Table of contents

1 Produc	t features	. 1
	Overview	. 1
	Front components	2
	Top components	. 2
	Infrared (IR) webcam (optional)	. 2
	Full High Definition (FHD) webcam (optional)	3
	Side components	. 3
	Rear components	4
	Bottom components	. 4
	Labels	. 5
2 Illustra	ited parts catalog	. 6
	System parts	6
	Covers	7
	Boards	. 8
	Mass storage devices	9
	Processors and memory modules	10
	Cables and adapters	10
	Keyboards and mice	11
3 Routine	e care, SATA drive guidelines, and disassembly preparation	12
	Electrostatic discharge information	12
	Generating static	13
	Preventing electrostatic damage to equipment	13
	Personal grounding methods and equipment	14
	Grounding the work area	14
	Recommended materials and equipment	14
	Operating guidelines	15
	Routine care	15
	General cleaning safety precautions	15
	Cleaning the Computer Case	16
	Cleaning the keyboard	16
	Cleaning the display	16
	Cleaning the mouse	16
	Service considerations	17
	Tools and software requirements	17

Screws	17
Cables and connectors	17
Hard drives	17
Lithium coin cell battery	. 18
Cable management	. 18

4 Removal and Rep	lacement Procedures	19
Preparing	g to disassemble the computer	19
Removin	g the rear port cover	19
Stands		20
	Recline stand	20
	Adjustable height stand	20
Access pa	anel	21
Drives		22
	Hard drive	23
	Optical drive	24
	M.2 solid-state drive	26
Memory		28
Battery .		30
WLAN me	odule	31
Power bu	Itton and fingerprint reader boards	33
Heat sink	٢	35
Processo	r	38
Webcam	module	40
VESA mo	unting bracket/fan assembly	43
Power su	ıpply	45
Rear I/O	cover	47
I/O brack	et	48
Hard driv	e cage	49
System b	oard	50
System b	oard callouts	53
Audio bo	ard	54
Speakers	·	55
Display p	anel	56
Antennas	5	59
Connecti	ng cables	61

5 Computer Setup (F10) Utility	62
Computer Setup (F10) Utilities	62
Using Computer Setup (F10) Utilities	. 62
Computer Setup–Main	. 64

Computer Setup—Security	66
Computer Setup—Advanced	
Computer Setup—UEFI Drivers	73
Recovering the Configuration Settings	73
6 Using HP PC Hardware Diagnostics (UEFI)	
Downloading HP PC Hardware Diagnostics (UEFI) to a USB device	
7 Troubleshooting without diagnostics	
Safety and comfort	76
Before you call for technical support	76
Helpful hints	
Solving general problems	
Solving power problems	82
Solving hard drive problems	83
Solving media card reader problems	
Solving audio problems	86
Solving printer problems	88
Solving keyboard and mouse problems	89
Solving hardware installation problems	91
Solving network problems	
Solving memory problems	95
Solving CD-ROM and DVD problems	96
Solving USB flash drive problems	
Solving front panel component problems	
Solving Internet access problems	100
Solving software problems	101
8 Backing up, restoring, and recovering	102
Backing up, restoring, and recovering in Windows 10	102
Creating recovery media and backups	102
Creating HP Recovery media (select products only)	102
Using Windows tools	103
Restore and recovery	104
Recovering using HP Recovery Manager	104
What you need to know before you get started	104
Using the HP Recovery partition (select products only)	105
Using HP Recovery media to recover	105
Changing the computer boot order	106
Removing the HP Recovery partition (select products only)	106

Backing up, restoring, and recovering in Windows 7	106
Creating recovery media and backups	107
Guidelines	107
Creating recovery media with HP Recovery Disc Creator	107
Creating recovery media	107
Backing up your information	108
Performing a system recovery	108
Using the Windows recovery tools	109
Using f11 recovery tools (select products only)	110
Using Windows 7 operating system media	110
9 POST error messages and diagnostic front panel LEDs and audible codes	112
POST numeric codes and text messages	112
Interpreting system validation diagnostic front panel LEDs and audible codes	117
10 Password security and resetting CMOS	119
Resetting the password jumper	119
Clearing and resetting the BIOS	121
Appendix A Power cord set requirements	122
General requirements	122
Japanese power cord requirements	122
Country-specific requirements	123
Appendix B Statement of memory volatility	124
Nonvolatile memory usage	126
Questions and answers	128
Using HP Sure Start (select models only)	129
Appendix C Specifications	130
Index	131

1 Product features

Overview



NOTE: For the latest manuals on this product, go to <u>http://www.hp.com/support</u>. Select **Find your product**, and then follow the on-screen instructions.

This product employs electronic labeling for indication of regulatory mark or statement. See <u>Labels</u> on page 5 for the operation to display.

Front components



Top components

Infrared (IR) webcam (optional)



	Component			Component
		Front View		
1	Webcam light		4	IR webcam
2	IR light		5	Rear webcam adjustment wheel
3	Full High Definition (FHD) webcam			
		Top view		
6	Digital microphones			
		Rear view		
7	Webcam light		8	FHD webcam

Full High Definition (FHD) webcam (optional)

_	<u> 00</u>
-	
	Component
	Front view
1	Webcam light
2	FHD webcam
	Top view
3	Digital microphones

Side components



Component		Component	
1	Optical disc drive (optional)	4	Headphone jack
2	Optical disc drive eject button (optional)	5	Fingerprint reader (Touch models only)
3	Audio-out (headphone) jack		

Rear components



Component		Component	
1	DisplayPort	5	RJ-45 (network) jack
2	HDMI port	6	USB 3.1 Type-A ports (2)
3	USB 3.1 Type-A ports (2)	7	Stereo audio-out jack
4	Power connector	8	Security cable slot

Bottom components



Labels

3.

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

- **IMPORTANT:** All labels described in this section will be located under the stand or affixed to the bottom of the computer.
 - 1. Microsoft[®] Certificate of Authenticity label (select models only prior to Windows 8)—Contains the Windows Product Key. You may need the Product Key to update or troubleshoot the operating system.
 - 2. Service label—Provides important information to identify your computer. When contacting support, you will probably be asked for the serial number, and possibly for the product number or the model number. Locate these numbers before you contact support.





Component	
(1)	Serial number
(2)	Product number
(3)	Warranty period
Serial number label	

2 Illustrated parts catalog

Component appearance may vary depending on model.

NOTE: HP continually improves and changes product parts. For complete and current information on supported parts for your computer, go to http://partsurfer.hp.com, select your country or region, and then follow the on-screen instructions.

System parts



(7)

(8)

Heat sink

Discrete

UMA

ltem	Description	
(9)	Power supply	
	180 W, for use in Intel models with UMA graphics	
	210 W, for use in AMD models with discrete AMD graphics	
(10)	Camera, pop-up	
*	Display (not illustrated)	
	Touch models	
	Non-touch models	
* not illu:	strated	

Covers



ltem	Description
(1)	Rear cover (main)
(2)	Rear I/O cover
(3)	Rear port cover
•	Card reader cover (for use in models without a card reader)
•	Optical drive cover (for use in models without an optical drive)
•	Webcam cover (for use in models without a webcam)
•	VESA cover (for use in models with out a stand; not illustrated)

* not illustrated

Boards

	v
ltem	
	Description
(1)	Description System board
(1) (2)	Description System board Power button board
(1) (2) (3)	Description System board Power button board Audio board Audio board
(1) (2) (3) (4)	Description System board Power button board Audio board Fingerprint reader board
(1) (2) (3) (4)	Description System board Power button board Audio board Fingerprint reader board WLAN modules (not illustrated)
(1) (2) (3) (4)	Description System board Power button board Audio board Fingerprint reader board WLAN modules (not illustrated) Intel Dual Band Wireless-AC 7265 NV
(1) (2) (3) (4)	Description System board Power button board Audio board Fingerprint reader board WLAN modules (not illustrated) Intel Dual Band Wireless-AC 7265 NV Intel 3168 ac 1x1 +Bluetooth 4.2LE M.2 non-vPro PCI-e+USB WW with 2 antennas
(1) (2) (3) (4)	Description System board Power button board Audio board Fingerprint reader board WLAN modules (not illustrated) Intel Dual Band Wireless-AC 7265 NV Intel 3168 ac 1x1 +Bluetooth 4.2LE M.2 non-vPro PCI-e+USB WW with 2 antennas Intel 8265 ac 2x2 +Bluetooth 4.2 M.2 non-vPro PCI-e+USB WW with 2 antennas
 (1) (2) (3) (4) · 	Description System board Power button board Audio board Fingerprint reader board WLAN modules (not illustrated) Intel Dual Band Wireless-AC 7265 NV Intel 3168 ac 1x1 +Bluetooth 4.2LE M.2 non-vPro PCI-e+USB WW with 2 antennas Intel 8265 ac 2x2 +Bluetooth 4.2 M.2 vPro PCI-e+USB WW with 2 antennas Intel 8265 ac 2x2 +Bluetooth 4.2 vPro PCI-e+USB WW with 2 antennas
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* not illustrated

Mass storage devices

Description	
Optical drive	
DVD±RW drive	
DVD-ROM drive	
Primary hard drive, 2.5-inch	
1 TB, 5400 rpm, hard drive/hybrid SSD drive	
1 TB, 7200 rpm	
500 GB, 5400 rpm, hard drive/hybrid SSD drive	
500 GB, 7200 rpm hard drive, self-encrypting (SED)	
500 GB, 7200 rpm hard drive	
500 GB, 5400 rpm hard drive, FIPS	
Primary solid-state drive, 2.5-inch	
512-GB solid-state drive, FIPS 140-2	
512-GB solid-state drive, self-encrypting (SED)	
256-GB solid-state drive, self-encrypting (SED)	
256-GB solid-state drive	
256-GB solid-state drive, FIPS 140-2	
128-GB solid-state drive	
M.2 solid-state drive	
1-TB solid-state drive, 2280SS, NVMe, TLC	
512-GB solid-state drive, 2280SS, PCIe, NVMe, TLC	
512-GB solid-state drive, 2280SS, NVMe, TLC	
256-GB solid-state drive, 2280SS, PCIe, NVMe, TLC	
256-GB solid-state drive, 2280SS, NVMe, TLC	
128-GB solid-state drive, 2280SS, PCIe, NVMe, TLC	

Processors and memory modules

Description	
Intel Processors (include replacement thermal material)	
Intel Core i7-7700 (3.6-GHz)	
Intel Core i5-7600 (3.5-GHz)	
Intel Core i5-7500 (3.4-GHz)	
Intel Core i3-7320 (4.1-GHz)	
Intel Core i3-7300 (4.0-GHz)	
Intel Core i3-7100 (3.9-GHz)	
Intel Core i7-6700 (3.4-GHz)	
Intel Core i5-6600 (3.3-GHz)	
Intel Core i5-6500 (3.2-GHz)	
Intel Core i3-6100 (3.7-GHz)	
Intel Pentium G4620 (3.7-GHz)	
Intel Pentium G4600 (3.6-GHz)	
Intel Pentium G4560 (3.5-GHz)	
Intel Celeron G3950 (3.0-GHz)	
Intel Celeron G3930 (2.9-GHz)	
Memory modules (SODIMM; DDR4-2400)	
16-GB	
8-GB	
4-GB	

Cables and adapters

Description	
LVDS (display) cable, 289 mm	
Power button cable, 110 mm	
Combination, fingerprint reader, power, touch cable	
Side audio jack cable, 200 mm	
Backlight cables, 110 mm	
BOE	
LGD	
SCD	
LGD	

Description	
DisplayPort cable, 1.8 m	
DVI-DVI monitor cable	
Antennas (wireless, for use with WLAN modules)	
Adapters	
DisplayPort to DVI	
DisplayPort to HDMI 1.4	
DisplayPort to VGA	
USB to serial port	
USB-C to USB 3.0	

Keyboards and mice

Description	
Keyboard	
USB, slim	
Wireless with mouse	
USB business slim, grey	
USB business slim, antimicrobial	
Mouse	
USB, washable	
USB, grey	
USB, hardened	
USB, antimicrobial	
USB, optical	
USB, laser	

3 Routine care, SATA drive guidelines, and disassembly preparation

This chapter provides general service information for the computer. Adherence to the procedures and precautions described in this chapter is essential for proper service.

CAUTION: When the computer is plugged into an AC power source, voltage is always applied to the system board. You must disconnect the power cord from the power source before opening the computer to prevent system board or component damage.

Electrostatic discharge information

A sudden discharge of static electricity from your finger or other conductor can destroy static-sensitive devices or microcircuitry. Often the spark is neither felt nor heard, but damage occurs. An electronic device exposed to electrostatic discharge (ESD) may not appear to be affected at all and can work perfectly throughout a normal cycle. The device may function normally for a while, but it has been degraded in the internal layers, reducing its life expectancy.

Networks built into many integrated circuits provide some protection, but in many cases, the discharge contains enough power to alter device parameters or melt silicon junctions.

Generating static

The following table shows that:

- Different activities generate different amounts of static electricity.
- Static electricity increases as humidity decreases.

	Relative Humidity		
Event	55%	40%	10%
Walking across carpet	7,500 V	15,000 V	35,000 V
Walking across vinyl floor	3,000 V	5,000 V	12,000 V
Motions of bench worker	400 V	800 V	6,000 V
Removing DIPs from plastic tube	400 V	700 V	2,000 V
Removing DIPs from vinyl tray	2,000 V	4,000 V	11,500 V
Removing DIPs from Styrofoam	3,500 V	5,000 V	14,500 V
Removing bubble pack from PCB	7,000 V	20,000 V	26,500 V
Packing PCBs in foam-lined box	5,000 V	11,000 V	21,000 V
These are then multi-packaged inside plastic tubes, trays, or Styrofoam.			

NOTE: 700 volts can degrade a product.

Preventing electrostatic damage to equipment

Many electronic components are sensitive to ESD. Circuitry design and structure determine the degree of sensitivity. The following packaging and grounding precautions are necessary to prevent damage to electric components and accessories.

- To avoid hand contact, transport products in static-safe containers such as tubes, bags, or boxes.
- Protect all electrostatic parts and assemblies with conductive or approved containers or packaging.
- Keep electrostatic sensitive parts in their containers until they arrive at static-free stations.
- Place items on a grounded surface before removing them from their container.
- Always be properly grounded when touching a sensitive component or assembly.
- Avoid contact with pins, leads, or circuitry.
- Place reusable electrostatic-sensitive parts from assemblies in protective packaging or conductive foam.

Personal grounding methods and equipment

Use the following equipment to prevent static electricity damage to equipment:

- Wrist straps are flexible straps with a maximum of one-megohm ± 10% resistance in the ground cords. To provide proper ground, a strap must be worn snug against bare skin. The ground cord must be connected and fit snugly into the banana plug connector on the grounding mat or workstation.
- **Heel straps/Toe straps/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 them on both feet with a maximum of one-megohm ± 10% resistance between the operator and ground.

Static Shielding Protection Levels			
Method	Voltage		
Antistatic plastic	1,500		
Carbon-loaded plastic	7,500		
Metallized laminate	15,000		

Grounding the work area

To prevent static damage at the work area, use the following precautions:

- Cover the work surface with approved static-dissipative material. Provide a wrist strap connected to the work surface and properly grounded tools and equipment.
- Use static-dissipative mats, foot straps, or air ionizers to give added protection.
- Handle electrostatic sensitive components, parts, and assemblies by the case or PCB laminate. Handle them only at static-free work areas.
- Turn off power and input signals before inserting and removing connectors or test equipment.
- Use fixtures made of static-safe materials when fixtures must directly contact dissipative surfaces.
- Keep work area free of nonconductive materials such as ordinary plastic assembly aids and Styrofoam.
- Use field service tools, such as cutters, screwdrivers, and vacuums, that are conductive.

Recommended materials and equipment

Materials and equipment that are recommended for use in preventing static electricity include:

- Antistatic tape
- Antistatic smocks, aprons, or sleeve protectors
- Conductive bins and other assembly or soldering aids
- Conductive foam
- Conductive tabletop workstations with ground cord of one-megohm +/- 10% resistance
- Static-dissipative table or floor mats with hard tie to ground
- Field service kits
- Static awareness labels
- Wrist straps and footwear straps providing one-megohm +/- 10% resistance

- Material handling packages
- Conductive plastic bags
- Conductive plastic tubes
- Conductive tote boxes
- Opaque shielding bags
- Transparent metallized shielding bags
- Transparent shielding tubes

Operating guidelines

To prevent overheating and to help prolong the life of the computer:

- Keep the computer away from excessive moisture, direct sunlight, and extremes of heat and cold.
- Operate the computer on a sturdy, level surface. Leave a 10.2-cm (4-inch) clearance on all vented sides of the computer and above the display to permit the required airflow.
- Never restrict the airflow into the computer by blocking any vents or air intakes. Do not place the keyboard, with the keyboard feet down, directly against the front of the desktop unit as this also restricts airflow.
- Occasionally clean the air vents on all vented sides of the computer. Lint, dust, and other foreign matter can block the vents and limit the airflow. Be sure to unplug the computer before cleaning the air vents.
- Never operate the computer with the cover or side panel removed.
- Do not stack computers on top of each other or place computers so near each other that they are subject to each other's re-circulated or preheated air.
- If the computer is to be operated within a separate enclosure, intake and exhaust ventilation must be provided on the enclosure, and the same operating guidelines listed above will still apply.
- Keep liquids away from the computer and keyboard.
- Never cover the ventilation slots with any type of material.
- Install or enable power management functions of the operating system or other software, including sleep states.

Routine care

General cleaning safety precautions

- 1. Never use solvents or flammable solutions to clean the computer.
- 2. Never immerse any parts in water or cleaning solutions; apply any liquids to a clean cloth and then use the cloth on the component.
- 3. Always unplug the computer when cleaning with liquids or damp cloths.
- **4.** Always unplug the computer before cleaning the keyboard, mouse, or air vents.
- 5. Disconnect the keyboard before cleaning it.
- 6. Wear safety glasses equipped with side shields when cleaning the keyboard.

Cleaning the Computer Case

Follow all safety precautions in <u>General cleaning safety precautions on page 15</u> before cleaning the computer.

To clean the computer case, follow the procedures described below:

- To remove light stains or dirt, use plain water with a clean, lint-free cloth or swab.
- For stronger stains, use a mild dishwashing liquid diluted with water. Rinse well by wiping it with a cloth or swab dampened with clear water.
- For stubborn stains, use isopropyl (rubbing) alcohol. No rinsing is needed as the alcohol will evaporate quickly and not leave a residue.
- After cleaning, always wipe the unit with a clean, lint-free cloth.
- Occasionally clean the air vents on the computer. Lint and other foreign matter can block the vents and limit the airflow.

Cleaning the keyboard

Follow all safety precautions in <u>General cleaning safety precautions on page 15</u> before cleaning the keyboard.

To clean the tops of the keys or the keyboard body, follow the procedures described in <u>Cleaning the Computer</u> <u>Case on page 16</u>.

When cleaning debris from under the keys, review all rules in <u>General cleaning safety precautions on page 15</u> before following these procedures:

CAUTION: Use safety glasses equipped with side shields before attempting to clean debris from under the keys.

- Visible debris underneath or between the keys may be removed by vacuuming or shaking.
- Canned, pressurized air may be used to clean debris from under the keys. Caution should be used as too much air pressure can dislodge lubricants applied under the wide keys.
- If you remove a key, use a specially designed key puller to prevent damage to the keys. This tool is available through many electronic supply outlets.

CAUTION: Never remove a wide leveled key (like the space bar) from the keyboard. If these keys are improperly removed or installed, the keyboard may not function properly.

• Cleaning under a key may be done with a swab moistened with isopropyl alcohol and squeezed out. Be careful not to wipe away lubricants necessary for proper key functions. Use tweezers to remove any fibers or dirt in confined areas. Allow the parts to air dry before reassembly.

Cleaning the display

Wipe the screen with a clean cloth moistened with water or with a towelette designed for cleaning displays. Do not use sprays or aerosols directly on the screen; the liquid may seep into the housing and damage a component. Never use solvents or flammable liquids on the display.

Cleaning the mouse

Before cleaning the mouse, ensure that the power to the computer is turned off.

- Clean the mouse ball by first removing the retaining plate and the ball from the housing. Pull out any debris from the ball socket and wipe the ball with a clean, dry cloth before reassembly.
- To clean the mouse body, follow the procedures in <u>Cleaning the Computer Case on page 16</u>.

Service considerations

Listed below are some of the considerations that you should keep in mind during the disassembly and assembly of the computer.

Tools and software requirements

To service the computer, you need the following:

- Torx T-15 screwdriver
- Torx T-15 screwdriver with small diameter shank (for certain front bezel removal)
- Flat-bladed screwdriver (may sometimes be used in place of the Torx screwdriver)
- Phillips #2 screwdriver
- Diagnostics software
- Tamper-resistant T-15 wrench

Screws

The screws used in the computer are not interchangeable. They may have standard or metric threads and may be of different lengths. If an incorrect screw is used during the reassembly process, it can damage the unit. HP strongly recommends that all screws removed during disassembly be kept with the part that was removed, then returned to their proper locations.

A CAUTION: Metric screws have a black finish. U.S. screws have a silver finish and are used on hard drives only.

CAUTION: As each subassembly is removed from the computer, it should be placed away from the work area to prevent damage.

Cables and connectors

Most cables used throughout the unit are flat, flexible cables. These cables must be handled with care to avoid damage. Apply only the tension required to seat or unseat the cables during insertion or removal from the connector. Handle cables by the connector whenever possible. In all cases, avoid bending or twisting the cables, and ensure that the cables are routed in such a way that they cannot be caught or snagged by parts being removed or replaced.

CAUTION: When servicing this computer, ensure that cables are placed in their proper location during the reassembly process. Improper cable placement can damage the computer.

Hard drives

Handle hard drives as delicate, precision components, avoiding all physical shock and vibration. This applies to failed drives as well as replacement spares.

- If a drive must be mailed, place the drive in a bubble-pack mailer or other suitable protective packaging and label the package "Fragile: Handle With Care."
- Do not remove hard drives from the shipping package for storage. Keep hard drives in their protective packaging until they are actually mounted in the CPU.
- Avoid dropping drives from any height onto any surface.
- If you are inserting or removing a hard drive, turn off the computer. Do not remove a hard drive while the computer is on or in standby mode.

- Before handling a drive, ensure that you are discharged of static electricity. While handling a drive, avoid touching the connector. For more information about preventing electrostatic damage, refer to <u>Electrostatic discharge information on page 12</u>
- Do not use excessive force when inserting a drive.
- Avoid exposing a hard drive to liquids, temperature extremes, or products that have magnetic fields such as displays or speakers.

Lithium coin cell battery

The battery that comes with the computer provides power to the real-time clock and has a minimum lifetime of about three years.

See the appropriate removal and replacement chapter for the chassis you are working on in this guide for instructions on the replacement procedures.

WARNING! This computer contains a lithium battery. There is a risk of fire and chemical burn if the battery is handled improperly. Do not disassemble, crush, puncture, short external contacts, dispose in water or fire, or expose it to temperatures higher than 140°F (60°C). Do not attempt to recharge the battery.

NOTE: Batteries, battery packs, and accumulators should not be disposed of together with the general household waste. In order to forward them to recycling or proper disposal, please use the public collection system or return them to HP, their authorized partners, or their agents.

Cable management

Always follow good cable management practices when working inside the computer.

- Keep cables away from major heat sources like the heat sink.
- Do not jam cables on top of expansion cards or memory modules. Printed circuit cards like these are not designed to take excessive pressure on them.
- Keep cables clear of sliding or moveable parts to prevent them from being cut or crimped when the parts are moved.
- When folding a flat ribbon cable, never fold to a sharp crease. Sharp creases may damage the wires.
- Some flat ribbon cables come prefolded. Never change the folds on these cables.
- Do not bend any cable sharply. A sharp bend can break the internal wires.
- Always position the cables to lay properly by themselves.

4 Removal and Replacement Procedures

The following sections provide information about disassembling various components of the computer.

Preparing to disassemble the computer

To avoid injury and equipment damage, always complete the following steps in order, when opening the HP All-in-One.

- 1. Remove all media from the computer.
- 2. Shut down the computer.
- **3.** After the system has completely shut down, disconnect the power adapter from the back of the computer.
- 4. If a cable lock is installed on the rear of the unit, remove the lock.
- 5. Disconnect all other attached cables from the back of the computer.
- 6. Place the computer face down on a soft flat surface. HP recommends that you set down a blanket, towel, or other soft cloth to protect the screen surface from scratches or other damage.

🕂 WARNING! Beware of sharp edges inside the chassis.

Removing the rear port cover

- 1. Prepare the computer for disassembly (see <u>Preparing to disassemble the computer on page 19</u>).
- 2. If the security lock screws are secured, use a T15 tamper-resistant Torx security screwdriver to remove both screws (1).
- 3. Slide the rear port cover retainer tabs toward each other (2) to release the port cover.
- 4. Pull the port cover (3) toward the bottom and off the computer.



Stands

Two stands are available for the computer:

- <u>Recline stand</u>
- <u>Adjustable height stand</u>

Recline stand

To remove the stand:

- 1. Prepare the computer for disassembly (see <u>Preparing to disassemble the computer on page 19</u>).
- 2. Remove the rear port cover, if it is installed. For instructions, see <u>Removing the rear port cover</u> on page 19.
- **3.** Press the release latch under the stand **(1)**.
- 4. Lift the stand up (2), and then pull the stand hooks out of the computer (3).



Adjustable height stand

To remove the stand:

- 1. Prepare the computer for disassembly (see <u>Preparing to disassemble the computer on page 19</u>).
- 2. Remove the rear port cover, if it is installed. For instructions, see <u>Removing the rear port cover</u> on page 19.
- **3.** Press the release latch under the stand **(1)**.

4. Lift the stand up (2), and then pull the stand hooks out of the computer (3).



Access panel

The computer has one main rear access panel that allows access to internal components.

To remove the access panel:

- 1. Prepare the computer for disassembly (see <u>Preparing to disassemble the computer on page 19</u>).
- 2. Remove the rear port cover (see <u>Removing the rear port cover on page 19</u>).
- **3.** Remove the stand (see <u>Stands on page 20</u>).
- 4. Pull up the notches (1) of the access panel, and then lift the access panel off the computer (2).



To replace the access panel, reverse the removal procedures.

Drives

Description
Optical drive (does not include bezel)
DVD±RW drive
DVD-ROM drive
Primary hard drive, 2.5-inch (not illustrated)
1 TB, 5400 rpm, hard drive/hybrid SSD drive
1 TB, 7200 rpm
500 GB, 5400 rpm, hard drive/hybrid SSD drive
500 GB, 7200 rpm hard drive, self-encrypting (SED)
500 GB, 7200 rpm hard drive
500 GB, 5400 rpm hard drive, FIPS
Primary solid-state drive, 2.5-inch
512-GB solid-state drive, FIPS 140-2
512-GB solid-state drive, self-encrypting (SED)
256-GB solid-state drive, self-encrypting (SED)
256-GB solid-state drive
256-GB solid-state drive, FIPS 140-2
128-GB solid-state drive
M.2 solid-state drive
1-TB solid-state drive, 2280SS, NVMe, TLC
512-GB solid-state drive, 2280SS, PCIe, NVMe, TLC
512-GB solid-state drive, 2280SS, NVMe, TLC
256-GB solid-state drive, 2280SS, PCIe, NVMe, TLC
256-GB solid-state drive, 2280SS, NVMe, TLC
128-GB solid-state drive, 2280SS, PCIe, NVMe, TLC

Hard drive

The 2.5 inch primary hard drive is installed on the right side of the computer on top of the optical disc drive (ODD).

- 1. Prepare the computer for disassembly (see <u>Preparing to disassemble the computer on page 19</u>).
- 2. Remove the rear port cover (see <u>Removing the rear port cover on page 19</u>).
- **3.** Remove the stand (see <u>Stands on page 20</u>).
- 4. Remove the access panel (see <u>Access panel on page 21</u>).
- 5. Pull the hard drive latch away from the hard drive to release the drive (1).
- 6. Slide the hard drive toward the edge of the computer and lift the hard drive out of the drive cage (2).



7. Remove the four mounting screws from the 2.5 inch hard drive. Be sure to keep the screws together with the blue rubber grommets to use to install a replacement drive.



To install a hard drive, reverse the disassembly instructions.