

User Guide

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Product notice

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

Not all features are available in all editions or versions of Windows. Systems may require upgraded and/or separately purchased hardware, drivers, software or BIOS update to take full advantage of Windows functionality. Windows 10 is automatically updated, which is always enabled. ISP fees may apply and additional requirements may apply over time for updates. Go to <http://www.microsoft.com> for details.

To access the latest user guides, go to <http://www.hp.com/support>, and follow the instructions to find your product. Then select **User Guides**.

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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 full refund subject to the refund policy of your seller.

For any further information or to request a full refund of the price of the computer, please contact your 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).

Processor configuration setting (select products only)

 **IMPORTANT:** Select products are configured with an Intel® Pentium® N35xx/N37xx series or a Celeron® N28xx/N29xx/N30xx/N31xx series processor and a Windows® operating system. **If your computer is configured as described, do not change the processor configuration setting in msconfig.exe from 4 or 2 processors to 1 processor.** If you do so, your computer will not restart. You will have to perform a factory reset to restore the original settings.

Table of contents

1 Starting right	1
Best practices	1
More HP resources	2
2 Getting to know your computer	4
Locating hardware	4
Locating software	4
Front	5
Color zones	6
Color zones	6
Right	7
Back	9
Bottom	11
Labels	11
3 Connecting to a network	13
Connecting to a wireless network	13
Using the wireless controls	13
Operating system controls	13
Connecting to a WLAN	13
Using Bluetooth wireless devices (select products only)	14
Connecting Bluetooth devices	15
Connecting to a wired network—LAN	15
4 Enjoying entertainment features	16
Using audio	16
Connecting speakers	16
Connecting digital speakers	17
Connecting headphones	17
Connecting a microphone	17
Connecting headsets	18
Using sound settings	18
Using video	18
Discovering and connecting to Miracast-compatible wireless displays (select products only)	18

5 Managing power	19
Using Sleep and Hibernation	19
Initiating and exiting Sleep	19
Initiating and exiting Hibernation (select products only)	19
Shutting down (turning off) the computer	20
6 Maintaining your computer	21
Improving performance	21
Using Disk Defragmenter	21
Using Disk Cleanup	21
Using HP 3D DriveGuard (select products only)	21
Identifying HP 3D DriveGuard status	22
Updating programs and drivers	22
Cleaning your computer	22
Cleaning procedures	22
Cleaning the sides or cover	23
Traveling with or shipping your computer	23
7 Securing your computer and information	24
Using passwords	24
Setting Windows passwords	24
Setting Setup Utility (BIOS) passwords	25
Using Internet security software	25
Using antivirus software	25
Using firewall software	25
Installing software updates	26
Using HP Touchpoint Manager (select products only)	26
Securing your wireless network	26
Backing up your software applications and information	26
Using an optional security cable (select products only)	26
8 Using Setup Utility (BIOS)	27
Starting Setup Utility (BIOS)	27
Updating Setup Utility (BIOS)	27
Determining the BIOS version	27
Downloading a BIOS update	28
9 Using HP PC Hardware Diagnostics (UEFI)	29
Downloading HP PC Hardware Diagnostics (UEFI) to a USB device	30

10 Backing up, restoring, and recovering	31
Creating recovery media and backups	31
Using HP Recovery media (select products only)	31
Using Windows tools	32
Using the HP Cloud Recovery Download Tool (select products only)	33
Restore and recovery	33
Recovering using HP Recovery Manager	33
What you need to know before you get started	33
Using the HP Recovery partition (select products only)	34
Using HP Recovery media to recover	35
Changing the computer boot order	35
Removing the HP Recovery partition (select products only)	35
11 Specifications	36
Operating environment	36
12 Electrostatic Discharge	37
13 Accessibility	38
Supported assistive technologies	38
Contacting support	38
Index	39

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.

Best practices

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

- Back up your hard drive by creating recovery media. See [Backing up, restoring, and recovering on page 31](#).
- If you haven't already done so, connect to a wired or wireless network. See details in [Connecting to a network on page 13](#).
- Become familiar with the computer hardware and software. For more information, see [Getting to know your computer on page 4](#) and [Enjoying entertainment features on page 16](#).
- Update or purchase antivirus software. See [Using antivirus software on page 25](#).

More HP resources

To locate resources that provide product details, how-to information, and more, use this table.

Resource	Contents
<i>Setup Instructions</i>	<ul style="list-style-type: none">Overview of computer setup and features
HP support For HP support, go to http://www.hp.com/support .	<ul style="list-style-type: none">Online chat with an HP technicianSupport telephone numbersReplacement parts videos (select products only)Maintenance and service guidesHP service center locations
<i>Safety & Comfort Guide</i> To access this guide: <ul style="list-style-type: none">Select the Start button, select HP Help and Support, and then select HP Documentation. – or – <ul style="list-style-type: none">Select the Start button, select HP, and then select HP Documentation. – or – <ul style="list-style-type: none">Go to http://www.hp.com/ergo.	<ul style="list-style-type: none">Proper workstation setupGuidelines for posture and work habits that increase your comfort and decrease your risk of injuryElectrical and mechanical safety information
<i>Regulatory, Safety and Environmental Notices</i> To access this document: <ul style="list-style-type: none">Select the Start button, select HP Help and Support, and then select HP Documentation. – or – <ul style="list-style-type: none">Select the Start button, select HP, and then select HP Documentation.	<ul style="list-style-type: none">Important regulatory notices, including information about proper battery disposal, if needed.
<i>Limited Warranty*</i> To access this document: <ul style="list-style-type: none">Select the Start button, select HP Help and Support, and then select HP Documentation. – or – <ul style="list-style-type: none">Select the Start button, select HP, and then select HP Documentation. – or – <ul style="list-style-type: none">Go to http://www.hp.com/go/orderdocuments.	<ul style="list-style-type: none">Specific warranty information about this computer

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

Resource	Contents
	can write to HP at POD, PO Box 161, Kitchener Road Post Office, Singapore 912006. Include your product name, and your name, phone number, and postal address.

2 Getting to know your computer

Your computer features top-rated components. This chapter provides details about your components, where they're located, and how they work.

Locating hardware

To find out what hardware is installed on your computer:

- ▲ Type `device manager` in the taskbar search box, and then select the **Device Manager** app.
A list displays all the devices installed on your computer.

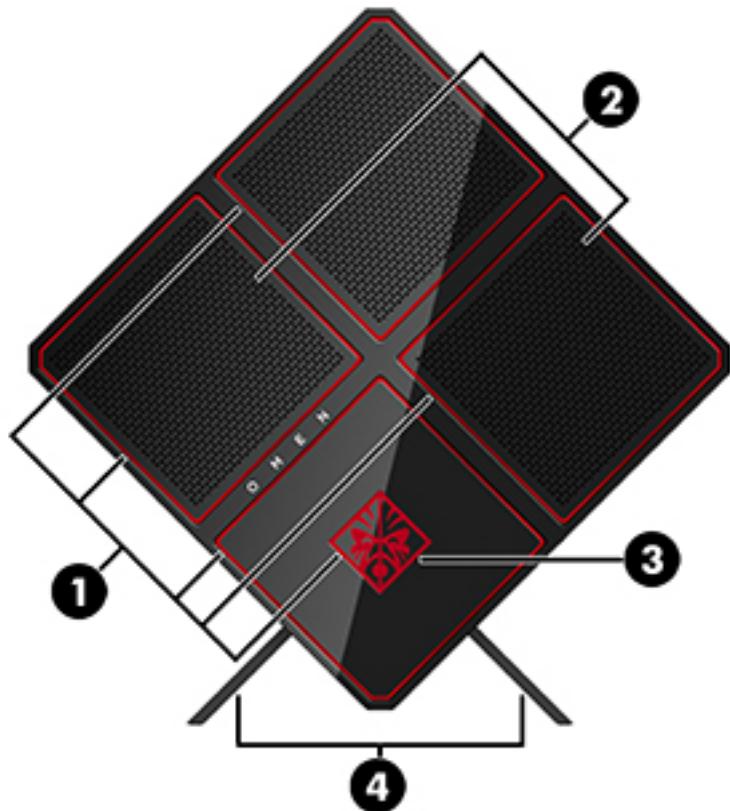
For information about system hardware components and the system BIOS version number, press `fn+esc` (select products only).

Locating software

To find out what software is installed on your computer:

- ▲ Select the **Start** button.
– or –
Right-click the **Start** button, and then select **Apps and Features**.

Front



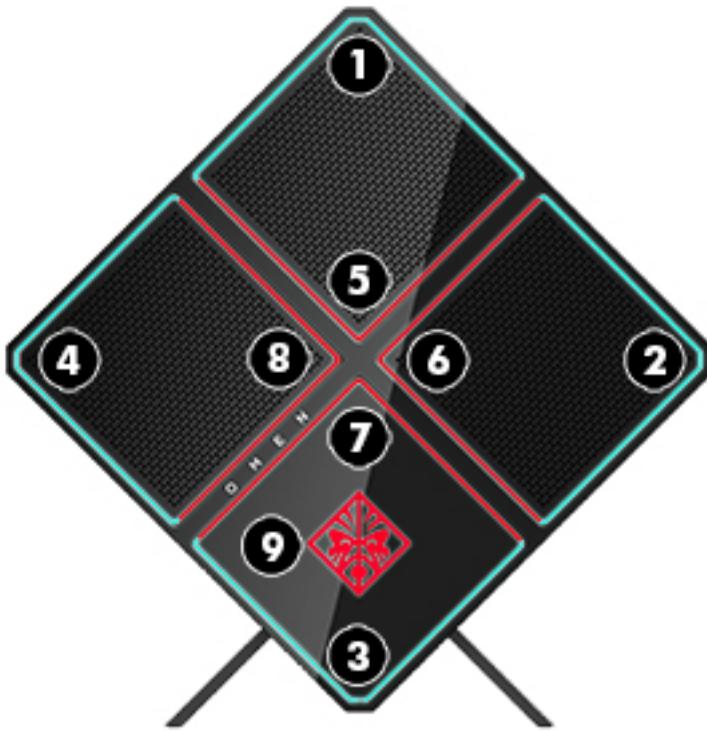
Component	Description
(1) Lighted color zones	Create unique lighting effects on the computer. NOTE: See Color zones on page 6 for more information.
(2) Vents (2)	Enable airflow to cool internal components. NOTE: The computer fan starts up automatically to cool internal components and prevent overheating. It is normal for the internal fan to cycle on and off during routine operation.
(3) Tool kit (not shown)	Contains a wrench and screws required to install computer components and graphics card fans. The tool kit is located under the logo. WARNING! To reduce the risk of serious injury or damage to the equipment, do not open the chassis cover of any computer containing a 1300 W PSU. To determine if you have a 600 W or 1300 W PSU, refer to the label on the back of the computer.
(4) Stand	Holds the computer in an upright position.

Color zones

The computer includes nine programmable lighted color zones that allow you to create unique lighting effects. With OMEN Command Center, you can customize the colors of each zone or group of zones.



NOTE: When you first set up your computer, all of the color zones are red.



Color zones

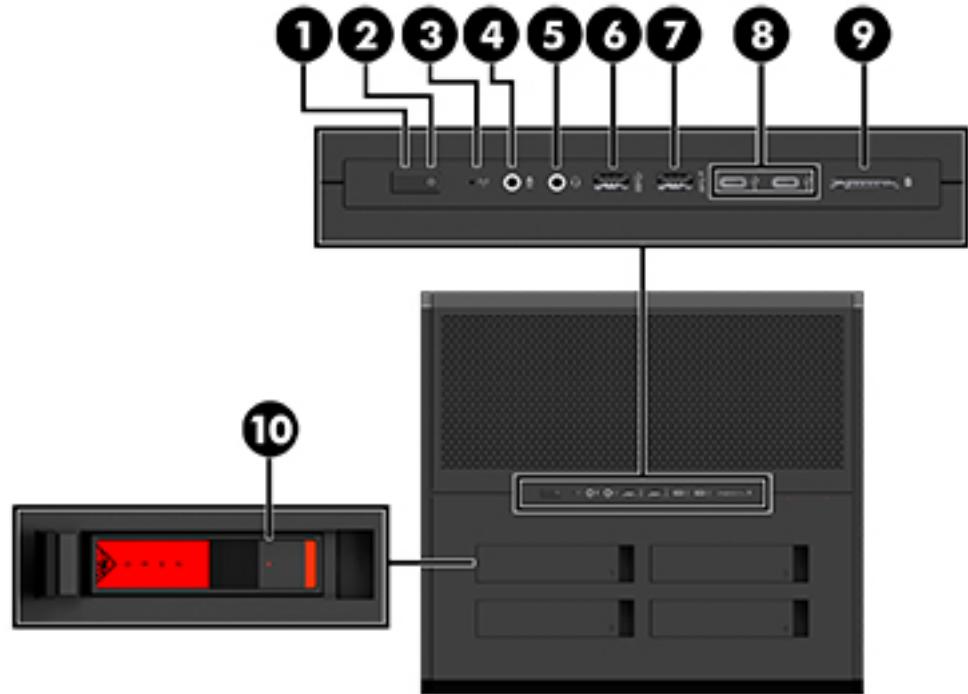
There are five color effects that you can customize in OMEN Command Center:

- Static color—Static lighting for each of the nine color zones.
- Color loop—Customize up to four phases for all of the color zones. The colors will transition from one phase to another.
- System vitals—Customize color zones for different computer hardware metrics (CPU usage, CPU temperature, GPU usage, or GPU temperature).
- Audio pulse—Lighting brightness responds to the audio output frequency.
- Off—All color zones are off.

To open OMEN Command Center and customize the lighting effects:

- ▲ Click the **OMEN** icon on the taskbar.

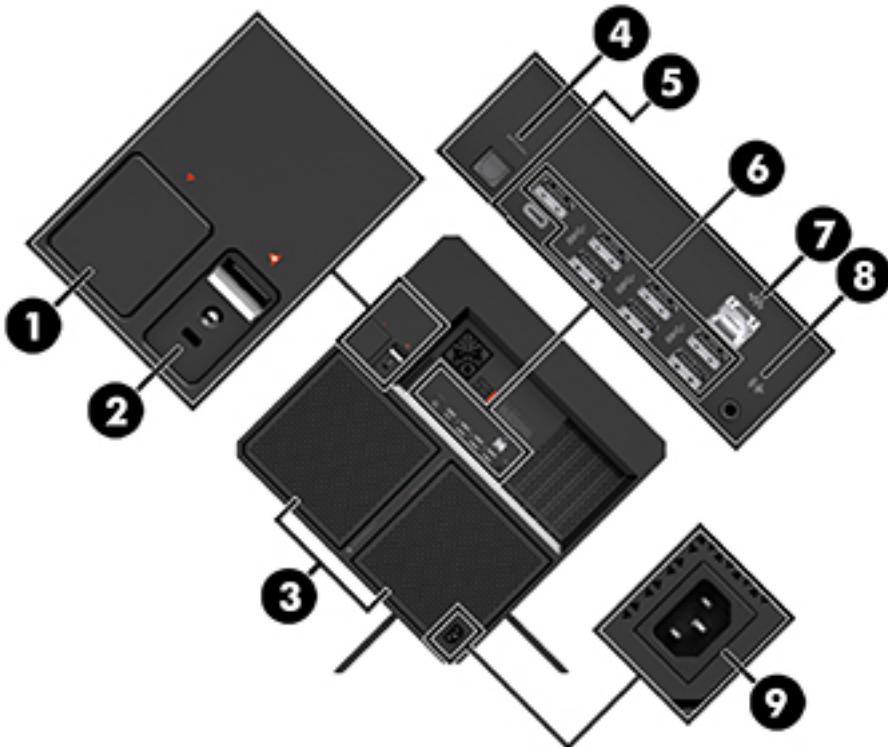
Right



Component	Description
(1) 	<ul style="list-style-type: none">When the computer is off, press the button to turn on the computer.When the computer is on, press the button briefly to initiate Sleep.When the computer is in the Sleep state, press the button briefly to exit Sleep.When the computer is in Hibernation, press the button briefly to exit Hibernation. <p>CAUTION: Pressing and holding down the power button results in the loss of unsaved information.</p> <p>If the computer has stopped responding and shutdown procedures are ineffective, press and hold the power button down for at least 5 seconds to turn off the computer.</p> <p>To learn more about your power settings, see your power options.</p> <ul style="list-style-type: none">▲ Type power in the taskbar search box, and then select Power & sleep settings.—or—▲ Right-click the Start button, and then select Power Options.
(2) Power light	<ul style="list-style-type: none">On: The computer is on.

Component	Description
	<ul style="list-style-type: none"> • Blinking: The computer is in the Sleep state, a power-saving state. The computer shuts off power to the display and other unneeded components. • Off: The computer is off or in Hibernation. Hibernation is a power-saving state that uses the least amount of power.
(3) 	Wireless light On: An integrated wireless device, such as a wireless local area network (WLAN) device and/or a Bluetooth® device, is on. The wireless light stays on even when all wireless devices are off.
(4) 	Audio-in (microphone) jack Connects an optional computer headset microphone, stereo array microphone, or monaural microphone.
(5) 	Audio-out (headphone)/Audio-in (microphone) combo jack Connects optional powered stereo speakers, headphones, earbuds, a headset, or a television audio cable. Also connects an optional headset microphone. This jack does not support optional standalone microphones.
	<p>WARNING! To reduce the risk of personal injury, adjust the volume before putting on headphones, earbuds, or a headset. For additional safety information, refer to the <i>Regulatory, Safety, and Environmental Notices</i>.</p>
	To access this guide:
	<p>▲ Select the Start button, select HP Help and Support, and then select HP Documentation.</p>
	<p>NOTE: When a device is connected to the jack, the computer speakers are disabled.</p>
(6) 	USB 3.x SuperSpeed port Connects a USB device, such as a cell phone, camera, activity tracker, or smartwatch, and provides high-speed data transfer.
(7) 	USB 3.x SuperSpeed port with HP Sleep and Charge Connects a USB device, provides high-speed data transfer, and even when the computer is off, charges most products such as a cell phone, camera, activity tracker, or smartwatch.
(8) 	USB Type-C ports (2) When the computer is on, connects and charges a USB device that has a Type-C connector, such as a cell phone, camera, activity tracker, or smartwatch, and provides data transfer.
(9) 	Memory card reader Reads optional memory cards that enable you to store, manage, share, or access information.
	To insert a card:
	<ol style="list-style-type: none"> 1. Hold the card label-side up, with 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.
	To remove a card:
	<p>▲ Press in on the card, and then remove it from the memory card reader.</p>
(10)	Hard drive lock Locks the hard drive service door.

Back



Component	Description
(1) Side panel release latch	Releases the side panel. WARNING! To reduce the risk of serious injury or damage to the equipment, do not open the chassis cover of any computer containing a 1300 W PSU. To determine if you have a 600 W or 1300 W PSU, refer to the label on the back of the computer.
(2) Security cable slot	Attaches an optional security cable to the computer. NOTE: The security cable is designed to act as a deterrent, but it may not prevent the computer from being mishandled or stolen.
(3) Vents (2)	Enable airflow to cool internal components. 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.
(4) Optical out connector	Connects digital speakers (purchased separately).
(5) USB Type-C charging port (select products only)	When the computer is on, connects and charges a USB device that has a Type-C connector, such as a cell phone, camera, activity tracker, or smartwatch, and provides data transfer.
(6) USB 3.x SuperSpeed ports (6 or 7)	Connect a USB device, such as a cell phone, camera, activity tracker, or smartwatch, and provides high-speed data transfer. NOTE: Depending on your product, your computer may have 6 or 7 USB 3.x SuperSpeed ports.

Component	Description			
(7) 	RJ-45 (network) jack/status lights	Connects a network cable.	<ul style="list-style-type: none"> White: The network is connected. 	<ul style="list-style-type: none"> Amber: Activity is occurring on the network.
(8) 	Audio-out (headphone) jack	Connects optional powered stereo speakers, headphones, earbuds, a headset, or a television audio cable.	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> .	
(9) 	Power connector	Connects an AC power cord.		

Bottom



Component	Description
(1) Vent	Enables airflow to cool internal components. 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.

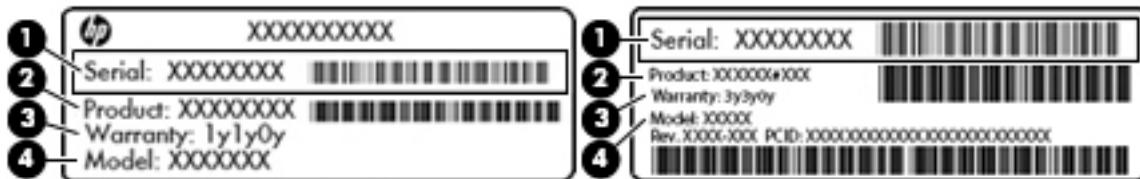
Labels

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

 **IMPORTANT:** Check the following locations for the labels described in this section: the bottom of the computer, under the service door, or on the back of the computer.

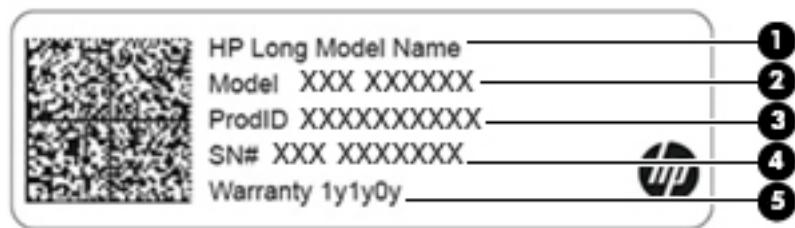
- Service label—Provides important information to identify your computer. When contacting support, you will probably be asked for the serial number, and possibly for the product number or the model number. Locate these numbers before you contact support.

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



Component

- (1) Serial number
(2) Product number
(3) Warranty period
(4) Model number (select products only)
-



Component

- (1) HP product name (select products only)
(2) Model name (select products only)
(3) Product number
(4) Serial number
(5) Warranty period
-

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

3 Connecting to a network

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

Connecting to a wireless network

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

- WLAN device—Connects the computer to wireless local area networks (commonly referred to as Wi-Fi networks, wireless LANs, or WLANs) in corporate offices, your home, and public places such as airports, restaurants, coffee shops, hotels, and universities. In a WLAN, the mobile wireless device in your computer communicates with a wireless router or a wireless access point.
- Bluetooth® device—Creates a personal area network (PAN) to connect to other Bluetooth-enabled devices such as computers, phones, printers, headsets, speakers, and cameras. In a PAN, each device communicates directly with other devices, and devices must be relatively close together—typically within 10 meters (approximately 33 feet) of each other.

Using the wireless controls

You can control the wireless devices in your computer using the operating system controls.

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:

1. Type **control panel** in the taskbar search box, and then select **Control Panel**.
2. Select **Network and Internet**, and then select **Network and Sharing Center**.

Connecting to a WLAN



NOTE: 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.

To connect to a WLAN, follow these steps:

1. Be sure that the WLAN device is on.
2. Select the network status icon in the taskbar, and then connect to one of the available networks.

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

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

 **NOTE:** If you do not see the WLAN you want to connect to, right-click the network status icon in the taskbar, and then select **Open Network and Sharing Center**. Select **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.

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

After the connection is made, select the network status icon at the far right of the taskbar, to verify the name and status of the connection.

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

Using Bluetooth wireless devices (select products only)

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

- Computers (desktop, notebook)
- Phones (cellular, cordless, smartphone)
- Imaging devices (printer, camera)
- Audio devices (headset, speakers)
- Mouse
- External keyboard

Connecting Bluetooth devices

Before you can use a Bluetooth device, you must establish a Bluetooth connection.

1. Type `bluetooth` in the taskbar search box, and then select **Bluetooth and other devices settings**.
2. Turn on Bluetooth, if it is not already turned on.
3. Select your device from the list, and then follow the on-screen instructions.

 **NOTE:** If the device requires verification, a pairing code is displayed. On the device you are adding, follow the on-screen instructions to verify that the code on your device matches the pairing code. For more information, refer to the documentation provided with the device.

 **NOTE:** If your device does not appear in the list, be sure that Bluetooth on that device is turned on. Some devices may have additional requirements; refer to the documentation provided with the device.

Connecting to a wired network—LAN

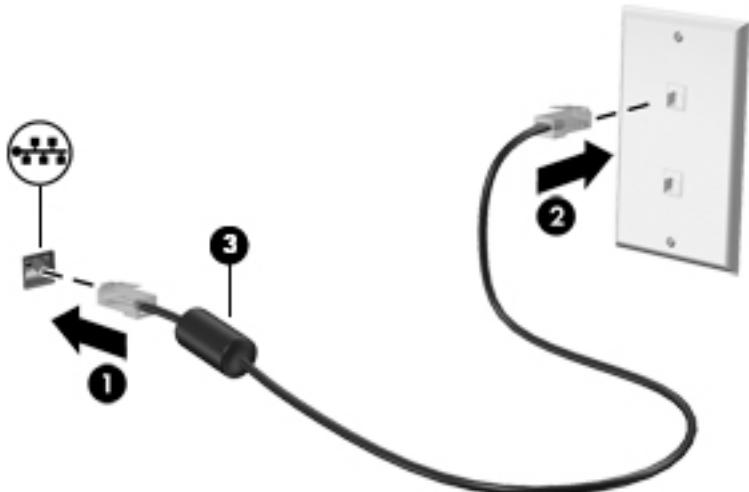
Use a LAN connection if you want to connect the computer directly to a router in your home (instead of working wirelessly), or if you want to connect to an existing network at your office.

Connecting to a LAN requires an RJ-45 (network) cable and a network jack or an optional docking device or expansion port, if there is no RJ-45 jack on the computer.

To connect the network cable, follow these steps:

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

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



4 Enjoying entertainment features

Use your HP computer as an entertainment hub to socialize via the camera, 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, TV, speakers, or headphones.

Using audio

You can download and listen to music, stream audio content (including radio) from the web, record audio, or mix audio and video to create multimedia. You can also play music CDs on the computer (on select models) or attach an external optical drive to play CDs. 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)/audio-in (microphone) combo jack on your computer or on a docking station.

To connect wireless speakers to your computer, follow the device manufacturer's instructions. Before connecting speakers, lower the volume setting.

Connecting digital speakers

You can use digital speakers with your computer by connecting them to the optical out connector on your computer.



NOTE: To connect digital speakers to your computer, you need an optical cable, purchased separately.

1. Connect one end of the optical cable to the optical out connector on the computer.



2. Connect the other end of the cable to the digital speakers.

For details about using digital speakers, refer to the device manufacturer's instructions.

Connecting headphones



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 document:

- ▲ Select the **Start** button, select **HP Help and Support**, and then select **HP Documentation**.

You can connect wired headphones to the headphone jack or to the audio-out (headphone)/audio-in (microphone) combo jack on your computer.

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

Connecting a microphone

To record audio, connect a microphone to the microphone jack on the computer. For best results when recording, speak directly into the microphone and record sound in a setting free of background noise.

Connecting headsets

 **WARNING!** To reduce the risk of personal injury, lower the volume setting before putting on headphones, earbuds, or a headset. For additional safety information, see the *Regulatory, Safety and Environmental Notices*.

To access this document:

- ▲ Select the **Start** button, select **HP Help and Support**, and then select **HP Documentation**.

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

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

Using sound settings

Use sound settings to adjust system volume, change system sounds, or manage audio devices.

To view or change sound settings:

- ▲ Type **control panel** in the taskbar search box, select **Control Panel**, select **Hardware and Sound**, and then select **Sound**.

Your computer may include an enhanced sound system by Bang & Olufsen, B&O Play, or another provider. As a result, your computer may include advanced audio features that can be controlled through an audio control panel specific to your sound system.

Use the audio control panel to view and control audio settings.

- ▲ Type **control panel** in the taskbar search box, select **Control Panel**, select **Hardware and Sound**, and then select the audio control panel specific to your system.

Using video

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

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

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

For information on using your video features, refer to HP Support Assistant.

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

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

To open Miracast:

- ▲ Type **project** in the taskbar search box, and then click **Project to a second screen**. Click **Connect to a wireless display**, and then follow the on-screen instructions.

5 Managing power

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

Some power management features described in this chapter may not be available on your computer.

Using Sleep and Hibernation

 **CAUTION:** Several well-known vulnerabilities exist when a computer is in the Sleep state. To prevent an unauthorized user from accessing data on your computer, even encrypted data, HP recommends that you always initiate Hibernation instead of Sleep anytime the computer will be out of your physical possession. This practice is particularly important when you travel with your computer.

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.

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

- Sleep—The Sleep state is automatically initiated after a period of inactivity. Your work is saved to memory, allowing you to resume your work very quickly. You can also initiate Sleep manually. For more information, see [Initiating and exiting Sleep on page 19](#).
- Hibernation—The Hibernation state is automatically initiated if the battery reaches a critical level. In the Hibernation state, your work is saved to a hibernation file and the computer powers down. You can also initiate Hibernation manually. For more information, see [Initiating and exiting Hibernation \(select products only\) on page 19](#).

Initiating and exiting Sleep

- ▲ To initiate Sleep, select the **Start** button, select the **Power** icon, and then select **Sleep**.

You can exit Sleep in any of the following ways:

- Briefly press the power button.
- Press a key on the keyboard (select products only).

When the computer exits Sleep, your work returns to the screen.

 **NOTE:** If you have set a password to be required on exiting Sleep, you must enter your Windows password before your work returns to the screen.

Initiating and exiting Hibernation (select products only)

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

1. Right-click the **Start** button, and then select **Power Options**.
2. Under **Related settings**, select **Additional power settings**.
3. In the left pane, select **Choose what the power buttons do** (wording may vary by product).

4. Depending on your product, you can enable Hibernation for battery power or external power in any of the following ways:

 - **Power button**—Under **Power and sleep buttons and lid settings** (wording may vary by product), select **When I press the power button**, and then select **Hibernate**.
 - **Power menu**—Select **Change Settings that are currently unavailable**, and then, under **Shutdown settings**, select the **Hibernate** check box.

The Power menu can be accessed by selecting the **Start** button.

5. Select **Save changes**.
- ▲ To initiate Hibernation, use the method that you enabled in step 3.
- ▲ To exit Hibernation, briefly press the power button.



NOTE: If you have set a password to be required on exiting Hibernation, you must enter your Windows password before your work returns to the screen.

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 the computer.

Shut down the computer when it will be unused and disconnected from external power for an extended period.

The recommended procedure is to use the Windows Shut down command.



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

1. Save your work and close all open programs.
2. Select the **Start** button, select the **Power** icon, and then select **Shut down**.

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

- Press **ctrl+alt+delete**, select the **Power** icon, and then select **Shut down**.
- Press and hold the power button for at least 10 seconds.
- Disconnect the computer from external power.

6 Maintaining your computer

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

Improving performance

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

Using Disk Defragmenter

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



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

To run Disk Defragmenter:

1. Connect the computer to AC power.
2. Type `defragment` in the taskbar search box, and then select **Defragment and Optimize Drives**.
3. Follow the on-screen instructions.

For additional information, access the Disk Defragmenter software Help.

Using Disk Cleanup

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

To run Disk Cleanup:

1. Type `disk` in the taskbar search box, and then select **Disk Cleanup**.
2. Follow the on-screen instructions.

Using HP 3D DriveGuard (select products only)

HP 3D DriveGuard protects a hard drive by parking the drive and halting data requests under either of the following conditions:

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

A short time after the end of one of these events, HP 3D DriveGuard returns the hard drive to normal operation.



NOTE: Only internal hard drives are protected by HP 3D DriveGuard. A hard drive installed in an optional docking device or connected to a USB port is not protected by HP 3D DriveGuard.



NOTE: Because solid-state drives (SSDs) lack moving parts, HP 3D DriveGuard is unnecessary for these drives.

For more information, see the HP 3D DriveGuard software Help.

Identifying HP 3D DriveGuard status

The hard drive light on the computer changes color to show that the drive in a primary hard drive bay and/or the drive in a secondary hard drive bay (select products only) is parked. To determine whether a drive is currently protected or whether it is parked, view the icon on the Windows desktop in the notification area, at the far right of the taskbar.

Updating programs and drivers

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

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

If you would like to update your programs and drivers, follow these instructions:

1. Type support in the taskbar search box, and then select the **HP Support Assistant** app.
– or –
Click the question mark icon in the taskbar.
2. Select **My PC**, select the **Updates** tab, and then select **Check for updates and messages**.
3. Follow the on-screen instructions.

Cleaning your computer

Use the following products to safely clean your computer:

- Dimethyl benzyl ammonium chloride 0.3 percent maximum concentration (for example, disposable wipes, which come in a variety of brands)
- Alcohol-free glass-cleaning fluid
- Solution of water and mild soap
- Dry microfiber cleaning cloth or a chamois (static-free cloth without oil)
- Static-free cloth wipes



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

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

Cleaning procedures

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

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

1. Turn off the computer.
2. Disconnect AC power.
3. Disconnect all powered external devices.

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

Cleaning the sides or cover

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

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

Traveling with or shipping your computer

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

- Prepare the computer for traveling or shipping:
 - Back up your information to an external drive.
 - Remove all discs and all external media cards, such as memory cards.
 - Turn off and then disconnect all external devices.
 - Shut down the computer.
- Take along a backup of your information. Keep the backup separate from the computer.
- When traveling by air, carry the computer as hand luggage; do not check it in with the rest of your luggage.

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

- If you plan to use the computer during a flight, listen for the in-flight announcement that tells you when you are allowed to use your computer. In-flight computer use is at the discretion of the airline.
- If you are shipping the computer or a drive, use suitable protective packaging and label the package "FRAGILE."
- The use of wireless devices may be restricted in some environments. Such restrictions may apply aboard aircraft, in hospitals, near explosives, and in hazardous locations. If you are uncertain of the policy that applies to the use of a wireless device in your computer, ask for authorization to use your computer before you turn it on.
- If you are traveling internationally, follow these suggestions:
 - Check the computer-related customs regulations for each country or region on your itinerary.
 - Check the power cord and adapter requirements for each location in which you plan to use the computer. Voltage, frequency, and plug configurations vary.

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

7 Securing your computer and information

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



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

Using passwords

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

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

To create and save passwords, use the following tips:

- To reduce the risk of being locked out of the computer, record each password and store it in a secure place away from the computer. Do not store passwords in a file on the computer.
- When creating passwords, follow requirements set by the program.
- Change your passwords at least every 3 months.
- An ideal password is long and has letters, punctuation, symbols, and numbers.
- Before you send your computer for service, back up your files, delete confidential files, and then remove all password settings.

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

▲ Type **support** in the taskbar search box, and then select the **HP Support Assistant** app.

– or –

Click the question mark icon in the taskbar.

Setting Windows passwords

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

Setting Setup Utility (BIOS) passwords

Password	Function
Administrator password	<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).
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.

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

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

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

Your changes take effect when the computer restarts.

Using Internet security software

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

Using antivirus software

Computer viruses can disable programs, utilities, or the operating system, or cause them to function abnormally. Antivirus software can detect most viruses, destroy them, and in most cases, repair any damage they have caused.

To provide ongoing protection against newly discovered viruses, antivirus software must be kept up to date.

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

For more information about computer viruses, type **support** in the taskbar search box, and then select the **HP Support Assistant** app.

– OR –

Click the question mark icon in the taskbar.

Using firewall software

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

There are two types of firewalls to consider:

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

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

Installing software updates

HP, Windows, and third-party software installed on your computer should be regularly updated to correct security problems and improve software performance.

 **CAUTION:** Microsoft sends out alerts regarding Windows updates, which may include security updates. To protect the computer from security breaches and computer viruses, install all updates from Microsoft as soon as you receive an alert.

You can install these updates automatically.

To view or change the settings:

1. Select the **Start** button, select **Settings**, and then select **Update & security**.
2. Select **Windows Update**, and then follow the on-screen instructions.
3. To schedule a time for installing updates, select **Advanced options**, and then follow the on-screen instructions.

Using HP Touchpoint Manager (select products only)

HP Touchpoint Manager is a cloud-based IT solution that enables businesses to effectively manage and secure their company assets. HP Touchpoint Manager helps protect devices against malware and other attacks, monitors device health, and enables you to reduce time spent solving end-user device and security issues. You can quickly download and install the software, which is highly cost effective relative to traditional in-house solutions.

Securing your wireless network

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

Backing up your software applications and information

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

Using an optional security cable (select products only)

A security cable (purchased separately) is designed to act as a deterrent, but it may not prevent the computer from being mishandled or stolen. To connect a security cable to your computer, follow the device manufacturer's instructions.

8 Using Setup Utility (BIOS)

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

Starting Setup Utility (BIOS)

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

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

Updating Setup Utility (BIOS)

Updated versions of Setup Utility (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 decide whether you need to update Setup Utility (BIOS), first determine the BIOS version on your computer.

To reveal the BIOS version information (also known as *ROM date* and *System BIOS*), use one of these options.

- **HP Support Assistant**
 1. Type **support** in the taskbar search box, and then select the **HP Support Assistant** app.
– or –
Click the question mark icon in the taskbar.
 2. Select **My PC**, and then select **Specifications**.
- **Setup Utility (BIOS)**
 1. Start Setup Utility (BIOS) (see [Starting Setup Utility \(BIOS\) on page 27](#)).
 2. Select **Main**, select **System Information**, and then make note of the BIOS version.
 3. Select **Exit**, select **No**, and then follow the on-screen instructions.

To check for later BIOS versions, see [Downloading a BIOS update on page 28](#).

Downloading a BIOS update

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

- Do not disconnect power from the computer by unplugging the power cord from the AC outlet.
- Do not shut down the computer or initiate Sleep.
- Do not insert, remove, connect, or disconnect any device, cable, or cord.

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

1. Type **support** in the taskbar search box, and then select the **HP Support Assistant** app.

– or –

Click the question mark icon in the taskbar.

2. Click **Updates**, and then click **Check for updates and messages**.

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 version, make a note of the date, name, or other identifier. You may need this information to locate the update later, after it has been downloaded to your hard drive.

b. Follow the on-screen instructions to download your selection to the hard drive.

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

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

1. Type **file** in the taskbar search box, 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 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.

9 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.

When HP PC Hardware Diagnostics UEFI detects a failure that requires hardware replacement, a 24-digit Failure ID code is generated. This ID code can then be provided to support to help determine how to correct the problem.

To start HP PC Hardware Diagnostics (UEFI), follow these steps:

1. Turn on or restart the computer, and quickly press **esc**.
2. Press or tap **f2**.

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

- a. Connected USB drive
-
-  **NOTE:** To download the HP PC Hardware Diagnostics (UEFI) tool to a USB drive, see [Downloading HP PC Hardware Diagnostics \(UEFI\) to a USB device on page 30](#).
-
- b. Hard drive
 - c. BIOS
3. When the diagnostic tool opens, select the type of diagnostic test you want to run, and then follow the on-screen instructions.

 **NOTE:** To stop a test, press the button you used to access UEFI.

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



NOTE: The HP PC Hardware Diagnostics (UEFI) download instructions are provided in English only, and you must use a Windows computer to download and create the HP UEFI support environment because only .exe files are offered.

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

Download the latest UEFI version

1. Go to <http://www.hp.com/go/techcenter/pcdiags>. The HP PC Diagnostics home page is displayed.
2. In the HP PC Hardware Diagnostics section, select the **Download** link, and then select **Run**.

Download any version of UEFI for a specific product

1. Go to <http://www.hp.com/support>.
2. Select **Get software and drivers**.
3. Enter the product name or number.
4. Select your computer, and then select your operating system.
5. In the **Diagnostic** section, follow the on-screen instructions to select and download the UEFI version you want.

10 Backing up, restoring, and recovering

This chapter provides information about the following processes. The information in the chapter is standard procedure for most products.

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

For additional information, refer to the HP Support Assistant app.

- ▲ Type **support** in the taskbar search box, and then select the **HP Support Assistant** app.
 - or –
 - Select the question mark icon in the taskbar.

 **IMPORTANT:** If you will be performing recovery procedures on a tablet, the tablet battery must be at least 70% charged before you start the recovery process.

IMPORTANT: For a tablet with a detachable keyboard, connect the tablet to the keyboard base before beginning any recovery process.

Creating recovery media and backups

The following methods of creating recovery media and backups are available on select products only. Choose the available method according to your computer model.

- Use HP Recovery Manager to create HP Recovery media after you successfully set up the computer. This step creates a backup of the HP Recovery partition on the computer. The backup can be used to reinstall the original operating system in cases where the hard drive is corrupted or has been replaced. For information on creating recovery media, see [Using HP Recovery media \(select products only\) on page 31](#). For information on the recovery options that are available using the recovery media, see [Using Windows tools on page 32](#).
- Use Windows tools to create system restore points and create backups of personal information. See [Using Windows tools on page 32](#).



NOTE: If storage is 32 GB or less, Microsoft System Restore is disabled by default.

- On select products, use the HP Cloud Recovery Download Tool to create a bootable USB flash drive for your HP recovery media. For more information, see [Using the HP Cloud Recovery Download Tool \(select products only\) on page 33](#).

Using HP Recovery media (select products only)

If possible, check for the presence of the Recovery partition and the Windows partition. Right-click the **Start** button, select **File Explorer**, and then select **This PC**.

- If your computer does not list the Windows partition and the Recovery partition, you can obtain recovery media for your system from support. You can find contact information on the HP website. Go to <http://www.hp.com/support>, select your country or region, and follow the on-screen instructions.
- If your computer does list the Recovery partition and the Windows partition, you can use HP Recovery Manager to create recovery media after you successfully set up the computer. HP Recovery media can be

used to perform system recovery if the hard drive becomes corrupted. System recovery reinstalls the original operating system and software programs that were installed at the factory and then configures the settings for the programs. HP Recovery media can also be used to customize the system or restore the factory image if you replace the hard drive.

- Only one set of recovery media can be created. Handle these recovery tools carefully, and keep them in a safe place.
- HP Recovery Manager examines the computer and determines the required storage capacity for the media that will be required.
- To create recovery discs, your computer must have an optical drive with DVD writer capability, and you must use only high-quality blank DVD-R, DVD+R, DVD-R DL, or DVD+R DL discs. Do not use rewritable discs such as CD±RW, DVD±RW, double-layer DVD±RW, or BD-RE (rewritable Blu-ray) discs; they are not compatible with HP Recovery Manager software. Or, instead, you can use a high-quality blank USB flash drive.
- If your computer does not include an integrated optical drive with DVD writer capability, but you would like to create DVD recovery media, you can use an external optical drive (purchased separately) to create recovery discs. If you use an external optical drive, it must be connected directly to a USB port on the computer; the drive cannot be connected to a USB port on an external device, such as a USB hub. If you cannot create DVD media yourself, you can obtain recovery discs for your computer from HP. You can find contact information on the HP website. Go to <http://www.hp.com/support>, select your country or region, and follow the on-screen instructions.
- Be sure that the computer is connected to AC power before you begin creating the recovery media.
- The creation process can take an hour or more. Do not interrupt the creation process.
- If necessary, you can exit the program before you have finished creating all of the recovery DVDs. HP Recovery Manager will finish burning the current DVD. The next time you start HP Recovery Manager, you will be prompted to continue.

To create HP Recovery media using HP recovery manager:



IMPORTANT: For a tablet with a detachable keyboard, connect the tablet to the keyboard base before beginning these steps.

1. Type **recovery** in the taskbar search box, and then select **HP Recovery Manager**.
2. Select **Create recovery media**, and then follow the on-screen instructions.

If you ever need to recover the system, see [Recovering using HP Recovery Manager on page 33](#).

Using Windows tools

You can create recovery media, system restore points, and backups of personal information using Windows tools.



NOTE: If storage is 32 GB or less, Microsoft System Restore is disabled by default.

For more information and steps, see the Get Help app.

- ▲ Select the **Start** button, and then select the **Get Help** app.



NOTE: You must be connected to the Internet to access the Get Help app.

Using the HP Cloud Recovery Download Tool (select products only)

To create HP Recovery media using the HP Cloud Recovery Download Tool:

1. Go to <http://www.hp.com/support>.
2. Select **Software and Drivers**, and then follow the on-screen instructions.

Restore and recovery

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



IMPORTANT: Not all methods are available on all products.

- Windows offers several options for restoring from backup, refreshing the computer, and resetting the computer to its original state. For more information see the Get Help app.
 - ▲ Select the **Start** button, and then select the **Get Help** app.
- If you need to correct a problem with a preinstalled application or driver, use the Reinstall drivers and/or applications option (select products only) of HP Recovery Manager to reinstall the individual application or driver.
 - ▲ Type `recovery` in the taskbar search box, select **HP Recovery Manager**, select **Reinstall drivers and/or applications**, and then follow the on-screen instructions.
- If you want to recover the Windows partition to original factory content, you can choose the System Recovery option from the HP Recovery partition (select products only) or use the HP Recovery media. For more information, see [Recovering using HP Recovery Manager on page 33](#). If you have not already created recovery media, see [Using HP Recovery media \(select products only\) on page 31](#).
- On select products, if you want to recover the computer's original factory partition and content, or if you have replaced the hard drive, you can use the Factory Reset option of HP Recovery media. For more information, see [Recovering using HP Recovery Manager on page 33](#).
- On select products, if you want to remove the Recovery partition to reclaim hard drive space, HP Recovery Manager offers the Remove Recovery Partition option.

For more information, see [Removing the HP Recovery partition \(select products only\) on page 35](#).

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 that you either created or that you obtained from HP, or by using the HP Recovery partition (select products only). If you have not already created recovery media, see [Using HP Recovery media \(select products only\) on page 31](#).

What you need to know before you get started

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

 **IMPORTANT:** Recovery through HP Recovery Manager should be used as a final attempt to correct computer issues.

- HP Recovery media must be used if the computer hard drive fails. If you have not already created recovery media, see [Using HP Recovery media \(select products only\) on page 31](#).
- To use the Factory Reset option (select products only), you must use HP Recovery media. If you have not already created recovery media, see [Using HP Recovery media \(select products only\) on page 31](#).
- If your computer does not allow the creation of HP Recovery media or if the HP Recovery media does not work, you can obtain recovery media for your system from support. You can 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 want to retain.

Using HP Recovery media, you can choose from one of the following recovery options:

 **NOTE:** Only the options available for your computer display when you start the recovery process.

- System Recovery—Reinstalls the original operating system, and then configures the settings for the programs that were installed at the factory.
- 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.

The HP Recovery partition (select products only) allows System Recovery only.

Using the HP Recovery partition (select products only)

The HP Recovery partition allows you to perform a system recovery without the need for recovery discs or a recovery USB flash drive. This type of recovery can be used only if the hard drive is still working.

To start HP Recovery Manager from the HP Recovery partition:

 **IMPORTANT:** For a tablet with a detachable keyboard, connect the tablet to the keyboard base before beginning these steps (select products only).

1. Type **recovery** in the taskbar search box, select **HP Recovery Manager**, and then select **Windows Recovery Environment**.

– or –

For computers or tablets with keyboards attached, press **f11** while the computer boots, or press and hold **f11** as you press the power button.

For tablets without keyboards:

- Turn on or restart the tablet, and then quickly hold down the volume up button; then select **f11**.

– or –

- Turn on or restart the tablet, and then quickly hold down the volume down button; then select **f11**.

2. Select **Troubleshoot** from the boot options menu.

3. Select **Recovery Manager**, and then follow the on-screen instructions.

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 HP Recovery media, 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 35](#).
3. Follow the on-screen instructions.

Changing the computer boot order

If your 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 to an optical drive or a USB flash drive.

To change the boot order:

 **IMPORTANT:** For a tablet with a detachable keyboard, connect the tablet to the keyboard base before beginning these steps.

1. Insert the HP Recovery media.
2. Access the system **Startup** menu.

For computers or tablets with keyboards attached:

- ▲ Turn on or restart the computer or tablet, quickly press **esc**, and then press **f9** for boot options.

For tablets without keyboards:

- ▲ Turn on or restart the tablet, and then quickly hold down the volume up button; then select **f9**.

– or –

Turn on or restart the tablet, and then quickly hold down the volume down button; then select **f9**.

3. Select the optical drive or USB flash drive from which you want to boot.
4. Follow the on-screen instructions.

Removing the HP Recovery partition (select products only)

HP Recovery Manager software allows you to remove the HP Recovery partition to free up hard drive space.

 **IMPORTANT:** After you remove the HP Recovery partition, you will not be able to perform System Recovery or create HP Recovery media from the HP Recovery partition. So before you remove the Recovery partition, create HP Recovery media; see [Using HP Recovery media \(select products only\) on page 31](#).

 **NOTE:** The Remove Recovery Partition option is only available on products that support this function.

Follow these steps to remove the HP Recovery partition:

1. Type **recovery** in the taskbar search box, and then select **HP Recovery Manager**.
2. Select **Remove Recovery Partition**, and then follow the on-screen instructions.

11 Specifications

Operating environment

 **NOTE:** To determine the exact electrical ratings of your computer, refer to the computer ratings label, located on the outside of the computer.

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

12 Electrostatic Discharge

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

A discharge of static electricity from fingers or other electrostatic conductors may damage electronic components.

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

- If removal or installation instructions direct you to unplug the computer, first be sure that it is properly grounded.
- Keep components in their electrostatic-safe containers until you are ready to install them.
- Avoid touching pins, leads, and circuitry. Handle electronic components as little as possible.
- Use nonmagnetic tools.
- Before handling components, discharge static electricity by touching an unpainted metal surface.
- If you remove a component, place it in an electrostatic-safe container.

13 Accessibility

HP designs, produces, and markets products and services that can be used by everyone, including people with disabilities, either on a stand-alone basis or with appropriate assistive devices. To access the latest information on HP accessibility, go to <http://www.hp.com/accessibility>.

Supported assistive technologies

HP products support a wide variety of operating system assistive technologies and can be configured to work with additional assistive technologies. Use the Search feature on your device to locate more information about assistive features.

 **NOTE:** For additional information about a particular assistive technology product, contact customer support for that product.

Contacting support

We are constantly refining the accessibility of our products and services and welcome feedback from users. If you have an issue with a product or would like to tell us about accessibility features that have helped you, please contact us at +1 (888) 259-5707, Monday through Friday, 6 a.m. to 9 p.m. North American Mountain Time. If you are deaf or hard-of-hearing and use TRS/VRS/WebCapTel, contact us if you require technical support or have accessibility questions by calling +1 (877) 656-7058, Monday through Friday, 6 a.m. to 9 p.m. North American Mountain Time.

 **NOTE:** Support is in English only.

Index

- A**
- accessibility 38
 - antivirus software, using 25
 - audio 18
 - audio-in (microphone) jack 8
 - audio-out (headphone) jacks 10
 - audio-out (headphone)/audio-in (microphone) jack, identifying 8
- B**
- backing up software and information 26
 - backups 31
 - best practices 1
 - BIOS
 - determining version 27
 - downloading an update 28
 - starting the Setup Utility 27
 - updating 27
 - Bluetooth device 13, 14
 - Bluetooth label 12
 - boot order
 - changing 35
 - bottom 12
 - buttons
 - power 7
- C**
- caring for your computer 22
 - cleaning your computer 22
 - color zones 6
 - color zones, identifying 5
 - components
 - back 9
 - bottom 11
 - right 7
 - connecting to a network 13
 - connecting to a wireless network 13
 - connecting to a WLAN 13
 - connecting to LAN 15
 - connector, power 10
 - corporate WLAN connection 13
- D**
- digital speakers, connecting 17
- E**
- Disk Cleanup software 21
 - Disk Defragmenter software 21
 - electrostatic discharge 37
- F**
- firewall software 25
- H**
- hard drive lock, identifying 8
 - headphones, connecting 17
 - headsets, connecting 18
 - Hibernation
 - exiting 19
 - initiating 19
 - high-definition devices, connecting 18
 - HP 3D DriveGuard 21
 - HP PC Hardware Diagnostics (UEFI)
 - Failure ID code 29
 - using 29
 - HP Recovery Manager
 - correcting boot problems 35
 - starting 34
 - HP Recovery media
 - recovery 35
 - using 31
 - HP Recovery partition
 - recovery 34
 - removing 35
 - HP resources 2
 - HP Touchpoint Manager 26
- I**
- initiating Sleep and Hibernation 19
 - installing
 - optional security cable 26
 - Internet security software, using 25
- J**
- jacks
 - audio-in (microphone) 8
 - audio-out (headphone) 10
- L**
- labels
 - Bluetooth 12
 - regulatory 12
 - serial number 11
 - service 11
 - wireless certification 12
 - WLAN 12
 - lighting
 - customize 6
 - OMEN Command Center 6
 - lights
 - power 7
 - RJ-45 (network) status 10
 - wireless 8
 - locating information
 - hardware 4
 - software 4
- M**
- maintenance
 - Disk Cleanup 21
 - Disk Defragmenter 21
 - HP 3D DriveGuard 21
 - updating programs and drivers 22
 - managing power 19
 - memory card reader, identifying 8
 - memory card, identifying 8
 - microphone, connecting 17
 - minimized image recovery 34
 - minimized image, creating 33
 - Miracast 18
- N**
- network jack, identifying 10
- O**
- OMEN Command Center 6
 - operating environment 36

operating system controls 13
optical out connector, connecting 17
optical out connector, identifying 9
original system recovery 33

P

passwords
 Setup Utility (BIOS) 25
 Windows 24
ports
 Miracast 18
 USB 3.x HP Sleep and Charge 8
 USB 3.x SuperSpeed 8, 9
 USB Type-C 8, 9
power button, identifying 7
power connector, identifying 10
power light, identifying 7
product name and number,
 computer 11
public WLAN connection 13

R

recover
 options 33
recovery
 discs 32, 35
 HP Recovery Manager 33
 media 35
 starting 34
 supported discs 32
 system 33
 USB flash drive 35
 using HP Recovery media 32
recovery media
 creating using HP Recovery
 Manager 32
 using 31
recovery partition
 removing 35
regulatory information
 regulatory label 12
 wireless certification labels 12
RJ-45 (network) jack, identifying 10
RJ-45 (network) status lights,
 identifying 10

S

security cable slot, identifying 9
security cable, installing 26
serial number, computer 11

service labels, locating 11
Setup Utility (BIOS) passwords 25
shipping the computer 23
shutdown 20
side panel release latch, identifying 9

Sleep
 exiting 19
 initiating 19
Sleep and Hibernation
 initiating 19
slots
 memory card reader 8
 security cable 9
software
 Disk Cleanup 21
 Disk Defragmenter 21
 HP 3D DriveGuard 21
software updates, installing 26
sound settings, using 18
speakers
 connecting 16
stand 5
supported discs, recovery 32
system recovery 33
system restore point
 creating 32
system restore point, creating 31

T

tool kit, identifying 5
traveling with the computer 12, 23
turning off the computer 20

U

unresponsive system 20
updating programs and drivers 22
USB 3.x port with HP Sleep and
 Charge, identifying 8
USB 3.x SuperSpeed port,
 identifying 9
USB 3.x SuperSprintport,
 identifying 8
USB Type-C port, identifying 8, 9
using passwords 24
using sound settings 18

V

vents, identifying 5, 9, 11
video 18

W

Windows
 system restore point 31, 32
Windows passwords 24
Windows tools
 using 32
wired network (LAN) 15
wireless button 13
wireless certification label 12
wireless controls
 button 13
 operating system 13
wireless light 8, 13
wireless network (WLAN)
 connecting 13
 corporate WLAN connection 13
 functional range 14
 public WLAN connection 13
wireless network, securing 26
WLAN device 12
WLAN label 12