User Guide

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 or manuals for your product, go to http://www.hp.com/support, and select your country. Select **Find your product**, and then follow the on-screen instructions.

Software terms

Safety warning notice

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

Processor configuration setting (select 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.

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• Recover factory settings	See Backing up, restoring, and recovering on page 27.
• See how-to videos about using the features of your computer	Go to http://www.hp.com/supportvideos (English only).
• Learn how to use the Windows® operating system • Find Windows password information • Find links to driver updates • Read frequently asked questions	Get started app: ▲ Select the **Start** button, and then select the **Get started** app.
• Troubleshoot the most common computer hardware and software issues	See Troubleshooting on page 21.
• Find electronic user guides and specifications for your computer model	To access the latest user guides or manuals for your product, go to http://www.hp.com/support, and select your country. Select **Find your product**, and then follow the on-screen instructions.
• Order parts and find additional troubleshooting help • Upgrade or replace components of your computer • Connect to a TV (select products only)	For HP support, go to http://www.hp.com/support.
• Get up-to-date information and help from the Windows community	Go to http://www.hp.com/support/consumer-forum.
• Maintain your computer	HP Support Assistant maintains your computer performance and resolves problems quickly by using automated updates, diagnostic tools, and guided assistance. ▲ Type `support` in the taskbar search box, and then select the **HP Support Assistant** app. – or – See Maintaining your computer on page 32.
• Find safety and regulatory notices	*Regulatory, Safety and Environmental Notices* To access this document: ▲ Select the **Start** button, select **HP Help and Support**, and then select **HP Documentation**. – or – ▲ Select the **Start** button, select **HP**, and then select **HP Documentation**.
• Find ergonomic information	*Safety & Comfort Guide* To access this guide:

Tasks	Instructions
	▲ Select the **Start** button, select **HP Help and Support**, and then select **HP Documentation**. – or – ▲ Select the **Start** button, select **HP**, and then select **HP Documentation**. – or – ▲ Go to http://www.hp.com/ergo. **IMPORTANT:** You must be connected to the Internet to access the latest version of the user guide.
● Find computer warranty information	*Limited Warranty** To access this document: ▲ Select the **Start** button, select **HP Help and Support**, and then select **HP Documentation**. – or – ▲ Select the **Start** button, select **HP**, and then select **HP Documentation**. – or – ▲ Go to http://www.hp.com/go/orderdocuments. **IMPORTANT:** You must be connected to the Internet to access the latest version of the user guide.

*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 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

Locating hardware

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

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**.

Setting up your computer

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

- Place the computer in a location away from water, dust, moisture, and soot. These environmental factors can increase the temperature inside your computer or cause fire or electrocution.

- Do not disable the power cord grounding pin. The grounding pin is an important safety feature.

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

- Disconnect power from the equipment by unplugging the power cord from the AC outlet. To prevent direct exposure to the laser beam, do not try to open the enclosure of the CD or DVD drive.

- The power supply is preset for the country or region in which you purchased your computer. If you move, check the voltage requirements for your new location before plugging the computer into an AC outlet.

To reduce the risk of serious injury read the *Safety & Comfort Guide*. To access this guide, go to http://www.hp.com/ergo.

1. Place the computer so that all ventilation openings are unobstructed and cabling is not in a walkway or where it can be stepped on or damaged by placing furniture on it.

2. When connecting all power cords from the monitor, computer, and accessories to an uninterruptible power supply (UPS), it is recommended that you use a power surge protection detection device. If the computer has a television tuner, or a modem or telephone connection, protect the computer by using surge protection with these signal inputs as well. Connect the television cable or the telephone line cord to the surge protection device, and then connect the device to the computer.

3. Download and install operating system updates.

a. Find out what operating system and version your computer is currently running.

Select the **Start** button, select the **Settings** icon ⚙, select **System**, and then select **About**.

b. Go to http://www.hp.com/support.

c. Select **Find your product**, and then follow the on-screen instructions.

4. Look in the computer box for additional printed details or updates.

After you complete the initial computer setup, you might want to install additional hardware devices or software. Check the operating system, memory, and other requirements listed for these items before purchasing them for your computer. Follow the software manufacturer's directions to install the new software.

📝 **NOTE:** Use only licensed original software. Installing copied software could result in an unstable installation, infect the computer with a virus, or be illegal.

📝 **NOTE:** A security solution is designed as a deterrent, but it might not be able to prevent theft, mishandling, or software attacks.

Adjusting Low Blue Light Mode (select products only)

Decreasing the blue light emitting from the display reduces the blue light exposure to your eyes. HP computers provide a setting to reduce blue light output and create a more relaxing and less stimulating image while you read content on the screen. To adjust your monitor to a comfortable viewing light, follow the steps below.

To adjust the blue light output from the display:

1. Open the HP Display Control app.

2. Select your desired setting:

- **Low Blue Light:** TUV certified. Reduces the blue light for improved eye comfort

- **Night:** Adjusts to the lowest blue light and reduces the impact on sleep

- **Reading:** Optimizes blue light and brightness for indoor viewing

⚠ **WARNING!** To reduce the risk of serious injury, read the *Safety & Comfort Guide*. It describes proper workstation setup, and proper posture, health, and work habits for computer users. The *Safety & Comfort Guide* also provides important electrical and mechanical safety information. The *Safety & Comfort Guide* is located on the Web at http://www.hp.com/ergo.

Shutting down (turning off) the computer

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

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

Shut down the computer under any of the following conditions:

- When you need to access components inside the computer

- When you are connecting an external hardware device that does not connect to a USB or video port or to a headphone or microphone jack

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

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

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

1. Save your work and close all open programs.

2. 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.

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.

- HP Mobile Broadband Module—Gives you wireless connectivity over a wireless wide area network (WWAN), a much larger area. Mobile network operators install base stations (similar to cell phone towers) throughout large geographic areas, effectively providing coverage across entire states, regions, or even countries.

- 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 one or more of these features:

- Airplane mode key (also called wireless button or wireless key) (referred to in this chapter as airplane mode key)

- Operating system controls

Airplane mode key

The computer may have an airplane mode key, one or more wireless devices, and one or two wireless lights. All the wireless devices on your computer are enabled at the factory.

The wireless light indicates the overall power state of your wireless devices, not the status of individual devices.

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 HP Mobile Broadband (select products only)

Your HP Mobile Broadband computer has built-in support for mobile broadband service. Your new computer, when used with a mobile operator's network, gives you the freedom to connect to the Internet, send e-mail, or connect to your corporate network without the need for Wi-Fi hotspots.

You might need the HP Mobile Broadband Module IMEI and/or MEID number to activate mobile broadband service. The number may be printed on a label located on the bottom of your computer, inside the battery bay, under the service door, or on the back of the display.

– or –

You can find the number following these steps:

1. From the taskbar, select the network status icon.

2. Select **View Connection Settings**.

3. Under the **Mobile broadband** section, select the network status icon.

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

For information about HP Mobile Broadband and how to activate service with a preferred mobile network operator, see the HP Mobile Broadband information included with your computer.

Using GPS (select products only)

Your computer may be equipped with a Global Positioning System (GPS) device. GPS satellites deliver location, speed, and direction information to GPS-equipped systems.

To enable GPS, make sure location is enabled under the Location setting.

1. Type `location` in the taskbar search box, and then make the selection for location.

2. Follow the on-screen instructions for using location settings.

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 (select products only)

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

Connecting to a LAN requires an 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.
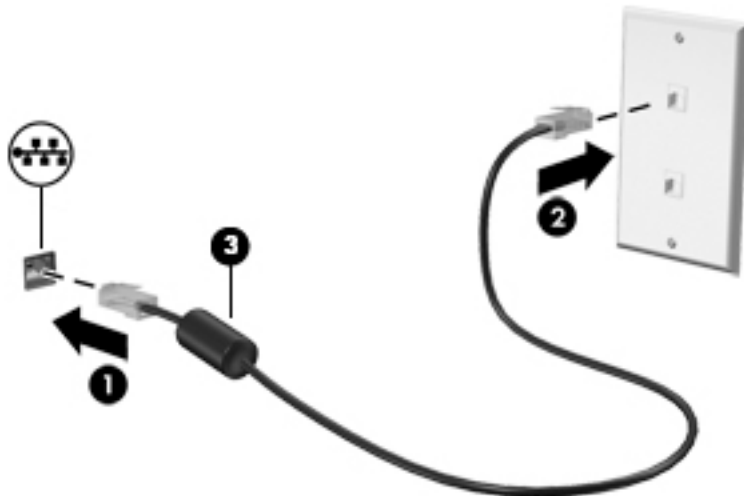
Connecting to your mobile device (select products only)

HP Orbit provides a way to easily move files, pictures, videos, and other information between your mobile device and computer.

NOTE: Before setting up and using HP Orbit, make sure your computer and mobile device are connected to the same Wi-Fi network.

To set up HP Orbit:

1. Download and install the HP Orbit app from the app store for your mobile device.

2. Open the **HP Orbit** app on your mobile device.

3. On your computer, select the **Start** button, and then select **HP Orbit**.

    – or –

    Open **HP Orbit** from the taskbar icon.

4. Follow the on-screen instructions to enter a pairing code and continue the installation.

After the devices have been paired, HP Orbit will remember the connection and allow you to send files between the devices whenever they are both connected to the same Wi-Fi network.

To transfer files from your mobile device to your computer:

1. Open the **HP Orbit** app on your mobile device.

2. Select the type of file.

3. Select the file, and then select **Send**.

When the transfer is complete, the file appears on HP Orbit Canvas on your computer.

To transfer files from your computer to your mobile device:

1. Open the **HP Orbit** app on your computer.

2. Drag and drop the file onto HP Orbit Canvas on your computer, and then follow the on-screen instructions.

When the transfer is complete, the file appears on HP Orbit Canvas on your mobile device.

For more information about using HP Orbit, refer to the HP Orbit software Help.

NOTE: Help is not available in all languages.

1. Open the **HP Orbit** app.

2. Select the **Settings** icon ⚙, and then select **Help**.

For more information about supported platforms and languages, go to http://www.hp.com/support.

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 the camera (select products only)

Your computer may have one or more cameras that enable you to connect with others for work or play. Cameras may be front facing, rear facing, or pop up. See the *Setup Instructions* or *Quick Setup* poster provided with your product for camera details.

Most cameras allow you to video chat, record video, and record still images. Some also provide HD (high-definition), apps for gaming, or facial recognition software like Windows Hello. See Computer security features on page 20 for details about using Windows Hello.

To use your camera, type `camera` in the taskbar search box, and then select **Camera** from the list of applications.

Using audio

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

Connecting speakers (select products only)

On select products, you can attach wired speakers to your computer by connecting them to a USB port, to an audio-out (headphone) or to an audio-out (headphone)/audio-in (microphone) combo jack on your computer.

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

Connecting headphones (select products only)

⚠ 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**.

On select products, you can connect wired headphones to an audio-out (headphone) jack or to an 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 (select products only)

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

Connecting headsets (select products only)

⚠ 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. On select products, 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, DTS, Beats audio, 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.

Connecting video devices using a USB Type-C cable (select products only)

⚿ NOTE: To connect a USB Type-C Thunderbolt® device to your computer, you need a USB Type-C cable, purchased separately.

To see video or high-resolution display output on an external Thunderbolt device, connect the Thunderbolt device according to the following instructions:
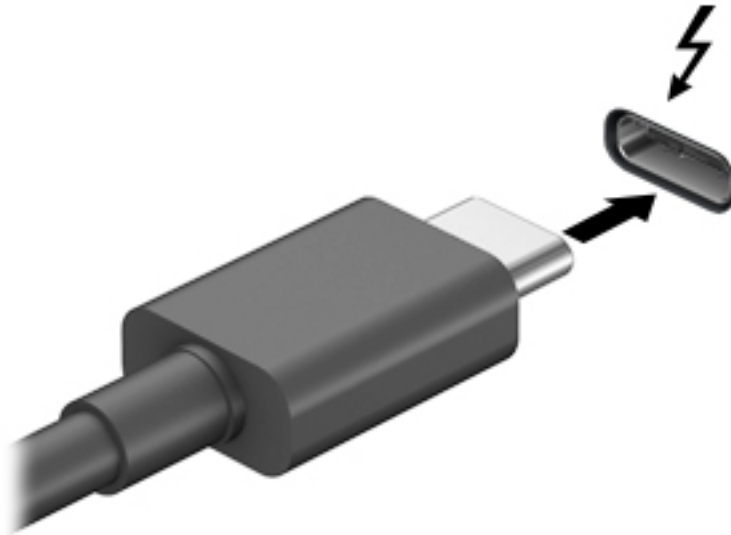
1. Connect one end of the USB Type-C cable to the USB Type-C Thunderbolt port on the computer.

2. Connect the other end of the cable to the external Thunderbolt device.

3. Press the switch screen key, for example f4, to alternate the computer screen image between 4 display states.

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

    ●   **Duplicate:** View the screen image simultaneously on both the computer and 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 the key, the display state changes.

    📝 **NOTE:** For best results, especially if you choose the "Extend" option, increase the screen resolution of the external device, as follows. Select the **Start** button, select the **Settings** icon ⚙, and then select **System**. Under **Display**, select the appropriate resolution, and then select **Keep changes**.

Connecting video devices by using a VGA cable (select products only)

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

To see the computer screen image on an external VGA monitor or projected for a presentation, connect a monitor or projector to the computer's VGA port.

1. Connect the VGA cable from the monitor or projector to the VGA port on the computer as shown.
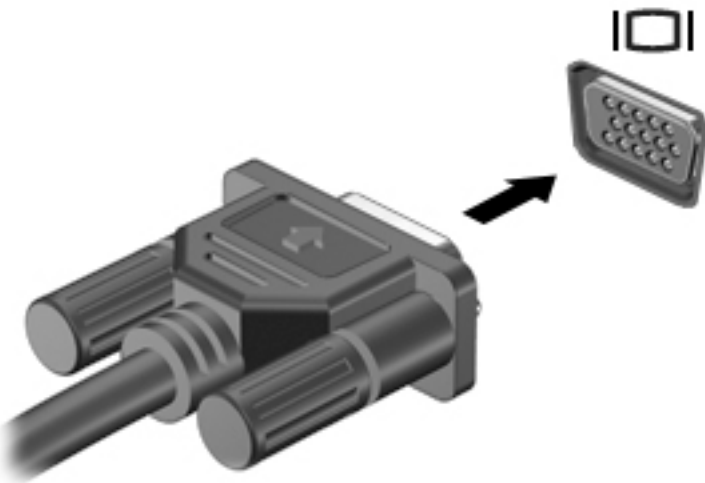
2. Press the switch screen key, for example f4, to alternate the screen image between 4 display states:

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

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

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

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

    Each time you press the key, the display state changes.

NOTE: For best results, especially if you choose the "Extend" option, increase the screen resolution of the external device, as follows. Select the **Start** button, select the **Settings** icon ⚙, and then select **System**. Under **Display**, select the appropriate resolution, and then select **Keep changes**.

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

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

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

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

2. Connect the other end of the cable to the high-definition TV or monitor.

3. Press the switch screen key, for example f4, to alternate the computer screen image between 4 display states:

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

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

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

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

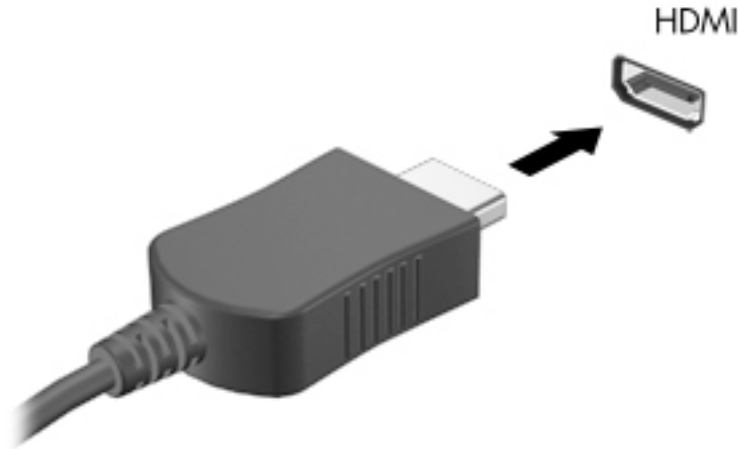   Each time you press the key, the display state changes.

   NOTE: For best results, especially if you choose the "Extend" option, increase the screen resolution of the external device, as follows. Select the **Start** button, select the **Settings** icon ⚙, and then select **System**. Under **Display**, select the appropriate resolution, and then select **Keep changes**.

Setting up HDMI audio

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

1. 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. 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**.

Connecting digital display devices using a Dual-Mode DisplayPort cable (select products only)

NOTE: To connect a digital display device to your computer, you need a Dual-Mode DisplayPort (DP-DP) cable, purchased separately.

The Dual-Mode DisplayPort connects a digital display device such as a high-performance monitor or projector. The Dual-Mode DisplayPort delivers higher performance than the VGA external monitor port and improves digital connectivity.

1. Connect one end of the Dual-Mode DisplayPort cable to the Dual-Mode DisplayPort on the computer.
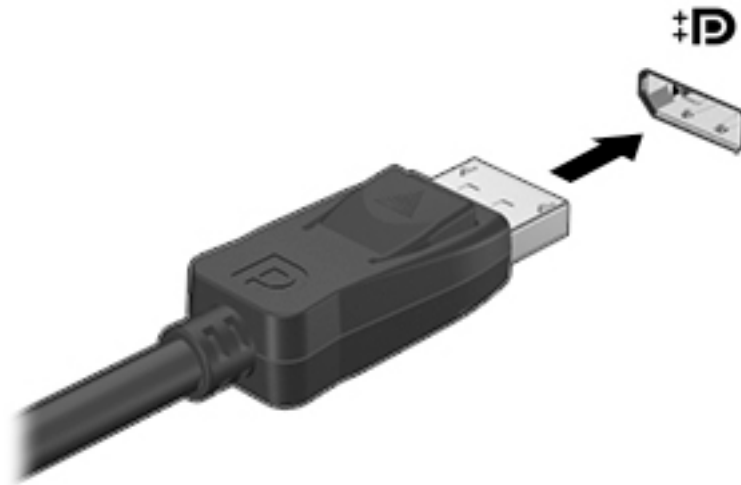
2. Connect the other end of the cable to the digital display device.

3. Press the switch screen key, for example f4, to alternate the computer screen image between 4 display states:

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

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

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

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

   Each time you press the key, the display state changes.

NOTE: For best results, especially if you choose the "Extend" option, increase the screen resolution of the external device, as follows. Select the **Start** button, select the **Settings** icon 🔅, and then select **System**. Under **Display**, select the appropriate resolution, and then select **Keep changes**.

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 Navigating the screen

You can navigate the computer screen in the following ways:

- Using touch gestures (select products only)

- Using the keyboard and mouse

Select computer models have special action keys or hot key functions on the keyboard to perform routine tasks.

Using touch gestures

You can customize the touch gestures by changing settings, button configurations, click speed, and pointer options.

Type `control panel` in the taskbar search box, and then select **Control Panel**. Select **Hardware and Sound**. Under **Devices and Printers**, select **Mouse**.

NOTE: Touch gestures are not supported in all apps.

Using the keyboard and mouse

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

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

NOTE: Depending on the country or region, the keys and keyboard functions of your keyboard may be different from those discussed in this section.

Using the action keys or hot keys

You can quickly access information or perform functions by using certain keys and key combinations.

- Action keys—Perform an assigned function. The icons on the function keys at the top of the keyboard illustrate the assigned function for that key.

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

- Hot keys—A combination of the fn key and the esc key, the spacebar, or the appropriate action key.

    To use a hot key, briefly press the fn key, and then briefly press the second key of the combination.

Depending on the computer model, your keyboard may support the following keys.

Icon	Description
?	Opens the "How to get help in Windows 10" webpage.

Icon	Description
☀	Decreases the screen brightness incrementally as long as you hold down the key.
☀	Increases the screen brightness incrementally as long as you hold down the key.
Ⅰ�☐Ⅰ	Switches the screen image between display devices connected to the system. For example, if a monitor is connected to the computer, repeatedly pressing this key alternates the screen image from the computer display to the monitor display to a simultaneous display on both the computer and the monitor.
▚▪▪▪	Turns the keyboard backlight off or on. **NOTE:** To conserve battery power, turn off this feature.
Ⅰ◀◀	Plays the previous track of an audio CD or the previous section of a DVD or a Blu-ray Disc (BD).
▶Ⅱ	Starts, pauses, or resumes playback of an audio CD, a DVD, or a BD.
▶▶Ⅰ	Plays the next track of an audio CD or the next section of a DVD or a BD.
■	Stops audio or video playback of a CD, a DVD, or a BD.
◀−	Decreases speaker volume incrementally while you hold down the key.
◀+	Increases speaker volume incrementally while you hold down the key.
◀⊘	Mutes or restores speaker sound.
((🏱))	Turns the wireless feature on or off. **NOTE:** A wireless network must be set up before a wireless connection is possible.
✈	Turns the airplane mode and wireless feature on or off. **NOTE:** The airplane mode key is also referred to as the wireless button. **NOTE:** A wireless network must be set up before a wireless connection is possible.

6 Securing your computer and information

Your computer includes features that help protect the integrity of your system and its data from unauthorized access. Review these features to ensure proper use.

Computer security features

Computer risk	Computer feature
Unauthorized use of the computer or user account	User password A *password* is a group of characters that you choose. These characters must be entered to authorize access to your computer information. – or – Windows Hello (select products only) On products equipped with a fingerprint reader or an infrared camera, you can use Windows Hello to sign in by swiping your finger or looking at the camera. To set up Windows Hello, follow these steps: 1. Select the **Start** button, select the **Settings** icon ⚙, select **Accounts**, and then select **Sign-in options**. 2. Under **Windows Hello**, follow the on-screen instructions to add both a password and a 4-digit PIN, and then enroll your fingerprint or facial ID.
Unauthorized access to Setup Utility, BIOS settings, and other system identification information	Administrator password
Computer viruses	Antivirus software The free trial antivirus software that is preinstalled on your computer can detect most viruses, remove them, and, in most cases, repair damage caused by viruses. For protection against new viruses beyond the trial period, purchase an extended service.
Unauthorized access to data and ongoing threats to the computer	Firewall software ● Windows includes firewall software preinstalled on the computer. ● The antivirus software, which is preinstalled on the computer, includes firewall software. Windows critical security updates Updates to the Windows operating system

7 Troubleshooting

If you have problems using any peripheral devices such as a monitor or a printer with your computer, for more extensive troubleshooting refer to the documentation provided by the product manufacturer. The following tables present some issues you might encounter while installing, starting up, or using your computer and suggest possible solutions.

For more information or for additional troubleshooting options, go to http://www.hp.com/support. Select **Find your product**, and then follow the on-screen instructions.

Computer does not start

Symptom	Possible solution

Error message: hard drive error	1. Restart the computer.
	
	   a. Press ctrl+alt+delete.
	
	   b. Select the **Power** icon, and then select **Restart**.
	
	   – or –
	
	   Press and hold the power button on the computer for 5 or more seconds to turn off the computer, and then press the button to turn on the computer.
	
	2. If Windows opens, immediately back up all important data to a backup hard drive.
	
	3. Contact support (regardless of whether Windows started or not).

Computer will not turn on or start	Be sure that the cables connecting the computer to the AC outlet are plugged in properly. The green power supply light on the computer should be on. If it is not, try a different AC outlet. If you are still having trouble, contact support.
	Be sure that the operating voltage of the AC outlet is appropriate for the electrical voltage of the computer.
	Test the AC outlet by plugging a different electrical device into it.
	If possible, remove any outlet filters and stabilizers, and then insert the power plug directly into the AC outlet.
	Disconnect all peripheral devices. Press and hold the power button down for at least 15 seconds until the computer turns off. Then press the power button again to turn on the computer.
	If the monitor screen is blank, the monitor might not be properly connected. Connect the monitor to the computer, plug the power cord into an AC outlet, and then turn the monitor on. See Display (monitor) (select products only) on page 22.
Computer is not responding	1. Press ctrl+alt+delete. 2. Select **Task Manager**. 3. Select any programs that are not responding, and then select **End task**. If closing programs does not resolve the problem, restart the computer. 1. Press ctrl+alt+delete. 2. Select the **Power** icon, and then select **Restart**. – or –

Symptom	Possible solution
	Press and hold the power button on the computer for 5 or more seconds to turn off the computer. Then press the power button again to turn on the computer.
Error message: Invalid system disk or Non-System disk or Disk error	When drive activity stops, remove the optical disc inside the optical drive, and then press the spacebar on the keyboard.

Power

Symptom	Possible solution
Computer does not turn off when the power button is pressed	Press and hold the power button until the computer turns off. Then turn the computer on again.
Computer shuts down automatically	● The computer might be in an exceedingly hot environment. Let it cool down. ● Be sure that computer air vents are not blocked. **NOTE:** If your computer has an internal fan, be sure that the internal fan is running.

Display (monitor) (select products only)

Symptom	Possible solution
Screen is blank, and monitor power light is off	Reconnect the power cable to the back of the monitor and to the AC outlet.
	Press the power button on the monitor.
Screen is blank	Press the space bar on the keyboard or move the mouse to redisplay the screen image.
	Press the Sleep button (select products only) or esc, to resume from Sleep mode.
	Press the power button to turn on the computer.
	Inspect the monitor cable for bent pins. ● If any of the pins are bent, replace the monitor cable. ● If no pins are bent, reconnect the monitor cable to the computer.
Images on the screen are too large or too small, or the images are fuzzy	Adjust the monitor resolution setting in Windows. ▲ Select the **Start** button, select the **Settings** icon ⚙, and then select **System**. Under **Display**, select the appropriate resolution, and then select **Keep changes**.
NOTE: In addition to the information listed here, refer to the documentation that came with your monitor.	

Keyboard and mouse (with cable)

Symptom	Possible solution
Keyboard commands and typing are not recognized by the computer	Use the mouse to turn off the computer. Disconnect and reconnect the keyboard to the back of your computer, and then restart your computer.
Mouse (with cable) does not work or is not detected	Disconnect and reconnect the mouse cable to your computer.
	If the mouse is still not detected, turn off the computer, disconnect and reconnect the mouse cable, and then restart the computer.
Cursor does not respond to the arrow keys on the number keypad	Press num lock on the keyboard to turn off numDis lock, so that the arrow keys on the number keypad can be used.
Cursor does not respond to mouse movement	1. Press alt+tab to navigate to an open program. 2. Press ctrl+s to save your changes in the selected program (ctrl+s is the keyboard shortcut for the Save command on most—not all—programs). 3. Repeat step 1 and step 2 to save changes in all open programs. 4. Press the power button to turn off the computer. 5. After the shutdown is complete, disconnect and reconnect the mouse cable to the back of your computer, and then restart your computer.

Keyboard and mouse (wireless)

Symptom	Possible solution
Wireless keyboard or mouse does not work or is not detected	• Be sure that you are using the wireless keyboard or wireless mouse within range of the transceiver, approximately 10 meters (32 feet) for normal use, and within 30 cm (12 inches) during initial setup or for re-synchronization. • Be sure that the mouse is not in Suspend mode, which occurs after 20 minutes of inactivity. Click the left mouse button to reactivate the mouse. • Replace the batteries in the keyboard and/or mouse.

Speakers and sound

Symptom	Possible solution
Volume is very low or unsatisfactory	Be sure that you connected the speakers to the audio-out (black) jack on the back of the computer. (Additional audio jacks are used for multiple-channel speakers.) Detached nonpowered speakers (speakers without a separate power source, such as batteries or a power cord) do not produce satisfactory sound. Replace the nonpowered speakers with powered speakers.
No sound is produced	1. Type control panel in the taskbar search box, and then select **Control Panel**. Select **System and Security**. 2. Under **Security and Maintenance**, select **Troubleshoot computer problems**, and then select **Troubleshoot audio playback**.
	Be sure that you connected powered speakers and that they are turned on.
	Turn off your computer, and then disconnect and reconnect the speakers. Be sure that the speakers are connected to an audio jack, not a microphone or headphone jack.

Symptom	Possible solution
	To resume from Sleep mode, press the Sleep button (select products only), or press esc.
	Unplug headphones if they are connected to your computer (or speaker system).

Internet access

Symptom	Possible solution
Cannot connect to the Internet	1. Type `control panel` in the taskbar search box, and then select **Control Panel**. 2. Under **Network and Sharing Center**, select **Connect to a network**.
	Verify that you are using the proper cables for your Internet connection type. Your computer might have a dial-up modem and an Ethernet network adapter (also called a network interface card, or NIC). A modem uses a standard telephone cable, whereas the network adapter uses a network cable, to connect to a local area network (LAN). Do not connect a telephone cable to the network adapter, and do not connect a network cable to a telephone line; doing so might damage the network adapter.
	Run the wireless setup wizard. 1. Type `control panel` in the taskbar search box, and then select **Control Panel**. Select **Network and Internet**, and then select **Network and Sharing Center**. 2. In the **Network and Sharing Center** window, select **Set up a new connection or network** to open the wizard, and then follow the on-screen instructions.
	If your system has an external antenna, try moving the antenna to a better position. If the antenna is internal, try moving the computer.
	Try to connect again later, or contact your ISP for assistance.
Cannot connect to the Internet but there is no error message	1. Right-click or tap and hold the network status icon in the notification area, at the far right of the taskbar. 2. Select **Troubleshoot problems**.
No network connection icon in the notification area	1. Type `repair` in the taskbar search box, and then Select **Identify and repair network problems**. 2. Follow the on-screen instructions.

Software troubleshooting

Symptom	Possible solution
To resolve software problems, try these methods:	• Turn the computer off completely, and then turn it on again. • Update the drivers. See "Updating device drivers," in this table. • Restore your computer to a configuration that was in use before the software was installed. See "Microsoft System Restore" in this table. • Reinstall the software program or hardware driver. See "Software program and hardware driver reinstallation" in this table. • Erase and reformat the hard drive, and then reinstall the operating system, programs, and drivers. This process erases all the data files that you have created. See Backing up, restoring, and recovering on page 27.
Software programs are slow to respond	• Close unnecessary software programs. • Run virus scans and other system tools when the computer is not in use.

	Stop startup applications (such as messaging software and multimedia applications) from loading.
	
	1. Type `msconfig` in the taskbar search box, and then select **System Configuration**.
	
	    NOTE: If you are prompted for an administrator password or confirmation, type the password or provide confirmation.
	
	2. From the **General** tab, select **Selective startup**.
	
	3. Select the **Startup** tab, and then select **Open Task Manager**.
	
	4. Select the startup items that you want to prevent from loading, and then select **Disable**.
	
	    NOTE: If you are unsure about an item, do not disable it.
	
	5. If prompted, select **Restart** to restart the computer.
	
	NOTE: To enable a program to load at startup, restart the computer and reverse these steps.

	Disable nonessential graphics capabilities. **1.** Type `file explorer` in the taskbar search box, and then select **File Explorer**. **2.** Right-click or tap and hold **This PC**, and then select **Properties**. **3.** Select **Advanced system settings**. **NOTE:** If you are prompted for an administrator password or confirmation, type the password or provide confirmation. **4.** From the **Advanced** tab under Performance, select **Settings**. **5.** From the **Visual Effects** tab, select **Adjust for best performance**, and then select **OK**.
Updating device drivers	Complete the following procedure to update a driver, or to revert to an earlier version of the driver if the new one does not solve your problem. **1.** Type `device manager` in the taskbar search box, and then select **Device Manager**. **2.** Select the arrow to expand the list of the type of device you want to update or roll back (for example, DVD/CD-ROM drives). **3.** Double-click or double-tap the specific item (for example, HP DVD Writer 640b). **4.** Select the **Driver** tab. **5.** To update a driver, select **Update Driver**, and then follow the on-screen instructions. – or – To revert to an earlier version of a driver, select **Roll Back Driver**, and then follow the on-screen instructions.

Symptom	Possible solution
Microsoft System Restore	If you have a problem that might be caused by software that you have installed on your computer, use System Restore to return the computer to a previous restore point. You can also set restore points manually.
	IMPORTANT: Always use this System Restore procedure before you use the System Recovery program.
	For more information and steps, see the Get started app.
	▲ Select the **Start** button, and then select the **Get started** app.
Software program and hardware driver reinstallation	If any of your factory-installed software programs or hardware drivers are damaged, you can reinstall them by using HP Recovery Manager (select products only).
	NOTE: Do not use HP Recovery Manager to reinstall software programs provided on CDs or DVDs included in the computer box. Reinstall these programs directly from the CDs or DVDs.
	Before you uninstall a program, be sure that you have a way to reinstall it. Confirm that it is still available from the original source (for example, discs or the Internet). Or, confirm that the program is in the list of programs you can reinstall from HP Recovery Manager (see the steps directly below).
	NOTE: Some features might not be available on systems that are shipped without a version of Windows.
	To check the list of installable programs or to reinstall a program in HP Recovery Manager:
	▲ Type `recovery` in the taskbar search box, select **HP Recovery Manager**, select **Reinstall drivers and/or applications**, and then follow the on-screen instructions.
	For information and steps to uninstall a program, see the Get started app.
	▲ Select the **Start** button, and then select the **Get started** app.

8 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 Creating HP Recovery media (select products only) on page 27. For information on the recovery options that are available using the recovery media, see Using Windows tools on page 28.

- Use Windows tools to create system restore points and create backups of personal information.

  For more information, see Recovering using HP Recovery Manager on page 29.

  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 drive for your HP recovery media. Go to https://support.hp.com/us-en/document/c05115630?openCLC=true, select your country or region, and follow the on-screen instructions.

Creating HP Recovery media (select products only)

If possible, check for the presence of the Recovery partition and the Windows partition. From the **Start** menu, 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. Go to http://www.hp.com/support, select your country or region, and follow the on-screen instructions.

You can use Windows tools to create system restore points and create backups of personal information, see Using Windows tools on page 28.

- 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. 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:

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 29.

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.

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.

  NOTE: You must be connected to the Internet to access 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 29. If you have not already created recovery media, see Creating HP Recovery media (select products only) on page 27.

- 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 29.

- 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 31.

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 Creating HP Recovery media (select products only) on page 27.

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 Creating HP Recovery media (select products only) on page 27.

- To use the Factory Reset option (select products only), you must use HP Recovery media. If you have not already created recovery media, see Creating HP Recovery media (select products only) on page 27.

- 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. 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 31.

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 Creating HP Recovery media (select products only) on page 27.

📝 **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.

9 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.

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.

Shipping your computer

If you have to 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.

10 Using HP PC Hardware Diagnostics (UEFI)

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

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.

NOTE: To start diagnostics on a convertible computer, your computer must be in notebook mode and you must use the keyboard attached.

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

1. Turn on or restart the computer, and quickly press esc.

2. Press 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 35.

    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: 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, 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.

11 Specifications

Operating specifications

📝 **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.
Operating temperature	5°C to 35°C	41°F to 95°F
Storage temperature	-20°C to 60°C	−22°F to 149°F
Operating humidity	15% to 80% @ 26°C	15% to 80% @ 78°F
Operating altitude	0 m to 2000 m	0 ft to 6561 ft
Storage altitude	0 m to 4572 m	0 ft to 15000 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.

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.

14 Support information

How to get help

HP support can help you get the most from your computer. You will find what you need with tools located on your computer and with information available on the Web, by phone, or through your local retailer.

Before contacting HP support, it's important to have the following information handy:

- Model number
- Product number
- Serial number
- Software build number
- Operating system
- Purchase date

Please take a moment to write down your product information for future reference.

The first four items on the list (model number, product number, serial number, and software build number) can be viewed by using HP Support Information. Type `support` in the taskbar search box, and then select the **HP Support Assistant** app.

Don't forget to register at http://www.hp.com/apac/register.

Where to get help

- Use the Get started app for help with hardware and software questions. Select the **Start** button, and then select the **Get started** app.
- Use HP Support Assistant. Type `support` in the taskbar search box, and then select the **HP Support Assistant** app.

  HP Support Assistant provides useful troubleshooting and diagnostics information and includes the following:

  - Online chat with an HP technician
  - Support telephone numbers
  - HP service center locations
- For help online, go to http://www.hp.com/support.

Telephone assistance to get you up and running is covered for thirty (30) days from the time you purchase your computer. After thirty (30) days, there may be a charge, but the helpful support is still available.

Customer support for repairs

If your computer needs to be repaired or to have parts replaced, you have two choices:

- You can easily replace many of your computer parts that are considered consumer replaceable. This is the fastest method of repair, because many times HP can send the part directly to your home or business in a few days. (This option may not be available in all countries or regions.)

- If a repair is necessary, HP support will make arrangements to repair your computer.

These services are covered during the warranty period.

There are some limitations and exclusions to the warranty (as well as some important details), which are described in the *HP Worldwide Limited Warranty and Technical Support* guide.

Before upgrading your hardware

If you intend to upgrade any of your hardware, do it only after you set up your new computer. For instructions on setting up your computer, see the *Setup Instructions* or *Quick Setup* poster or Getting to know your computer on page 3. If you have any problems setting up your system and turning it on, immediately contact HP support using the procedures given earlier in this chapter. This must be done first before attempting to upgrade your system.

By breaking the security seal on the back of the computer, you confirm that the computer was working properly before you attempted to upgrade your system. After the security seal has been broken, your computer is then, to the extent allowed by local law, covered under the terms and conditions listed in the *HP Worldwide Limited Warranty and Technical Support* guide.

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