Aurora R7
Service Manual

Computer Model: Alienware Aurora R7Alienware Aurora R7
Regulatory Model: D23M
Regulatory Type: D23M002

ALIENWARE

Notes, cautions, and warnings

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

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.

   Windows 10: Click or tap **Start** → **Power** → **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 #1
- Flat-head screwdriver
- Plastic scribe

Screw list

The following table provides the list of screws that are used for securing different components to Alienware Aurora R7.

Table 1. Screw list

Component	Secured to	Screw type	Quantity	Screw image
3.5-inch hard-drive cage	Chassis	#6-32 X 1/4"	2	
2.5-inch hard-drive cage	Chassis	#6-32 X 1/4"	4	
Power-supply unit hinge	Chassis	#6-32 X 1/4"	6	
		#6-32 X 1/4" BLK	3	
Power-supply unit	Power-supply unit hinge	#6-32 X 1/4"	4	
Power-supply unit bracket		#6-32 X 1/4"	2	
Optical-drive assembly	Chassis	#6-32 X 1/4"	2	
System board	Chassis	#6-32 X 1/4"	8	
Top cover	Chassis	#6-32 X 1/4"	2	
Top I/O assembly	Chassis	#6-32 X 1/4" BLK	4	

Component	Secured to	Screw type	Quantity	Screw image
Processor-cooling assembly bracket	Chassis	#6-32 X 1/4" BLK	2	
Processor-cooling assembly radiator	Processor-cooling assembly bracket	#6-32 X 1/4" BLK	4	
Top-chassis fan assembly	Chassis	#6-32 X 1/4"	1	
Top-chassis fan bracket	Chassis	#6-32 X 1/4" BLK	1	
Antenna assembly	Chassis	#6-32 X 1/4"	2	
Power-button board	Top cover	M3 X 4	2	
Rubber foot	Bottom cover	M3 X 4	4	
M.2 SSD card	System board	Standoff M2	1	
		M2 X 2.5	1	
Optical-drive bracket	Optical drive	M2 X 2.5	1	
WLAN bracket	System board	M2 X 2.5	1	

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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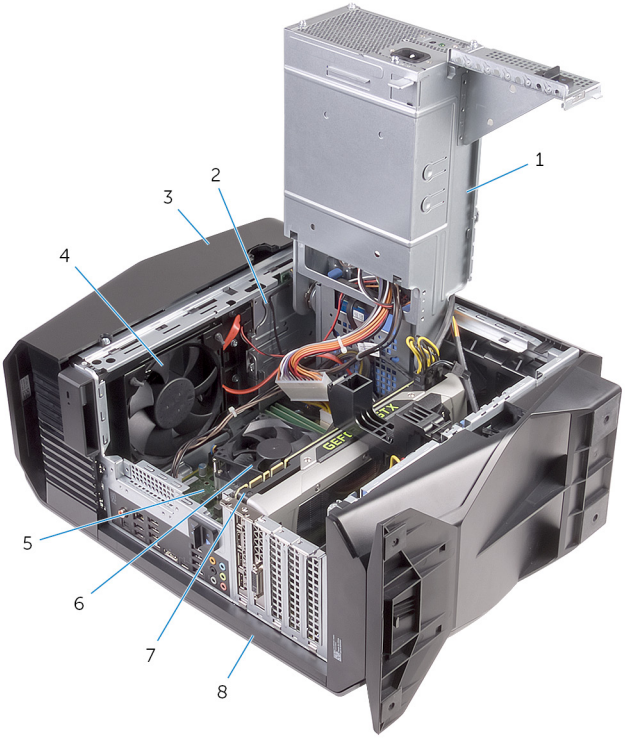
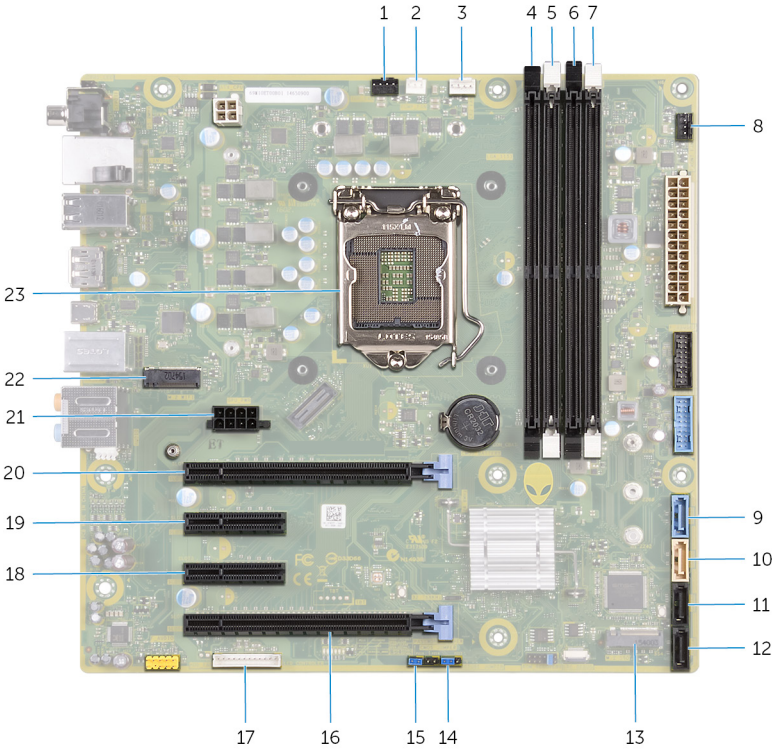
Inside view of your computer



1	power-supply unit	2	optical-drive assembly
3	top cover	4	top-chassis fan
5	system board	6	processor fan and heat-sink assembly
7	graphics card	8	right-side cover

System-board components



1	top-chassis fan (TOP_FAN)	2	processor-cooling assembly pump-fan connector (PUMP_FAN)
3	processor-fan connector (CPU_FAN)	4	memory-module slot 1 (XMM1)
5	memory-module slot 2 (XMM2)	6	memory-module slot 3 (XMM3)
7	memory-module slot 4 (XMM4)	8	front-chassis fan connector (FRONT_FAN)

9	SATA 6 Gbps drive connector (SATA1)	10	SATA 6 Gbps drive connector (SATA2)
11	SATA 6 Gbps drive connector (SATA3)	12	SATA 6 Gbps drive connector (SATA4)
13	solid-state drive slot (M.2 SSD)	14	CMOS reset jumper (CMOS JUMPER)
15	Password reset jumper (PASSWORD JUMPER)	16	PCI-Express x16 mechanical/x8 electrical slot (SLOT4)
17	LED controller connector (LED_CONTROLLER)	18	PCI-Express x4 slot (SLOT3)
19	PCI-Express x4 slot (SLOT2)	20	PCI-Express x16 mechanical/x8 electrical slot (SLOT1)
21	graphics-card power connector (GPU_POWER)	22	wireless-card slot (M.2 WIFI)
23	processor socket (CPU1)		

Removing the stability foot

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Procedure

1. Place the computer on a clean and flat surface with the bottom cover facing up.
2. Pull the securing tab to release the stability foot from the slots on the bottom cover.

3 Lift the stability foot off the bottom cover.

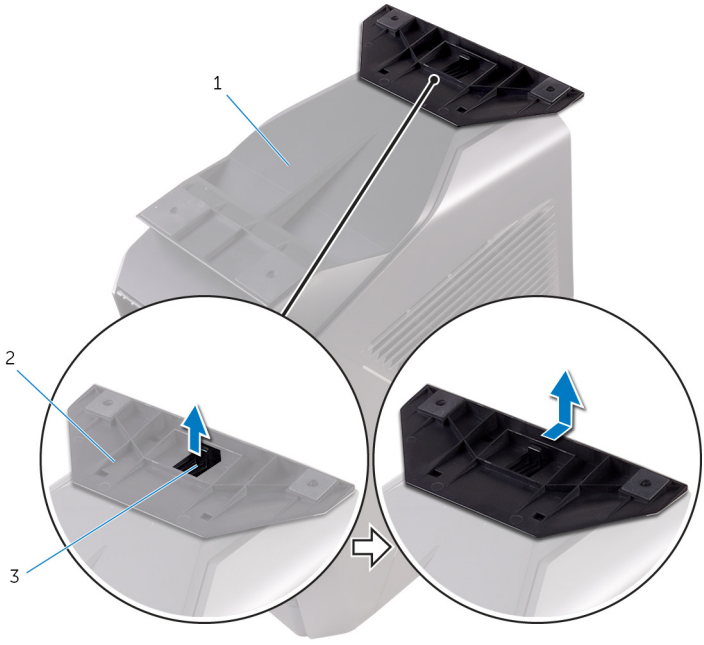

Figure 1. Removing the stability foot

1	bottom cover	2	stability foot
3	security tab		

4 Lay the computer on its side.

Replacing the stability foot

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Procedure

1. Place the computer on a clean and flat surface with the bottom cover facing up.
2. Align the tabs on the stability foot with the slots on the bottom cover and snap the stability foot to lock it in place.
3. Turn the computer over and place it in upright position.

Removing the left-side cover

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Procedure

NOTE: Ensure that you remove the security cable and security screw from the security-cable slot (if applicable).

1 Pull the side-panel release latch.

2 Release the left-side cover away from the chassis and then lift it from the computer.

Figure 2. Removing the left-side cover

1	side-panel release latch	2	top cover
3	left-side cover		

Replacing the left-side cover

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Procedure

1 Align the tabs on the left-side cover with the slots on the chassis.

2 Snap the left-side cover to lock it in place.

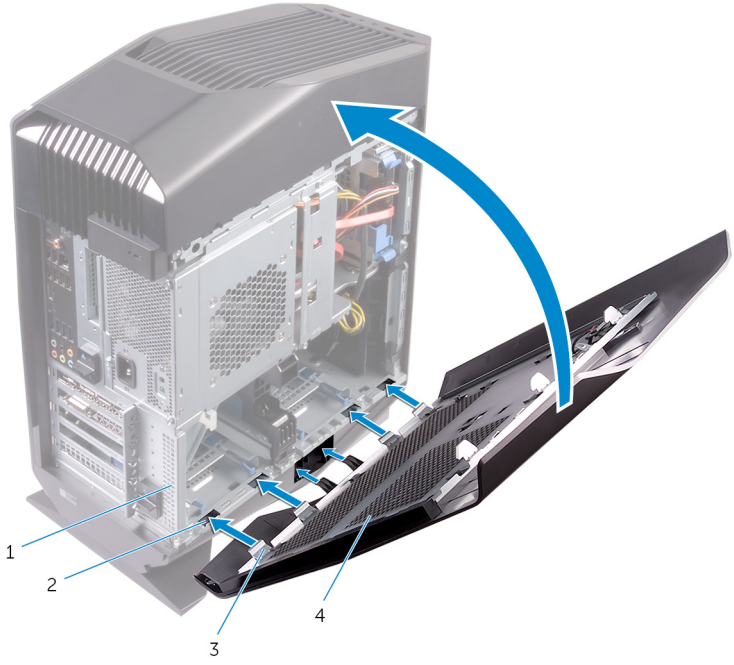

Figure 3. Replacing the left-side cover

1	chassis	2	slots
3	tabs	4	left-side cover

Removing the right-side cover

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Procedure

1 Carefully pry around the edges of the right-side cover from the chassis.

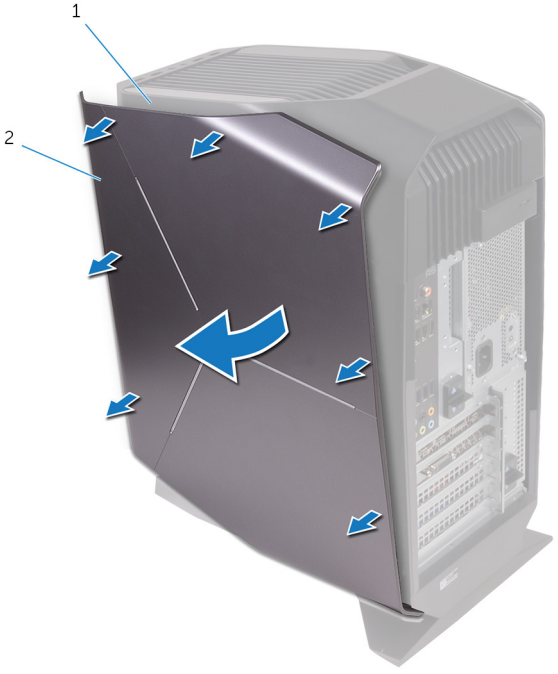

Figure 4. Removing the right-side cover

1	chassis	2	right-side cover

2 Disconnect the lighting cable from the right-side cover.

3 Lift the right-side cover off the chassis.

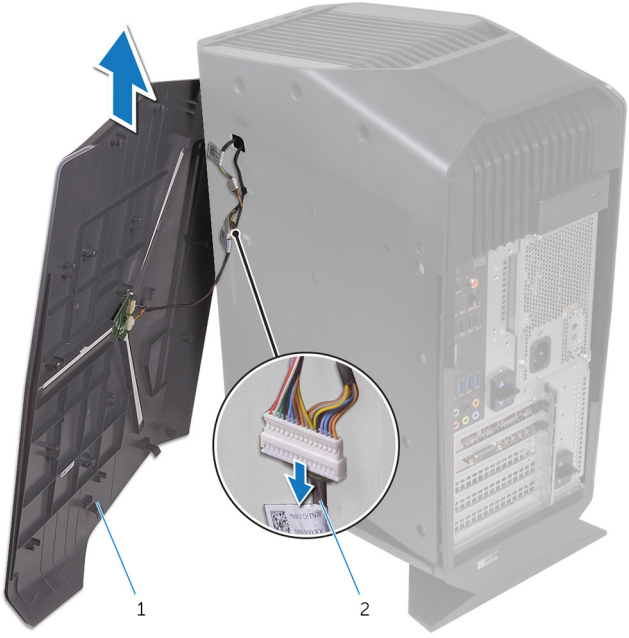

Figure 5. Removing the right-side cover

1	right-side cover	2	lighting cable

Replacing the right-side cover

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Procedure

1 Connect the lighting cable to the right-side cover.

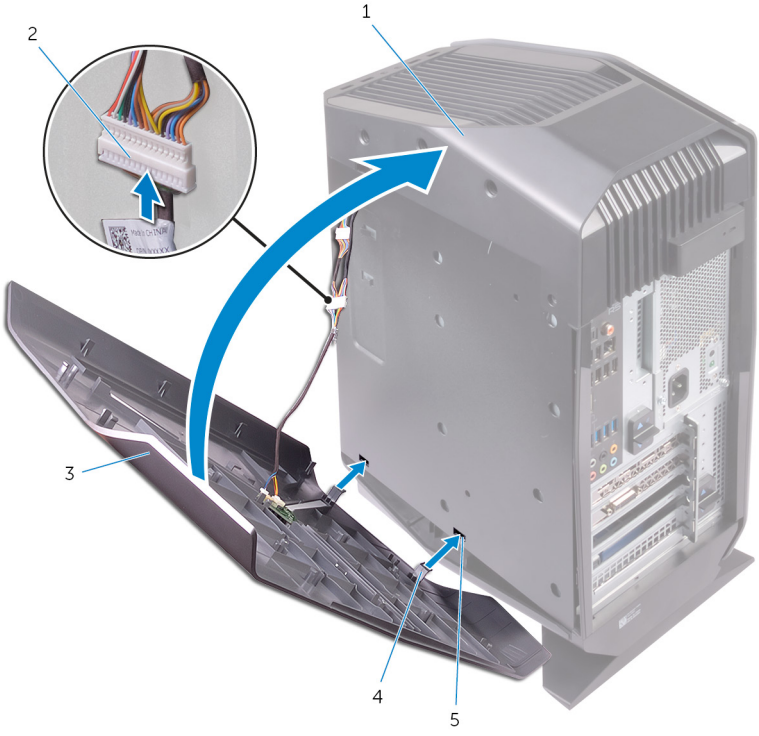

Figure 6. Connecting the lighting cable

a chassis
b lighting cable
c right-side cover
d tabs
e slots

2 Align the tabs on the right-side cover with the slots on the chassis and snap the right-side cover to lock it in place.

Figure 7. Replacing the right-side cover

a chassis

b slots

c right-side cover

Removing the top-cover assembly

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Prerequisites

1. Remove the left-side cover.
2. Remove the right-side cover.

Procedure

1. Remove the screws that secure the top cover to the chassis.
2. Disconnect the lighting cable from the top cover.

3 Slide the lighting cable through the slot on the chassis.

Figure 8. Removing the top cover

1	lighting cable	2	chassis
3	screws (2)	4	top cover

4 Starting from the rear, release the tabs on the top cover from the slots on the chassis.

5 Lift the top cover off the chassis.

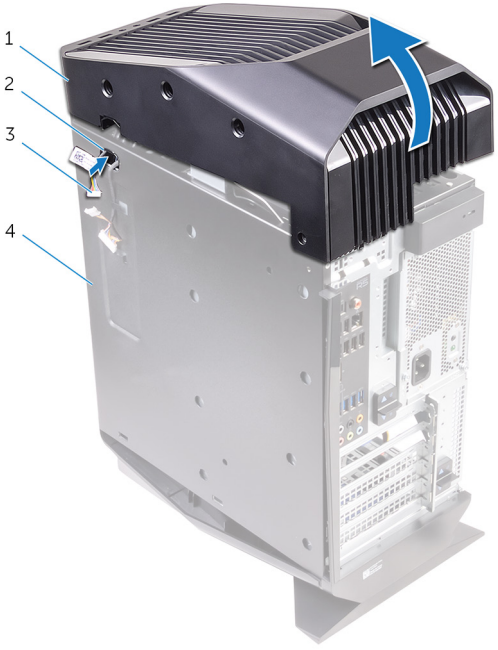

Figure 9. Removing the top cover

1	top cover	2	slot
3	lighting cable	4	chassis

6 Turn the top cover over, release the tabs on the top cover from the slots on the top bezel.

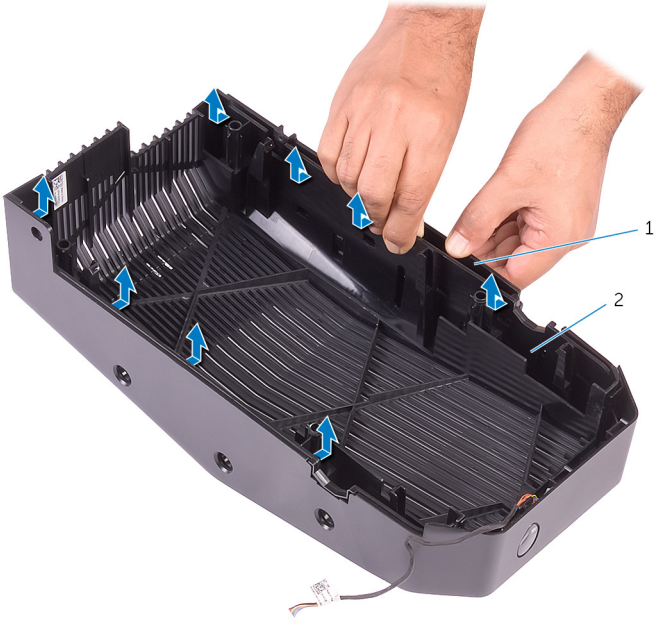

Figure 10. Releasing the top cover from the top bezel

7 Lift the top cover from the top bezel.

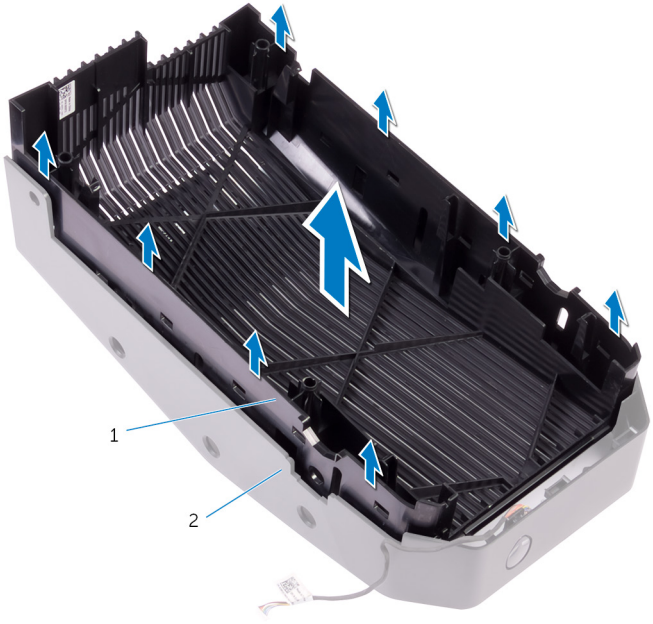

Figure 11. Lifting the top cover from the top bezel

a top cover

b top bezel

8 You are left with top bezel and top cover.

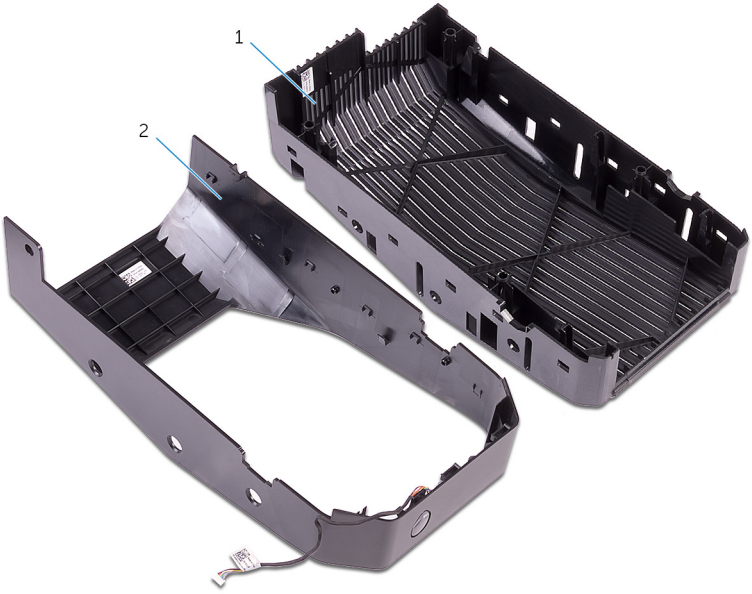

Figure 12. Top cover and top bezel

a top bezel

b top cover

Replacing the top-cover assembly

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Procedure

1. Align the tabs on the top cover with the slots on the top bezel and snap the top cover into place.
2. Slide the lighting cable through the slot on the chassis.
3. Align the tabs on the top cover with the slots on the chassis and snap the top cover into place.
4. Connect the lighting cable to the top cover.
5. Replace the screws that secure the top cover to the chassis.

Post-requisites

1. Replace the right-side cover.
2. Replace the left-side cover.

Removing the bottom cover

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Prerequisites

1. Remove the left-side cover.
2. Remove the two 2.5-inch hard-drive cages.

Procedure

1. Press the securing tabs to release the bottom cover from the slots on the chassis.
2. Tilt the computer back to the upright position.

Replacing the bottom cover

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Procedure

1. Turn the computer over until the base is facing up.
2. Align the tabs on the bottom cover with the slots on the chassis and snap the bottom cover in place.
3. Turn the computer over and place it in upright position.

Post-requisites

1. Replace the two 2.5-inch hard-drive cages.
2. Replace the left-side cover.

Removing the 3.5-inch hard drive

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Prerequisites

Remove the left-side cover.

Procedure

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

2 Press the release tabs on the hard-drive carrier and slide the hard-drive carrier out of the hard-drive cage.

Figure 13. Removing the hard drive

1	data cable	2	power cable
3	hard-drive cage	4	release tabs
5	hard-drive carrier		

3 Pry the hard-drive carrier to release the tabs on the carrier from the slots on the hard drive.

4 Lift the hard drive off the hard-drive carrier.

NOTE: Note the orientation of the hard drive so that you can replace it correctly.

Figure 14. Removing the hard drive from the hard-drive bracket

1	hard drive	2	hard-drive carrier
3	tabs (4)		

Replacing the 3.5-inch hard drive

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Procedure

1. Place the hard drive into the hard-drive carrier and align the tabs on the carrier with the slots on the hard drive.
2. Snap the hard-drive carrier into the hard drive.
3. Slide the hard-drive assembly into the hard-drive cage until it snaps into place.
4. Connect the data and power cables to the hard drive.

Post-requisites

Replace the left-side cover.

Removing the 2.5-inch hard drive

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Prerequisites

Remove the left-side cover.

Procedure

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

2 Press the release tabs on the hard-drive carrier and slide the hard-drive carrier out of the hard-drive cage.

Figure 15. Removing the hard drive

1	data cable	2	power cable
3	hard-drive cage	4	release tabs
5	hard-drive carrier		

3 Pry the hard-drive carrier to release the tabs on the carrier from the slots on the hard drive.

4 Lift the hard drive off the hard-drive carrier.

NOTE: Note the orientation of the hard drive so that you can replace it correctly.

Figure 16. Removing the hard drive from the hard-drive carrier

1	hard drive	2	hard-drive carrier
3	tabs (4)		

Replacing the 2.5-inch hard drive

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Procedure

1. Place the hard drive into the hard-drive carrier and align the tabs on the carrier with the slots on the hard drive.
2. Snap the hard-drive carrier into the hard drive.
3. Slide the hard-drive assembly into the hard-drive cage until it snaps into place.
4. Connect the data cable and power cable to the hard drive.

Post-requisites

Replace the left-side cover.

Removing the hard-drive cage

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Prerequisites

1. Remove the left-side cover.
2. Remove the 3.5-inch 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.

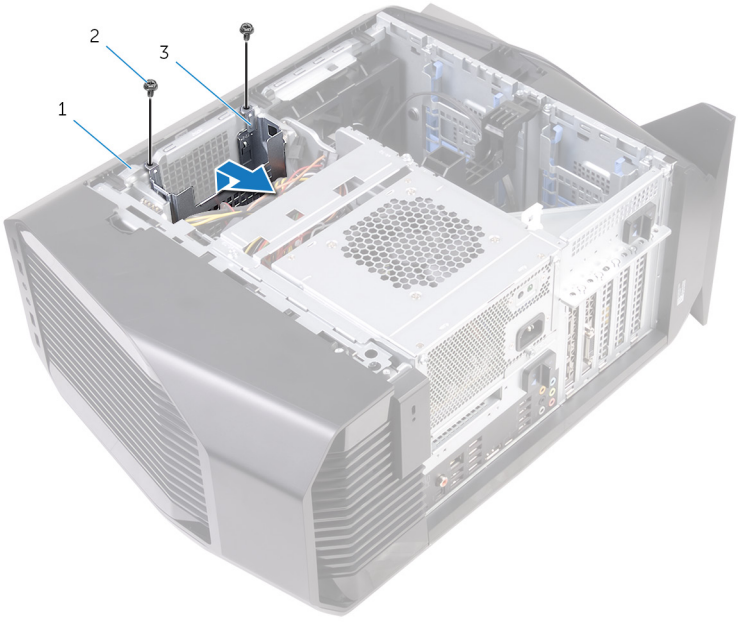


Figure 17. Removing hard-drive cage

1	chassis	2	#6-32x1/4" screws (2)
3	hard-drive cage		

Replacing the hard-drive cage

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

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 3.5-inch hard drive.
2. Replace the left-side cover.

Removing the power-supply unit

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

Remove the left-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 Lay the computer on the right side.

2 Slide the power-supply unit cage release latches towards the unlock position.

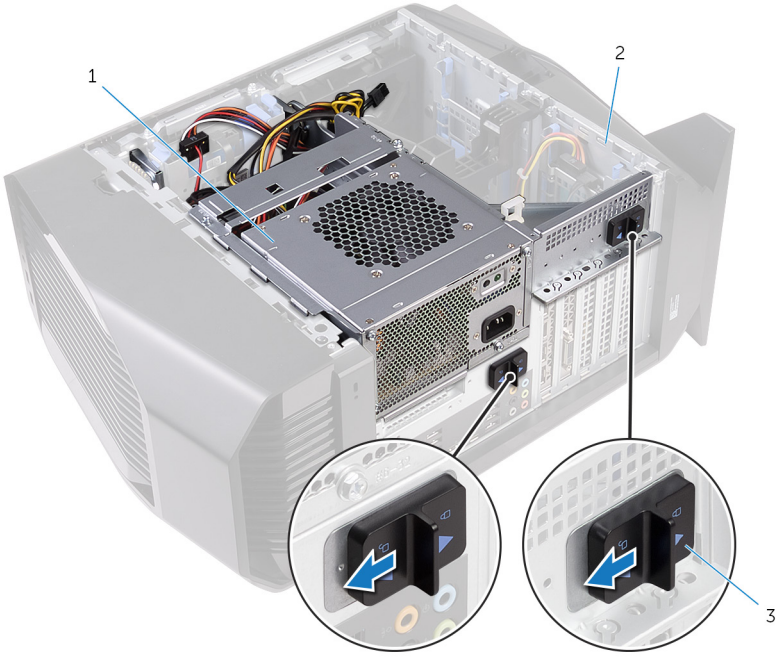
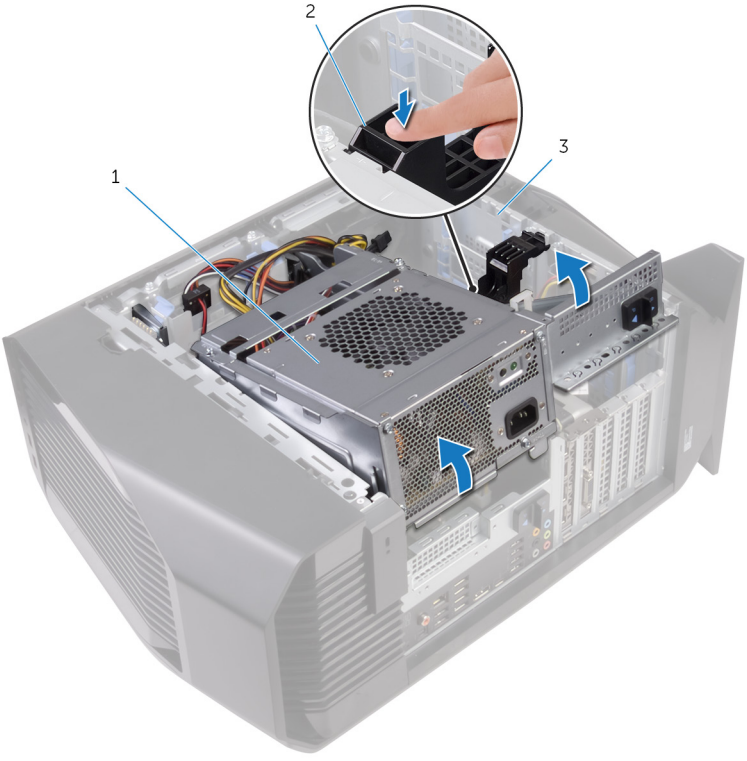


Figure 18. Sliding the power-supply unit cage release latches

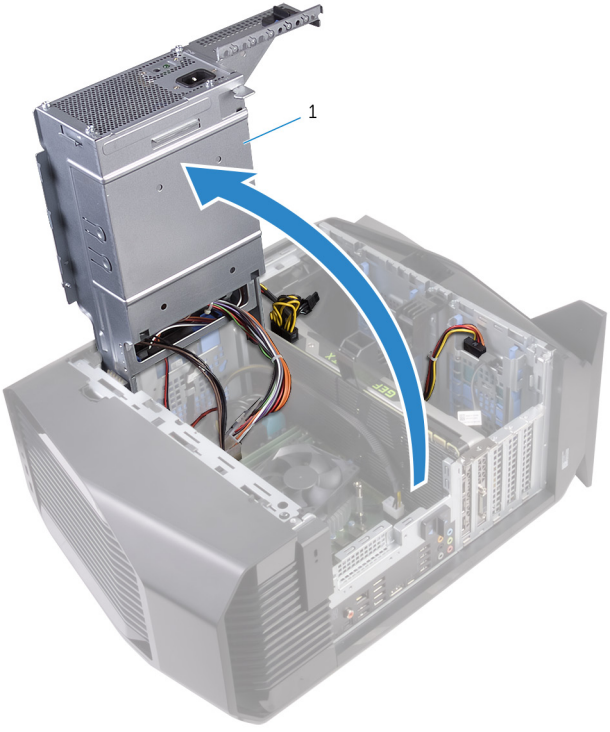
1	power-supply unit	2	chassis
3	power-supply unit cage release cage latches (2)		

3 Lift the power-supply unit cage while pressing and holding the graphics-card bracket.



1	power-supply unit cage	2	graphics-card bracket
3	chassis		

4 Rotate the power-supply unit cage away from the chassis.

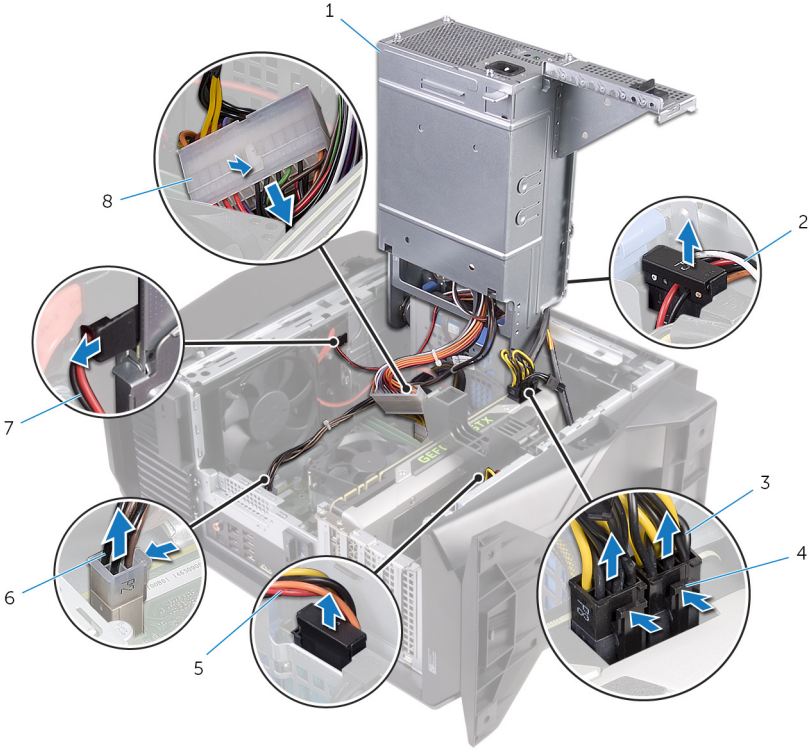


1 power-supply unit

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

6 Disconnect the power cables from the optical drive and hard drives.

7 Disconnect the processor-power cable and system-board power cable from the system board.

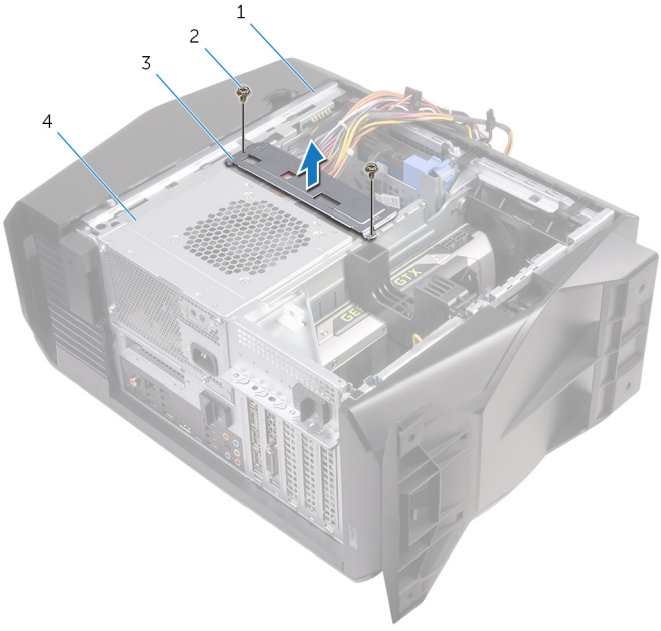


1	power-supply unit	2	hard-drive power cable
3	graphics-card power cables (2)	4	releasing clips (2)
5	hard-drive power cable	6	processor-power cable
7	optical-drive power cable	8	system-board power cable

8 Rotate the power-supply unit cage towards the chassis until the unit snaps into place.

9 Remove the screws that secure the power-supply unit bracket to the power-supply unit cage.

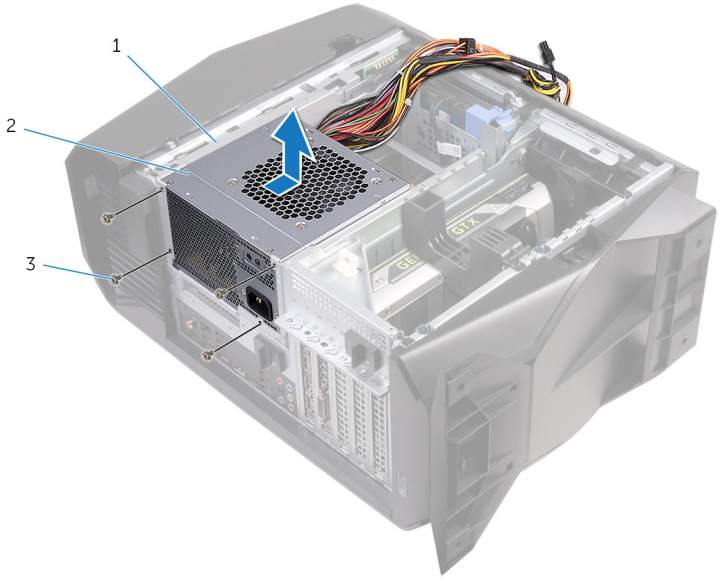
10 Lift the power-supply unit bracket off the power-supply unit cage.



1	chassis	2	screws (2)
3	power-supply unit bracket	4	power-supply unit

11 Remove the screws that secure the power-supply unit to the chassis.

12 Lift the power-supply unit, along with the cables, off the chassis.



1 chassis
2 power-supply unit
3 screws (4)

Replacing the power-supply unit

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

1. Place the power supply on the chassis.
2. Align the screw holes on the power-supply unit with the screw holes on the chassis.
3. Replace the screws that secure the power-supply unit to the chassis.
4. Align the screw holes on the power-supply unit bracket with the screw holes on the power-supply unit cage.
5. Replace the screws that secure the power-supply unit bracket to the power-supply unit cage.
6. Slide the power supply unit release latches towards the unlock position.
7. Lift and rotate the power-supply unit cage away from the chassis while pressing and holding the graphics-card bracket.
8. Connect the power cables to the graphics card, hard drives, and optical drive.
9. Connect the processor-power cable and system-board power cable to the system board.
10. Rotate the power-supply unit cage towards the chassis until the unit snaps into place.
11. Slide the power supply unit cage release latches towards the locked position.

Post-requisites

Replace the left-side cover.

Removing the processor-cooling assembly

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 left-side cover.
2. Remove the right-side cover.
3. Remove the top cover.

Procedure

1 Remove the screws that secure the radiator and fan assembly to the radiator and fan cage.

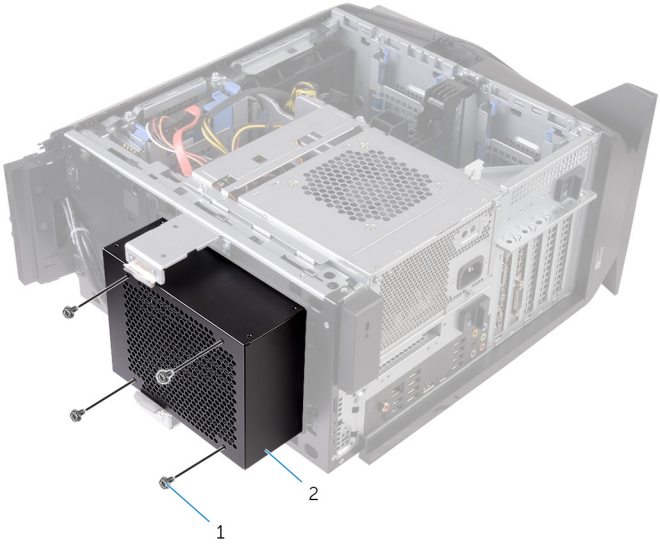


Figure 19. Removing the processor-cooling assembly

1	screws (4)	2	radiator and fan cage

2 Follow the procedure from step 1 to step 4 in "Removing the power-supply unit".

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

4 Lift the VR heat sink off the computer.

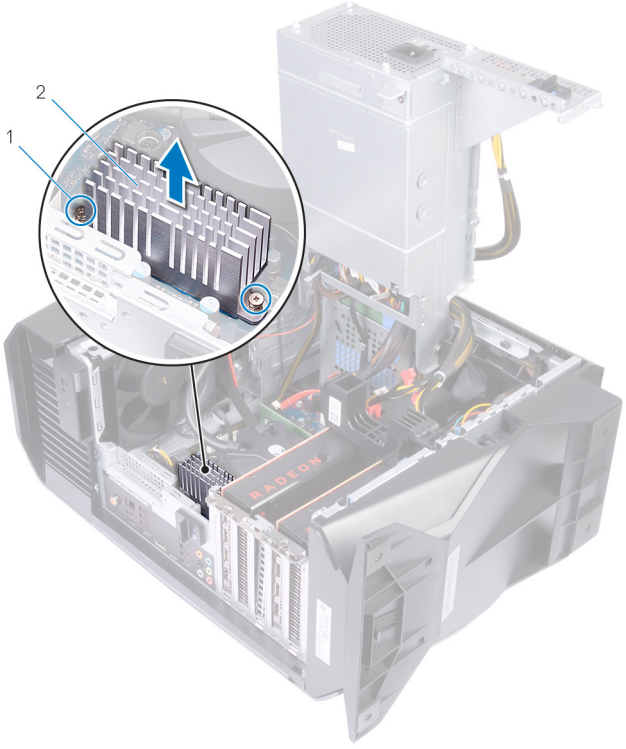


Figure 20. Removing the VR heat sink

1	captive screws (2)	2	VR heat sink

5 Disconnect the processor-cooling assembly cables from the system board.

6 In reversed order (as indicated on the processor cooler), loosen the captive screws that secure the processor cooler to the system board.

NOTE: If your are using an electric screwdriver, torque the screws at 6.9 +/-1.15 kilogram-force centimeter (6 +/-1 pound force inch).

7 Lift the processor-cooling assembly along with the cables off the computer.

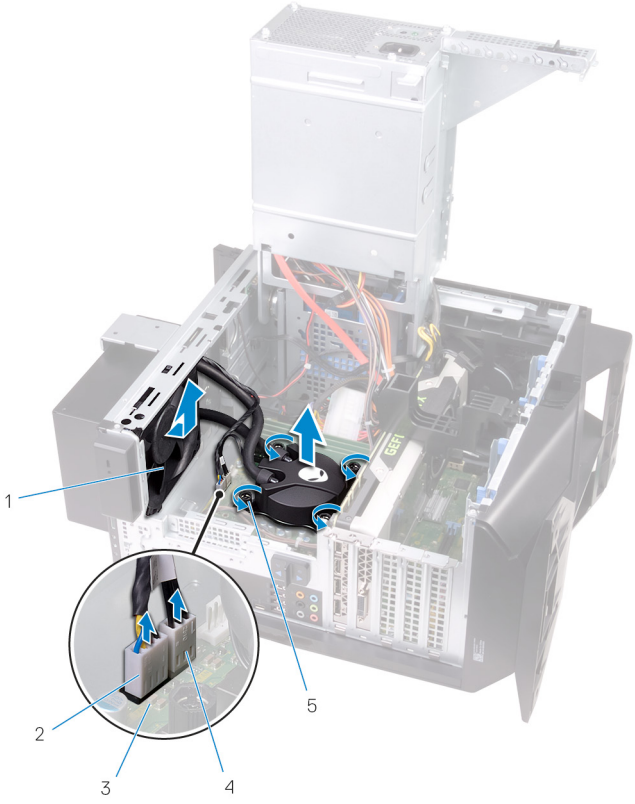


Figure 21. Removing the processor-cooling assembly

1	radiator fan	2	radiator-fan cable
3	system board	4	processor-cooling assembly cable
5	captive screws (4)		

Replacing the processor-cooling assembly

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

1. Slide the radiator and fan assembly into the radiator and fan cage.
2. Align the screw holes on the radiator and fan assembly with the screw holes on the radiator and fan cage.
3. Replace the screws that secure the radiator and fan assembly to the radiator and fan cage.
4. Align the screw holes on the processor cooler with the screw holes on the system board.
5. In sequential order (indicated on the processor cooler), tighten the captive screws that secure the processor cooler to the system board.

NOTE: If your are using an electric screwdriver, torque the screws at 6.9 +/-1.15 kilogram-force centimeter (6 +/-1 pound force inch).

6 Connect the processor-cooling assembly cables to the system board.

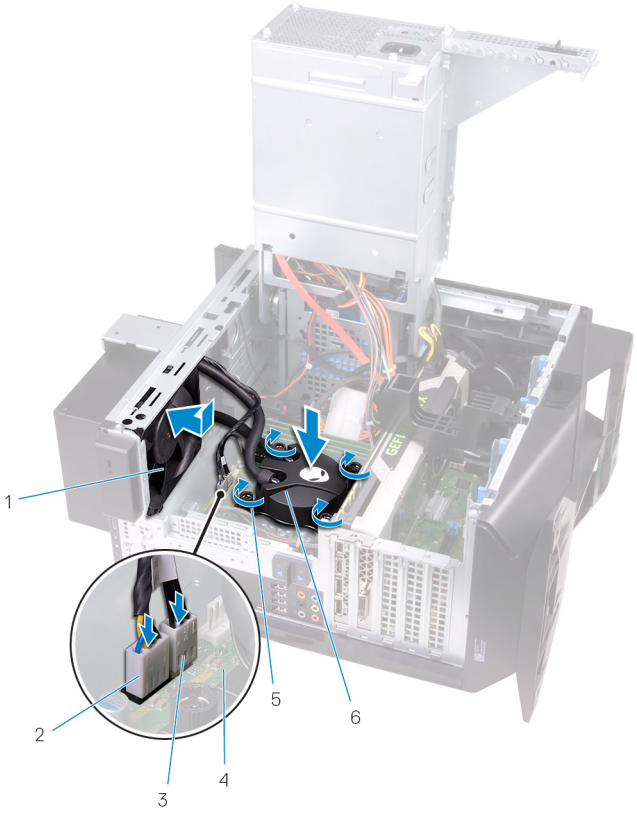


Figure 22. Replacing the processor-cooling assembly

1	radiator fan	2	radiator-fan cable
3	processor-cooling assembly cable	4	system board
5	captive screws (4)	6	processor-cooling assembly

7 Align the screw holes on the VR heat sink with the screw holes on the system board.

8 Tighten the captive screws that secure the VR heat sink to the system board.

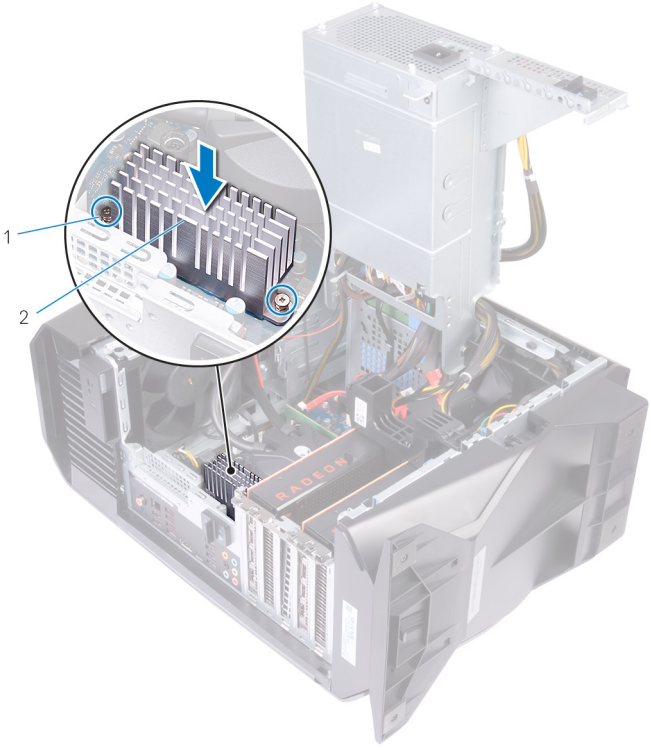


Figure 23. Replacing the VR heat sink

1	VR heat sink	2	captive screws (2)

9 Follow the procedure from step 10 to step 11 in "Replacing the power-supply unit".

10 Replace the screws that secure the radiator and fan assembly to the chassis.

Post-requisites

1 Replace the top cover.

2 Replace the right-side cover.

3 Replace the left-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 left-side cover.
2. Follow the procedure from step 1 to step 4 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.

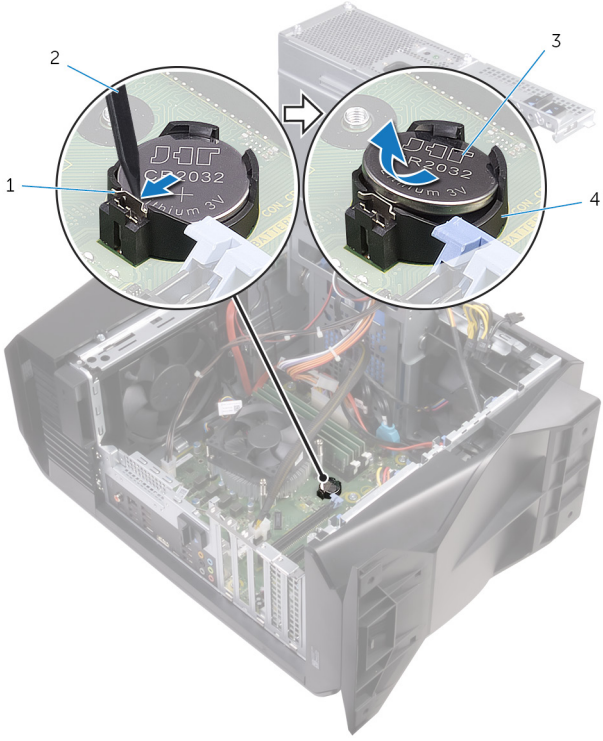


Figure 24. Removing the coin-cell battery

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

Replacing the coin-cell battery

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Procedure

Insert a new coin-cell battery (CR2032) into the battery socket with the positive side facing up, and snap the battery into place.

Post-requisites

1. Follow the procedure from step 10 to step 11 in "Replacing the power-supply unit".
2. Replace the left-side cover.

Removing the memory modules

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 left-side cover.
2. Follow the procedure from step 1 to step 4 in "Removing the power-supply unit".

Procedure

1. Locate the memory-module slots 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.

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

CAUTION: To prevent damage to the memory module, hold the memory module by the edges. Do not touch the components on the memory module.

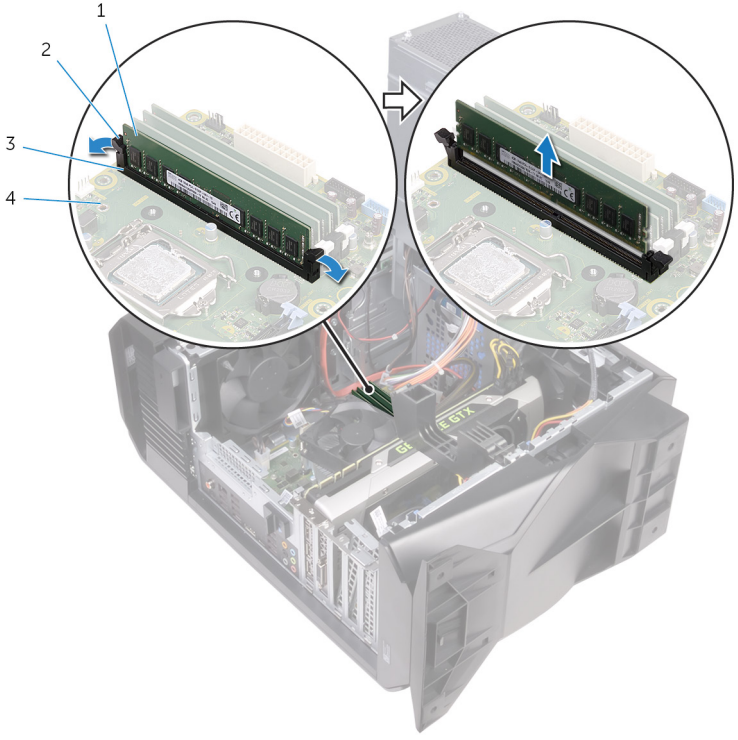


Figure 25. Removing the memory module

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

Replacing the memory modules

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

1. Ensure that the securing clips are extended away from the memory-module slot.
2. Align the notch on the memory module with the tab on the memory-module slot.

3 Insert the memory module into the memory-module slot and press the memory module down until it snaps into position and the securing clips lock in place.

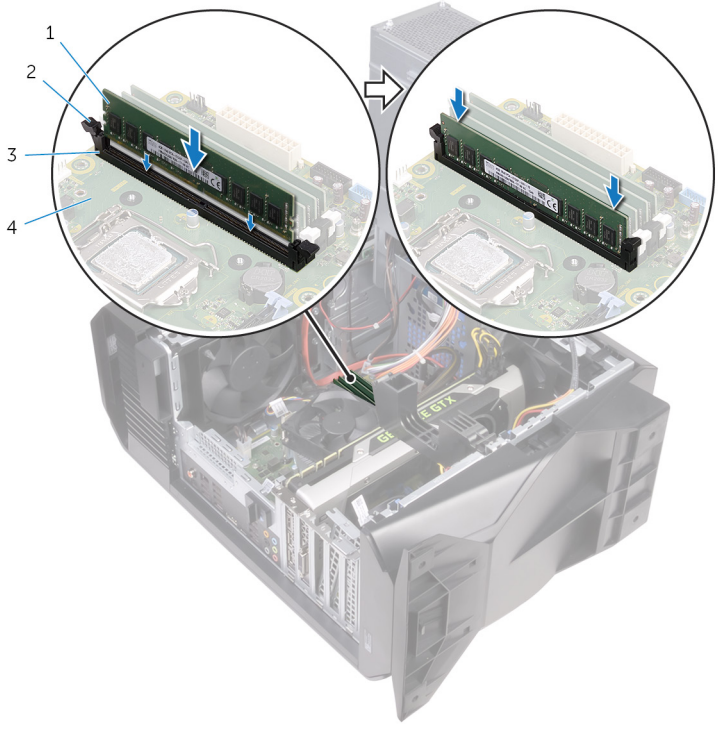


Figure 26. Replacing the memory module

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

NOTE: Use slots XMM1 and XMM2 if you need to use two memory modules. For more information, see System-board components.

The following table lists the available memory configuration matrix:

Table 2. Memory configuration matrix

Configuration	Slot			
	DIMM1	DIMM2	DIMM3	DIMM4
8 GB DDR4	8 GB			
16 GB DDR4	8 GB	8 GB		
32 GB DDR4	16 GB	16 GB		
64 GB DDR4	16 GB	16 GB	16 GB	16 GB

Post-requisites

1. Follow the procedure from step 10 to step 11 in "Replacing the power-supply unit".
2. Replace the left-side cover.

Removing the solid-state drive

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: 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.

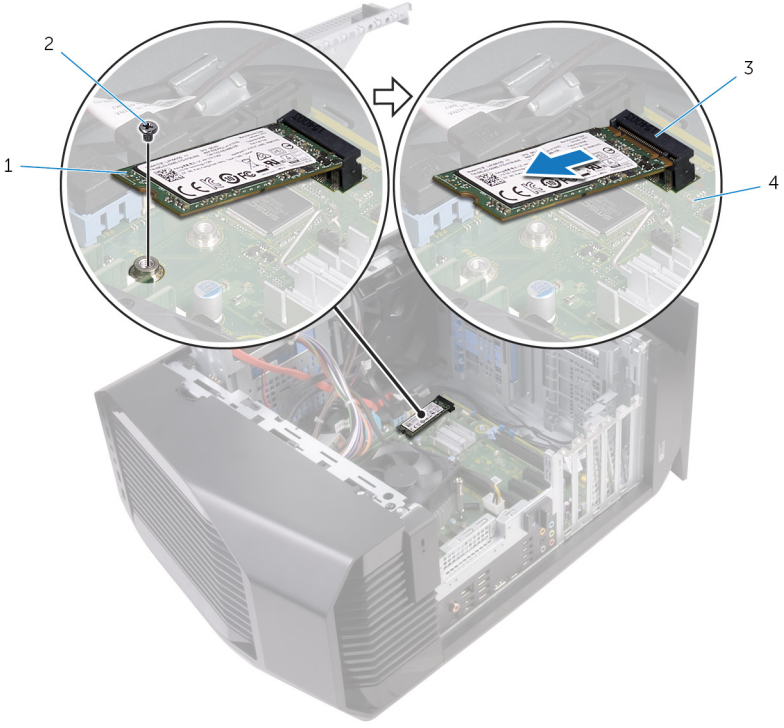
Prerequisites

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

Procedure

1. Locate the solid-state drive slot on the system board. For more information, see "System-board components".
2. Remove the screw that secures the solid-state drive to the system board.

3 Slide and lift the solid-state drive off the system board.



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

Replacing the solid-state drive

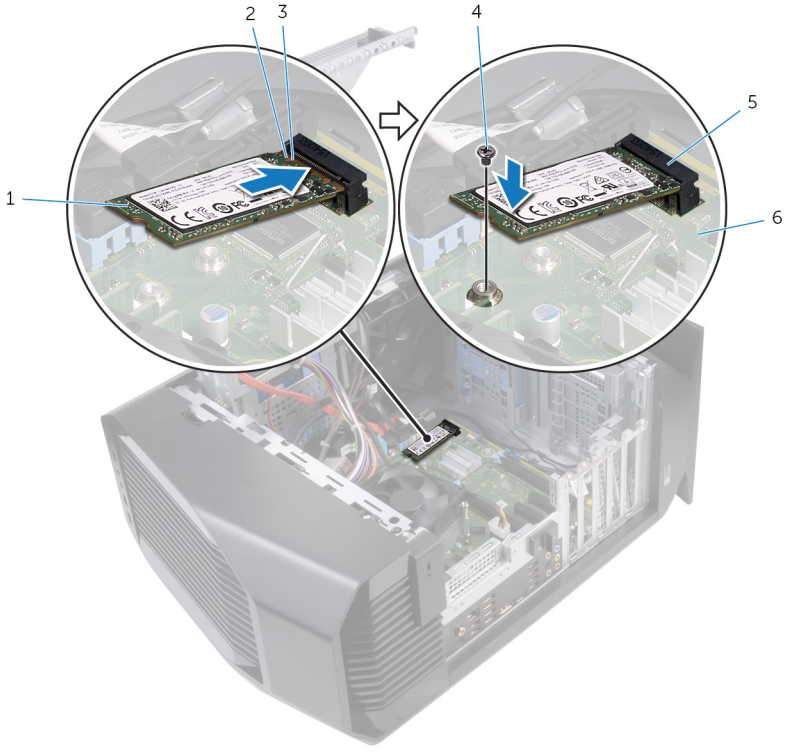
WARNING: Before working inside your computer, read the safety information that shipped with your computer and follow the steps in Before working inside your computer. After working inside your computer, follow the instructions in After working inside your computer. For more safety best practices, see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

CAUTION: 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 system board.

3 Press the other end of the solid-state drive down and replace the screw that secure the solid-state drive to the system board.



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

Post-requisites

1 Replace the graphics card.

2 Follow the procedure from step 10 to step 11 in "Replacing the power-supply unit".

3 Replace the left-side cover.

Removing the graphics card

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Prerequisites

1. Remove the left-side cover.
2. Follow the procedure from step 1 to step 4 in "Removing the power-supply unit".

Procedure

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

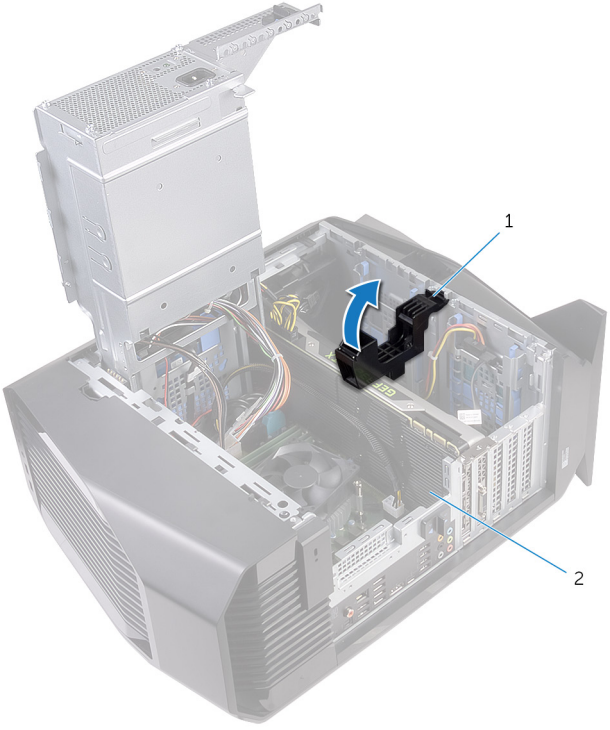

Figure 27. Removing the graphics card

1	graphics-card bracket	2	graphics card

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.

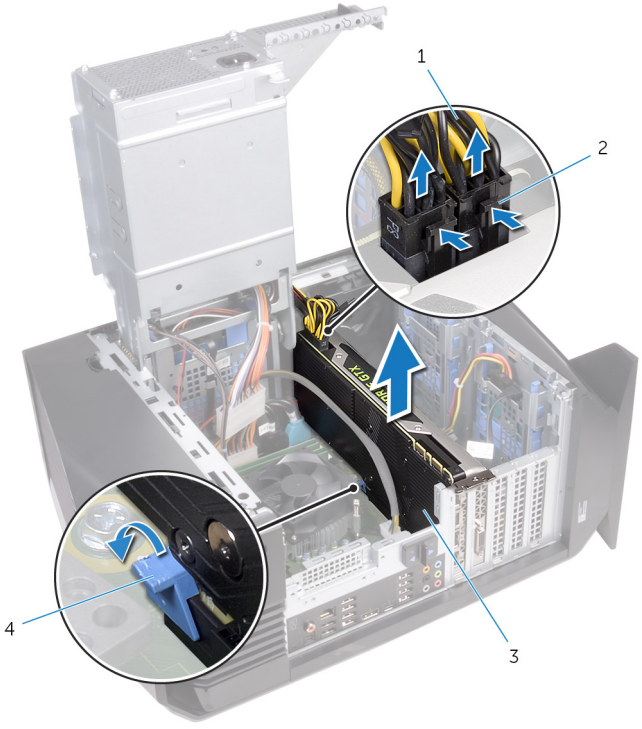

Figure 28. Removing the graphics card

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

Replacing the graphics 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.

Procedure

1. Align the graphics card with the slot on the system board.
2. Place the card into the slot and press down firmly until the graphics card snaps into place.
3. Connect the power cables to the 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 10 to step 11 in "Replacing the power-supply unit".
2. Replace the left-side cover.

Removing the VR heat sink

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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 left-side cover.
2. Follow the procedure from step 1 to step 4 in "Removing the power-supply unit".

Procedure

1. Loosen the captive screws that secure the VR heat sink to the system board.

2 Lift the VR heat sink from the system board.

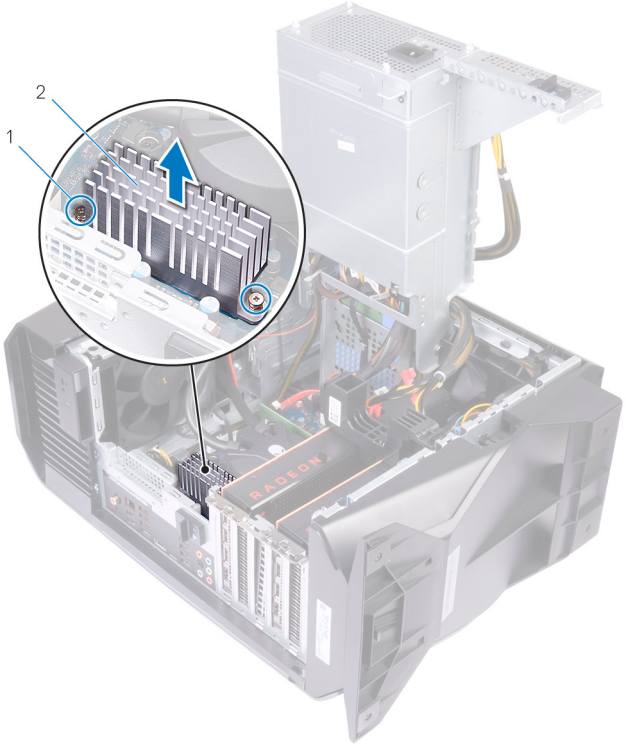

Figure 29. Removing the VR heat sink

1	captive screws (2)	2	VR heat sink

Replacing the VR heat sink

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

1. Align and place the VR heat sink on the system board.
2. Tighten the captive screws that secure the VR heat sink to the system board.

Post-requisites

1. Follow the procedure from step 10 to step 11 in "Replacing the power-supply unit".
2. Replace the left-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 left-side cover.
2. Follow the procedure from step 1 to step 4 in "Removing the power-supply unit".

Procedure

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

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

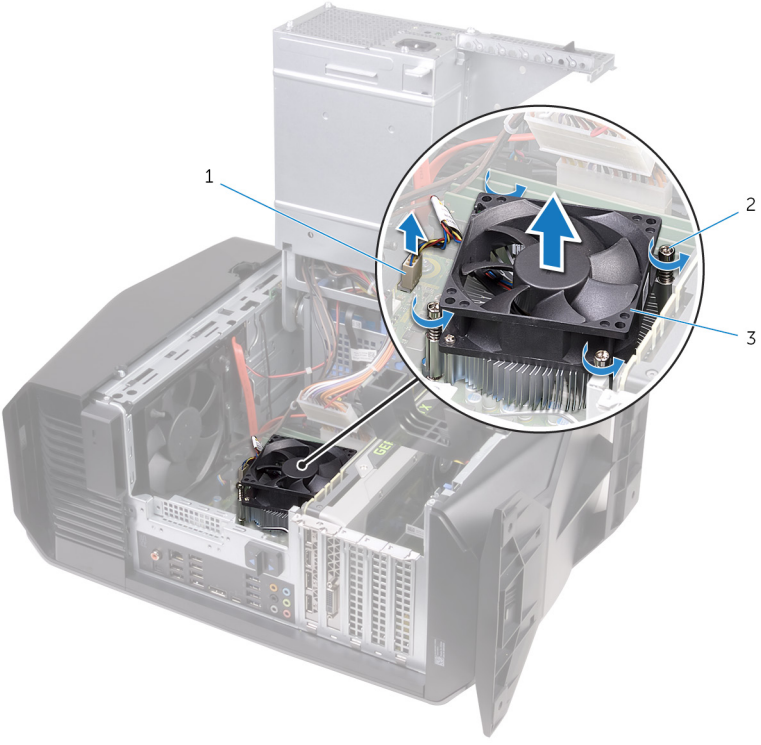

Figure 30. Removing the processor fan and heat sink assembly

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

Replacing the processor fan and heat-sink assembly

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

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

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

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

Post-requisites

1. Follow the procedure from step 10 to step 11 in "Replacing the power-supply unit".
2. Replace the left-side cover.

Removing the processor

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 left-side cover.
2. Follow the procedure from step 1 to step 4 in "Removing the power-supply unit".
3. Remove the processor fan and heat-sink assembly or processor-cooling assembly (as applicable).

Procedure

1. Press the release lever down and then push it away from the processor to release it from the tab.
2. Extend the release lever completely and open the processor cover.

3 Lift the processor off the processor socket.

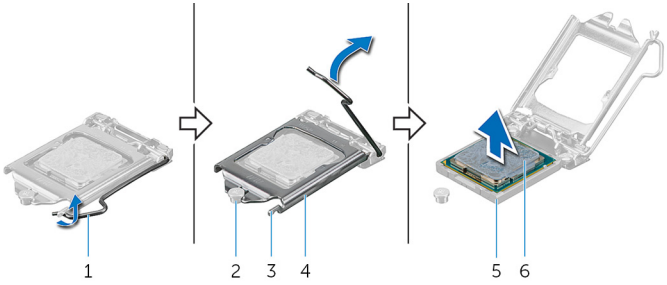

Figure 31. Removing the processor

1	release lever	2	alignment post
3	tab	4	processor cover
5	processor socket	6	processor

Replacing the processor

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: 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 and the processor cover is fully open.

CAUTION: Position the processor correctly in the processor socket to avoid permanent damage to the processor.

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.

CAUTION: Ensure that the processor-cover notch is positioned underneath the alignment post.

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.

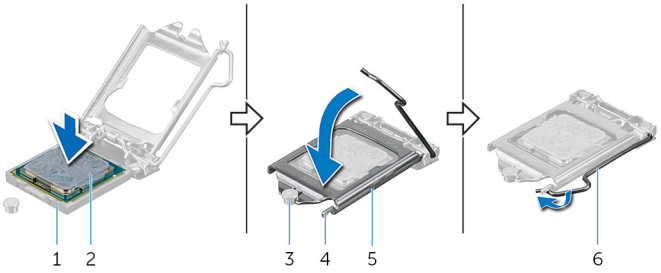

Figure 32. Replacing the processor

1	processor socket	2	processor
3	alignment post	4	tab
5	processor cover	6	release lever

Post-requisites

1 Replace the processor fan and heat-sink assembly or processor-cooling assembly (as applicable).

2 Follow the procedure from step 10 to step 11 in "Replacing the power-supply unit".

3 Replace the left-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 left-side cover.
2. Follow the procedure from step 1 to step 4 in "Removing the power-supply unit".

Procedure

1. Remove the screw that secures the wireless card to the system board.
2. Lift the wireless-card bracket off the wireless card.
3. Disconnect the antenna cables from the wireless card.

4 Slide and remove the wireless card from the wireless-card slot.

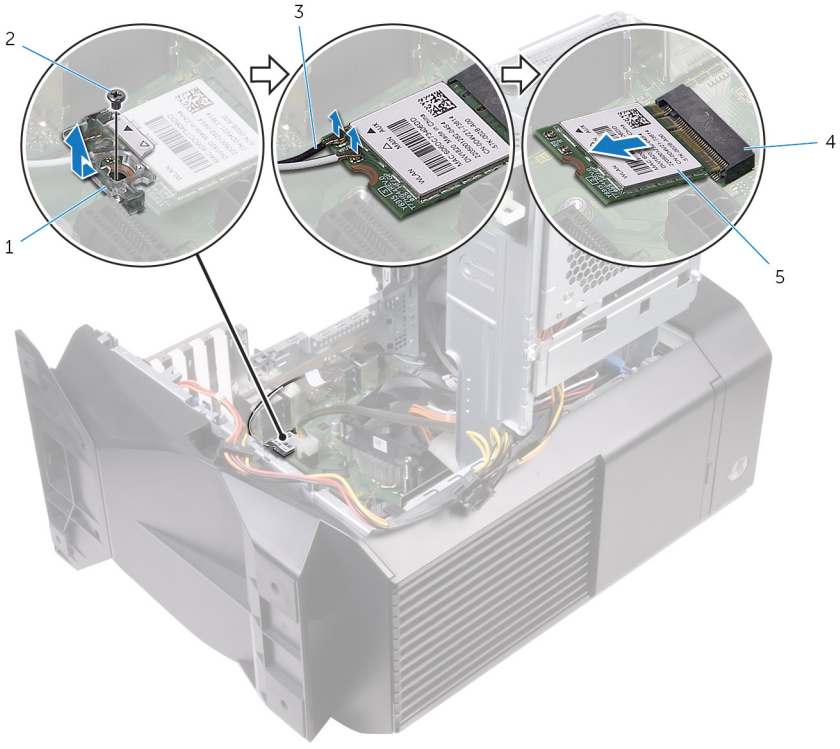

Figure 33. Removing the wireless card

1	wireless-card bracket	2	screw
3	antenna cables	4	wireless-card slot
5	wireless card		

Replacing 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.

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.

   Table 3. Antenna-cable color scheme

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

4. Place the wireless-card bracket on the wireless card.

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

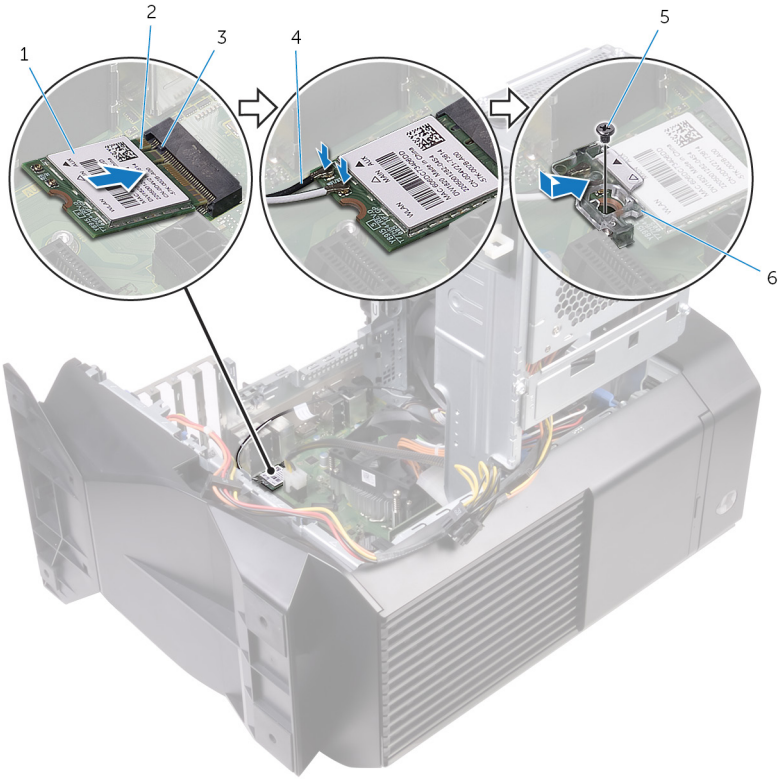

Figure 34. Replacing the wireless card

1	wireless card	2	notch
3	tab	4	antenna cables
5	screw	6	wireless-card bracket

Post-requisites

1 Follow the procedure from step 10 to step 11 in "Replacing the power-supply unit".

2 Replace the left-side cover.

Removing the antenna

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

Procedure

1. Note the antenna-cable routing and remove the antenna cables from the routing guides inside the chassis.

2 Push down the antenna cables towards the top of the computer through the cable-routing slot on the chassis.

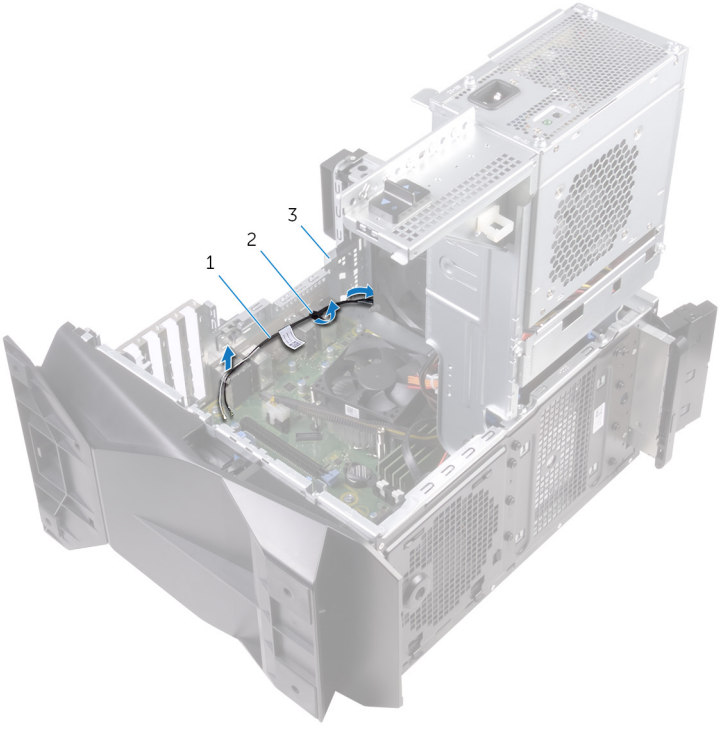

Figure 35. Removing the antenna cables

1	antenna cables	2	routing guides
3	chassis		

3 Remove the antenna cables from the routing guides on the chassis.

4 Pry the antenna off the chassis.

Figure 36. Removing the antenna cables

1	antenna	2	antenna cables
3	routing guides		

Replacing the antenna

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

1. Adhere the antenna to the chassis.
2. Route the antenna cables through the routing guides on the chassis and slide the cables through the cable-routing slot on the chassis.
3. Route the antenna cables through the routing guides inside the chassis.

Post-requisites

1. Follow the procedure from step 1 to step 3 in “Replacing the wireless card”.
2. Replace the top cover.
3. Replace the right-side cover.
4. Replace the left-side cover.

Removing the front-chassis fan

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

Procedure

1. Disconnect the front-chassis fan cable from the system board.
2. Push the tab to release the front-chassis fan from the chassis.

3 Slide and lift the chassis fan off the chassis.

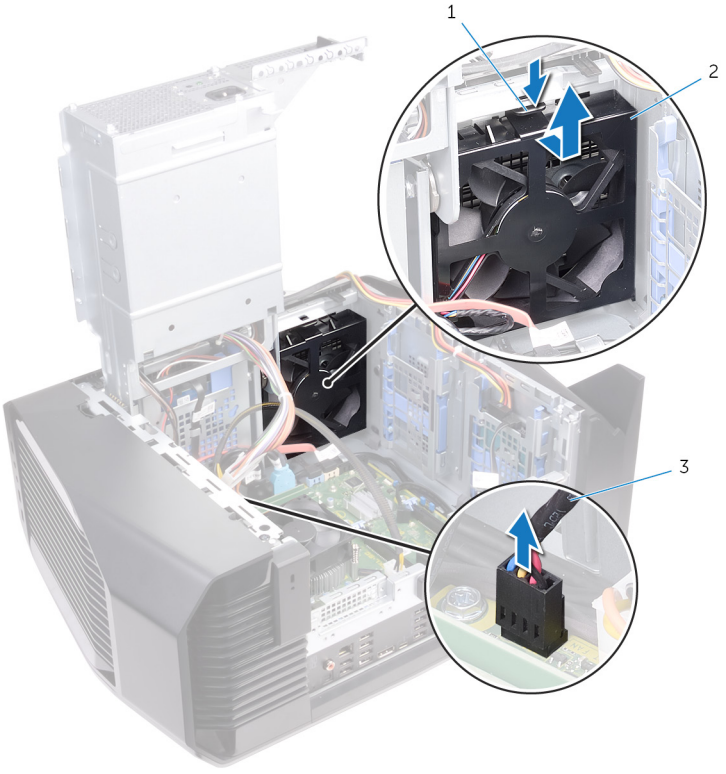

Figure 37. Removing the chassis fan

1	tab	2	front-chassis fan bracket
3	front-chassis fan cable		

4 Spread apart the tabs on the front-chassis fan bracket and lift the front-chassis fan along with its cable off the bracket.

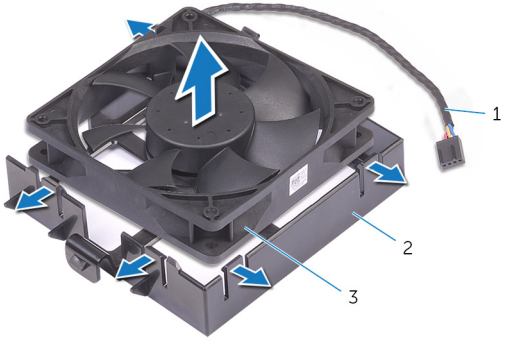

Figure 38. Removing the chassis fan

1	front-chassis fan cable	2	front-chassis fan bracket
3	front-chassis fan		

Replacing the front-chassis fan

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

1. Align the tabs on the front-chassis fan bracket with the front-chassis fan and press down on the fan until it snaps into position.
2. Align the tabs on the front-chassis fan with the slots on the chassis and slide the fan until it snaps into position.
3. Connect the front-chassis fan cable to the system board.

Post-requisites

1. Replace the graphics card.
2. Follow the procedure from step 10 to step 11 in "Replacing the power-supply unit".
3. Replace the left-side cover.

Removing the top-chassis fan

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 left-side cover.
2. Follow the procedure from step 1 to step 4 in "Removing the power-supply unit".

Procedure

1. Remove the screw that secures the top-chassis fan to the chassis.
2. Disconnect the top-chassis fan cable from the system board.

3 Remove the top-chassis fan from the chassis.

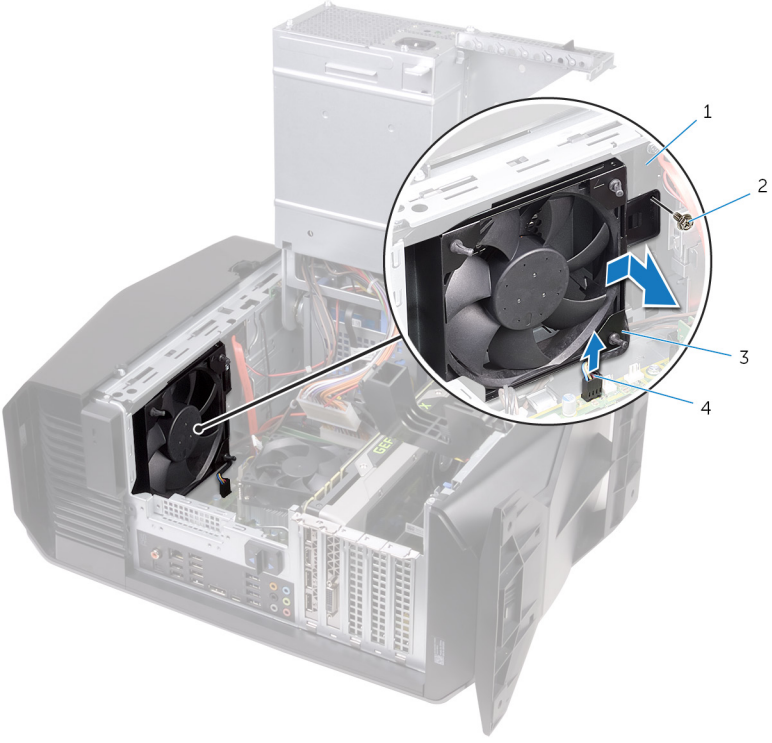

Figure 39. Removing the top-chassis fan

1	chassis	2	screw
3	top-chassis fan	4	top-chassis fan cable

4 Remove the top-chassis fan cable from the routing guide on the top-chassis fan bracket.

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

6 Lift the top-chassis fan off the top-chassis fan bracket.

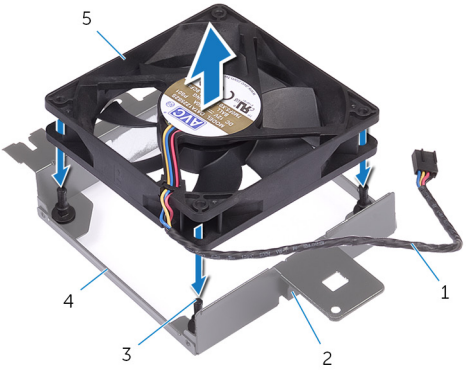

Figure 40. Removing the top-chassis fan

1	top-chassis fan cable	2	routing guide
3	rubber grommets (4)	4	top-chassis fan bracket
5	top-chassis fan		

Replacing the top-chassis fan

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Procedure

1. Align the holes on the top-chassis fan with the holes on the top-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 top-chassis fan bracket and pull through until they snap into place.
4. Route the top-chassis fan cable through the routing guide on the bracket.
5. Align the tabs on the top-chassis fan with the slots on the chassis and slide the fan until it snaps into position.
6. Replace the screw that secures the top-chassis fan to the chassis.
7. Connect the top-chassis fan cable to the system board.

Post-requisites

1. Follow the procedure from step 10 to step 11 in "Replacing the power-supply unit".
2. Replace the left-side cover.

Removing the optical drive

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 left-side cover.
2. Follow the procedure from step 1 to step 4 in "Removing the power-supply unit".

Procedure

1. Disconnect the power and data cable from the optical-drive.

2 Pull the securing tab to release the optical-drive carrier from the chassis.

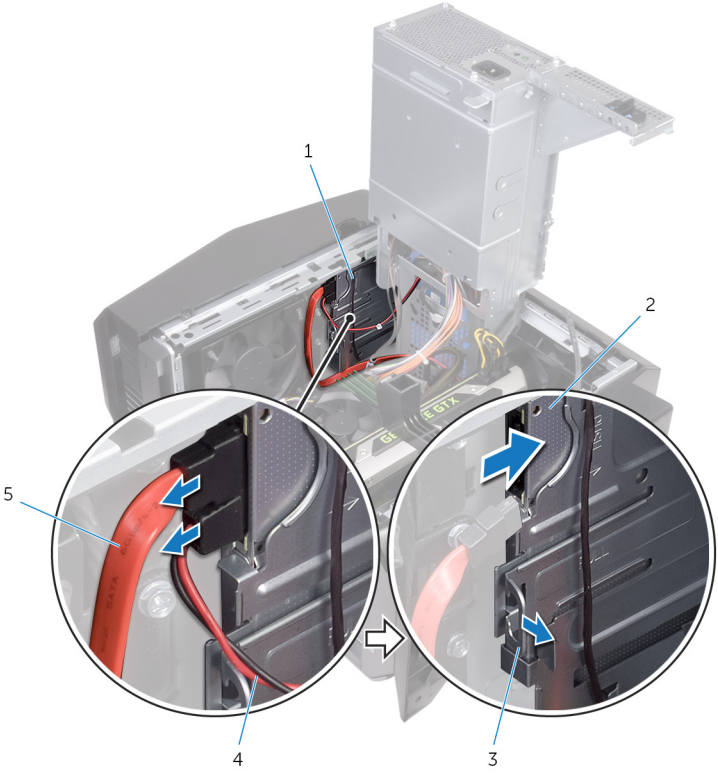

Figure 41. Disconnecting the power and data cables

1	optical-drive carrier	2	optical drive
3	securing tab	4	power cable
5	data cable		

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

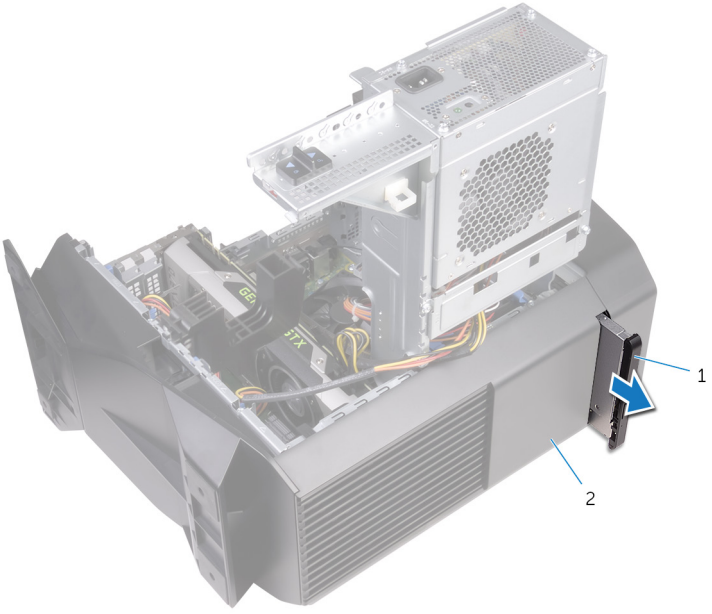

Figure 42. Removing the optical drive

1	optical-drive assembly	2	chassis

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

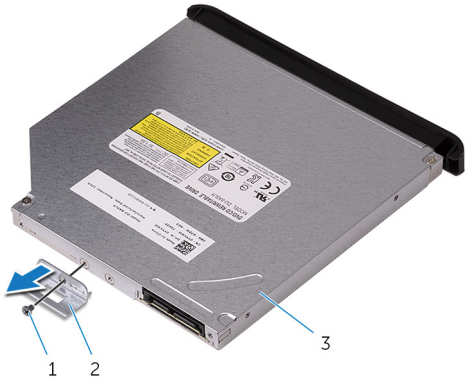

Figure 43. Removing the optical drive

1 screw
2 optical-drive bracket
3 optical drive

5 Gently pull and disconnect the optical-drive bezel from the optical drive.

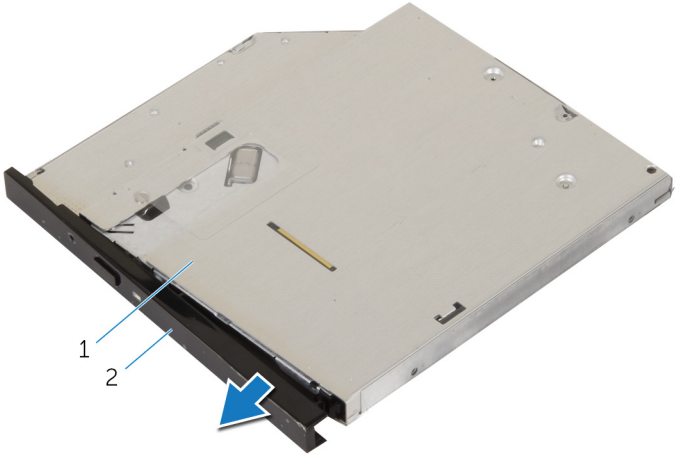

Figure 44. Removing the optical drive

1 optical drive
2 optical-drive bezel

Replacing the optical drive

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

1. Align and snap the optical-drive bezel to the optical drive.
2. Align the screw hole on the optical-drive bracket with the screw hole on the optical drive.
3. Replace the screw that secures the optical-drive bracket to the optical drive.
4. Slide the optical-drive assembly through the front of the computer until the securing tab snaps into place.
5. Connect the data and power cables to the optical drive.

Post-requisites

1. Follow the procedure from step 10 to step 11 in "Replacing the power-supply unit".
2. Replace the left-side cover.

Removing the front bezel

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 left-side cover.
2. Remove the right-side cover.
3. Follow the procedure from step 1 to step 3 in "Removing the optical drive".
4. Remove the top cover.

Procedure

1. Place the computer in an upright position.

2 Grasp and release the front bezel tabs sequentially from the top, by moving them outward from the front panel.

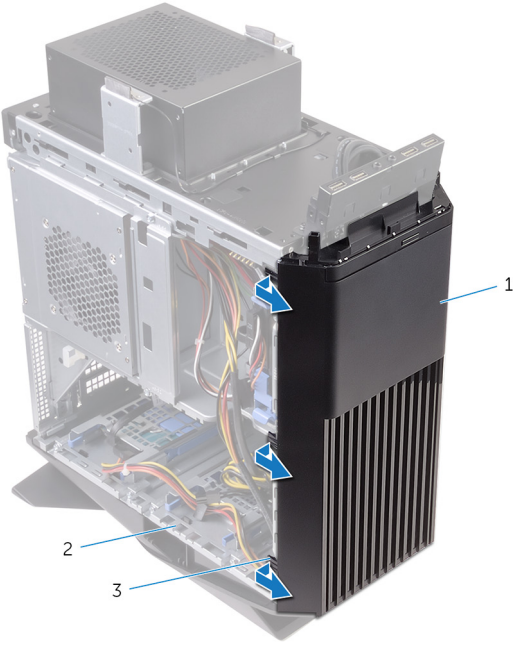

Figure 45. Removing the front bezel

1	front bezel	2	chassis
3	tabs		

3 Rotate and pull the front bezel away from the front of the chassis to release the tabs on the front bezel from the slots on the front panel.

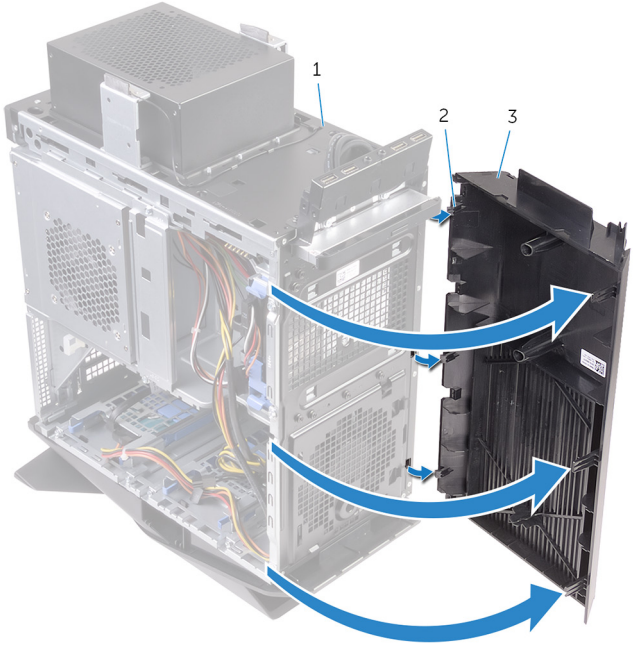

Figure 46. Removing the front bezel

1	chassis	2	tabs
3	front bezel		

Replacing the front bezel

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Procedure

1. Align and insert the front bezel tabs into the front panel slots.
2. Rotate the front bezel towards the chassis until the front bezel tabs snap into place.

Post-requisites

1. Replace the top cover.
2. Follow the procedure from step 4 to step 5 in "Replacing the optical drive".
3. Replace the right-side cover.
4. Replace the left-side cover.

Removing the power-button board

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 left-side cover.
2. Remove the right-side cover.
3. Remove the top cover.

Procedure

1. Note the power-button module cable routing and remove the cable from the routing guides on the top cover.
2. Remove the screws that secure the power-button module to the top cover.

3 Lift the power-button module off the top cover.

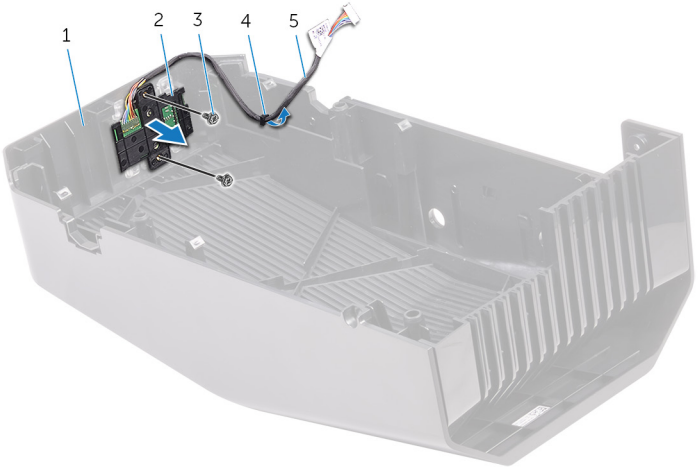

Figure 47. Removing the power-button module

1	top cover	2	power-button module
3	screws (2)	4	routing guide
5	power-button module cable		

4 Release the power-button board from under the tabs on the power-button board bracket.

5 Lift the power-button board along with the cable off the power-button board bracket.

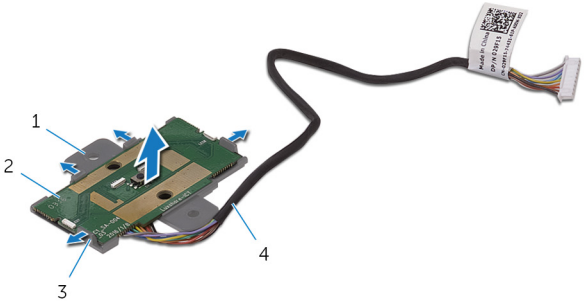

Figure 48. Removing the power-button module

1	power-button board bracket	2	power-button board
3	tabs (4)	4	power-button module cable

Replacing the power-button board

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Procedure

1. Align and slide the power-button board on the power-button board bracket and snap it into place.
2. Align the screw holes on the power-button module with the screw holes on the top cover.
3. Replace the screws that secure the power-button module to the top cover.
4. Route the power-button module cable through the routing guide on the top cover.

Post-requisites

1. Replace the top cover.
2. Replace the right-side cover.
3. Replace the left-side cover.

Removing the rear trim cover

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 left-side cover.
2. Remove the right-side cover.
3. Remove the top cover.

Procedure

1. Place the computer in an upright position.

2 Using the tab, slide and remove the rear trim cover from the chassis.

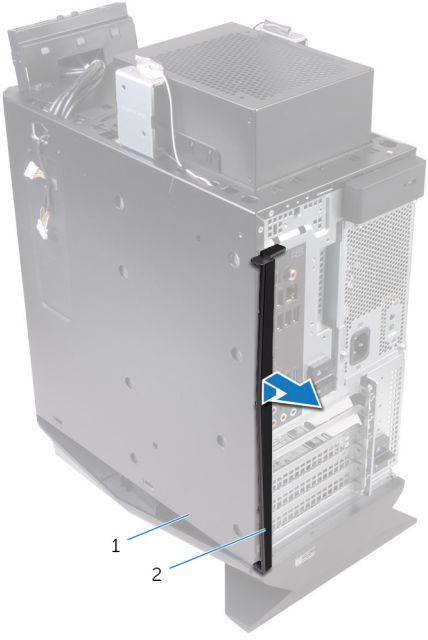

Figure 49. Removing the rear trim cover

1	chassis	2	rear trim cover

Replacing the rear trim cover

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

Align the tabs on the rear trim cover with the slots on the chassis and snap the cover to lock it in place.

Post-requisites

1. Replace the top cover.
2. Replace the right-side cover.
3. Replace the left-side cover.

Removing the system board

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.

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

Procedure

NOTE: Note the routing of all cables as you remove them so that you can reroute them correctly after you replace the system board. For information on system board connectors, see "System-board components".

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

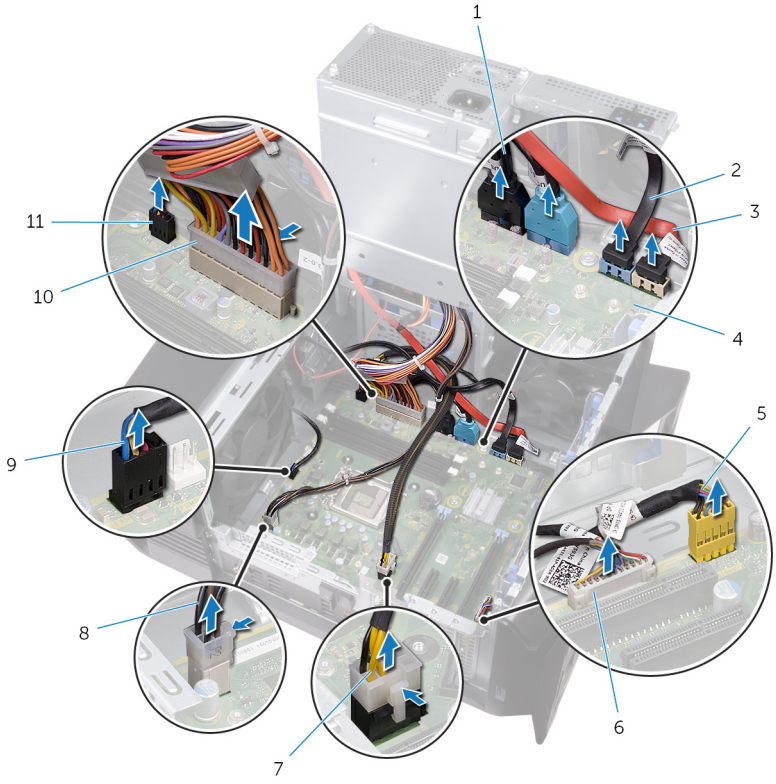

Figure 50. Removing the system board

1	Top panel USB cables (SSUSB)	2	SATA 6 Gbps drive cable (SATA1)
3	SATA 6 Gbps drive cable (SATA2)	4	system board
5	front-panel audio cable (F_AUDIO)	6	LED controller cable (LED_CONTROLLER)
7	graphics-card power cable (GPU_POWER)	8	processor power cable (ATX_CPU)
9	top-chassis fan cable (TOP_FAN)	10	system-board power cable
11	front-chassis fan cable (FRONT_FAN)		

2 Remove the screws that secure the system-board assembly to the chassis.

3 Lift the system-board assembly out of the chassis.

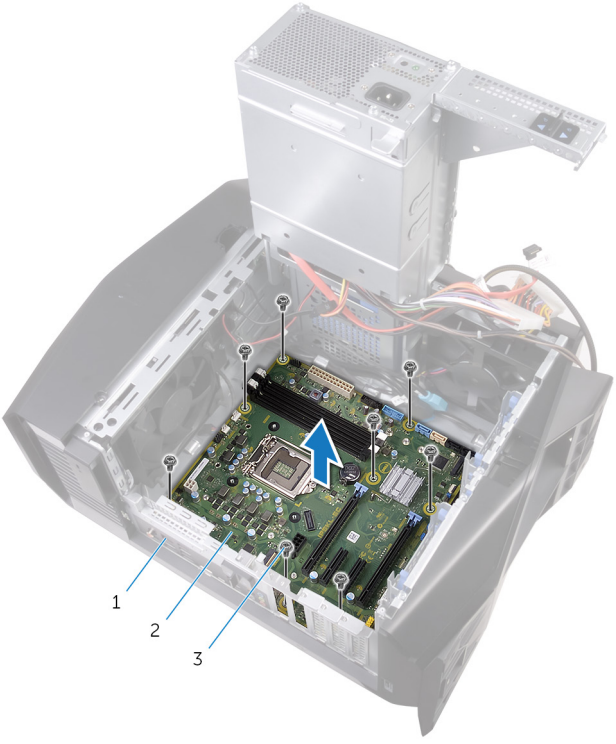

Figure 51. Removing the system board

1	chassis	2	system board
3	screws (8)		

Replacing the system board

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.

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. Align the system-board assembly with the slots on the chassis and place the system-board assembly in position.
2. Slide the system-board assembly to engage the latches that secure it to the chassis.
3. Replace the screws that secure the system-board assembly to the chassis.
4. Route and connect the cables that you disconnected from the system-board assembly.

Post-requisites

1. Replace the processor.
2. Replace the graphics card.
3. Replace the processor fan and heat-sink assembly.
4. Replace the wireless card.
5. Replace the solid-state drive.
6. Replace the memory modules.

7 Follow the procedure from step 10 to step 11 in "Replacing the power-supply unit".

8 Replace the left-side cover.

Entering the Service Tag in the BIOS setup program

1 Turn on or restart your computer.

2 Press F2 when the AlienHead logo is displayed to enter the BIOS setup program.

3 Navigate to the **Main** tab and enter the Service Tag in the **Service Tag Input** field.

Downloading drivers

Downloading the audio driver

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. Scroll down the page and expand **Audio**.
6. Click **Download** to download the audio driver for your computer.
7. After the download is complete, navigate to the folder where you saved the audio driver file.
8. Double-click the audio driver file icon and follow the instructions on the screen to install the driver.

Downloading the graphics driver

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. Scroll down the page and expand **Video**.
6. Click **Download** to download the graphics driver for your computer.
7. After the download is complete, navigate to the folder where you saved the graphics driver file.
8. Double-click the graphics driver file icon and follow the instructions on the screen.

Downloading the USB 2.0 and USB 3.0 driver

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. Scroll down the page and expand **Chipset**.
6. Click **Download** to download the USB 2.0 or USB 3.0 driver for your computer.
7. After the download is complete, navigate to the folder where you saved the USB 2.0 or USB 3.0 driver file.
8. Double-click the driver file icon and follow the instructions on screen.

Downloading the chipset driver

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. Scroll down the page and expand **Chipset**.
6. Click **Download** to download the chipset driver for your computer.
7. After the download is complete, navigate to the folder where you saved the chipset driver file.
8. Double-click the chipset driver file icon and follow the instructions on the screen.

Downloading the network driver

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. Scroll down the page and expand **Network**.
6. Click **Download** to download the network driver for your computer.
7. Save the file, and after the download is complete, navigate to the folder where you saved the network driver file.
8. Double-click the network driver file icon and follow the instructions on screen.

System setup

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

Boot Sequence

Boot Sequence allows you to bypass the System Setup–defined boot device order and boot directly to a specific device (for example: optical drive or hard drive). During the Power-on Self Test (POST), when the Dell logo appears, you can:

- Access System Setup by pressing F2 key
- Bring up the one-time boot menu by pressing F12 key

The one-time boot menu displays the devices that you can boot from including the diagnostic option. The boot menu options are:

- Removable Drive (if available)
- STXXXX Drive

  NOTE: XXX denotes the SATA drive number.
- Optical Drive (if available)
- SATA Hard Drive (if available)
- Diagnostics

  NOTE: Choosing Diagnostics, will display the ePSA diagnostics screen.

The boot sequence screen also displays the option to access the System Setup screen.

Navigation keys

NOTE: For most of the System Setup options, changes that you make are recorded but do not take effect until you restart the system.

Keys	Navigation
Up arrow	Moves to the previous field.
Down arrow	Moves to the next field.
Enter	Selects a value in the selected field (if applicable) or follow the link in the field.
Spacebar	Expands or collapses a drop-down list, if applicable.
Tab	Moves to the next focus area. **NOTE: For the standard graphics browser only.**
Esc	Moves to the previous page until you view the main screen. Pressing Esc in the main screen displays a message that prompts you to save any unsaved changes and restarts the system.

BIOS 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 the BIOS Setup program for the following purposes:

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

BIOS Features

- USB 2.0/3.1 Gen 1/3.1 Gen 2 Support
- Wake on USB scan-code from S4/S5 - All USB ports

- Support Wake-on-LAN (WOL) from S3/S4 for on-board network access.
- Support for utility partition.
- UEFI BIOS SUPPORT to ASSURE Win10 Logo Compliance
- Ability to detect connected display and show POST information on that display
- HW Monitoring Readouts for voltages and support for 3rd Party applications to detect voltages
- iRST support
- Boot from the NVMe SSD support

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.

Table 4. System setup options—Main menu

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	

Main	
BIOS Version	Displays the BIOS version number.
Product Information	
Product Name	Displays the product name. Default: Alienware Aurora R7.
Service Tag	Displays 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	
CPU Type	Displays the processor type
CPU Speed	Displays the speed of the processor.
CPU ID	Displays the processor identification code.
Cache L1	Displays the processor L1 cache size.
Cache L2	Displays the processor L2 cache size.
Cache L3	Displays the processor L3 cache size.

Table 5. System setup options—Advanced menu

Advanced	
Advanced BIOS Features	
Intel SpeedStep	Allows you to enable or disable Intel Speedstep Technology. Default: Enabled.

Advanced	
	NOTE: If enabled, the processor clock speed and core voltage are adjusted dynamically based on the processor load.
Virtualization	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.
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.

Advanced	
USB Wake Support (S3)	Allows you to enable the USB devices to wake the system from Standby.
USB PowerShare (S4/S5)	Allows you to charge external devices.
USB PowerShare Wake Support (S4/S5)	Allows you to enable front the USB devices to wake the system 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 OC level1/level2 setting and adjust the processor flex ratio and voltage in the Customization mode.
Computrace	Allows you to enable or disable the Computrace service using the Absolute software.
Core Ratio Limit Override	Allows you to set the core ratio limit.

Advanced	
Single Core	Allows you to select single core or multiple cores.
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.
XMP Memory	Allows you to set the XMP memory.

Table 6. System setup options—Security menu

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.

Table 7. System setup options—Boot menu

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.

Boot	
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 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.

Table 8. System setup options—Exit menu

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.

System and setup password

You can create a system password and a setup password to secure your computer.

Password type	Description
System password	Password that you must enter to log on to your system.
Setup password	Password that you must enter to access and make changes to the BIOS settings of your computer.

CAUTION: The password features provide a basic level of security for the data on your computer.

CAUTION: Anyone can access the data stored on your computer if it is not locked and left unattended.

NOTE: System and setup password feature is disabled.

Assigning a system password and setup password

You can assign a new **System Password** only when the status is in **Not Set**. To enter the system setup, press F2 immediately after a power-on or re-boot.

1. In the **System BIOS** or **System Setup** screen, select **Security** and press Enter.

   The **Security** screen is displayed.
2. Select **System Password** and create a password in the **Enter the new password** field.

   Use the following guidelines to assign the system password:

   – A password can have up to 32 characters.
   – The password can contain the numbers 0 through 9.
   – Only lower case letters are valid, upper case letters are not allowed.
   – Only the following special characters are allowed: space, (”), (+), (,), (-), (.), (/), (;), ([), (\), (]), (`).
3. Type the system password that you entered earlier in the **Confirm new password** field and click **OK**.
4. Press Esc and a message prompts you to save the changes.
5. Press Y to save the changes.

   The computer reboots.

Deleting or changing an existing system and or setup password

Ensure that the **Password Status** is Unlocked (in the System Setup) before attempting to delete or change the existing System and/or Setup password. You cannot delete or change an existing System or Setup password, if the **Password Status** is Locked.
To enter the System Setup, press F2 immediately after a power-on or reboot.

1. In the **System BIOS** or **System Setup** screen, select **System Security** and press Enter.

   The **System Security** screen is displayed.
2. In the **System Security** screen, verify that **Password Status** is **Unlocked**.
3. Select **System Password**, alter or delete the existing system password and press Enter or Tab.
4. Select **Setup Password**, alter or delete the existing setup password and press Enter or Tab.

   NOTE: If you change the System and/or Setup password, re-enter the new password when promoted. If you delete the System and/or Setup password, confirm the deletion when promoted.
5. Press Esc and a message prompts you to save the changes.
6. Press Y to save the changes and exit from System Setup.

   The computer reboots.

Clearing forgotten passwords

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 left-side cover.
2. Follow the procedure from step 1 to step 4 in "Removing the power-supply unit".

Procedure

1. Locate the password jumper (P215) on the system board.

   For information on the location of the Password jumper, see System-board components.
2. Remove the jumper plug from pins 215.
3. Follow the procedure from step 8 to step 9 in "Replacing the power-supply unit".
4. Replace the left-side cover.
5. Turn on your computer and wait until the operating system is completely loaded.
6. Shut down your computer.
7. Remove the left-side cover.
8. Follow the procedure from step 1 to step 3 in "Removing the power-supply unit".

9 Replace the jumper plug on pins 215.

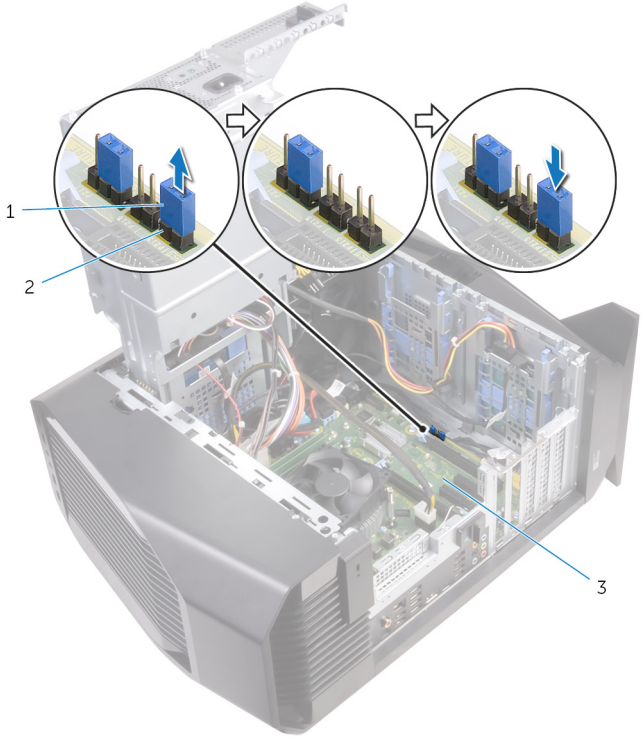

Figure 52. Clearing forgotten passwords

1	jumper plug	2	P215

Post-requisites

1 Follow the procedure from step 10 to step 11 in "Replacing the power-supply unit".

2 Replace the left-side cover.

Clearing CMOS Settings

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 left-side cover.
2. Follow the procedure from step 1 to step 4 in "Removing the power-supply unit".

Procedure

1. Locate the CMOS jumper (P217) on the system board.

   For information on the location of the CMOS jumper, see "System-board components".
2. Disconnect the system-board power cable from the system board.
3. Remove the jumper plug from pins 217 and replace it on pins 216 (P216).
4. Wait for 5 seconds.
5. Remove the jumper plug from pins 216 and replace it on pins 217.

6 Connect the system-board power cable to the system board.

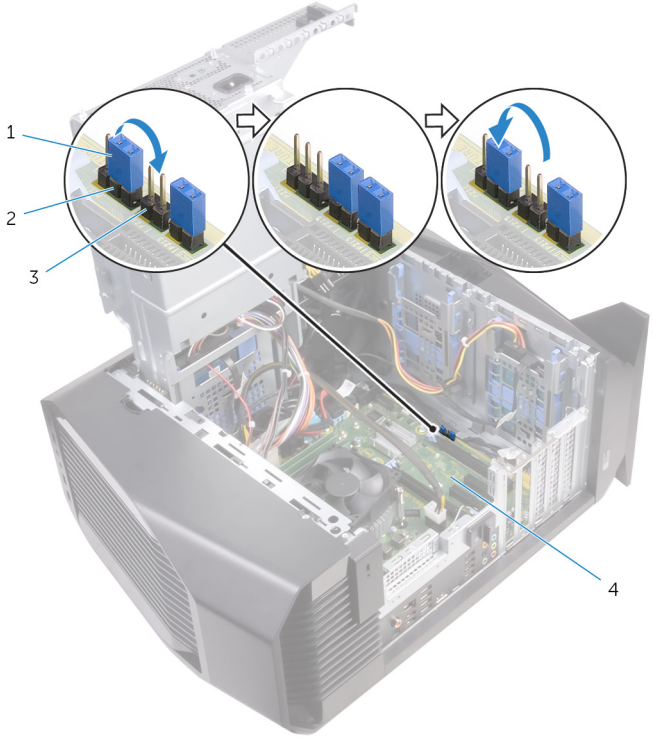

Figure 53. Clearing CMOS settings

1	jumper plug	2	P217
3	P216	4	system board

Post-requisites

1 Follow the procedure from step 10 to step 11 in "Replacing the power-supply unit".

2 Replace the left-side cover.

Troubleshooting

Flashing the BIOS

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

Follow these steps 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.

Flashing BIOS (USB key)

1. Follow the procedure from step 1 to step 7 in "Flashing the BIOS" to download the latest BIOS setup program file.
2. Create a bootable USB drive. For more information see the knowledge base article SLN143196 at www.dell.com/support.
3. Copy the BIOS setup program file to the bootable USB drive.
4. Connect the bootable USB drive to the computer that needs the BIOS update.
5. Restart the computer and press **F12** when the Dell logo is displayed on the screen.

6 Boot to the USB drive from the **One Time Boot Menu**.

7 Type the BIOS setup program filename and press **Enter**.

8 The **BIOS Update Utility** appears. Follow the instructions on the screen to complete the BIOS update.

Enhanced Pre-Boot System Assessment (ePSA) diagnostics

CAUTION: Use the ePSA diagnostics to test only your computer. Using this program with other computers may cause invalid results or error messages.

The ePSA diagnostics (also known as system diagnostics) performs a complete check of your hardware. The ePSA is embedded with the BIOS and is launched by the BIOS internally. The embedded system diagnostics provides a set of options for particular devices or device groups allowing you to:

- Run tests automatically or in an interactive mode
- Repeat tests
- Display or save test results
- Run thorough tests to introduce additional test options to provide extra information about the failed device(s)
- View status messages that inform you if tests are completed successfully
- View error messages that inform you of problems encountered during testing

NOTE: Some tests for specific devices require user interaction. Always ensure that you are present at the computer terminal when the diagnostic tests are performed.

For more information, see Dell EPSA Diagnostic 3.0.

Running the ePSA diagnostics

1 Power-on the computer.

2 As the computer boots, press the F12 key as the Dell logo appears.

3 On the boot menu screen, select the **Diagnostics** option.

4 Click the arrow key at the bottom left corner.

Diagnostics front page is displayed.

5 Press the arrow in the lower-right corner to go to the page listing.

The items detected are listed.

6 To run a diagnostic test on a specific device, press Esc and click **Yes** to stop the diagnostic test.

7 Select the device from the left pane and click **Run Tests**.

8 If there are any issues, error codes are displayed.

Note the error code and validation number and contact Dell.

System diagnostic lights

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 in amber color during the start-up.

The following table shows different light patterns and what they indicate.

Table 9. Diagnostics

Number of Power LED flashes	Problem description
1	System board: BIOS and ROM failure
2	No memory or RAM detected
3	System board or chipset error
4	Memory or RAM failure
5	CMOS battery failure
6	Video card or chip failure
7	CPU failure
3,6	BIOS recovery image not found
3,7	BIOS recovery image found but invalid

Flea power release

Flea power is the residual static electricity that remains on the computer even after it has been powered off. The following procedure list the steps to conduct a flea power release for the computer.

1 Turn off your computer.

2 Disconnect the power cable.

3 Press and hold down the power button for 15 seconds to drain the flea power.

4 Connect the power cable.

5 Turn on your computer.

Wi-Fi power cycle

If your computer is unable to access the internet due to Wi-Fi connectivity issues a Wi-Fi power cycle procedure may be performed. The following procedure provides the instructions on how to conduct a Wi-Fi power cycle:

NOTE: Some ISPs (Internet Service Providers) provide a modem/ router combo device.

1 Turn off your computer.

2 Turn off the modem.

3 Turn off the wireless router.

4 Wait for 30 seconds.

5 Turn on the wireless router.

6 Turn on the modem.

7 Turn on your computer.

Getting help and contacting Alienware

Self-help resources

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

Table 10. Self-help resources

Information about Alienware products and services	www.alienware.com
Troubleshooting information, user manuals, setup instructions, product specifications, technical help blogs, drivers, software updates, and so on	www.alienware.com/gamingservices
Videos providing step-by-step instructions to service your computer	www.youtube.com/alienwareservices

Contacting Alienware

To contact Alienware for sales, technical support, or customer service issues, see www.alienware.com.

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.