from the top or bottom edge to reveal the app command options.



Setting touch screen preferences


Mode	Steps
	<ol style="list-style-type: none">1. Swipe from the right edge of the TouchPad or touch screen to display the charms, tap Search, and then tap the search box.2. Type c, tap Control Panel, tap Hardware and Sound, tap Pen and Touch, and then follow the on-screen instructions.
	<ol style="list-style-type: none">1. On the Start screen, type c, and then select Control Panel.2. Select Hardware and Sound, select Pen and Touch, and then follow the on-screen instructions.


These preferences are specific to the touch screen and the computer.

Using the on-screen keyboard

You may want to enter data into a data field. This may be required when you set up a wireless network configuration or a weather reporting location, or when you access user accounts on Internet sites. The computer has an on-screen keyboard that is displayed when you need to enter such information.

1. To display the keyboard, tap in the first data field. Tap the small keyboard icon that is displayed.
– or –
Tap the keyboard icon on the right side of the notification area.
2. To enlarge the size of the on-screen keyboard, tap the lower-right corner and drag it to the desired size.
3. Tap each character, continuing until you have spelled out the name or word that you are entering into the data field.

 **NOTE:** Action keys do not display or function on the on-screen keyboard.

 **NOTE:** Suggested words may be displayed at the top of the on-screen keyboard. If an appropriate word is displayed, tap it to select it.

4. Tap **enter** on the keyboard.

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

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, 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, see the information and website links provided in Help and Support. From the Start screen, type help, and then select **Help and Support**.

Using the wireless controls

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

- **Wireless button, wireless switch, or wireless key** (referred to in this chapter as the wireless button) (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 (white) 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 white, 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.

Using 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:

Mode	Steps
	<ol style="list-style-type: none">1. Swipe from the right edge of the TouchPad or touch screen to display the charms, tap Search, and then tap the search box.2. Type <code>control panel</code> in the search box, and then tap Control Panel.3. Tap Network and Internet, and then tap Network and Sharing Center.
	<ol style="list-style-type: none">1. From the Start screen, type <code>control panel</code>, and then select Control Panel.2. Select Network and Internet, and then select Network and Sharing Center.

For more information, from the Start screen, type `help`, and then select **Help and Support**.

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. Network computers can exchange software and data with each other.

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

To share folders or content on the same network:

1. From the Windows desktop, open **File Explorer**.
2. From **This PC**, click a folder with content you want to share. Select **Share** from the navigation bar at the top of the window, and then click **Specific people**.
3. Type a name in the **File Sharing** box, and then click **Add**.
4. Click **Share** and then follow the on-screen instructions.

To share drives on the same network:

1. From the Windows desktop, right-click the network status icon in the notification area, at the far right of the taskbar.
2. Select **Open Network and Sharing Center**.
3. Under **View your active networks**, select an active network.
4. Select **Change advanced sharing settings** to set sharing options for privacy, network discovery, file and printer sharing or other network options.

Using a WLAN

With a WLAN device, you can access a wireless local area network (WLAN), which is composed of other devices 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 devices 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 devices 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).

Using an Internet service provider

When you are setting up Internet access in your home, you must establish an account with an Internet service provider (ISP). To purchase Internet service and a modem, contact a local ISP. The ISP will help set up the modem, install a network cable to connect your wireless router to the modem, and test the Internet service.




NOTE: Your ISP will give you a user ID and a password to use for Internet access. Record this information and store it in a safe place.

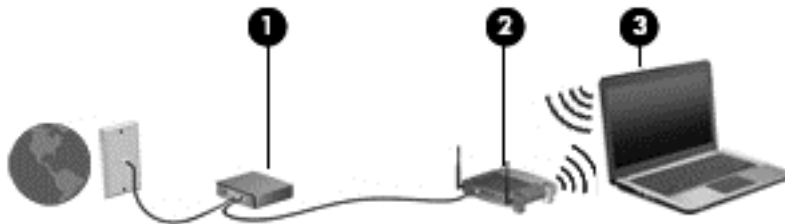
Setting up a WLAN

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
- A wireless router **(2)** (purchased separately)
- A wireless computer **(3)**

 **NOTE:** Some modems have a built-in wireless router. Check with your ISP to determine what type of modem you have.

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 devices can be connected to the network to access the Internet.

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

Configuring a wireless router

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

 **NOTE:** It is recommended that you initially connect your new wireless device to the router by using the network cable provided with the router. When the device successfully connects to the Internet, disconnect the cable, and access the Internet through your wireless network.

Protecting your WLAN

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. If you are concerned about the security of your device when connected to a hotspot, limit your network activities to email that is not confidential and basic Internet surfing.


Wireless radio signals travel outside the network, so other WLAN devices can pick up unprotected signals. Take the following precautions to protect your WLAN:


- Use a firewall.
A firewall checks both data and requests for data that are sent to your network, and discards any suspicious items. Firewalls are available in both software and hardware. Some networks use a combination of both types.
- Use wireless encryption.
Wireless encryption uses security settings to encrypt and decrypt data that is transmitted over the network. For more information, from the Start screen, type `help`, and then select **Help and Support**.

Connecting to a WLAN


To connect to the WLAN, follow these steps:

1. Be sure that the WLAN device is on.
2. From the Windows desktop, tap or click the network status icon in the notification area, at the far right of the taskbar.
3. Select your WLAN from the list.
4. Click **Connect**.
5. If the WLAN is a security-enabled WLAN, you are prompted to enter a security code. Type the code, and then click **OK** 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.

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

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)
- Mouse

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


4 Enjoying entertainment features

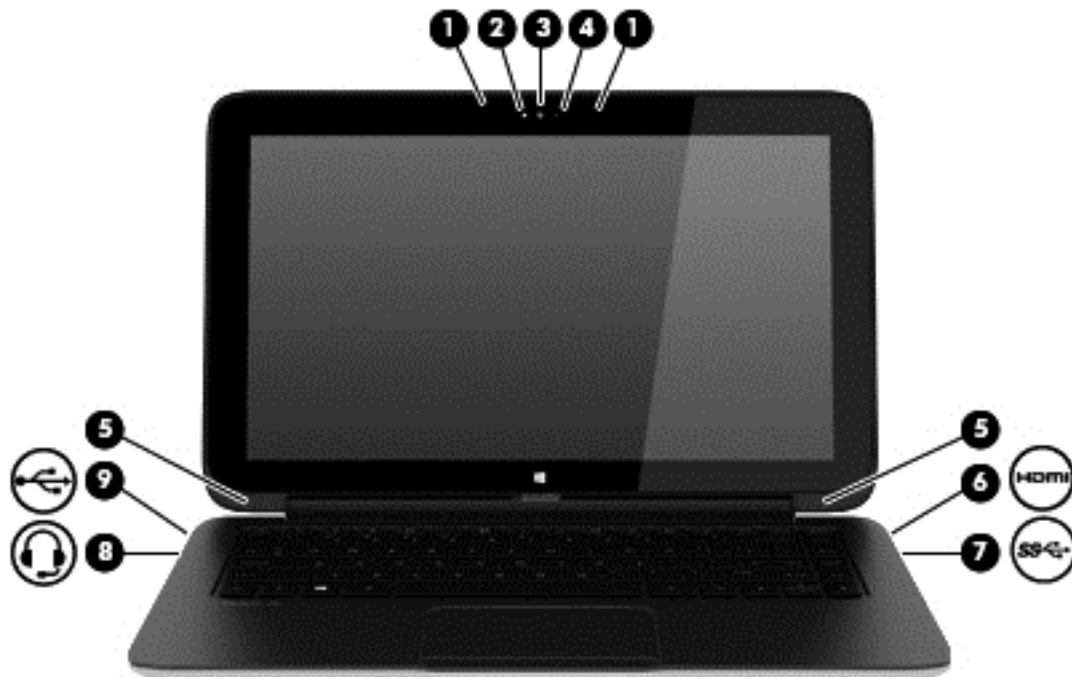
Use your HP computer as an entertainment hub to socialize via the webcam, enjoy and manage your music, and download and watch movies. Or, to make your computer an even more powerful entertainment center, connect external devices like a monitor, projector, or television, or speakers and headphones.





Multimedia features



Here are some of the entertainment features on your computer.



Component	Description	
(1) 	Audio-out (headphone) jack/Audio-in (microphone) jack	<p>Connects optional powered stereo speakers, headphones, earbuds, a headset, or a television audio cable. Also connects an optional headset microphone.</p> <p>WARNING! To reduce the risk of personal injury, adjust the volume before using headphones, earbuds, or a headset. For additional safety information, see the <i>Regulatory, Safety and Environmental Notices</i>.</p> <p>NOTE: When a device is connected to the jack, the computer speakers are disabled.</p> <p>NOTE: Be sure that the device cable has a 4-conductor connector that supports both audio-out (headphone) and audio-in (microphone).</p> <p>NOTE: Stand-alone microphones and headphones with separate microphone jacks are not supported.</p>
(2)	Volume button	<p>Controls speaker volume.</p> <ul style="list-style-type: none"> To increase speaker volume, press the + edge of the button. To decrease speaker volume, press the – edge of the button.





Component	Description	
(1)	Internal microphones (2)	Record sound.
(2)	Webcam light	On: The webcam is in use.
(3)	Webcam	<p>Records video and captures photographs. Some models may allow you to video conference and chat online using streaming video.</p> <p> Swipe from the right edge of the TouchPad or touch screen to display the charms, tap Search, and then tap the search box. type <code>camera</code>, and then tap Camera from the list of applications.</p> <p>– or –</p> <p> From the Start screen, type <code>camera</code>, and then select Camera from the list of applications.</p>
(4)	Ambient light sensor	Automatically adjusts the display brightness based on the lighting conditions in your environment.
(5)	Speakers (2)	Produce sound.
(6)	 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 HDMI device.
(7)	 USB 3.0 port	Connects optional USB 3.0 devices and provide enhanced USB power performance.
		NOTE: For details about different types of USB ports, see Using a USB device on page 50 .

Component	Description	
(8) 	Audio-out (headphone) jack/Audio-in (microphone) jack	<p>Connects optional powered stereo speakers, headphones, earbuds, a headset, or a television audio cable. Also connects an optional headset microphone.</p> <p>WARNING! To reduce the risk of personal injury, adjust the volume before using headphones, earbuds, or a headset. For additional safety information, see the <i>Regulatory, Safety and Environmental Notices</i>.</p> <p>NOTE: When a device is connected to the jack, the computer speakers are disabled.</p> <p>NOTE: Be sure that the device cable has a 4-conductor connector that supports both audio-out (headphone) and audio-in (microphone).</p> <p>NOTE: Stand-alone microphones and headphones with separate microphone jacks are not supported.</p>
(9) 	USB 2.0 port	Connects an optional USB device.

Using the webcam

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:

Mode	Steps
	<ol style="list-style-type: none"> 1. Swipe from the right edge of the TouchPad or touch screen to display the charms, tap Search, and then tap the search box. 2. Type <code>camera</code>, and then tap Camera from the list of applications.
	From the Start screen, type <code>camera</code> , and then select Camera from the list of applications.

For details about using the webcam, go to Help and Support. From the Start screen, type `h`, and then select **Help and Support**.

Using audio

On your computer, 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 33](#). Before connecting speakers, lower the volume setting.

Connecting headphones and microphones



You can connect wired headphones or headsets to the audio-out (headphone)/audio-in (microphone) jack on your computer. Many headsets with integrated microphones are commercially available.

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



⚠ 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, from the Start screen, type `support`, select the **HP Support Assistant** app, select **My computer**, and then select **User guides**.

Testing your audio features



To check the audio functions on your computer, follow these steps:

Mode	Steps
	<ol style="list-style-type: none">1. Swipe from the right edge of the TouchPad or touch screen to display the charms, tap Search, and then tap the search box.2. Type <code>c</code>, tap Control Panel, tap Hardware and Sound, and then tap Sound.3. When the Sound window opens, tap the Sounds tab. Under Program Events, tap any sound event, such as a beep or alarm, and then tap Test.
	<ol style="list-style-type: none">1. On the Start screen, type <code>c</code>, and then select Control Panel from the list of applications.2. Select Hardware and Sound, and then select Sound.3. When the Sound window opens, select the Sounds tab. Under Program Events, select any sound event, such as a beep or alarm, and then click Test. <p>You should hear sound through the speakers or through connected headphones.</p>

To check the recording functions on your computer, follow these steps:

Mode	Steps
	<ol style="list-style-type: none"> 1. Swipe from the right edge of the TouchPad or touch screen to display the charms, tap Search, and then tap the search box. 2. Type s, and then tap Sound Recorder. 3. Tap Start Recording and speak into the microphone. Save the file to your desktop. 4. Open a multimedia program and play the recording.
	<ol style="list-style-type: none"> 1. From the Start screen, type s, and then select Sound Recorder. 2. Click Start Recording and speak into the microphone. Save the file to your desktop. 3. Open a multimedia program and play the recording.


To confirm or change the audio settings on your computer:

Mode	Steps
	<ol style="list-style-type: none"> 1. Swipe from the right edge of the TouchPad or touch screen to display the charms, tap Search, and then tap the search box. 2. Type c, and then tap Control Panel from the list of applications. 3. Tap Hardware and Sound, and then tap Sound.
	<ol style="list-style-type: none"> 1. From the Start screen, type c, and then select Control Panel from the list of applications. 2. Select Hardware and Sound, and then select Sound.


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 without needing to connect to a network.

To enhance your viewing enjoyment, use one of the video ports on the keyboard dock to connect an external monitor, projector, or television. Your computer has a high-definition multimedia interface (HDMI) port, which allows you to connect a high-definition monitor or television.

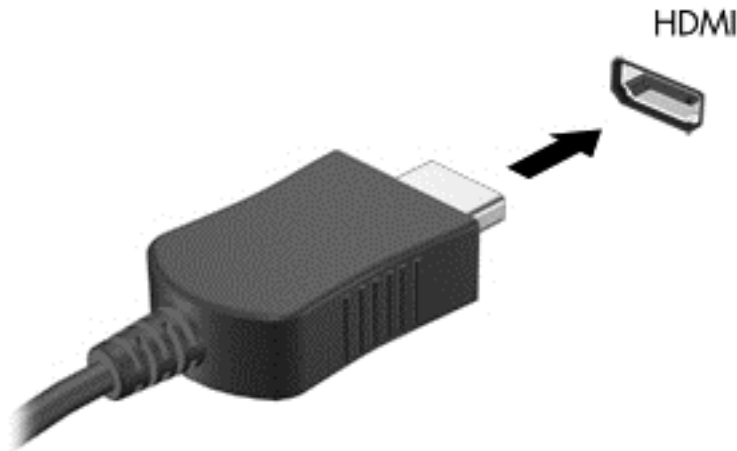
 **IMPORTANT:** Be sure that the external device is connected to the correct port on the computer, using the correct cable. Check the device manufacturer's instructions if you have questions.

Connecting video devices by using an HDMI cable

 **NOTE:** To connect an HDMI device to your keyboard dock, you need an HDMI cable, sold separately.


To see the computer screen image on a high-definition television 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 television or monitor.
3. Press **f4** on the computer 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 external device.
 - **Extend:** View the screen image extended across *both* the computer and external device.
 - **Second screen only:** View the screen image on the external device only.

Each time you press **f4** on the computer, the display state changes.

 **NOTE:** Adjust the screen resolution of the external device, especially if you choose the “Extend” option. From the Start screen on the keyboard dock, type `control panel`, and then select **Control Panel** from the list of applications. Select **Appearance and Personalization**. Under **Display**, select **Adjust screen resolution** for best results.

Setting up HDMI audio

HDMI is the only video interface that supports high-definition video and audio. After you connect an HDMI television 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**.

Camera

Your tablet includes an integrated webcam which is an input device that allows you to record video and take photos.


Discovering and connecting to Miracast-compatible wireless displays (select models only)

To discover and connect to Miracast-compatible wireless displays without leaving your current apps, follow the steps below.

Action	Using a keyboard and mouse	Using touch gestures
Discover and connect to Miracast-compatible wireless displays	Point to the upper-right or lower-right corner of the Start screen to display the charms, click Devices , click Project , and then follow the on-screen instructions.	Swipe from the right edge of the Start screen to display the charms, tap Devices , tap Project , and then follow the on-screen instructions.

5 Navigating the screen

Your computer allows navigation using touch gestures in addition to the keyboard and mouse. Touch gestures can be used on your computer's TouchPad or on a touch screen.

 **NOTE:** An external USB mouse (purchased separately) can be connected to one of the USB ports on the keyboard dock.

Review the *Windows Basics* guide included with your computer. The guide provides information on common tasks using the TouchPad, touch screen, or the keyboard.


Action keys do not display or function on the on-screen keyboard of the tablet. Tablet models have special hot key functions on the keyboard to perform routine tasks.

Using the TouchPad

The TouchPad allows you to navigate the computer screen by using simple finger movements.

You can customize the touch gestures by changing settings, button configurations, click speed, and pointer options. From the Start screen, type *c*, select **Control Panel**, and then select **Hardware and Sound**. Under **Devices and Printers**, select **Mouse**.

Using TouchPad gestures


 **TIP:** Use the left and right buttons on the TouchPad as you would use the corresponding buttons on an external mouse.

 **NOTE:** TouchPad gestures are not supported in all apps.

Tapping

To make an on-screen selection, use the Tap function on the TouchPad.

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

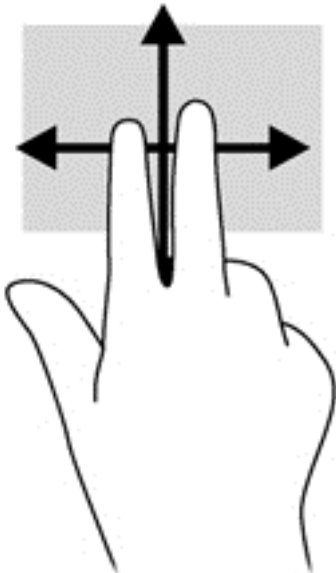
 **NOTE:** Press and hold on the TouchPad to open a help screen that provides information about the selected item.



Scrolling

Scrolling is useful for moving up, down, or sideways on a page or image.

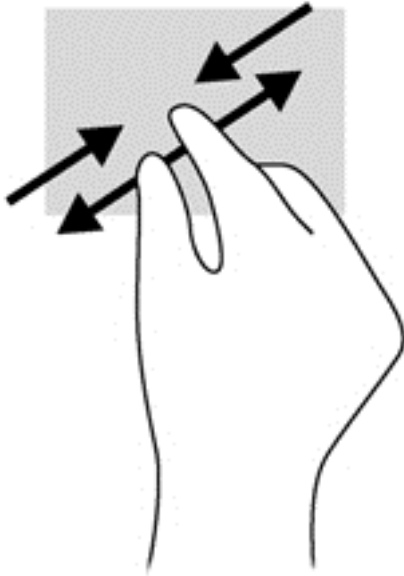
- Place two fingers slightly apart on the TouchPad zone and then drag them up, down, left, or right.



Pinching/zooming

Pinching and zooming allow you to zoom out or in on images or text.

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



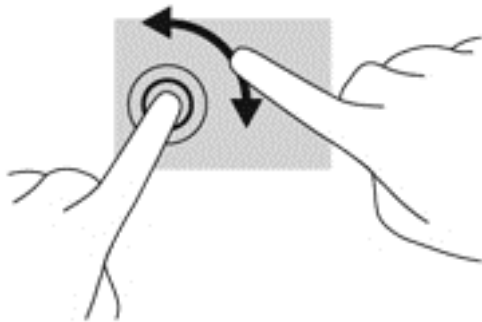
Rotating (select models only)

Rotating allows you to turn items such as photos.

- Point to an object, then anchor the forefinger of your left hand in the TouchPad zone. Using your right hand, slide your forefinger in a sweeping motion from 12 o'clock to 3 o'clock. To reverse the rotation, move your forefinger from 3 o'clock to 12 o'clock.



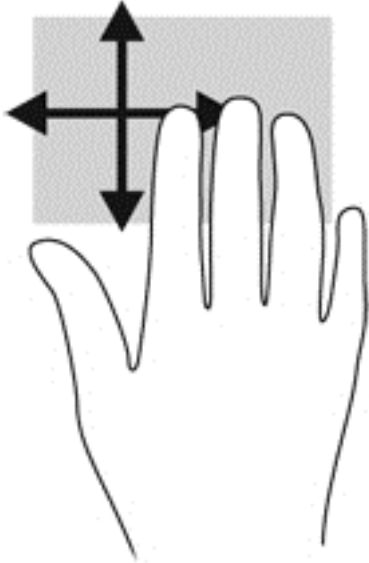
NOTE: Rotate is intended for specific apps where you can manipulate an object or image. It may not be functional for all apps.



Flicking (select models only)

Flicking allows you to navigate through screens or quickly scroll through documents.

- Place three fingers on the TouchPad zone and flick your fingers in a light, quick motion up, down, left or right.



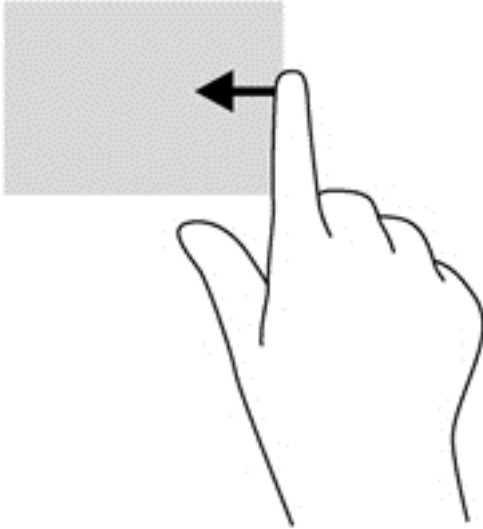
Edge swipes

Edge swipes allow you to access toolbars on your computer for tasks such as changing settings and finding or using apps.

Right-edge swipe


The right-edge swipe accesses the charms, which let you search, share, start apps, access devices, or change settings.

- Swipe your finger gently from the right edge to display the charms.

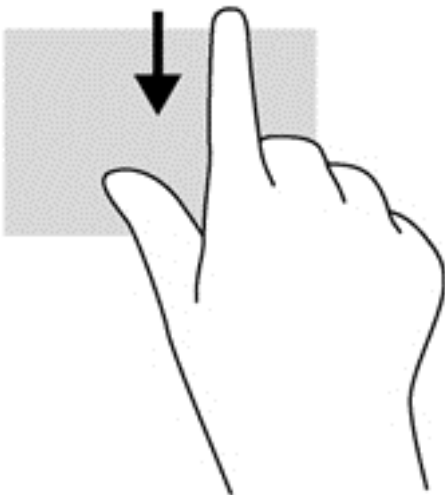


Top-edge swipe

The top-edge swipe displays app command options that allow you to customize apps.

 **IMPORTANT:** When an app is open, the top-edge gesture varies depending on the app.

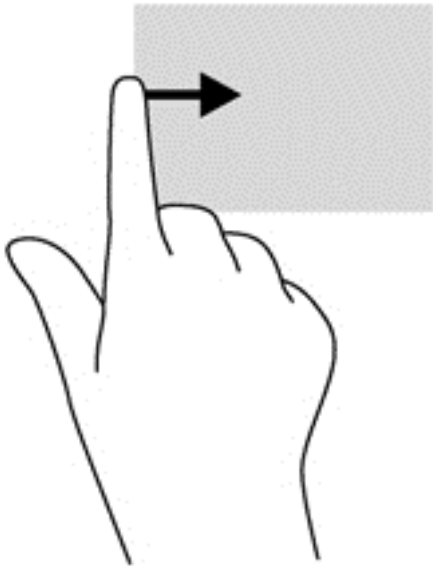
- Gently swipe your finger from the top edge to reveal the app command options.



Left-edge swipe


The left-edge swipe accesses your recently opened apps so that you can switch between them quickly.



- Swipe your finger gently from the left edge of the TouchPad to switch between recently opened apps.




Using the keyboard and mouse

The keyboard and mouse allow you to type, select items, scroll and perform the same functions as using touch gestures. The keyboard dock allows you to use special action keys and hot keys to perform specific functions.

 **NOTE:** Action keys do not display or function on the on-screen keyboard of the tablet.


 **TIP:** The Windows key  on the keyboard allows you to quickly return to the Start screen from an open app or the Windows desktop. Pressing the Windows key again returns you to the previous screen.

 **NOTE:** Depending on the country or region, your keyboard may have different keys and keyboard functions than those discussed in this section.

Using the keys

Your computer has different ways to quickly access information or perform functions with certain key combinations.

Using the action keys

 **NOTE:** Action keys do not display or function on the on-screen keyboard of the tablet.












An action key on the keyboard dock performs an assigned function. The icon on each of the **f1** through **f4** and **f6** through **f12** 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.

The keyboard dock action key feature is enabled at the factory. You can disable this feature in Setup Utility (BIOS). See [Using Setup Utility \(BIOS\), MultiBoot, and HP PC Hardware Diagnostics \(UEFI\) on page 61](#) for instructions on opening Setup Utility (BIOS), and then follow the instructions at the bottom of the screen.

To activate the assigned function after disabling the action key feature on the keyboard dock, you must press the **fn** key in combination with the appropriate action key.

Icon	Key	Description
	f1	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.
	f2	Decreases the screen brightness incrementally as long as you hold down the key.
	f3	Increases the screen brightness incrementally as long as you hold down the key.
	f4	Switches the screen image between display devices connected to the system. For example, if a monitor is connected to the computer, 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. This action key can also alternate images among other devices that are receiving video information from the computer.
	f6	Mutes or restores speaker sound.
	f7	Decreases speaker volume incrementally as long as you hold down the key.
	f8	Increases speaker volume incrementally as long as you hold down the key.
	f9	Plays the previous track of an audio CD or the previous section of a DVD or a BD.
	f10	Begins, pauses, or resumes playback of an audio CD, a DVD, or a BD.
	f11	Plays the next track of an audio CD or the next section of a DVD or a BD.
	f12	Turns the wireless feature on or off. NOTE: A wireless network must be set up before a wireless connection is possible.

Using Windows shortcut keys

Microsoft Windows 8 provides shortcuts to perform actions quickly. Press the Windows key  in combination with a designated key in the table to perform the action.

For additional information on Windows shortcut keys, go to **Help and Support**. From the Start screen, type `help`, and then select **Help and Support**.



NOTE: Action keys do not display or function from the on-screen keyboard of the tablet.

For commonly used shortcuts, use the *Windows Basics* guide.

Using the hot keys

A hot key is a combination of the `fn` key and the `esc` key.

To use a hot key:

- ▲ Briefly press the `fn` key, and then briefly press the second key of the combination.

Function	Hot key	Description
Display system information.	<code>fn+esc</code>	Displays information about system hardware components and the system BIOS version number.


6 Managing power


Your computer can operate on either battery power or external power. When the computer is only running on battery power and an AC power source is not available to charge the battery, it is important to monitor and conserve the battery charge. Your computer supports an optimal power plan to manage how your computer uses and conserves power so that computer performance can be balanced with power conservation.

Initiating Sleep and Hibernation

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

- **Sleep**—The Sleep state is automatically initiated after a period of inactivity when running on battery power or on external power. Your work is saved to memory, allowing you to resume your work very quickly. You can also initiate Sleep manually. For more information, see [Initiating and exiting Sleep on page 44](#).
- **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.

 **NOTE:** If you want to initiate Hibernation manually, you can enable Hibernation using Power Options. For more information, see [Enabling and exiting Hibernation \(select models only\) on page 44](#).

 **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 Sleep 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.

Intel Rapid Start Technology (select models only)

For select models, the Intel Rapid Start Technology (RST) feature is enabled by default. Rapid Start Technology allows your computer to resume quickly from inactivity.


Rapid Start Technology manages your power-saving options as follows:

- **Sleep**—Rapid Start Technology allows you to select the Sleep state. To exit from Sleep, press any key, activate the TouchPad, or press the power button briefly.
- **Hibernation**—Rapid Start Technology initiates Hibernation after a period of inactivity while in the Sleep state when running on battery power or on external power or when the battery reaches a critical level. After Hibernation is initiated, press the power button to resume your work.


 **NOTE:** Rapid Start Technology can be disabled in Setup Utility (BIOS). If you want to be able to initiate the Hibernation state, you must enable user-initiated Hibernation using Power Options. See [Enabling and exiting Hibernation \(select models only\) on page 44](#).

Initiating and exiting Sleep

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

- Briefly press the power button.
-  Swipe from the right edge of the TouchPad or touch screen to display the charms, tap **Settings**, tap the **Power** icon, and then tap **Sleep**.


– or –

-  From the Start screen, point to the upper-right or lower-right corner of the screen. When the charms list opens, select **Settings**, select the **Power** icon, and then select **Sleep**.

To exit Sleep:

- Press the Windows key.
- Briefly press the power button.
- If the display is closed, and the tablet is connected to the keyboard dock, 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 the computer 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 the computer will return to the screen.

Enabling 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 screen, type `power`, select **Settings**, and then select **Power Options** from the list of applications.
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

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

1. From the Start screen, type `power`, select **Settings**, and then select **Power Options** from the list of applications.
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 display the percentage of remaining battery charge and the current power plan, on the Windows desktop, point over the power meter icon.
- To use Power Options, click the power meter icon and select an item from the list. From the Start screen, type `power`, select **Settings**, and then select **Power Options**.

Different power 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 or critical battery level.

Running on battery power

When a charged battery is in the tablet and the tablet is not plugged into external power, the tablet runs on battery power. If the tablet has a charged battery installed and the AC adapter is disconnected from the tablet, the tablet automatically switches to battery power and the display brightness decreases to conserve battery life. The battery in the tablet slowly discharges when the tablet is off and unplugged from external power. When the tablet is attached to the keyboard dock, the system is powered by the keyboard dock's battery until the battery reaches a critical level in the keyboard dock. At that time, the system switches to the tablet's battery.

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

 **NOTE:** There is a secondary battery in the keyboard dock. When the tablet is attached to the keyboard dock, the system is powered by the keyboard dock's battery.

Factory-sealed battery

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, from the Start screen, type `support`, select the **HP Support Assistant** app, and then select **Battery and performance**. If Battery Check indicates that your battery should be replaced, contact support.

Do not attempt to remove or replace the factory-sealed battery. Removing or replacing the battery could affect your warranty coverage. If the battery is no longer holding a charge, contact support.

When a battery has reached the end of its useful life, do not dispose of the battery in general household waste. Follow the local laws and regulations in your area for battery disposal.

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, from the Start screen, type `support`, select the **HP Support Assistant** app, and then select **Battery and performance**.

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

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

Conserving battery power

Tips for conserving battery power and maximizing battery life:

- Lower the brightness on the display.
- Select the **Power saver** setting in Power Options.
- Turn off wireless 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.

Identifying low battery levels

When a battery that is the sole power source for the computer reaches a low or critical battery level, the following behavior occurs:

- The battery light (select models only) indicates a low or critical battery level.

– or –

- The power meter icon on the Windows desktop shows a low or critical battery notification.



NOTE: For additional information about the power meter, see [Using the power meter and power settings on page 45](#).

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

- 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.
- If Hibernation is enabled and the computer is on or in the Sleep state, the computer initiates Hibernation.

Resolving a low battery level

Resolving a low battery level when external power is available

- Connect an AC adapter.
- Connect the keyboard dock to the tablet.
- Connect an optional power adapter purchased as an accessory from HP.

Resolving a low battery level when no power source is available

- Initiate Hibernation (see [Enabling and exiting Hibernation \(select models only\) on page 44](#)).
- 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. Connect the AC adapter to the computer and to external power.
2. Exit Hibernation by pressing the power button.

Running on external AC power

For information on 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 external 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 specifically for this system.

⚠ CAUTION: To prevent damage to your system, do not use AC adapters from other tablets or computers.

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

When you connect the computer to external AC power:

- The battery begins to charge.
- The display brightness increases.
- The power meter icon on the Windows desktop changes appearance.

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

- The computer switches to battery power.
- The display 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 are off.

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.

HP CoolSense (select models only)

HP CoolSense  automatically detects when the computer is not in a stationary position and adjusts performance and fan settings to keep the surface temperature of your computer at the optimum level of comfort.

When HP CoolSense is off, the position of the computer is not detected and the performance and fan options remain at the factory setting. As a result, the surface temperature of the computer may be higher than it would be with HP CoolSense on.

To turn CoolSense off or on, follow these steps:

- ▲ From the Start screen, type `cool`, select **Settings**, and then select **HP CoolSense**.


Refreshing your software content with Intel Smart Connect Technology (select models only)

When the computer is in the Sleep state, Intel® Smart Connect Technology periodically causes the computer to exit Sleep. Smart Connect then updates the content for certain open applications. As a

result, your work is immediately available to you as soon as you exit Sleep. You do not have to wait while updates are downloaded.

- ▲ To enable this feature or manually adjust the settings, from the **Start** screen, type `smart`, and then select Intel® Smart Connect Technology.

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 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

To shut down the tablet when it is not connected to the keyboard dock:

- ▲ Press the Windows key and the power button at the same time, and then tap **Shut down**.

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

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

1. Save your work and close all open programs.
2. Swipe from the right edge of the TouchPad or touch screen to display the charms, tap **Settings**, tap the **Power** icon, and then tap **Shut down**.

– or –

From the Start screen, point to the upper-right or lower-right corner of the screen.

3. When the charms list opens, click **Settings**, click the **Power** icon, and then 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:

To shut down the unresponsive tablet:

- ▲ Press both the Windows key and the power button at the same time.


To shut down the unresponsive tablet when it is connected to the keyboard dock:


- 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.

7 Managing and sharing information

Drives are digital storage devices that help you store, manage, share, and access information. Your computer has a solid state drive that stores your computer's software, operating system, and also provides storage for all of your personal files.


For added capacity or functionality, connect an external drive (purchased separately), such as an optical drive or hard drive, or insert a memory card directly from your phone or camera. A USB flash drive, connected to the Universal Serial Bus (USB) port on your computer, also allows quick data transfer. Some devices use the computer's power to run; others have their own power source. Some devices come with software that must be installed.

 **NOTE:** For information about connecting external wireless devices, see [Connecting to a network on page 22](#).

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


Using a USB device

Most computers have more than one USB port, because this versatile interface allows you to connect numerous kinds of external devices—such as a USB keyboard, mouse, external drive, printer, scanner, or USB hub—to your computer.


 **NOTE:** Some USB devices may not be supported when the computer is running on AC or battery power if they do not have their own AC adapters. More than one USB device may not be supported simultaneously when the computer is running on AC or battery power.

Type	Description
USB 2.0	Transfers data at 60 MB/s.
USB 3.0	Transfers data at 640 MB/s. USB 3.0 ports, also known as SuperSpeed ports, are also compatible with USB 1.0 and 2.0 devices.

Connecting a USB device


 **CAUTION:** To reduce the risk of damage to a USB connector, use minimal force to connect the device.

- ▲ Connect the USB cable for the device to the USB port.


 **NOTE:** The USB port on your computer may look slightly different from the illustration in this section.



A sound indicates that the device has been detected.

 **NOTE:** The first time you connect a USB device, a message displays on the Windows desktop and an icon appears in the notification area, letting you know that the device is recognized by the computer.


Removing a USB device

 **CAUTION:** To reduce the risk of damage to a USB connector, do not pull on the cable to remove the USB device.

CAUTION: To reduce the risk of loss of information or an unresponsive system, use the following procedure to safely remove the USB device.

1. Save your information and close all programs associated with the device.
2. From the Windows desktop, tap or click the hardware icon in the notification area, at the far right of the taskbar. A message, **Safely remove hardware and eject media** is revealed. Follow the on-screen instructions.

Connecting a powered USB device

 **CAUTION:** To reduce the risk of damage to the equipment when connecting a powered device, be sure that the device is turned off and its AC power cord is unplugged.

1. Connect the device to the computer.
2. Plug the device power cord into a grounded AC outlet.
3. Turn on the device.

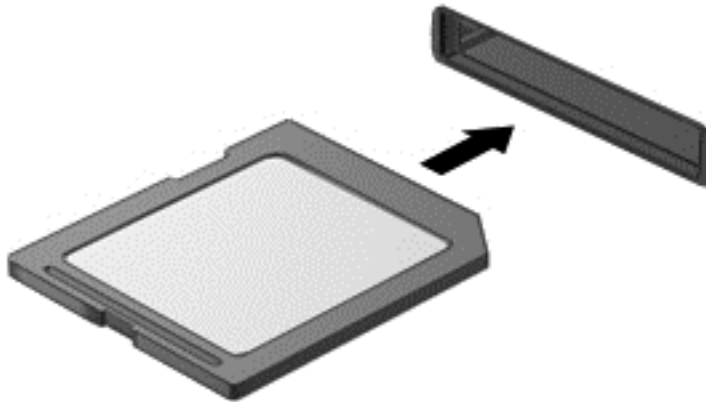
To disconnect an unpowered external device, stop the device, and then disconnect it from the computer. To disconnect a powered external device, turn off the device, disconnect it from the computer, and then unplug the AC power cord.

Inserting and removing a memory card

To insert a memory card:

CAUTION: To reduce the risk of damage to the memory card connectors, use minimal force to insert a memory card.

1. Hold the card label-side up, with the connectors facing the computer.
2. Insert the card into the memory card reader, and then press in on the card until it is firmly seated.

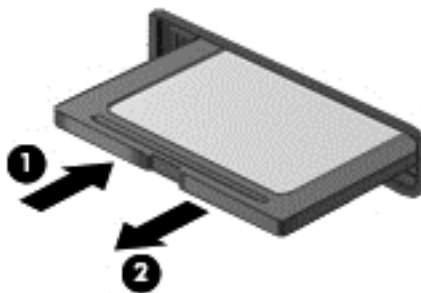


A sound indicates that the device has been detected.

To remove a memory card:

CAUTION: To reduce the risk of loss of data or an unresponsive system, use the following procedure to safely remove the memory card.

1. Save your information and close all programs associated with the memory card.
2. From the Windows desktop, tap or click the remove hardware icon in the notification area, at the far right of the taskbar. Then, follow the on-screen instructions.
3. Press in on the card **(1)**, and then remove it from the slot **(2)**.



NOTE: If the card is not ejected, pull the card out of the slot.

8 Maintaining your computer

It is important to perform regular maintenance to keep your computer in optimal condition. This chapter provides information about improving the performance of your computer by running tools such as Disk Defragmenter and Disk Cleanup. It also provides information about updating your programs and drivers, instructions for cleaning your computer, and tips for traveling with your computer.

Improving performance

Everyone wants a fast computer and by performing regular maintenance tasks, using tools such as Disk Defragmenter and Disk Cleanup, you can drastically improve the performance of your computer. Also, as your computer gets older, you might consider installing larger drives and adding more memory.

Using Disk Defragmenter

As you use your computer over time, the files on the hard drive become fragmented. A fragmented drive means data on your drive is not contiguous (sequential) and, because of this, the hard drive works harder to locate files, thus slowing down the computer. Disk Defragmenter consolidates (or physically reorganizes) the fragmented files and folders on the hard drive so that the system can run more efficiently.



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

After you start Disk Defragmenter, it works without supervision. However, depending on the size of your hard drive and the number of fragmented files, Disk Defragmenter may take more than an hour to complete.

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. Connect the computer to AC power.
2. From the Start screen, type `d`, and then type `disk` in the search box. Select **Settings**, and then select **Defragment and optimize your drives**.
3. Follow the on-screen instructions.

For additional information, access 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 run more efficiently.

To run Disk Cleanup:

1. From the Start screen, type `disk`, select **Settings**, and then select **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 to the latest versions. Updates can resolve issues and bring new features and options to your computer. Technology is always changing, and updating programs and drivers allows your computer to run the latest technology available. 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 update notifications when they become available.

Cleaning your computer

Cleaning products

Use the following products to safely clean your computer:

- Dimethyl benzyl ammonium chloride 0.3 percent maximum concentration (For example: disposable wipes. These wipes come in a variety of brand names.)
- Alcohol-free glass cleaning fluid
- Water with mild soap solution
- 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, which 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 turned on:

Turn off the computer.

Disconnect external power.

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 the display is dry before closing the display.


Cleaning the sides and cover

To clean the sides and 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

 **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 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, here are some tips to keep in mind to keep your equipment safe.

- Prepare the computer for traveling or shipping:
 - Attach the tablet to the keyboard dock to protect the tablet screen.
 - Back up your information to an external drive.
 - Remove all discs and all external media cards, such as memory cards, from the computer.
 - 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 conveyor 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.”

- If the computer has a wireless device installed, the use of these devices may be restricted in some environments. Such restrictions may apply onboard aircraft, in hospitals, near explosives, and in hazardous locations. If you are uncertain of the policy that applies to the use of a particular device, 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.

9 Securing your computer and information

Tablet 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.

Tablet risk	Security feature
Unauthorized use of the computer	Power-on password
Computer viruses	Antivirus software
Unauthorized access to data	Firewall software
Unauthorized access to Setup Utility (BIOS) settings and other system identification information	Administrator password
Ongoing or future threats to the computer	Software updates
Unauthorized access to a Windows user account	User password

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.

Use the following tips for creating and saving passwords:

- 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 three 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, from the Start screen, type `support`, and then select the **HP Support Assistant** app.

Setting Windows passwords

Password	Function
User password	Protects access to a Windows user account. You may also set up your computer to require the user password to exit Sleep. See Setting password protection on wakeup on page 45 for more information.
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	<ul style="list-style-type: none">• Must be entered each time you access Setup Utility (BIOS).• If you forget your administrator password, you cannot access Setup Utility (BIOS). <p>NOTE: The administrator password can be used in place of the power-on password.</p> <p>NOTE: 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.</p> <p>NOTE: If you enter the power-on password at the first password check before the “Press the ESC key for Startup Menu” message is displayed, you must enter the administrator password to access Setup Utility (BIOS).</p>
Power-on password	<ul style="list-style-type: none">• 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. <p>NOTE: The administrator password can be used in place of the power-on password.</p> <p>NOTE: A power-on password is not displayed as it is set, entered, changed, or deleted.</p>

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

1. To start Setup Utility (BIOS), turn on or restart the computer, quickly press **esc**, and then press **f10**.
2. Use the arrow keys to select **Security**, and then follow the on-screen instructions.

Your changes take effect when the computer restarts.

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. An antivirus program may be

preinstalled on your computer. It is strongly recommended that you use an antivirus program 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, from the Start screen, type `support`, and then select the **HP Support Assistant** app.

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, Microsoft 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 54](#).

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, from the Start screen, type `c`, and then select **Control Panel**. Select **System and security**, select **Windows Update**, select **Change settings**, and then follow the on-screen instructions.

Installing Windows updates

Updates to the operating system and other software may have become available after the computer left the factory. Microsoft sends out alerts regarding critical updates. To protect the computer from security breaches and viruses, install all critical updates from Microsoft as soon as you receive an alert.

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. From the Start screen, type *w*, select **Settings**, and then select **Windows Update**.
- Run Windows Update monthly thereafter.
- Obtain updates to Windows and other Microsoft programs, as they are released, from the Microsoft website and through the updates link in Help and Support.

Installing HP and third-party software updates

HP recommends that you regularly update the software and drivers that were originally installed on your computer. To download the latest versions, go to <http://www.hp.com/support>. At this location, you can also register to receive automatic update notifications when they become available.

If you have installed third-party software after you purchased your computer, regularly update the software. Software companies provide software updates to their products to correct security problems and improve functionality of the software.

Securing your wireless network

When you set up your wireless network, always enable security features. For more information, see [Protecting your WLAN on page 25](#).

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. For more information, see [Backing up, restoring, and recovering on page 64](#).

10 Using Setup Utility (BIOS), MultiBoot, and HP PC Hardware Diagnostics (UEFI)

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)

To start Setup Utility (BIOS), turn on or restart the computer, quickly press **esc**, and then press **f10**.

Information about how to navigate in Setup Utility (BIOS) is located at the bottom of the screen.



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

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 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 using Setup Utility (BIOS).

1. Start Setup Utility (BIOS) see [Starting Setup Utility \(BIOS\) on page 61](#).
2. Use the arrow keys to select **Main**.
3. To exit Setup Utility (BIOS) without saving your changes, use the arrow keys to select **Exit**, select **Exit Discarding Changes**, and then press **enter**.
4. Click **Yes**.

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 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.

1. From the Start screen, type `support`, and then select the **HP Support Assistant** app.
2. Click **Updates and tune-ups**, and then click **Check for HP updates now**.
3. Follow the on-screen instructions.
4. At the download area, follow these steps:
 - a. Identify the most recent BIOS update and compare it to the BIOS version currently installed on your computer. If the update is more recent than your BIOS, 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.


If the update is more recent than your BIOS, 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 are displayed on the screen after the download is complete. If no instructions are displayed, follow these steps:

1. From the Start screen, type `e`, and then select **File Explorer**.
2. 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.

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. Turn on or restart the computer, quickly press **esc**, and then press **f2**.

The BIOS searches three places for the HP PC Hardware Diagnostics (UEFI) 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 63](#).

- b. Hard drive
- c. BIOS

2. When the diagnostic tool opens, click 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 **esc**.

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



NOTE: The HP PC Hardware Diagnostics (UEFI) download instructions are provided in English only.

1. Go to <http://www.hp.com>.
2. Click **Support & Drivers**, and then click the **Drivers & Software** tab.
3. Enter the product name in the text box, and then click **Search**.
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 HP and Windows to help you safeguard your information and retrieve it if you ever need to. These tools will help you return your computer to a proper working state or even back to the original factory state, all with simple steps.

This chapter provides information about the following processes:

- Creating recovery media and backups
- Restoring and recovering your system



NOTE: This chapter describes an overview of backing up, restoring and recovering options. For more details about the tools provided, see the HP Support Assistant. To access the HP Support Assistant, from the Start screen, select the **HP Support Assistant app**. Use the search field to access information about backup, restore, refresh, and other recovery topics, and then follow the information provided.

Creating recovery media and backups

Recovery after a system failure is only as good as your most recent backup.

- ▲ Use the Windows tools to create system restore points and create backups of personal information. For more information and steps, see HP Support Assistant. To access HP Support Assistant, from the Start screen, select the **HP Support Assistant app**. Use the search field to access information about restore.

Restore and recovery

There are several options for recovering your system. Choose the method that best matches your situation and level of expertise:

- Windows offers several options for restoring from backup, refreshing the computer, and resetting the computer to its original state. For more information and steps, see Help and Support. From the Start screen, type **h**, and then select **Help and Support**.
- If you need to correct a problem with a preinstalled application or driver, use the Drivers and Applications Reinstall option of HP Recovery Manager to reinstall the individual application or driver.

From the Start screen, type *recovery*, select **HP Recovery Manager**, select **Drivers and Applications Reinstall**, and then follow the on-screen instructions.

- If you want to restore the system to a previous state without losing any personal information, Windows System Restore is an option. System Restore allows you to restore without the requirements of Windows Refresh or a reinstallation. Windows creates system restore points automatically during a Windows update and other system maintenance events. Even if you did not manually create a restore point, you can choose to restore to an automatically created

restore point. For more information and steps for using Windows System Restore, see Help and Support. From the Start screen, type h, and then select **Help and Support**.

- If you have replaced the hard drive, you can use the Factory Reset option of HP Recovery media to restore the factory image to the replacement drive. For more information, see [Recovering using HP Recovery Manager on page 65](#).

Recovering using HP Recovery Manager

HP Recovery Manager software allows you to recover the computer to its original factory state by using the HP Recovery media you created. You can choose from one of the following recovery options:

- System Recovery—Reinstalls the original operating system, and then configures the settings for the programs that were installed at the factory.
- Minimized Image Recovery—Reinstalls the operating system and all hardware-related drivers and software, but not other software applications.
- Factory Reset—Restores the computer to its original factory state by deleting all information from the hard drive and re-creating the partitions. Then it reinstalls the operating system and the software that was installed at the factory.

What you need to know

- HP Recovery media must be used if the computer hard drive fails. If you have not already created recovery media, see [Creating recovery media and backups on page 64](#)
- To use the Factory Reset option, you must use HP Recovery media. If you have not already created recovery media, see [Creating recovery media and backups on page 64](#).
- If the HP Recovery media does not work, you can obtain recovery media for your system from support. See the *Worldwide Telephone Numbers* booklet included with the computer. You can also find contact information from the HP website. Go to <http://www.hp.com/support>, select your country or region, and follow the on-screen instructions.



IMPORTANT: HP Recovery Manager does not automatically provide backups of your personal data. Before beginning recovery, back up any personal data you wish to retain.

Using HP Recovery media to recover

You can use HP Recovery media to recover the original system. This method can be used if your system does not have an HP Recovery partition or if the hard drive is not working properly.

1. If possible, back up all personal files.
2. Insert the first HP Recovery media that you created, and then restart the computer.

– or –

Insert the HP Recovery USB flash drive you created 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 [Changing the computer boot order on page 66](#).

3. Follow the on-screen instructions.

Changing the computer boot order

If computer does not restart in HP Recovery Manager, you can change the computer boot order, which is the order of devices listed in BIOS where the computer looks for startup information. You can change the selection for an optical drive or a USB flash drive.

To change the boot order:

1. Insert the HP Recovery media you created.
2. Restart the computer.
3. Press and hold **esc** while the computer is restarting, and then press **f9** for boot options.
4. Select the optical drive or USB flash drive you want to boot from.
5. Follow the on-screen instructions.


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 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 - 65 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°C to 35°C	41°F to 95°F
Nonoperating	-20°C to 60°C	-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 make sure that it is properly grounded, and then remove the cover.
- 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 of the component.
- If you remove a component, place it in an electrostatic-safe container.

If you need more information about static electricity or assistance with component removal or installation, contact support.

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