User Guide

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Product notice

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

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

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

Software terms

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 60950-1).

Table of contents

1 Getting started 1

Finding information 2

2 Components 3

Locating hardware and software 3

Right 3

Left 4

Display 5

Top 6

TouchPad 6

Lights 8

Buttons and fingerprint reader 9

Special function keys 10

Using the hot keys 10

Bottom 12

Front 13

Labels 14

Inserting a SIM card (select products only) 15

3 Connecting to a network 16

Connecting to a wireless network 16

Using the wireless controls 16

Turning wireless devices on or off 16

HP Connection Manager (select products only) 17

Wireless button 17

Operating system controls 17

Connecting to a WLAN 17

Using HP Mobile Broadband (select products only) 18

Using HP Mobile Connect (select products only) 18

Using GPS (select products only) 18

Using Bluetooth wireless devices (select products only) 19

Adding a Bluetooth-enabled device 19

Connecting to a wired network 19

Connecting to a local area network (LAN) (select products only) 19

Using a modem (select products only) 20

Connecting a modem cable 20

Connecting a country- or region-specific modem cable adapter 20

4 Screen navigation 22

Using the TouchPad and touch screen gestures 22

Tap 22

Two-finger pinch zoom 22

Two-finger scroll (TouchPad only) 23

Two-finger tap (TouchPad only) 23

5 Entertainment features 24

Using a webcam (select products only) 24

Using audio 24

Connecting speakers 24

Connecting headphones 24

Connecting headsets 24

Using sound settings 25

Using video 25

Connecting video devices using a VGA cable (select products only) 25

Connecting video devices using an HDMI cable (select products only) 26

Setting up HDMI audio 27

Connecting a USB Type-C (Thunderbolt-3-enabled) port 27

Discovering and connecting wired displays using MultiStream Transport 28

Connect displays to computers with Intel graphics (with a built-in hub) 28

Discovering and connecting to Miracast-compatible wireless displays (select products only) 28

Discovering and connecting to Intel WiDi certified displays (select Intel products only) 29

6 Power management 30

Shutting down (turning off) the computer 30

Setting power options 30

Using power-saving states 30

Initiating and exiting Sleep 31

Initiating and exiting Hibernation 31

Using the power meter and power settings 31

Setting password protection on wakeup 32

Using battery power 32

Using HP Battery Check 32

Displaying the remaining battery charge 33

Maximizing battery discharge time 33

Managing low battery levels 33

Identifying low battery levels 33

Resolving a low battery level 33
Removing the battery 34
Conserving battery power 35
Disposing of a user-replaceable battery 35
Replacing a battery 35
Using external AC power 36
Testing an AC adapter 36

7 Security 37
Protecting the computer 37
Using passwords 38
Setting passwords in Windows 38
Setting passwords in Computer Setup 39
Managing a BIOS administrator password 39
Entering a BIOS administrator password 40
Managing a Computer Setup DriveLock password (select products only) 41
Setting a DriveLock password 41
Enabling DriveLock (select products only) 42
Disabling DriveLock (select products only) 42
Entering a DriveLock password (select products only) 43
Changing a DriveLock password (select products only) 43
Using antivirus software 43
Using firewall software 43
Installing critical security updates 44
Using HP Client Security (select products only) 44
Using HP Touchpoint Manager (select products only) 44
Installing an optional security cable (select products only) 44
Using a fingerprint reader (select products only) 44
Locating the fingerprint reader 45

8 Maintenance 46
Improving performance 46
Using Disk Defragmenter 46
Using Disk Cleanup 46
Using HP 3D DriveGuard (select products only) 46
Identifying HP 3D DriveGuard status 47
Updating programs and drivers 47
Cleaning your computer 47
Cleaning procedures 47
Cleaning the display 48
Cleaning the sides or cover 48

Cleaning the TouchPad, keyboard, or mouse (select products only) 48
Traveling with or shipping your computer 48

9 Backup and recovery 50
Creating recovery media and backups 50
Guidelines 50
Creating recovery media with HP Recovery Disc Creator 50
Creating recovery media 51
Backing up your information 51
Performing a system recovery 52
Using the Windows recovery tools 52
Using f11 recovery tools (select products only) 53
Using Windows 7 operating system media 53

10 Computer Setup (BIOS), TPM, and HP Sure Start 55
Using Computer Setup 55
Starting Computer Setup 55
Navigating and selecting in Computer Setup 55
Restoring factory settings in Computer Setup 56
Updating the BIOS 56
Determining the BIOS version 56
Downloading a BIOS update 57
Changing the boot order using the f9 prompt 57
TPM BIOS settings (select products only) 58
Using HP Sure Start (select products only) 58

11 Using HP PC Hardware Diagnostics (UEFI) 59
Downloading HP PC Hardware Diagnostics (UEFI) to a USB device 59

12 Specifications 61
Input power 61
Operating environment 61

13 Electrostatic Discharge 62

14 Accessibility 63
Supported assistive technologies 63
Getting support for accessibility 63

Index 64

1 Getting started

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

- **Connect to the Internet**—Set up your wired or wireless network so that you can connect to the Internet. For more information, see Connecting to a network on page 16.
- **Update your antivirus software**—Protect your computer from damage caused by viruses. The software is preinstalled on the computer. For more information, see Security on page 37.
- **Get to know your computer**—Learn about your computer features. See Components on page 3 and Screen navigation on page 22 for additional information.
- **Find installed software**—Access a list of the software preinstalled on the computer:

  Select **Start > All Programs**. For details about using the software included with the computer, see the software manufacturer's instructions, which may be provided with the software or on the manufacturer's website.
- Back up your hard drive by creating recovery discs or a recovery flash drive. See Backup and recovery on page 50.

Finding information

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

Resources	For information about
Setup Instructions poster	• How to set up the computer • Help to identify computer components
HP Support Assistant To access Help and Support, select **Start > All Programs > HP Help and Support**. To access the latest user guide, go to http://www.hp.com/support, and select your country. Select **Drivers & Downloads**, and then follow the on-screen instructions.	• Software, driver, and BIOS updates • Troubleshooting tools • How to access support
Worldwide support To get support in your language, go to http://www.hp.com/support, and select your country.	• Online chat with an HP technician • Support telephone numbers • HP service center locations
HP website To access the latest user guide, go to http://www.hp.com/support, and select your country. Select **Drivers & Downloads**, and then follow the on-screen instructions.	• Support information • Ordering parts and finding additional help • Accessories available for the device
Safety & Comfort Guide To access the user guide, select **Start > All Programs > HP Help and Support > HP Documentation**. – or – Go to http://www.hp.com/ergo.	• Proper workstation setup, posture, health, and work habits • Electrical and mechanical safety information
Regulatory, Safety, and Environmental Notices To access the user guide, select **Start > All Programs > HP Help and Support > HP Documentation**.	• Regulatory and safety information • Battery disposal information
*Limited Warranty** To access the Limited Warranty, select **Start > All Programs > HP Help and Support > HP Documentation > View Warranty Information**. – or – Go to http://www.hp.com/go/orderdocuments.	• Warranty information
*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 Components

Locating hardware and software

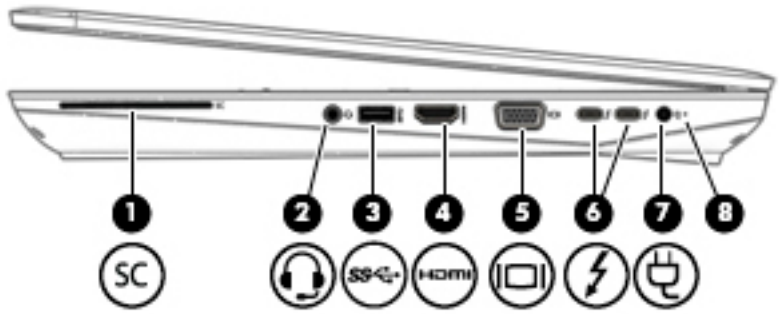
To see a list of your installed hardware:

▲ Select **Start > Control Panel > Device Manager**.

To see a list of your installed software:

▲ Select **Start > All Programs**.

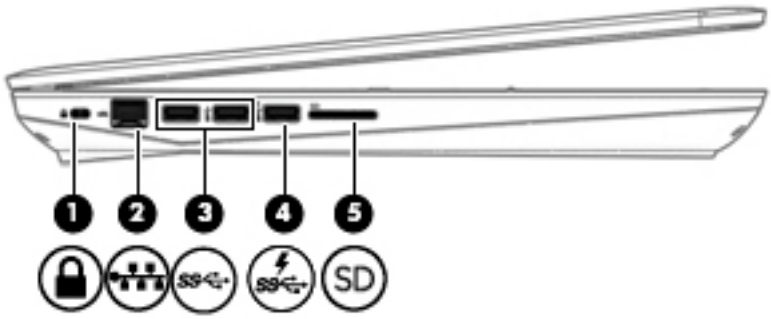
Right



Component			Description
(1)	SC	Smart card reader	Supports optional Smart cards.
(2)		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. **WARNING!** To reduce the risk of personal injury, adjust the volume before putting on headphones, earbuds, or a headset. For additional safety information, refer to the *Regulatory, Safety, and Environmental Notices*. To access this guide: ▲ Select **Start > All Programs > HP Help and Support > HP Documentation**. **NOTE:** When a device is connected to the jack, the computer speakers are disabled. **NOTE:** Be sure that the device cable has a 4-conductor connector that supports both audio-out (headphone) and audio-in (microphone).
(3)	SS	USB 3.0 port	Connects an optional USB device, such as a keyboard, mouse, external drive, printer, scanner or USB hub.

Component		Description
(4)	HDMI port	Connects an optional video or audio device, such as a high-definition television, any compatible digital or audio component, or a high-speed High Definition Multimedia Interface (HDMI) device.
(5)	External monitor port	Connects an external VGA monitor or projector.
(6)	USB Type-C (Thunderbolt-3-enabled) ports (2)	Connect any USB device with a Type-C connector. **NOTE:** USB Type-C ports charge products such as cell phones, laptops, tablets, and MP3 players, even when the computer is off. Also, some USB Type-C ports connect DisplayPort, VGA, HDMI, Thunderbolt™ and other video devices to provide video output. **NOTE:** Adapters (purchased separately) may be required.
(7)	Power connector	Connects an AC adapter.
(8)	Battery light	When AC power is connected: • White: The battery charge is greater than 90 percent. • Amber: The battery charge is from 0 to 90 percent. • Off: The battery is not charging. When AC power is disconnected (battery not charging): • Blinking amber: The battery has reached a low battery level. When the battery has reached a critical battery level, the battery light begins blinking rapidly. • Off: The battery is not charging.

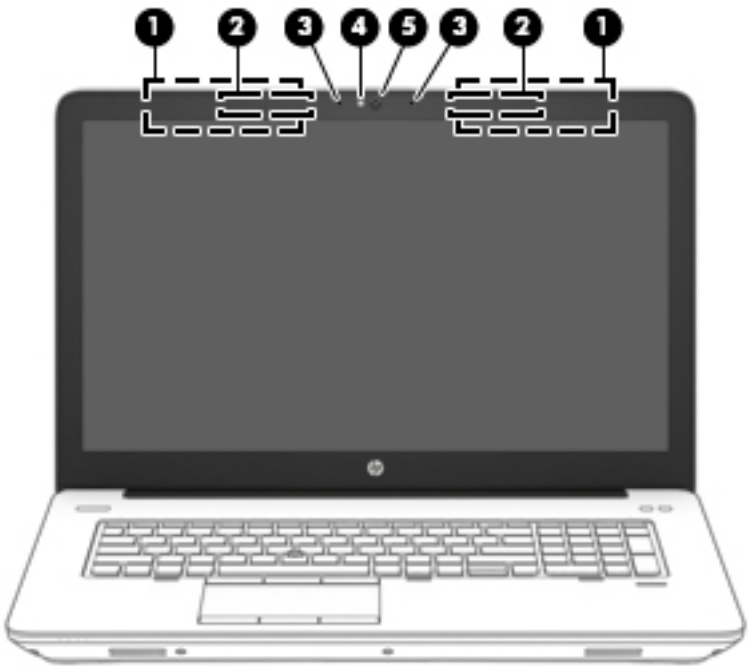
Left



Component		Description
(1)	Security cable slot	Attaches an optional security cable to the computer. **NOTE:** The security cable is designed to act as a deterrent, but it may not prevent the computer from being mishandled or stolen.

Component			Description
(2)		RJ-45 (network) jack/status lights	Connects a network cable. • Green (left): The network is connected. • Amber (right): Activity is occurring on the network.
(3)		USB 3.0 ports (2)	Connect an optional USB device, such as a keyboard, mouse, external drive, printer, scanner or USB hub.
(4)		USB 3.0 charging (powered) port	Connects an optional USB device, such as a keyboard, mouse, external drive, printer, scanner or USB hub. Standard USB ports will not charge all USB devices or will charge using a low current. Some USB devices require power and require you to use a powered port. **NOTE:** USB charging ports can also charge select models of cell phones and MP3 players, even when the computer is off.
(5)	SD	Memory card reader	Reads optional memory cards that store, manage, share, or access information.

Display



Component		Description
(1)	WLAN antennas*	Send and receive wireless signals to communicate with wireless local area networks (WLANs). The antennas for your product will be located within this area.
(2)	WWAN antennas (select products only)*	Send and receive wireless signals to communicate with wireless wide area networks (WWANs).

Component		Description
(3)	Internal microphones (2)	Record sound.
(4)	Webcam light (select products only)	On: The webcam is in use.
(5)	Webcam (select products only)	Records video and captures photographs. Some models allow you to video conference and chat online using streaming video. To use the webcam: ▲ Select **Start > All Programs > Communication and Chat > CyberLink YouCam**.

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

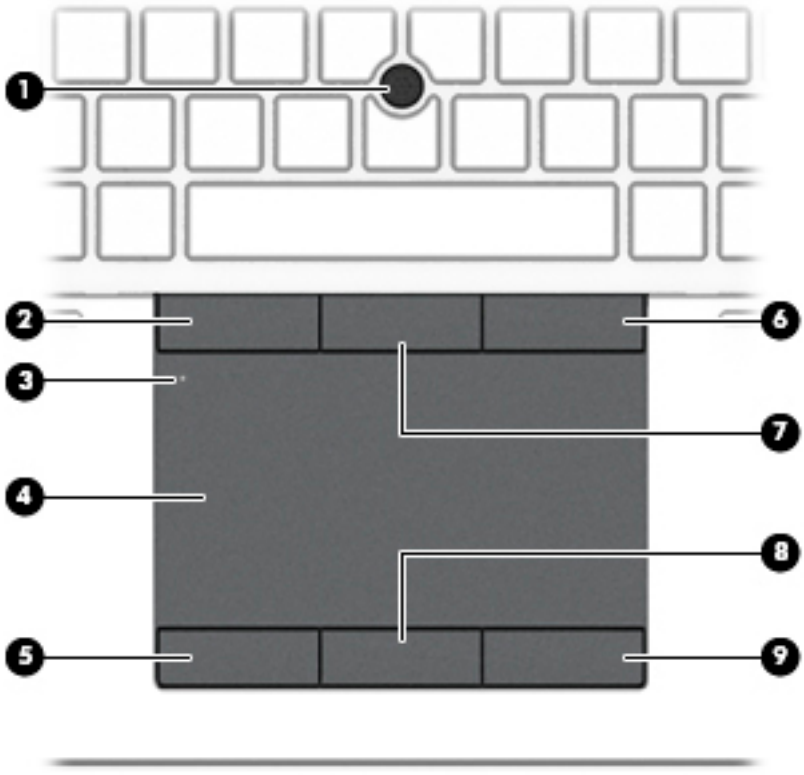
For wireless regulatory notices, see the section of the *Regulatory, Safety, and Environmental Notices* that applies to your country or region.

To access this guide:

▲ Select **Start > All Programs > HP Help and Support > HP Documentation**.

Top

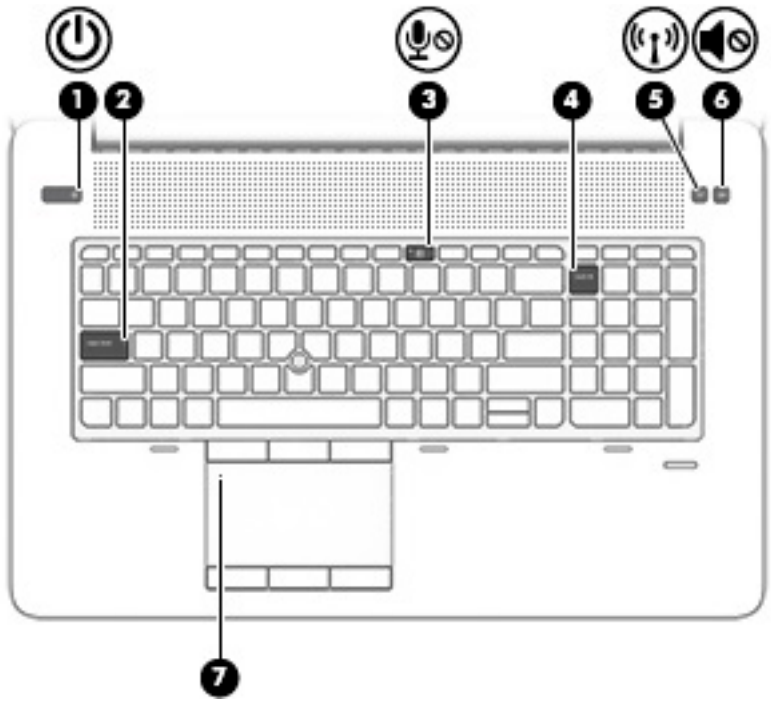
TouchPad



Component		Description
(1)	Pointing stick	Moves the pointer and selects or activates items on the screen.
(2)	Left pointing stick button	Functions like the left button on an external mouse.

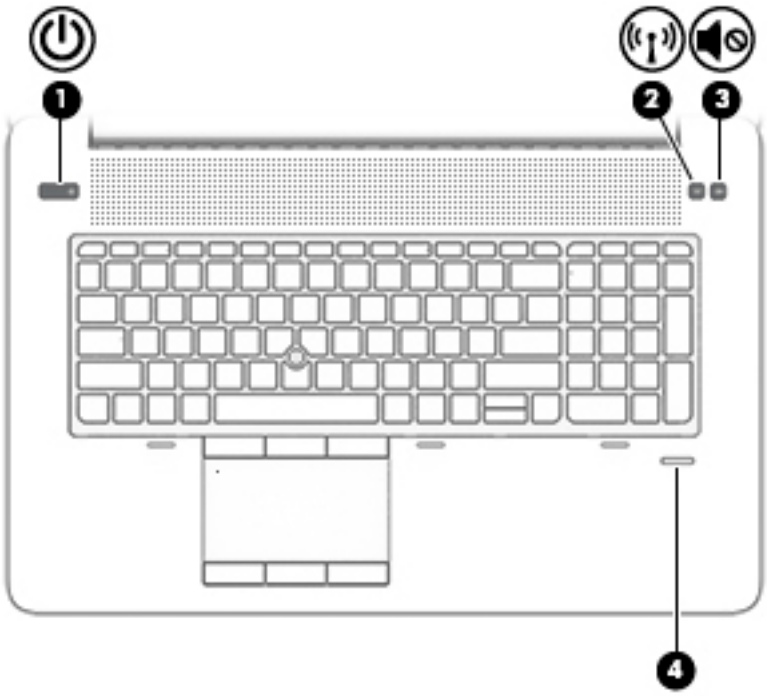
Component		Description
(3)	TouchPad on/off button	Turns the TouchPad on and off.
(4)	TouchPad zone	Reads your finger gestures to move the pointer or activate items on the screen.
(5)	Left TouchPad button	Functions like the left button on an external mouse.
(6)	Right pointing stick button	Functions like the right button on an external mouse.
(7)	Center pointing stick button	Functions like the center button on an external mouse.
(8)	Center TouchPad button	Functions like the center button on an external mouse.
(9)	Right TouchPad button	Functions like the right button on an external mouse.

Lights



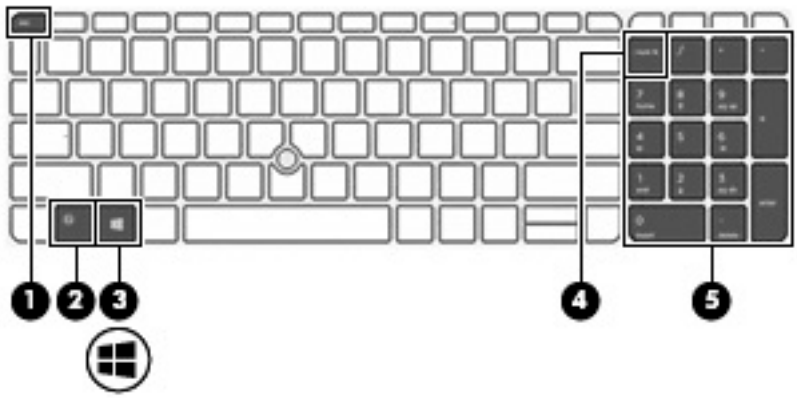
Component		Description
(1)	Power light	• On: The computer is on. • Blinking: The computer is in the Sleep state, a power-saving state. The computer shuts off power to the display and other unneeded components. • Off: The computer is off or in Hibernation. Hibernation is a power-saving state that uses the least amount of power.
(2)	Caps lock light	On: Caps lock is on, which switches the key input to all capital letters.
(3)	Microphone mute light	• Amber: microphone sound is off. • Off: microphone sound is on.
(4)	Num lock light	On: Num lock is on.
(5)	Wireless light	On: An integrated wireless device, such as a wireless local area network (WLAN) device and/or a Bluetooth® device, is on. **NOTE:** On some models, the wireless light is amber when all wireless devices are off.
(6)	Mute light	• Amber: Computer sound is off. • Off: Computer sound is on.
(7)	TouchPad light	• On: The TouchPad is off. • Off: The TouchPad is on.

Buttons and fingerprint reader



Component			Description
(1)		Power button	• When the computer is off, press the button to turn on the computer. • When the computer is on, press the button briefly to initiate Sleep. • When the computer is in the Sleep state, press the button briefly to exit Sleep. • When the computer is in Hibernation, press the button briefly to exit Hibernation. **CAUTION:** Pressing and holding down the power button results in the loss of unsaved information. If the computer has stopped responding and shutdown procedures are ineffective, press and hold the power button for at least 5 seconds to turn off the computer. To learn more about your power settings, see your power options. ▲ Select **Start > Control Panel > System and Security > Power Options**.
(2)		Wireless button	Turns the wireless feature on or off but does not establish a wireless connection.
(3)		Volume mute button (select products only)	Mutes and restores speaker sound.
(4)		Fingerprint reader (select products only)	Allows a fingerprint logon to Windows®, instead of a password logon.

Special function keys



Component		Description
(1)	esc key	Displays system information when pressed in combination with the fn key.
(2)	fn key	Executes frequently used system functions when pressed in combination with a function key, the num lock key, or the esc key. See Using the hot keys on page 10.
(3)	Windows key	Opens the **Start** menu. **NOTE:** Pressing the Windows key again will close the **Start** menu.
(4)	num lock key	Turns the numeric keypad on and off.
(5)	Integrated numeric keypad	A separate keypad to the right of the alphabet keyboard that enables you to add, subtract, and perform other numeric tasks. When num lock is on, the integrated keypad can be used like an external numeric keypad.

Using the hot keys

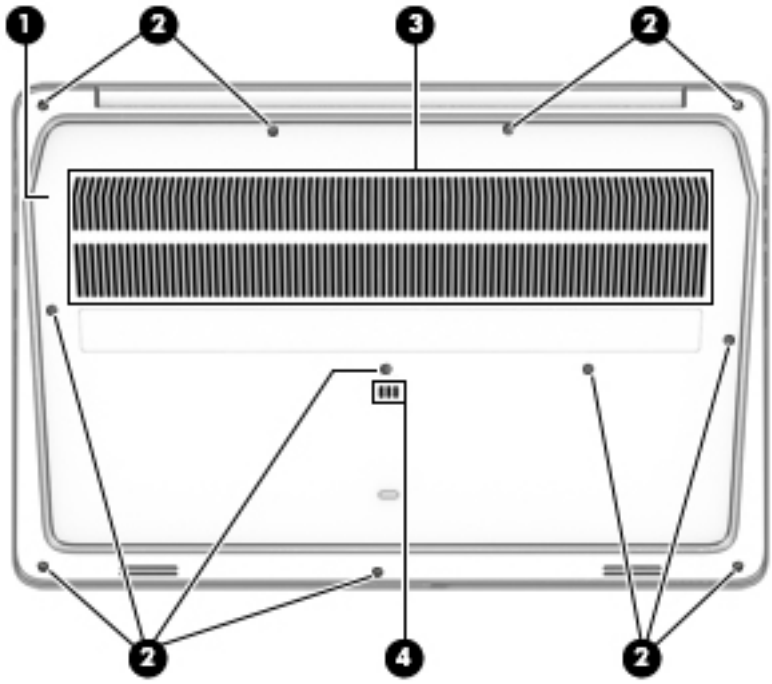
To use a hot key:

▲ Press the fn key, and then press the correct function key represented by the icons below.

Press fn+function key	Description
	Initiates Sleep, which saves your information in system memory. The display and other system components turn off and power is conserved. To exit Sleep, briefly press the power button. **CAUTION:** To reduce the risk of information loss, save your work before initiating Sleep.
	Turns the keyboard backlight off or on. **NOTE:** To conserve battery power, turn off this feature.
	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.

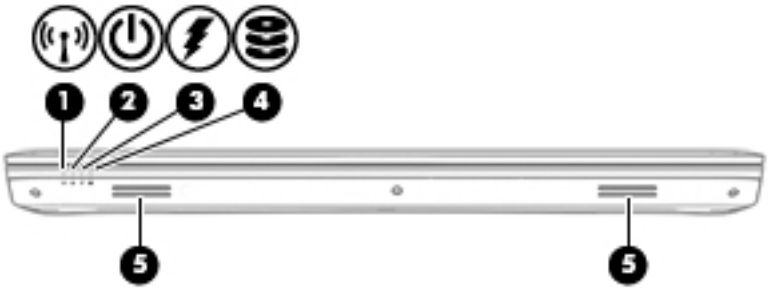
Press fn+function key	Description
	Decreases the screen brightness incrementally as long as you hold down the key.
	Increases the screen brightness incrementally as long as you hold down the key.
	Decreases speaker volume incrementally while you hold down the key.
	Increases speaker volume incrementally while you hold down the key.
	Mutes the microphone.

Bottom



Component		Description
(1)	Service door	Provides access to the hard drive bay, the WLAN module slot, the WWAN module slot, and the memory module slots. **CAUTION:** To prevent an unresponsive system, replace the wireless module only with a wireless module authorized for use in the computer by the governmental agency that regulates wireless devices in your country or region. If you replace the module and then receive a warning message, remove the module to restore computer functionality, and then contact support. ▲ Select **Start > Help and Support**.
(2)	Service door release screws	Releases the service door.
(3)	Vents	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)	Spill drain	Allows spilled liquids, such as sodas or coffee, to drain out of the computer.

Front



Component			Description
(1)		Wireless light	On: An integrated wireless device, such as a wireless local area network (WLAN) device and/or a Bluetooth® device, is on. **NOTE:** On some models, the wireless light is amber when all wireless devices are off.
(2)		Power light	• On: The computer is on. • Blinking: The computer is in the Sleep state, a power-saving state. The computer shuts off power to the display and other unneeded components. • Off: The computer is off or in Hibernation. Hibernation is a power-saving state that uses the least amount of power.
(3)		Battery light	When AC power is connected: • White: The battery charge is greater than 90 percent. • Amber: The battery charge is from 0 to 90 percent. • Off: The battery is not charging. When AC power is disconnected (battery not charging): • Blinking amber: The battery has reached a low battery level. When the battery has reached a critical battery level, the battery light begins blinking rapidly. • Off: The battery is not charging.
(4)		Hard drive light	• Blinking white: The hard drive is being accessed. • Amber: HP 3D DriveGuard has temporarily parked the hard drive. **NOTE:** For more information about HP 3D DriveGuard, see Using HP 3D DriveGuard (select products only) on page 46.
(5)		Speakers	Produce sound.

Labels

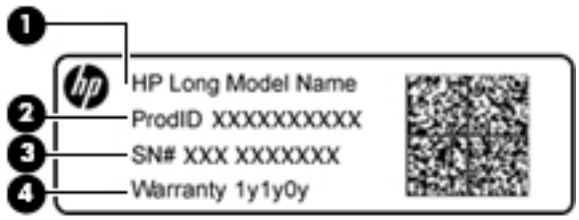
The labels affixed to the computer provide information you may need when you troubleshoot system problems or travel internationally with the computer.

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

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

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

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



Component	
(1)	Model name (select products only)
(2)	Product number
(3)	Serial number
(4)	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.

Inserting a SIM card (select products only)

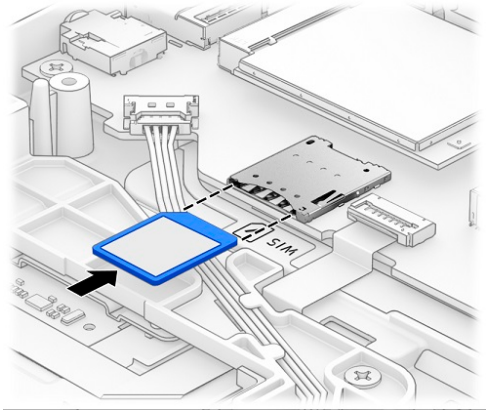
CAUTION: To prevent damage to the connectors, use minimal force when inserting a SIM card.

To insert a SIM card, follow these steps:

1. Turn off the computer by using the Shut down command.
2. Close the display.
3. Disconnect all external devices connected to the computer.
4. Unplug the power cord from the AC outlet.
5. Turn the computer upside down on a flat surface.
6. Remove the service door and battery. See Removing the battery on page 34.
7. Insert the SIM card into the SIM card slot, and then press in on the SIM card until it is firmly seated.

NOTE: The SIM card in your computer may look slightly different from the illustration in this section.

NOTE: See the image on the battery bay to determine which way the SIM card should be inserted into your computer.



To remove a SIM card, press in on the SIM card, and then remove it from the slot.

3 Connecting to a network

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

Connecting to a wireless network

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

- Wireless local area network (WLAN) device—Connects the computer to wireless local area networks (commonly referred to as Wi-Fi networks, wireless LANs, or WLANs) in corporate offices, your home, and public places such as airports, restaurants, coffee shops, hotels, and universities. In a WLAN, the mobile wireless device in your computer communicates with a wireless router or a wireless access point.
- HP Mobile Broadband Module (select models only)—A wireless wide area network (WWAN) device that gives you wireless connectivity over 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.

For more information about wireless technology, see the information and website links provided in Help and Support. To access Help and Support, select **Start > Help and Support**.

Using the wireless controls

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

- Wireless button, wireless switch, or wireless key (referred to in this chapter as the wireless button)
- Operating system controls

Turning wireless devices on or off

You can use the wireless button or HP Connection Manager (select models only) to turn on and turn off wireless devices.

NOTE: A computer may have a wireless button, a wireless switch, or a wireless key on the keyboard. The term wireless button is used throughout this guide to refer to all types of wireless controls.

To turn off wireless devices using HP Connection Manager:

▲ Right-click the **HP Connection Manager** icon in the notification area, at the far right of the taskbar, and then click the power button next to the desired device.

-or-

Select **Start > All Programs > Productivity and Tools > HP Connection Manager**, and then click the power button next to the desired device.

HP Connection Manager (select products only)

HP Connection Manager provides a central location for managing your wireless devices, an interface for connecting to the Internet using HP Mobile Broadband, and an interface for sending and receiving SMS (text) messages. HP Connection Manager allows you to manage the following devices:

- Wireless local area network (WLAN)/Wi-Fi
- Wireless wide area network (WWAN)/HP Mobile Broadband
- Bluetooth

HP Connection Manager provides information and notifications on connection status, power status, SIM card details, and SMS messages. Status information and notifications are provided in the notification area, at the far right of the taskbar.

To open HP Connection Manager:

▲ Click the **HP Connection Manager** icon in the taskbar.

-or-

Select **Start > All Programs > Productivity and Tools > HP Connection Manager**.

For more information, see the HP Connection Manager software Help.

Wireless button

The computer may have a wireless button, 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, manage wireless networks, and diagnose and repair network problems.

To use operating system controls:

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

For more information, access Help and Support by selecting **Start > Help and Support**.

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 computer to the modem, and test the Internet service

To connect to the WLAN, follow these steps:

1. Be sure that the WLAN device is on.
2. Click the network status icon in the notification area, at the far right of the taskbar.
3. Select a WLAN to connect to.

4. Click **Connect**.

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

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

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

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

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

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

Using 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.

NOTE: If your computer includes HP Mobile Connect, these instructions do not apply. See Using HP Mobile Connect (select products only) on page 18.

You may need the HP Mobile Broadband Module serial number to activate mobile broadband service. The serial number may be printed on a label inside the battery bay, under the service door, or on the back of the display.

Some mobile network operators require the use of a 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 provided in the HP Mobile Broadband information provided with your computer or the mobile network operator may provide it separately from the computer.

For information 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 HP Mobile Connect (select products only)

HP Mobile Connect is a prepaid, mobile broadband service that provides a cost-effective, secure, simple, and flexible mobile broadband connection for your computer. To use HP Mobile Connect, your computer must have a SIM and the **HP Mobile Connect** app. For more information about HP Mobile Connect and where it is available, go to http://www.hp.com/go/mobileconnect.

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.

For more information, see the HP GPS and Location software Help.

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

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

Adding a Bluetooth-enabled device

1. Select **Start > Devices and printers > Add a device**, and then follow the on-screen instructions.
2. Select the Bluetooth-enabled device you want to add to your computer, and then select **Next**.

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 and that the wireless setting for your computer is turned on. Some devices may have additional requirements; refer to the documentation provided with the device.

Connecting to a wired network

Select products may allow wired connections: local area network (LAN) and modem connection. A LAN connection uses a network cable and is much faster than a modem, which uses a telephone cable. Both cables are sold separately.

WARNING! To reduce the risk of electric shock, fire, or damage to the equipment, do not plug a modem cable or telephone cable into an RJ-45 (network) jack.

Connecting to a local area 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.

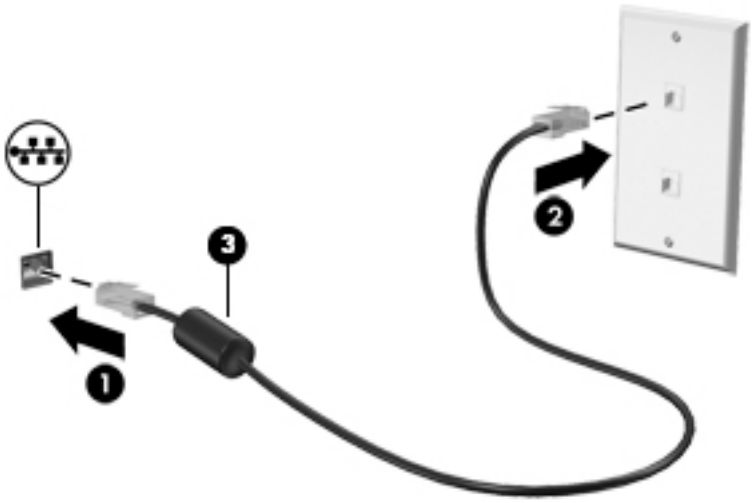
Connecting to a LAN requires an 8-pin, RJ-45 network cable or an optional docking device or expansion port, if there is no RJ-45 port on the computer.

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.



Using a modem (select products only)

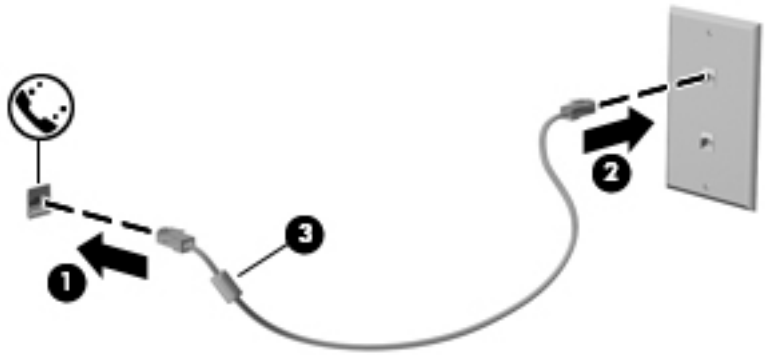
A modem must be connected to an analog telephone line using a 6-pin, RJ-11 modem cable. In some countries or regions, a specific modem cable adapter is also required. Jacks for digital PBX systems may resemble analog telephone jacks, but they are not compatible with the modem.

Connecting a modem cable

To connect the modem cable, follow these steps:

1. Plug the modem cable into the modem jack **(1)** on the computer.
2. Plug the modem cable into the RJ-11 telephone wall jack **(2)**.

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

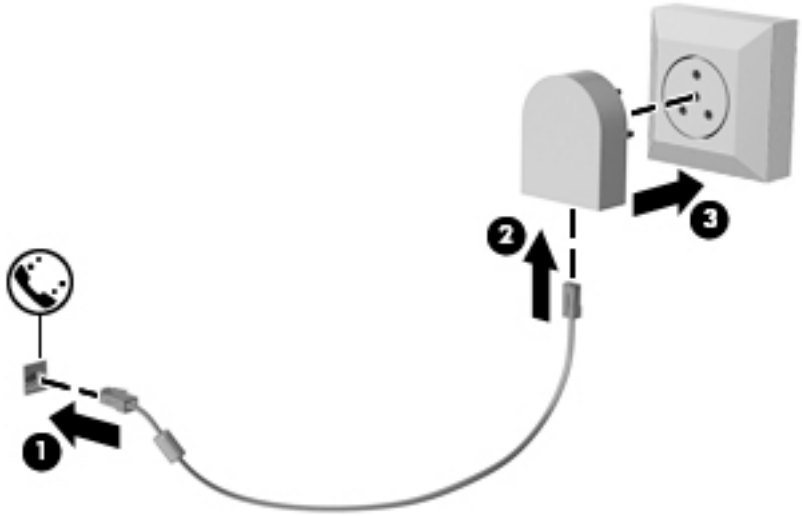


Connecting a country- or region-specific modem cable adapter

Telephone jacks vary by country or region. To use the modem and the modem cable outside the country or region in which you purchased the computer, you must obtain a country- or region-specific modem cable adapter.

To connect the modem to an analog telephone line that does not have an RJ-11 telephone jack, follow these steps:

1. Plug the modem cable into the modem jack **(1)** on the computer.
2. Plug the modem cable into the modem cable adapter **(2)**.
3. Plug the modem cable adapter **(3)** into the telephone wall jack.



4 Screen navigation

You can navigate the computer screen in the following ways:

- Use touch gestures directly on the computer screen (select products only)
- Use touch gestures on the TouchPad
- Use keyboard and optional mouse (mouse purchased separately)
- Use the pointing stick

Using the TouchPad and touch screen gestures

The TouchPad helps you navigate the computer screen and control the pointer using simple touch gestures. You can also use the left and right TouchPad buttons as you would use the corresponding buttons on an external mouse. To navigate a touch screen (select products only), touch the screen directly using gestures described in this chapter.

You can also customize gestures and view demonstrations of how they work. Select **Start > Control Panel > Hardware and Sound > Devices and Printers > Mouse**.

NOTE: Unless noted, gestures can be used on the TouchPad or a touch screen (select products only).

Tap

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

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

Two-finger pinch zoom

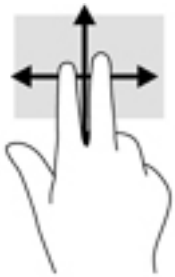
Use the two-finger pinch zoom to zoom out or in on images or text.

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

Two-finger scroll (TouchPad only)

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

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



Two-finger tap (TouchPad only)

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

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

- Tap two fingers on the TouchPad zone to open the options menu for the selected object.

5 Entertainment features

Use your HP computer for business or pleasure to meet with others via the webcam, mix audio and video, or connect external devices like a projector, monitor, TV, or speakers. See Components on page 3 to locate the audio, video and camera features on your computer.

Using a webcam (select products only)

Your computer has a webcam (integrated camera) that records video and captures photographs. Some models allow you to video conference and chat online using streaming video.

- To access the camera, select **Start > All Programs > Communication and Chat > CyberLink YouCam**.

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 products) or attach an external optical drive to play CDs. To enhance your listening enjoyment, attach headphones or speakers.

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. To connect high-definition speakers to the computer, see Setting up HDMI audio on page 27. Before connecting speakers, lower the volume setting.

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 **Start > All Programs > HP Help and Support > HP Documentation**.

You can connect wired headphones 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 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 **Start > All Programs > HP Help and Support > 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:

- Select **Start > Control Panel > Hardware and Sound**, and then select **Sound** or your audio software.

NOTE: To see all Control Panel contents, select large or small icon view, instead of **Category** view.

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.

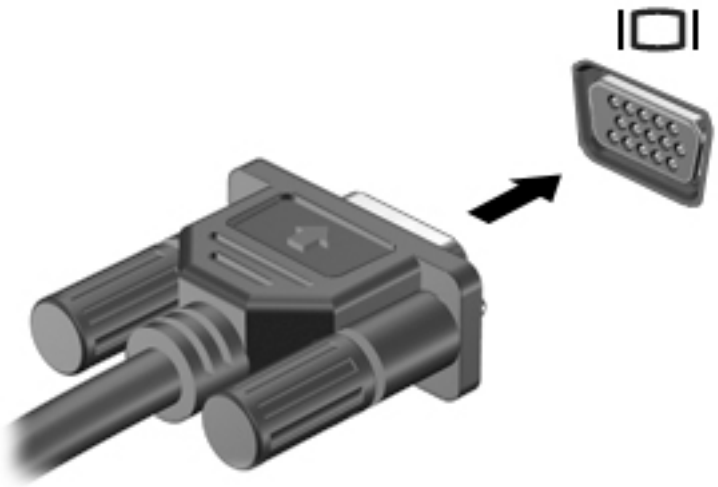
For information on using your video features, refer to HP Support Assistant.

Connecting video devices using a 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 fn+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 fn+f4, the display state changes.

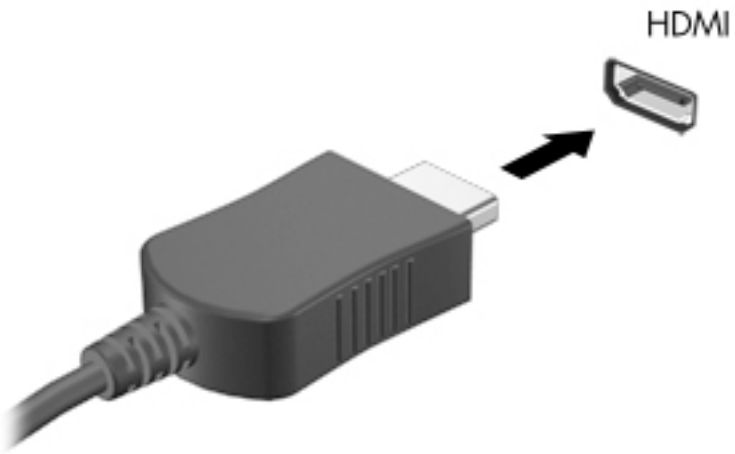
NOTE: For best results, especially if you choose the "Extend" option, increase the screen resolution of the external device, as follows. Select **Start > Control Panel > Appearance and Personalization**. Under **Display**, select **Adjust resolution**.

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 fn+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 fn+f4, 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 **Start > Control Panel > Appearance and Personalization**. Under **Display**, select **Adjust resolution**.

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:

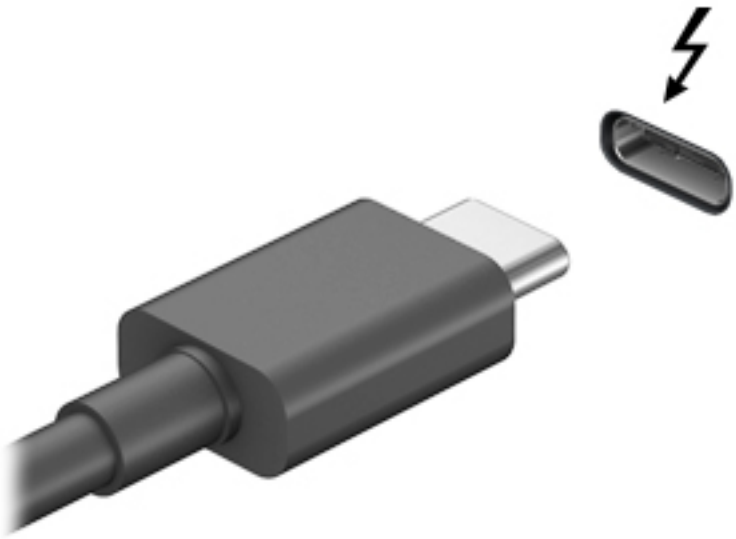
1. Right-click the **Speakers** icon in the notification area, at the far right of the taskbar, and then click **Playback devices**.
2. On the Playback tab, click **Speakers**.
3. Click **Set Default**, and then click **OK**.

Connecting a USB Type-C (Thunderbolt-3-enabled) port

The USB Type-C (Thunderbolt-3-enabled) port connects an optional high-resolution display device or a high-performance data device. This port delivers higher performance than the VGA external monitor port and improves digital connectivity. USB Type-C ports also charge products such as cell phones, laptops, tablets, and MP3 players even when the computer is off.

NOTE: Thunderbolt is new technology. Install all the latest drivers for your Thunderbolt device before connecting the device to the Thunderbolt port. Thunderbolt cable and Thunderbolt device (sold separately) must be compatible with Windows. To determine whether your device is Thunderbolt Certified for Windows, go to https://thunderbolttechnology.net/products.

1. Connect one end of the Thunderbolt-3 connector to the USB Type-C port on the computer.



2. Connect the other end of the cable to the digital display device.
3. Press fn+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 fn+f4 the display state changes.

NOTE: For best results, especially if you choose the "Extend" option, adjust the screen resolution of the external device, as follows. Select **Start > Control Panel > Appearance and Personalization**. Under **Display**, select **Adjust screen resolution**.

Discovering and connecting wired displays using MultiStream Transport

MultiStream Transport (MST) allows you to connect multiple wired display devices to your computer by connecting to the VGA port on your computer and also to the VGA or DisplayPorts on a hub or an external docking station. You can connect in several ways, depending on the type of graphics controller installed on your computer and whether or not your computer includes a built-in hub. Go to Device Manager to find out what hardware is installed on your computer.

▲ Select **Start > Control Panel > System and Security > System > Device Manager** to see a list of all devices installed on your computer.

Connect displays to computers with Intel graphics (with a built-in hub)

With your internal hub and Intel® graphics controller, you can connect up to 3 display devices in the following configurations:

- Two 1920 x 1200 DP monitors connected to the computer + one 1920 x 1200 VGA monitor connected to an optional docking station
- One 2560 x 1600 DP monitor connected to the computer + one 1920 x 1200 VGA monitor connected to an optional docking station

To set up multiple display devices, follow these steps:

1. Connect your external display devices to the VGA ports or DisplayPorts (DP) on the computer base or the docking station.
2. When Windows detects a monitor connected to the DP hub, the **DisplayPort Topology Notification** dialog box is displayed. Click the appropriate options to configure your displays. Multiple display choices include **Duplicate**, which mirrors your computer screen on all enabled display devices, or **Extend**, which extends the screen image across all enabled display devices.

NOTE: If this dialog box does not appear, be sure that each external display device is connected to the correct port on the hub. For more information, select **Start > Control Panel > Appearance and Personalization > Display > Adjust resolution**.

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

NOTE: To learn what type of display you have (Miracast-compatible or Intel WiDi), refer to the documentation that came with your TV or secondary display.

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

To open Miracast:

- Select **Start > Control Panel > Appearance and Personalization > Display > Connect to an external display**.

Discovering and connecting to Intel WiDi certified displays (select Intel products only)

Use Intel WiDi to wirelessly project individual files such as photos, music, or videos, or to duplicate your entire computer screen to a TV or a secondary display device.

Intel WiDi, a premium Miracast solution, makes it easy and seamless to pair your secondary display device; provides for full-screen duplication; and improves speed, quality, and scaling.

To connect to Intel WiDi certified displays:

- Select **Start > Control Panel > Appearance and Personalization > Display > Connect to an external display**.

To open Intel WiDi:

- Select **Start > Control Panel > Appearance and Personalization > Display > Intel WiDi**.

6 Power management

NOTE: A computer may have a power button or a power switch. The term *power button* is used throughout this guide to mean both types of power controls.

Shutting down (turning off) the computer

CAUTION: Unsaved information is lost when the computer shuts down.

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

Shut down the computer under any of the following conditions:

- When you need to replace the battery or access components inside the computer
- When you are connecting an external hardware device that does not connect to a Universal Serial Bus (USB) port
- When the computer will be unused and disconnected from external power for an extended period

Although you can turn off the computer with the power button, the recommended procedure is to use the Windows shutdown command:

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

1. Save your work and close all open programs.
2. Select **Start > Shut Down**.

If the computer is unresponsive and you are unable to use the preceding shutdown procedure, 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 5 seconds.
- Disconnect the computer from external power.
- Remove the battery.

Setting power options

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.

Using power-saving states

Sleep is enabled at the factory. When Sleep is initiated, the power lights blink and the screen clears. Your work is saved to memory.

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 memory card.

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

Initiating and exiting Sleep

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

- Briefly press the power button.
- Close the display.
- Select **Start**, select the arrow next to the Shut down button, and then select **Sleep**.

To exit Sleep:

- Briefly press the power button.
- If the display is closed, open the display.
- Press a key on the keyboard.
- Tap or swipe the TouchPad

When the computer exits Sleep, the power lights turn on and the computer returns to the screen where you stopped working.

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

Initiating and exiting Hibernation

The system is set at the factory to initiate Hibernation after a period of inactivity when running on battery power or on external power, or when the battery reaches a critical battery level.

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

To initiate Hibernation:

▲ Select **Start**, select the arrow next to the Shut down button, and then select **Hibernate**.

To exit Hibernation:

▲ Briefly press the power button.

The power lights turn on and your work returns to the screen where you stopped working.

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

Using the power meter and power settings

The power meter is located in the notification area, at the far right of the taskbar. The power meter allows you to quickly access power settings and view the remaining battery charge.

- To reveal the percentage of remaining battery charge and the current power plan, point over the power meter icon.
- To use Power Options, or to change the power plan, select the power meter icon and select an item from the list.

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

Setting password protection on wakeup

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

1. Select **Start > Control Panel > System and Security > Power Options**.
2. In the left pane, select **Require a password on wakeup**.
3. Select **Change Settings that are currently unavailable**.
4. Select **Require a password** (recommended).

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

5. Select **Save changes**.

Using battery power

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

The computer runs on battery power whenever it is not plugged into external AC power. Computer battery life varies, depending on power management settings, running programs, display brightness, external devices connected to the computer, and other factors. Keeping the battery in the computer whenever the computer is plugged into AC power charges the battery and also protects your work in case of a power outage. If the computer contains a charged battery and is running on external AC power, the computer automatically switches to battery power if the AC adapter is disconnected on the computer or an AC power loss occurs.

NOTE: When you disconnect AC power, the display brightness is automatically decreased to save battery life. Select computer products can switch between graphic modes to increase battery life.

Using HP Battery Check

To monitor the status of your battery, or if the battery is no longer holding a charge, run HP Battery Check in HP Support Assistant. If HP Battery Check indicates that your battery should be replaced, contact support.

To run HP Battery Check:

1. Connect the AC adapter to the computer.

   NOTE: The computer must be connected to external power for HP Battery Check to work properly.

2. Select **Start > All Programs > HP Help and Support > HP Support Assistant**.

   – or –

   Select the question mark icon in the taskbar.

3. Select **My PC**, select the **Diagnostics and Tools** tab, and then select **HP Battery Check**.

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

Displaying the remaining battery charge

▲ Move the pointer over the power meter icon on the Windows desktop in the notification area, at the far right of the taskbar.

Maximizing battery discharge time

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

Tips for maximizing battery discharge time:

- Lower the brightness on the display.
- Select the **Power saver** setting in Power Options.
- Remove a user-replaceable battery when the computer is not being used for longer than 2 weeks.
- Store a user-replaceable battery in a cool, dry location.

Managing low battery levels

The information in this section describes the alerts and system responses set at the factory. Some low-battery alerts and system responses can be changed using Power Options. Preferences set using Power Options do not affect lights.

Identifying low battery levels

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

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

– or –

- The power meter icon in the notification area shows a low or critical battery notification.

If the computer is on or in the Sleep state, the computer remains briefly in the Sleep state, and then shuts down and loses any unsaved information.

Resolving a low battery level

Resolving a low battery level when external power is available

▲ Connect one of the following devices:

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

Resolving a low battery level when no power source is available

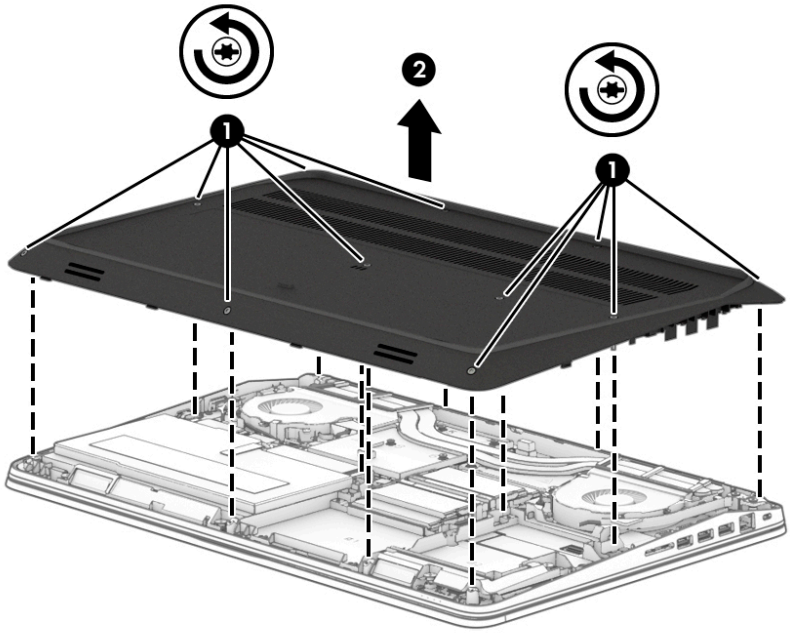
To resolve a low battery level when no power source is available, save your work and shut down the computer.

Removing the battery

To remove the battery:

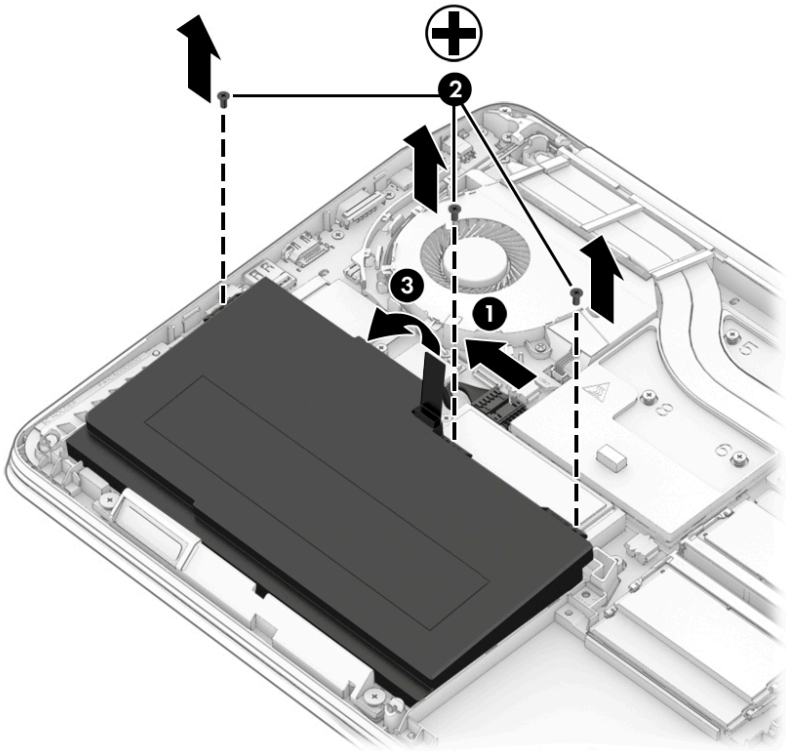
CAUTION: Removing a battery that is the sole power source for the computer can cause loss of information. To prevent loss of information, save your work and shut down the computer through Windows before removing the battery.

1. Turn the computer upside down on a flat surface.
2. Loosen the 11 Torx captive screws **(1)** to release the service door.
3. Remove the service door **(2)**.



4. Disconnect the battery from the system board **(1)**.
5. Remove the 3 screws **(2)** securing the battery to the computer.

6. Pull the battery tab **(3)** to remove the battery from the computer.



Conserving battery power

- Select low power-use settings through Power Options in Windows Control Panel.
- Turn off wireless and LAN connections and exit modem applications when you are not using them.
- Disconnect unused external devices that are not plugged into an external power source.
- Stop, disable, or remove any external memory cards that you are not using.
- Decrease screen brightness.
- Before you leave your work, initiate Sleep, or shut down the computer.

Disposing of a user-replaceable battery

⚠ **WARNING!** To reduce the risk of fire or burns, do not disassemble, crush, or puncture; do not short external contacts; do not dispose of in fire or water.

See the *Regulatory, Safety and Environmental Notices* for proper battery disposal. To access the user guides, select the **Start > All Programs > HP Help and Support > HP Documentation**.

Replacing a battery

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

Using external AC power

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

WARNING! To reduce potential safety issues, use only the AC adapter provided with the computer, a replacement AC adapter provided by HP, or a compatible AC adapter purchased from HP.

NOTE: For information on connecting to AC power, see the *Setup Instructions* poster provided in the computer box.

External AC power is supplied through an approved AC adapter or an optional docking or expansion device.

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

- When charging or calibrating a battery
- When installing or modifying system software
- When writing information to a CD, a DVD, or a BD (select products only)
- When running Disk Defragmenter
- When performing a backup or recovery

When you connect the computer to external AC power, the following events occur:

- The battery begins to charge.
- If the computer is turned on, the power meter icon in the notification area changes appearance.

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

- The computer switches to battery power.
- The display brightness is automatically decreased to save battery life.

Testing an AC adapter

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

- The computer does not turn on.
- The display does not turn on.
- The power lights are off.

To test the AC adapter:

NOTE: The following instructions apply to computers with user-replaceable batteries.

1. Shut down the computer.
2. Remove the battery on the computer.
3. Connect the AC adapter to the computer, and then plug it into an AC outlet.
4. Turn on the computer.
    - If the power lights turn *on*, the AC adapter is working properly.
    - If the power lights remain *off*, the AC adapter is not functioning and should be replaced.

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

7 Security

Protecting the computer

Standard security features provided by the Windows operating system and the non-Windows Computer Setup utility (BIOS) can protect your personal settings and data from a variety of risks.

NOTE: Security solutions are designed to act as deterrents. These deterrents may not prevent a product from being mishandled or stolen.

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

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

NOTE: Your computer supports Computrace, which is an online security-based tracking and recovery service available in select regions. If the computer is stolen, Computrace can track the computer if the unauthorized user accesses the Internet. You must purchase the software and subscribe to the service in order to use Computrace. For information about ordering the Computrace software, go to http://www.hp.com.

Computer risk	Security feature
Unauthorized use of the computer	HP Client Security, in combination with a password, smart card, contactless card, registered fingerprints, or other authentication credential
Unauthorized access to Computer Setup (BIOS)	BIOS Administrator password in Computer Setup*
Unauthorized access to the contents of a hard drive	DriveLock password (select products only) in Computer Setup*
Unauthorized startup from an optional external optical drive (select products only), optional external hard drive (select products only), or internal network adapter	Boot options feature in Computer Setup*
Unauthorized access to a Windows user account	Windows user password
Unauthorized access to data	• HP Drive Encryption software (select products only) • Windows Defender
Unauthorized access to Computer Setup settings and other system identification information	BIOS Administrator password in Computer Setup*
Unauthorized removal of the computer	Security cable slot (used with an optional security cable on select products only)

*Computer Setup is a preinstalled, ROM-based utility that can be used even when the operating system is not working or will not load. You can use a pointing device (TouchPad, pointing stick, or USB mouse) or the keyboard to navigate and make selections in Computer Setup.

NOTE: On tablets without keyboards, you can use the touchscreen.

Using passwords

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

- BIOS Administrator and DriveLock passwords are set in Computer Setup and are managed by the system BIOS.
- Windows passwords are set only in the Windows operating system.
- If you forget both the DriveLock user password and the DriveLock master password set in Computer Setup, the hard drive that is protected by the passwords is permanently locked and can no longer be used.

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

Use the following tips for creating and saving passwords:

- When creating passwords, follow requirements set by the program.
- Do not use the same password for multiple applications or websites, and do not reuse your Windows password for any other application or website.
- Use the Password Manager feature of HP Client Security to store your user names and passwords for your websites and applications. You can securely read them in the future if they cannot be remembered.
- Do not store passwords in a file on the computer.

The following tables list commonly used Windows and BIOS Administrator passwords and describe their functions.

Setting passwords in Windows

Password	Function
Administrator password*	Protects access to a Windows administrator-level account. **NOTE:** Setting the Windows administrator password does not set the BIOS Administrator password.
User password*	Protects access to a Windows user account.
*For information about setting a Windows administrator password or a Windows user password, select **Start > All Programs > HP Help and Support > HP Support Assistant** .	

Setting passwords in Computer Setup

Password	Function
BIOS administrator password*	Protects access to Computer Setup. **NOTE:** If features have been enabled to prevent removing the BIOS administrator password, you may not be able to remove it until those features have been disabled.
DriveLock master password*	Protects access to the internal hard drive that is protected by DriveLock. It is also used to remove DriveLock protection. **NOTE:** For select products, a BIOS administrator password must be set before you can set a DriveLock password.
DriveLock user password*	Protects access to the internal hard drive that is protected by DriveLock, and is set under DriveLock Passwords during the enable process. **NOTE:** For select products, a BIOS administrator password must be set before you can set a DriveLock password.
*For details about each of these passwords, see the following topics.	

Managing a BIOS administrator password

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

Setting a new BIOS administrator password

1. Start Computer Setup.
   - Computers or tablets with keyboards:
     - ▲ Turn on or restart the computer, and when the HP logo appears, press f10 to enter Computer Setup.
   - Tablets without keyboards:
     - ▲ Turn off the tablet. Press the power button in combination with the volume down button until the Startup menu is displayed, and then tap **F10** to enter Computer Setup.
2. Select **Security**, select **Create BIOS Administrator password**, and then press enter.
3. When prompted, type a password.
4. When prompted, type the new password again to confirm.
5. To save your changes and exit Computer Setup, select the **Save** icon and then follow the on-screen instructions.

   – or –

   Select **Main**, select **Save Changes and Exit**, and then press enter.

Your changes go into effect when the computer restarts.

Changing a BIOS administrator password

1. Start Computer Setup.
   - Computers or tablets with keyboards:

- ▲ Turn on or restart the computer, and when the HP logo appears, press f10 to enter Computer Setup.

- Tablets without keyboards:
  - ▲ Turn off the tablet. Press the power button in combination with the volume down button until the Startup menu is displayed, and then tap **F10** to enter Computer Setup.

2. Select **Security**, select **Change BIOS Administrator Password**, and then press enter.
3. When prompted, type your current password.
4. When prompted, type your new password.
5. When prompted, type your new password again to confirm.
6. To save your changes and exit Computer Setup, select the **Save** icon, and then follow the on-screen instructions.

   – or –

   Select **Main**, select **Save Changes and Exit**, and then press enter.

Your changes go into effect when the computer restarts.

Deleting a BIOS administrator password

1. Start Computer Setup.
   - Computers or tablets with keyboards:
     - ▲ Turn on or restart the computer, and when the HP logo appears, press f10 to enter Computer Setup.
   - Tablets without keyboards:
     - ▲ Turn off the tablet. Press the power button in combination with the volume down button until the Startup menu is displayed, and then tap **F10** to enter Computer Setup.
2. Select **Security**, select **Change BIOS Administrator Password**, and then press enter.
3. When prompted, type your current password.
4. When prompted for the new password, leave the field empty, and then press enter.
5. When prompted to type your new password again, leave the field empty, and then press enter.
6. To save your changes and exit Computer Setup, select the **Save** icon, and then follow the on-screen instructions.

   – or –

   Select **Main**, select **Save Changes and Exit**, and then press enter.

Your changes go into effect when the computer restarts.

Entering a BIOS administrator password

At the **BIOS Administrator password** prompt, type your password (using the same kind of keys you used to set the password), and then press enter. After two unsuccessful attempts to enter the BIOS administrator password, you must restart the computer and try again.

Managing a Computer Setup DriveLock password (select products only)

CAUTION: To prevent a DriveLock-protected hard drive from becoming permanently unusable, record the DriveLock user password and the DriveLock master password in a safe place away from your computer. If you forget both DriveLock passwords, the hard drive will be permanently locked and can no longer be used.

DriveLock protection prevents unauthorized access to the contents of a hard drive. DriveLock can be applied only to the internal hard drive(s) of the computer. After DriveLock protection is applied to a drive, a password must be entered to access the drive. The drive must be inserted into the computer or an advanced port replicator in order for it to be accessed by the DriveLock passwords.

To apply DriveLock protection to an internal hard drive, a user password and a master password must be set in Computer Setup. Note the following considerations about using DriveLock protection:

- After DriveLock protection is applied to a hard drive, the hard drive can be accessed only by entering either the user password or the master password.
- The owner of the user password should be the day-to-day user of the protected hard drive. The owner of the master password may be either a system administrator or the day-to-day user.
- The user password and the master password can be identical.
- You can delete a user password or master password only by removing DriveLock protection from the drive.

NOTE: For select products, a BIOS administrator password must be set before you can access the DriveLock features.

Setting a DriveLock password

To set a DriveLock password in Computer Setup, follow these steps:

1. Start Computer Setup.
   - Computers or tablets with keyboards:
     1. Turn off the computer.
     2. Press the power button, and when the HP logo appears, press f10 to enter Computer Setup.
   - Tablets without keyboards:
     1. Turn off the tablet.
     2. Press the power button in combination with the volume down button until the Startup menu is displayed, and then tap **F10** to enter Computer Setup.
2. Select **Security**, make the selection for **Hard Drive Utilities**, select **DriveLock**, and then press enter.

NOTE: For select products, you may be required to set a DriveLock password and enter the BIOS administrator password.

3. Select the hard drive you want to protect, and then press enter.
4. Select **Set DriveLock Master Password** or **Set DriveLock Password** (select products only), and then press enter.
5. Carefully read the warning.
6. Follow the on-screen instructions to set a DriveLock password.
7. To exit Computer Setup, select **Main**, select **Save Changes and Exit**, and then select **Yes**.

Enabling DriveLock (select products only)

For select products, you may need to follow these instructions to enable DriveLock.

1. Start Computer Setup.
   - Computers or tablets with keyboards:
     1. Turn off the computer.
     2. Press the power button, and when the HP logo appears, press f10 to enter Computer Setup.
   - Tablets without keyboards:
     1. Turn off the tablet.
     2. Press the power button in combination with the volume down button until the Startup menu is displayed, and then tap **F10** to enter Computer Setup.
2. Select **Security**, select **Hard Drive Utilities**, select **DriveLock**, and then press enter.

NOTE: For select products, you may be required to enter the BIOS Administrator password and select **Set DriveLock Password**.

3. Select the hard drive you want to protect, and then press enter.
4. Follow the on-screen instructions to make the selections to enable DriveLock and to enter passwords when prompted.

NOTE: For select products, you may be prompted to type `DriveLock`. The field is case sensitive.

5. To exit Computer Setup, select **Main**, select **Save Changes and Exit**, and then select **Yes**.

Disabling DriveLock (select products only)

1. Start Computer Setup.
   - Computers or tablets with keyboards:
     1. Turn off the computer.
     2. Press the power button, and when the HP logo appears, press f10 to enter Computer Setup.
   - Tablets without keyboards:
     1. Turn off the tablet.
     2. Press the power button in combination with the volume down button until the Startup menu is displayed, and then tap **F10** to enter Computer Setup.
2. Select **Security**, select **Hard Drive Utilities**, select **DriveLock**, and then press enter.

NOTE: For select products, you may be required to enter the BIOS Administrator password and select **Set DriveLock Password**.

3. Select the hard drive you want to manage, and then press enter.
4. Follow the on-screen instructions to disable DriveLock.
5. To exit Computer Setup, select **Main**, select **Save Changes and Exit**, and then select **Yes**.

Entering a DriveLock password (select products only)

Be sure that the hard drive is inserted into the computer (not into an optional docking device or external MultiBay).

At the **DriveLock Password** prompt, type your user or master password (using the same kind of keys you used to set the password), and then press enter.

After three incorrect attempts to enter the password, you must shut down the computer and try again.

Changing a DriveLock password (select products only)

To change a DriveLock password in Computer Setup, follow these steps:

1. Turn off the computer.
2. Press the power button.
3. At the **DriveLock Password** prompt, type the current DriveLock user password or master password that you are changing, press enter, and then press or tap **f10** to enter Computer Setup.
4. Select **Security**, select **Hard Drive Utilities** , select **DriveLock**, and then press enter.

NOTE: For select products, you may be required to enter the BIOS Administrator password and select **Set DriveLock Password**.

5. Select the hard drive you want to manage, and then press enter.
6. Make the selection to change the password, and then follow the on-screen prompts to enter passwords.

NOTE: The **Change DriveLock Master Password** option is visible only if the master password was provided at the DriveLock Password prompt in step 3.

7. To exit Computer Setup, select **Main**, select **Save Changes and Exit**, and then follow the on-screen instructions.

Using antivirus software

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

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

Windows Defender is preinstalled on your computer. It is strongly recommended that you continue to use an antivirus program in order to fully protect your computer.

For more information about computer viruses, access the HP Support Assistant.

Using firewall software

Firewalls are designed to prevent unauthorized access to a system or network. A firewall can be a software program you install on your computer and/or network, or it can be a solution made up 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.

Your computer or networking equipment may already have a firewall installed. If not, firewall software solutions are available.

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

Installing critical security updates

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

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

Using HP Client Security (select products only)

HP Client Security software is preinstalled on your computer. This software can be accessed through the HP Client Security icon at the far right of the taskbar or Windows Control Panel. It provides security features that help protect against unauthorized access to the computer, networks, and critical data. For more information, see the HP Client Security software Help.

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 customers to reduce time spent solving end-user device and security issues. Customers can quickly download and install the software, which is highly cost effective relative to traditional in-house solutions. For more information, see http://www.hptouchpointmanager.com.

Installing 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.

Using a fingerprint reader (select products only)

Integrated fingerprint readers are available on select products. In order to use the fingerprint reader, you must enroll your fingerprints in HP Client Security's Credential Manager. Refer to the HP Client Security software Help.

After you enroll your fingerprints in Credential Manager, you can use HP Client Security's Password Manager to store and fill in your user names and passwords in supported websites and applications.

Locating the fingerprint reader

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

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

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

8 Maintenance

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

Improving performance

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

Using Disk Defragmenter

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

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

To run Disk Defragmenter:

1. Connect the computer to AC power.
2. Select **Start > Control Panel > System and Security > Administrative Tools**, and then select **Defragment your hard drive**.

NOTE: Windows includes the User Account Control feature to improve the security of your computer. You may be prompted for your permission or password for tasks such as installing software, running utilities, or changing Windows settings. Refer to Help and Support. To access Help and Support, select **Start > All Programs > HP Help and Support**.

For additional information, access the Disk Defragmenter software Help.

Using Disk Cleanup

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

To run Disk Cleanup:

1. Select **Start > Control Panel > System and Security > Administrative Tools**, and then select **Free up disk space**.
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. Select **Start > All Programs >Windows Update**.
2. 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 display

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

Cleaning the sides or cover

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

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

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

WARNING! To reduce the risk of electric shock or damage to internal components, do not use a vacuum cleaner attachment to clean the keyboard. A vacuum cleaner can deposit household debris on the keyboard surface.

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

- To clean the TouchPad, keyboard, or mouse, use a soft microfiber cloth or a chamois moistened with one of the cleaning solutions listed previously or use an acceptable disposable wipe.
- To prevent keys from sticking and to remove dust, lint, and particles from the keyboard, use a can of compressed air with a straw extension.

Traveling with or shipping your computer

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

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

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

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

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

9 Backup and recovery

Your computer includes HP and Windows tools to help you safeguard your information and retrieve it if you ever need to. These tools will help you return your computer to a proper working state, all with simple steps. This section provides information about the following processes:

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

Creating recovery media and backups

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

1. After you successfully set up the computer, create HP Recovery media. This step creates a Windows 7 operating system DVD and a *Driver Recovery* DVD. The Windows DVD can be used to reinstall the original operating system in cases where the hard drive is corrupted or has been replaced. The *Driver Recovery* DVD installs specific drivers and applications. See Creating recovery media with HP Recovery Disc Creator on page 50.
2. Use Windows Backup and Recovery tools to perform the following:
   - Back up individual files and folders
   - Back up your entire hard drive (select products only)
   - Create system repair discs (select products only) with the installed optical drive (select products only) or an optional external optical drive
   - Create system restore points

NOTE: This guide describes an overview of backing up, restoring, and recovering options. For more details about the tools provided, see Help and Support. To access Help and Support, select **Start > Help and Support**.

NOTE: HP recommends that you print the recovery procedures and save them for later use, in case of system instability.

In case of system failure, you can use the backup files to restore the contents of your computer. See Backing up your information on page 51.

Guidelines

- When creating recovery media or backing up to discs, use any of the following types of discs (purchased separately): DVD+R, DVD+R DL, DVD-R, DVD-R DL, or DVD±RW. The discs you use will depend on the type of optical drive you are using.
- Be sure that the computer is connected to AC power before you start the recovery media creation process or the backup process.

Creating recovery media with HP Recovery Disc Creator

HP Recovery Disc Creator is a software program that offers an alternative way to create recovery media. After you successfully set up the computer, you can create recovery media using HP Recovery Disc Creator. This recovery media allows you to reinstall your original operating system as well as select drivers and

applications if the hard drive becomes corrupted. HP Recovery Disc Creator can create two kinds of recovery DVDs:

- Windows 7 operating system DVD—Installs the operating system without additional drivers or applications.
- *Driver Recovery* DVD—Installs specific drivers and applications only, in the same way that the HP Software Setup utility installs drivers and applications.

Creating recovery media

NOTE: The Windows 7 operating system DVD can be created only once. Thereafter, the option to create that media will not be available after you create a Windows DVD.

To create the Windows DVD:

1. Select **Start > All Programs > Productivity and Tools > HP Recovery Disc Creator**.
2. Select **Windows disk**.
3. From the drop-down menu, select the drive for burning the recovery media.
4. Click the **Create** button to start the burning process.

After the Windows 7 operating system DVD has been created, create the *Driver Recovery* DVD:

1. Select **Start > All Programs > Productivity and Tools > HP Recovery Disc Creator**.
2. Select **Driver disk**.
3. From the drop-down menu, select the drive for burning the recovery media.
4. Click the **Create** button to start the burning process.

Backing up your information

You should create system repair media and your initial backup immediately after initial system setup. As you add new software and data files, you should continue to back up your system on a regular basis to maintain a reasonably current backup. You should also create Windows system repair media (select products only) which can be used to start up (boot) the computer and repair the operating system in case of system instability or failure. Your initial and subsequent backups allow you to restore your data and settings if a failure occurs.

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

Note the following when backing up:

- Store personal files in the Documents library, and back it up regularly.
- Back up templates that are stored in their associated directories.
- Save customized settings that appear in a window, toolbar, or menu bar by taking a screen shot of your settings. The screen shot can be a time-saver if you have to reset your preferences.
- When backing up to discs, number each disc after removing it from the drive.

NOTE: For detailed instructions on various backup and restore options, perform a search for these topics in Help and Support. To access Help and Support, select **Start > Help and Support**.

NOTE: Windows includes the User Account Control feature to improve the security of your computer. You may be prompted for your permission or password for tasks such as installing software, running utilities, or changing Windows settings. Refer to Help and Support. To access Help and Support, select **Start > Help and Support**.

To create a backup using Windows Backup and Restore:

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

1. Select **Start > All Programs > Maintenance > Backup and Restore**.
2. Follow the on-screen instructions to set up your backup, create a system image (select products only), or create system repair media (select products only).

Performing a system recovery

In case of system failure or instability, the computer provides the following tools to recover your files:

- Windows recovery tools: You can use Windows Backup and Restore to recover information you have previously backed up. You can also use Windows Startup Repair to fix problems that might prevent Windows from starting correctly.
- f11 recovery tools (select products only): You can use the f11 recovery tools to recover your original hard drive image. The image includes the Windows operating system and software programs installed at the factory.

NOTE: If you are unable to boot (start up) your computer and you cannot use the system repair media you previously created (select products only), you must purchase Windows 7 operating system media to reboot the computer and repair the operating system. For additional information, see Using Windows 7 operating system media on page 53.

Using the Windows recovery tools

Using the Windows recovery tools, you can:

- Recover individual files
- Restore the computer to a previous system restore point
- Recover information using recovery tools

NOTE: For detailed instructions on various recovery and restore options, perform a search for these topics in Help and Support. To access Help and Support, select **Start > Help and Support**.

NOTE: Windows includes the User Account Control feature to improve the security of your computer. You may be prompted for your permission or password for tasks such as installing software, running utilities, or changing Windows settings. Refer to Help and Support. To access Help and Support, select **Start > Help and Support**.

To recover information you previously backed up:

1. Select **Start > All Programs > Maintenance > Backup and Restore**.
2. Follow the on-screen instructions to recover your system settings, your computer (select products only), or your files.

To recover your information using Startup Repair, follow these steps:

CAUTION: Some Startup Repair options will completely erase and reformat the hard drive. All files you have created and any software installed on the computer are permanently removed. When reformatting is complete, the recovery process restores the operating system, as well as the drivers, software, and utilities from the backup used for recovery.

1. If possible, back up all personal files.
2. If possible, check for the presence of the Windows partition.

   To check for the Windows partition, select **Start > Computer**.

   NOTE: If the Windows partition is not listed, you must recover your operating system and programs using the Windows 7 operating system DVD and the *Driver Recovery* media. For additional information, see Using Windows 7 operating system media on page 53.
3. If the Windows partition is listed, restart the computer, and then press f8 before the Windows operating system loads.
4. Select **Startup Repair**.
5. Follow the on-screen instructions.

NOTE: For additional information on recovering information using the Windows tools, select **Start > Help and Support**.

Using f11 recovery tools (select products only)

CAUTION: Using f11 completely erases hard drive contents and reformats the hard drive. All files that you have created and any software that you have installed on the computer are permanently removed. The f11 recovery tool reinstalls the operating system and HP programs and drivers that were installed at the factory. Software not installed at the factory must be reinstalled.

To recover the original hard drive image using f11:

1. If possible, back up all personal files.
2. If possible, check for the presence of the HP Recovery partition: click **Start**, right-click **Computer**, click **Manage**, and then click **Disk Management**.

   NOTE: If the HP Recovery partition is not listed, you must recover your operating system and programs using the Windows 7 operating system media and the *Driver Recovery* media. For additional information, see Using Windows 7 operating system media on page 53.
3. If the HP Recovery partition is listed, restart the computer, and then press f11 before the Windows operating system loads.
4. Press f11 while the “Press <F11> for recovery” message is displayed on the screen.
5. Follow the on-screen instructions.

Using Windows 7 operating system media

If you cannot use the recovery media you previously created using the HP Recovery Disc Creator (select products only), you must purchase a Windows 7 operating system DVD to reboot the computer and repair the operating system.

To order a Windows 7 operating system DVD, go to the HP website. For U.S. support, go to http://www.hp.com/support. For worldwide support, go to http://welcome.hp.com/country/us/en/wwcontact_us.html. You can also order the DVD by calling support. For contact information, see the *Worldwide Telephone Numbers* booklet included with the computer.

CAUTION: Using a Windows 7 operating system DVD completely erases hard drive contents and reformats the hard drive. All files that you have created and any software that you have installed on the computer are permanently removed. When reformatting is complete, the recovery process helps you restore the operating system, as well as drivers, software, and utilities.

To initiate recovery using a Windows 7 operating system DVD:

NOTE: This process takes several minutes.

1. If possible, back up all personal files.
2. Restart the computer, and then insert the Windows 7 operating system DVD into the optical drive before the Windows operating system loads.
3. When prompted, press any keyboard key.
4. Follow the on-screen instructions.
5. Click **Next**.
6. Select **Repair your computer**.
7. Follow the on-screen instructions.

After the repair is completed:

1. Eject the Windows 7 operating system DVD and then insert the *Driver Recovery* DVD.
2. Install the Hardware Enabling Drivers first, and then install Recommended Applications.

10 Computer Setup (BIOS), TPM, and HP Sure Start

Using Computer Setup

Computer Setup, 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). Computer Setup includes settings for the types of devices installed, the startup sequence of the computer, and the amount of system and extended memory.

NOTE: Use extreme care when making changes in Computer Setup. Errors can prevent the computer from operating properly.

Starting Computer Setup

NOTE: An external keyboard or mouse connected to a USB port can be used with Computer Setup only if USB legacy support is enabled.

To start Computer Setup, follow these steps:

▲ Turn on or restart the computer, and when the HP logo appears, press f10 to enter Computer Setup.

Navigating and selecting in Computer Setup

- To select a menu or a menu item, use the tab key and the keyboard arrow keys and then press enter, or use a pointing device to select the item.

  NOTE: On tablets without keyboards, you can use your finger to make selections.

- To scroll up and down, select the up arrow or the down arrow in the upper-right corner of the screen, or use the up arrow key or the down arrow key on the keyboard.
- To close open dialog boxes and return to the main Computer Setup screen, press esc, and then follow the on-screen instructions.

To exit Computer Setup menus, choose one of the following methods:

- To exit Computer Setup menus without saving your changes:

  Select the **Exit** icon in the lower-right corner of the screen, and then follow the on-screen instructions.

  – or –

  Select **Main**, select **Ignore Changes and Exit**, and then press enter.

- To save your changes and exit Computer Setup menus:

  Select the **Save** icon in the lower-right corner of the screen, and then follow the on-screen instructions.

  – or –

  Select **Main**, select **Save Changes and Exit**, and then press enter.

Your changes go into effect when the computer restarts.

Restoring factory settings in Computer Setup

NOTE: Restoring defaults will not change the hard drive mode.

To return all settings in Computer Setup to the values that were set at the factory, follow these steps:

1. Start Computer Setup. See Starting Computer Setup on page 55.
2. Select **Main**, and then select **Apply Factory Defaults and Exit**.

   NOTE: On select products, the selections may display **Restore Defaults** instead of **Apply Factory Defaults and Exit**.

3. Follow the on-screen instructions.
4. To save your changes and exit, select the **Save** icon in the lower-right corner of the screen, and then follow the on-screen instructions.

   – or –

   Select **Main**, select **Save Changes and Exit**, and then press enter.

Your changes go into effect when the computer restarts.

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

Updating the BIOS

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

Most BIOS updates on the HP website are packaged in compressed files called *SoftPaqs*.

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

Determining the BIOS version

To decide whether you need to update Computer Setup (BIOS), first determine the BIOS version on your computer.

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

1. Start Computer Setup. See Starting Computer Setup on page 55.
2. Select **Main**, and then select **System Information**.
3. To exit Computer Setup without saving your changes, select the **Exit** icon in the lower-right corner of the screen, and then follow the on-screen instructions.

   – or –

   Select **Main**, select **Ignore Changes and Exit**, and then press enter.

To check for later BIOS versions, see Downloading a BIOS update on page 57.

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 on the computer by unplugging the power cord from the AC outlet.

Do not shut down the computer or initiate Sleep.

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

1. Access Help and Support by selecting **Start > All Programs > HP Help and Support > HP Support Assistant**.
2. Make the selection for updates.
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. Make a note of the date, name, or other identifier. You may need this information to locate the update later, after it has been downloaded to your hard drive.
   b. Follow the on-screen instructions to download your selection to the hard drive.

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

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

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

1. Select **Start > Computer**.
2. Select 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.

Changing the boot order using the f9 prompt

To dynamically choose a boot device for the current startup sequence, follow these steps:

1. Turn on or restart the computer, and when the HP logo appears, press f9 to enter the Boot Device Options menu.
2. Select a boot device, then press enter.

TPM BIOS settings (select products only)

IMPORTANT: Before enabling Trusted Platform Module (TPM) functionality on this system, you must ensure that your intended use of TPM complies with relevant local laws, regulations and policies, and approvals or licenses must be obtained if applicable. For any compliance issues arising from your operation/usage of TPM which violates the above mentioned requirement, you shall bear all the liabilities wholly and solely. HP will not be responsible for any related liabilities.

TPM provides additional security for your computer. You can modify the TPM settings in Computer Setup (BIOS).

NOTE: If you change the TPM setting to Hidden, TPM is not visible in the operating system.

To access TPM settings in Computer Setup:

1. Start Computer Setup. See Starting Computer Setup on page 55.
2. Select **Security**, select **TPM Embedded Security**, and then follow the on-screen instructions.

Using HP Sure Start (select products only)

Select computer models are configured with HP Sure Start, a technology that continuously monitors the computer's BIOS for attacks or corruption. If the BIOS becomes corrupted or is attacked, HP Sure Start automatically restores the BIOS to its previously safe state, without user intervention.

HP Sure Start is configured and already enabled so that most users can use the HP Sure Start default configuration. The default configuration can be customized by advanced users.

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

11 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 59.

   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, click the **Download** link, and then select **Run**.

Download any version of UEFI for a specific product

1. Go to http://www.hp.com/support, and then select your country. The HP Support page is displayed.
2. Click **Drivers & Downloads**.

3. Use the categories listed to find your product.

   – or –

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

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.

12 Specifications

Input power

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

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

The computer can operate on DC power within the following specifications.

Input Power	Rating
Operating voltage and current	19.5 V dc @ 10.3 A — Slim 200 W

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

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

Operating environment

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

13 Electrostatic Discharge

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

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

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

- If removal or installation instructions direct you to unplug the computer, first 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.

14 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.

Getting support for accessibility

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

AC adapter, testing 36
accessibility 63
administrator password 38
antivirus software 43
audio-out (headphone)/audio-in (microphone) combo jack, identifying 3

B

Backup and Restore 52
backup tools 50
backups
  creating 51
  recovering 52
battery
  conserving power 35
  discharging 33
  displaying remaining charge 33
  disposing 35
  low battery levels 33
  removing 34
  replacing 35
battery light 4, 13
battery power 32
BIOS
  determining version 56
  downloading an update 57
  updating 56
Bluetooth device 16, 19
Bluetooth label 14
bottom 14
buttons
  center pointing stick 7
  center TouchPad 7
  left TouchPad 7
  power 9, 30
  right pointing stick 7
  right TouchPad 7
  TouchPad on/off 7

C

caps lock light, identifying 8
caring for your computer 47
cleaning your computer 47
components
  bottom 12
  display 5
  front 13
  left side 4
  right side 3
  top 6
Computer Setup
  BIOS administrator password 39
  DriveLock password 41
  navigating and selecting 55
  restoring factory settings 56
connecting to a WLAN 17
connector, power 4
conservation, power 35
corporate WLAN connection 17
critical battery level 30
critical updates, software 44

D

Disk Cleanup software 46
Disk Defragmenter software 46
drive media 31
DriveLock
  disabling 42
  enabling 42
DriveLock master password
  changing 43
DriveLock password
  changing 43
  description 41
  entering 43
  setting 41
Driver Recovery DVD,
  creating 50
  using for restore 53

E

electrostatic discharge 62
esc key, identifying 10
external AC power, using 36
external monitor port 4, 25

F

f11 recovery 53
fingerprint reader 44
fingerprint reader, identifying 9
firewall software 43
fn key, identifying 10

G

GPS 18

H

hard drive light, identifying 13
hard drive recovery 53
hard drive, identifying 12
HDMI port
  connecting 26
HDMI port, identifying 4
HDMI, configuring audio 27
headphones, connecting 24
headsets, connecting 24
Hibernation
  exiting 31
  initiating 31
high-definition devices, connecting 26, 28
hot keys
  Sleep 10
  using 10
HP 3D DriveGuard 46
HP Battery Check 32
HP Client Security 44
HP Mobile Connect 18
HP PC Hardware Diagnostics (UEFI)
  using 59
HP Recovery Disc Creator, using 50
HP Recovery partition
  checking for presence 53
  using for recovery 53
HP Touchpoint Manager 44

I

input power 61
integrated numeric keypad, identifying 10
integrated webcam light, identifying 6
internal microphones, identifying 6

J
jacks
audio-out (headphone)/audio-in (microphone) combo 3
network 5
RJ-45 (network) 5

K
keypad
integrated numeric 10
keys
esc 10
fn 10
Windows key 10

L
labels
Bluetooth 14
regulatory 14
serial number 14
service 14
wireless certification 14
WLAN 14
left pointing stick button, identifying 6
legacy support, USB 55
lights
battery 4, 13
caps lock 8
hard drive 13
microphone mute 8
num lock 8
power 8, 13
RJ-45 (network) 5
TouchPad 8
webcam 6
wireless 8, 13
locating information
hardware 3
software 3
low battery level 33

M
maintenance
Disk Cleanup 46
Disk Defragmenter 46
HP 3D DriveGuard 46
updating programs and drivers 47
memory card 31
memory card reader, identifying 5
memory module
identifying 12
microphone mute light, identifying 8
Miracast 28

N
network jack, identifying 5
num lock light 8

O
operating environment 61

P
passwords
administrator 38
BIOS administrator 39
DriveLock 41
user 38
pointing stick 6
ports
external monitor 4, 25
HDMI 4, 26
Miracast 28
Thunderbolt 27
USB 3.0 charging (powered) 5
USB Type-C (Thunderbolt-3-enabled) 4
VGA 25
power
battery 32
conserving 35
options 30
power button 30
power button, identifying 9
power connector, identifying 4
power lights 8, 13
power switch 30
power-saving states 30
product name and number, computer 14
public WLAN connection 17

R
readable media 31
recovery media, creating 50
recovery media, using for restore 53
recovery partition 53
recovery tools 50
recovery tools, Windows 52
recovery, system 52
regulatory information
regulatory label 14
wireless certification labels 14
restoring the hard drive 53
RJ-45 (network) jack, identifying 5
RJ-45 (network) lights, identifying 5

S
security cable slot, identifying 4
serial number 14
serial number, computer 14
service labels, locating 14
setting password protection on wakeup 32
setting power options 30
setup utility
navigating and selecting 55
restoring factory settings 56
shipping the computer 48
shutdown 30
SIM card
inserting 15
Sleep
exiting 31
initiating 31
slots
security cable 4
smart card 3
smart card
slot 3
software
antivirus 43
critical updates 44
Disk Cleanup 46
Disk Defragmenter 46
firewall 43
HP 3D DriveGuard 46
sound settings, using 25
speakers
connecting 24
speakers, identifying 13
spill drain, identifying 12
Startup Repair, using 52
Sure Start
using 58
switch, power 30

T

tap TouchPad and touch screen gesture 22
testing an AC adapter 36
Thunderbolt port, connecting 27
TouchPad
  buttons 7
  using 22
TouchPad and touch screen gestures
  tap 22
  two-finger pinch zoom 22
TouchPad gestures
  two-finger scroll 23
  two-finger tap 23
TouchPad light, identifying 8
TouchPad on/off button, identifying 7
TouchPad zone
  identifying 7
TPM settings 58
traveling with the computer 14, 48
turning off the computer 30
two-finger pinch zoom TouchPad and touch screen gesture 22
two-finger scroll TouchPad gesture 23
two-finger tap TouchPad gesture 23

U

unresponsive system 30
updating programs and drivers 47
USB 3.0 charging (powered), identifying 5
USB 3.0 port 3, 5
USB legacy support 55
USB ports, identifying 3, 5
USB Type-C (Thunderbolt-3-enabled) port, identifying 4
user password 38
using
  external AC power 36
  power-saving states 30
using sound settings 25
using the TouchPad 22

V

vents, identifying 12
VGA port, connecting 25
video 25

W

webcam 6
  using 24
webcam light, identifying 6
webcam, identifying 6
Windows 7 operating system DVD
  creating 50
  using for restore 53
Windows 7 operating system media
  creating 50
  using for restore 53
Windows key, identifying 10
Windows Startup Repair, using 52
wireless antennas, identifying 5
wireless button 16
wireless certification label 14
wireless controls
  button 16
  operating system 16
wireless light 8, 13, 16
wireless network (WLAN)
  connecting 17
  corporate WLAN connection 17
  functional range 18
  public WLAN connection 17
WLAN antennas, identifying 5
WLAN device 14
WLAN label 14
writable media 31
WWAN antennas, identifying 5
WWAN device 16, 18