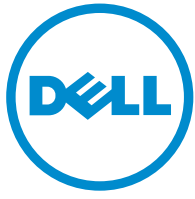
XPS 8910
Service Manual

Computer Model: XPS 8910
Regulatory Model: D24M
Regulatory Type: D24M001



Notes, cautions, and warnings

NOTE: A NOTE indicates important information that helps you make better use of your computer.

CAUTION: A CAUTION indicates either potential damage to hardware or loss of data and tells you how to avoid the problem.

WARNING: A WARNING indicates a potential for property damage, personal injury, or death.

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Before working inside your computer

NOTE: The images in this document may differ from your computer depending on the configuration you ordered.

Before you begin

1 Save and close all open files and exit all open applications.

2 Shut down your computer.

The shut-down instruction varies depending on the operating system installed on your computer.

- Windows 10: Click **Start** → **Power** → **Shut down**.
- Windows 8.1: On the **Start** screen, click the power icon → **Shut down**.
- Windows 7: Click **Start** → **Shut down**.

NOTE: If you are using a different operating system, see the documentation of your operating system for shut-down instructions.

3 Disconnect your computer and all attached devices from their electrical outlets.

4 Disconnect all cables such as telephone cables, network cables, and so on, from your computer.

5 Disconnect all attached devices and peripherals, such as keyboard, mouse, monitor, and so on, from your computer.

6 Remove any media card and optical disc from your computer, if applicable.

7 After the computer is unplugged, press and hold the power button for 5 seconds to ground the system board.

Safety instructions

Use the following safety guidelines to protect your computer from potential damage and ensure your personal safety.

WARNING: Before working inside your computer, read the safety information that shipped with your computer. For more safety best practices, see the Regulatory Compliance home page at www.dell.com/regulatory_compliance.

WARNING: Disconnect all power sources before opening the computer cover or panels. After you finish working inside the computer, replace all covers, panels, and screws before connecting to the electrical outlet.

CAUTION: To avoid damaging the computer, ensure that the work surface is flat and clean.

CAUTION: To avoid damaging the components and cards, handle them by their edges, and avoid touching pins and contacts.

CAUTION: You should only perform troubleshooting and repairs as authorized or directed by the Dell technical assistance team. Damage due to servicing that is not authorized by Dell is not covered by your warranty. See the safety instructions that shipped with the product or at www.dell.com/regulatory_compliance.

CAUTION: Before touching anything inside your computer, ground yourself by touching an unpainted metal surface, such as the metal at the back of the computer. While you work, periodically touch an unpainted metal surface to dissipate static electricity, which could harm internal components.

CAUTION: When you disconnect a cable, pull on its connector or on its pull tab, not on the cable itself. Some cables have connectors with locking tabs or thumb-screws that you must disengage before disconnecting the cable. When disconnecting cables, keep them evenly aligned to avoid bending any connector pins. When connecting cables, ensure that the ports and connectors are correctly oriented and aligned.

CAUTION: Press and eject any installed card from the media-card reader.

Recommended tools

The procedures in this document may require the following tools:

- Philips screwdriver

- Flat-head screwdriver
- Plastic scribe

Screw list

The following table provides the list of screws that are used for securing different components to the computer.

Component	Secured to	Screw type	Quantity
Hard drive	Hard-drive bracket	#6-32 X 1/4''	4
Hard-drive cage	Chassis	#6-32 X 1/4''	6 (two per hard-drive cage installed)
Power-supply bracket	Chassis	#6-32 X 1/4''	2
Power-supply unit	Chassis	#6-32 X 1/4''	4
Blower	Heat-sink assembly	#6-32 X 1/4''	3
Chassis fan	Chassis	#6-32 X 1/4''	1
Power button module	Top panel	#6-32 X 1/4''	1
Solid-state drive	System board	M2 X 2.5	1
Wireless card	System board	M2 X 2.5	1
Top IO panel	Chassis	#6-32 X 1/4''	4
ODD	ODD bracket	M2 x 2.5	1
System board	Chassis	#6-32 X 1/4''	8

After working inside your computer

CAUTION: Leaving stray or loose screws inside your computer may severely damage your computer.

1. Replace all screws and ensure that no stray screws remain inside your computer.
2. Connect any external devices, peripherals, or cables you removed before working on your computer.
3. Replace any media cards, discs, or any other parts that you removed before working on your computer.
4. Connect your computer and all attached devices to their electrical outlets.
5. Turn on your computer.

Technical overview

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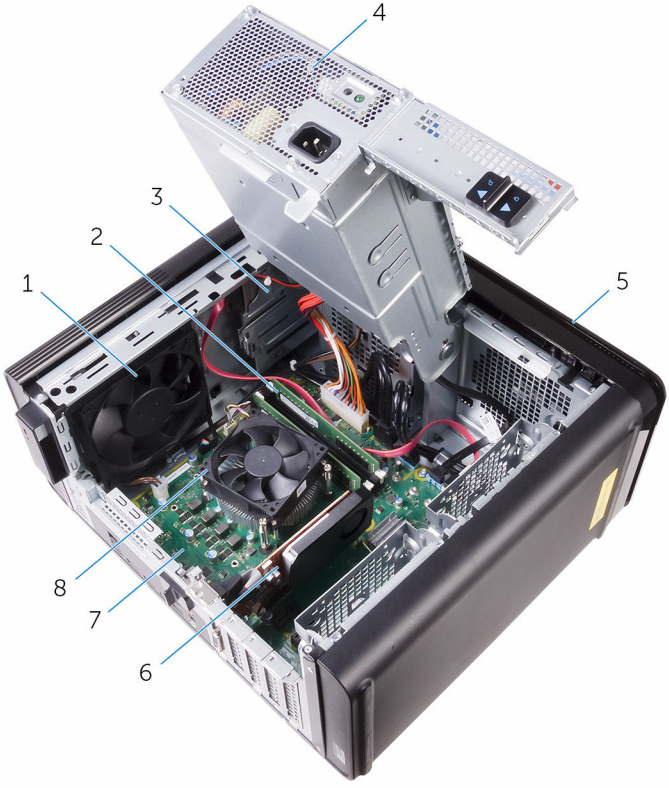
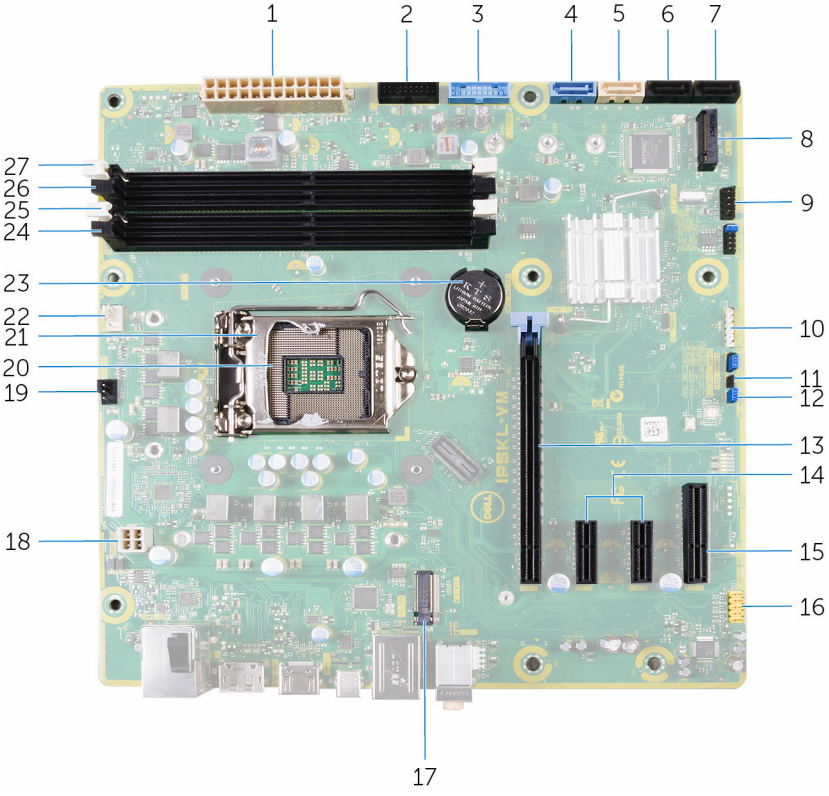
Inside view of your computer



1	chassis fan	2	memory module

3	optical drive	4	power-supply unit
5	front bezel	6	graphics card
7	system board	8	processor fan and heat-sink assembly

System-board components



1	power connector (ATX_POWER)	2	USB 2 (F_SSUSB2)
3	USB 1 (F_SSUSB1)	4	SATA 6 Gbps for optical drive (SATA1)
5	SATA 6 Gbps for hard drive (SATA2)	6	SATA 6 Gbps drive connector (SATA3)
7	SATA 6 Gbps drive connector (SATA4)	8	solid-state drive slot (M.2 SSD)

9	I/O panel (F_PANEL)	10	media card reader connector (CARD_READER)
11	CMOS-reset jumper (CMOS JUMPER)	12	password-reset jumper (PASSWORD JUMPER)
13	PCI-Express x16 card slot (SLOT1)	14	PCI-Express x1 card slots (SLOT 2 and SLOT 3)
15	PCI-Express x4 card slot (SLOT 4)	16	Top I/O and audio connector (F_audio)
17	wireless-card slot (M.2_SLOT1)	18	CPU cable (ATX_CPU)
19	chassis-fan connector (TOP_FAN)	20	processor socket
21	processor cover	22	processor-fan connector (CPU_FAN)
23	coin-cell battery (CMOS BATTERY)	24	memory-module slot (DIMM3)
25	memory-module slot (DIMM1)	26	memory-module slot (DIMM4)
27	memory-module slot (DIMM2)		

Removing the right-side cover

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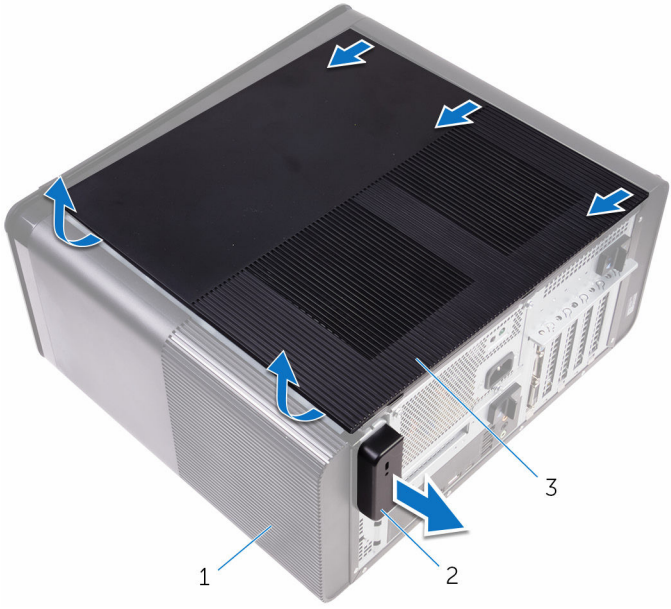
Procedure

1. Lay the computer on the left side.
2. Pull the right-side cover release latch.
3. Lift the right-side cover and then slide it towards the top of the computer.

4 Remove the right-side cover from the chassis.



1	chassis	2	right-side cover release latch
3	right-side cover		

Replacing the right-side cover

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Procedure

1. Align the tabs on the right-side cover with the slots on the chassis and snap the side-cover to lock it in place.
2. Place the computer in an upright position.

Removing the top cover

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Prerequisites

Remove the right-side cover.

Procedure

1 Place the computer in an upright position.

2 Pry and lift the top cover away from the chassis.

1 top cover 2 chassis

Replacing the top cover

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Procedure

1. Align the tabs on the top cover with the slots on the top panel.
2. Press and slide the top cover towards the back of the computer until it clicks into place.
3. Lay the computer on the left side.

Post-requisites

Replace the right-side cover.

Removing the bottom cover

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Prerequisites

Remove the right-side cover.

Procedure

1 Place the computer with the bottom facing up.

2 Pry and lift the bottom cover away from the chassis.

1 bottom cover 2 chassis

Replacing the bottom cover

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Procedure

1. Align the tabs on the bottom cover with the slots on the bottom panel.
2. Press and slide the bottom cover towards the back of the computer until it clicks into place.
3. Lay the computer on the left side.

Post-requisites

Replace the right-side cover.

Removing the front bezel

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Prerequisites

Remove the right-side cover.

Procedure

1 Place the computer in an upright position.

2 Pry the optical-drive bezel from the front bezel.

1 optical-drive bezel 2 front bezel

3 Release the front-bezel tabs sequentially from the top, one at a time by moving them away from the front panel.

4 Rotate and pull the front bezel away from the front of the computer to release the front-bezel.

1	front-bezel tabs	2	front bezel
3	front panel		

Replacing the front bezel

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Procedure

1. Align the tabs on the front bezel with the slots on the chassis.
2. Rotate the front bezel towards the computer until the front bezel tabs snap into place.
3. Snap the optical-drive bezel to the front bezel.
4. Lay the computer on the left side.

Post-requisites

Replace the right-side cover.

Removing the hard drive

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CAUTION: Hard drives are fragile. Exercise care when handling the hard drive.

CAUTION: To avoid data loss, do not remove the hard drive while the computer is in sleep or on state.

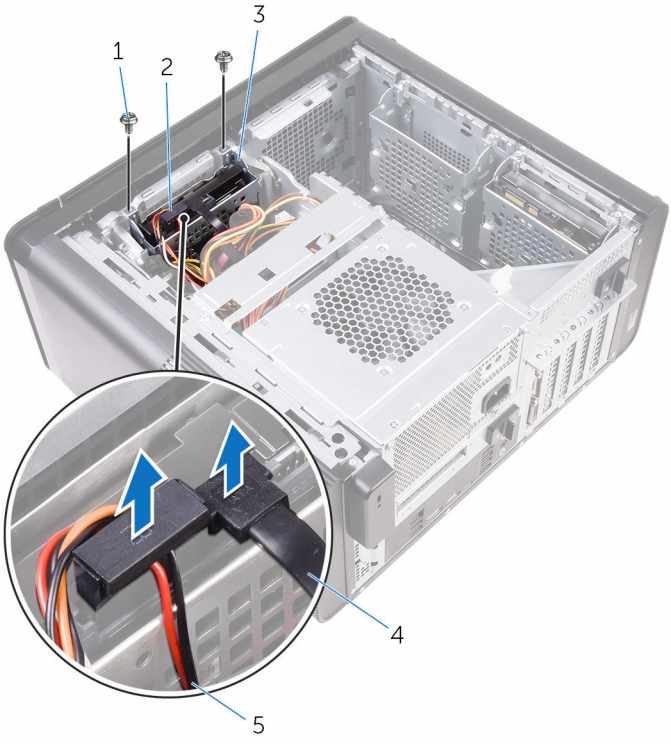
Prerequisites

Remove the right-side cover.

Procedure

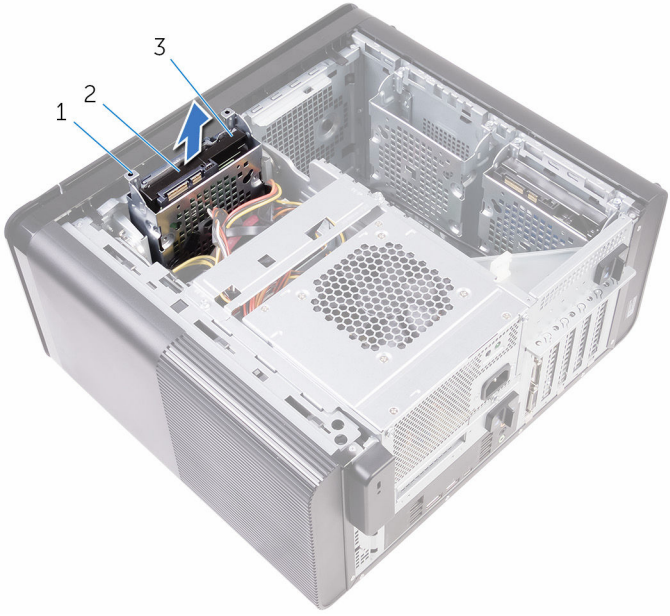
1 Disconnect the data and power cables from the hard-drive assembly.

2 Remove the screws that secure the hard-drive assembly to the hard-drive cage.



1	#6-32 X 1/4" screws (2)	2	hard-drive assembly
3	hard-drive cage	4	data cable
5	power cable		

3 Grasp the tabs and lift the hard-drive assembly off the hard-drive cage.



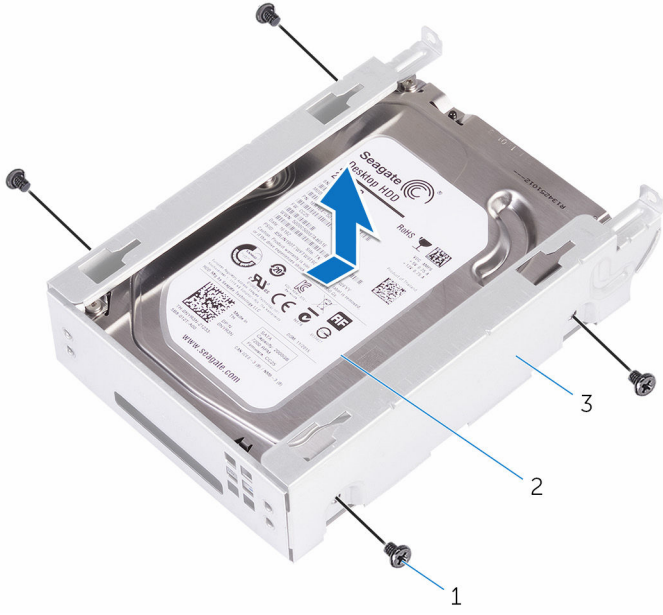
1 hard-drive cage 2 tab

3 hard-drive assembly

4 Remove the screws that secure the hard drive to the hard-drive bracket.

5 Lift the hard drive off the hard-drive bracket.

NOTE: Note the orientation of the hard drive to replace it correctly.



1 #6-32 X 1/4" screws (4) 2 hard drive

3 hard-drive bracket

Replacing the hard drive

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CAUTION: Hard drives are fragile. Exercise care when handling the hard drive.

Procedure

1. Place the hard drive into the hard-drive bracket.
2. Align the screw holes on the hard-drive bracket with the screw holes on the hard drive.
3. Replace the screws that secure the hard drive to the hard-drive bracket.
4. Insert the hard-drive assembly into the hard-drive cage.
5. Replace the screws that secure the hard-drive assembly to the hard-drive cage.
6. Connect the data and power cables to the hard-drive assembly.

Prerequisites

Replace the right-side cover.

Removing the hard-drive cage

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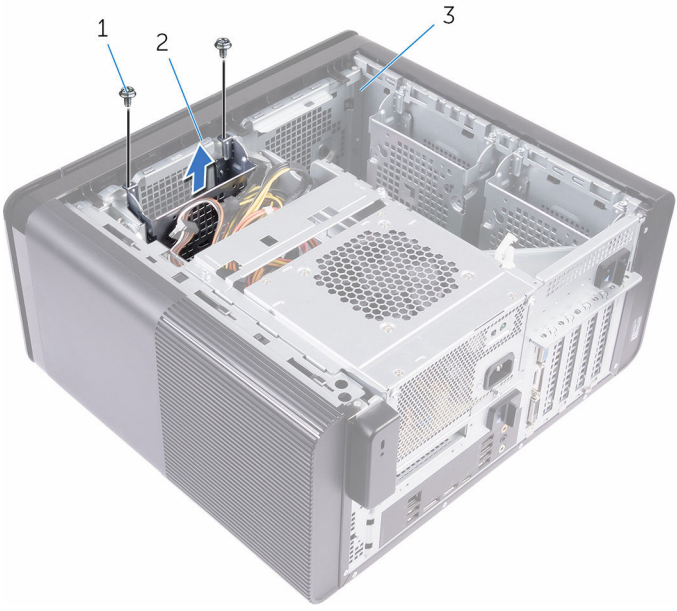
Prerequisites

1. Remove the right-side cover.
2. Remove the hard drive.

Procedure

1. Remove the screws that secure the hard-drive cage to the chassis.

2 Lift the hard-drive cage off the chassis.



1 #6-32 X 1/4" screws (2) 2 hard-drive cage

3 chassis

Replacing the hard-drive cage

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Procedure

1. Insert the hard-drive cage into its slot on the chassis.
2. Align the tabs on the cage with the tabs on the chassis.
3. Replace the screws that secure the hard-drive cage to the chassis.

Post-requisites

1. Replace the hard drive.
2. Replace the right-side cover.

Removing the solid-state drive

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CAUTION: Solid-state drives are fragile. Exercise care when handling the solid-state drive.

CAUTION: To avoid data loss, do not remove the solid-state drive while the computer is in sleep or on state.

Prerequisites

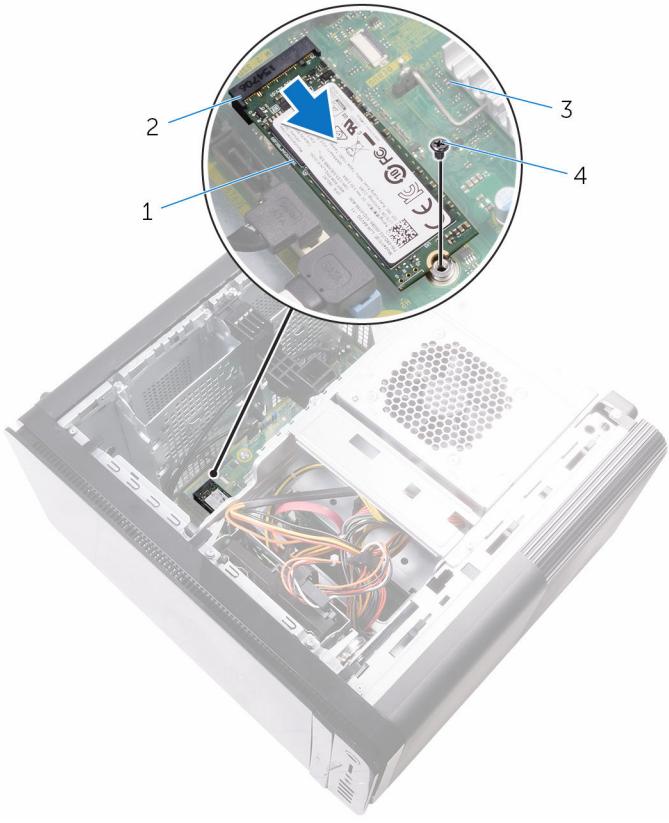
1 Remove the right-side cover.

2 Remove the full-length graphics card (if installed).

Procedure

1 Remove the screw that secures the solid-state drive to the system board.

2 Slide and lift the solid-state drive off the system board.
For more information, see "System-board components".



1	solid-state drive slot	2	solid-state drive
3	system board	4	M2 X 2.5 screw

Replacing the solid-state drive

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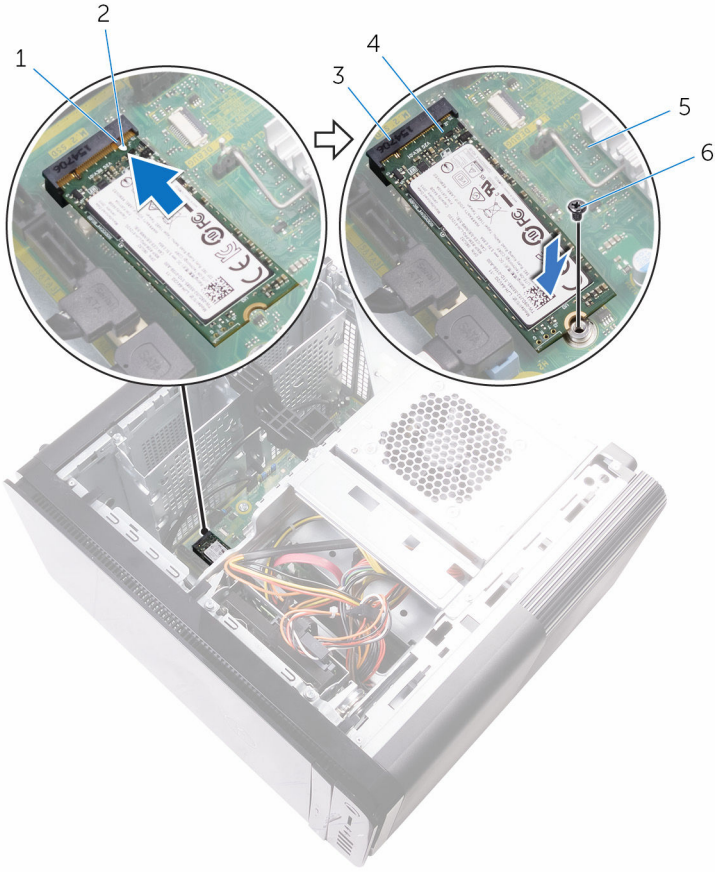
CAUTION: Solid-state drives are fragile. Exercise care when handling the solid-state drive.

Procedure

1. Align the notch on the solid-state drive with the tab on the solid-state drive slot.
2. Insert the solid-state drive at a 45-degree angle into the solid-drive drive slot.

   For more information, see "System-board components".

3 Replace the screw that secures the solid-state drive to the system board.



1	tab	2	notch
3	solid-state drive slot	4	solid-state drive
5	system board	6	M2 X 2.5 screw

Post-requisites

1 Replace the full-length graphics card (if installed).
2 Replace the right-side cover.

Removing the power-supply unit

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Prerequisites

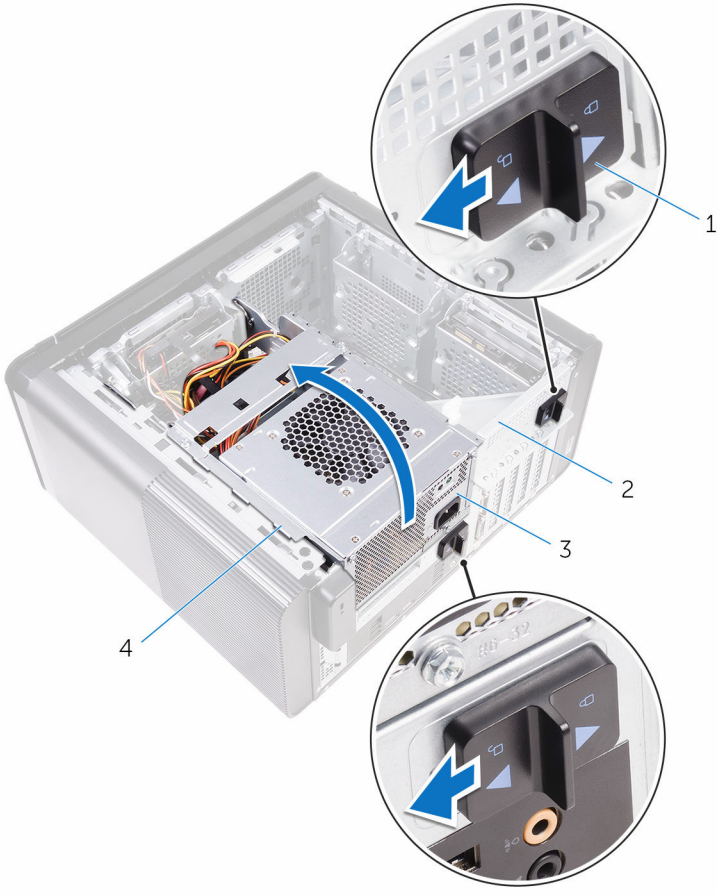
Remove the right-side cover.

Procedure

NOTE: Note the routing of all cables as you remove them so that you can reroute them correctly after you replace the power supply.

1 Slide the power supply unit release latches towards the unlock position.

2 Rotate the power-supply unit away from the power-supply unit cage.

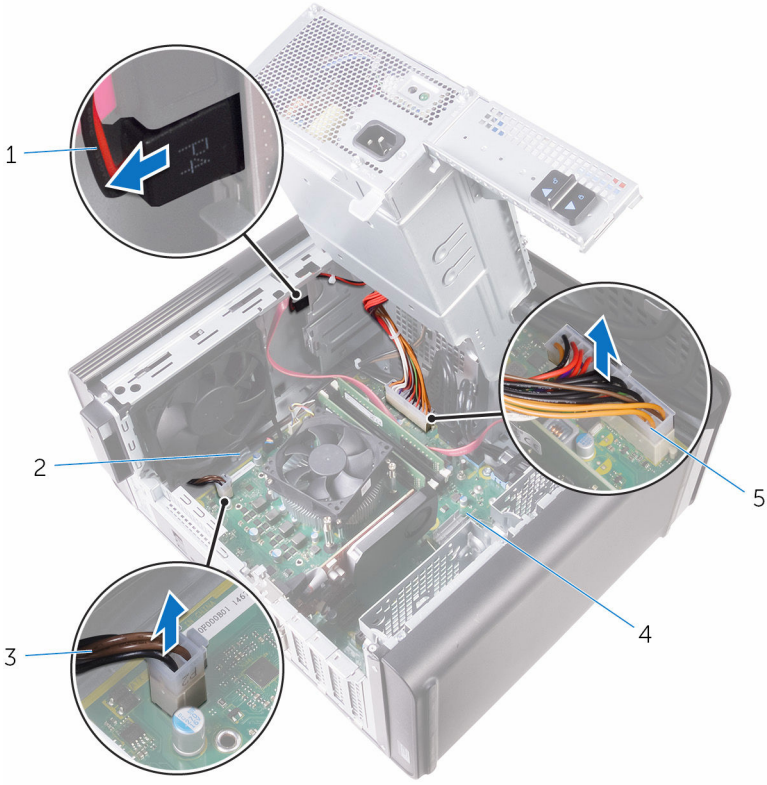


1	power-supply unit release latches (2)	2	chassis
3	power-supply unit	4	power-supply unit cage

3 Disconnect the CPU-power cable and system board power cable from the system board and the optical-drive power cable from the optical drive.

For more information, see "System-board components".

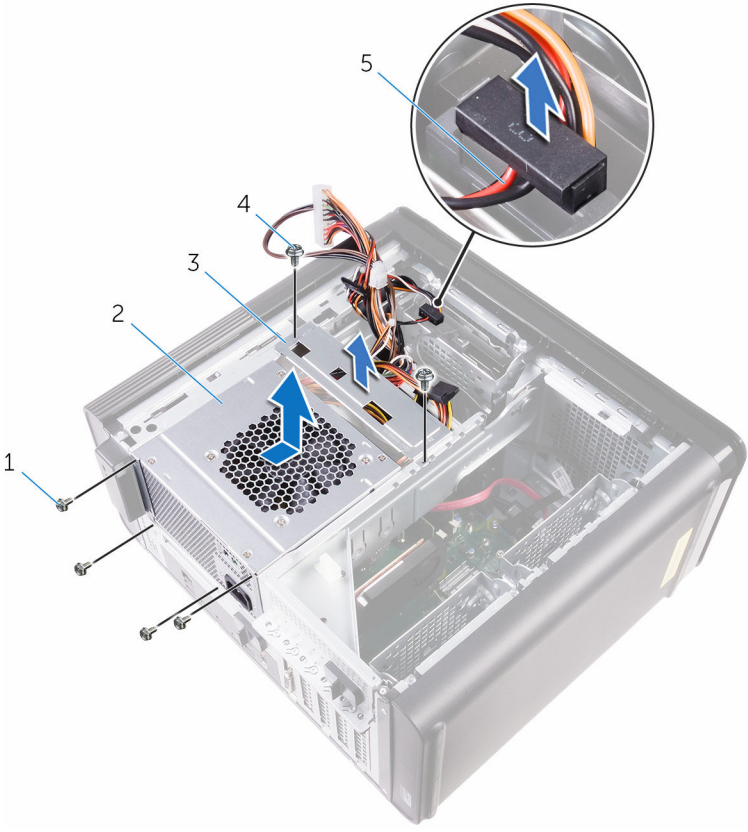
4 Disconnect the graphics-card power cables if applicable.



1	optical drive cable	2	routing guide
3	CPU cable	4	system board
5	power cable		

5 Remove the cable from the routing guide on the chassis.
6 Rotate the power-supply unit towards the chassis.
7 Disconnect the hard-disk power cable.
8 Remove the screws that secure the power-supply bracket to the chassis.
9 Remove the screws that secure the power-supply unit to the chassis.
10 Lift the power-supply bracket off the chassis.

11 Lift the power-supply unit off the chassis.



1 #6-32 X 1/4" screws (4)
2 power-supply unit
3 power-supply bracket
4 #6-32 X 1/4" screws (2)
5 hard-drive cable

Replacing the power-supply unit

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Procedure

1. Place the power supply on the power-supply unit cage.
2. Replace the screws that secure the power-supply unit to the power-supply unit cage.
3. Align the screw holes on the power-supply bracket with the screw holes on the power-supply unit cage.
4. Replace the screws that secure the power supply bracket to the power-supply unit cage.
5. Connect the hard-drive power cable.
6. Rotate the power-supply unit away from the chassis.
7. Connect the CPU-power cable, system-board power cable to the system board and the optical-drive power cable to the optical drive.

   For more information, see "System-board components".
8. Connect the graphics-card power cables if applicable.
9. Rotate the power-supply unit towards the chassis until the unit snaps into place.
10. Slide the power supply unit release latches towards the bottom of the computer to lock the release latches.

Post-requisites

Replace the right-side cover.

Removing the coin-cell battery

WARNING: Before working inside your computer, read the safety information that shipped with your computer and follow the steps in Before working inside your computer. After working inside your computer, follow the instructions in After working inside your computer. For more safety best practices, see the Regulatory Compliance home page at www.dell.com/regulatory_compliance.

CAUTION: Removing the coin-cell battery resets the BIOS setup program's settings to default. It is recommended that you note the BIOS setup program's settings before removing the coin-cell battery.

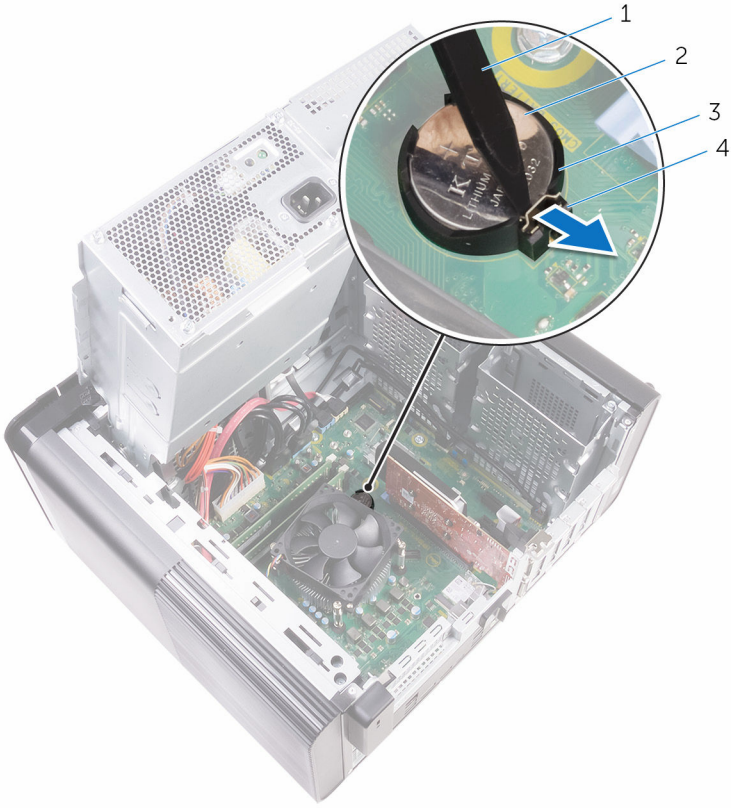
Prerequisites

1. Remove the right-side cover.
2. Follow the procedure from step 1 to step 2 in "Removing the power-supply unit".

Procedure

1. Using a plastic scribe, press the battery-release lever away from the coin-cell battery until the coin-cell battery pops up.

2 Lift the coin-cell battery out of its socket.



1	plastic scribe	2	coin-cell battery
3	coin-cell battery socket	4	battery-release lever

Replacing the coin-cell battery

WARNING: Before working inside your computer, read the safety information that shipped with your computer and follow the steps in Before working inside your computer. After working inside your computer, follow the instructions in After working inside your computer. For more safety best practices, see the Regulatory Compliance home page at www.dell.com/regulatory_compliance.

Procedure

Insert the coin-cell battery into the battery socket with the positive side facing up, and snap the battery into place.

Post-requisites

1. Follow the procedure from step 9 to step 10 in "Replacing the power-supply unit".
2. Replace the right-side cover.

Removing the chassis fan

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Prerequisites

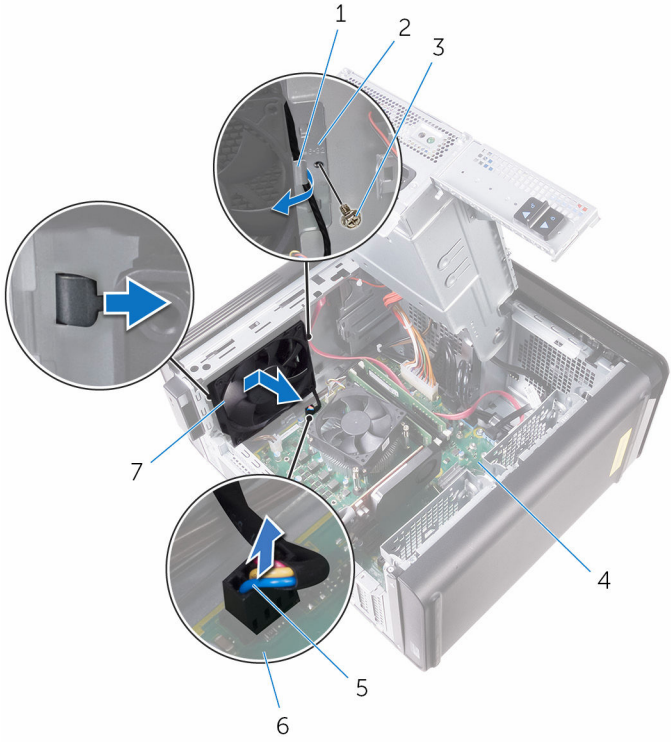
1. Remove the right-side cover.
2. Follow the procedure from step 1 to step 2 in "Removing the power-supply unit".

Procedure

1. Remove the chassis-fan cable from the routing guide on the chassis-fan bracket.
2. Disconnect the chassis-fan cable from the system board.

   For more information, see "System-board components".
3. Remove the screw that secures the chassis fan to the chassis.
4. Slide the chassis fan towards the front of the computer to release the fan from the chassis.

5 Lift the chassis fan off the chassis.



1	routing guide	2	chassis-fan bracket
3	#6-32 X 1/4" screw	4	chassis
5	chassis-fan cable	6	system board
7	chassis fan		

6 Push the rubber grommets through the holes at each corner of the fan to release the chassis-fan from the bracket.

7 Lift the chassis-fan off the chassis-fan bracket.

1 chassis-fan bracket 2 chassis-fan

Replacing the chassis fan

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Procedure

1. Align the holes on the chassis fan with the rubber grommets on the chassis-fan bracket.
2. Insert the ends of the rubber grommets through the holes at each corner of the fan.
3. Align the grommets in the fan with the holes at each corner of the chassis fan bracket and pull through until they snap into place.
4. Route the chassis-fan cable through the routing guide on the bracket.
5. Align the tab on the chassis-fan bracket with the slot on the chassis and slide the fan into position.
6. Align the screw hole on the chassis fan with the screw hole on the chassis.
7. Replace the screw that secures the chassis fan to the chassis.
8. Route the chassis-fan cable through the routing guide on the bracket.
9. Connect the chassis-fan cable to the system board.

   For more information, see "System-board components".

Post-requisites

1. Follow the procedure from step 9 to step 10 in "Replacing the power-supply unit".
2. Replace the right-side cover.

Removing the graphics card

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Prerequisites

NOTE: Your computer will be shipped with either graphics card or full-length graphics card.

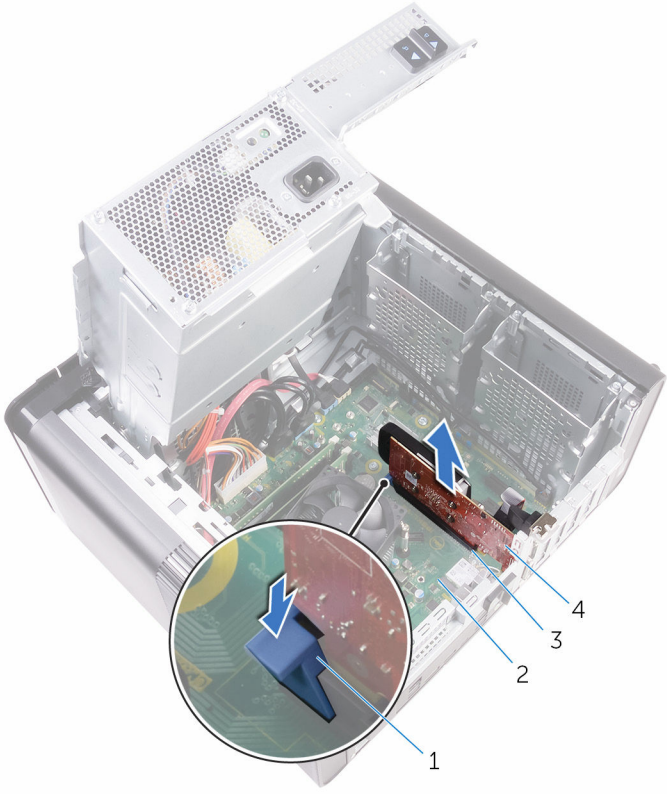
1. Remove the right-side cover.
2. Follow the procedure from step 1 to step 2 in "Removing the power-supply unit".

Procedure

1. Locate the graphics card on the system board and make note of the graphics-card slot (PCI-Express x16).

   For more information, see "System-board components".

2 Push the securing tab on the PCIe slot away from the graphics card, grasp the card by its top corner, and ease it out of the slot.



1	securing tab	2	system board
3	graphics card slot	4	graphics card

Replacing the graphics card

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Procedure

1. Locate the PCI-Express x16 card slot on the system board.

   For more information, see "System-board components".
2. Align the notch on the graphics card with the tab on the slot and snap the graphics card in place.

Post-requisites

1. Follow the procedure from step 9 to step 10 in "Replacing the power-supply unit".
2. Replace the right-side cover.

Removing the full-length graphics cards

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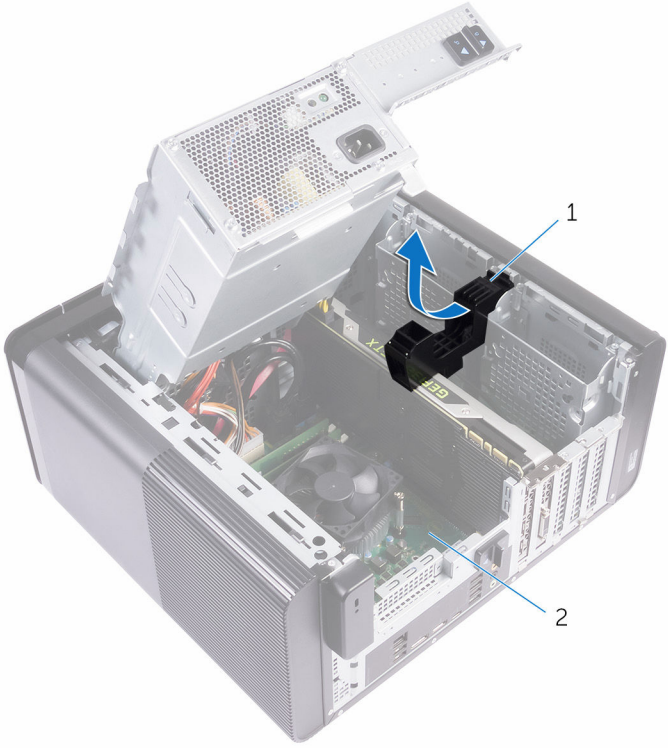
Prerequisites

NOTE: Your computer will be shipped with either graphics card or full-length graphics card.

1. Remove the right-side cover.
2. Follow the procedure from step 1 to step 2 in "Removing the power-supply unit".

Procedure

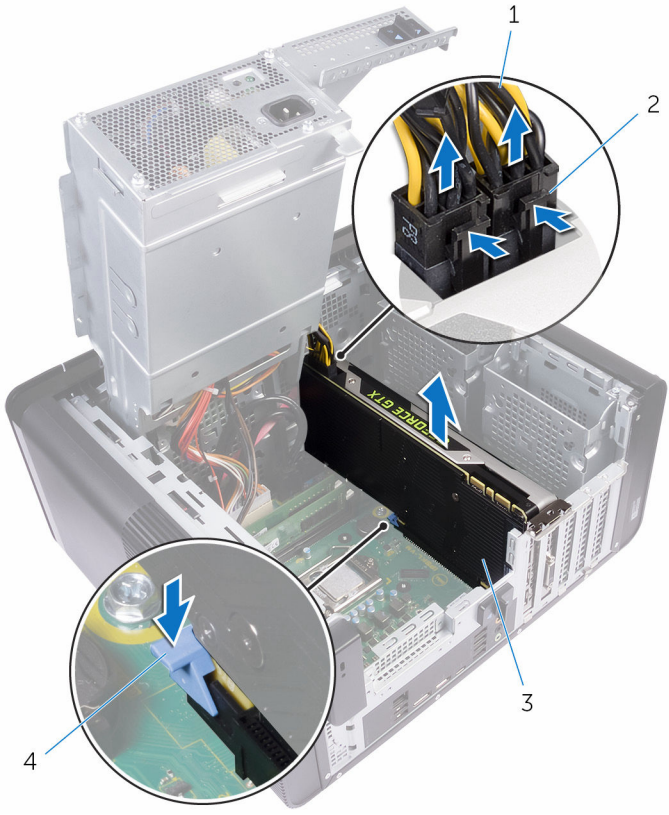
1 Lift to release the graphics-card bracket from the chassis.



1 graphics-card bracket 2 chassis

2 Press the releasing clip on the power-cable connectors and disconnect the power cables from the graphics card.

3 Push the securing tab on the PCIe slot away from the graphics card, grasp the card by its top corner, and ease it out of the slot.



1	power cables	2	releasing clips (2)
3	graphics card	4	securing tab

Replacing the full-length graphics cards

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Procedure

1. Align the full-length graphics card with the slot on the system board.
2. Place the card into the slot and press down firmly until the full-length graphics card snaps into place.
3. Connect the power cables to the full-length graphics card.
4. Slide the tab on the graphics-card bracket into the slot on the chassis and snap it into place.

Post-requisites

1. Follow the procedure from step 9 to step 10 in "Replacing the power-supply unit".
2. Replace the right-side cover.

Removing the memory modules

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Prerequisites

1. Remove the right-side cover.
2. Follow the procedure from step 1 to step 2 in "Removing the power-supply unit".

Procedure

1. Locate the memory-module slot on the system board.
   For more information, see "System-board components".
2. Push the securing clips away from the memory module.

3 Grasp the memory module near the securing clip, and then gently ease the memory module out of the memory-module slot.

CAUTION: If the memory module is difficult to remove, gently ease the memory module back and forth to remove it from the slot.

NOTE: Repeat step 2 to step 3 to remove any other memory modules installed in your computer.

1 memory-module slot
2 memory module
3 securing clips (2)
4 system board

Replacing the memory modules

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Procedure

1 Align the notch on the memory module with the tab on the memory-module slot.

2 Insert the memory module into the memory-module slot, and press the memory module straight until it snaps into position and the securing clips lock in place.

NOTE: If you do not hear the click, remove the memory module and reinstall it.

1	tab	2	notch
3	memory-module slot	4	memory module
5	system board		

NOTE: Use slots DIMM1 and DIMM3 if you need to use two memory modules. For more information, see System-board components.

The following table lists the available memory configuration matrix:

Configuration	Slot			
	DIMM1	DIMM2	DIMM3	DIMM4
8 GB	4 GB	4 GB		
16 GB	8 GB	8 GB		
24 GB	4 GB	4 GB	8 GB	8 GB
32 GB	8 GB	8 GB	8 GB	8 GB
64 GB	16 GB	16 GB	16 GB	16 GB

Post-requisites

1. Follow the procedure from step 9 to step 10 in "Replacing the power-supply unit".
2. Replace the right-side cover.

Removing the optical drive

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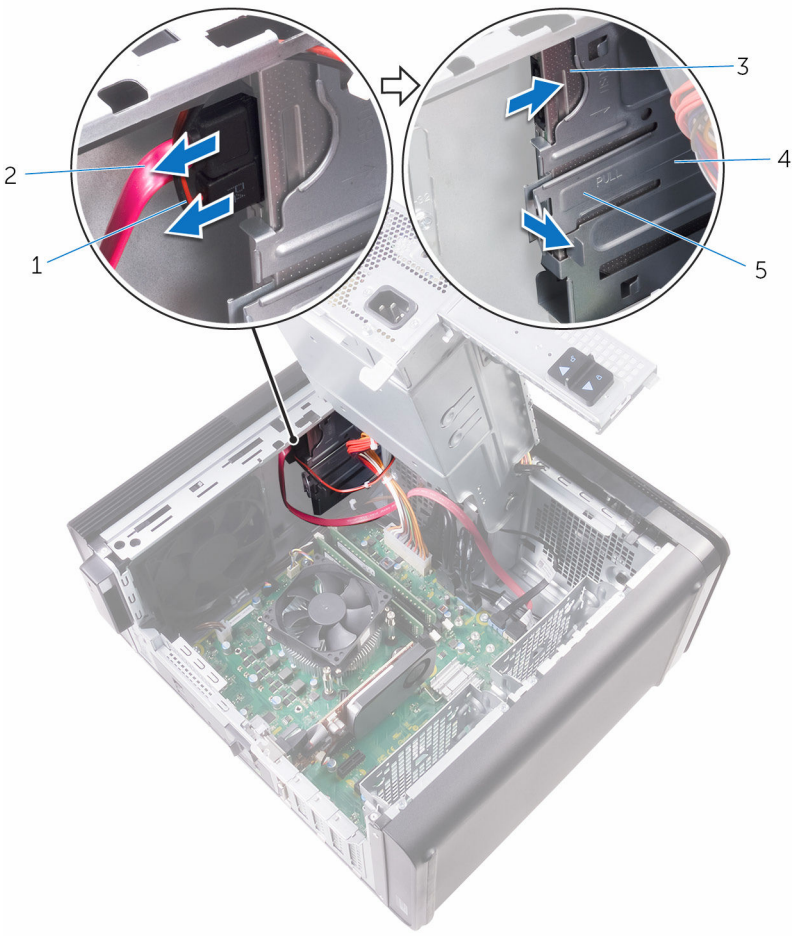
Prerequisites

1. Remove the right-side cover.
2. Follow the procedure from step 1 to step 2 in "Removing the power-supply unit".

Procedure

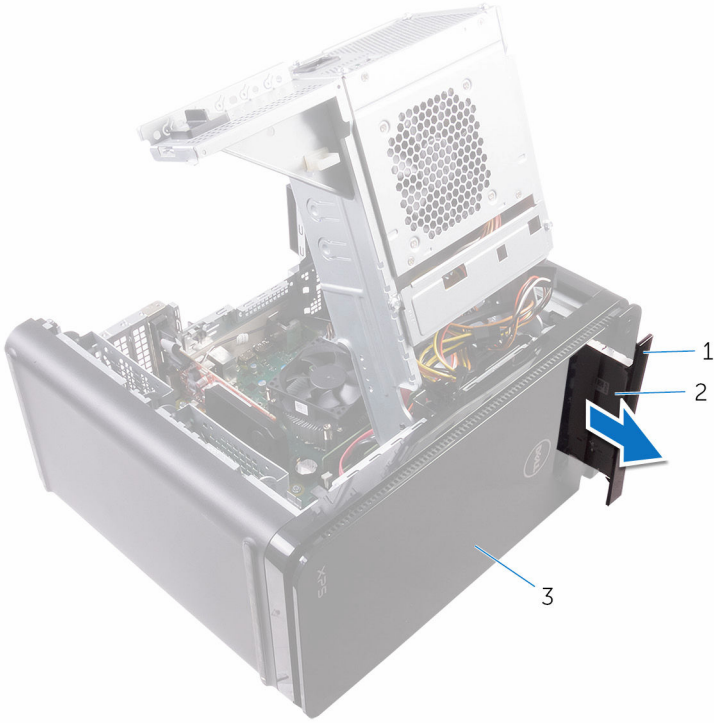
1. Disconnect the power and data cables from the optical drive.
2. Pull the release tab on the optical-drive cage towards the bottom of the computer.

3 Push to slide out the optical drive through the front of the computer.



1 power cable
2 data cable
3 optical drive
4 optical-drive cage
5 release tab

4 Push and slide the optical drive through the front of the computer.



1 optical-drive cover
2 optical drive
3 front bezel

5 Remove the screw that secures the optical-drive bracket to the optical drive.

1 M2 x 2.5 screw

2 optical-drive bracket

3 optical drive

Replacing the optical drive

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Procedure

1. Align the screw hole on the optical-drive bracket with the screw hole on the optical drive.
2. Replace the screw that secures the optical-drive bracket to the optical drive.
3. Replace the optical drive cover.
4. Slide the optical drive into the optical-drive cage through the front of the computer till it snaps into place.
5. Connect the power and data cables to the optical drive.

Post-requisites

1. Follow the procedure from step 9 to step 10 in "Replacing the power-supply unit".
2. Replace the right-side cover.

Removing the power-button module

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Prerequisites

1. Remove the right-side cover.
2. Remove the top cover.
3. Remove the front bezel.

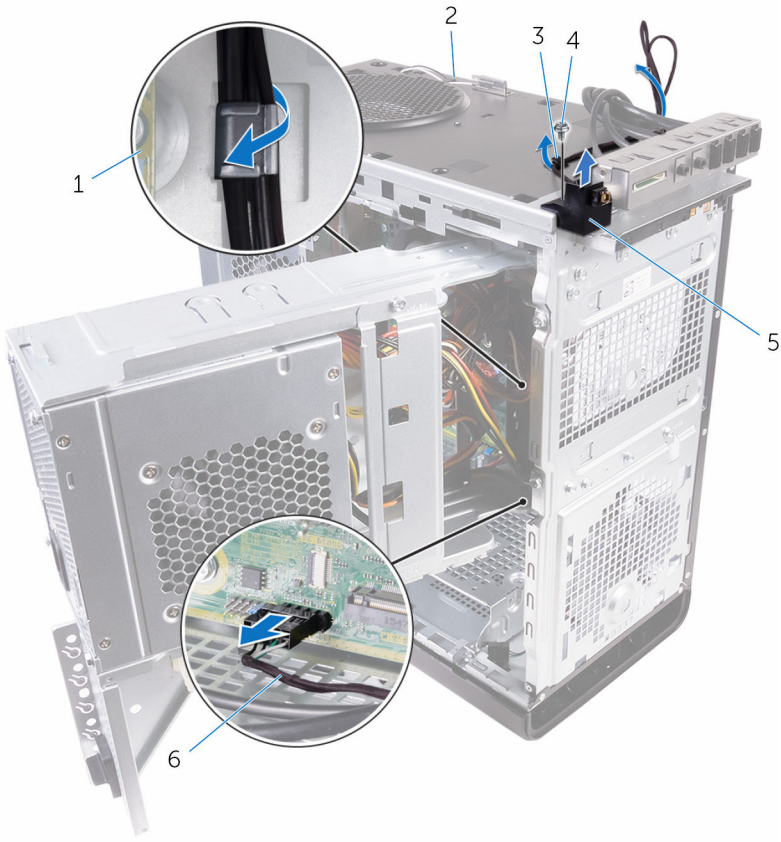
Procedure

NOTE: Note the routing of the cable as you remove it so that you can reroute it correctly after you replace the power-button module.

1. Disconnect the power-button module cable from the system board.

   For more information, see "System-board components".
2. Note the power-button module cable routing and remove the cable from the routing guides next to the system board on the chassis.
3. Remove the screw that secures the power-button module and lift the power-button module from the chassis.

4 Remove the cable from the slot on top of the chassis.



1	system board	2	chassis
3	routing guide	4	#6-32 X 1/4" screw
5	power-button module	6	power-button module cable

Replacing the power-button module

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Procedure

1. Route the cable through the slot on the top of the chassis.
2. Align the screw hole on the power-button module with the screw hole on the chassis.
3. Replace the screw that secures the power-button module to the top chassis.
4. Route the power-button module cable through the routing guides on the chassis.
5. Connect the power-button module cable to the system board.

   For more information, see "System-board components".

Post-requisites

1. Replace the front bezel.
2. Replace the top cover.
3. Replace the right-side cover.

Removing the top I/O-panel

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Prerequisites

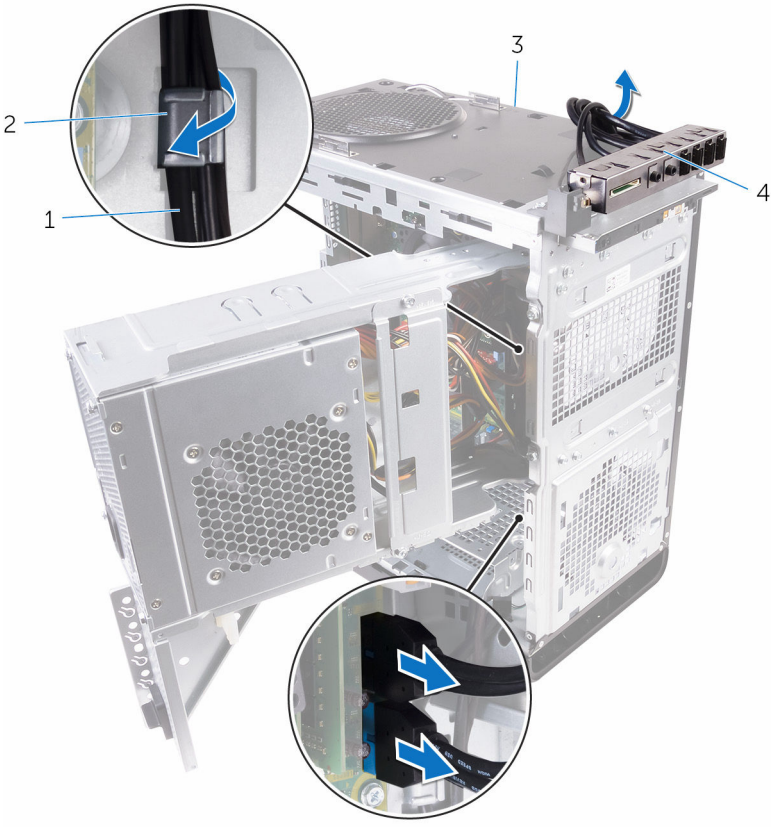
1. Remove the right-side cover.
2. Remove the front bezel.
3. Remove the top cover.
4. Follow the procedure from step 1 to step 2 in "Removing the power-supply unit".

Procedure

1. Disconnect the top I/O-panel cables from the system board.

   For more information, see "System-board components".
2. Note the I/O-panel cables routing and remove them from the routing guides next to the system board on the chassis.

3 Remove the cables through the slot at the top of the chassis.



1	I/O-panel cables (2)	2	routing guide
3	chassis	4	top I/O panel bracket

4 Remove the screws that secure the top I/O-panel to the chassis.

5 Lift the top I/O-panel bracket from the chassis.

1 #6-32 X 1/4" (4)
2 top I/O-panel bracket
3 chassis

Replacing the top I/O-panel

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Procedure

1. Align the screw holes on the top I/O-panel with the screw holes on the chassis.
2. Replace the screws that secure the top I/O-panel to the top chassis.
3. Route the I/O-panel cables through the routing guides on the chassis.
4. Connect the top I/O-panel cables to the system board.

   For more information, see "System-board components".

Post-requisites

1. Replace the top cover.
2. Replace the front bezel.
3. Follow the procedure from step 9 to step 10 in "Replacing the power-supply unit".
4. Replace the right-side cover.

Removing blower and heat-sink assembly

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WARNING: The heat sink may become hot during normal operation. Allow sufficient time for the heat sink to cool before you touch it.

CAUTION: For maximum cooling of the processor, do not touch the heat transfer areas on the heat sink. The oils in your skin can reduce the heat transfer capability of the thermal grease.

Prerequisites

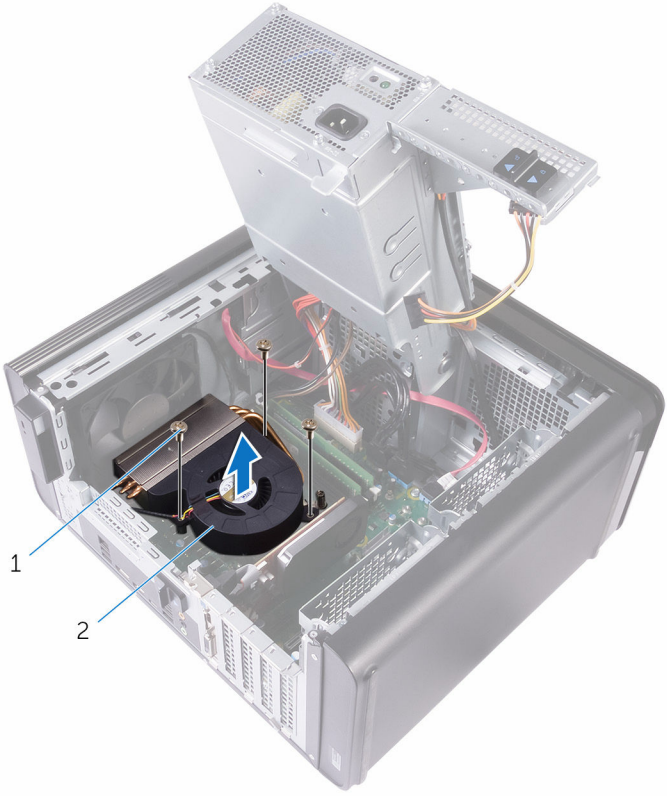
1 Remove the right-side cover.

2 Follow the procedure from step 1 to step 2 in "Removing the power-supply unit".

Procedure

1 Remove the screws that secure the blower to the heat-sink assembly.

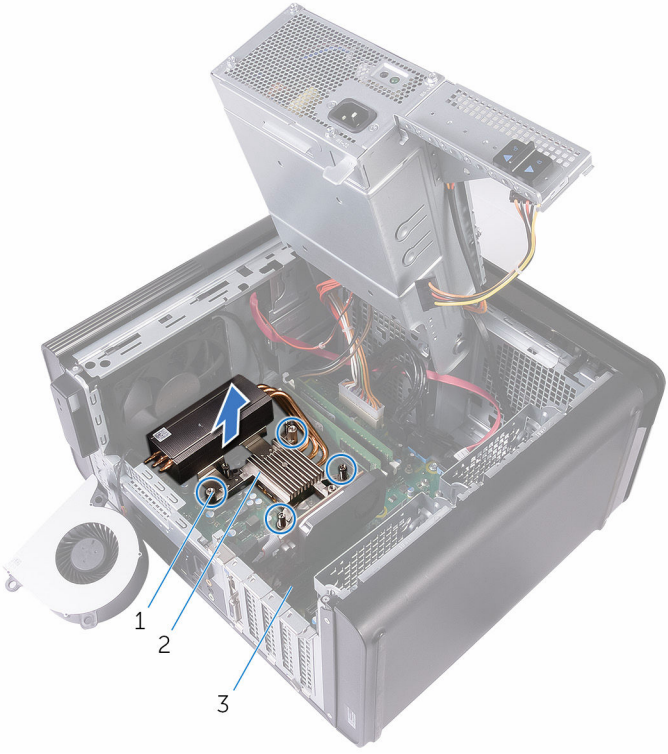
2 Lift the blower off the heat-sink assembly and place it to the side.



1 #6-32 X 1/4" screws (3) 2 blower

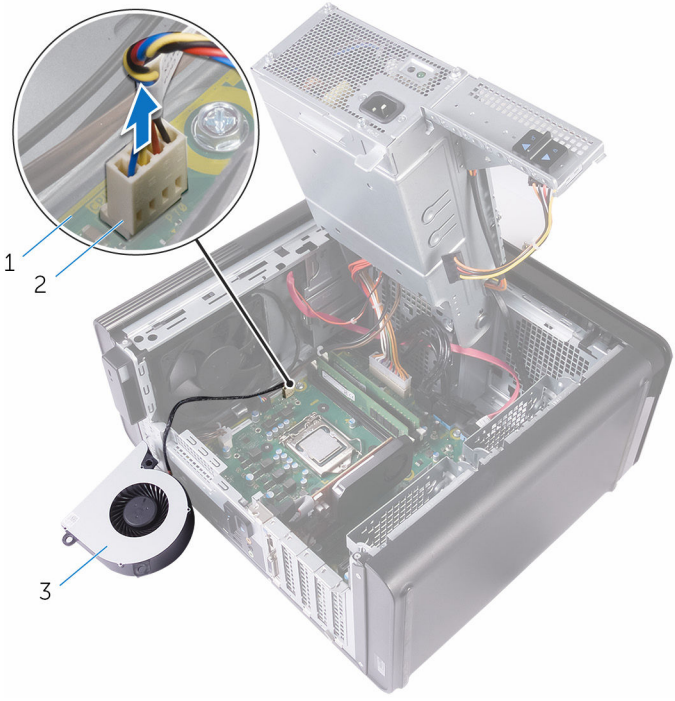
3 Loosen the captive screws that secure the heat-sink assembly to the system board.

4 Lift the heat-sink assembly off the system board.



1 captive screws (4)
2 heat-sink assembly
3 system board

5 Disconnect the blower cable from the system board.
For more information, see "System-board components".



1 system board
2 blower cable
3 blower

Replacing blower and heat-sink assembly

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Procedure

CAUTION: If either the processor or the heat-sink assembly is replaced, use the thermal grease provided in the kit to make sure that thermal conductivity is achieved.

NOTE: The original thermal grease can be reused if the original processor and heat-sink assembly are reinstalled together.

1. Connect the blower cable to the system board.

   For more information, see "System-board components".
2. Place the heat-sink assembly over the processor.
3. Align the captive screws on the heat-sink assembly with the screw holes on the system board.
4. Tighten the captive screws that secure the heat-sink assembly to the system board.
5. Place the blower over the heat-sink assembly.
6. Align the screw holes on the blower to the screw holes on the heat-sink assembly.
7. Replace the screws that secure the blower to the heat-sink assembly.

Post-requisites

1. Follow the procedure from step 9 to step 10 in "Replacing the power-supply unit".
2. Replace the right-side cover.

Removing the processor fan and heat-sink assembly

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WARNING: The heat sink may become hot during normal operation. Allow sufficient time for the heat sink to cool before you touch it.

CAUTION: For maximum cooling of the processor, do not touch the heat transfer areas on the heat sink. The oils in your skin can reduce the heat transfer capability of the thermal grease.

Prerequisites

1. Remove the right-side cover.
2. Follow the procedure from step 1 to step 2 in "Removing the power-supply unit".

Procedure

1. Disconnect the processor-fan cable from the system board.

   For more information, see "System-board components".
2. Loosen the captive screws that secure the processor fan and heat-sink assembly to the system board.

3 Lift the processor fan and heat-sink assembly off the system board.

1	processor-fan cable	2	captive screws (4)
3	processor fan and heat-sink assembly	4	system board

Replacing the processor fan and heat-sink assembly

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Procedure

CAUTION: If either the processor or the heat-sink assembly is replaced, use the thermal grease provided in the kit to make sure that thermal conductivity is achieved.

NOTE: The original thermal grease can be reused if the original processor and heat-sink assembly are reinstalled together.

1. Place the processor fan and heat-sink assembly over the processor.
2. Align the captive screws on the processor fan heat-sink assembly with the screw holes on the system board.
3. Tighten the captive screws that secure the processor fan and heat-sink assembly to the system board.
4. Connect the processor-fan cable to the system board.

   For more information, see "System-board components".

Post-requisites

1. Follow the procedure from step 9 to step 10 in "Replacing the power-supply unit".
2. Replace the right-side cover.

Removing the processor

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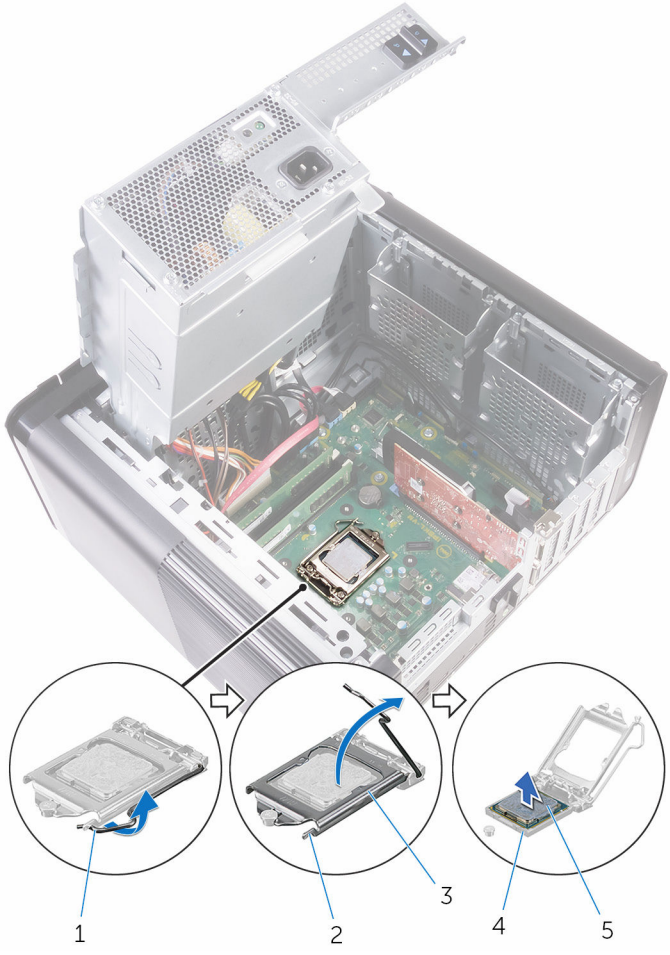
Prerequisites

1. Remove the right-side cover.
2. Follow the procedure from step 1 to step 2 in "Removing the power-supply unit".
3. Remove the processor fan and heat sink assembly.

Procedure

1. Press the processor release-lever down and then pull it outwards to release it from the securing tab.
2. Extend the processor release-lever completely to open the processor cover.

3 Gently lift the processor and remove it from the processor socket.



1 processor release-lever
2 securing tab
3 processor cover
4 processor socket
5 processor

Replacing the processor

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CAUTION: If either the processor or the heat sink is replaced, use the thermal grease provided in the kit to ensure that thermal conductivity is achieved.

NOTE: A new processor ships with a thermal pad in the package. In some cases, the processor may ship with the thermal pad attached to it.

Procedure

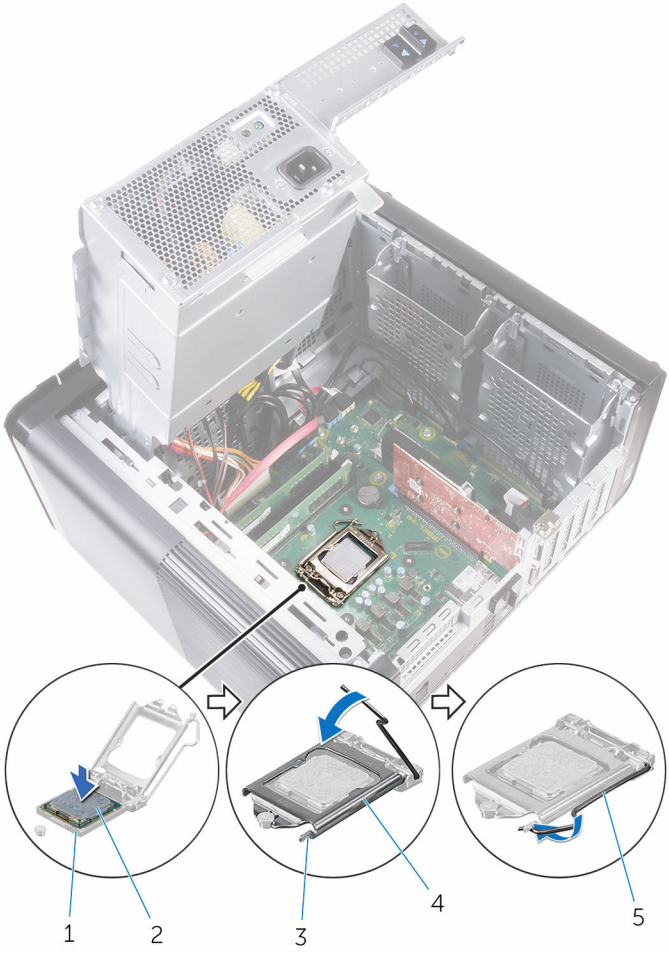
1 Ensure that the release lever on the processor socket is fully extended in the open position.

CAUTION: The pin-1 corner of the processor has a triangle that aligns with the triangle on the pin-1 corner on the processor socket. When the processor is properly seated, all four corners are aligned at the same height. If one or more corners of the processor are higher than the others, the processor is not seated properly.

2 Align the pin-1 corner on the processor with the pin-1 corner on the processor socket, and then place the processor in the processor socket.

3 When the processor is fully seated in the socket, close the processor cover.

4 Pivot the release-lever down and place it under the tab on the processor cover.



1	processor socket	2	processor
3	securing tab	4	processor cover
5	release lever		

Post-requisites

1 Replace the processor fan and heat-sink assembly.

2 Follow the procedure from step 9 to step 10 in "Replacing the power-supply unit".

3 Replace the right-side cover.

Removing the wireless card

WARNING: Before working inside your computer, read the safety information that shipped with your computer and follow the steps in Before working inside your computer. After working inside your computer, follow the instructions in After working inside your computer. For more safety best practices, see the Regulatory Compliance home page at www.dell.com/regulatory_compliance.

Prerequisites

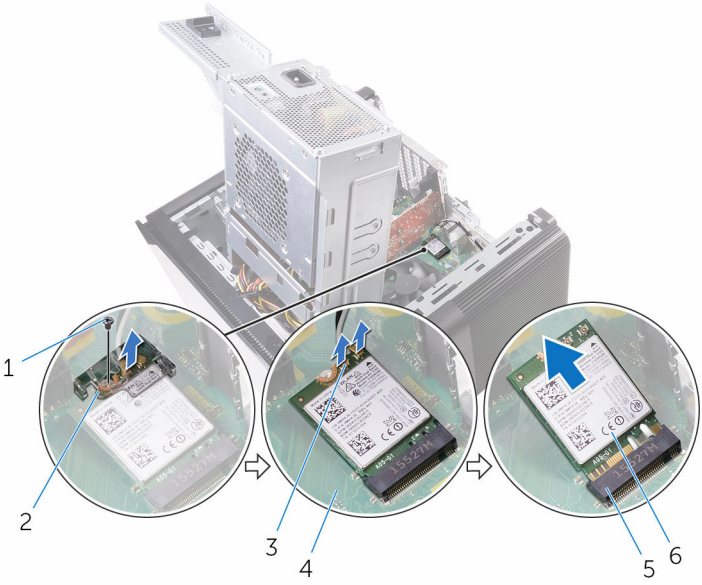
1. Remove the right-side cover.
2. Follow the procedure from step 1 to step 2 in "Removing the power-supply unit".

Procedure

1. Locate the wireless-card slot on the system board.

   For more information, see "System-board components".
2. Remove the screw that secures the wireless-card bracket to the wireless card and the system board.
3. Remove the wireless-card bracket and disconnect the antenna cables from the wireless card.

4 Slide and lift the wireless card off the system board.



1	M2 X 2.5 screw	2	wireless-card bracket
3	antenna cables (2)	4	system board
5	wireless-card slot	6	wireless card

Replacing the wireless card

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Procedure

CAUTION: To avoid damaging the wireless card, do not place any cables under it.

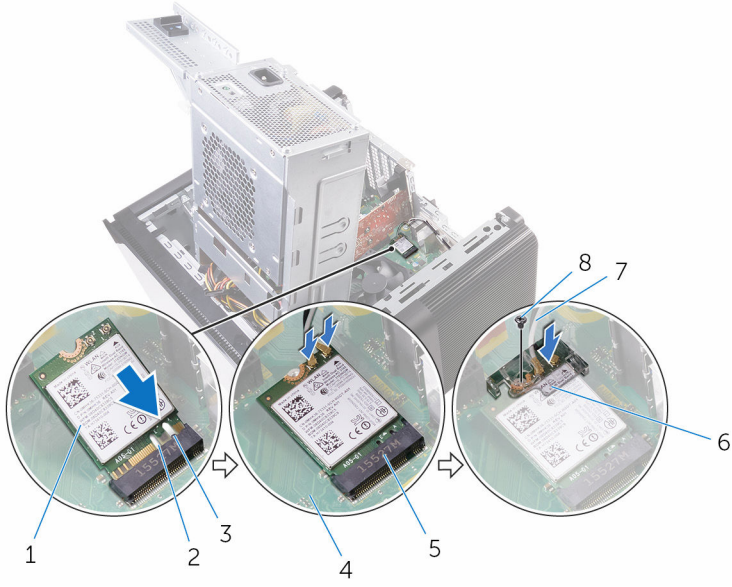
1. Align the notch on the wireless card with the tab on the wireless-card slot.
2. Slide the wireless card at an angle into the wireless-card slot.
3. Connect the antenna cables to the wireless card.

   The following table provides the antenna-cable color scheme for the wireless card supported by your computer.

Connectors on the wireless card	Antenna-cable color
Main (white triangle)	White
Auxiliary (black triangle)	Black

4. Align the screw hole on the wireless-card bracket with the screw hole on the wireless card and the system board.

5 Replace the screw that secures the wireless-card bracket to the wireless card and the system board.



1	wireless card	2	notch (2)
3	tab	4	system board
5	wireless card slot	6	wireless card bracket
7	antenna cables	8	M2 X 2.5 screw

Post-requisites

1 Follow the procedure from step 9 to step 10 in "Replacing the power-supply unit".

2 Replace the right-side cover.

Removing the antenna

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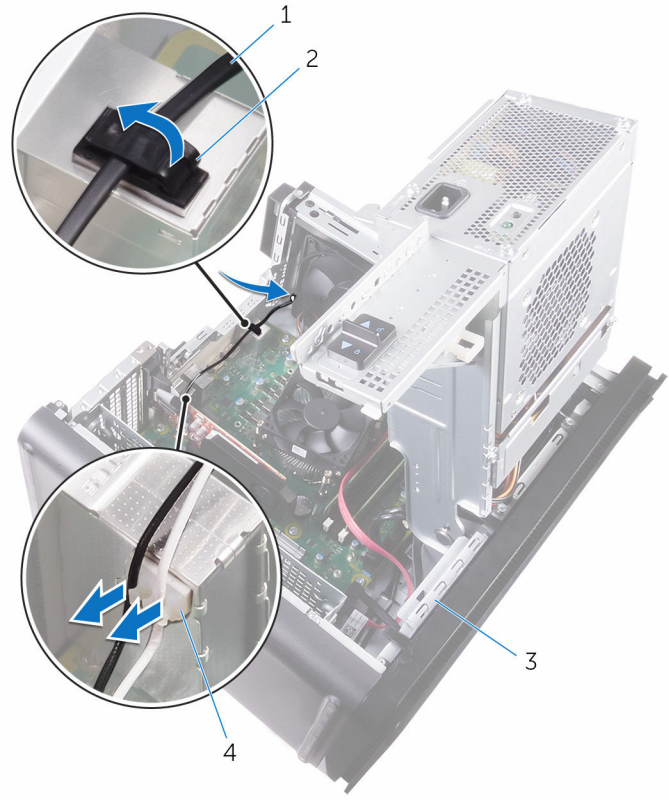
Prerequisites

1. Remove the right-side cover.
2. Follow the procedure from step 1 to step 2 in "Removing the power-supply unit".
3. Remove the top cover.
4. Follow the procedure from step 1 to step 4 in Removing the wireless card.

Procedure

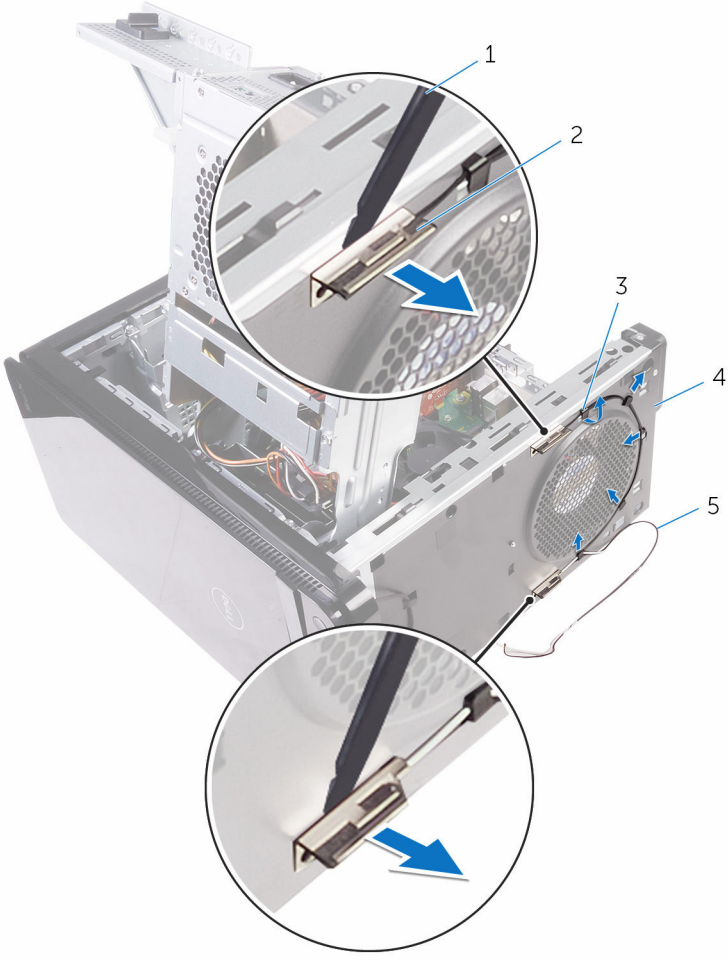
1. Open the securing clip which secures the antenna cable to the chassis.
2. Remove the cables from the routing guide through the slot on the top of the chassis.

3 Note the antenna-cable routing and remove the antenna cables from the routing guides on the chassis.



1	antenna cable	2	securing clip
3	chassis	4	routing guide

4 Using a plastic scribe, pry the antenna off the chassis.



1	plastic scribe	2	antenna (2)
3	routing guide	4	chassis
5	antenna cables		

Replacing the antenna

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Procedure

1. Adhere the antenna to the chassis.
2. Route the antenna cables through the slot on the top of the chassis.
3. Route the antenna cables through the routing guides on the chassis.
4. Secure the antenna cables to the chassis using the securing clip.

Post-requisites

1. Follow the procedure from step 3 to step 5 in "Replacing the wireless card".
2. Replace the top cover.
3. Follow the procedure from step 9 to step 10 in "Replacing the power-supply unit".
4. Replace the right-side cover.

Removing the system board

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NOTE: Your computer's Service Tag is stored in the system board. You must enter the Service Tag in the BIOS setup program after you replace the system board.

NOTE: Replacing the system board removes any changes you have made to the BIOS using the BIOS setup program. You must make the appropriate changes again after you replace the system board.

NOTE: Before disconnecting the cables from the system board, note the location of the connectors so that you can reconnect the cables correctly after you replace the system board.

Prerequisites

1. Remove the right-side cover.
2. Follow the procedure from step 1 to step 2 in "Removing the power-supply unit".
3. Follow the procedure from step 1 to step 3 in "Removing the antenna".
4. Remove the memory modules.
5. Remove the graphics card.
6. Remove the solid-state drive.
7. Remove the processor fan and heat sink assembly.
8. Remove the processor.

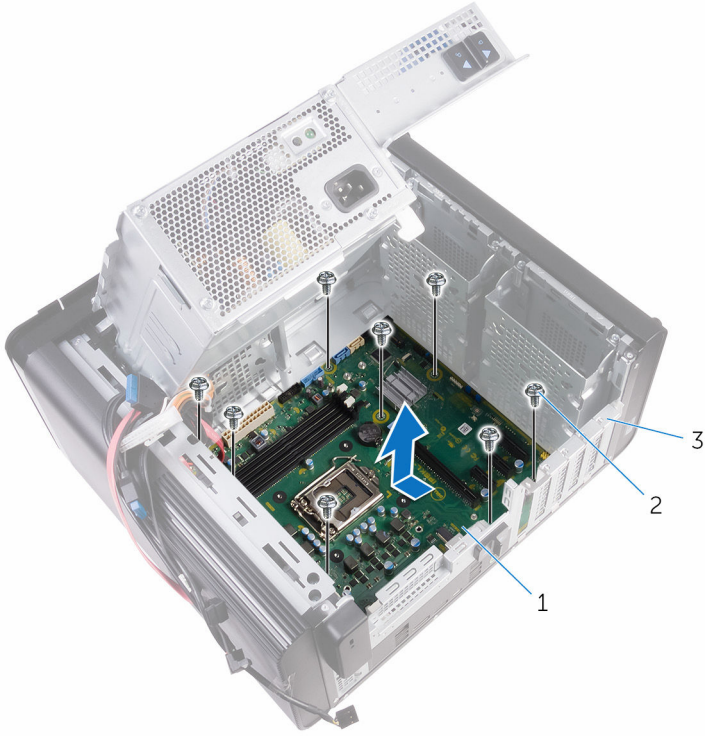
Procedure

1. Disconnect all the cables connected to the system board.

   For more information, see "System-board components".
2. Make note of the cable routing and remove the cables from the routing guides.

3 Remove the screws that secure the system board to the chassis.

4 Lift the system board at an angle and remove it from the computer.



1 system board

2 #6-32 X 1/4" screws (8)

3 chassis

Replacing the system board

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NOTE: Your computer's Service Tag is stored in the system board. You must enter the Service Tag in the BIOS setup program after you replace the system board.

NOTE: Replacing the system board removes any changes you have made to the BIOS using the BIOS setup program. You must make the appropriate changes again after you replace the system board.

Procedure

1. Slide the I/O ports on the system board into the slots on the chassis and align the screw holes on the system board with the screw holes on the chassis.
2. Replace the screws that secure the system board to the chassis.
3. Route and connect the cables that you disconnected from the system board.

   For more information, see "System-board components."

Post-requisites

1. Replace the processor.
2. Replace the processor fan and heat sink assembly.
3. Replace the solid-state drive.
4. Replace the graphics card.
5. Replace the memory modules.
6. Follow the procedure from step 3 to step 4 in "Replacing the antenna".
7. Follow the procedure from step 9 to step 10 in "Replacing the power-supply unit".
8. Replace the right-side cover.

Flashing the BIOS

You may need to flash (update) the BIOS when an update is available or when you replace the system board. To flash the BIOS:

1. Turn on your computer.
2. Go to www.dell.com/support.
3. Click **Product support**, enter the Service Tag of your computer, and then click **Submit**.

   NOTE: If you do not have the Service Tag, use the auto-detect feature or manually browse for your computer model.
4. Click **Drivers & downloads** → **Find it myself**.
5. Select the operating system installed on your computer.
6. Scroll down the page and expand **BIOS**.
7. Click **Download** to download the latest version of the BIOS for your computer.
8. After the download is complete, navigate to the folder where you saved the BIOS update file.
9. Double-click the BIOS update file icon and follow the instructions on the screen.

BIOS setup program

Overview

CAUTION: Unless you are an expert computer user, do not change the settings in the BIOS setup program. Certain changes can make your computer work incorrectly.

NOTE: Before you change BIOS setup program, it is recommended that you write down the BIOS setup program screen information for future reference.

Use BIOS setup program to:

- Get information about the hardware installed in your computer, such as the amount of RAM, the size of the hard drive, and so on.
- Change the system configuration information.
- Set or change a user-selectable option, such as the user password, type of hard drive installed, enabling or disabling base devices, and so on.

Entering BIOS setup program

1 Turn on (or restart) your computer.

2 During POST, when the DELL logo is displayed, watch for the F2 prompt to appear, and then press F2 immediately.

NOTE: The F2 prompt indicates that the keyboard is initialized. This prompt can appear very quickly, so you must watch for it, and then press F2. If you press F2 before the F2 prompt, this keystroke is lost. If you wait too long and the operating system logo appears, continue to wait until you see the desktop. Then, turn off your computer and try again.

System Setup Options

NOTE: Depending on your computer and its installed devices, the items listed in this section may or may not appear.

Main	
System Date	Displays the current date in mm/dd/yyyy format.
System Time	Displays the current time in hh:mm:ss format.
BIOS Information	
BIOS Version	Displays the BIOS version number.
Product Information	
Product Name	Displays the product name.
Service Tag	Allows you to enter the service tag of your computer.
Asset Tag	Displays the asset tag of your computer.
Memory Information	
System Memory	Displays the total computer memory installed.
Memory Speed	Displays the memory speed.
CPU Information	
Processor Type	Displays the processor type
Processor ID	Displays the processor identification code.
CPU Speed	Displays the speed of the processor.
Cache L1	Displays the processor L1 cache size.
Cache L2	Displays the processor L2 cache size.
Cache L3	Displays the processor L3 cache size.

Advanced	
Advanced BIOS Features	
Intel SpeedStep Technology	Allows you to enable or disable Intel Speedstep Technology. Default: Enabled. NOTE: If enabled, the processor clock speed and core voltage are adjusted dynamically based on the processor load.
Intel Virtualization Technology	Allows you to enable or disable Intel Virtualization Technology feature for the processor.
VT for Direct I/O	Allows you to enable or disable Intel Virtualization Technology feature for the Direct I/O.
SATA Operation	Allows you to configure the operating mode of the integrated SATA hard drive controller.
Intel Ready Mode Technology	Allows you to enable or disable the Intel Ready Mode Technology.
Intel Software Guard Extensions	Allows you to enable or disable Intel Software Guard Extensions.
BIOS Recovery from Hard Drive	Allows you to enable or disable BIOS Recovery from hard drive.
USB Configuration	
Front USB Ports	Allows you to enable or disable the front USB ports.
Rear USB Ports	Allows you to enable or disable the rear USB ports.
Power Options	
Numlock Key	Allows you to set the status of the Num Lock key during boot to On or Off.
Wake Up by Integrated LAN	Allow the computer to be powered on by special LAN signals.

Advanced	
AC Recovery	Sets what action the computer takes when power is restored.
Deep Sleep Control	Allows you to define the controls when Deep Sleep is enabled.
USB Wake Support (S3)	Allows you to enable the USB devices to wake the computer from Standby.
USB PowerShare (S4/S5)	Allows you to charge external devices.
USB PowerShare Wake Support (S4/S5)	Allows you to enable USB devices to wake the computer from S4/S5.
Auto Power On	
Auto Power On Mode	Allows you to set the computer to turn on automatically every day or on a preselected date. This option can be configured only if the Auto Power On mode is set to Enabled Everyday or Selected Day.
Auto Power On Date	Allows you to set the date on which the computer must turn on automatically. This option can be configured only if the Auto Power On mode is set to Enabled 1 to 31.
Auto Power On Time	Allows you to set the time at which the computer must turn on automatically. This option can be configured only if the Auto Power On mode is set to Enabled hh:mm:ss.
Performance Options	
Overclocking Feature	
Core Over Clocking Level	Allows you enable or disable the processor to adjust the flex ratio and voltage in a turbo mode environment.
Core Ratio Limit Override	Allows you to set the core ratio limit.
Single Core	Allows you to select single core or multiple cores.

Advanced	
Core Voltage Mode	Allows you to select between adaptive and override voltage modes.
Core Voltage Offset	Allows you to set the override value of core voltage.
Long Duration PWR Limit	Allows you to set the turbo mode power limit.
Short Duration PWR Limit Options	Allows you to set the turbo mode power limit.

Security	
Admin Password Status	Displays whether the admin password is set.
System Password Status	Displays whether the system password is set.
HDD Password Status	Displays if the hard drive password is set.
Admin Password	Displays the admin password.
System Password	Displays the system password.
HDD Password	Displays the hard drive password.
Firmware TPM	Displays the firmware TPM.

Boot	
Boot List Option	Displays the available boot devices.
File Browser Add Boot Option	Allows you to set the boot path in the boot option list.
File Browser Del Boot Option	Allows you to delete the boot path in the boot option list.
Secure Boot Control	Allows you to enable or disable the secure boot control.
Load Legacy OPROM	Allows you to enable or disable the Legacy Option ROM.
Boot Option Priorities	Displays the available boot devices.

Boot	
Boot Option #1	Displays the first boot device. Default: UEFI: Windows Boot Manager.
Boot Option #2	Displays the second boot device. Default: Onboard NIC Device.
Boot Option #3	Displays the third boot device. Default: Onboard NIC Device.

Save & Exit	
Save Changes and Reset	Allows you to exit system setup and save your changes.
Discard Changes and Reset	Allows you to exit system setup and load previous values for all system setup options.
Restore Defaults	Allows you to load default values for all system setup options.
Discard Changes	Allows you to exit your changes.
Save Changes	Allows you to save your changes.

Clearing forgotten passwords

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Prerequisites

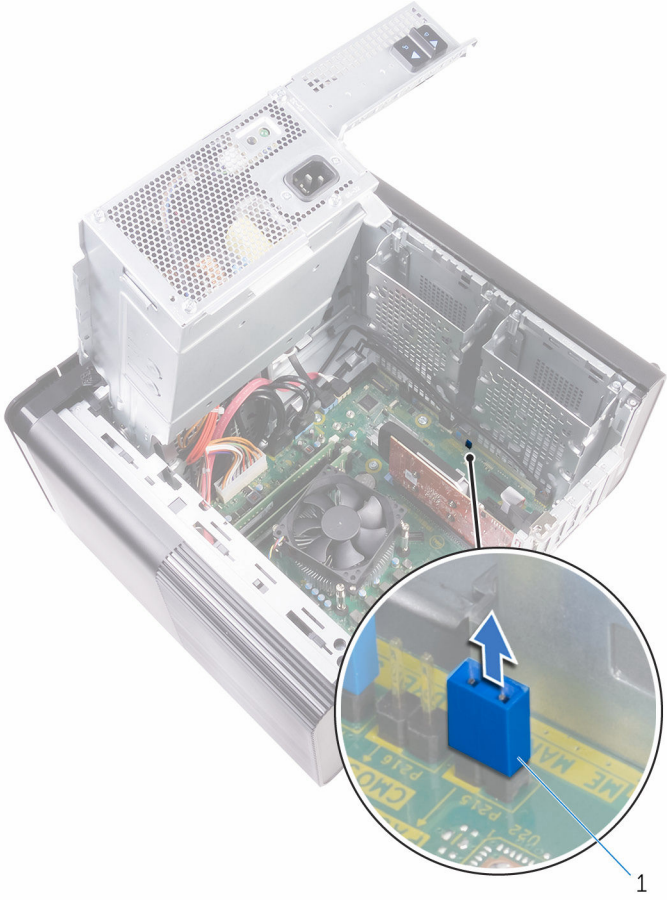
1. Remove the right side-cover.
2. Follow the procedure from step 1 to step 3 in "Removing the power-supply unit".

Procedure

1 Locate the password reset jumper (PSWD) on the system board.

NOTE: For more information on the location of the password reset jumper, see "System-board components".

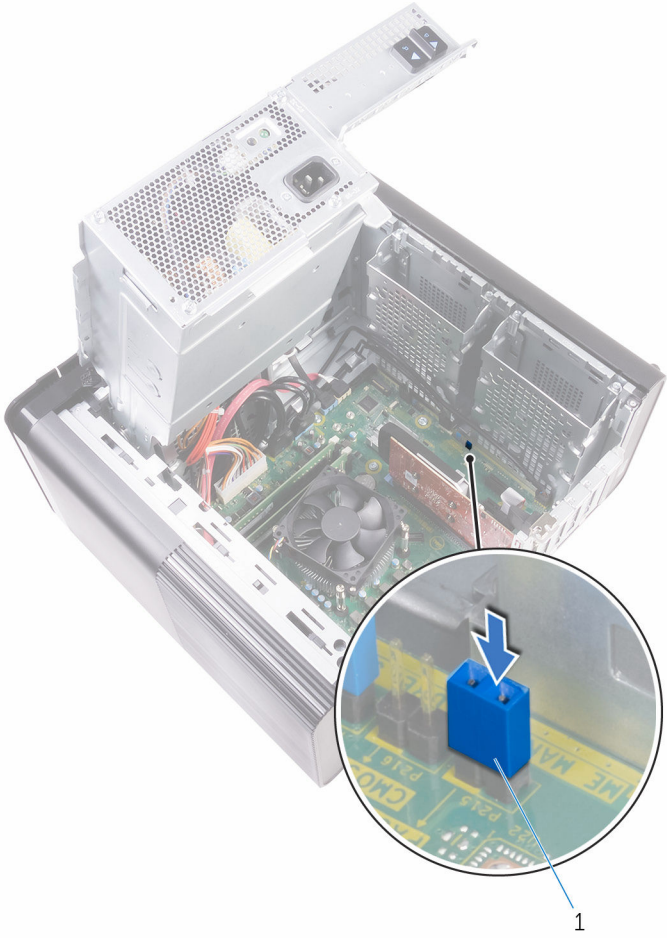
2 Remove the jumper plug from the password jumper-pins.



1 jumper plug

3 Power on without the jumper plug to clear the password.

4 Wait until the desktop is loaded and then shut down the system and replace the jumper plug in its original location.



1 jumper plug

Post-requisites

1 Replace the right side-cover.

2 Follow the procedure from step 9 to step 10 in "Replacing the power-supply unit".

Clearing CMOS settings

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Prerequisites

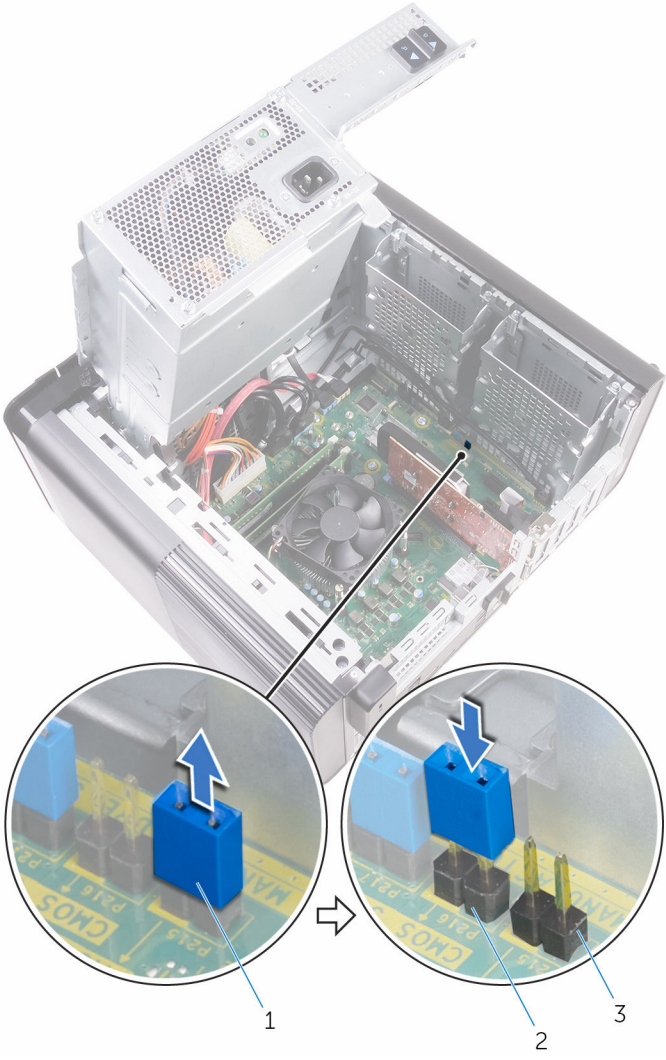
1. Remove the right side-cover.
2. Follow the procedure from step 1 to step 3 in "Removing the power-supply unit".

Procedure

1. Locate the CMOS reset jumper (CMCLR) on the system board.

   NOTE: For more information on the location of the CMOS jumper, see "System-board components".
2. Remove the power cord.
3. Remove the jumper plug from the password jumper-pins (PSWD) and connect it to the CMOS jumper-pins.

4 Wait for 5 seconds and then replace the jumper plug to the password jumper-pins (PSWD).



1	jumper plug	2	CMOS jumper-pins
3	password jumper-pins (PSWD)		

Post-requisites

1. Replace the right side-cover.
2. Follow the procedure from step 9 to step 10 in "Replacing the power-supply unit".

Diagnostics

The computer POST (Power On Self Test) ensures that it meets the basic computer requirements and the hardware is working appropriately before the boot process begins. If the computer passes the POST, the computer continues to start in a normal mode. However, if the computer fails the POST, the computer emits a series of LED codes during the start-up. The system LED is integrated on the Power button.

The following table shows different light patterns, what they indicate, and the suggested solutions.

Number of LED flashes	Problem description	Suggested solution
1	System board: BIOS and ROM failure	Flash latest BIOS version. If problem persists, replace the system board.
2	No memory or RAM detected	Confirm that the memory module is installed properly. If problem persists, replace the memory module.
3	System board or chipset error	Replace the system board.
4	Memory or RAM failure	Replace the memory module.
5	CMOS battery failure	Replace the CMOS battery.
6	Video card or chip failure	Replace the CMOS battery.
7	CPU failure	Replace the system board.
3,6	Recovery image not found	Reimage the computer.
3,7	Recovery image found but invalid	Reimage the computer.

Getting help and contacting Dell

Self-help resources

You can get information and help on Dell products and services using these self-help resources:

Information about Dell products and services	www.dell.com
Windows 8.1 and Windows 10	Dell Help & Support app
Windows 10	Get started app
Windows 8.1	Help + Tips app
Accessing help in Windows 8, Windows 8.1, and Windows 10	In Windows search, type `Help and Support`, and press Enter.
Accessing help in Windows 7	Click **Start** → **Help and Support**.
Online help for operating system	www.dell.com/support/windows www.dell.com/support/linux
Troubleshooting information, user manuals, setup instructions, product specifications, technical help blogs, drivers, software updates, and so on.	www.dell.com/support
Learn about your operating system, setting up and using your computer, data backup, diagnostics, and so on.	See *Me and My Dell* at www.dell.com/support/manuals.

Contacting Dell

To contact Dell for sales, technical support, or customer service issues, see www.dell.com/contactdell.

NOTE: Availability varies by country and product, and some services may not be available in your country.

NOTE: If you do not have an active internet connection, you can find contact information on your purchase invoice, packing slip, bill, or Dell product catalog.