HP EliteBook Folio 1020 G1 Notebook PC

Maintenance and Service Guide

Product notice

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

Not all features are available on all editions of Windows 8. This computer may require upgraded and/or separately purchased hardware, drivers, and/or software to take full advantage of Windows 8 functionality. See http://www.microsoft.com for details.

This computer may require upgraded and/ or separately purchased hardware and/or a DVD drive to install the Windows 7 software and take full advantage of Windows 7 functionality. See http://windows.microsoft.com/en-us/windows7/get-know-windows-7 for details.

Safety warning notice

⚠ **WARNING!**   To reduce the possibility of heat-related injuries or of overheating the device, do not place the device directly on your lap or obstruct the device air vents. Use the device 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 contact the skin or a soft surface, such as pillows or rugs or clothing, during operation. The device 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 Product description

Category	Description
Product Name	HP EliteBook Folio 1020 G1 Notebook PC
Processors	Intel® Core® M processors: ● 5Y71, 1.2-GHz (max turbo frequency 2.9-GHz), 4-MB L3 Cache, 4.5W ● 5Y51, 1.1-GHz (max turbo frequency 2.6-GHz), 4-MB L3 Cache, 4.5W
Chipset	Intel Broadwell Premium PCH-LP Integrated with processor
Graphics	Intel UMA Graphics with shared video memory Intel HD Graphics 5300
Panels	**31.75-cm** (12.5-in), eDP1.3, UltraSlim, full high-definition (FHD), AntiGlare (AG), UVWA (1920×1080), non-touch display, 300 nits **31.75-cm** (12.5-in), eDP1.3, UltraSlim, quad high-definition (QHD), AntiGlare (AG), UVWA (2560×1440), non-touch display, 340 nits **31.75-cm** (12.5-in), eDP1.3, UltraSlim, quad high-definition (QHD), UVWA (2560×1440), touch display, 340 nits
Memory	On-board (soldered) memory LPDDR3, 1600 MHz, dual channel support Supports up to 8 GB of system RAM
Primary storage	Supports M.2 SSD SS 2280 Serial ATA III Supports the following M.2 SSDs: ● 512-GB ● 256-GB ● 256-GB, TLC ● 256-GB, SED, OPAL2 ● 180-GB ● 180-GB, SED, OPAL1 ● 180-GB, SED, OPAL2 ● 128-GB ● 128-GB, TLC
Audio and video	Two stereo speakers HD audio with DTS Studio Sound Integrated 720p webcam Integrated dual-array microphone

Category	Description
Ethernet	No direct Ethernet support. Ethernet available from accessory dongle.
Wireless	**WLAN**
	Integrated wireless local area network (WLAN) options by way of M.2 wireless module
	Two WLAN antennas built into display assembly
	Support for the following WLAN formats:
	● Intel Dual Band Wireless-N 7265AN 802.11 a/b/g/n 2x2 WiFi + BT 4.0
	● Intel Dual Band Wireless-AC 7265 802.11 ac 2x2 WiFi + BT 4.0
	● Intel Dual Band Wireless-N 7265 802.11 a/c 2×2 WiFi + Bluetooth 4.0 Combo Adapter for use in Indonesia
	Supports no WLAN option
	NFC
	Integrated NFC module
	NFC antenna configured with NFC option
External media cards	Micro SD Media Reader Slot - supports SD, SDHC, SDXC
Ports	Headphone/Microphone Combo
	HDMI
	Docking connector
	Multi-Pin AC port, 4.5mm
	USB 3.0 port (2)
Docking	HP Docking Station
Keyboard/pointing devices	**Keyboard**
	Dura keys
	Backlit
	Spill-resistant with drain
	ForcePad
	Gestures enabled by default: two-finger scrolling, two-finger pinch-zoom
	Taps enabled by default
	ForcePad supports 2-way scroll
	Glass with chemical etched surface
Power requirements	**AC adapters:**
	45-W HP Smart AC adapter
	45-W, 2-prong AC adapter
	65-W HP Smart AC adapter
	65-W Slim AC adapter
	Power cords:
	2-wire plug (4.5 mm) (1.0 m)(only available with 45-W 2-prong adapter

Category	Description
	3-wire plug with ground pin (4.5 mm) (1.0 m)
	3-wire plug with ground pin (4.5 mm) (1.8 m)
	Battery:
	Supports a 4-cell, 36-Whr, 2.4 Ahr long life polymer battery
Security	Security lock
	Fingerprint reader
	Supports Trusted Platform Module (TPM) 1.2 (Infineon, soldered down)
	Full volume encryption
	Preboot authentication (password)
Operating system	**Preinstalled:**
	● Windows 7 Professional 64
	● Windows 7 Professional 32
	● Windows 7 Professional MSNA 64 (only for China and Asia/Pacific)
	● Windows 8.1 Professional 64 DPK with Windows 7 Professional MSNA 64 image (only for China and Asia/Pacific)
	● Windows 8.1 Professional 64 DPK with Windows 7 Professional 64 image (only for China and Asia/Pacific)
	● Windows 8.1 Professional 64 DPK with Windows 7 Professional 32 image (only for China and Asia/Pacific)
	● Windows 8.1 China 64 CPPP
	● Windows 8.1 Emerging Markets 64
	● Windows 8.1 Multilingual 64
	● Windows 8.1 Professional 64
	● Windows 8.1 Professional 64 MSNA
	● Windows 8.1 Professional 64 for Education
	● FreeDOS 2.0
	● Ubuntu Linux
	Restore media–DR-DVD:
	● Windows 7
	● Windows 8.1
	Restore media–SR-DVD:
	● Ubuntu
	Restore media–OS-DVD:
	● Windows 8.1 Professional 64-bit
	● Windows 8.1 Emerging Market 64-bit
	● Windows 8.1 64-bit
	● Windows 8.1 Country Specific 64-bit
	● Windows 7 Professional 64

Category	Description
	● Windows 7 Professional 32
	Certified:
	● Microsoft WHQL
	Web-only support:
	● Windows 8.1 Professional 64-bit
	● Windows 8.1 Chinese Market 64-bit
	● Windows 8.1 Multi-Language 64-bit
	● Windows 8.1 Emerging Market 64-bit
	● Windows 8.1 Enterprise 64-bit
	● Windows 7 Professional 64
	● Windows 7 Professional 32
	● Windows 7 Enterprise 64
	● Windows 7 Enterprise 32
Serviceability	End user replaceable parts:
	● AC adapter

2 External component identification

Display

Component		Description
(1)	Internal microphones (2)	Record sound.
(2)	Webcam light	On: The webcam is in use.
(3)	Webcam	Records video and captures photographs. Some models allow you to video conference and chat online using streaming video.
		Windows 8: For information on using the webcam, access HP Support Assistant. To access HP Support Assistant in Windows 8, on the Start screen, select the **HP Support Assistant** app.
		Windows 7: For information on using the webcam, select **Start > All Programs > Communication and Chat > Cyberlink YouCam**.
(4)	Internal display switch	Turns off the display or initiates Sleep if the display is closed while the power is on.
		NOTE: The display switch is not visible on the outside of the computer.
(5)	WLAN antennas (2)* (select models only)	Send and receive wireless signals to communicate with wireless local area networks (WLAN).

Component		Description
(6)	Near Field Communication (NFC) antenna* (select models only)	Send and receive wireless signals to communicate and transfer data/ info to and from your NFC-compatible devices.

*The antennas are not visible on the outside of the computer. For optimal transmission, keep the areas immediately around the antennas free from obstructions. To see wireless regulatory notices, see the section of the *Regulatory, Safety, and Environmental Notices* that applies to your country or region. To access the user guides in Windows 8, select the **HP Support Assistant** app on the Start screen, select **My computer**, and then select **User guides**. To access the user guides in Windows 7, select **Start > Help and Support > User Guides**.

Top

TouchPad
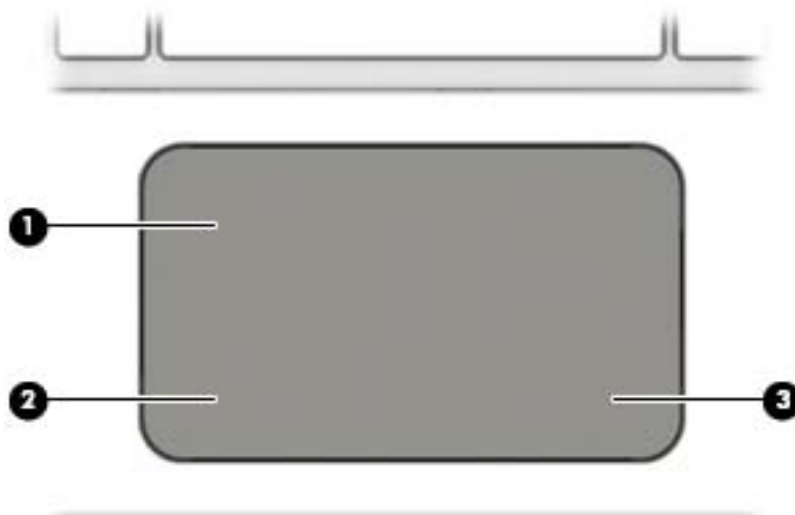
Component		Description
(1)	TouchPad zone	Moves the pointer and selects or activates items on the screen.
		NOTE: The TouchPad detects the force of the finger pressure being applied while using gestures. Press your fingers down on the TouchPad with force while gesturing to accelerate the gesture motion.
(2)	Left TouchPad button	Functions like the left button on an external mouse.
(3)	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. • Off: The computer is off.
(2)	Caps lock light	On: Caps lock is on.
(3)	TouchPad light	• Amber: The TouchPad is off. • Off: The TouchPad is on.
(4)	Mute light	• Amber: Computer sound is off. • Off: Computer sound is on.
(5)	Microphone mute light	• Amber: Microphone sound is off. • Off: Microphone sound is on.
(6)	Wireless light	• White: An integrated wireless device, such as a wireless local area network (WLAN) device and/or a Bluetooth® device, is on. • Amber: All wireless devices are off.
(7)	Num lock light	On: Num lock is on.

Buttons, speakers, 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 will result in the loss of unsaved information.
		If the computer has stopped responding and Windows® shutdown procedures are ineffective, press and hold the power button for at least 5 seconds to turn off the computer.
		If the computer has stopped responding and the previous shutdown procedures are ineffective, press and hold the power button for 15 seconds to perform a hardware reset turning off the computer immediately.
		To learn more about your power settings in Windows 8, see your power options. From the Start screen, type power, select **Power and sleep settings**, and then select **Power and sleep** from the list of applications.
		To learn more about your power settings in Windows 7: Select **Start > Control Panel > System and Security > Power Options**.

Component		Description
(2)	Speaker grill	Produce sound.
(3)	Fingerprint reader	Allows a fingerprint logon to Windows, instead of a password logon.

Keys
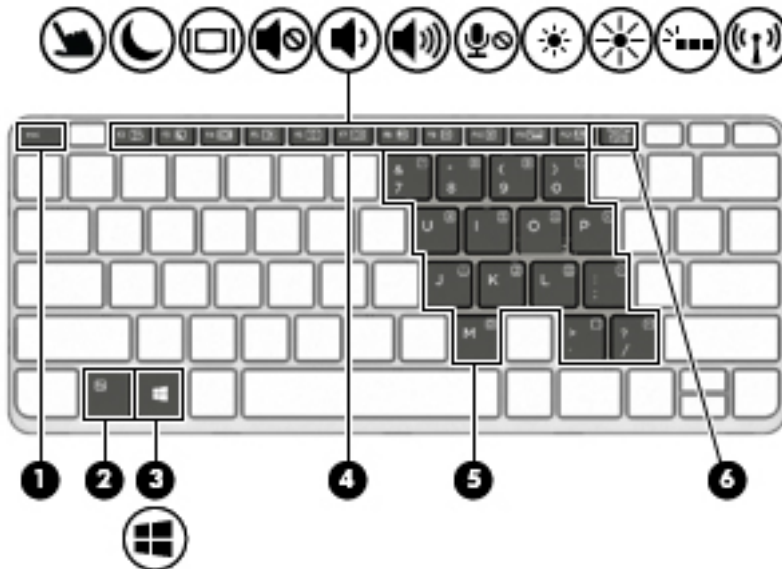
Component		Description
(1)	esc key	Displays system information when pressed in combination with the fn key.
(2)	fn key	Executes frequently used system functions when pressed in combination with a function key, the num lk key, or the esc key.
(3)	Windows key	Windows 8: Returns you to the Start screen from an open app or the Windows desktop. **NOTE:** Pressing the Windows key again will return you to the previous screen. Windows 7: Displays the Windows Start menu.
(4)	Function keys	Execute frequently used system functions when pressed in combination with the fn key.
(5)	Embedded numeric keypad	When the keypad is turned on, it can be used like an external numeric keypad. Each key on the keypad performs the function indicated by the icon in the upper-right corner of the key.
(6)	num lk key	Turns the embedded numeric keypad on and off when pressed in combination with the fn key. Alternates between the navigational and numeric functions on the integrated numeric keypad.

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.
(2)	HDMI port	Connects an optional video or audio device, such as a high-definition television, any compatible digital or audio component, or a high-speed HDMI device.
(3)	USB 3.0 charging 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. The USB charging port can also charge select models of cell phones and MP3 players, even when the computer is off. **NOTE:** The battery can be depleted quickly if you charge multiple devices while operating on battery power.
(4)	Micro SD memory card reader	Supports micro Secure Digital (SD) memory cards.

Right

Component		Description
(1)	Audio-out (headphone) jack/Audio-in (microphone) jack	Produces sound when connected to optional powered stereo speakers, headphones, earbuds, a headset, or television audio. Also connects an optional headset microphone.
		WARNING! To reduce the risk of personal injury, adjust the volume before putting on headphones, earbuds, or a headset. For additional safety information, see the *Regulatory, Safety, and Environmental Notices.* To access the user guides in Windows 8, select the **HP Support Assistant** app on the Start screen, select **My computer**, and then select **User guides**. To access the user guides in Windows 7, select **Start > Help and Support > User Guides**.
		NOTE: When a device is connected to the jack, the computer speakers are disabled.
		NOTE: Be sure that the device cable has a 4-conductor connector that supports both audio-out (headphone) and audio-in (microphone).
(2)	USB 3.0 charging 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.
		The USB charging port can also charge select models of cell phones and MP3 players, even when the computer is off.
		NOTE: The battery can be depleted quickly if you charge multiple devices while operating on battery power.
(3)	Docking connector	Connects an optional docking device or expansion port device.
(4)	AC adapter/Battery light	● White: The computer is connected to external power and the battery is charged from 90 to 99 percent.
		● Amber: The computer is connected to external power and the battery is charged from 0 to 90 percent.
		● Blinking amber: A battery that is the only available power source has reached a low battery level. When the battery reaches a critical battery level, the battery light begins blinking rapidly.
		● Off: The battery is fully charged.
(5)	Power connector	Connects an AC adapter.

Bottom

Component		Description
(1)	Docking device receptors (2)	Connects an optional docking device.

Service tag and PCID label

Service tag

When ordering parts or requesting information, provide the computer serial number and model description provided on the service tag.
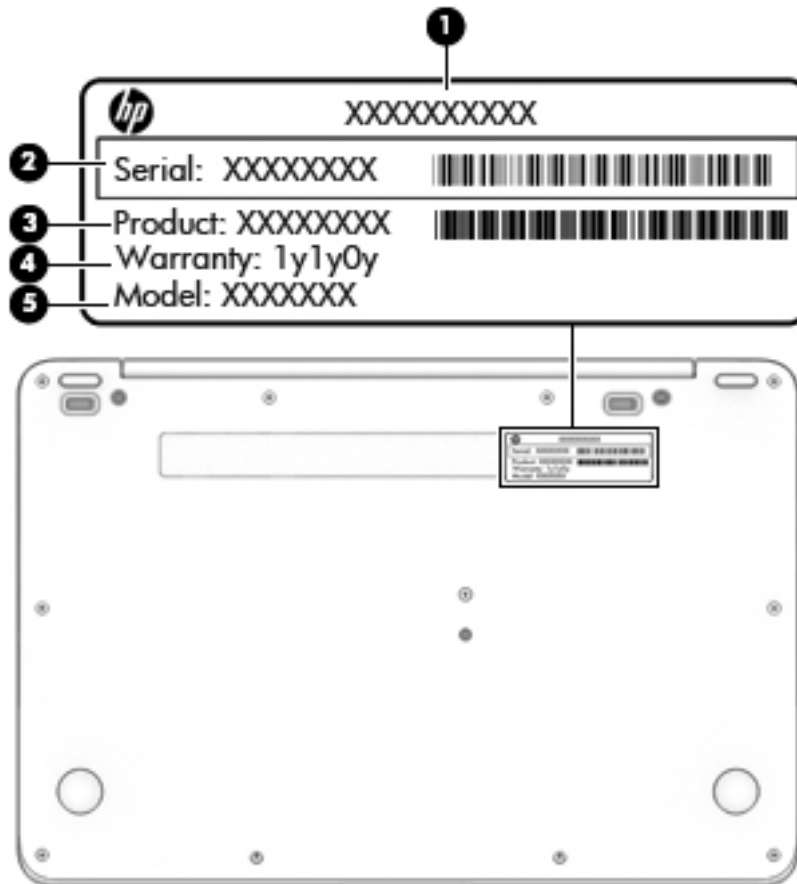
PCID label

The PCID label provides the information required to properly reset the notebook firmware (BIOS) back to factory shipped specifications when replacing the system board. The label may have a different number of characters depending on the operating system on the computer.

Windows 8 models

PCID:XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX

Non-Windows 8 models

PCID:XXXXXXXX
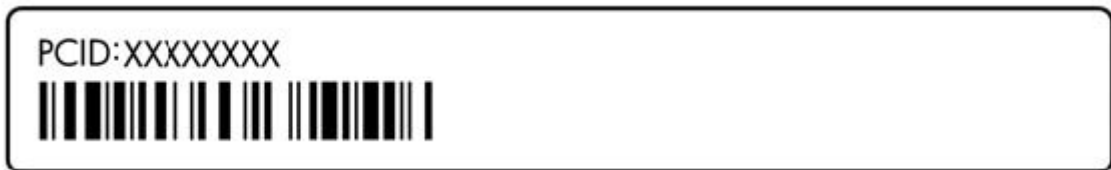
3   Illustrated parts catalog

Computer major components

Item	Component	Spare part number
(1)	**Display assembly**, touch screen	790047-001
	NOTE: Non-touch display assemblies are spared at the subcomponent level only. For display assembly spare part information, see Display assembly subcomponents, non-touch models on page 18.	
	Touch displays are only spared as full hinge-ups. Individual components are not spared for touch screen displays.	
(2)	**Keyboard** (backlit; includes keyboard cable and backlight cable):	804214-xx1
	NOTE: For a detailed list of available keyboards, see Sequential part number listing on page 22.	
(3)	**Top cover** (includes power button)	
	For use in models with FHD displays	790077-001
	For use in models with QHD displays	801210-001
(4)	**RTC battery** (includes double-sided tape)	702853-001
(5)	**ForcePad (Touchpad)**	790066-001
(6)	**Heat sink/thermal module** (includes replacement thermal material):	790073-001
(7)	**WLAN module:**	
	Intel Dual Band Wireless-AC 7265AN 802.11 a/b/g/n 2×2 WiFi + Bluetooth 4.0 WLAN module	756748-005
	Intel Dual Band Wireless-N 7265 802.11 a/c 2×2 WiFi + Bluetooth 4.0 Combo Adapter	756749-005
	Intel Dual Band Wireless-N 7265 802.11 a/c 2×2 WiFi + Bluetooth 4.0 Combo Adapter for use in Indonesia	783721-005
(8)	**Solid-state drive**	
	512-GB	790057-001
	256-GB, SED, OPAL2	790056-001
	256-GB, TLC	804216-001
	256-GB	790055-001
	180-GB	790052-001
	180-GB, SED, OPAL2	790053-001
	128-GB, TLC	804215-001
	128-GB	790051-001
(9)	**Speakers** (includes cable)	800583-001
(10)	**System board** (includes processor and replacement thermal material):	
	For use in models without Windows 8:	
	● Equipped with Intel Core M-5Y51 processor	790064-001
	● Equipped with Intel Core M-5Y71 processor	790065-001
	For use in models with Windows 8 Standard:	
	● Equipped with Intel Core M-5Y51 processor	790064-501
	● Equipped with Intel Core M-5Y71 processor	790065-501

Item	Component	Spare part number
	For use in models with Windows 8 Professional:	
	• Equipped with Intel Core M–5Y51 processor	790064–601
	• Equipped with Intel Core M–5Y71 processor	790065–601
(11)	**Battery** (4-cell, 36-Wh, 2.4-Ah, Li ion):	760605–005
(12)	**NFC module**	790069–001
	NFC Cable Kit (not illustrated)	804213–001
	NFC module antenna	
	NFC module cable	
(13)	**Fingerprint reader board** (includes bracket and cable)	790074–001
(14)	**Bottom cover**	
	For use on models with FHD displays	790072–001
	For use on models with QHD displays	801209–001

Display assembly subcomponents, non-touch models
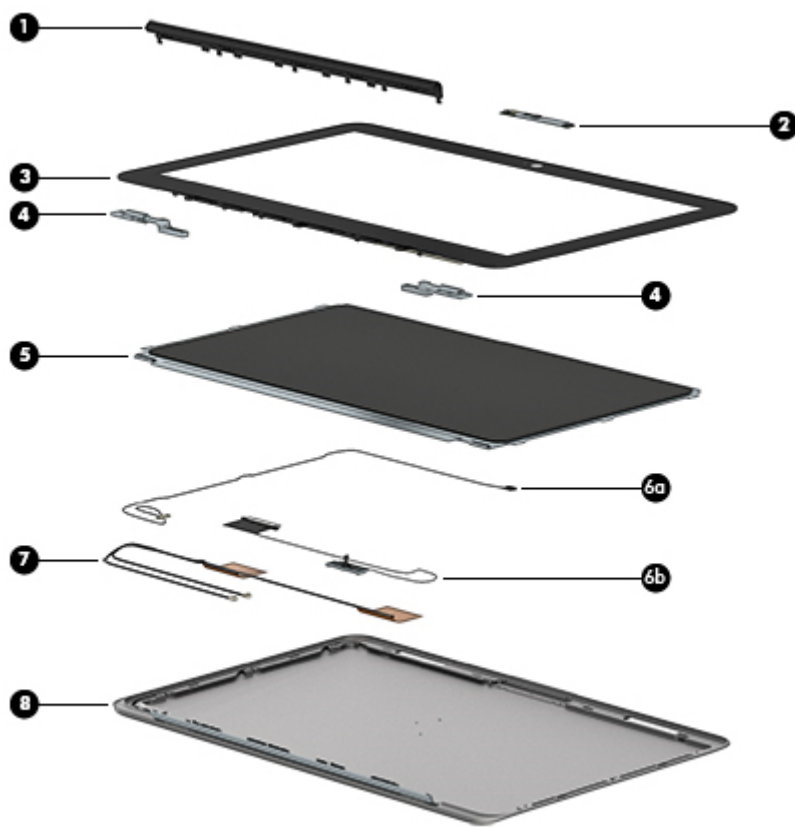
Item	Component	Spare part number
(1)	**Display hinge cover**	790045-001
(2)	**Webcam module**	790068-001
(3)	**Display bezel**	790046-001
(4)	**Display Hinge Kit**	801211-001
(5)	**Display panel (raw), 31.75-cm** (12.5-in):	
	QHD display	790070-001
	FHD display	790071-001
	Display Cable Kit, includes:	801213-001
(6a)	Webcam cable	
(6b)	Display cable	
(7)	**Antenna**	800580-001
(8)	**Display enclosure**	800579-001
	Raw display panel support kit (not illustrated)	790049-001

Bracket Kit
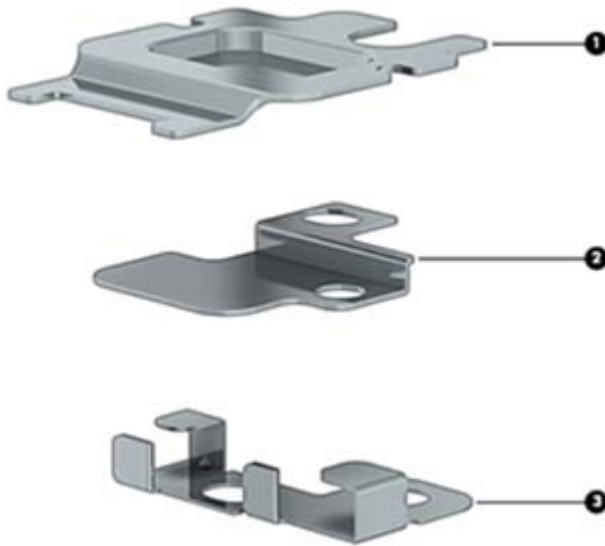
Item	Component	Spare part number
Bracket Kit		800582-001
(1)	Fingerprint reader bracket	
(2)	Left display (QHD) bracket	
(3)	right display (QHD) bracket/clip	
	Top cable clip (left and right; not illustrated)	

Mass storage devices

Description	Spare part number
Solid-State Drive	
512-GB	790057-001
256-GB, SED, OPAL2	790056-001
256-GB, TLC	804216-001
256-GB	790055-001
180-GB	790052-001
180-GB, SED, SED, OPAL2	790053-001
128-GB, TLC	804215-001
128-GB	790051-001
External optical drive (DVD±RW Double Layer Drive)	659940-001

Miscellaneous parts

Component	Spare part number
AC adapter:	
45-W HP Smart AC adapter (non-PFC) – slim	721092-001
45-W HP Smart AC adapter (non-PFC) – non-slim	741727-001
45-W AC adapter (non-PFC), 2-prong	742436-001
65-W HP Smart AC adapter, 4.5 mm, EM	714657-001
65-W HP Smart AC travel adapter	693716-001
65-W HP Smart AC adapter (RC/V EM) for use in Asia, India, and the People's Republic of China	693710-001
65-W HP Smart AC adapter	693711-001
Smart AC adapter dongle, 7.4mm	734734-001
Power cord (3-pin, black, 1.83-m):	
For use in Argentina	490371-D01
For use in Australia	490371-011
For use in Brazil	490371-202
For use in the Denmark	490371-081
For use in Europe	490371-021
For use in India	490371-D61
For use in Israel	490371-BB1
For use in Italy	490371-061
For use in Japan	490371-291
For use in North America	490371-001
For use in the People's Republic of China	490371-AA1
For use in South Africa	490371-AR1
For use in South Korea	490371-AD1
For use in Switzerland	490371-111
For use in Taiwan	490371-AB1
For use in Thailand	490371-201
For use in the United Kingdom	490371-031
Power cord (3-pin, black, 1.00-m):	
For use in Argentina	755530-D01
For use in Australia	755530-011
For use in Brazil	755530-202
For use in the Denmark	755530-081
For use in Europe	755530-021

Component	Spare part number
For use in India	755530-D61
For use in Israel	755530-BB1
For use in Italy	755530-061
For use in Japan	755530-291
For use in North America	755530-001
For use in the People's Republic of China	755530-AA1
For use in South Africa	755530-AR1
For use in South Korea	755530-AD1
For use in Switzerland	755530-111
For use in Taiwan	755530-AB1
For use in Thailand	755530-201
For use in the United Kingdom	755530-031
Power cord for use in Japan (2-pin, black, 1.0-m)	762689-291
Screw Kit	790076-001
Cable, detachable, with tips (4.5 mm and 7.4 mm tips)	736697-001
Docking station	732252-001
Adapter, docking connector to ethernet (RJ-45)/VGA	797848-001
Adapter, HDMI to VGA	701943-001
Lock, HP Ultraslim Keyed Cable Lock	703372-001
Mouse:	
HP USB optical travel mouse	757770-001
HP Comfort Grip wireless mouse	691922-001
Top load case	679921-001
HP Slim Ultrabook Top Load Case	747078-001
HP Essential Backpack	679923-001
HP Slim Ultrabook Backpack	747079-001

Sequential part number listing

CSR flag designations:

A = Mandatory

B = Optional

C = Service technician recommended

N = Non-user replaceable

Spare part number	CSR flag	Description
490371-001	A	Power cord for use in North America (3-pin, black, 1.83-m)
490371-011	A	Power cord for use in Australia (3-pin, black, 1.83-m)
490371-021	A	Power cord for use in Europe (3-pin, black, 1.83-m)
490371-031	A	Power cord for use in the United Kingdom (3-pin, black, 1.83-m)
490371-061	A	Power cord for use in the Italy (3-pin, black, 1.83-m)
490371-081	A	Power cord for use in Denmark (3-pin, black, 1.83-m)
490371-111	A	Power cord for use in Switzerland (3-pin, black, 1.83-m)
490371-201	A	Power cord for use in Thailand (3-pin, black, 1.83-m)
490371-202	A	Power cord for use in Brazil (3-pin, black, 1.83-m)
490371-291	A	Power cord for use in Japan (3-pin, black, 1.83-m)
490371-AA1	A	Power cord for use in the People's Republic of China (3-pin, black, 1.83-m)
490371-AB1	A	Power cord for use in Taiwan (3-pin, black, 1.83-m)
490371-AD1	A	Power cord for use in South Korea (3-pin, black, 1.83-m)
490371-AR1	A	Power cord for use in South Africa (3-pin, black, 1.83-m)
490371-BB1	A	Power cord for use in Israel (3-pin, black, 1.83-m)
490371-D01	A	Power cord for use in Argentina (3-pin, black, 1.83-m)
490371-D61	A	Power cord for use in India (3-pin, black, 1.83-m)
659940-001	A	External optical drive (DVD±RW Double Layer Drive)
679921-001	A	Top load case
679923-001	A	HP Essential Backpack
691922-001	A	HP Comfort Grip Wireless Mouse
693710-001	A	65-W HP Smart AC adapter (RC/V EM) for use in Asia, India, and the People's Republic of China
693711-001	A	65-W HP Smart AC adapter
693716-001	A	65-W HP Smart AC travel adapter
701943-001	A	Adapter, HDMI to VGA
702853-001	N	RTC battery (includes double-sided tape)
703372-001	A	HP Ultraslim Keyed Cable Lock

Spare part number	CSR flag	Description
714657-001	A	65-W HP Smart AC adapter, 4.5 mm, EM
721092-001	N	45-W HP Smart AC adapter (non-PFC)
732252-001	A	Docking station
734734-001	A	Smart AC adapter dongle, 7.4mm
736697-001	N	Cable, detachable, with tips (4.5 mm and 7.4 mm tips)
739566-001	N	Smart Card reader (includes cable)
741727-001	A	45-W HP Smart AC adapter (non-PFC) – non-slim
742436-001	A	45-W AC adapter (non-PFC), 2-prong
747078-001	A	HP Slim Ultrabook Top Load Case
747079-001	A	HP Slim Ultrabook Backpack
755530-001	A	Power cord (1.0 m, 3-pin) for use in North America
755530-011	A	Power cord (1.0 m, 3-pin) for use in Australia
755530-021	A	Power cord (1.0 m, 3-pin) for use in Europe, the Middle East, and Africa
755530-031	A	Power cord (1.0 m, 3-pin) for use in the United Kingdom and Singapore
755530-061	A	Power cord (1.0 m, 3-pin) for use in Italy
755530-081	A	Power cord (1.0 m, 3-pin) for use in Denmark
755530-111	A	Power cord (1.0 m, 3-pin) for use in Switzerland
755530-201	A	Power cord (1.0 m, 3-pin) for use in Thailand
755530-202	A	Power cord (1.0 m, 3-pin) for use in Brazil
755530-291	A	Power cord (1.0 m, 3-pin) for use in Japan
755530-AA1	A	Power cord (1.0 m, 3-pin) for use in the People's Republic of China
755530-AB1	A	Power cord (1.0 m, 3-pin) for use in Taiwan
755530-AD1	A	Power cord (1.0 m, 3-pin) for use in South Korea
755530-AR1	A	Power cord (1.0 m, 3-pin) for use in South Africa
755530-BB1	A	Power cord (1.0 m, 3-pin) for use in Israel
755530-D01	A	Power cord (1.0 m, 3-pin) for use in Argentina
755530-D61	A	Power cord (1.0 m, 3-pin) for use in India
756748-005	N	Intel Dual Band Wireless-N 7265AN 802.11 a/b/g/n 2x2 WiFi + BT 4.0
756749-005	N	Intel Dual Band Wireless-N 7265 802.11 a/c 2×2 WiFi + Bluetooth 4.0 Combo Adapter
757770-001	A	HP USB optical travel mouse
760605-005	N	4-cell, 36-Wh, 2.4-Ah
762689-291	A	Power cord for use in Japan (2-pin, black, 1.0-m)
783721-005	N	Intel Dual Band Wireless-N 7265 802.11 a/c 2×2 WiFi + Bluetooth 4.0 Combo Adapter for use in Indonesia
790045-001	N	Display hinge cover for use in models with an FHD non-touch display

Spare part number	CSR flag	Description
790046-001	N	Display bezel for use on models with FHD displays
790047-001	N	Full hinge-up display, touch screen
790049-001	N	Raw display panel support kit for use in models with FHD displays
790051-001	N	Solid-state drive, 128-GB, SATA III
790052-001	N	Solid-state drive, 180-GB, SATA III
790053-001	N	180-GB solid-state drive, SED, OPAL2
790055-001	N	Solid-state drive, 256-GB, SATA III
790056-001	N	256-GB solid-state drive, SED, OPAL2
790057-001	N	512-GB solid-state drive, SATA-III
790064-001	N	System board with Intel Core M-5Y51 processor for use in models without Windows 8
790064-501	N	System board with Intel Core M-5Y51 processor for use in models with Windows 8 Standard
790064-601	N	System board with Intel Core M-5Y51 processor for use in models with Windows 8 Professional
790065-001	N	System board equipped with Intel Core M-5Y71 processor for use in models without Windows 8
790065-501	N	System board equipped with Intel Core M-5Y71 processor for use in models with Windows 8 Standard
790065-601	N	System board equipped with Intel Core M-5Y71 processor for use in models with Windows 8 Professional
790066-001	N	ForcePad (Touchpad) assembly (includes cable)
790068-001	N	Webcam module (includes double-sided tape)
790069-001	N	NFC module
790070-001	N	**31.75-cm** (12.5-in) QHD raw display panel, non-touch
790071-001	N	35.6-cm (14.0-in), LED, HD, AntiGlare display panel
790072-001	N	Bottom cover for use in models with FHD displays
790073-001	N	Heat sink/thermal module
790074-001	N	Fingerprint reader board (includes cable)
790076-001	N	Screw Kit
790077-001	N	Top cover for use in models with FHD displays (includes power button)
797848-001	A	Adapter, docking connector to ethernet (RJ-45)/VGA
800579-001	N	Display enclosure for use in models with FHD displays (includes wireless antenna)
800580-001	N	Antenna Kit for use in non-touch models
800582-001	N	Bracket Kit
800583-001	N	Speaker assembly (includes cable)
801209-001	N	Bottom cover for use in models with QHD displays
801210-001	N	Top cover for use in models with QHD displays (includes power button)
801211-001	N	Display Hinge Kit for use in FHD displays
801213-001	N	Display Cable Kit for use in models with an FHD display, includes webcam cable and display cable

Spare part number	CSR flag	Description
804213-001	N	NFC Cable Kit (includes NFC module cable and NFC antenna)
804214-001	N	Keyboard with backlight for use in the United States (includes keyboard cable and backlight cable)
804214-031	N	Keyboard with backlight for use in the United Kingdom and Singapore (includes keyboard cable and backlight cable)
804214-041	N	Keyboard with backlight for use in Germany (includes keyboard cable and backlight cable)
804214-051	N	Keyboard with backlight for use in France (includes keyboard cable and backlight cable)
804214-061	N	Keyboard with backlight for use in Italy (includes keyboard cable and backlight cable)
804214-071	N	Keyboard with backlight for use in Spain (includes keyboard cable and backlight cable)
804214-081	N	Keyboard with backlight for use in Denmark (includes keyboard cable and backlight cable)
804214-091	N	Keyboard with backlight for use in Norway (includes keyboard cable and backlight cable)
804214-131	N	Keyboard with backlight for use in Portugal (includes keyboard cable and backlight cable)
804214-141	N	Keyboard with backlight for use in Turkey (includes keyboard cable and backlight cable)
804214-151	N	Keyboard for use in Greece (includes keyboard cable and backlight cable)
804214-161	N	Keyboard with backlight for use in Latin America (includes keyboard cable and backlight cable)
804214-171	N	Keyboard with backlight for use in Saudi Arabia (includes keyboard cable and backlight cable)
804214-201	N	Keyboard with backlight for use in Brazil (includes keyboard cable and backlight cable)
804214-211	N	Keyboard with backlight for use in Hungary (includes keyboard cable and backlight cable)
804214-251	N	Keyboard with backlight for use in Russia (includes keyboard cable and backlight cable)
804214-261	N	Keyboard with backlight for use in Bulgaria (includes keyboard cable and backlight cable)
804214-271	N	Keyboard with backlight for use in Romania (includes keyboard cable and backlight cable)
804214-281	N	Keyboard with backlight for use in Thailand (includes keyboard cable and backlight cable)
804214-291	N	Keyboard with backlight for use in Japan (includes keyboard cable and backlight cable)
804214-A41	N	Keyboard with backlight for use in Belgium (includes keyboard cable and backlight cable)
804214-AB1	N	Keyboard with backlight for use in Taiwan (includes keyboard cable and backlight cable)
804214-AD1	N	Keyboard with backlight for use in South Korea (includes keyboard cable and backlight cable)
804214-B31	N	Keyboard with backlight for use in the Netherlands (includes keyboard cable and backlight cable)
804214-B71	N	Keyboard with backlight for use in Sweden and Finland (includes keyboard cable and backlight cable)
804214-BA1	N	Keyboard with backlight for use in Slovenia (includes keyboard cable and backlight cable)
804214-BB1	N	Keyboard with backlight for use in Israel (includes keyboard cable and backlight cable)
804214-BG1	N	Keyboard with backlight for use in Switzerland (includes keyboard cable and backlight cable)
804214-D61	N	Keyboard with backlight for use in India (includes keyboard cable and backlight cable)
804214-DB1	N	Keyboard with backlight for use in Canada (includes keyboard cable and backlight cable)
804214-DD1	N	Keyboard with backlight for use in Iceland (includes keyboard cable and backlight cable)

Spare part number	CSR flag	Description
804214-FL1	N	Keyboard with backlight for use in the Czech Republic and Slovakia (includes keyboard cable and backlight cable)
804214-FP1	N	Keyboard with backlight for use in northwest Africa (includes keyboard cable and backlight cable)
804215-001	N	256-GB solid-state drive, SATA-III, TLC
804216-001	N	256-GB, TLC solid-state drive, SATA-III, TLC

4 Removal and replacement procedures preliminary requirements

Tools required

You will need the following tools to complete the removal and replacement procedures:

- Flat-bladed screw driver
- Torx T8 screw driver
- Phillips P0 and P1 screw drivers
- Non-marking pry tool

Service considerations

The following sections include some of the considerations that you must keep in mind during disassembly and assembly procedures.

NOTE: As you remove each subassembly from the computer, place the subassembly (and all accompanying screws) away from the work area to prevent damage.

Plastic parts

CAUTION: Using excessive force during disassembly and reassembly can damage plastic parts. Use care when handling the plastic parts. Apply pressure only at the points designated in the maintenance instructions.

Cables and connectors

CAUTION: When servicing the computer, be sure that cables are placed in their proper locations during the reassembly process. Improper cable placement can damage the computer.

Cables must be handled with extreme care to avoid damage. Apply only the tension required to unseat or seat the cables during removal and insertion. Handle cables by the connector whenever possible. In all cases, avoid bending, twisting, or tearing cables. Be sure that cables are routed in such a way that they cannot be caught or snagged by parts being removed or replaced. Handle flex cables with extreme care; these cables tear easily.

Drive handling

> **CAUTION:** Drives are fragile components that must be handled with care. To prevent damage to the computer, damage to a drive, or loss of information, observe these precautions:

Before removing or inserting a hard drive, shut down the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.

Before handling a drive, be sure that you are discharged of static electricity. While handling a drive, avoid touching the connector.

Before removing a diskette drive or optical drive, be sure that a diskette or disc is not in the drive and be sure that the optical drive tray is closed.

Handle drives on surfaces covered with at least one inch of shock-proof foam.

Avoid dropping drives from any height onto any surface.

After removing a hard drive, an optical drive, or a diskette drive, place it in a static-proof bag.

Avoid exposing an internal hard drive to products that have magnetic fields, such as monitors or speakers.

Avoid exposing a drive to temperature extremes or liquids.

If a drive must be mailed, place the drive in a bubble pack mailer or other suitable form of protective packaging and label the package "FRAGILE."

Grounding guidelines

Electrostatic discharge damage

Electronic components are sensitive to electrostatic discharge (ESD). Circuitry design and structure determine the degree of sensitivity. Networks built into many integrated circuits provide some protection, but in many cases, ESD contains enough power to alter device parameters or melt silicon junctions.

A discharge of static electricity from a finger or other conductor can destroy static-sensitive devices or microcircuitry. Even if the spark is neither felt nor heard, damage may have occurred.

An electronic device exposed to ESD may not be affected at all and can work perfectly throughout a normal cycle. Or the device may function normally for a while, then degrade in the internal layers, reducing its life expectancy.

> **CAUTION:** To prevent damage to the computer when you are removing or installing internal components, observe these precautions:

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

Before touching an electronic component, discharge static electricity by using the guidelines described in this section.

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

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

The following table shows how humidity affects the electrostatic voltage levels generated by different activities.

> **CAUTION:** A product can be degraded by as little as 700 V.

Typical electrostatic voltage levels			
	Relative humidity		
Event	**10%**	**40%**	**55%**
Walking across carpet	35,000 V	15,000 V	7,500 V
Walking across vinyl floor	12,000 V	5,000 V	3,000 V
Motions of bench worker	6,000 V	800 V	400 V
Removing DIPS from plastic tube	2,000 V	700 V	400 V
Removing DIPS from vinyl tray	11,500 V	4,000 V	2,000 V
Removing DIPS from Styrofoam	14,500 V	5,000 V	3,500 V
Removing bubble pack from PCB	26,500 V	20,000 V	7,000 V
Packing PCBs in foam-lined box	21,000 V	11,000 V	5,000 V

Packaging and transporting guidelines

Follow these grounding guidelines when packaging and transporting equipment:

● To avoid hand contact, transport products in static-safe tubes, bags, or boxes.

● Protect ESD-sensitive parts and assemblies with conductive or approved containers or packaging.

● Keep ESD-sensitive parts in their containers until the parts arrive at static-free workstations.

● Place items on a grounded surface before removing items from their containers.

● Always be properly grounded when touching a component or assembly.

● Store reusable ESD-sensitive parts from assemblies in protective packaging or nonconductive foam.

● Use transporters and conveyors made of antistatic belts and roller bushings. Be sure that mechanized equipment used for moving materials is wired to ground and that proper materials are selected to avoid static charging. When grounding is not possible, use an ionizer to dissipate electric charges.

Workstation guidelines

Follow these grounding workstation guidelines:

● Cover the workstation with approved static-shielding material.

● Use a wrist strap connected to a properly grounded work surface and use properly grounded tools and equipment.

● Use conductive field service tools, such as cutters, screw drivers, and vacuums.

● When fixtures must directly contact dissipative surfaces, use fixtures made only of static-safe materials.

● Keep the work area free of nonconductive materials, such as ordinary plastic assembly aids and Styrofoam.

● Handle ESD-sensitive components, parts, and assemblies by the case or PCM laminate. Handle these items only at static-free workstations.

- Avoid contact with pins, leads, or circuitry.
- Turn off power and input signals before inserting or removing connectors or test equipment.

Equipment guidelines

Grounding equipment must include either a wrist strap or a foot strap at a grounded workstation.

- When seated, wear a wrist strap connected to a grounded system. Wrist straps are flexible straps with a minimum of one megohm ±10% resistance in the ground cords. To provide proper ground, wear a strap snugly against the skin at all times. On grounded mats with banana-plug connectors, use alligator clips to connect a wrist strap.
- When standing, use foot straps and a grounded floor mat. Foot straps (heel, toe, or boot straps) can be used at standing workstations and are compatible with most types of shoes or boots. On conductive floors or dissipative floor mats, use foot straps on both feet with a minimum of one megohm resistance between the operator and ground. To be effective, the conductive must be worn in contact with the skin.

The following grounding equipment is recommended to prevent electrostatic damage:

- Antistatic tape
- Antistatic smocks, aprons, and sleeve protectors
- Conductive bins and other assembly or soldering aids
- Nonconductive foam
- Conductive tabletop workstations with ground cords of one megohm resistance
- Static-dissipative tables or floor mats with hard ties to the ground
- Field service kits
- Static awareness labels
- Material-handling packages
- Nonconductive plastic bags, tubes, or boxes
- Metal tote boxes
- Electrostatic voltage levels and protective materials

The following table lists the shielding protection provided by antistatic bags and floor mats.

Material	Use	Voltage protection level
Antistatic plastics	Bags	1,500 V
Carbon-loaded plastic	Floor mats	7,500 V
Metallized laminate	Floor mats	5,000 V

5 Removal and replacement procedures for Authorized Service Provider parts

⚠ **CAUTION:** Components described in this chapter should only be accessed by an authorized service provider. Accessing these parts can damage the computer or void the warranty.

Component replacement procedures

📝 **NOTE:** Details about your computer, including model, serial number, product key, and length of warranty, are on the service tag at the bottom of your computer. See Service tag and PCID label on page 13 for details.

This chapter provides removal and replacement procedures.

There are as many as 59 screws that must be removed, replaced, or loosened when servicing Authorized Service Provider only parts. Make special note of each screw size and location during removal and replacement.

Unlocking the device and disabling Always On Remote Management (select HP devices only)

HP Touchpoint Manager (HPTM) is a complete cloud-based solution for managing devices. For select HP devices with the Windows operating system, the Always On Remote Management (AORM) feature is automatically activated when HP Touchpoint Manager software is installed.

AORM can perform a secure BIOS level lock and can also securely erase internal drives (except for encrypted self-encrypting drives). The HP Touchpoint Manager website (http://www.hptouchpointmanager.com) provides access to the AORM lock feature. The device must be unlocked using an authorized PIN from the same website before you can access HP Computer Setup and start the Windows operating system.

📝 **IMPORTANT:** A service agent cannot retrieve the PIN from the HP Touchpoint Manager website. If a locked device is returned for service, the agent must contact the customer to obtain the PIN to unlock the device. If a PIN is not available, the entire system board must be replaced.

Before returning the device for service, be sure to unlock the device using the PIN from the HP Touchpoint Manager website (http://www.hptouchpointmanager.com), and also disable the AORM feature in HP Computer Setup.

To disable AORM:

1. Access HP Computer Setup (F10).

   a. Turn on or restart the computer, and then press esc while the "Press the ESC key for Startup Menu" message is displayed at the bottom of the screen.

   b. Press f10 to enter Computer Setup.

   📝 **NOTE:** If the BIOS is protected with an Administrator password, enter the password.

2. Select **Advanced** and then select **HP Touchpoint Manager Options**.

3. Clear the **Allow Activation** check box.

**4.** Select **Save changes and exit.**.

Bottom cover

Description	Spare part number
Bottom cover for use on models with FHD displays	790072-001
Bottom cover for use on models with QHD displays	801209-001

Before removing the bottom cover, follow these steps:

1. Turn off the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.

2. Disconnect the power from the computer by unplugging the power cord from the computer.
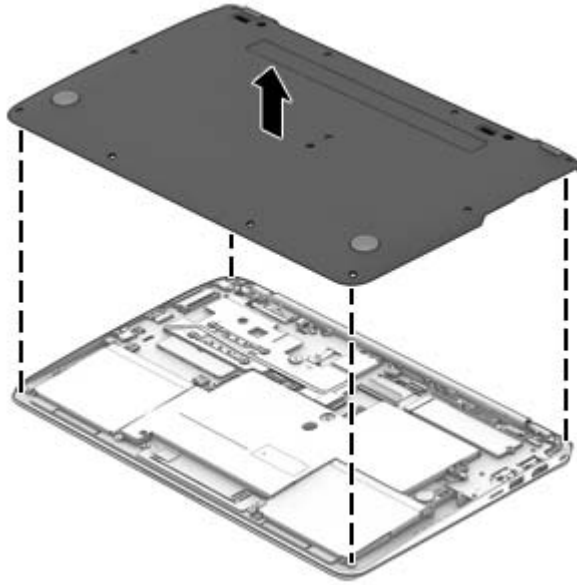
3. Disconnect all external devices from the computer.

Remove the bottom cover:

1. Remove the seven Torx T8M2.0×4.3 screws **(1)** and the four Torx T8M2.0×2.3 screws **(2)** that secure the bottom cover to the computer.
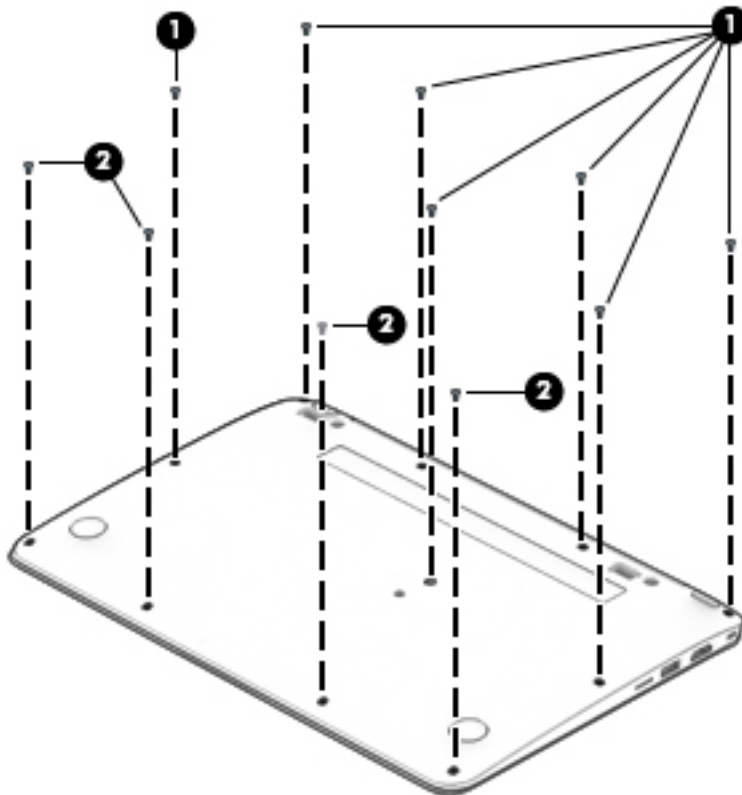
2. Pry up on the top (near the display hinge) of the bottom cover to disengage it from the computer.

Reverse the removal procedures to install the bottom cover.

Display assembly components (panel, bezel, webcam, microphone)

⚠️ **CAUTION:** Be sure to disconnect the battery cable before removing any components from the computer.

All display assemblies include WLAN antenna transceivers and cables.

This section describes removing components from non-touch displays that do not require that you entirely remove the display assembly from the computer. You can remove the display bezel, webcam/microphone module, and display panel with the display assembly still attached to the computer.

To remove the remaining components from non-touch displays, including the hinges, panels, and cables, you must remove the entire display assembly from the computer. See Display assembly on page 45 for more information about removing the remaining components.

Description	Spare part number
NOTE: Non-touch display assemblies are spared at the subcomponent level only.	
Touch displays are only spared as full hinge-ups. Individual components are not spared for touch screen displays.	
Raw display panels (35.6-cm [14.0-in], anti-glare, LED)	
QHD display panel, non-touch	790070-001
FHD display panel, non-touch	790071-001
Display bezel	790046-001
Webcam module	790068-001

Before removing the display panel, follow these steps:

1. Shut down the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.

2. Disconnect all external devices connected to the computer.

3. Disconnect the power from the computer by first unplugging the power cord from the AC outlet, and then unplugging the AC adapter from the computer.
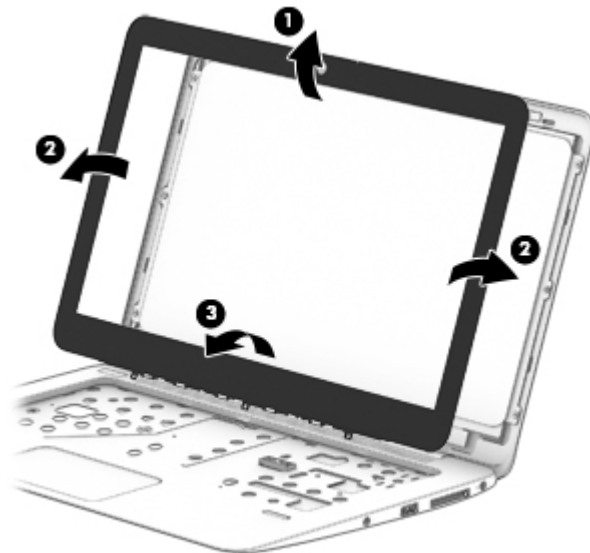
4. Remove the bottom cover (see Bottom cover on page 32).

5. Disconnect the battery cable.
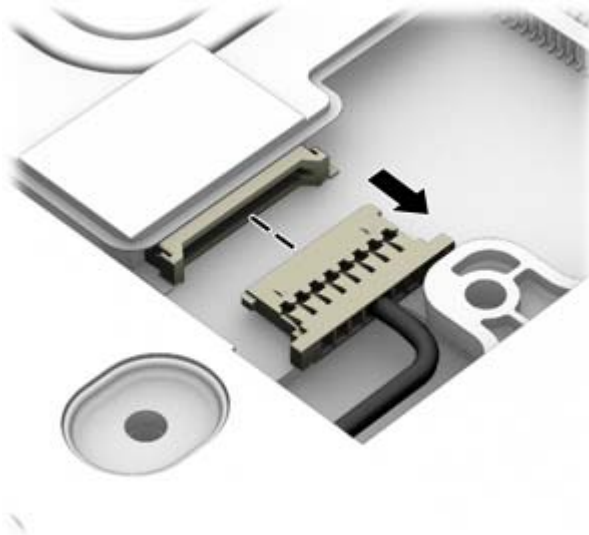
Remove the display assembly components:

1. Position the computer upright, and open as far as possible.

2. To remove the display bezel:

a. Flex the inside edges of the top edge **(1)**, the left and right sides **(2)**, and the bottom edge **(3)** of the display bezel until the bezel disengages from the display enclosure.
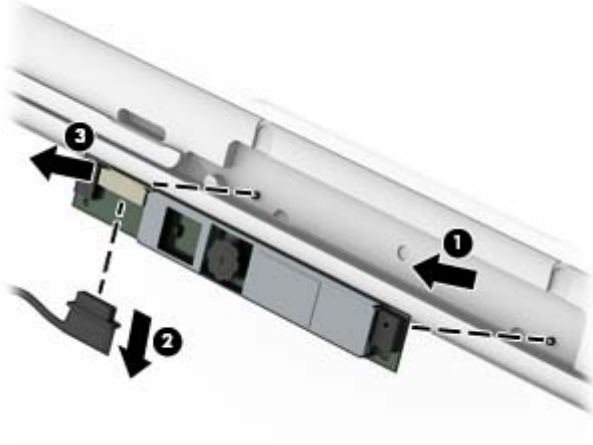
b. Remove the bezel.

The display bezel is available using spare part number 790046-001.

3. If it is necessary to replace the webcam/microphone module:

a. Detach the webcam/microphone module **(1)** from the display enclosure. (The webcam/microphone module is attached to the display enclosure with adhesive.)

b. Disconnect the cable **(2)** from the webcam/microphone module, and then remove the webcam module from the display enclosure **(3)**.

The webcam module is available using spare part number 790068-001.

4. If it is necessary to replace the display panel:

   a. Remove the six Phillips PM2.0×1.8 screws that secure the display panel to the display enclosure **(1)**, and then rotate the top of the display panel downward **(2)** onto the keyboard.

   Display panels are available using the following spare part numbers:

   - 790071-001 — **31.75-cm** (12.5-in) QHD raw display panel, non-touch
   - 790070-001 — **31.75-cm** (12.5-in) FHD raw display panel, non-touch
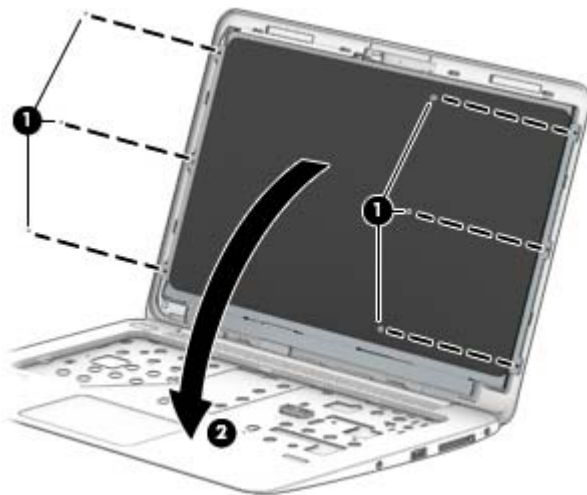
b. Disconnect the display cable from the connector on the panel **(1)**, and then remove the display panel **(2)**.

Reverse this procedure to reassemble and install the display assembly components.

Keyboard

Description	Spare part number
Keyboard (backlit; includes keyboard cable and backlight cable)	804214-xx1
NOTE: For a detailed list of available keyboards, see Sequential part number listing on page 22.	

Before removing the keyboard, follow these steps:

1. Turn off the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.

2. Disconnect the power from the computer by unplugging the power cord from the computer.

3. Disconnect all external devices from the computer.

4. Remove the bottom cover (see Bottom cover on page 32).

5. Disconnect the battery cable.
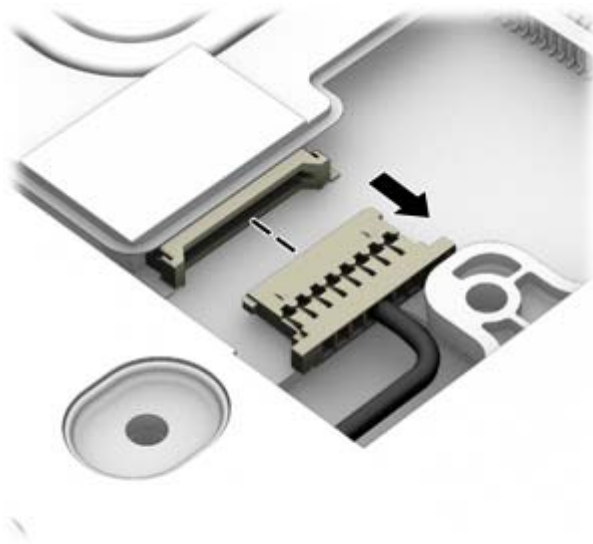
Remove the keyboard:

1. Remove the Phillips PM2.0×2.8 broadhead screw **(1)** that secures the keyboard to the computer.

2. Disconnect the keyboard backlight cable from the system board **(2)**.

3. Disconnect the main keyboard cable from the system board **(3)**.
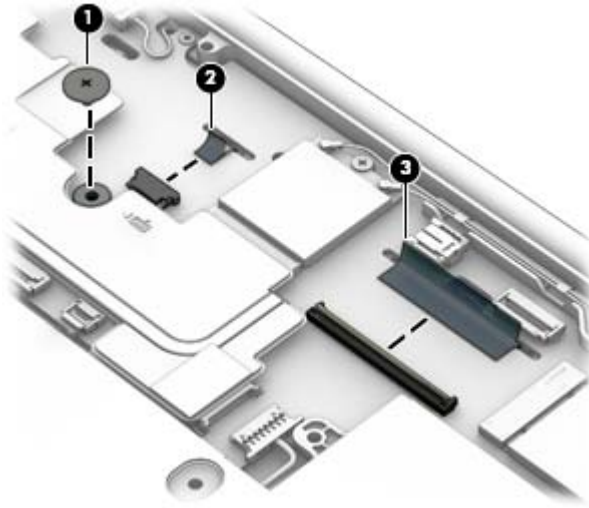
4. Position the computer on its side and open.

5. Insert a screwdriver or similar thin tool into the screw boss of the screw removed in the previous step, and then press on the back of the keyboard until it disengages from the computer.
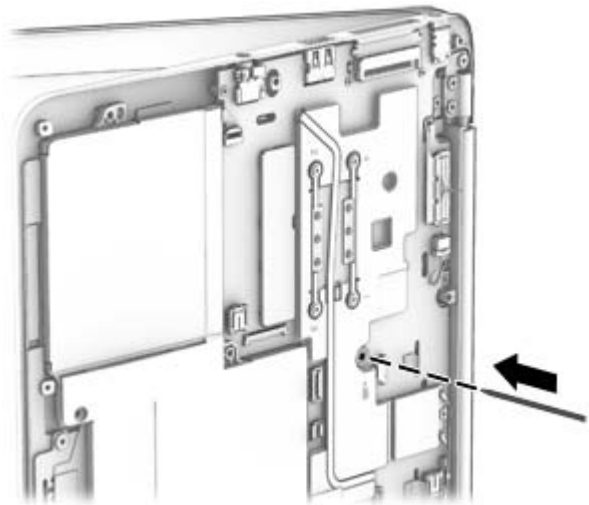
6. Lift the main keyboard cable **(1)** and the keyboard backlight cable **(2)** from the slits in the computer, and then remove the keyboard **(3)**.
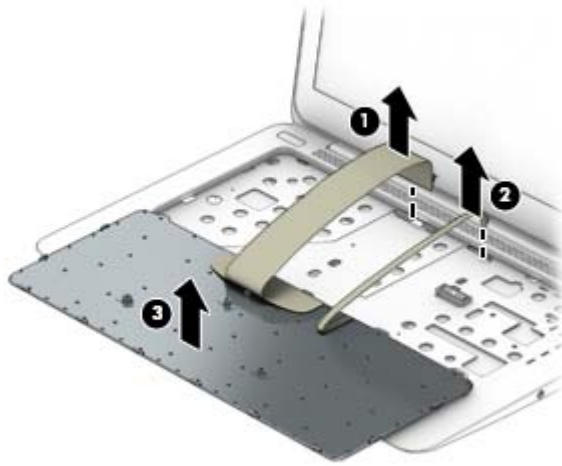
7. Remove the keyboard.

Reverse this procedure to install the keyboard.

SSD drive

Description	Spare part number
Solid-state drive	
512-GB	790057-001
256-GB, SED, OPAL2	790056-001
256-GB, TLC	804216-001
256-GB	790055-001
180-GB	790052-001
180-GB, SED, OPAL2	790053-001
128-GB, TLC	804215-001
128-GB	790051-001

Before removing the solid-state drive, follow these steps:

1. Turn off the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.

2. Disconnect the power from the computer by unplugging the power cord from the computer.

3. Disconnect all external devices from the computer.

4. Remove the bottom cover (see).

5. Disconnect the battery cable.
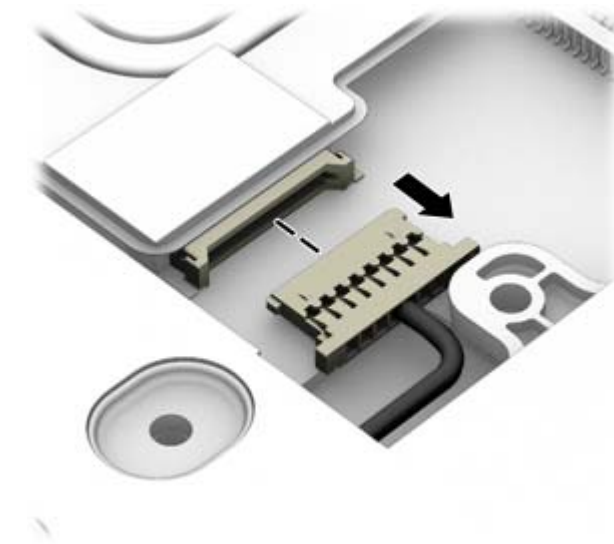
Remove the SSD:

1. Remove the Phillips PM2.0×1.8 screw **(1)** that secures the drive to the system board.

2. Remove the drive **(2)** by pulling it away from the connector.

> 📝 **NOTE:** mSATA drives are designed with notches to prevent incorrect insertion.
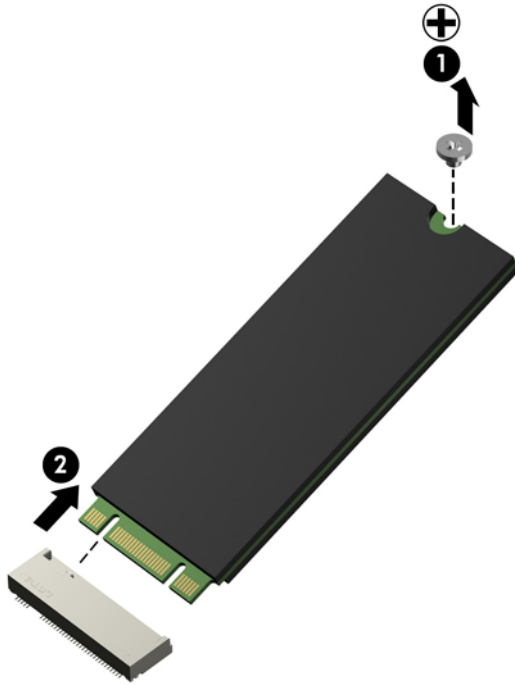
Reverse this procedure to reassemble and install the mSATA drive.

WLAN module

Description	Spare part number
Intel Dual Band Wireless-N 7265AN 802.11 a/b/g/n 2x2 WiFi + BT 4.0	756748-005
Intel Dual Band Wireless-N 7265 802.11 a/c 2×2 WiFi + Bluetooth 4.0 Combo Adapter	756749-005
Intel Dual Band Wireless-N 7265 802.11 a/c 2×2 WiFi + Bluetooth 4.0 Combo Adapter for use in Indonesia	783721-005

⚠ **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 device functionality, and then contact technical support.

Before removing the WLAN module, follow these steps:

1. Turn off the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.

2. Disconnect the power from the computer by unplugging the power cord from the computer.

3. Disconnect all external devices from the computer.

4. Remove the bottom cover (see Bottom cover on page 32).
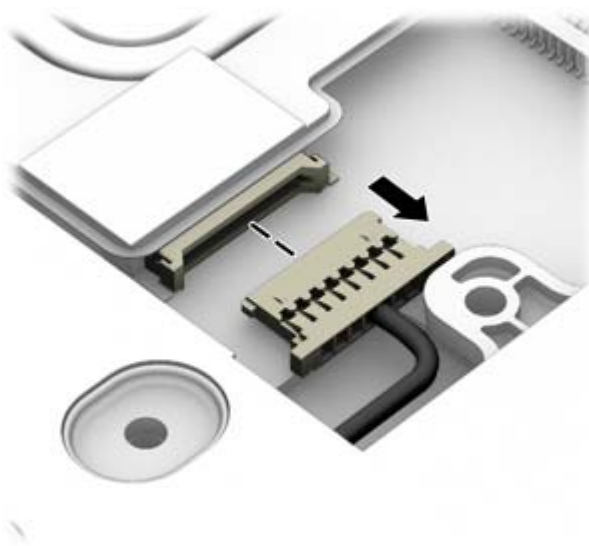
5. Disconnect the battery cable.

Remove the WLAN module:

1. Disconnect the WLAN antenna cables **(1)** from the terminals on the WLAN module.

NOTE: The WLAN antenna cable labeled "1" connects to the WLAN module "Main" terminal labeled "1". The WLAN antenna cable labeled "2" connects to the WLAN module "Aux" terminal labeled "2". If the computer is equipped with an 802.11a/b/g/n WLAN module, the yellow WLAN antenna cable connects to the middle terminal on the WLAN module.

2. Remove the Phillips PM2.0×1.8 screw **(2)** that secures the WLAN module to the system board. (The WLAN module tilts up.)

3. Remove the WLAN module **(3)** by pulling the module away from the slot at an angle.

NOTE: WLAN modules are designed with a notch to prevent incorrect insertion.
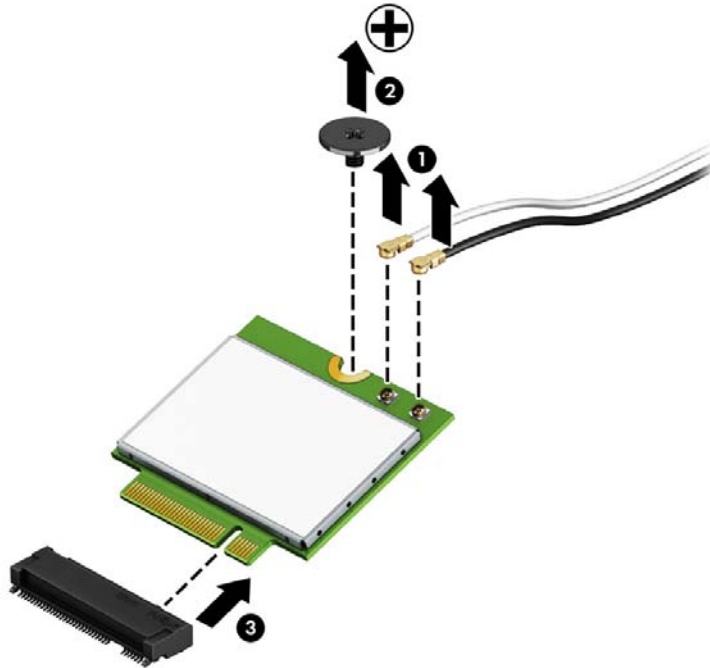
NOTE: If the WLAN antennas are not connected to the terminals on the WLAN module, the protective sleeves must be installed on the antenna connectors, as shown in the following illustration.

Reverse this procedure to install the WLAN module.

Display assembly

This section describes removing components that require you to completely remove the display panel. You can remove the display bezel, webcam, and display panel without removing the entire display hinge-up from the computer.

Before removing the display assembly, follow these steps:

1. Turn off the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.

2. Disconnect the power from the computer by unplugging the power cord from the computer.

3. Disconnect all external devices from the computer.

4. Remove the bottom cover (see Bottom cover on page 32).

5. Disconnect the battery cable.
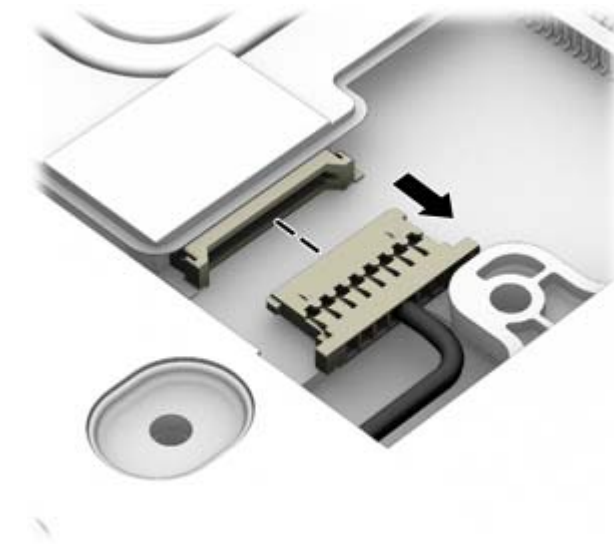
Remove the display assembly:

1. Open the computer and position it with the base enclosure on a table and the display hanging down.

2. Remove the two Phillips PM2.5×5.2 screws **(1)** that secure the bracket on the left side of the computer, and the remove the bracket **(2)**.
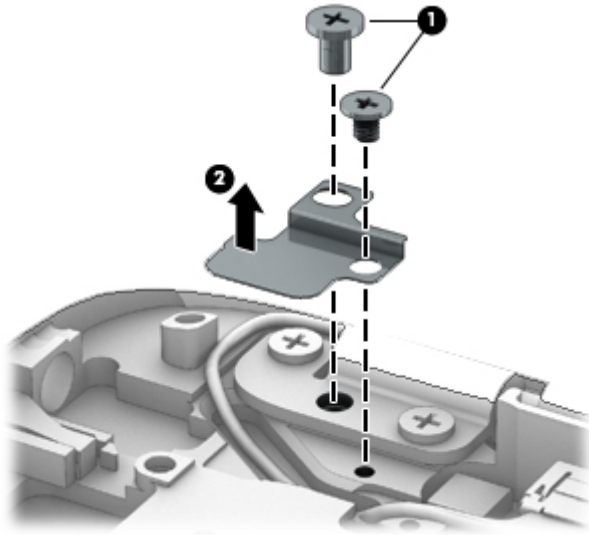
The display brackets are available in the Bracket Kit using spare part number 800582-001.

3. Remove the cable from the routing clips in the right display bracket **(1)**.

4. Remove the two Phillips PM2.5×3.4 screws **(2)** that secure the display bracket to the right side of the computer, and then remove the bracket **(3)**.

The display brackets are available in the Bracket Kit using spare part number 800582-001.
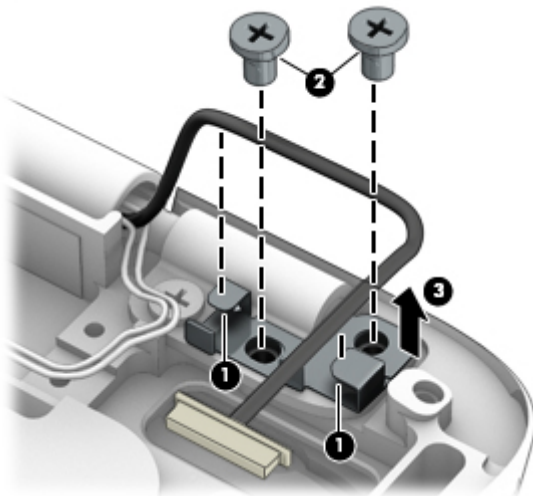
5. Disconnect the display cable from the system board **(1)**.

6. Remove the WLAN antenna from the clips and routing path built into the computer **(2)**.

7. Disconnect the webcam cable from the system board **(3)**.

8. Remove the three Phillips PM2.5×4.0 screws **(4)** that secure the display to the computer.

9. Remove the computer from the display assembly **(5)**.
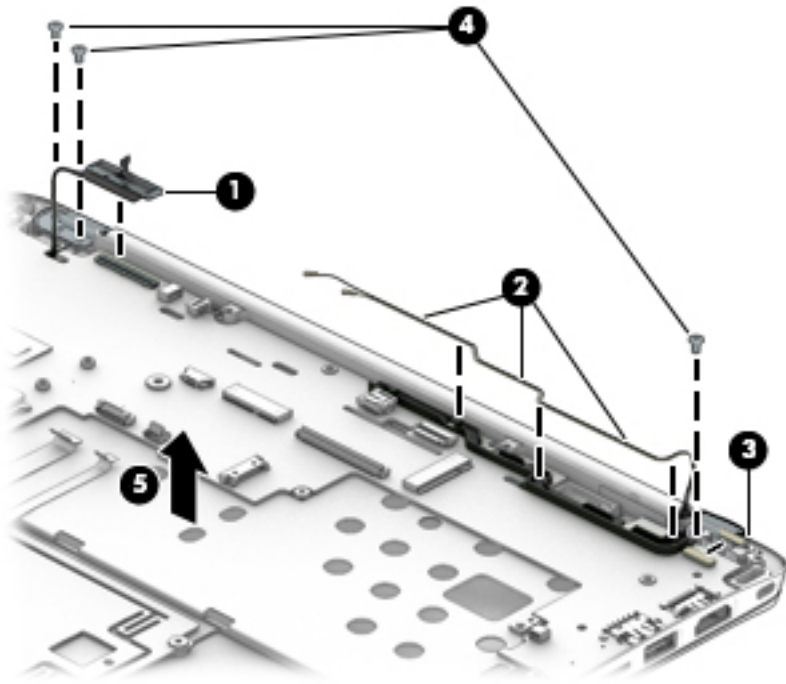
10. If it is necessary to replace the display hinges:

a. Run a non-marking tool along the edge of the hinge cover to disengage the cover from the display **(1)**.

b. Remove the hinge cover from the display **(2)**.

The display hinge cover is available using spare part number 790045-001.
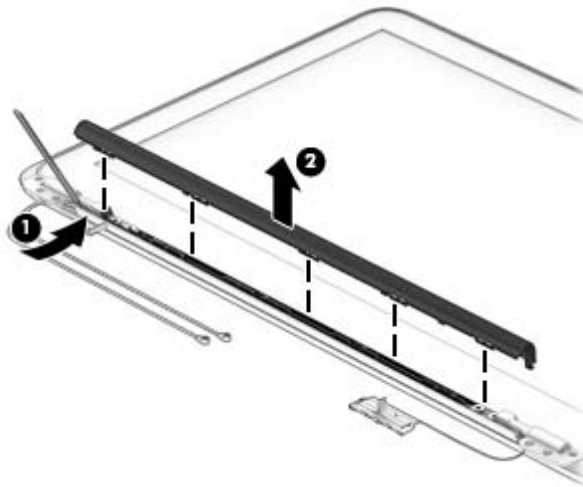
c. Remove the two Phillips PM2.5×5.2 screws **(1)** per hinge that secure the hinges to the display.

d. Remove the acetate tape and antenna cable from the left hinge **(2)**.

e. Lift the display hinges off the display enclosure **(3)**.

Display hinges are available in the Display Hinge Kit, spare part number 801211-001.
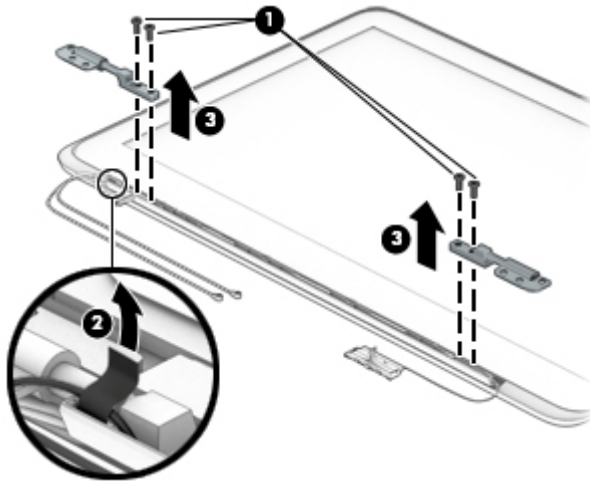
11. To remove the display bezel:

a. Flex the inside edges of the top edge **(1)**, the left and right sides **(2)**, and the bottom edge **(3)** of the display bezel until the bezel disengages from the display enclosure.

b. Remove the bezel.

The display bezel is available using spare part number 790046-001.
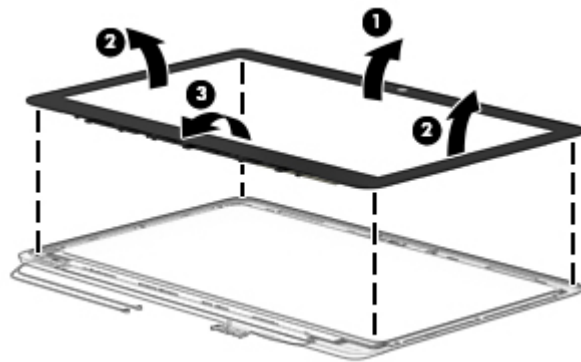
12. If it is necessary to replace the webcam/microphone module:

a. Detach the webcam/microphone module **(1)** from the display enclosure. (The webcam/microphone module is attached to the display enclosure with adhesive.)

b. Disconnect the cable **(2)** from the webcam/microphone module, and then remove the webcam module from the display enclosure **(3)**.

The webcam module is available using spare part number 790068-001.

13. If it is necessary to replace the display panel:

a. Remove the six Phillips PM2.0×1.8 screws that secure the display panel to the display enclosure **(1)**, rotate the top of the display panel up, and then place the panel upside down next to the display enclosure **(2)** so you can access the display cable and connector on the rear of the panel.

Display panels are available using the following spare part numbers:

● 790071-001:**31.75-cm** (12.5-in) QHD raw display panel, non-touch

● 790070-001:**31.75-cm** (12.5-in) FHD raw display panel, non-touch

790049-001: Raw display panel support kit
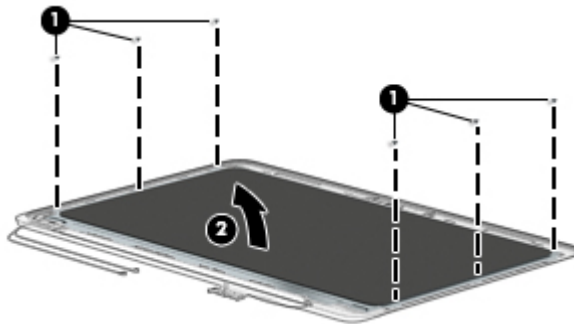
b. Disconnect the display cable from the connector on the panel **(1)**, and then remove the display panel **(2)**.
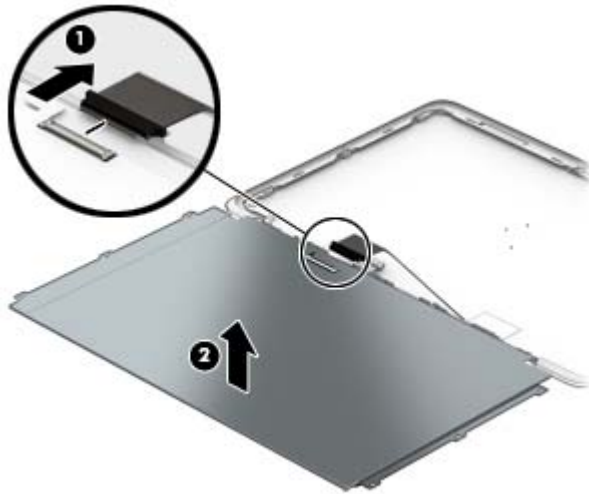
14. If it is necessary to replace the display cable or the webcam cable, lift the webcam cable **(1)** or the display cable **(2)** from the display enclosure.

The webcam and display cables are available in the Display Cable Kit using spare part number 801213-001 for models.
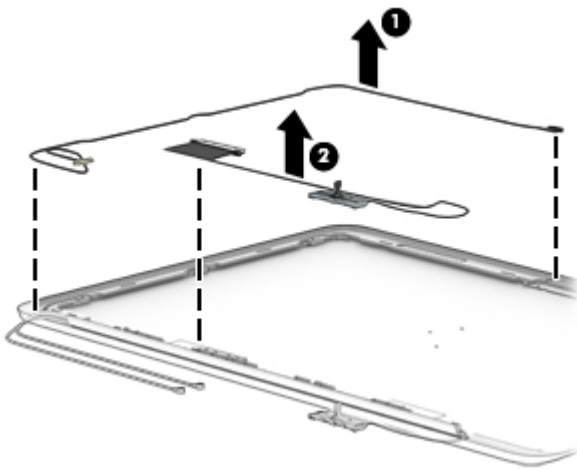
15. If it is necessary to replace the antenna cables, lift the antenna cables from the clips on the sides of the display enclosure **(1)**, and then remove the antennas from the enclosure **(2)**.

The antenna cables are available using spare part number 800580-001.

The display enclosure is available using spare part number 800579-001.
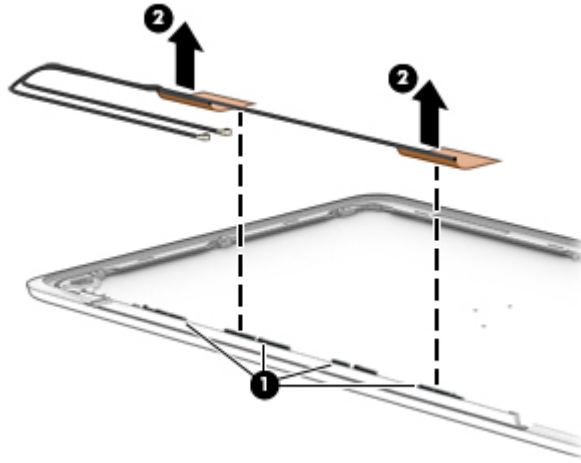
Reverse this procedure to reassemble and install the display assembly.

RTC battery

Description	Spare part number
RTC battery (includes double-sided tape)	702853-001

Before removing the RTC battery, follow these steps:

1. Turn off the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.

2. Disconnect the power from the computer by unplugging the power cord from the computer.

3. Disconnect all external devices from the computer.

4. Remove the bottom cover (see Bottom cover on page 32).

5. Disconnect the battery cable.
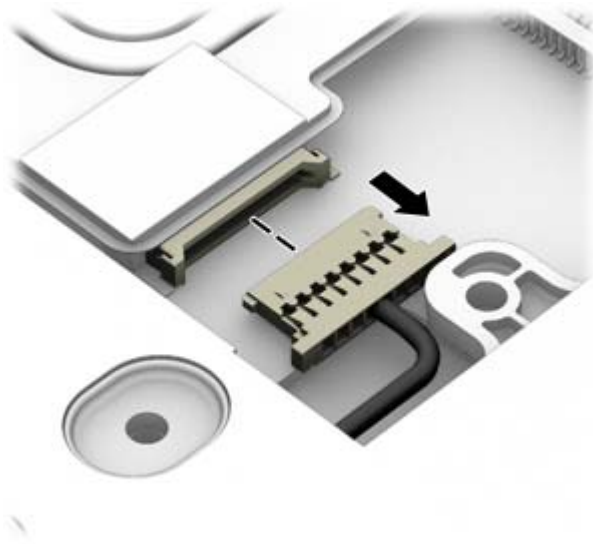
Remove the RTC battery:

1. Disconnect the RTC battery cable **(1)** from the system board.

2. Detach the RTC battery **(2)** from the computer.

Reverse this procedure to install the RTC battery.

Heat sink

NOTE: The heat sink assembly spare part kit includes replacement thermal material.

Description	Spare part number
Heat sink assembly	790073-001

Before removing the heat sink, follow these steps:

1. Turn off the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.

2. Disconnect the power from the computer by unplugging the power cord from the computer.

3. Disconnect all external devices from the computer.

4. Remove the bottom cover (see).

5. Disconnect the battery cable.
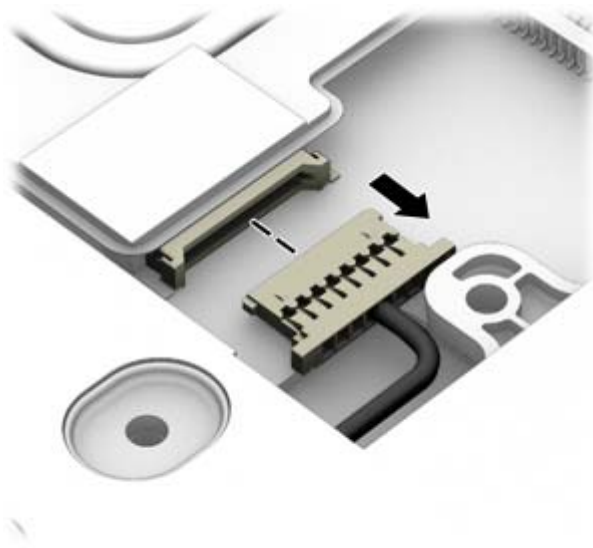
Remove the heat sink:

1. Following the sequence stamped into the heat sink, loosen the four captive Philllips screws **(1)** that secure the heat sink to the system board.

2. Remove the heat sink **(2)**.

> **⚠ CAUTION:** Take extreme care when removing the heat sink. The heatpipe is very fragile and can be easily damaged and bent during removal.
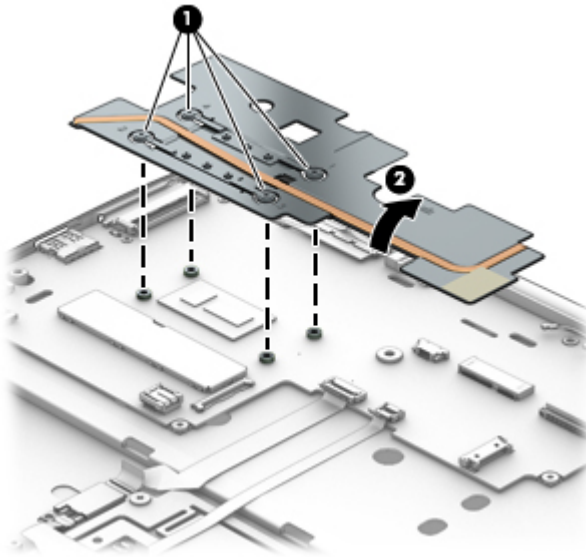
> **📝 NOTE:** The thermal material must be thoroughly cleaned from the surfaces of the heat sink and the system board components each time the heat sink is removed. Replacement thermal material is included with the heat sink, processor, and system board spare part kits.

The following illustration shows the replacement thermal material locations. Thermal paste is used on the heat sink **(1)** and the processor **(2)**.
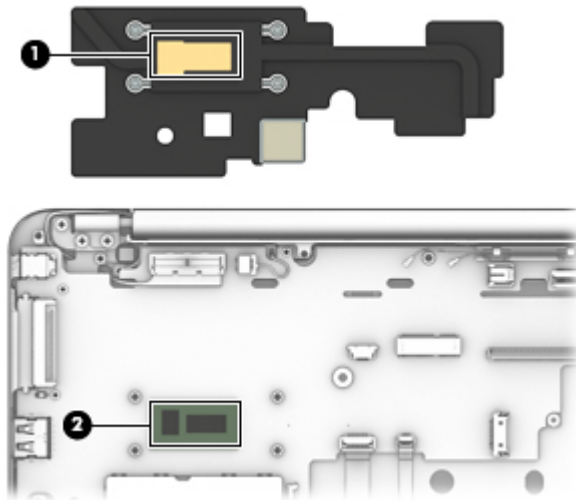
Reverse this procedure to install the heat sink assembly.

Battery

Description	Spare part number
4-cell, 36-Wh, 2.4-Ah, Li ion battery	760605-005

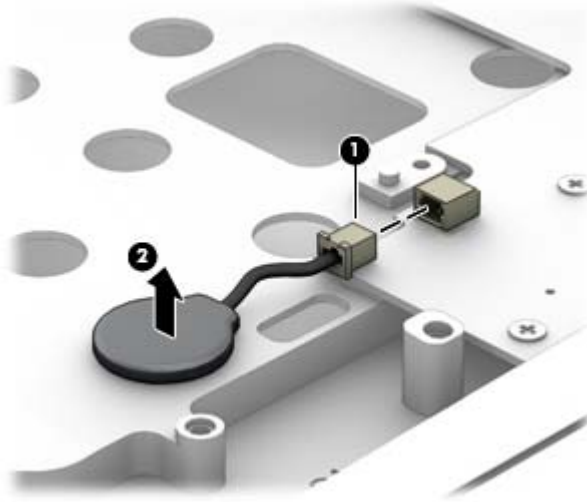Before disassembling the computer, follow these steps:

1. Turn off the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.

2. Disconnect the power from the computer by unplugging the power cord from the computer.

3. Disconnect all external devices from the computer.

4. Remove the bottom cover (see Bottom cover on page 32).

Remove the battery:

1. Disconnect the battery cable from the system board **(1)**.

2. Remove the six Phillips PM2.0×4.0 screws **(2)** that secure the battery to the computer.

3. Lift the battery out of the computer **(3)**.
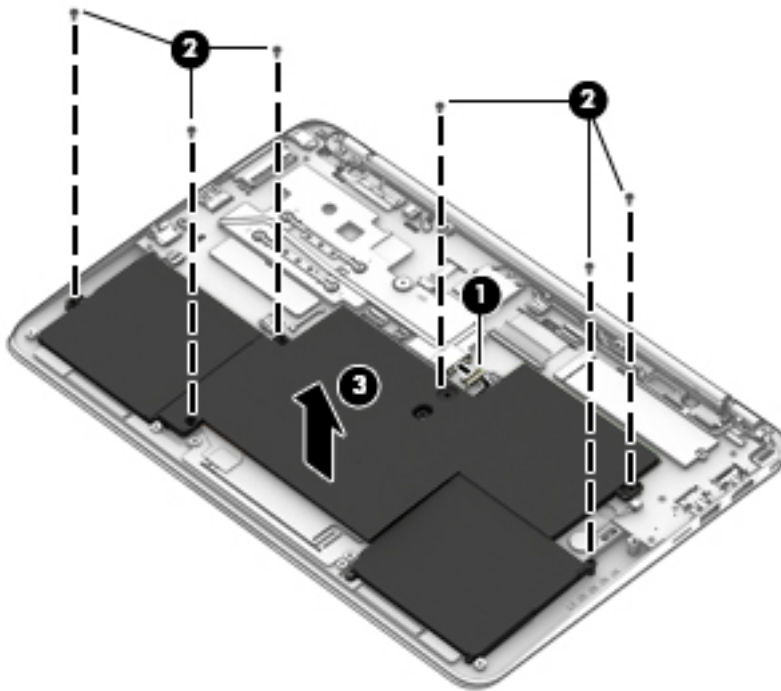
Fingerprint reader board

Description	Spare part number
Fingerprint reader board (includes cable)	790074-001

Before removing the fingerprint reader board, follow these steps:

1. Turn off the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.

2. Disconnect the power from the computer by unplugging the power cord from the computer.

3. Disconnect all external devices from the computer.

4. Remove the bottom cover (see Bottom cover on page 32).

5. Remove the battery (see Battery on page 56).

Remove the fingerprint reader board:

1. Disconnect the cable from the system board **(1)**.

2. Remove the Phillips PM2.0×2.0 broadhead screw **(2)** that secures the assembly to the computer.

3. Remove the bracket from atop the fingerprint reader board **(3)**.

   The fingerprint reader bracket is available in the Bracket Kit using spare part number 800582-001.

4. Remove the fingerprint reader board and cable from the computer **(4)**.

Reverse this procedure to install the fingerprint reader board.

NFC module

Description	Spare part number
NFC (Near Field Communication) module	790069-001
NFC cable kit (includes NFC cable and antenna)	804213-001

Before removing the NFC module, follow these steps:

1. Turn off the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.

2. Disconnect the power from the computer by unplugging the power cord from the computer.

3. Disconnect all external devices from the computer.

4. Remove the bottom cover (see Bottom cover on page 32).

5. Remove the battery (see Battery on page 56).

Remove the NFC module:

1. Disconnect the cable from the NFC module **(1)**.

2. Disconnect the antenna from the NFC module **(2)**.

3. Use a flat tool to pry the module up **(3)**, and the lift it from the computer **(4)**.

> **NOTE:** The NFC module cable and NFC antenna are available in the NFC Cable Kit, spare part number 804213-001.

Reverse the removal procedures to install the NFC module.

ForcePad (Touchpad)

Description	Spare part number
ForcePad (Touchpad) (includes cable)	790066-001

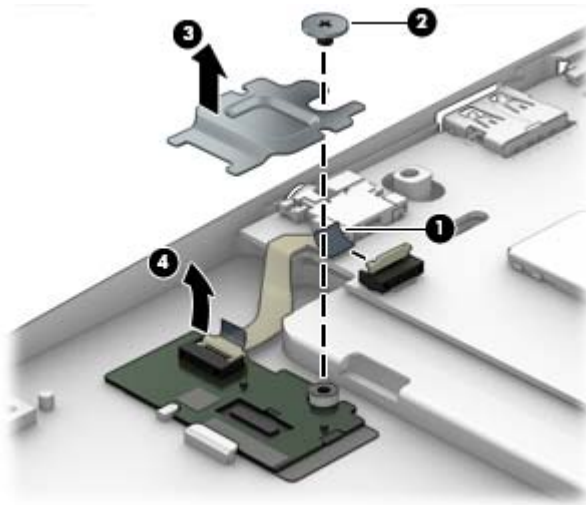Before removing the ForcePad, follow these steps:

1. Turn off the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.

2. Disconnect the power from the computer by unplugging the power cord from the computer.

3. Disconnect all external devices from the computer.

4. Remove the bottom cover (see Bottom cover on page 32).

5. Remove the battery (see Battery on page 56).

Remove the ForcePad:

1. Disconnect the ForcePad cable **(1)** from the system board.

2. Disconnect the NFC module antenna cable **(2)** from the ForcePad.

3. Remove the four Phillips PM2.0×2.0 broadhead screws **(3)** that secure the ForcePad to the computer, and then lift the ForcePad from the computer **(4)**.
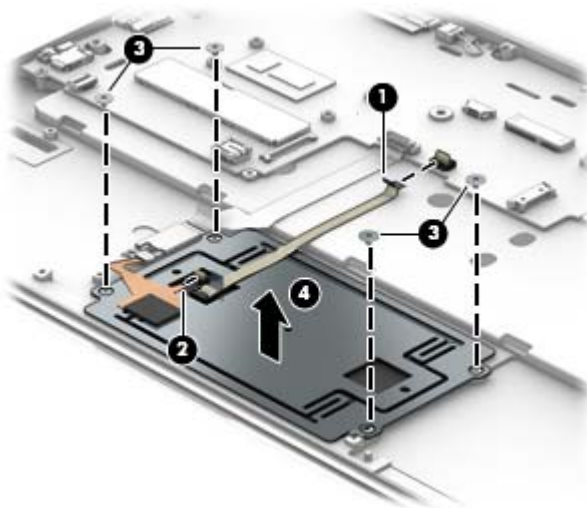
Reverse the removal procedures to install the ForcePad.

System board

NOTE: The system board spare part kit includes replacement thermal material.

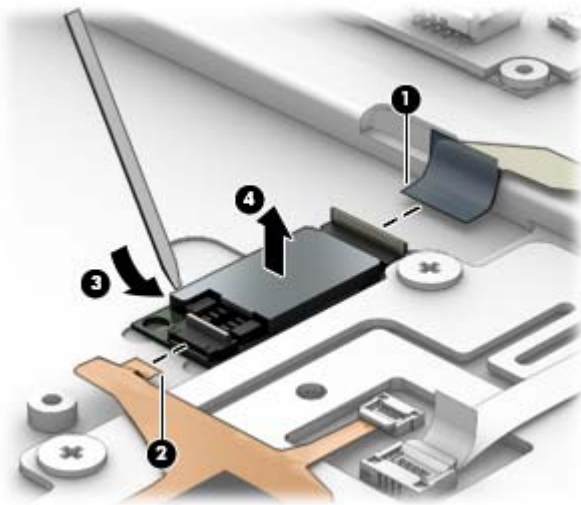| Description	Spare part number
System boards for use in models without Windows 8:	
Equipped with Intel Core M-5Y51 processor	790064-001
Equipped with Intel Core M-5Y71 processor	790065-001
System boards for use in Windows 8 models:	
Equipped with Intel Core M-5Y51 processor for use in models with Windows 8 Standard	790064-501
Equipped with Intel Core M-5Y51 processor for use in models with Windows 8 Professional	790064-601
Equipped with Intel Core M-5Y71 processor for use in models with Windows 8 Standard	790065-501
Equipped with Intel Core M-5Y71 processor for use in models with Windows 8 Professional	790065-601

Before removing the system board, follow these steps:

1. Turn off the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.

2. Disconnect the power from the computer by unplugging the power cord from the computer.

3. Disconnect all external devices from the computer.

4. Remove the bottom cover (see Bottom cover on page 32).

5. Remove the battery (see Battery on page 56).

6. When replacing the system board, be sure that the following components are removed from the defective system board and installed on the replacement system board:

   ● SSD drive module (see SSD drive on page 41)

   ● WLAN module (see WLAN module on page 43)

   ● Heat sink (see Heat sink on page 54)

Remove the system board:

1. Disconnect the following cables:

   (1): Display panel

   (2): Speaker

   (3): Webcam

   (4): ForcePad

   (5): NFC module

   (6): Fingerprint reader
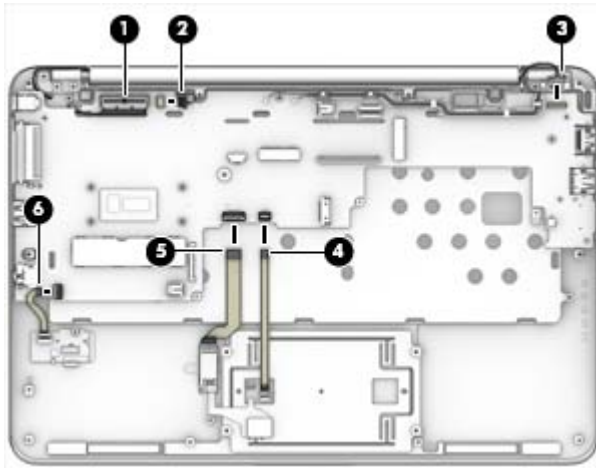
2. Remove the WLAN antenna from the routing channel on the system board **(1)**.

3. Remove the eight Phillips PM2.0×3.0 screws **(2)** that secure the system board to the computer.
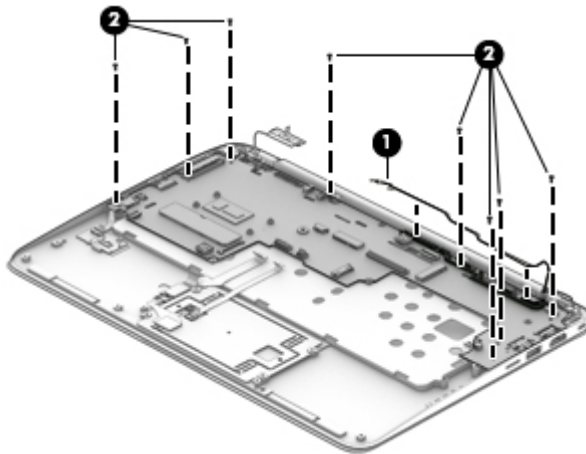
4. Lift the right side of the system board up at an angle **(1)**.

⚠ **CAUTION:** To avoid damaging or breaking the system board, use two hands when removing the board. Do not lift up on the narrow end of the board.

5. Pull the flat ribbon cable through the slit in the system board **(2)**.

6. Pull the system board away from and out of the computer **(3)**, making sure the connectors on the side of the board are clear of the computer.
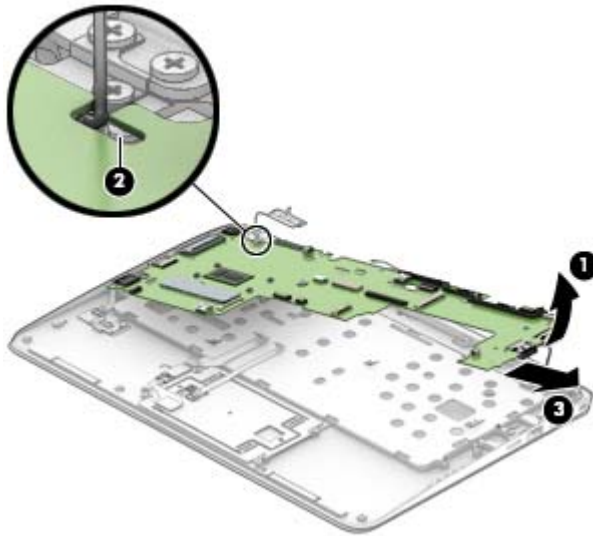
Reverse this procedure to install the system board.

Power button

Description	Spare part number
Power button	not spared

Before removing the power button, follow these steps:

1. Turn off the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.

2. Disconnect the power from the computer by unplugging the power cord from the computer.

3. Disconnect all external devices from the computer.

4. Remove the bottom cover (see Bottom cover on page 32).

5. Remove the battery (see Battery on page 56).

6. Remove the system board (see System board on page 60).

Remove the power button:

1. Remove the two Phillips PM2.0×2.4 screws **(1)** that secure the button to the computer.

2. Lift the button up and off the computer **(2)**.
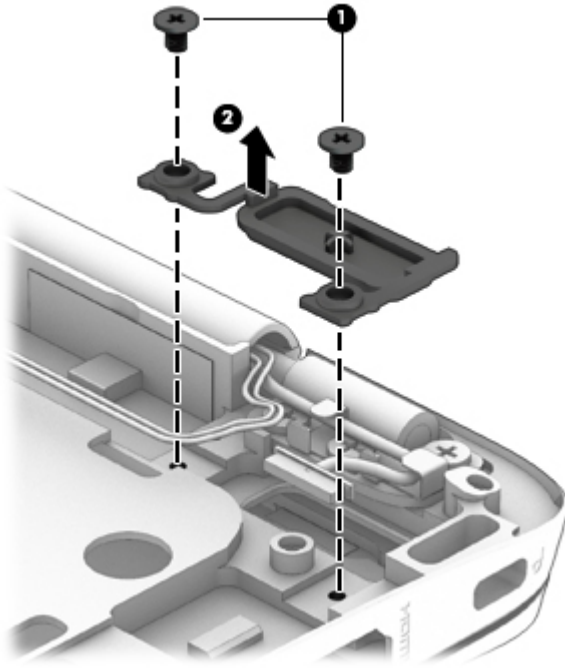
Reverse the removal procedures to install the power button.

Speaker assembly

Description	Spare part number
Speaker assembly (includes cable)	800583-001

Before removing the speaker assembly, follow these steps:

1. Turn off the computer. If you are unsure whether the computer is off or in Hibernation, turn the computer on, and then shut it down through the operating system.

2. Disconnect the power from the computer by unplugging the power cord from the computer.

3. Disconnect all external devices from the computer.

4. Remove the bottom cover (see Bottom cover on page 32).

5. Remove the battery (see Battery on page 56).

6. Remove the system board (see System board on page 60).

Remove the speaker assembly:

1. Remove the three Phillips PM2.0×2.4 screws **(1)** that secure the speaker to the computer.

2. Remove the speaker **(2)** from the computer.
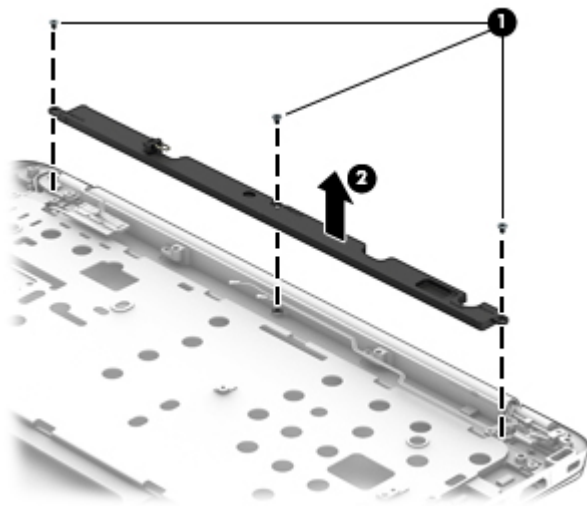
Reverse this procedure to install the speaker.

6 Computer Setup (BIOS), MultiBoot, and HP PC Hardware Diagnostics (UEFI) in Windows 8.1

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:

1. Turn on or restart the computer, and then press esc while the "Press the ESC key for Startup Menu" message is displayed at the bottom of the screen.

2. Press f10 to enter Computer Setup.

Navigating and selecting in Computer Setup

To navigate and select in Computer Setup, follow these steps:

1. Turn on or restart the computer, and then press esc while the "Press the ESC key for Startup Menu" message is displayed at the bottom of the screen.

   NOTE: You can use either a pointing device (TouchPad, pointing stick, or USB mouse) or the keyboard to navigate and make selections in Computer Setup.

2. Press f10 to enter 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 click the item.

   ● To scroll up and down, click 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:

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

– or –

Use the tab key and the arrow keys to select **Main > Ignore Changes and Exit**, and then press enter.

● To save your changes and exit Computer Setup menus:

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

– or –

Use the tab key and the arrow keys to select **Main > 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. Turn on or restart the computer, and then press esc while the "Press the ESC key for Startup Menu" message is displayed at the bottom of the screen.

2. Press f10 to enter Computer Setup.

3. Use a pointing device or the arrow keys to select **Main > Restore Defaults**.

4. Follow the on-screen instructions.

5. To save your changes and exit, click the **Save** icon in the lower-right corner of the screen, and then follow the on-screen instructions.

– or –

Use the arrow keys to select **Main > 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 determine whether available BIOS updates contain later BIOS versions than those currently installed on the computer, you need to know the version of the system BIOS currently installed.

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

1. Start Computer Setup.

2. Use a pointing device or the arrow keys to select **Main > System Information**.

3. To exit Computer Setup without saving your changes, click the **Exit** icon in the lower-right corner of the screen, and then follow the on-screen instructions.

   – or –

   Use the tab key and the arrow keys to select **Main > Ignore Changes and Exit**, and then press enter.

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. From the Start screen, type `support`, and then select the HP Support Assistant app.

2. Click **Updates and tune-ups**, and then click **Check for HP updates now**.

3. Follow the on-screen instructions.

4. At the download area, follow these steps:

   a. Identify the most recent BIOS update and compare it to the BIOS version currently installed on your computer. Make a note of the date, name, or other identifier. You may need this information to locate the update later, after it has been downloaded to your hard drive.

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

      If the update is more recent than your BIOS, make a note of the path to the location on your hard drive where the BIOS update is downloaded. You will need to access this path when you are ready to install the update.

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

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

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

2. Click your hard drive designation. The hard drive designation is typically Local Disk (C:).

3. Using the hard drive path you recorded earlier, open the folder on your hard drive that contains the update.

4. Double-click the file that has an .exe extension (for example, *filename*.exe).

   The BIOS installation begins.

5. Complete the installation by following the on-screen instructions.

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

Using MultiBoot

About the boot device order

As the computer starts, the system attempts to boot from enabled devices. The MultiBoot utility, which is enabled at the factory, controls the order in which the system selects a boot device. Boot devices can include optical drives, diskette drives, a network interface card (NIC), hard drives, and USB devices. Boot devices contain bootable media or files that the computer needs to start and operate properly.

NOTE: Some boot devices must be enabled in Computer Setup before they can be included in the boot order.

You can change the order in which the computer searches for a boot device by changing the boot order in Computer Setup. You can also press esc while the "Press the ESC key for Startup Menu" message is displayed at the bottom of the screen, and then press f9. Pressing f9 displays a menu that shows the current boot devices and allows you to select a boot device. Or, you can use MultiBoot Express to set the computer to prompt you for a boot location each time the computer turns on or restarts.

Choosing MultiBoot preferences

You can use MultiBoot in the following ways:

- To set a new boot order that the computer uses each time it is turned on, by changing the boot order in Computer Setup.

- To dynamically choose the boot device, by pressing esc while the "Press the ESC key for Startup Menu" message is displayed at the bottom of the screen, and then pressing f9 to enter the Boot Device Options menu.

- To use MultiBoot Express to set variable boot orders. This feature prompts you for a boot device each time the computer is turned on or restarted.

Setting a new boot order in Computer Setup

To start Computer Setup and set a boot device order that the computer uses each time it is turned on or restarted, follow these steps:

1. Turn on or restart the computer, and then press esc while the "Press the ESC key for Startup Menu" message is displayed at the bottom of the screen.

2. Press f10 to enter Computer Setup.

3. Use a pointing device or the arrow keys to select one of the following options:

   - **Advanced > Boot Options > UEFI Boot Order > UEFI Hybrid**

   - **Advanced > Boot Options > UEFI Boot Order > UEFI Native Boot mode**

   - **Advanced > Boot Options > Legacy Boot Order > Legacy Boot Mode**

   Press enter.

4. To move the device up in the boot order, use a pointing device to click the up arrow, or press the + key.

   – or –

To move the device down in the boot order, use a pointing device to click the down arrow, or press the -
key.

5. To save your changes and exit Computer Setup, click the **Save** icon in the lower-left corner of the
screen, and then follow the on-screen instructions.

– or –

Use the arrow keys to select **Main > Save Changes and Exit**, and then press enter.

Dynamically choosing a boot device using the f9 prompt

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

1. Open the Select Boot Device menu by turning on or restarting the computer, and then pressing esc while
the "Press the ESC key for Startup Menu" message is displayed at the bottom of the screen.

2. Press f9.

3. Use a pointing device or the arrow keys to select a boot device, then press enter.

Setting a MultiBoot Express prompt

To start Computer Setup and set the computer to display the MultiBoot startup location menu each time the
computer is started or restarted, follow these steps:

1. Turn on or restart the computer, and then press esc while the "Press the ESC key for Startup Menu"
message is displayed at the bottom of the screen.

2. Press f10 to enter Computer Setup.

3. Use a pointing device or the arrow keys to select **Advanced > Boot Options > MultiBoot Express Boot
Popup Delay (Sec)**, and then press enter.

4. In the **MultiBoot Express Popup Delay (Sec)** field, enter the length of time in seconds that you want the
computer to display the startup location menu before it defaults to the current MultiBoot setting.
(When 0 is selected, the Express Boot startup location menu is not displayed.)

5. To save your changes and exit Computer Setup, click the **Save** icon in the lower-left corner of the
screen, and then follow the on-screen instructions.

– or –

Use the arrow keys to select **Main > Save Changes and Exit**, and then press enter.

Your changes go into effect when the computer restarts.

Entering MultiBoot Express preferences

When the Express Boot menu is displayed during startup, you have the following choices:

● To specify a boot device from the Express Boot menu, select your preference within the allotted time,
and then press enter.

● To prevent the computer from defaulting to the current MultiBoot setting, press any key before the
allotted time expires. The computer will not start until you select a boot device and press enter.

● To allow the computer to start according to the current MultiBoot settings, wait for the allotted time to
expire.

Using HP PC Hardware Diagnostics (UEFI) (select models only)

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

To start HP PC Hardware Diagnostics UEFI:

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

    After pressing f2, the BIOS searches three places for the HP PC Hardware Diagnostics (UEFI) tools in the following order:

    a. Connected USB drive

        📝 **NOTE:**   To download the HP PC Hardware Diagnostics (UEFI) tool to a USB drive, see Downloading HP PC Hardware Diagnostics (UEFI) to a USB device on page 70.

    b. Hard drive

    c. BIOS

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

    📝 **NOTE:**   If you need to stop a diagnostic test while it is running, press esc.

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

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

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

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

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

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

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

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

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

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

    – or –

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

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

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

    – or –

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

Using HP Sure Start (select models 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.

7 Computer Setup (BIOS), MultiBoot, and HP PC Hardware Diagnostics (UEFI) in Windows 7

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:

1. Turn on or restart the computer, and then press esc while the "Press the ESC key for Startup Menu" message is displayed at the bottom of the screen.

2. Press f10 to enter Computer Setup.

Navigating and selecting in Computer Setup

To navigate and select in Computer Setup, follow these steps:

1. Turn on or restart the computer, and then press esc while the "Press the ESC key for Startup Menu" message is displayed at the bottom of the screen.

    📝 **NOTE:** You can use either a pointing device (TouchPad, pointing stick, or USB mouse) or the keyboard to navigate and make selections in Computer Setup.

2. Press f10 to enter 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 click the item.

    ● To scroll up and down, click 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:

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

– or –

Use the tab key and the arrow keys to select **Main > Ignore Changes and Exit**, and then press enter.

●   To save your changes and exit Computer Setup menus:

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

– or –

Use the tab key and the arrow keys to select **Main > 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.   Turn on or restart the computer, and then press esc while the "Press the ESC key for Startup Menu" message is displayed at the bottom of the screen.

2.   Press f10 to enter Computer Setup.

3.   Use a pointing device or the arrow keys to select **Main > Restore Defaults**.

4.   Follow the on-screen instructions.

5.   To save your changes and exit, click the **Save** icon in the lower-right corner of the screen, and then follow the on-screen instructions.

– or –

Use the arrow keys to select **Main > 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 determine whether available BIOS updates contain later BIOS versions than those currently installed on the computer, you need to know the version of the system BIOS currently installed.

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

1. Start Computer Setup.

2. Use a pointing device or the arrow keys to select **Main > System Information**.

3. To exit Computer Setup without saving your changes, click the **Exit** icon in the lower-right corner of the screen, and then follow the on-screen instructions.

   – or –

   Use the tab key and the arrow keys to select **Main > Ignore Changes and Exit**, and then press enter.

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 > Help and Support**.

2. Select **Updates and tune-ups**, and then select **Check for HP updates now**.

3. 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.

   If the update is more recent than your BIOS, make a note of the path to the location on your hard drive where the BIOS update is downloaded. You will need to access this path when you are ready to install the update.

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

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

1. Select **Start > Computer**.

2. Click your hard drive designation. The hard drive designation is typically Local Disk (C:).

3. Using the hard drive path you recorded earlier, open the folder on your hard drive that contains the update.

4. Double-click the file that has an .exe extension (for example, *filename*.exe).

   The BIOS installation begins.

5. Complete the installation by following the on-screen instructions.

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

Using MultiBoot

About the boot device order

As the computer starts, the system attempts to boot from enabled devices. The MultiBoot utility, which is enabled at the factory, controls the order in which the system selects a boot device. Boot devices can include optical drives, diskette drives, a network interface card (NIC), hard drives, and USB devices. Boot devices contain bootable media or files that the computer needs to start and operate properly.

NOTE: Some boot devices must be enabled in Computer Setup before they can be included in the boot order.

You can change the order in which the computer searches for a boot device by changing the boot order in Computer Setup. You can also press esc while the "Press the ESC key for Startup Menu" message is displayed at the bottom of the screen, and then press f9. Pressing f9 displays a menu that shows the current boot devices and allows you to select a boot device. Or, you can use MultiBoot Express to set the computer to prompt you for a boot location each time the computer turns on or restarts.

Choosing MultiBoot preferences

You can use MultiBoot in the following ways:

- To set a new boot order that the computer uses each time it is turned on, by changing the boot order in Computer Setup.

- To dynamically choose the boot device, by pressing esc while the "Press the ESC key for Startup Menu" message is displayed at the bottom of the screen, and then pressing f9 to enter the Boot Device Options menu.

- To use MultiBoot Express to set variable boot orders. This feature prompts you for a boot device each time the computer is turned on or restarted.

Setting a new boot order in Computer Setup

To start Computer Setup and set a boot device order that the computer uses each time it is turned on or restarted, follow these steps:

1. Turn on or restart the computer, and then press esc while the "Press the ESC key for Startup Menu" message is displayed at the bottom of the screen.

2. Press f10 to enter Computer Setup.

3. Use a pointing device or the arrow keys to select the **Advanced > Boot Options > UEFI Boot Order for UEFI Hybrid** or **UEFI Native Boot mode**, or select **Advanced > Boot Options > Legacy Boot Order** for Legacy Boot Mode, and then press enter.

4. To move the device up in the boot order, use a pointing device to click the up arrow, or press the + key.

   – or –

   To move the device down in the boot order, use a pointing device to click the down arrow, or press the - key.

5. To save your changes and exit Computer Setup, click the **Save** icon in the lower-left corner of the screen, and then follow the on-screen instructions.

   – or –

   Use the arrow keys to select **Main > Save Changes and Exit**, and then press enter.

Dynamically choosing a boot device using the f9 prompt

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

1. Open the Select Boot Device menu by turning on or restarting the computer, and then pressing esc while the "Press the ESC key for Startup Menu" message is displayed at the bottom of the screen.

2. Press f9.

3. Use a pointing device or the arrow keys to select a boot device, then press enter.

Setting a MultiBoot Express prompt

To start Computer Setup and set the computer to display the MultiBoot startup location menu each time the computer is started or restarted, follow these steps:

1. Turn on or restart the computer, and then press esc while the "Press the ESC key for Startup Menu" message is displayed at the bottom of the screen.

2. Press f10 to enter Computer Setup.

3. Use a pointing device or the arrow keys to select **Advanced > Boot Options > MultiBoot Express Boot Popup Delay (Sec)**, and then press enter.

4. In the **MultiBoot Express Popup Delay (Sec)** field, enter the length of time in seconds that you want the computer to display the startup location menu before it defaults to the current MultiBoot setting. (When 0 is selected, the Express Boot startup location menu is not displayed.)

5. To save your changes and exit Computer Setup, click the **Save** icon in the lower-left corner of the screen, and then follow the on-screen instructions.

    – or –

    Use the arrow keys to select **Main > Save Changes and Exit**, and then press enter.

Your changes go into effect when the computer restarts.

Entering MultiBoot Express preferences

When the Express Boot menu is displayed during startup, you have the following choices:

●   To specify a boot device from the Express Boot menu, select your preference within the allotted time, and then press enter.

●   To prevent the computer from defaulting to the current MultiBoot setting, press any key before the allotted time expires. The computer will not start until you select a boot device and press enter.

●   To allow the computer to start according to the current MultiBoot settings, wait for the allotted time to expire.

Using HP PC Hardware Diagnostics (UEFI) (select models only)

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

To start HP PC Hardware Diagnostics UEFI:

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

   After pressing f2, the BIOS searches three places for the HP PC Hardware Diagnostics (UEFI) tools in the following order:

   a. Connected USB drive

   NOTE: To download the HP PC Hardware Diagnostics (UEFI) tool to a USB drive, see Downloading HP PC Hardware Diagnostics (UEFI) to a USB device on page 70.

   b. Hard drive

   c. BIOS

2. Use the keyboard arrow keys to select the type of diagnostic test you want to run, and then follow the on-screen instructions.

   NOTE: If you need to stop a diagnostic test while it is running, press esc.

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

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

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

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

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

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

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

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

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

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

   – or –

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

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

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

   – or –

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

8 Using Setup Utility (BIOS) and HP PC Hardware Diagnostics (UEFI) in Ubuntu Linux

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

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

Starting Setup Utility

▲ Turn on or restart the computer. While the "Press the ESC key for Startup Menu" message is displayed in the lower-left corner of the screen, press esc. When the Startup Menu is displayed, press f10.

Using Setup Utility

Changing the language of Setup Utility

1. Start Setup Utility.
2. Use the arrow keys to select **System Configuration > Language**, and then press enter.
3. Use the arrow keys to select a language, and then press enter.
4. When a confirmation prompt with your language selected is displayed, press enter.
5. To save your change and exit Setup Utility, use the arrow keys to select **Exit > Exit Saving Changes**, and then press enter.

Your change takes effect immediately.

Navigating and selecting in Setup Utility

Setup Utility does not support the TouchPad. Navigation and selection are by keystroke.

- To choose a menu or a menu item, use the arrow keys.
- To choose an item in a list or to toggle a field—for example an Enable/Disable field—use either the arrow keys or f5 and f6.
- To select an item, press enter.
- To close a text box or return to the menu display, press esc.
- To display additional navigation and selection information while Setup Utility is open, press f1.

Displaying system information

1. Start Setup Utility.

2. Select the **Main** menu. System information such as the system time and date, and identification information about the computer is displayed.

3. To exit Setup Utility without changing any settings:

   ● Use the arrow keys to select **Exit > Ignore Changes and Exit**, and then press enter.

      -Or-

   ● Use the arrow keys to select **Exit > Exit Discarding Changes**. Click **Yes**, and then press enter.

Restoring factory default settings in Setup Utility

1. Start Setup Utility.

2. Use the arrow keys to select **Exit > Load Setup Defaults**, and then press enter.

3. When the Setup Confirmation is displayed, press enter.

4. To save your change and exit Setup Utility, use the arrow keys to select **Exit > Exit Saving Changes**, and then press enter.

The Setup Utility factory settings take effect when the computer restarts.

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

Exiting Setup Utility

● To exit Setup Utility and save your changes from the current session:

   If the Setup Utility menus are not visible, press esc to return to the menu display. Then use the arrow keys to select **Exit > Exit Saving Changes**, and then press enter.

● To exit Setup Utility without saving your changes from the current session:

   ○ Use the arrow keys to select **Exit > Ignore Changes and Exit**, and then press enter.

      -Or-

   ○ Use the arrow keys to select **Exit > Exit Discarding Changes**. Click **Yes**, and then press enter.

Using HP PC Hardware Diagnostics (UEFI)

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

To start HP PC Hardware Diagnostics UEFI:

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

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

   a. Connected USB drive

    b. BIOS

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

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

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

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

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

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

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

Option 2: Support and Drivers page—Provides downloads for a specific product for earlier and later versions

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

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

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

    – or –

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

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

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

    – or –

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

9 Specifications

Computer specifications

	Metric	U.S.
Dimensions		
Width	**31.0 cm**	12.2 in
Depth	**21.0 cm**	8.27 in
Height (non-touch)	**1.57 cm**	0.62 in
Height (touch)	**1.71 cm**	0.67 in
Weight		
Non-touch (Equipped with FHD display (no touch), M.2 SSD, fingerprint reader, webcam, no NFC, WLAN module)	**1.22 kg**	2.68 lbs
Non-touch (QHD display (no touch), M.2 SSD, fingerprint reader, webcam, no NFC, WLAN module)	**1.00 kg**	2.20 lbs
Touch (QHD display (no touch), M.2 SSD, fingerprint reader, webcam, no NFC, WLAN module)	**1.27 kg**	2.81 lbs
Input power		
Operating voltage and current	18.5 V dc @ 3.5 A - 65 W	
	– or –	
	19.0 V dc @ 4.74 A - 90 W	
Temperature		
Operating	5°C to 35°C	41°F to 95°F
Nonoperating	-20°C to 60°C	-4°F to 140°F
Relative humidity (noncondensing)		
Operating	10% to 90%	
Nonoperating	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

NOTE: Applicable product safety standards specify thermal limits for plastic surfaces. The device operates well within this range of temperatures.

35.6-cm (14.0-in) HD+ display specifications

	Metric	U.S.
Dimensions		
Height	**17.6 cm**	6.93 in
Width	**31.2 cm**	12.28 in
Diagonal	**35.7 cm**	14.06 in
Number of colors	up to 16.8 million	
Contrast ratio	200:1 (typical)	
Brightness	250 nits (typical)	
Pixel resolution		
Pitch	**0.197 × 0.197 mm**	
Format	HD+ (1600 x 900)	
Configuration	RGB vertical stripe	
Backlight	LED	
Character display	80 × 25	
Total power consumption	3.46 W	
Viewing angle	±65° horizontal, ±50° vertical (typical)	

35.6-cm (14.0-in) FHD display specifications

	Metric	U.S.
Dimensions		
Height	**17.6 cm**	6.93 in
Width	**31.2 cm**	12.28 in
Diagonal	**35.7 cm**	14.06 in
Number of colors	up to 16.8 million	
Contrast ratio	200:1 (typical)	
Brightness	300 nits (typical)	
Pixel resolution		
Pitch	**0.197 × 0.197 mm**	
Format	HD+ (1920 x 1080)	
Configuration	RGB vertical stripe	
Backlight	LED	
Character display	80 × 25	
Total power consumption	3.46 W	
Viewing angle	±65° horizontal, ±50° vertical (typical)	

M.2 solid-state drive specifications

	128-GB*	180-GB*	256-GB*
Dimensions			
Height	1 mm	1 mm	1 mm
Length	50.8 mm	50.8 mm	50.8 mm
Width	28.9 mm	28.9 mm	28.9 mm
Weight	< 10 g	< 10 g	< 10 g
Interface type	ATA-7	ATA-7	ATA-7
Transfer rate			
Sequential Read	Up to 160 MB/s	Up to 380 MB/s	Up to 490 MB/s
Random Read	Up to 128 MB/s	Up to 180 MB/s	Up to 480 MB/s
Sequential Write	Up to 115 MB/s	Up to 80 MB/s	Up to 250 MB/s
Random Write	Up to 16 MB/s	Up to 40 MB/s	Up to 100 MB/s
Ready time, Maximum (to not busy)	2.0 s	4.0 s	4.0 s
Access times			
Logical	0.1 ms	0.1 ms	0.1
Total logical sectors	117,905,264	352,533,296	500,118,192
Operating temperature			
Operating	0° to 70℃ (32°F to 158°F)	0° to 70℃ (32°F to 158°F)	0° to 70℃ (32°F to 158°F)
Non-operating	-55° to 95℃ (-67°F to 203°F)	-40° to 80°C (-40°F to 176°F)	-40° to 80°C (-40°F to 176°F)

*1 GB = 1 billion bytes when referring to hard drive storage capacity. Actual accessible capacity is less.

NOTE: Certain restrictions and exclusions apply. Contact technical support for details.

10   Backup and recovery in Windows 8.1

To protect your information, use Windows backup and restore utilities to back up individual files and folders, back up your entire hard drive, create system repair media (select models only) by using the installed optical drive (select models only) or an optional external optical drive, or create system restore points. In case of system failure, you can use the backup files to restore the contents of your computer.

From the Start screen, type `restore`, click **Settings**, and then select from the list of displayed options.

NOTE: For detailed instructions on various backup and restore options, perform a search for these topics in Windows Help and Support.

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

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. For more information, see Windows Help and Support.

Backing up your information

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

For more information on the Windows backup features, see Windows Help and Support.

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 Automatic Repair to fix problems that might prevent Windows from starting correctly.

- f11 recovery tools: 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 models only), you must purchase Windows operating system media to reboot the computer and repair the operating system. For additional information, see Using Windows operating system media (purchased separately) on page 87.

Using the Windows recovery tools

To recover information you previously backed up, see Windows Help and Support for steps on restoring files and folders.

To recover your information using Automatic 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 Recovery Image partition and the Windows partition.

   From the Start screen, type `file`, and then click **File Explorer**.

   – or –

   From the Start screen, type `pc`, and then select **This PC**.

   NOTE: If the Windows partition and the Recovery Image partition are not listed, you must recover your operating system and programs using the Windows operating system DVD and the *Driver Recovery* media (both purchased separately). For additional information, see Using Windows operating system media (purchased separately) on page 87.

3. If the Windows partition and the Recovery Image partition are listed, restart the computer by pressing and holding the shift key while clicking **Restart**.

4. Select **Troubleshoot**, then select **Advanced Options**, and then select **Startup Repair**.

5. Follow the on-screen instructions.

NOTE: For additional information on recovering information using the Windows tools, perform a search for these topics in Windows Help and Support.

Using f11 recovery tools

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 Recovery Image partition: From the Start screen, type `pc`, and then select **This PC**.

   NOTE: If the Recovery Image partition is not listed, you must recover your operating system and programs using the Windows operating system media and the *Driver Recovery* media (both purchased separately). For additional information, see Using Windows operating system media (purchased separately) on page 87.

3. If the Recovery Image partition is listed, restart the computer, and then press esc while the "Press the ESC key for Startup Menu" message is displayed at the bottom of the screen.

4. Press f11 while the "Press <F11> for recovery" message is displayed on the screen.

5. Follow the on-screen instructions.

Using Windows operating system media (purchased separately)

To order a Windows operating system DVD, contact support. See the *Worldwide Telephone Numbers* booklet included with the computer. You can also find contact information from the HP website. Go to http://www.hp.com/support, select your country or region, and follow the on-screen instructions.

⚠ **CAUTION:** Using a Windows operating system media 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 a full install of the operating system using a Windows operating system DVD:

📝 **NOTE:** This process takes several minutes.

1. If possible, back up all personal files.

2. Insert the Windows operating system DVD into the optical drive, and then restart the computer.

3. When prompted, press any keyboard key.

4. Follow the on-screen instructions.

After the installation is completed:

1. Eject the Windows operating system media and then insert the *Driver Recovery* media.

2. Install the Hardware Enabling Drivers first, and then install Recommended Applications.

Using Windows Refresh or Windows Reset

When your computer is not working properly and you need to regain system stability, the Windows Refresh option allows you to start fresh and keep what is important to you.

The Windows Reset option allows you to perform detailed reformatting of your computer, or remove personal information before you give away or recycle your computer. For more information on these features, see Windows Help and Support.

Using HP Software Setup

HP Software Setup can be used to reinstall drivers or select software that has been corrupted or deleted from the system.

1. From the Start screen, type `HP Software Setup`.

2. Open HP Software Setup.

3. Follow the on-screen directions to reinstall drivers or select software.

11 Backup and recovery in Windows 7

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 88.

2. Use Windows Backup and Recovery tools to perform the following:

   - Back up individual files and folders
   - Back up your entire hard drive (select models only)
   - Create system repair discs (select models only) with 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 89.

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 models 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 models only), or create system repair media (select models 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 models 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 models 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 92.

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 models 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 92.

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 models 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 92.

3. If the HP Recovery partition is listed, restart the computer, and then press esc while the "Press the ESC key for Startup Menu" message is displayed at the bottom of the screen.

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 models 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.

12 Backing up, restoring, and recovering

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

Creating a restore image

The Recovery Media Creator allows you to repair or restore the computer to its original factory state. You can create restore image DVDs using DVD±RW optical drives. You can also create a restore image on a USB device.

⚠ **CAUTION:** Using Restore completely erases hard drive contents and reformats the hard drive. All files you have created and any software installed on the computer are permanently removed. The recovery tool reinstalls the original operating system and programs and drivers that were installed at the factory. Software, drivers, and updates not installed at the factory must be manually reinstalled. Your data files and personal files must be restored from a backup.

📝 **NOTE:** HP recommends that you create the restore image in the event of a system failure.

Creating restore image on DVDs

You can use Recovery Media Creator or the restore creation software to create a set of system restore discs using blank, writable DVDs (DVD-R or DVD+R). HP recommends using blank DVD+R discs from a manufacturer you trust, because these recovery DVDs are so important. HP recommends having up to 3 blank DVD+R discs available for the restore image. If you use more than one disc, label each disc with the order in which it was created. Numbering the discs will ensure that you have them in the correct order if you need to restore the computer to its original factory state.

To create restore DVDs using the Recovery Media Creator:

1. Click the **Dash Home** icon at the far left of the top panel, and then enter `recovery` in the Search box. Select **Recovery Media Creator**.

2. On the **Please choose media type** window, click the **DVD** icon.

3. Follow the on-screen instructions.

To create restore DVDs using the restore creation software:

1. Click the **System menu** icon at the far right of the top panel, and then click **System Settings > Backup**.

2. Select **Storage** from the panel on the left side of the window, click the down-arrow next to **Backup Location**, select the Local Folder, and then click the **Choose Folder** button. Select the DVD from the panel on the left side of the window, and click **OK**.

3. Select **Overview** from the panel on the left side of the window, and then click **Back Up Now**.

4. Follow the on-screen instructions.

Creating a restore image on a USB device

📝 **NOTE:** Be sure AC power is connected to the computer before you begin this procedure.

You can use Recovery Media Creator or the restore creation software to create a system restore image on a USB device. Verify the exact amount of free space on your storage device before you begin the creation process. For most models, you will need at least 4GB of free space on the USB device. However, depending on the drivers and software installed on your computer, you may need slightly more than 4 GB of space. **HP recommends that you use an 8 GB USB device or above for best results.**

📝 **IMPORTANT:** Remember to insert your USB device into the USB port on the computer before starting this procedure.

To create a restore USB device using the Recovery Media Creator:

1. Click the **Dash Home** icon at the far left of the top panel, and then enter `recovery` in the Search box. Select **Recovery Media Creator**.

2. On the **Please choose media type** window, click the **USB** icon.

3. Follow the on-screen instructions.

To create a restore USB device using restore creation software:

1. Click the **System menu** icon at the far right of the top panel, and then click **System Settings > Backup**.

2. Select **Storage** from the panel on the left side of the window, click the down-arrow next to **Backup Location**, select the Local Folder, and then click the **Choose Folder** button. Select the USB device from the panel on the left side of the window, and click **OK**.

3. Select **Overview** from the panel on the left side of the window, and then click **Backup Now**.

4. Follow the on-screen instructions.

Restoring the original factory state

📝 **NOTE:** Be sure AC power is connected to the computer before you begin this procedure.

To use the restore image on DVDs or a USB device to restore your computer to the original factory state:

1. If possible, back up all personal files.

2. Shut down the computer.

3. Be sure the first restore DVD or USB device is connected to the computer.

4. Restart the computer.

5. When system boots, press F9 to enter boot device selection, and then select the device containing the restore image.

6. Click **Restore entire hard drive**, and then click **Continue**.

7. Follow the on-screen instructions.

📝 **NOTE:** If you are unable to boot (start up) your computer, and you did not create a system recovery disc, you must purchase an *Ubuntu Operating System* DVD to reinstall the operating system. For additional information, refer to the *Worldwide Telephone Numbers* booklet.

Backing up your data files

The Deja Dup Restore Tool allows you to back up your data files.

You should back up your data files on a regular schedule to maintain a current backup. You can manually back up your information to an optional external drive, a network drive, or discs. Be sure to back up your data at the following times:

- At regularly scheduled times
- Before the computer is repaired or restored
- Before you add or modify hardware or software

To back up your home directory files using the Deja Dup Backup Tool:

NOTE: Before you back up your information, be sure you have designated a location to save the backup files.

1. Click the **System menu** icon at the far right of the top panel, and then click **System Settings > Backup** icon.

2. Select **Folders** from the panel on the left side of the window, and beneath **Folders to back up**, select the folders to back up.

3. Select **Storage** from the panel on the left side of the window, click the down-arrow next to **Backup Location**, and select your designated back up location from the drop-down list.

4. Select **Overview** from the panel on the left side of the window, and then click **Back Up Now**.

NOTE: You may also back up to cloud storage services provided by various companies. For a small fee, they will keep your backup for you. A cloud service is recommended, since it is an easy way to keep your backups off-site and safe.

Restoring your data files

The Deja Dup Restore Tool allows you to restore your data files.

NOTE: Be sure AC power is connected to the computer before you begin this procedure.

To restore your data from your backup files:

1. Click the **System menu** icon at the far right of the top panel, and then click **System Settings > Backup** icon.

2. Click **Restore**, select the location of the backup files and the folder name, and then click **Forward**.

3. Under **Restore from When?**, select the date of the files to be restored, and then click **Forward**.

4. Select the location and folder where the files are to be restored, and then click **Forward**.

5. Follow the instructions on the screen.

6. Click **Restore** to start restoring the files, or click **Cancel** to cancel the operation.

13   Statement of memory volatility

The purpose of this chapter is to provide general information regarding nonvolatile memory in HP Business PCs. This chapter also provides general instructions for restoring nonvolatile memory that can contain personal data after the system has been powered off and the hard drive has been removed.

HP Business PC products that use Intel®-based or AMD®-based system boards contain volatile DDR memory. The amount of nonvolatile memory present in the system depends upon the system configuration. Intel-based and AMD-based system boards contain nonvolatile memory subcomponents as originally shipped from HP, assuming that no subsequent modifications have been made to the system and assuming that no applications, features, or functionality have been added to or installed on the system.

Following system shutdown and removal of all power sources from an HP Business PC system, personal data can remain on volatile system memory (DIMMs) for a finite period of time and will also remain in nonvolatile memory. Use the steps below to remove personal data from the PC, including the nonvolatile memory found in Intel-based and AMD-based system boards.

1. Follow steps (a) through (j) below to restore the nonvolatile memory that can contain personal data. Restoring or reprogramming nonvolatile memory that does not store personal data is neither necessary nor recommended.

    a. Turn on or restart the computer, and then press esc while the "Press the ESC key for Startup Menu" message is displayed at the bottom of the screen.

    > **NOTE:** If the system has a BIOS administrator password, enter the password at the prompt.

    b. Select **Main**, select **Restore Defaults**, and then select **Yes** to load defaults.

    c. Select the **Security** menu, select **Restore Security Level Defaults**, and then select **Yes** to restore security level defaults.

    d. If an asset or ownership tag is set, select the **Security** menu and scroll down to the **Utilities** menu. Select **System IDs**, and then select **Asset Tracking Number**. Clear the tag, and then make the selection to return to the prior menu.

    e. If a DriveLock password is set, select the **Security** menu, and scroll down to **Hard Drive Tools** under the **Utilities** menu. Select **Hard Drive Tools**, select **DriveLock**, then uncheck the checkbox for **DriveLock password on restart**. Select **OK** to proceed.

    f. If an Automatic DriveLock password is set, select the **Security** menu, scroll down to **Hard Drive Tools** under the **Utilities** menu. Select **Hard Drive Tools**, scroll down to **Automatic DriveLock**, then select the desired hard drive and disable protection. At the automatic drive lock warning screen, select **Yes** to continue. Repeat this procedure if more than one hard drive has an Automatic DriveLock password.

    g. Select the **Main** menu, and then select **Reset BIOS Security to factory default**. Click **Yes** at the warning message.

    h. Select the **Main** menu, select **Save Changes and Exit**, select **Yes** to save changes and exit, and then select **Shutdown**.

i. Reboot the system. If the system has a Trusted Platform Module (TPM) and/or fingerprint reader, one or two prompts will appear—one to clear the TPM and the other to Reset Fingerprint Sensor; press or tap F1 to accept or F2 to reject.

j. Remove all power and system batteries for at least 24 hours.

2. Complete one of the following:

   ● Remove and retain the storage drive.

   – or –

   ● Clear the drive contents by using a third party utility designed to erase data from an SSD.

   – or –

   ● Clear the contents of the drive by using the following BIOS Setup Secure Erase command option steps:

IMPORTANT: If you clear data using Secure Erase, it cannot be recovered.

   a. Turn on or restart the computer, and then press esc while the "Press the ESC key for Startup Menu" message is displayed at the bottom of the screen.

   b. Select the **Security** menu and scroll down to the **Utilities** menu.

   c. Select **Hard Drive Tools**.

   d. Under **Utilities**, select **Secure Erase**, select the hard drive storing the data you want to clear, and then follow the on-screen instructions to continue.

   – or –

   ● Clear the contents of the drive by using the following Disk Sanitizer command steps:

IMPORTANT: If you clear data using Disk Sanitizer, it cannot be recovered.

NOTE: The amount of time it takes for Disk Sanitizer to run can take several hours. Plug the computer into an AC outlet before starting.

   a. Turn on or restart the computer, and then press esc while the "Press the ESC key for Startup Menu" message is displayed at the bottom of the screen.

   b. Select the **Security** menu and scroll down to the **Utilities** menu.

   c. Select **Hard Drive Tools**.

   d. Under **Utilities**, select **Disk Sanitizer**, select the hard drive storing the data you want to clear, and then follow the on-screen instructions to continue.

Nonvolatile memory usage

Nonvolatile Memory Type	Amount (Size)	Does this memory store customer data?	Does this memory retain data when power is removed?	What is the purpose of this memory?	How is data input into this memory?	How is this memory write-protected?
HP Sure Start flash (select models only)	2 MBytes	No	Yes	Provides protected backup of critical System BIOS code, EC firmware, and critical PC configuration data for select platforms that support HP Sure Start. For more information, see Using HP Sure Start (select models only) on page 101.	Data cannot be written to this device via the host processor. The content is managed solely by the HP Sure Start Embedded Controller.	This memory is protected by the HP Sure Start Embedded Controller.
Real Time Clock (RTC) battery backed-up CMOS configuration memory	256 Bytes	No	Yes	Stores system date and time and noncritical data.	RTC battery backed-up CMOS is programmed using the Computer Setup (BIOS), or changing the Microsoft Windows date & time.	This memory is not write-protected.
Controller (NIC) EEPROM	64 KBytes (not customer accessible)	No	Yes	Stores NIC configuration and NIC firmware.	NIC EEPROM is programmed using a utility from the NIC vendor that can be run from DOS.	A utility is required to write data to this memory and is available from the NIC vendor. Writing data to this ROM in an inappropriate manner will render the NIC non-functional.
DIMM Serial Presence Detect (SPD) configuration data	256 Bytes per memory module, 128 Bytes programmable (not customer accessible)	No	Yes	Stores memory module information.	DIMM SPD is programmed by the memory vendor.	Data cannot be written to this memory when the module is installed in a PC. The specific write-protection method varies by memory vendor.
System BIOS	4 MBytes to 5 MBytes	Yes	Yes	Stores system BIOS code and PC configuration data.	System BIOS code is programmed at the factory. Code is updated when the system BIOS is updated. Configuration data and settings are input using the Computer Setup (BIOS) or a custom utility.	**NOTE:** Writing data to this ROM in an inappropriate manner can render the PC non-functional. A utility is required for writing data to this memory and is available on the HP website; go to http://www.hp.com/support, and select your country. Select **Drivers &**

Nonvolatile Memory Type	Amount (Size)	Does this memory store customer data?	Does this memory retain data when power is removed?	What is the purpose of this memory?	How is data input into this memory?	How is this memory write-protected?
						Downloads, and then follow the on-screen instructions.
Intel Management Engine Firmware (present in only specific ZBook and EliteBook models. For more information, go to http://www.hp.com/support, and select your country. Select **Drivers & Downloads**, and then follow the on-screen instructions.)	1.5 MBytes or 5 MBytes	Yes	Yes	Stores Management Engine Code, Settings, Provisioning Data and iAMT third-party data store.	Management Engine Code is programmed at the factory. Code is updated via Intel secure firmware update utility. Unique Provisioning Data can be entered at the factory or by an administrator using the Management Engine (MEBx) setup utility. The third party data store contents can be populated by a remote management console or local applications that have been registered by an administrator to have access to the space.	The Intel chipset is configured to enforce hardware protection to block all direct read/write access to this area. An Intel utility is required for updating the firmware. Only firmware updates digitally signed by Intel can be applied using this utility.
Bluetooth flash	2 Mbit	No	Yes	Stores Bluetooth configuration and firmware.	Bluetooth flash is programmed at the factory. Tools for writing data to this memory are not publicly available but can be obtained from the silicon vendor.	A utility is required for writing data to this memory and is made available through newer versions of the driver whenever the flash requires an upgrade.
802.11 WLAN EEPROM	4 Kbit to 8 Kbit	No	Yes	Stores configuration and calibration data.	802.11 WLAN EEPROM is programmed at the factory. Tools for writing data to this memory are not made public.	A utility is required for writing data to this memory and is typically not made available to the public unless a firmware upgrade is necessary to address a unique issue.
Web camera	64 Kbit	No	Yes	Stores webcam configuration and firmware.	Webcam memory is programmed using a utility from the device manufacturer that can be run from Windows.	A utility is required for writing data to this memory and is typically not made available to the public unless a firmware upgrade is necessary to address a unique issue.
Fingerprint reader	512 KByte flash	Yes	Yes	Stores fingerprint templates.	Fingerprint reader memory is programmed by user enrollment in HP ProtectTools Security Manager.	Only a digitally signed application can make the call to write to the flash.

Questions and answers

1. **How can the BIOS settings be restored (returned to factory settings)?**

    📝 **IMPORTANT:** Restore defaults does not securely erase any data on your hard drive. See question and answer 6 for steps to securely erase data.

    Restore defaults does not reset the Custom Secure Boot keys. See question and answer 7 for information about resetting the keys.

    a. Turn on or restart the computer, and then press esc while the "Press the ESC key for Startup Menu" message is displayed at the bottom of the screen.

    b. Select **Main**, and then select **Restore defaults**.

    c. Follow the on-screen instructions.

    d. Select **Main**, select **Save Changes and Exit**, and then follow the on-screen instructions.

2. **What is a UEFI BIOS, and how is it different from a legacy BIOS?**

    The Unified Extensible Firmware Interface (UEFI) BIOS is an industry-standard software interface between the platform firmware and an operating system (OS). It is a replacement for the older BIOS architecture, but supports much of the legacy BIOS functionality.

    Like the legacy BIOS, the UEFI BIOS provides an interface to display the system information and configuration settings and to change the configuration of your computer before an OS is loaded. BIOS provides a secure run-time environment that supports a Graphic User Interface (GUI). In this environment, you can use either a pointing device (Touchscreen, TouchPad, pointing stick, or USB mouse) or the keyboard to navigate and make menu and configuration selections. The UEFI BIOS also contains basic system diagnostics.

    The UEFI BIOS provides functionality beyond that of the legacy BIOS. In addition, the UEFI BIOS works to initialize the computer's hardware before loading and executing the OS; the run-time environment allows the loading and execution of software programs from storage devices to provide more functionality, such as advanced hardware diagnostics (with the ability to display more detailed system information) and advanced firmware management and recovery software.

    HP has provided options in Computer Setup (BIOS) to allow you to run in legacy BIOS, if required by the operating system. Examples of this requirement would be if you upgrade or downgrade the OS.

3. **Where does the UEFI BIOS reside?**

    The UEFI BIOS resides on a flash memory chip. A utility is required to write to the chip.

4. **What kind of configuration data is stored on the DIMM Serial Presence Detect (SPD) memory module? How would this data be written?**

    The DIMM SPD memory contains information about the memory module, such as size, serial number, data width, speed/timing, voltage, and thermal information. This information is written by the module manufacturer and stored on an EEPROM. This EEPROM cannot be written to when the memory module is installed in a PC. Third-party tools do exist that can write to the EEPROM when the memory module is not installed in a PC. Various third-party tools are available to read SPD memory.

5. **What is meant by "Restore the nonvolatile memory found in Intel-based system boards"?**

    This message relates to clearing the Real Time Clock (RTC) CMOS memory that contains PC configuration data.

6. **How can the BIOS security be reset to factory defaults and data erased?**

IMPORTANT: Resetting will result in the loss of information.

These steps will not reset Custom Secure Boot Keys. See question and answer 7 for information about resetting the keys.

   a. Turn on or restart the computer, and then press esc while the "Press the ESC key for Startup Menu" message is displayed at the bottom of the screen.

   b. Select **Main**, and then select **Reset BIOS Security to Factory Default**.

   c. Follow the on-screen instructions.

   d. Select **Main**, select **Save Changes and Exit**, and then follow the on-screen instructions.

7. **How can the Custom Secure Boot Keys be reset?**

Secure Boot is a feature to ensure that only authenticated code can start on a platform. If you enabled Secure Boot and created Custom Secure Boot Keys, simply disabling Secure Boot will not clear the keys. You must also select to clear the Custom Secure Boot Keys. Use the same Secure Boot access procedure you used to create the Custom Secure Boot Keys, but make the selection to clear or delete all Secure Boot Keys.

   a. Turn on or restart the computer, and then press esc while the "Press the ESC key for Startup Menu" message is displayed at the bottom of the screen.

   b. Select the **Security** menu, select **Secure Boot Configuration**, and then follow the on-screen instructions.

   c. At the **Secure Boot Configuration** window, select **Secure Boot**, select **Clear Secure Boot Keys**, and then follow the on-screen instructions to continue.

Using HP Sure Start (select models only)

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

14 Power cord set requirements

The wide-range input feature of the computer permits it to operate from any line voltage from 100 to 120 volts AC, or from 220 to 240 volts AC.

The 3-conductor power cord set included with the computer meets the requirements for use in the country or region where the equipment is purchased.

Power cord sets for use in other countries and regions must meet the requirements of the country or region where the computer is used.

Requirements for all countries

The following requirements are applicable to all countries and regions:

- The length of the power cord set must be at least **1.5 m** (5.0 ft) and no more than **2.0 m** (6.5 ft).

- All power cord sets must be approved by an acceptable accredited agency responsible for evaluation in the country or region where the power cord set will be used.

- The power cord sets must have a minimum current capacity of 10 amps and a nominal voltage rating of 125 or 250 V AC, as required by the power system of each country or region.

- The appliance coupler must meet the mechanical configuration of an EN 60 320/IEC 320 Standard Sheet C13 connector for mating with the appliance inlet on the back of the computer.

Requirements for specific countries and regions

Country/region	Accredited agency	Applicable note number
Australia	EANSW	1
Austria	OVE	1
Belgium	CEBC	1
Canada	CSA	2
Denmark	DEMKO	1
Finland	FIMKO	1
France	UTE	1
Germany	VDE	1
Italy	IMQ	1
Japan	METI	3
The Netherlands	KEMA	1
Norway	NEMKO	1
The People's Republic of China	COC	5
South Korea	EK	4

Country/region	Accredited agency	Applicable note number
Sweden	SEMKO	1
Switzerland	SEV	1
Taiwan	BSMI	4
The United Kingdom	BSI	1
The United States	UL	2

1. The flexible cord must be Type HO5VV-F, 3-conductor, 1.0-mm² conductor size. Power cord set fittings (appliance coupler and wall plug) must bear the certification mark of the agency responsible for evaluation in the country or region where it will be used.

2. The flexible cord must be Type SPT-3 or equivalent, No. 18 AWG, 3-conductor. The wall plug must be a two-pole grounding type with a NEMA 5-15P (15 A, 125 V) or NEMA 6-15P (15 A, 250 V) configuration.

3. The appliance coupler, flexible cord, and wall plug must bear a "T" mark and registration number in accordance with the Japanese Dentori Law. The flexible cord must be Type VCT or VCTF, 3-conductor, 1.00-mm² conductor size. The wall plug must be a two-pole grounding type with a Japanese Industrial Standard C8303 (7 A, 125 V) configuration.

4. The flexible cord must be Type RVV, 3-conductor, 0.75-mm² conductor size. Power cord set fittings (appliance coupler and wall plug) must bear the certification mark of the agency responsible for evaluation in the country or region where it will be used.

5. The flexible cord must be Type VCTF, 3-conductor, 0.75-mm² conductor size. Power cord set fittings (appliance coupler and wall plug) must bear the certification mark of the agency responsible for evaluation in the country or region where it will be used.

15 Recycling

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

HP encourages customers to recycle used electronic hardware, HP original print cartridges, and rechargeable batteries. For more information about recycling programs, see the HP Web site at http://www.hp.com/recycle.

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