

Aurora R6

Service Manual

Computer Model: Alienware Aurora R6
Regulatory Model: D23M
Regulatory Type: D23M001

A L I E N W A R E™ 

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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2017 - 01

Rev. A00

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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
- 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 R5.

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.**

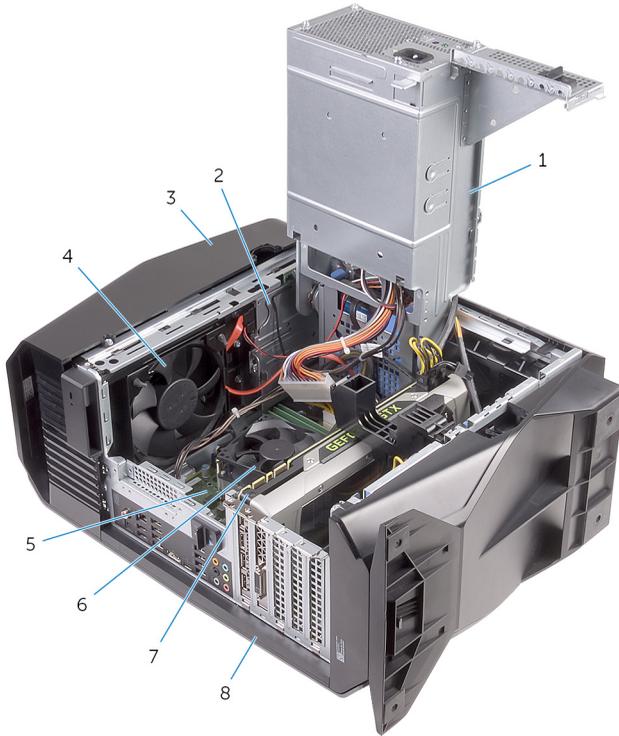
- 1 Replace all screws and ensure that no stray screws remain inside your computer.
- 2 Connect any external devices, peripherals, or cables you removed before working on your computer.
- 3 Replace any media cards, discs, or any other parts that you removed before working on your computer.
- 4 Connect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

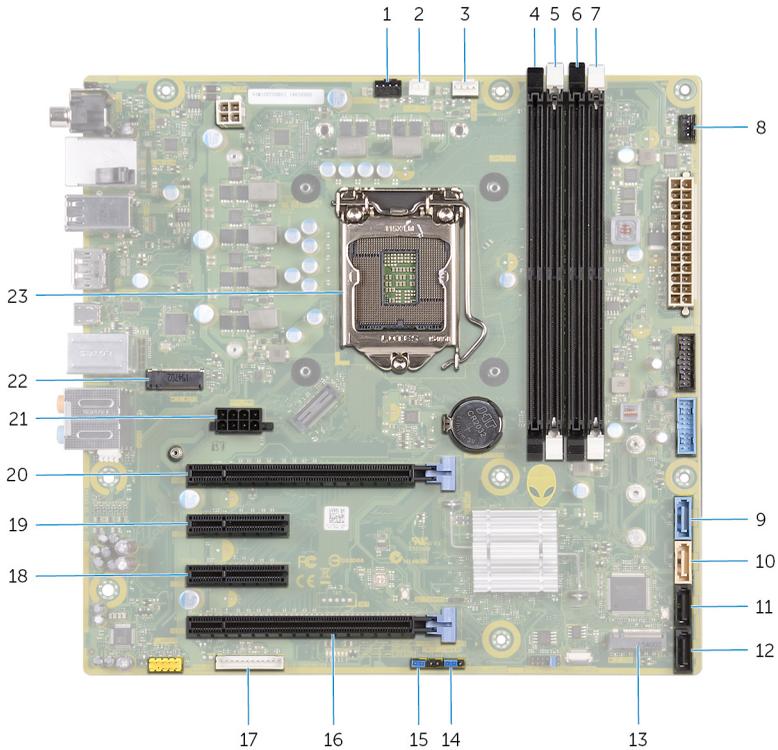
5 system board

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

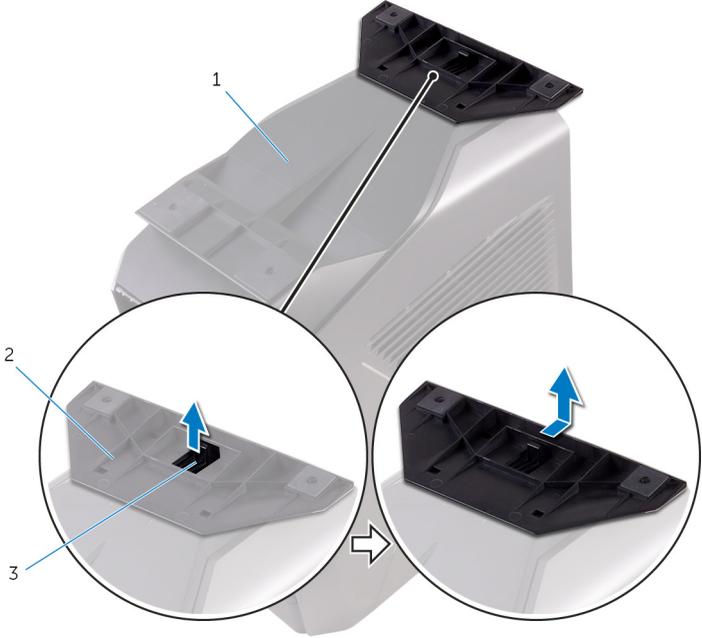


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Procedure

- 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.



- 1 bottom cover
- 3 security tab

2 stability foot

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.



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.

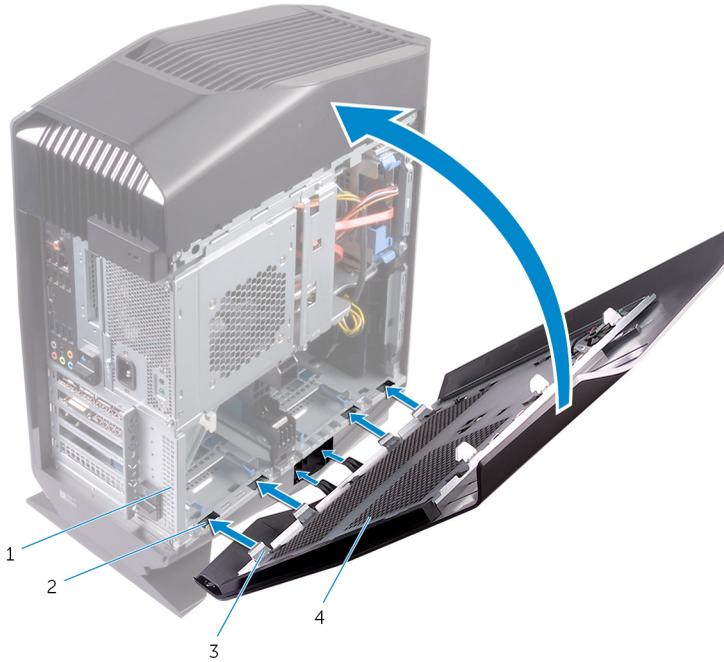


Figure 1. Replacing the left-side cover

- | | | | |
|---|---------|---|-----------------|
| 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 2. 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 3. 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.

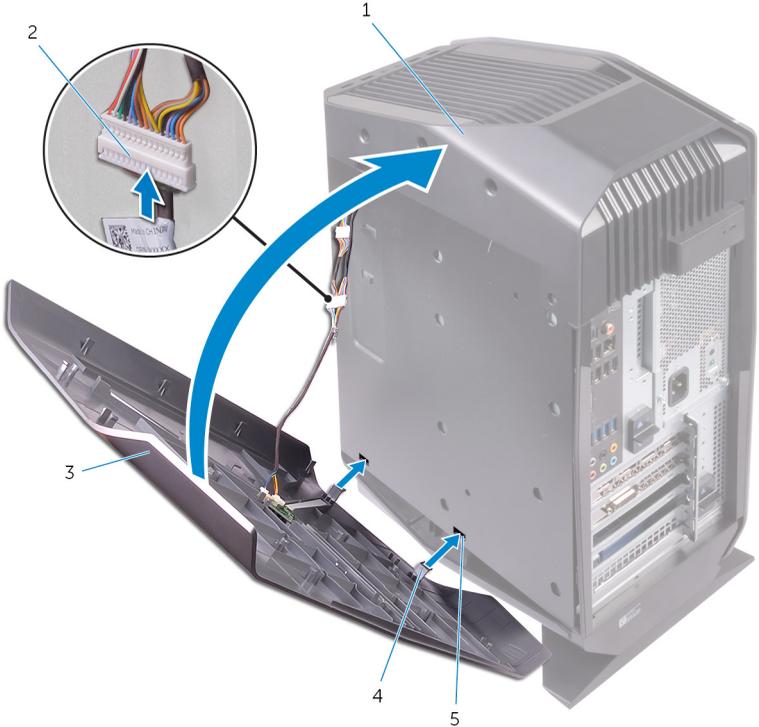


Figure 4. Connecting the lighting cable

- 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 5. 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 6. 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.

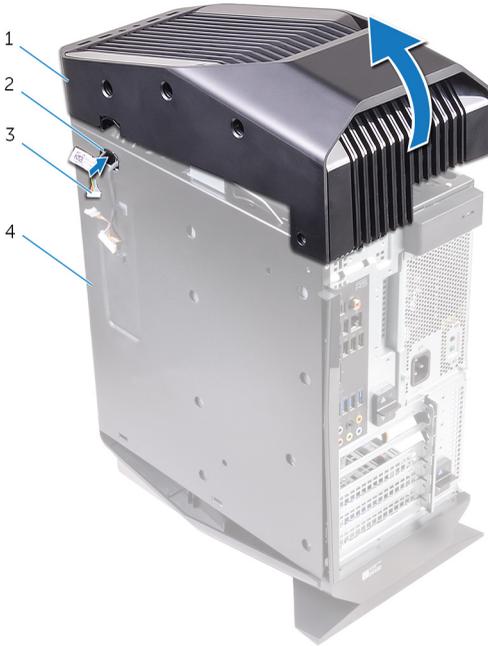


Figure 7. Removing the top cover

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 8. Releasing the top cover from the top bezel

7 Lift the top cover from the top bezel.

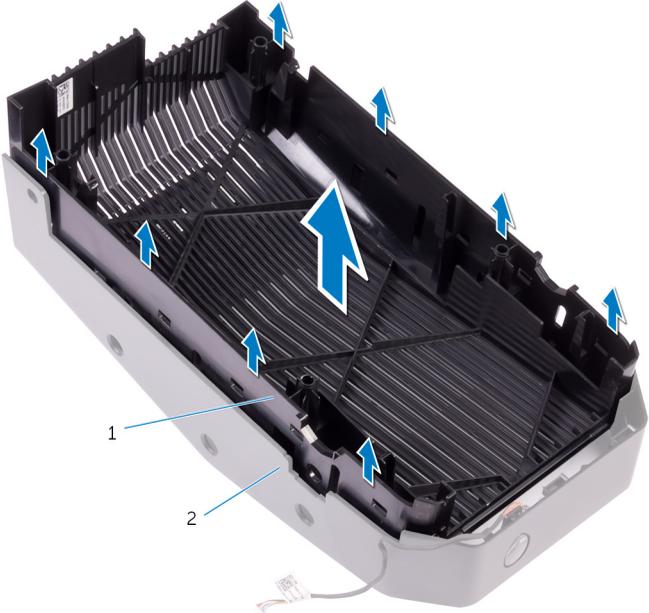


Figure 9. Lifting the top cover from the top bezel

- a top cover
- b top bezel

8 You are left with top bezel and top cover.

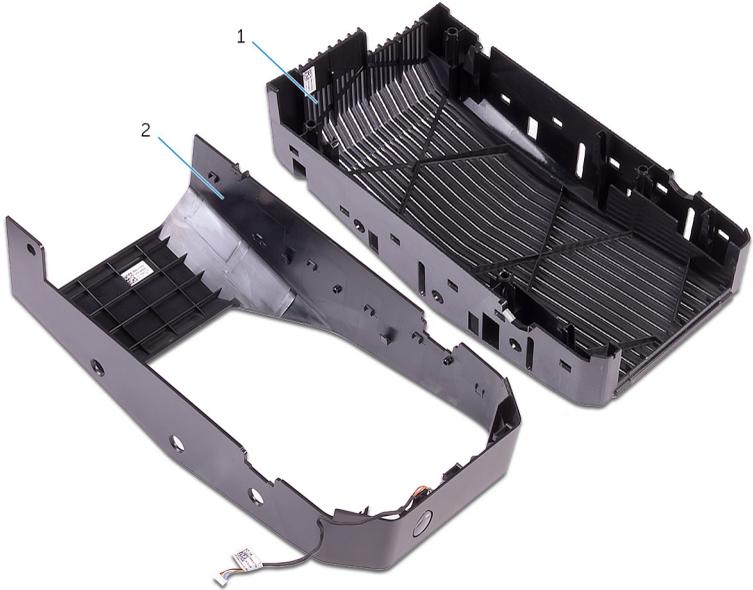


Figure 10. Top cover and top bezel

- 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.

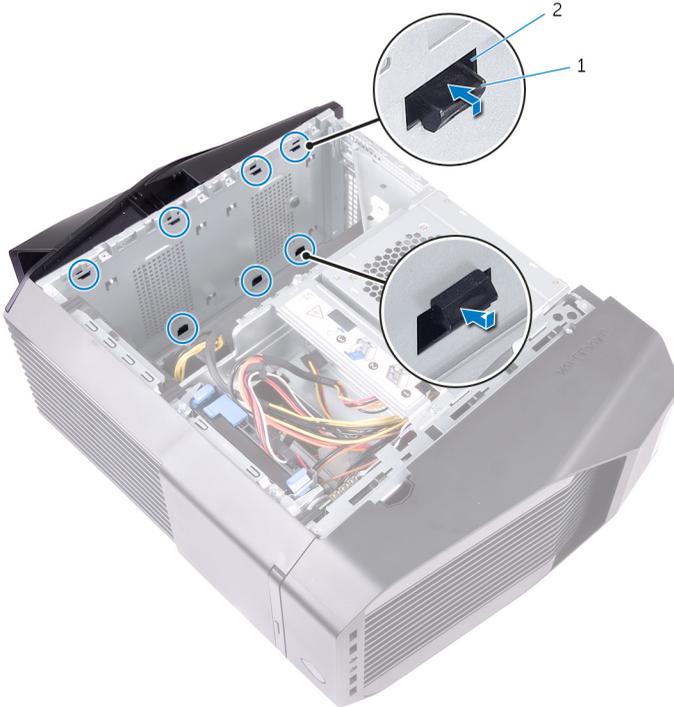


Figure 11. Releasing the bottom cover from the chassis

- | | | | |
|---|-------------------|---|-----------|
| 1 | securing tabs (8) | 2 | slots (8) |
|---|-------------------|---|-----------|
- 2 Tilt the computer towards the front until the base is facing up.

- 3 Lift the bottom cover from the chassis.



Figure 12. Removing the bottom cover

- 4 Tilt the computer back to the upright position.

Replacing the bottom cover



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Procedure

- 1 Tilt the computer towards the front 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 to lock it 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.

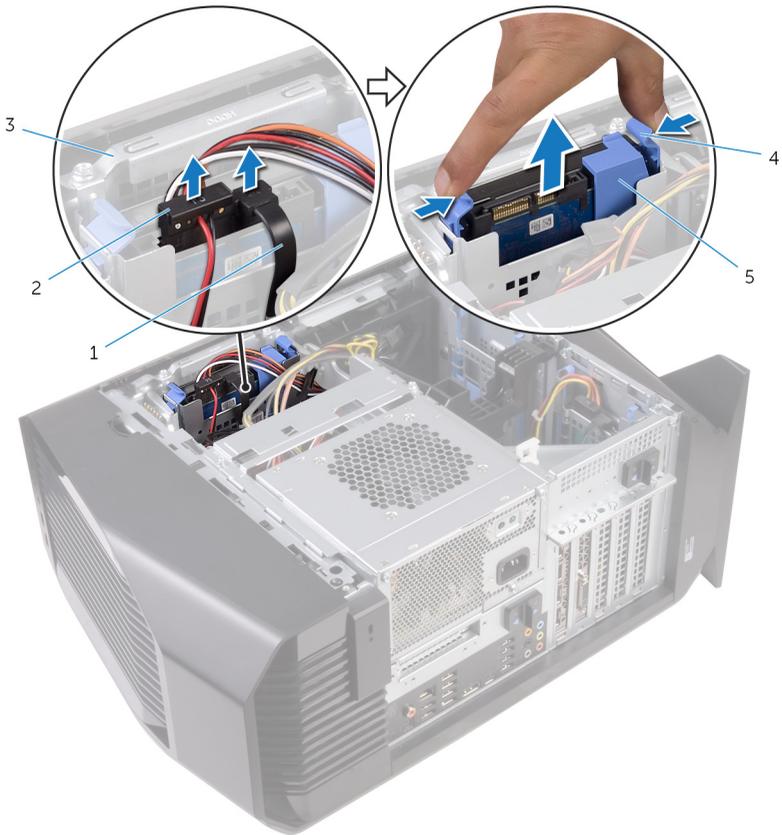


Figure 13. Removing the hard drive

- | | | | |
|---|--------------------|---|--------------|
| 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.

- 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 drives



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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.

- 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 drives



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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



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

- 2 Lift the hard-drive cage off the chassis.

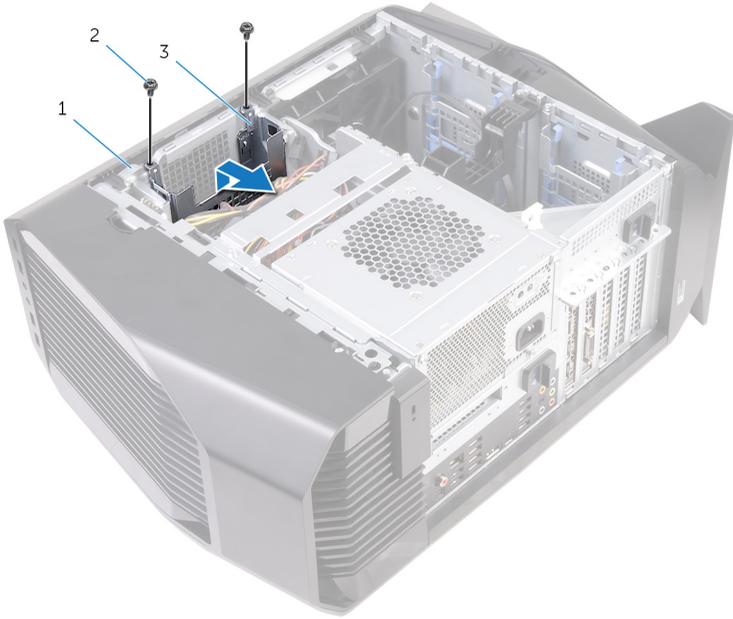


Figure 17. Removing hard-drive cage

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

Prerequisites

- 1 Remove the [left-side cover](#).
- 2 Remove the [3.5-inch hard drive](#).

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.

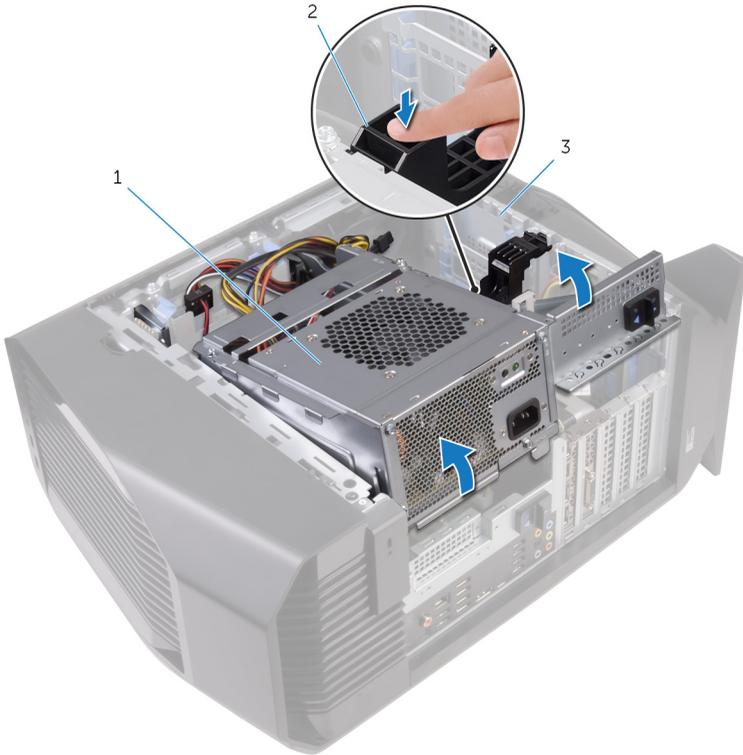
- 2 Slide the power-supply unit cage release latches towards the unlock position.



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) | | |

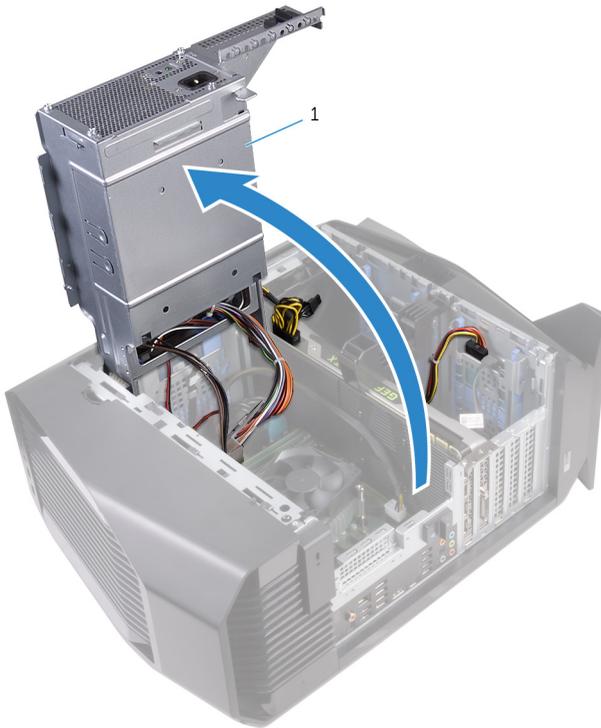
- 3** Lift the power-supply unit cage while pressing and holding the graphics-card bracket.



1 power-supply unit cage
3 chassis

2 graphics-card bracket

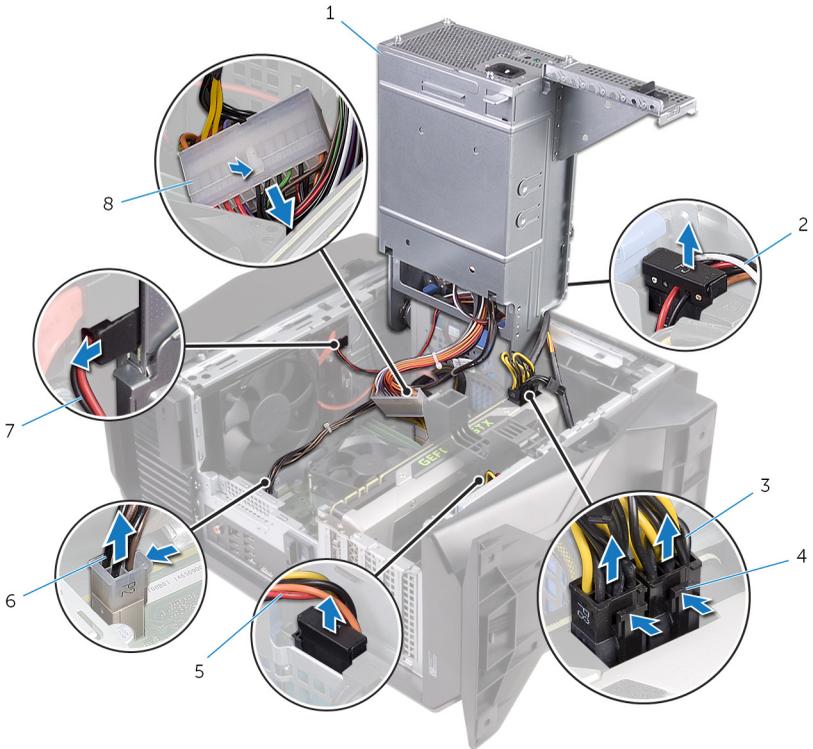
- 4 Rotate the power-supply unit cage away from the chassis.



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.

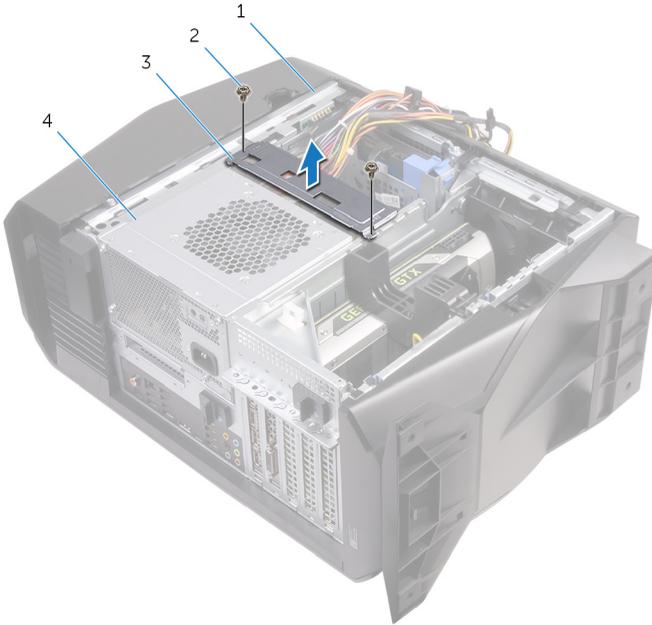
- 7 Disconnect the processor-power cable and system-board power cable from the system board.



- | | | | |
|---|--------------------------------|---|--------------------------|
| 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

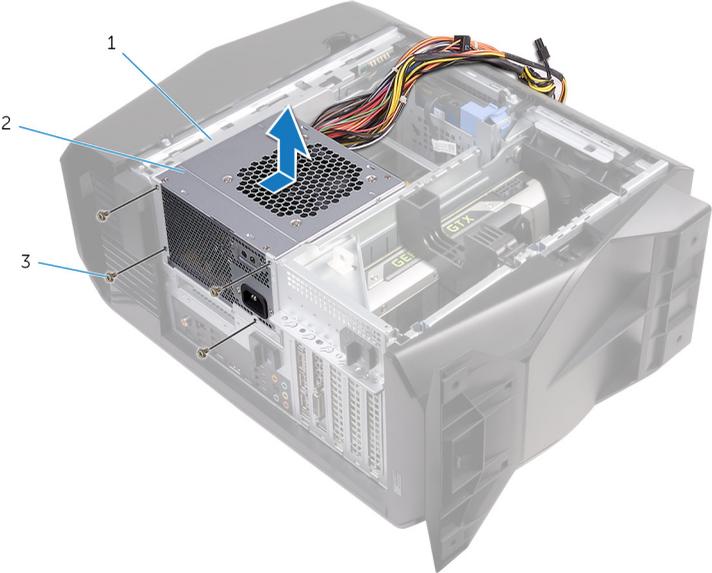
2 screws (2)

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
- 3 screws (4)

- 2 power-supply unit

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.

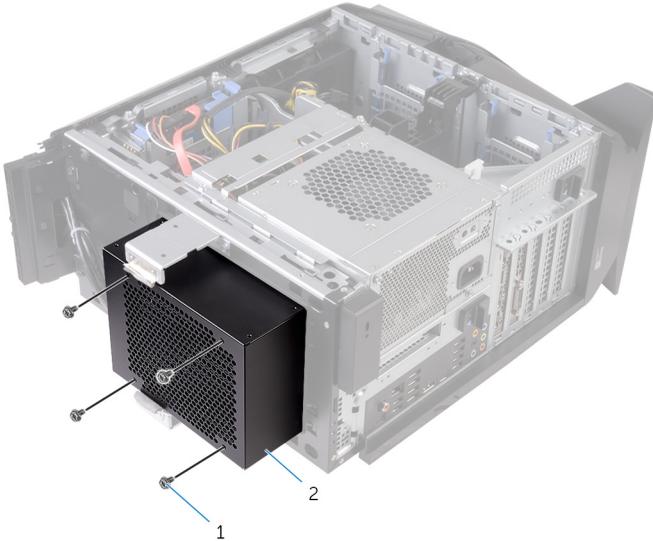


Figure 19. Removing the processor-cooling assembly

- | | | | |
|---|------------|---|-----------------------|
| 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 Disconnect the processor-cooling assembly cables from the system board.
 - 4 In sequential order (as indicated on the processor cooler), loosen the captive screws that secure the processor cooler to the system board.

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

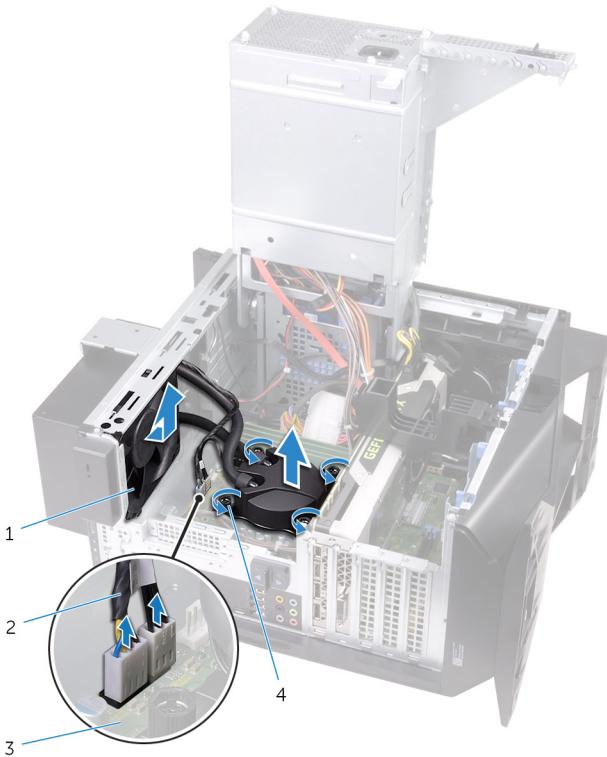


Figure 20. Removing the processor-cooling assembly

- | | | | |
|---|----------------------------|---|-----------------------------------|
| 1 | processor-cooling assembly | 2 | processor-cooling assembly cables |
| 3 | system board | 4 | 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.
- 6 Connect the processor-cooling assembly cables to the system board.
- 7 Follow the procedure from step 10 to step 11 in "[Replacing the power-supply unit](#)".
- 8 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

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 **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.

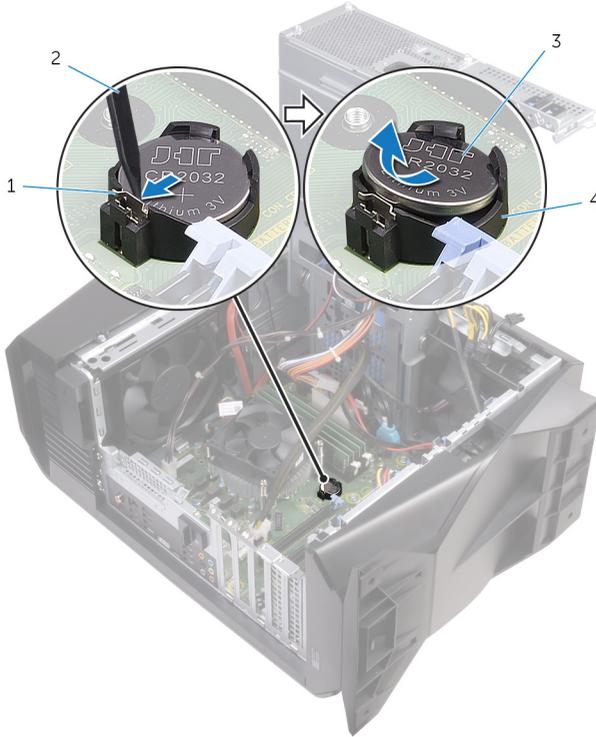


Figure 21. Removing the coin-cell battery

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

Replacing the coin-cell battery

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

Procedure

Insert 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.

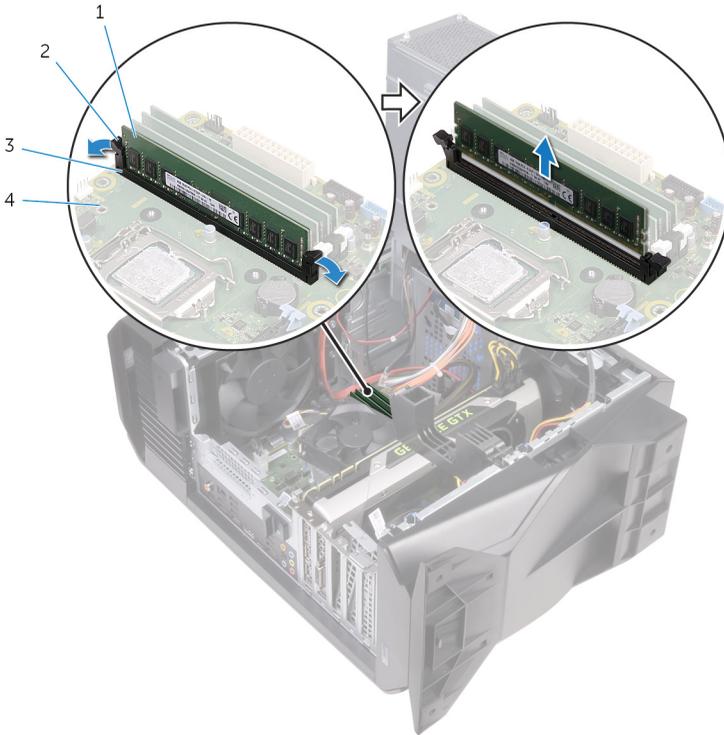


Figure 22. Removing the memory module

- | | | | |
|---|--------------------|---|--------------------|
| 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.

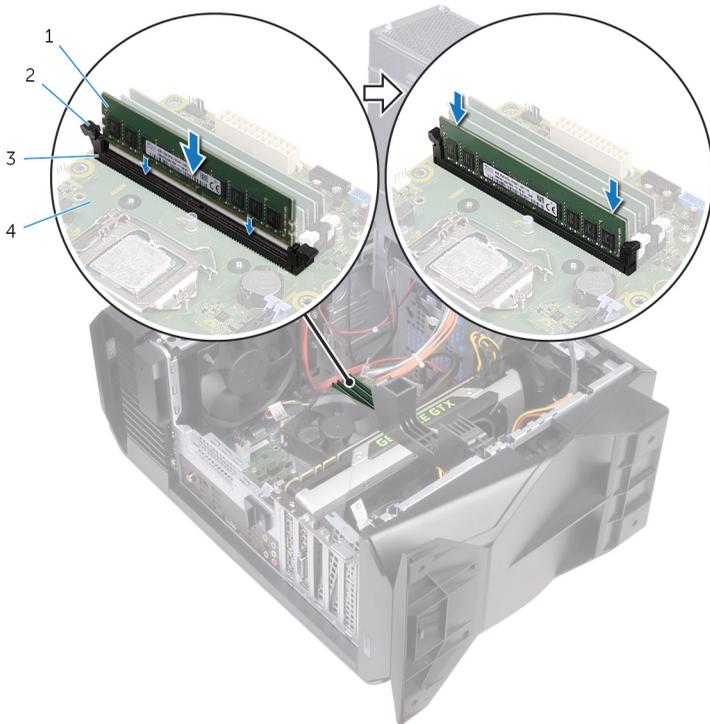


Figure 23. Replacing the memory module

- | | | | |
|---|--------------------|---|--------------------|
| 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

Configuratio n	Slot			
	DIMM1	DIMM2	DIMM3	DIMM4
8 GB	4 GB	4 GB		
16 GB	8 GB	8 GB		
24 GB	4 GB	4 GB	8 GB	8 GB
32 GB	8 GB	8 GB	8 GB	8 GB

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.

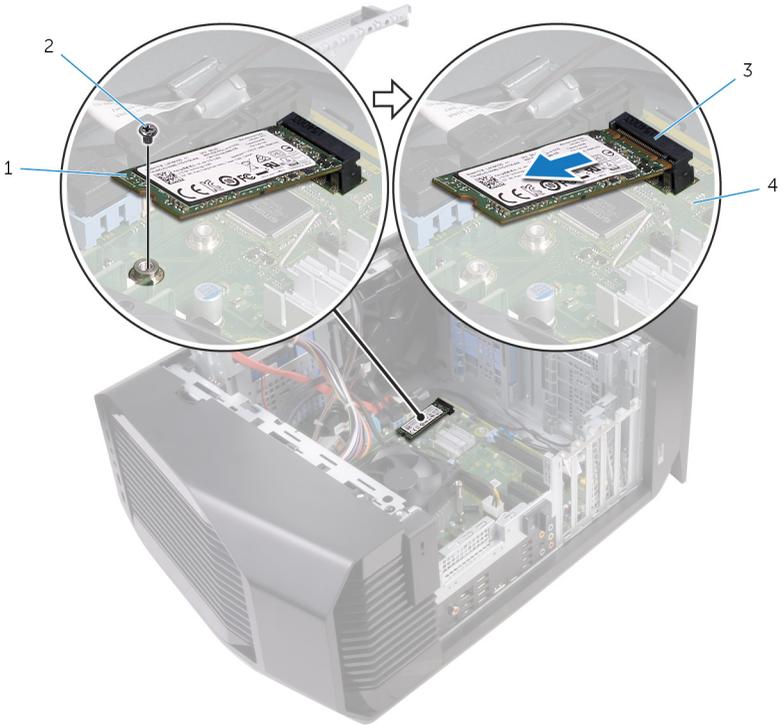
Prerequisites

- 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
- 3 solid-state drive slot

- 2 screw
- 4 system board

Replacing the solid-state drive

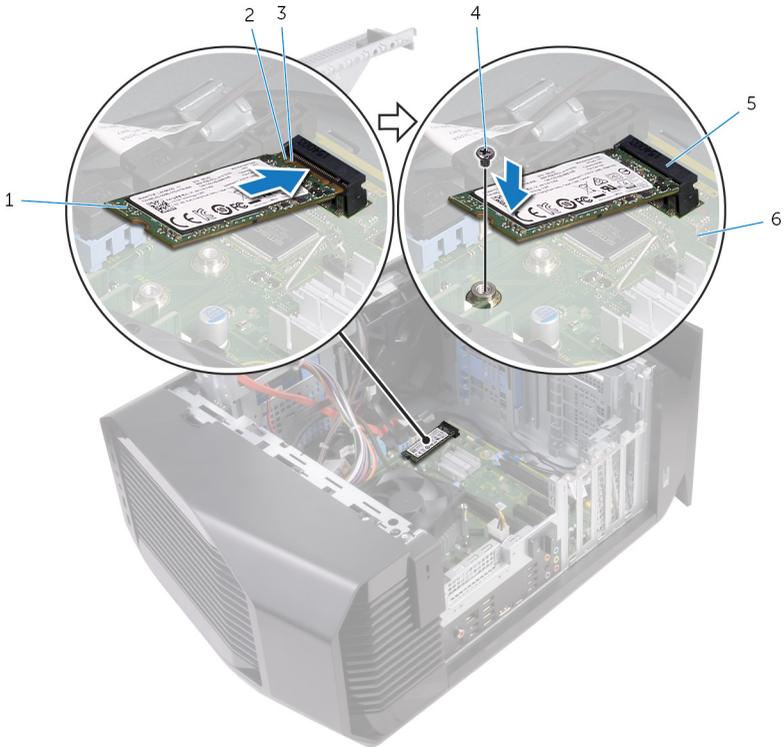
 **WARNING:** Before working inside your computer, read the safety information that shipped with your computer and follow the steps in [Before working inside your computer](#). After working inside your computer, follow the instructions in [After working inside your computer](#). For more safety best 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 |
| 3 | tab |
| 5 | solid-state drive slot |

- | | |
|---|--------------|
| 2 | notch |
| 4 | screw |
| 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.

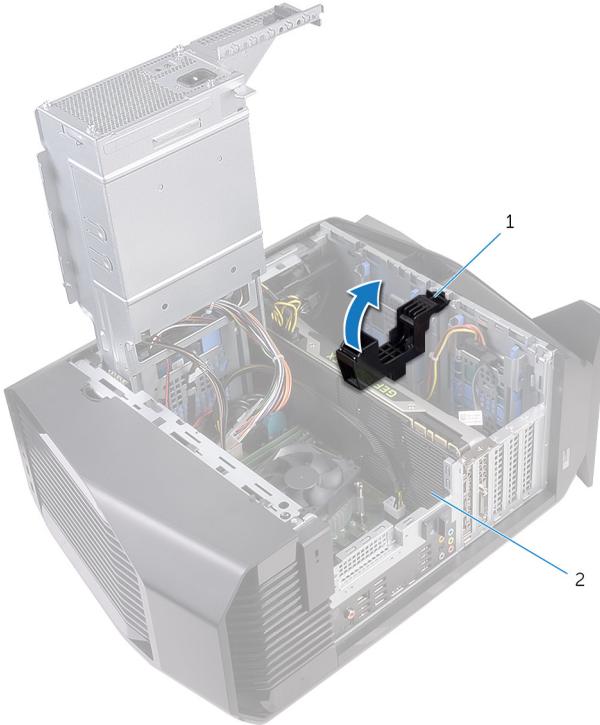


Figure 24. Removing the graphics card

- | | | | |
|---|-----------------------|---|---------------|
| 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.

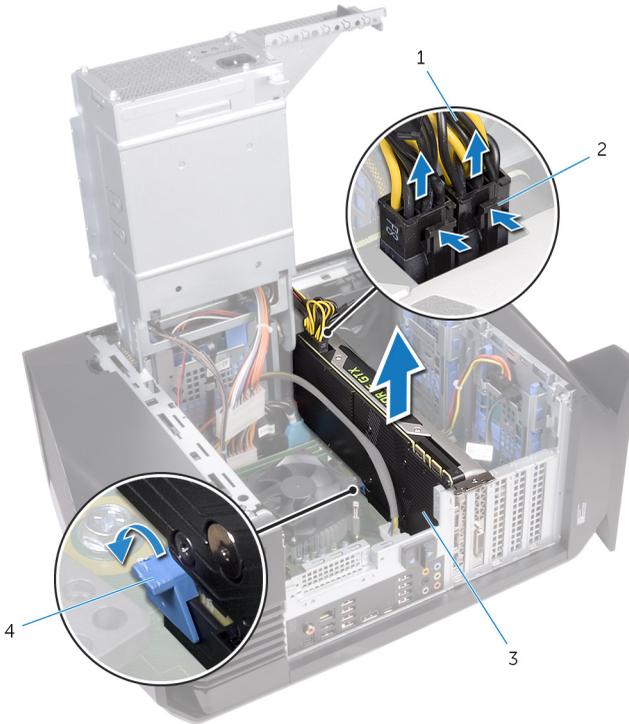


Figure 25. Removing the graphics card

- | | | | |
|---|---------------|---|---------------------|
| 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 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.
-  **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 In a non-adjacent sequence, loosen the captive screws that secure the processor fan and heat-sink assembly to the system board.

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

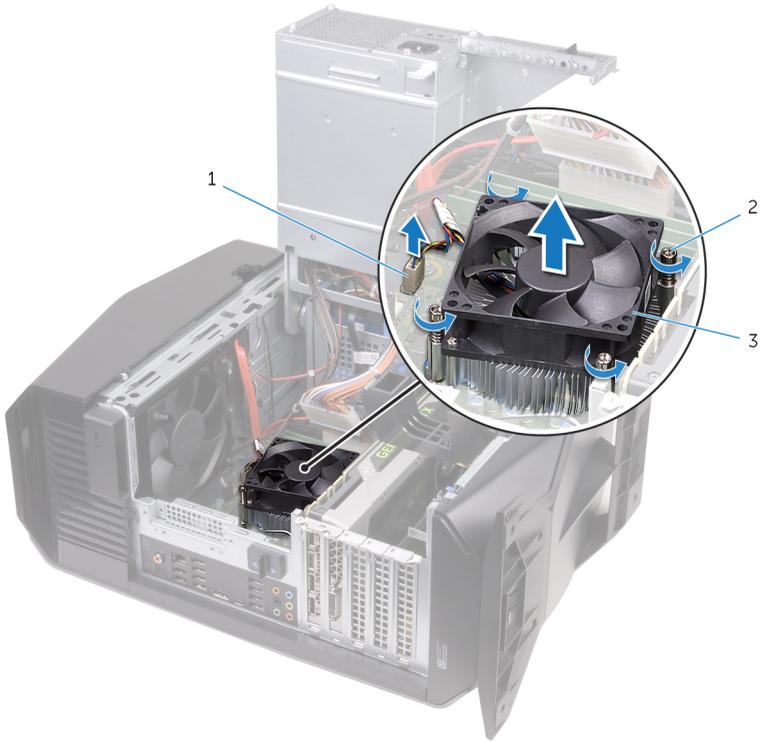


Figure 26. Removing the heat sink assembly

- | | | | |
|---|--------------------------------------|---|--------------------|
| 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 In a non-adjacent sequence, tighten the captive screws that secure the processor fan and heat-sink assembly to the system board.
- 4 Connect the processor-fan cable to the system board.

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 27. Removing the processor

1 release lever

3 tab

5 processor socket

2 alignment post

4 processor cover

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.

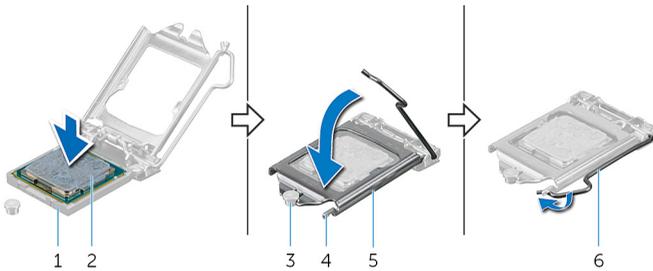


Figure 28. Replacing the processor

- | | | | |
|---|------------------|---|---------------|
| 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.

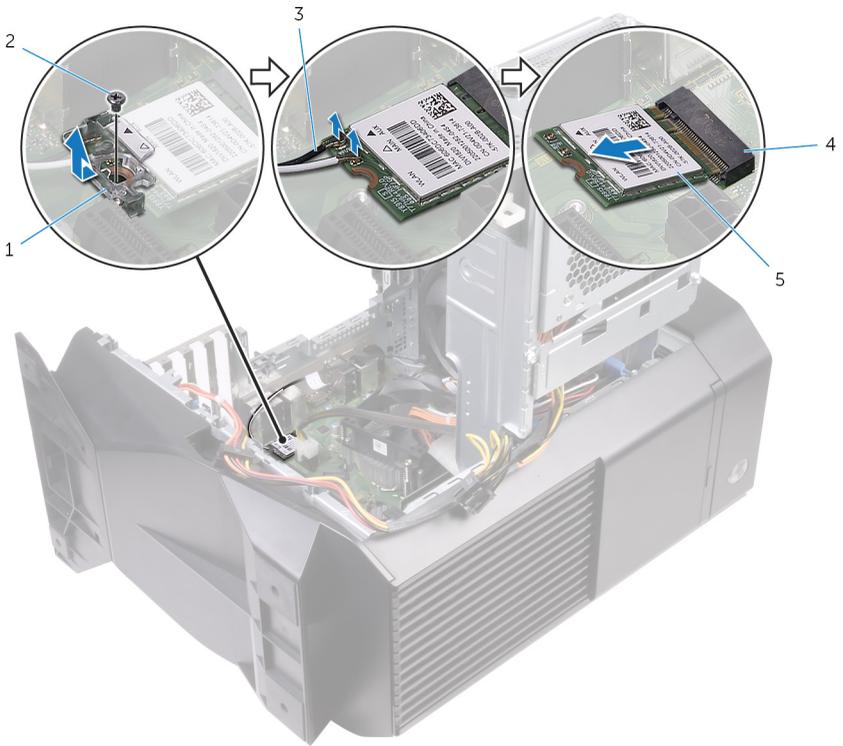


Figure 29. Removing the wireless card

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

Replacing the wireless card

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Procedure

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

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

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

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.

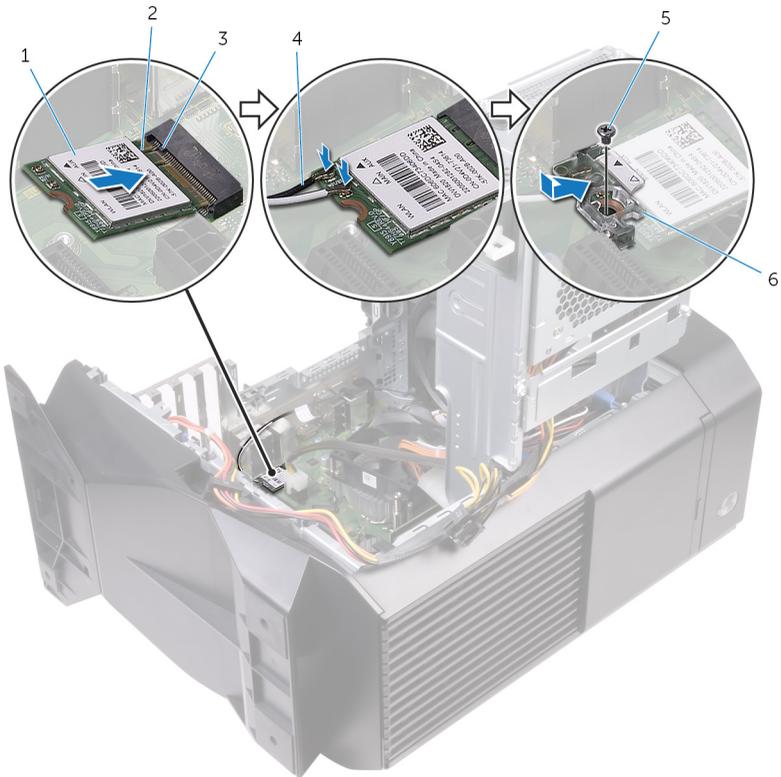


Figure 30. Replacing the wireless card

- | | | | |
|---|---------------|---|-----------------------|
| 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.

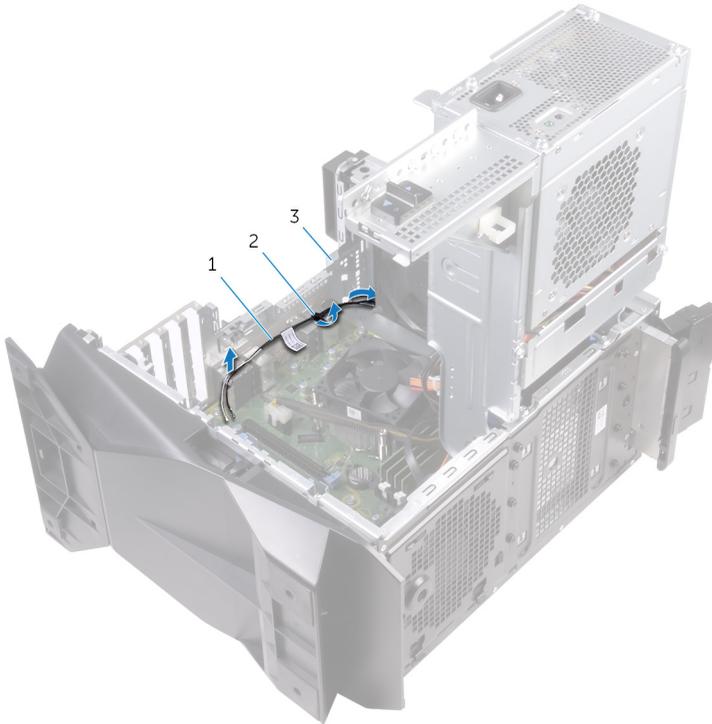


Figure 31. Removing the antenna cables

- | | | | |
|---|----------------|---|----------------|
| 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 32. 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.

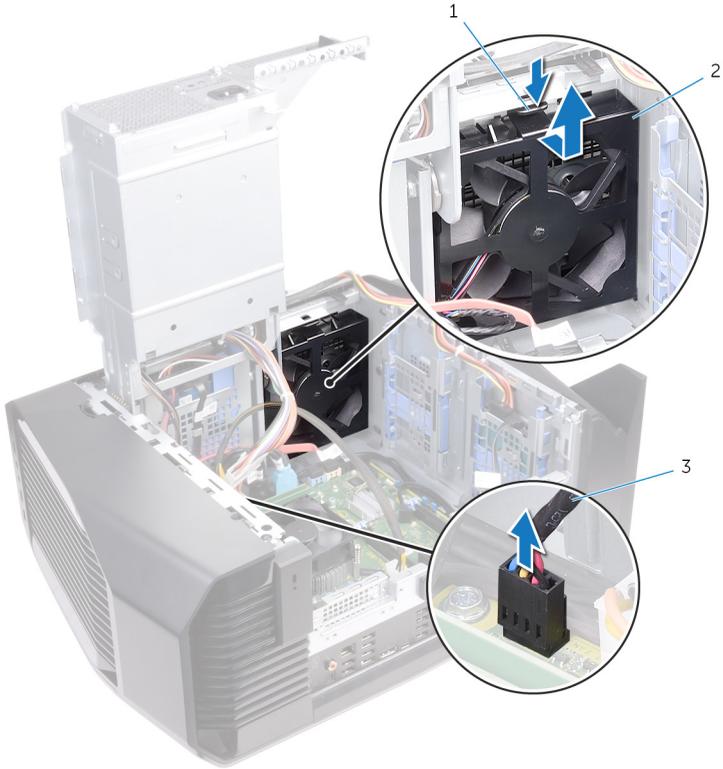


Figure 33. Removing the chassis fan

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.

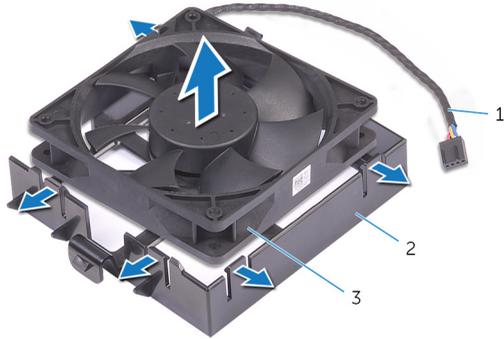


Figure 34. Removing the chassis fan

- | | | | |
|---|-------------------------|---|---------------------------|
| 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 35. 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.

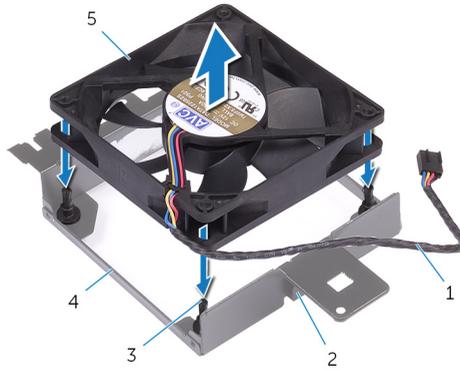


Figure 36. Removing the top-chassis fan

- | | | | |
|---|-----------------------|---|-------------------------|
| 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

 **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 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



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

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

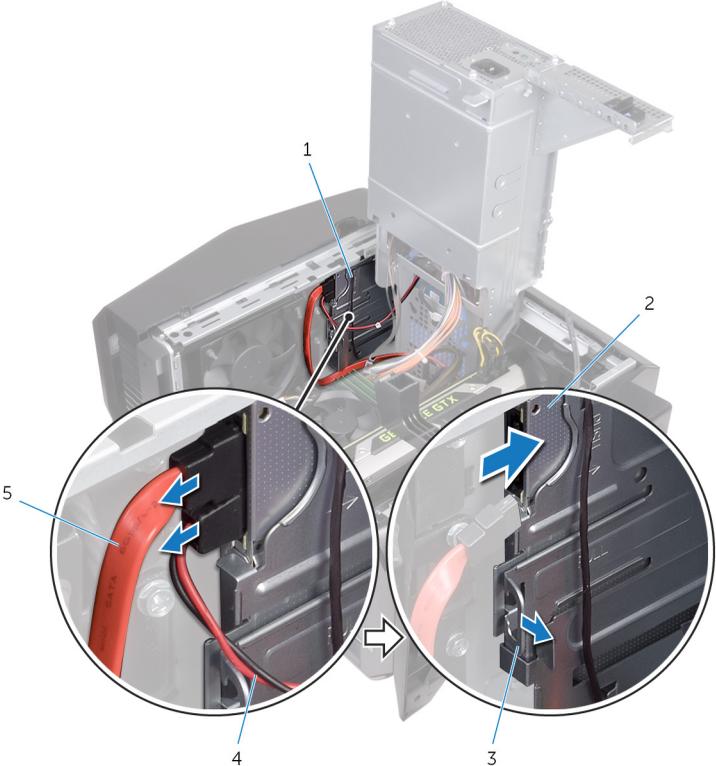


Figure 37. Disconnecting the power and data cables

- 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.

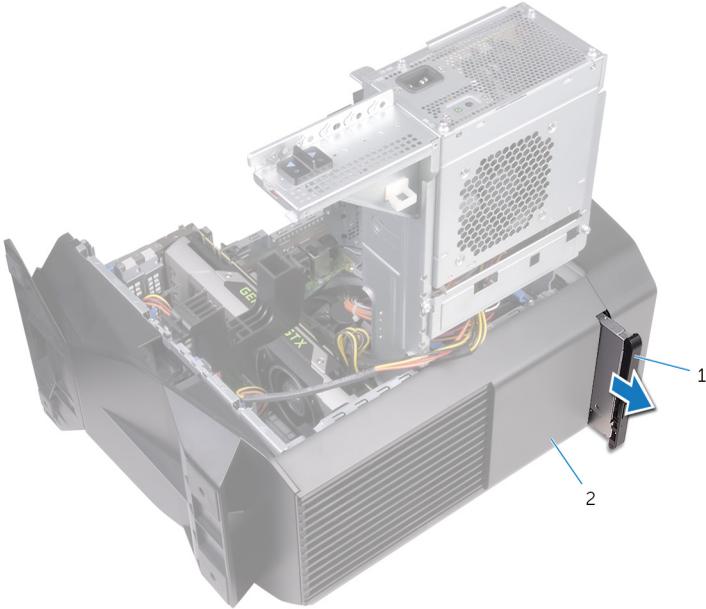


Figure 38. Removing the optical drive

1 optical-drive assembly

2 chassis

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



Figure 39. 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 40. 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 Lift the securing tab and 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



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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.

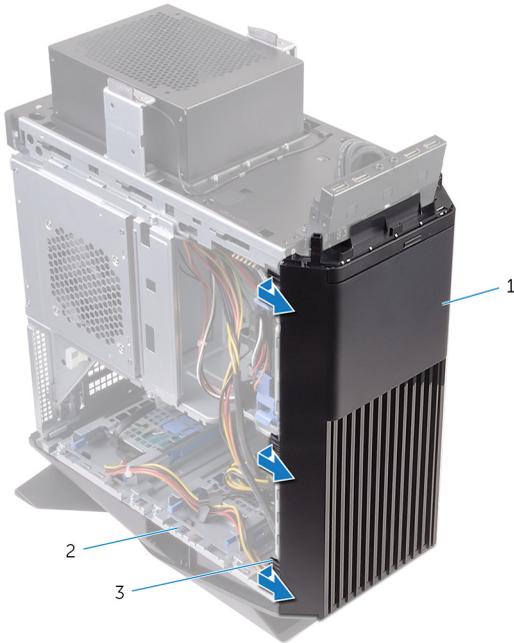


Figure 41. Removing the front bezel

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.

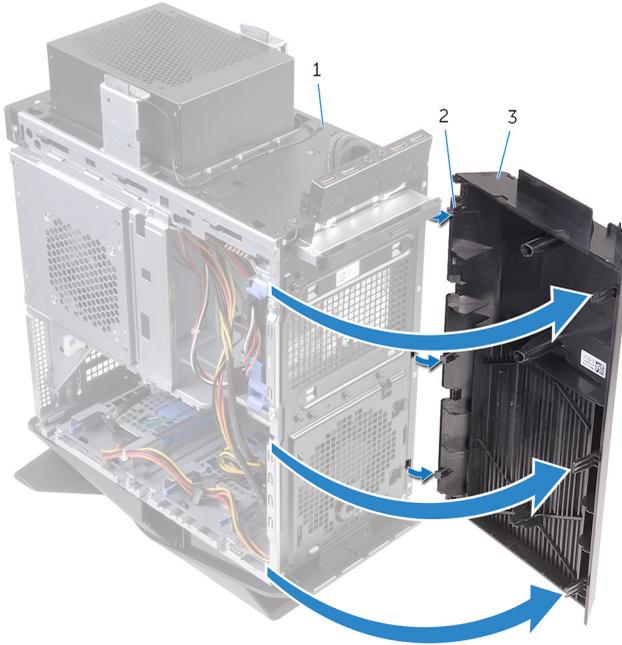


Figure 42. Removing the front bezel

- | | | | |
|---|-------------|---|------|
| 1 | chassis | 2 | tabs |
| 3 | front bezel | | |

Replacing 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.

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



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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.

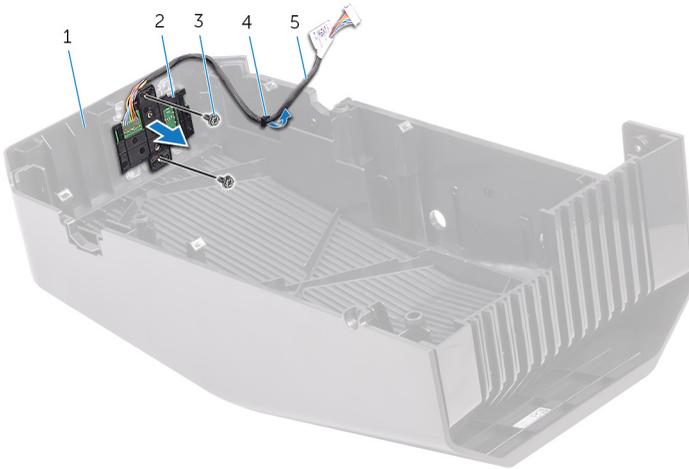


Figure 43. Removing the power-button module

- | | | | |
|---|---------------------------|---|---------------------|
| 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.

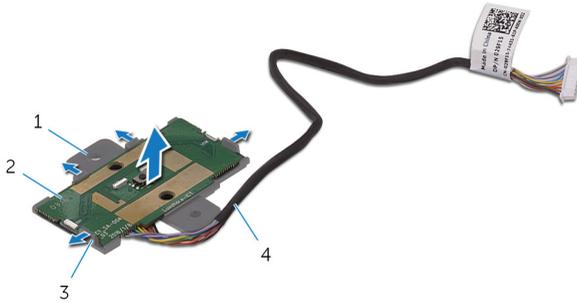


Figure 44. Removing the power-button module

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

Replacing the power-button board



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 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 45. 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.

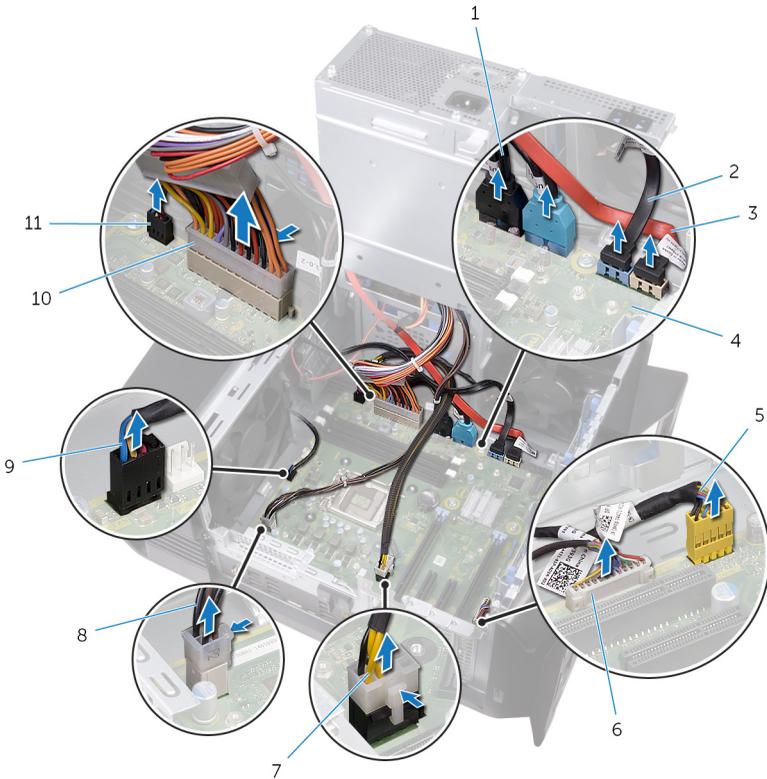


Figure 46. Removing the system board

- | | | | |
|----|---------------------------------------|----|---------------------------------------|
| 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 47. 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.

BIOS setup program

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.

Entering BIOS setup program

- 1 Turn on (or restart) your computer.
- 2 During POST, when the AlienHead 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	
BIOS Version	Displays the BIOS version number.
Product Information	
Product Name	Displays the product name. Default: Alienware Aurora R5.
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.



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.

Advanced

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.
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
--------------------------	--------------------------------------------------------------------------

Advanced

	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.
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.
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 OPRROM	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.

Clearing forgotten passwords



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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 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.

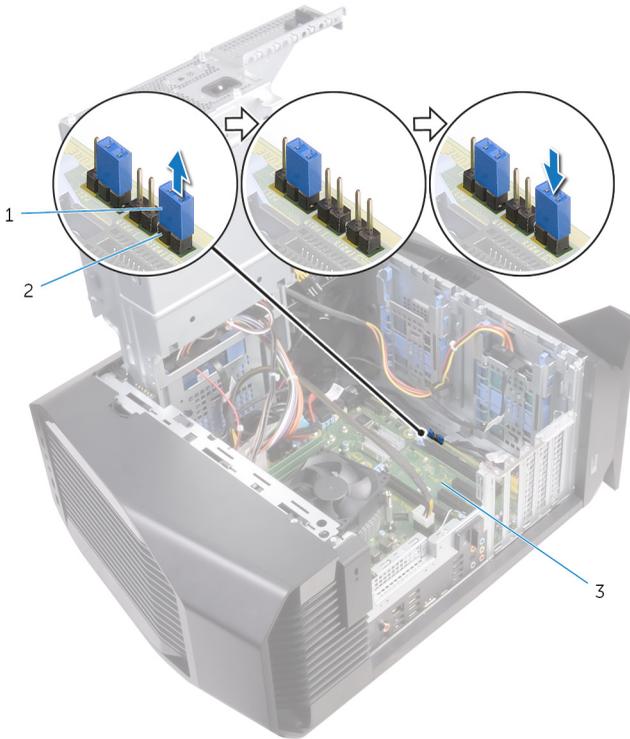


Figure 48. Clearing forgotten passwords

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



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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 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.

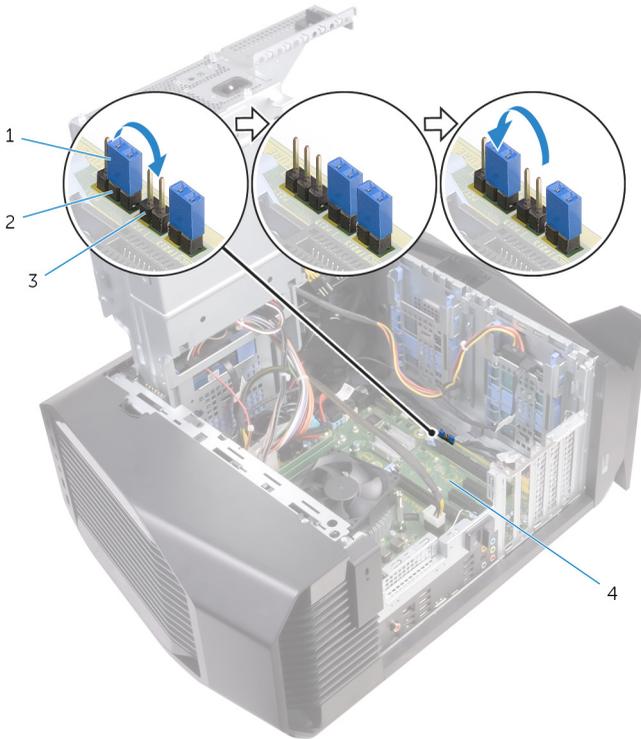


Figure 49. Clearing CMOS settings

- | | | | |
|---|-------------|---|--------------|
| 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](#).

Flashing the BIOS

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

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



NOTE: If you do not have the Service Tag, use the auto-detect feature or manually browse for your computer model.

- 4 Click **Drivers & downloads** → **Find it myself**.
- 5 Select the operating system installed on your computer.
- 6 Scroll down the page and expand **BIOS**.
- 7 Click **Download** to download the latest version of the BIOS for your computer.
- 8 After the download is complete, navigate to the folder where you saved the BIOS update file.
- 9 Double-click the BIOS update file icon and follow the instructions on the screen.

Technology and components

Audio

Alienware Aurora R5 is shipped with Realtek ALC3861 for optical S/PDIF output.



NOTE: The audio drivers are already installed when you receive your computer.

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.

Identifying the audio controller

- 1 On the taskbar, click the search box, and then type `Device Manager`.
- 2 Click **Device Manager**.
The **Device Manager** window is displayed.

- Expand **Sound, video and game controllers** to view the audio controller.

Table 9. Audio controller status in Device Manager

Before installation	After installation

Changing the audio settings

- On the taskbar, click the search box, and then type `Dell Audio`.
- Click **Dell Audio** and change the audio settings as required.

Graphics

Alienware Aurora R6 is shipped with the following graphics options:

Table 10. Video specifications

Integrated:	
Controller	Intel HD Graphics 630
Memory	Shared system memory
Discrete:	
Type	Up to two PCI-Express X16, single-width/double-width, full length (maximum 10.5 inches)
	NOTE: The graphics configuration of your desktop varies depending on the graphics card configuration ordered.
Controller	<ul style="list-style-type: none"> AMD or NVIDIA Also supports Dual AMD or NVIDIA (SLI)
Memory	Up to 12 GB

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**.

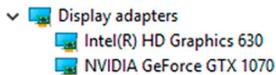


NOTE: If you do not have the Service Tag, use the auto-detect feature or manually browse for your computer model.

- 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.

Identifying the display adapter

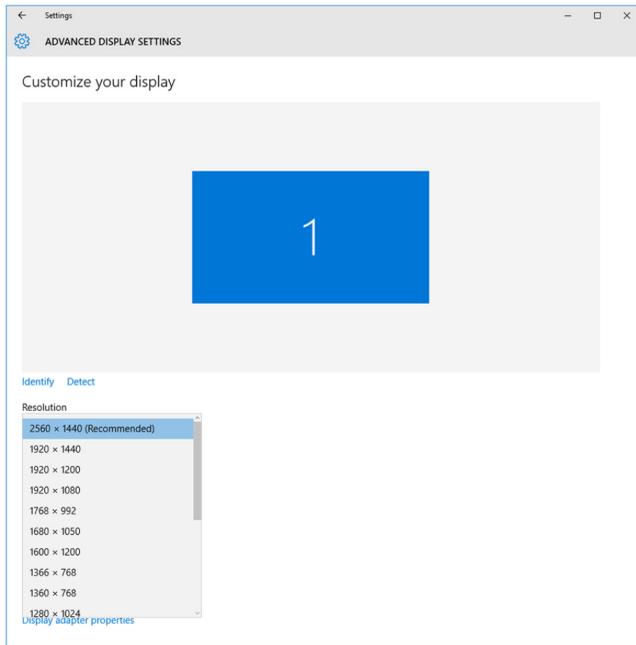
- 1 On the taskbar, click the search box, and then type `Device Manager`.
- 2 Click **Device Manager**.
The **Device Manager** window is displayed.
- 3 Expand **Display adapters**.



Changing the screen resolution

- 1 Right-click on your desktop and select **Display settings**.
- 2 Click **Advanced display settings**.
- 3 Select the appropriate resolution from the drop-down list.

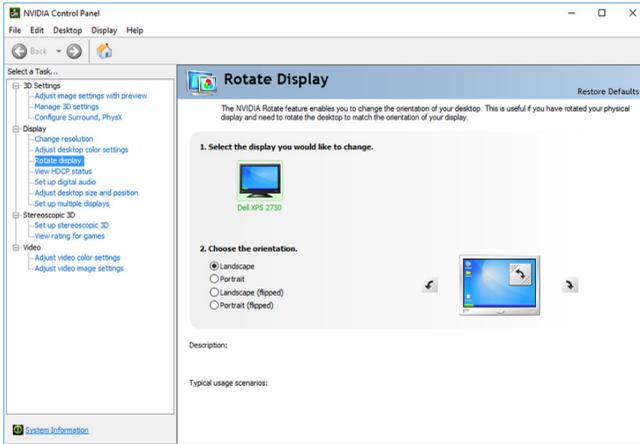
4 Click **Apply**.



Rotating the display

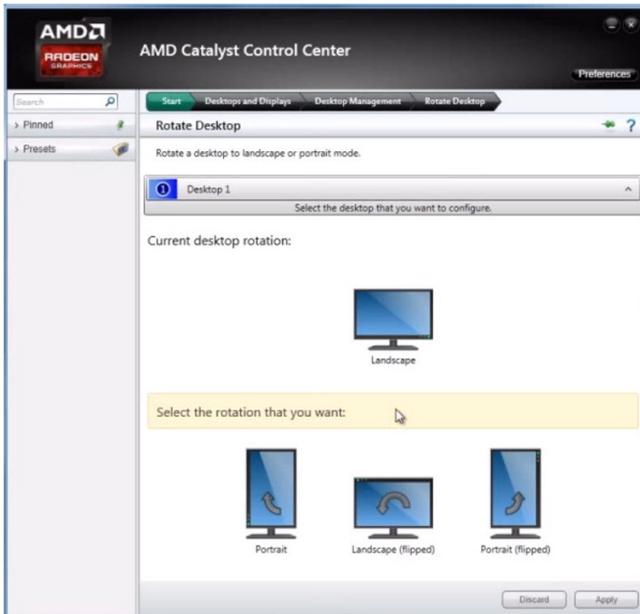
- 1 Right-click on your desktop.

2 Select **Graphics Options** → **Rotation** and select from the listed options.



The display can be also rotated by selecting **Rotate Display** under the **Display** menu in the **NVIDIA Control Panel**.

For computers shipped with the AMD video card, the display can be rotated by selecting the required rotation on **Rotate Desktop** tab in the **AMD Catalyst Control Center**.



USB

The following table shows the USB ports available in Alienware Aurora R6.

Table 11. USB ports and its location

Ports	Location
USB 3.0	Two on the front side
USB 3.0 with PowerShare	Two on the front side
USB 2.0	Six on the back panel
USB 3.1 Type-C	One on the back panel
USB 3.1	One on the back panel
USB 3.0	Three on the back panel

 **NOTE: USB 3.0 needs the driver to be installed before it can detect any USB devices.**

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.

Identifying the USB drivers

- 1 On the taskbar, click the search box, and then type `Device Manager`.

- 2 Click **Device Manager**.
The **Device Manager** window is displayed.
- 3 Expand **System devices**.



Enabling or disabling the USB in BIOS setup program

- 1 Turn on or restart your computer.
- 2 Press F2 when the AlienHead logo is displayed on the screen to enter the BIOS setup program.
The BIOS setup program is displayed.
- 3 On the **Advanced** tab, select **USB Configuration**.
- 4 Select the **Front USB Ports** or **Rear USB Ports** options to enable or disable the ports respectively.
- 5 Save the BIOS setup program settings and exit.

Fixing a no-boot issue caused by USB emulation

Sometimes the computer does not boot to the operating system when USB devices are connected to the computer during startup. This behavior occurs because the computer is looking for bootable files in the USB devices. Follow these steps to fix the no-boot issue:

- 1 Turn on or restart your computer.
- 2 Press F2 when the AlienHead logo is displayed on the screen to enter the BIOS setup program.
The BIOS setup program is displayed.
- 3 On the **Advanced** tab, select **USB Configuration**.
- 4 Select the **USB Boot Support** to disable it.
- 5 Save the settings and exit.

Wi-Fi

Alienware Aurora R6 is shipped with Wi-Fi 802.11b/g/n or Wi-Fi 802.11ac.

Turning on or off Wi-Fi

 **NOTE:** There is no physical switch to enable or disable Wi-Fi. It has to be done through computer settings.

- 1 Swipe-in from the right edge of the display, or click the **Action Center** icon on the taskbar to access the Action Center.
- 2 Click **Wi-Fi** to turn Wi-Fi on or off.

Downloading the Wi-Fi 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 Wi-Fi driver for your computer.
- 7 After the download is complete, navigate to the folder where you saved the Wi-Fi driver file.
- 8 Double-click the driver file icon and follow the on-screen instructions to install the driver.

Identifying the Wireless drivers

- 1 On the taskbar, click the search box, and then type `Device Manager`.
- 2 Click **Device Manager**.
The **Device Manager** window is displayed.

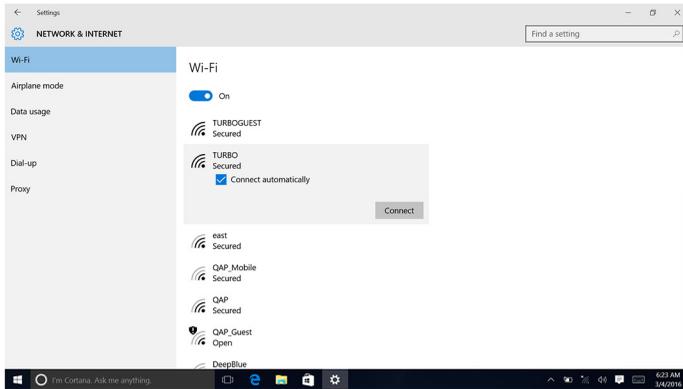
3 Expand **System devices**.



Configuring the Wi-Fi

- 1 Turn on Wi-Fi. For more information, see [Turning Wi-Fi on or off](#).
- 2 Click the Action Center icon on the taskbar to access the Action Center.
- 3 Click **Wi-Fi**, and then click **Go to settings**.
A list of available networks is displayed.
- 4 Select your network and click **Connect**.

 **NOTE:** Type the network security key, if prompted.



Bluetooth

Alienware Aurora R6 is shipped with Bluetooth 4.1/Bluetooth 4.2.

Turning on or off Bluetooth

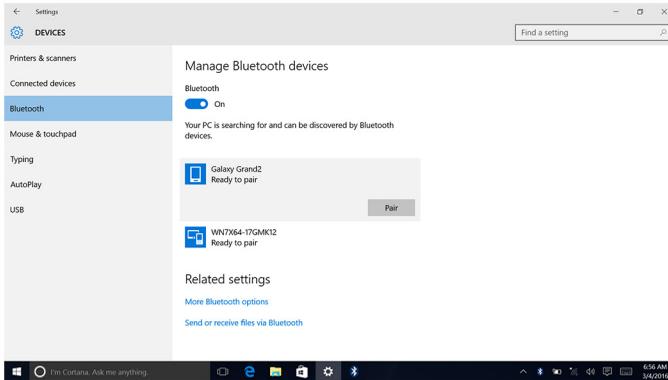


NOTE: There is no physical switch to enable or disable Bluetooth. It has to be done through the computer settings.

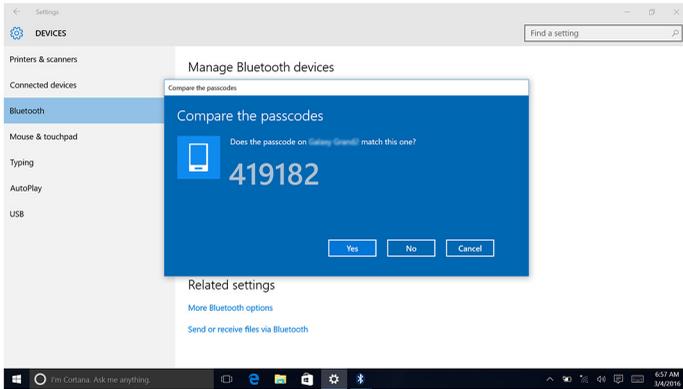
- 1 Click the **Action Center** icon on the taskbar to access the Action Center.
- 2 Click **Bluetooth** to turn Bluetooth on or off.

Pairing the Bluetooth-enabled devices

- 1 Turn on Bluetooth. For more information, see [Turning on or off Bluetooth](#).
- 2 Click the **Action Center** icon on the taskbar to access the Action Center.
- 3 Click **Bluetooth**, and then click **Go to settings**.
- 4 Select the required Bluetooth device for pairing.
- 5 Click **Pair** to pair the bluetooth devices.

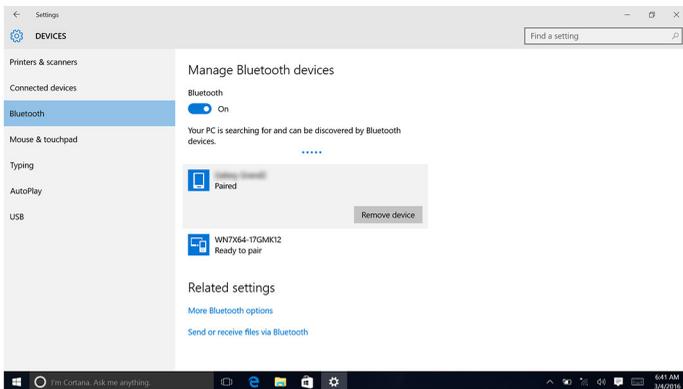


- 6 Click **Yes** to confirm the passcodes on both the devices.



Removing the Bluetooth device

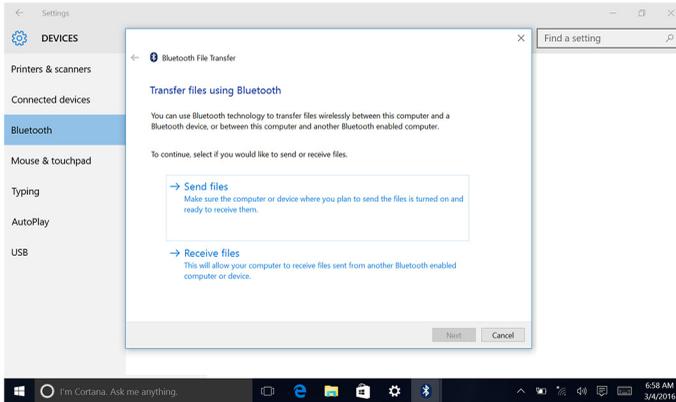
- 1 Click the **Action Center** icon on the taskbar to access the Action Center.
- 2 Click **Bluetooth**, and then click **Go to settings**.
- 3 Click the device you want to remove, and then click **Remove device**.



Transferring files between devices using Bluetooth

- 1 Click the **Action Center** icon on the taskbar to access the Action Center.
- 2 Click **Bluetooth**, and then click **Go to settings**.

- 3 Select your Bluetooth device.
- 4 Click **Send or receive files via Bluetooth**.
- 5 In the **Bluetooth File Transfer** window, click **Send files**, and then select the file you want to transfer.



Hard drive

The following table shows the hard-drive options available in Alienware Aurora R6.

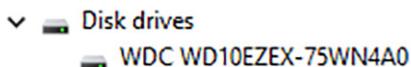
Table 12. Hard drive options

Options	Dimensions
SSD	One M.2 drive
SATA	<ul style="list-style-type: none"> • One 3.5-inch drive bay • Two 2.5-inch drive bays

Identifying the hard drive

- 1 On the taskbar, click the search box, and then type `Device Manager`.
- 2 Click **Device Manager**.
The **Device Manager** window is displayed.

3 Expand **Disk drives**.



Identifying the hard drive in BIOS setup program

- 1 Turn on or restart your computer.
- 2 Press F2 when the AlienHead logo is displayed on the screen to enter the BIOS setup program.
A list of hard drives is displayed on the **Main** tab. For more information, see [System setup options](#).

Chipset

Alienware Aurora R6 is shipped with the Intel Z270 chipset.

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.

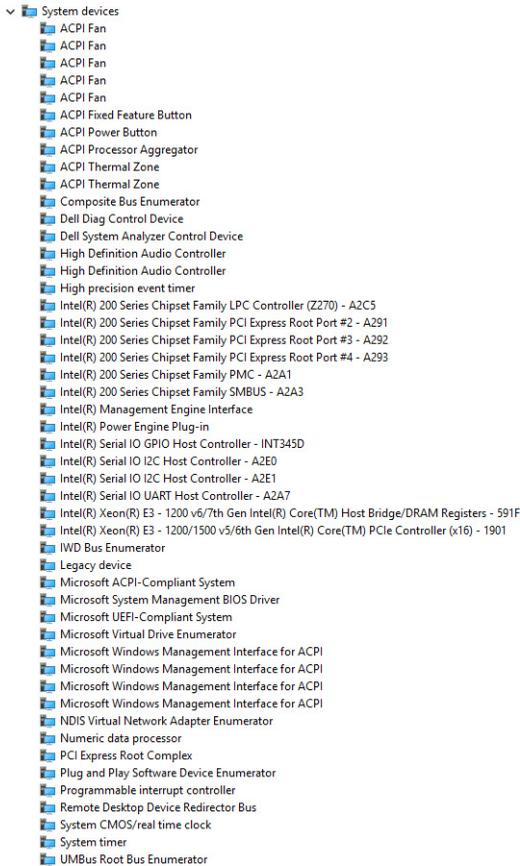
Identifying the chipset

- 1 On the taskbar, click the search box, and then type `Device Manager`.

2 Click **Device Manager**.

The **Device Manager** window is displayed.

3 Expand **System devices**.



Memory

Alienware Aurora R5 has four DIMM (RAM) slots, which are accessible by removing the left-side cover and rotating the power-supply unit. Your computer

supports 4 GB, 8 GB, 16 GB, 32 GB, and 64 GB DDR4 memory of up to 2133 MHz and up to 2400 MHz with XMP (optional).

Checking the system memory in Windows

- 1 Click **Start** .
- 2 Select **Settings** .
- 3 Click **System** → **About**.

Checking the system memory in BIOS setup program

- 1 Turn on or restart your computer.
- 2 Press F2 when the AlienHead logo is displayed on the screen to enter the BIOS setup program.
On the **Main** tab, the memory information is displayed. For more information, see [System setup options](#).

Testing memory using ePSA

- 1 Turn on or restart your computer.
- 2 Press F12 after the AlienHead logo is displayed on the screen to access the boot menu.
- 3 Use the arrow keys to highlight the **Diagnostics** menu option and press **Enter**.
- 4 Follow the instructions on the screen to complete the ePSA Pre-boot System Assessment (PSA).



NOTE: If the operating system logo appears, wait until you see the desktop. Turn off your computer and try again.

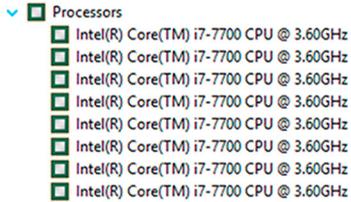
Processors

Alienware Aurora R6 is shipped with the following processor options:

- 7th Generation Intel Core i3
- 7th Generation Intel Core i5/i5k
- 7th Generation Intel Core i7/i7k

Identifying the processors in Windows

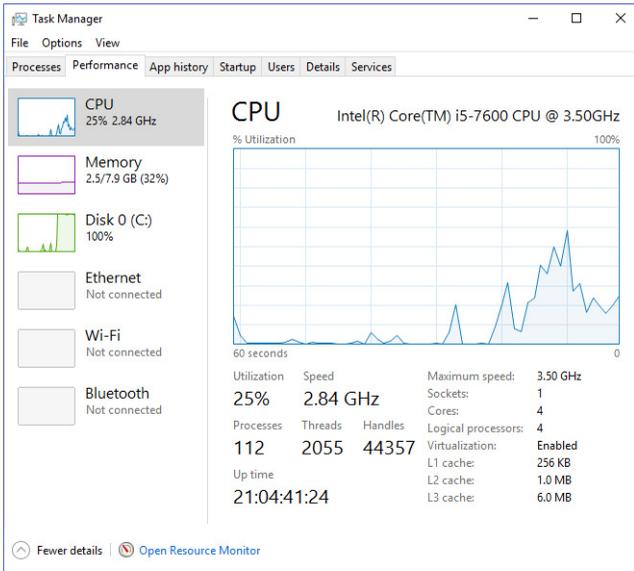
- 1 On the taskbar, click the search box, and then type `Device Manager`.
- 2 Click **Device Manager**.
The **Device Manager** window is displayed.
- 3 Expand **Processors** .



Checking the processor usage in the task manager

- 1 Right-click on the taskbar.
- 2 Click **Task Manager**.
The **Task Manager** window is displayed.

- 3 Click **Performance** tab to display the processor performance details.



Operating System

Alienware Aurora R6 is shipped with the Windows 10 factory installation.

Service Tag location

The service tag is a unique alphanumeric identifier that allows Dell service technicians to identify the hardware components in your computer and access warranty information.

The Service Tag label is located at the rear of your computer towards the base.

Device driver

A device driver or software driver is a computer program allowing higher-level computer programs to interact with a hardware device. For Alienware Aurora R5,

all driver installation for their devices is similar except that some systems may have more devices than others.

Intel Chipset Software Installation Utility

In the Device Manager, check if the chipset driver is installed.

Install the Intel chipset updates from www.dell.com/support.

- System devices
 - ACPI Fan
 - ACPI Fixed Feature Button
 - ACPI Power Button
 - ACPI Processor Aggregator
 - ACPI Thermal Zone
 - ACPI Thermal Zone
 - Composite Bus Enumerator
 - Dell Diag Control Device
 - Dell System Analyzer Control Device
 - High Definition Audio Controller
 - High Definition Audio Controller
 - High precision event timer
 - Intel(R) 200 Series Chipset Family LPC Controller (Z270) - A2C5
 - Intel(R) 200 Series Chipset Family PCI Express Root Port #2 - A291
 - Intel(R) 200 Series Chipset Family PCI Express Root Port #3 - A292
 - Intel(R) 200 Series Chipset Family PCI Express Root Port #4 - A293
 - Intel(R) 200 Series Chipset Family PMC - A2A1
 - Intel(R) 200 Series Chipset Family SMBUS - A2A3
 - Intel(R) Management Engine Interface
 - Intel(R) Power Engine Plug-in
 - Intel(R) Serial IO GPIO Host Controller - INT345D
 - Intel(R) Serial IO I2C Host Controller - A2E0
 - Intel(R) Serial IO I2C Host Controller - A2E1
 - Intel(R) Serial IO UART Host Controller - A2A7
 - Intel(R) Xeon(R) E3 - 1200 v6/7th Gen Intel(R) Core(TM) Host Bridge/DRAM Registers - 591F
 - Intel(R) Xeon(R) E3 - 1200/1500 v5/6th Gen Intel(R) Core(TM) PCIe Controller (x16) - 1901
 - IWD Bus Enumerator
 - Legacy device
 - Microsoft ACPI-Compliant System
 - Microsoft System Management BIOS Driver
 - Microsoft UEFI-Compliant System
 - Microsoft Virtual Drive Enumerator
 - Microsoft Windows Management Interface for ACPI
 - NDIS Virtual Network Adapter Enumerator
 - Numeric data processor
 - PCI Express Root Complex
 - Plug and Play Software Device Enumerator
 - Programmable interrupt controller
 - Remote Desktop Device Redirector Bus
 - System CMOS/real time clock
 - System timer
 - UMBus Root Bus Enumerator

Video drivers

In the Device Manager, check if the video driver is installed.

Install the video driver update from www.dell.com/support.

- ▼  Display adapters
 -  Intel(R) HD Graphics 630
 -  NVIDIA GeForce GTX 1070

Intel Serial IO driver

In the Device Manager, check if the Intel Serial IO driver is installed.

Install the driver updates from www.dell.com/support.

- ▼  Human Interface Devices
 -  HID-compliant consumer control device
 -  HID-compliant consumer control device
 -  HID-compliant system controller
 -  USB Input Device
 -  USB Input Device
 -  USB Input Device

- ▼  Mice and other pointing devices
 -  HID-compliant mouse

- System devices
 - ACPI Fan
 - ACPI Fixed Feature Button
 - ACPI Power Button
 - ACPI Processor Aggregator
 - ACPI Thermal Zone
 - ACPI Thermal Zone
 - Composite Bus Enumerator
 - Dell Diag Control Device
 - Dell System Analyzer Control Device
 - High Definition Audio Controller
 - High Definition Audio Controller
 - High precision event timer
 - Intel(R) 200 Series Chipset Family LPC Controller (Z270) - A2C5
 - Intel(R) 200 Series Chipset Family PCI Express Root Port #2 - A291
 - Intel(R) 200 Series Chipset Family PCI Express Root Port #3 - A292
 - Intel(R) 200 Series Chipset Family PCI Express Root Port #4 - A293
 - Intel(R) 200 Series Chipset Family PMC - A2A1
 - Intel(R) 200 Series Chipset Family SMBUS - A2A3
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 - Intel(R) Serial IO I2C Host Controller - A2E0
 - Intel(R) Serial IO I2C Host Controller - A2E1
 - Intel(R) Serial IO UART Host Controller - A2A7
 - Intel(R) Xeon(R) E3 - 1200 v6/7th Gen Intel(R) Core(TM) Host Bridge/DRAM Registers - 591F
 - Intel(R) Xeon(R) E3 - 1200/1500 v5/6th Gen Intel(R) Core(TM) PCIe Controller (x16) - 1901
 - IWD Bus Enumerator
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 - Microsoft ACPI-Compliant System
 - Microsoft System Management BIOS Driver
 - Microsoft UEFI-Compliant System
 - Microsoft Virtual Drive Enumerator
 - Microsoft Windows Management Interface for ACPI
 - NDIS Virtual Network Adapter Enumerator
 - Numeric data processor
 - PCI Express Root Complex
 - Plug and Play Software Device Enumerator
 - Programmable interrupt controller
 - Remote Desktop Device Redirector Bus
 - System CMOS/real time clock
 - System timer
 - UMBus Root Bus Enumerator

Intel Trusted Execution Engine Interface

In the Device Manager, check if the Intel Trusted Execution Engine Interface driver is installed.

Install the driver update from www.dell.com/support.

- System devices
 - ACPI Fan
 - ACPI Fixed Feature Button
 - ACPI Power Button
 - ACPI Processor Aggregator
 - ACPI Thermal Zone
 - ACPI Thermal Zone
 - Composite Bus Enumerator
 - Dell Diag Control Device
 - Dell System Analyzer Control Device
 - High Definition Audio Controller
 - High Definition Audio Controller
 - High precision event timer
 - Intel(R) 200 Series Chipset Family LPC Controller (Z270) - A2C5
 - Intel(R) 200 Series Chipset Family PCI Express Root Port #2 - A291
 - Intel(R) 200 Series Chipset Family PCI Express Root Port #3 - A292
 - Intel(R) 200 Series Chipset Family PCI Express Root Port #4 - A293
 - Intel(R) 200 Series Chipset Family PMC - A2A1
 - Intel(R) 200 Series Chipset Family SMBUS - A2A3
 - Intel(R) Management Engine Interface
 - Intel(R) Power Engine Plug-in
 - Intel(R) Serial IO GPIO Host Controller - INT345D
 - Intel(R) Serial IO I2C Host Controller - A2E0
 - Intel(R) Serial IO I2C Host Controller - A2E1
 - Intel(R) Serial IO UART Host Controller - A2A7
 - Intel(R) Xeon(R) E3 - 1200 v6/7th Gen Intel(R) Core(TM) Host Bridge/DRAM Registers - 591F
 - Intel(R) Xeon(R) E3 - 1200/1500 v5/6th Gen Intel(R) Core(TM) PCIe Controller (x16) - 1901
 - IWD Bus Enumerator
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 - Microsoft ACPI-Compliant System
 - Microsoft System Management BIOS Driver
 - Microsoft UEFI-Compliant System
 - Microsoft Virtual Drive Enumerator
 - Microsoft Windows Management Interface for ACPI
 - NDIS Virtual Network Adapter Enumerator
 - Numeric data processor
 - PCI Express Root Complex
 - Plug and Play Software Device Enumerator
 - Programmable interrupt controller
 - Remote Desktop Device Redirector Bus
 - System CMOS/real time clock
 - System timer
 - UMBus Root Bus Enumerator

Intel Wireless-AC 8260 Wi-Fi and Bluetooth drivers

In the Device Manager, check if the network card driver is installed.

Install the driver updates from www.dell.com/support.

- Network adapters
 - Bluetooth Device (Personal Area Network)
 - Bluetooth Device (RFCOMM Protocol TDI)
 - Dell Wireless 1820 802.11ac
 - Killer e2400 Gigabit Ethernet Controller

In the Device Manager, check if the Bluetooth driver is installed.

Install the driver updates from www.dell.com/support.



BIOS overview

The BIOS manages data flow between the computer's operating system and attached devices such as hard disk, video adapter, keyboard, mouse, and printer.

Boot menu

The Alienware Area-51 R2 includes a one-time boot menu. By using this feature, you can change the sequence of devices that your computer attempts to boot from, for example, CD-ROM, hard drive, or network.

Boot menu enhancements

The boot menu enhancements are as follows:

- **Easier Access** — Press F12 to access the boot selection menu.
- **User Prompting** — The user is prompted to use the keystroke on the BIOS screen.
- **Diagnostics Options** — The boot menu includes the ePSA diagnostic options.

Timing key sequences

The keyboard is not the first device initialized by Setup. As a result, if you press a keystroke too early, the keyboard is locked out. In such case, a keyboard error message is displayed on the screen, and you cannot restart your computer with the Ctrl+Alt+Del key combination.

To prevent the keyboard from locking, wait until the keyboard is initialized completely. The keyboard is initialized if one of the following occurs:

- The keyboard lights flash.

- The F2=Setup prompt appears at the top-right corner of the screen during boot.

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 13. 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

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 14. 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.**