

XPS 8920

Service Manual

Computer Model: XPS 8920
Regulatory Model: D24M
Regulatory Type: D24M001



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. Click **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 attached network devices and peripherals, such as keyboard, mouse, and monitor from your computer.
- 5 Remove any media card and optical disc from your computer, if applicable.
- 6 After the computer is unplugged, press and hold the power button for 5 seconds to ground the system board.

Safety instructions







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



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



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

-  **CAUTION:** To avoid damaging the computer, ensure that the work surface is flat and clean.
-  **CAUTION:** To avoid damaging the components and cards, handle them by their edges, and avoid touching pins and contacts.
-  **CAUTION:** You should only perform troubleshooting and repairs as authorized or directed by the Dell technical assistance team. Damage due to servicing that is not authorized by Dell is not covered by your warranty. See the safety instructions that shipped with the product or at www.dell.com/regulatory_compliance.
-  **CAUTION:** Before touching anything inside your computer, ground yourself by touching an unpainted metal surface, such as the metal at the back of the computer. While you work, periodically touch an unpainted metal surface to dissipate static electricity, which could harm internal components.
-  **CAUTION:** When you disconnect a cable, pull on its connector or on its pull tab, not on the cable itself. Some cables have connectors with locking tabs or thumb-screws that you must disengage before disconnecting the cable. When disconnecting cables, keep them evenly aligned to avoid bending any connector pins. When connecting cables, ensure that the ports and connectors are correctly oriented and aligned.
-  **CAUTION:** Press and eject any installed card from the media-card reader.

Recommended tools

The procedures in this document may require the following tools:










- Philips screwdriver
- Flat-head screwdriver
- Plastic scribe




Screw list

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

Table 1. Screw list

| Component | Secured to | Screw type | Quantity | Screw image |
|----------------------|--------------------|------------|---------------------------------------|---|
| Hard drive | Hard-drive bracket | #6-32x1/4" | 4 |  |
| Hard-drive cage | Chassis | #6-32x1/4" | 6 (two per hard-drive cage installed) |  |
| Power-supply bracket | Chassis | #6-32x1/4" | 2 |  |
| Power-supply unit | Chassis | #6-32x1/4" | 4 |  |
| Blower | Heat-sink assembly | #6-32x1/4" | 3 |  |
| Chassis fan | Chassis | #6-32x1/4" | 1 |  |
| Power button module | Top panel | #6-32x1/4" | 1 |  |
| Solid-state drive | System board | M2x2.5 | 1 |  |
| Wireless card | System board | M2x2.5 | 1 |  |
| Top IO panel | Chassis | #6-32x1/4" | 4 |  |
| ODD | ODD bracket | M2x2.5 | 1 |  |

| Component | Secured to | Screw type | Quantity | Screw image |
|------------------|-------------------|-------------------|-----------------|---|
| System board | Chassis | #6-32x1/4" | 8 |  |



After working inside your computer



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

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

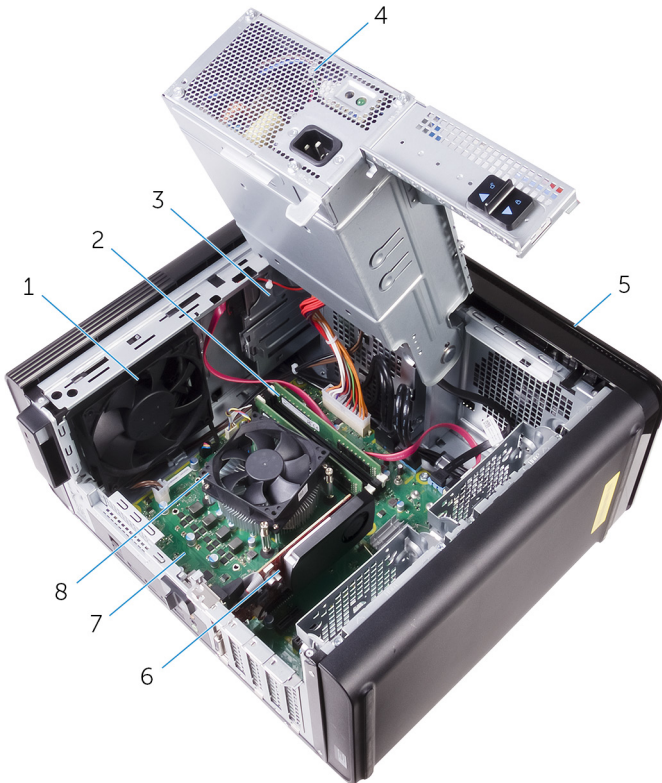
Technical overview



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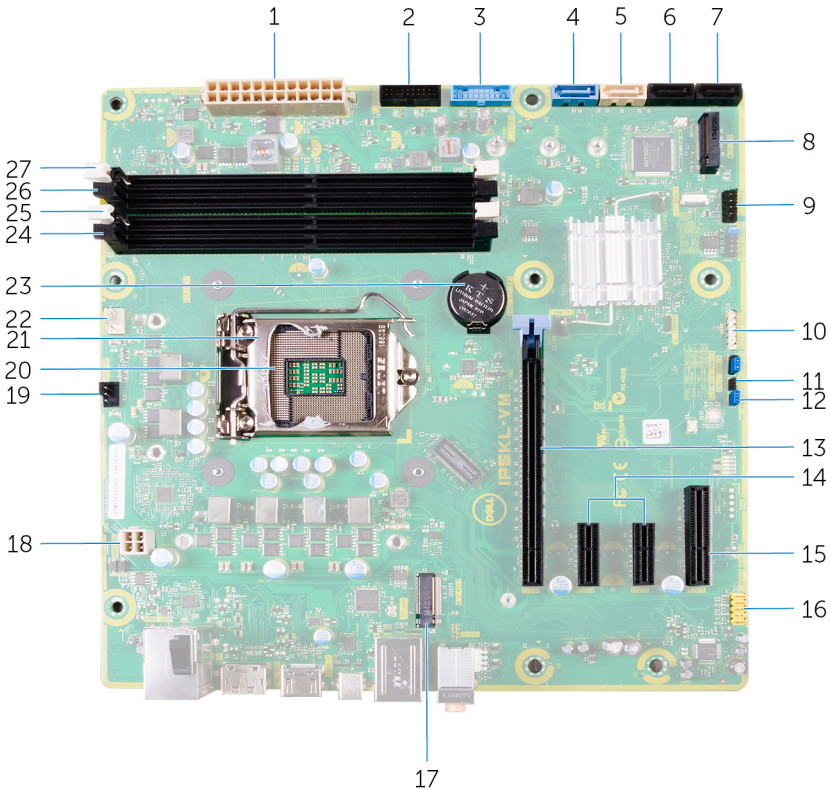


Inside view of your computer



- | | | | |
|---|---------------|---|--------------------------------------|
| 1 | chassis fan | 2 | memory module |
| 3 | optical drive | 4 | power-supply unit |
| 5 | front bezel | 6 | graphics card |
| 7 | system board | 8 | processor fan and heat-sink assembly |

System-board components



- | | | | |
|---|--|----|---|
| 1 | system board power connector (ATX_POWER) | 2 | USB 2 (F_SSUSB2) |
| 3 | USB 1 (F_SSUSB1) | 4 | SATA 6 Gbps for hard drive (SATA1) |
| 5 | SATA 6 Gbps for optical drive (SATA2) | 6 | SATA 6 Gbps drive connector (SATA3) |
| 7 | SATA 6 Gbps drive connector (SATA4) | 8 | solid-state drive slot (M.2 SSD) |
| 9 | front I/O panel (F_PANEL) | 10 | media card reader connector (CARD_READER) |



| | | | |
|----|-----------------------------------|----|---|
| 11 | CMOS-reset jumper (CMOS JUMPER) | 12 | password-reset jumper (PASSWORD JUMPER) |
| 13 | PCI-Express x16 card slot (SLOT1) | 14 | PCI-Express x1 card slots (SLOT 2 and SLOT 3) |
| 15 | PCI-Express x4 card slot (SLOT 4) | 16 | front audio connector (F_audio) |
| 17 | wireless-card slot (M.2_SLOT1) | 18 | CPU power cable (ATX_CPU) |
| 19 | chassis-fan connector (TOP_FAN) | 20 | processor socket |
| 21 | processor release latch | 22 | processor-fan connector (CPU_FAN) |
| 23 | coin-cell battery (CMOS BATTERY) | 24 | memory-module slot (DIMM3) |
| 25 | memory-module slot (DIMM1) | 26 | memory-module slot (DIMM4) |
| 27 | memory-module slot (DIMM2) | | |



Removing the right-side cover



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 computer in an upright position.
- 2 Pull the right-side cover release latch.
- 3 Lift the right-side cover and then slide it towards the top of the computer.



- 4 Remove the right-side cover from the chassis.

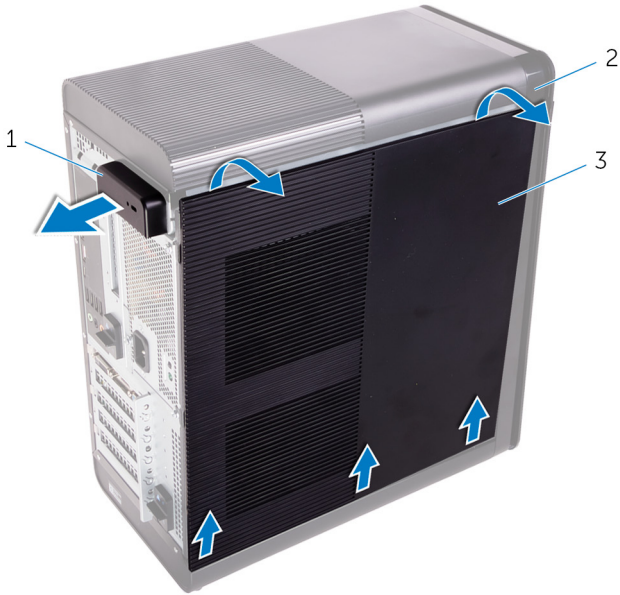


Figure 1. Removing the right-side cover

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

Replacing the right-side cover



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Procedure

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

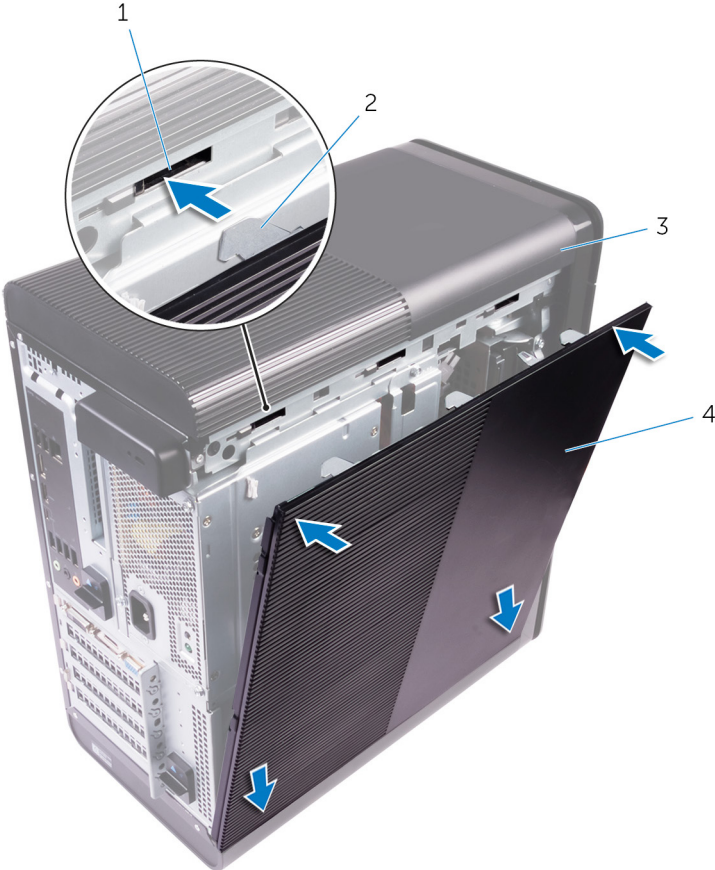


Figure 2. Right-side cover replacement

- 1 slots
- 2 tabs
- 3 chassis
- 4 right-side cover



Removing the top cover



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Prerequisites

Remove the [right-side cover](#).

Procedure

- 1 Place the computer in an upright position.



- 2 Pry the cover from the back corner and lift the top cover away from the chassis.



Figure 3. Removing the top cover

1 top cover

2 chassis

Replacing the top cover



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Procedure

Align the tabs on the top cover with the slots on the top panel and press the top cover until it snaps into place.

Post-requisites

Replace the [right-side cover](#).



Removing the bottom cover



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Prerequisites

Remove the [right-side cover](#).

Procedure

- 1 Place the computer with the bottom facing up.

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



Figure 4. Removing the bottom cover

1 bottom cover

2 chassis



Replacing the bottom cover



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Procedure

Align the tabs on the bottom cover with the slots on the bottom panel and press the bottom cover until it snaps in place.

Post-requisites

Replace the [right-side cover](#).

Removing the front bezel



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Prerequisites

Remove the [right-side cover](#).



Procedure

- 1 Pry the optical-drive bezel from the optical drive.



Figure 5. Removing the optical drive bezel

- | | | | |
|---|---------------------|---|-------------|
| 1 | optical-drive bezel | 2 | front bezel |
|---|---------------------|---|-------------|

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

- 3 Rotate and pull the front bezel away from the front of the chassis to release the front-bezel.



Figure 6. Removing the front bezel

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

Replacing the front bezel



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Procedure

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


Post-requisites

Replace the [right-side cover](#).

Removing the primary hard-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:** Hard drives are fragile. Exercise care when handling the hard drive.

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

Prerequisites

Remove the [right-side cover](#).

Procedure (with tabs)

- 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 7. Removing the hard-drive assembly

- | | | | |
|---|--------------------|---|--------------|
| 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 to replace it correctly.



Figure 8. Removing the hard drive from the bracket

- | | | | |
|---|------------|---|--------------------|
| 1 | hard drive | 2 | hard-drive carrier |
| 3 | tabs | | |

Replacing the primary hard-drive

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


Procedure (with tabs)

- 1 Place the hard drive into the hard-drive carrier and align the tabs on the bracket with the slots on the hard drive.
- 2 Snap the hard-drive carrier into the hard drive.
- 3 Slide the hard-drive carrier 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 [right-side cover](#).

Removing the primary hard-drive

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

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

Prerequisites

Remove the [right-side cover](#).

Procedure (with screws)

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



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

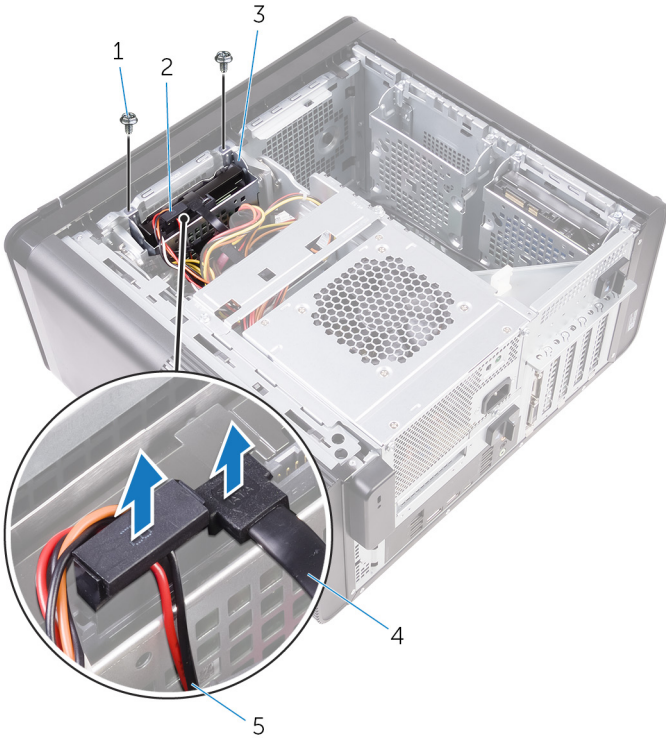


Figure 9. Disconnecting cables

- | | | | |
|---|-----------------------|---|------------|
| 1 | #6-32x1/4" screws (2) | 2 | hard drive |
| 3 | hard-drive cage | 4 | data cable |
| 5 | power cable | | |

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

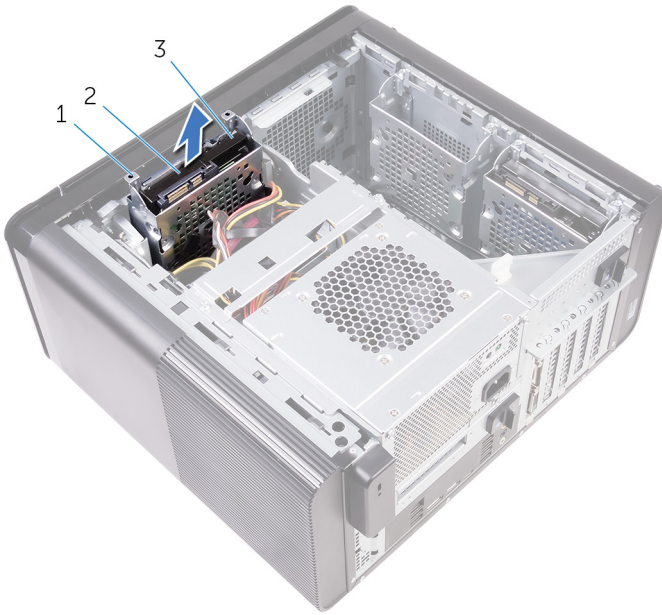


Figure 10. Removing the hard-drive cage

- | | | | |
|---|---------------------|---|-----|
| 1 | hard-drive cage | 2 | tab |
| 3 | hard-drive assembly | | |
- 4 Remove the screws that secure the hard drive to the hard-drive cage.

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

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

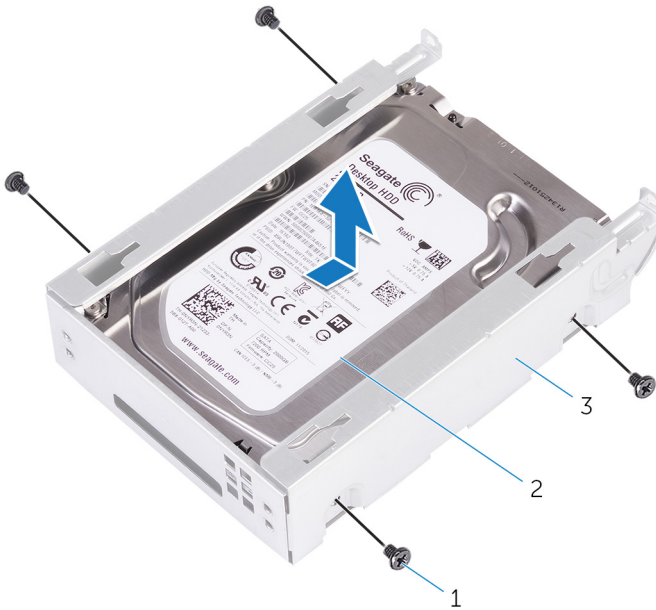



Figure 11. Removing the hard drive from the bracket

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

Replacing the primary hard-drive

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

Procedure

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

Post-requisites

Replace the [right-side cover](#).



Removing the secondary hard-drive



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



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

Prerequisites

Remove the [right-side cover](#).

Procedure

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

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

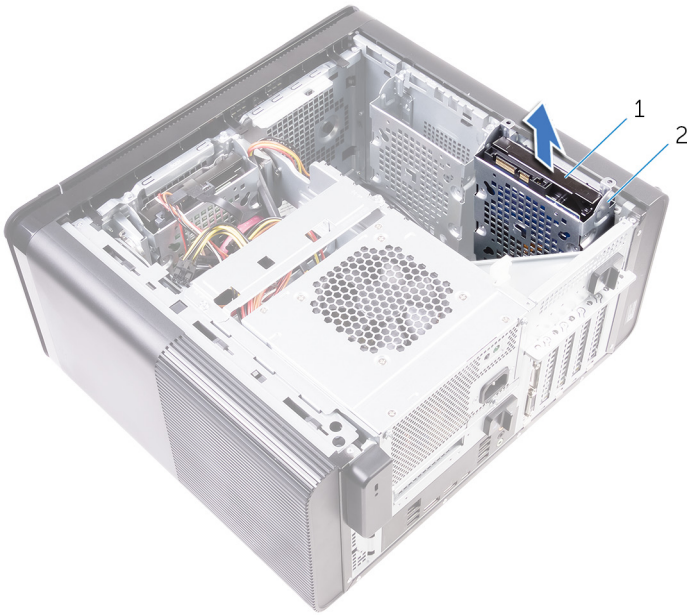


- 1 #6-32 X 1/4" screws (2)
- 3 hard-drive cage
- 5 data cable

- 2 hard drive
- 4 power cable



- 3 Lift the hard drive cage off the chassis.



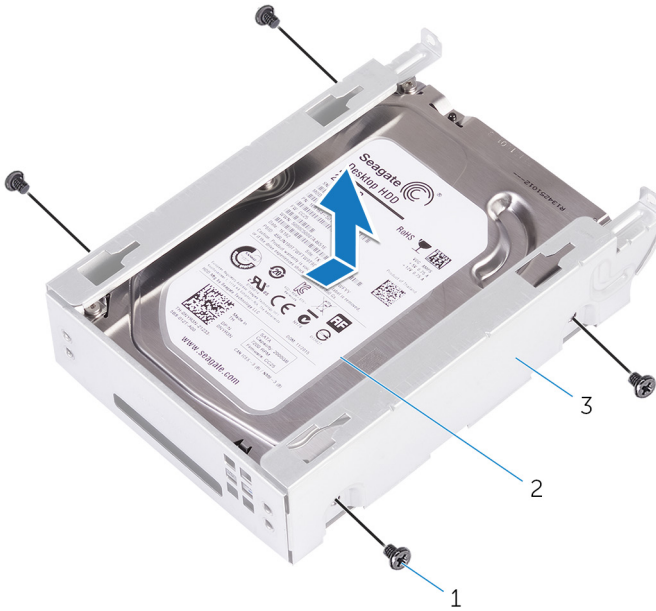
1 hard drive

2 hard-drive cage

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

- 5 Lift the hard drive out of the hard drive cage.

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



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



Replacing the secondary hard-drive



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


Post-requisites

Replace the [right-side cover](#).


Procedure

- 1 Place the hard drive into the hard-drive cage.
- 2 Replace the screws that secure the hard drive to the hard-drive cage.
- 3 Place the hard-drive cage into the hard-drive cage slot in the chassis.
- 4 Replace the screws that secure the hard-drive cage to the chassis.
- 5 Connect the data and power cables to the hard drive.

Removing the solid-state drive

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

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

Prerequisites

- 1 Remove the [right-side cover](#).
- 2 Remove the [full-length graphics card](#) (if installed).

Procedure

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



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

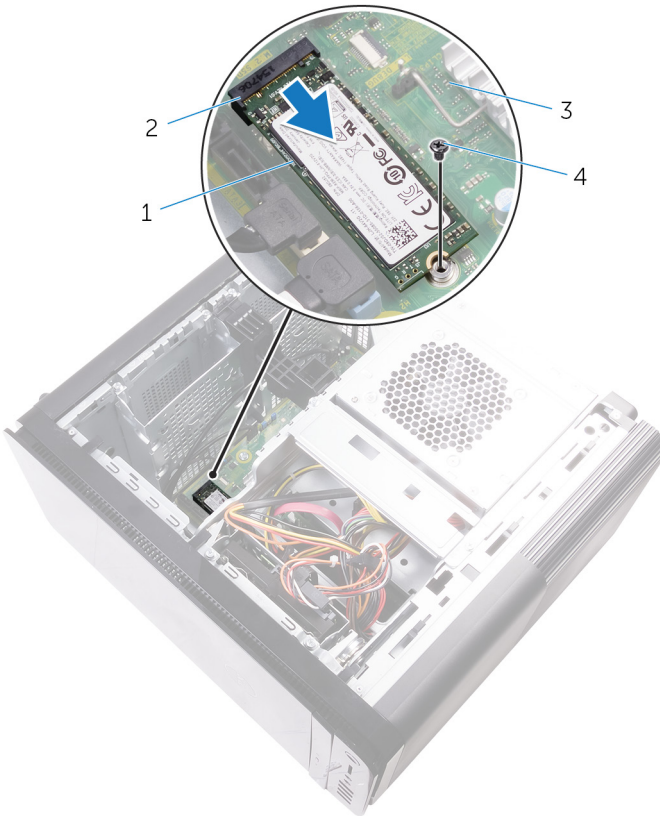



Figure 12. Removing the solid-state drive

- | | | | |
|---|-------------------|---|------------------------|
| 1 | solid-state drive | 2 | solid-state drive slot |
| 3 | system board | 4 | M2x2.5 screw |

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 solid-drive drive slot.
For more information, see "[System-board components](#)".



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

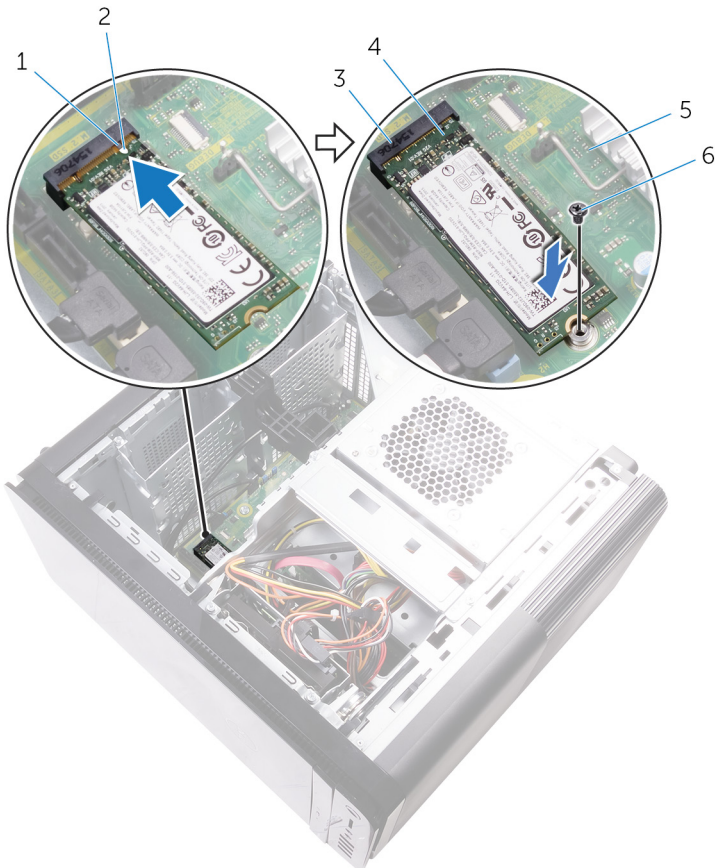


Figure 13. Replacing the solid-state drive

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

Post-requisites

- 1 Replace the [full-length graphics card](#) (if installed).

- 2 Replace the [right-side cover](#).



Removing the power-supply unit



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 [right-side cover](#).

Procedure



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

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

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

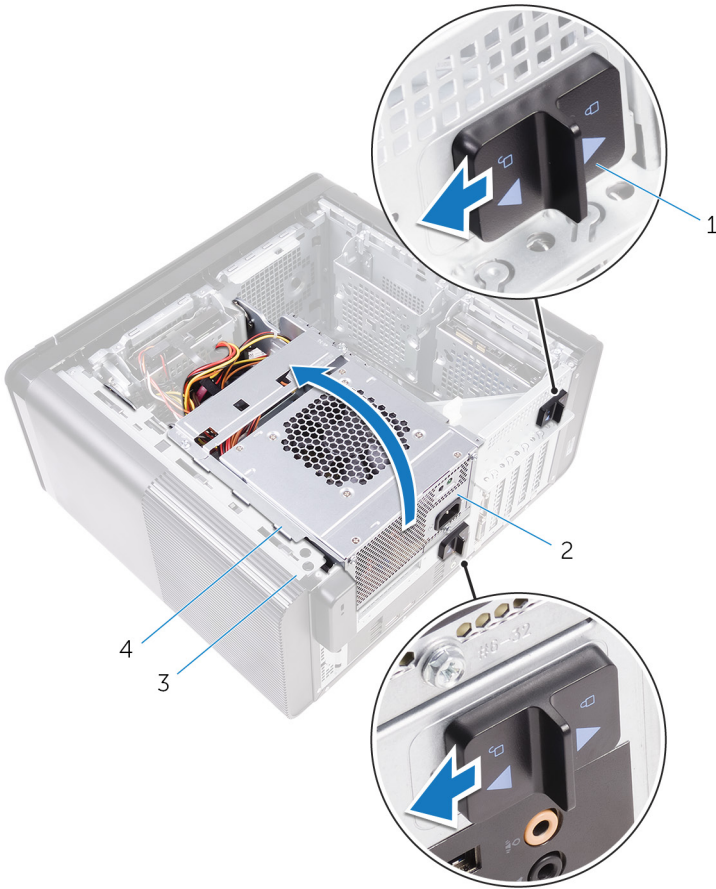


Figure 14. Rotating the power-supply unit

- | | | | |
|---|--|---|------------------------|
| 1 | power-supply unit cage release latches (2) | 2 | power-supply unit |
| 3 | chassis | 4 | power-supply unit cage |
- 3 Disconnect the CPU-power cable and system board power cable from the system board and the optical-drive power cable from the optical drive.
For more information, see "[System-board components](#)".
 - 4 Disconnect the graphics-card power cables if applicable.



- 5 Remove the system-board power cable from the routing guide on the chassis.

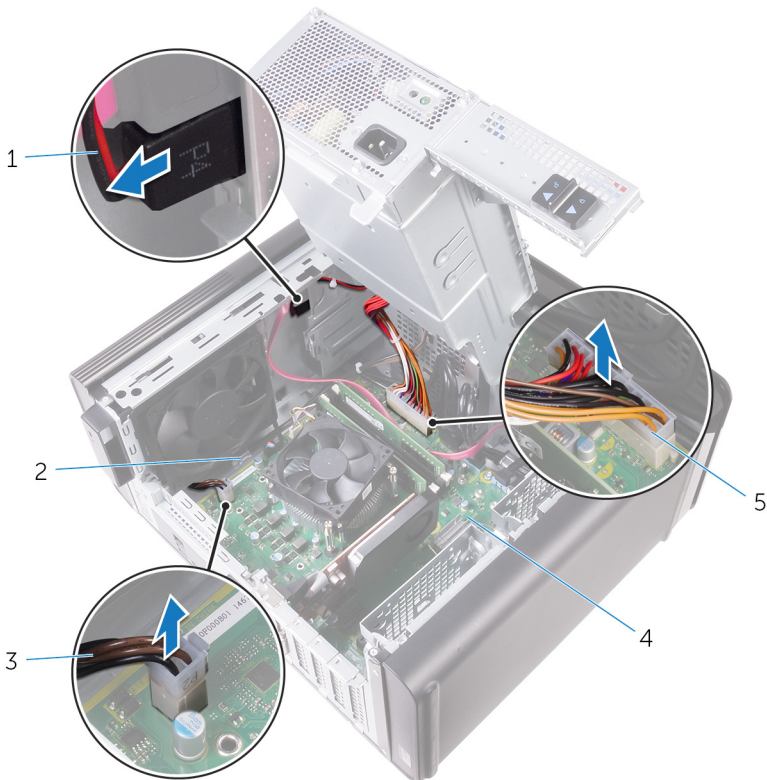


Figure 15. Disconnecting cables

- | | | | |
|---|---------------------------|---|---------------|
| 1 | optical drive power cable | 2 | routing guide |
| 3 | CPU power cable | 4 | system board |
| 5 | system board power cable | | |
- 6 Rotate the power-supply unit cage towards the chassis.
 - 7 Disconnect the hard-disk power cable.
NOTE: There could be up to three hard-disk power cables depending on the quantity of hard-disk drive installed.
 - 8 Remove the screws that secure the power-supply bracket to the chassis.
 - 9 Remove the screws that secure the power-supply unit to the chassis.

- 10 Lift the power-supply bracket off the chassis.
- 11 Lift the power-supply unit off the chassis.

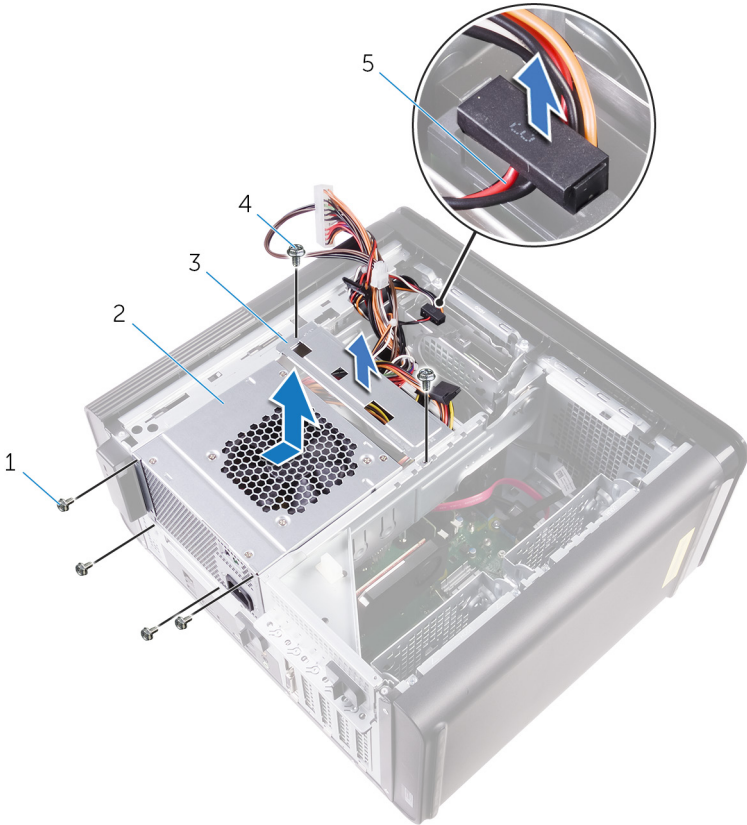


Figure 16. Removing the power supply unit

- | | | | |
|---|-----------------------|---|-----------------------|
| 1 | #6-32x1/4" screws (4) | 2 | power-supply unit |
| 3 | power-supply bracket | 4 | #6-32x1/4" screws (2) |
| 5 | hard-drive cable | | |



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 power-supply unit cage.
- 2 Replace the screws that secure the power-supply unit to the power-supply unit cage.
- 3 Align the screw holes on the power-supply bracket with the screw holes on the power-supply unit cage.
- 4 Replace the screws that secure the power supply bracket to the power-supply unit cage.
- 5 Connect the hard-drive power cable.
- 6 Rotate the power-supply unit away from the chassis.
- 7 Connect the CPU-power cable, system-board power cable to the system board and the optical-drive power cable to the optical drive.
For more information, see "[System-board components](#)".
- 8 Route the system-board power cable through the routing guide on the chassis.
- 9 Connect the graphics-card power cables if applicable.
- 10 Rotate the power-supply unit towards the chassis until the unit snaps into place.
- 11 Slide the power-supply unit cage release latches to their locking positions to lock the release latches.

Post-requisites

Replace the [right-side cover](#).

Removing the coin-cell battery

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

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

Prerequisites

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

Procedure

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



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

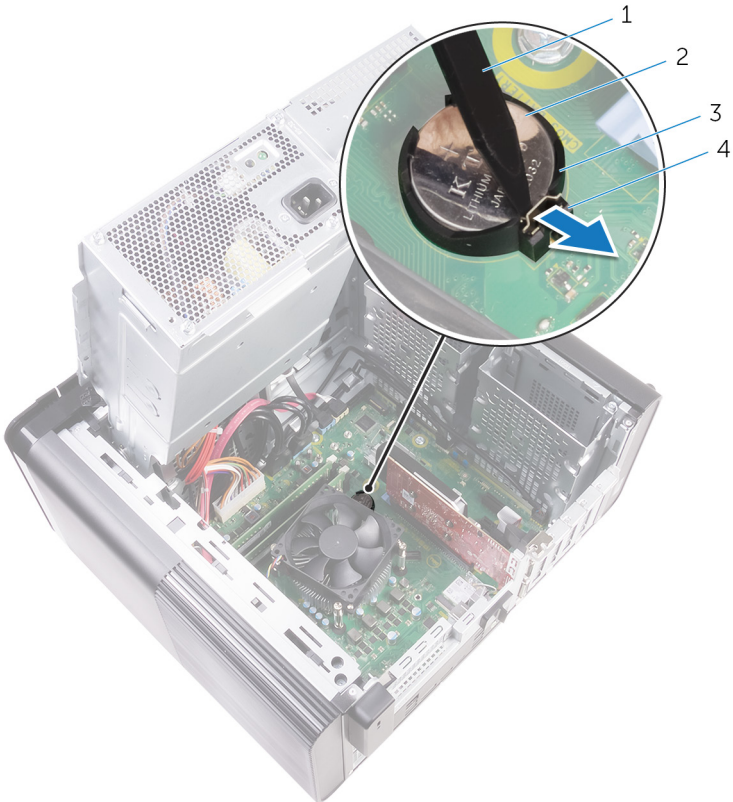


Figure 17. Removing the coin cell battery

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

Replacing the coin-cell battery



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

Procedure

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

Post-requisites

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



Removing the chassis fan



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

Prerequisites

- 1 Remove the [right-side cover](#).
- 2 Follow the procedure from step 1 to step 2 in “[Removing the power-supply unit](#)”.
- 3 Remove the [blower and heat-sink assembly](#). (if installed)

Procedure

- 1 Remove the chassis-fan cable from the routing guide on the chassis-fan bracket.
- 2 Disconnect the chassis-fan cable from the system board.
For more information, see “[System-board components](#)”.
- 3 Remove the screw that secures the chassis-fan bracket to the chassis.
- 4 Slide the chassis-fan assembly towards the front of the computer to release the fan from the chassis.

- 5 Lift the chassis-fan assembly off the chassis.

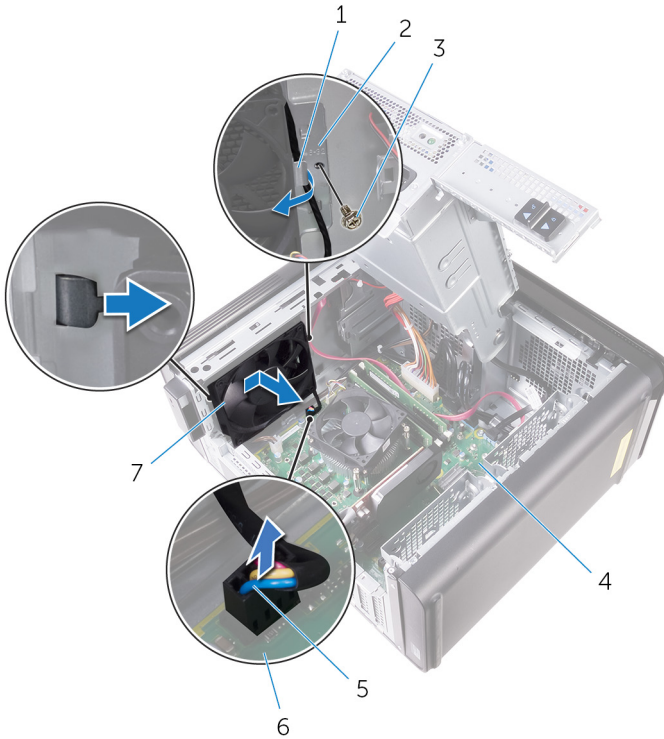


Figure 18. Removing the chassis fan

- | | | | |
|---|-------------------|---|---------------------|
| 1 | routing guide | 2 | chassis-fan bracket |
| 3 | #6-32x1/4" screw | 4 | chassis |
| 5 | chassis-fan cable | 6 | system board |
| 7 | chassis fan | | |

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



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



Figure 19. Removing the chassis fan

1 chassis-fan bracket

2 chassis-fan

Replacing the 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 chassis fan with the rubber grommets on the chassis-fan bracket.



NOTE: You must correctly align to the chassis-fan bracket to ensure that the chassis fan is secured to the computer.

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

For more information, see "[System-board components](#)".

Post-requisites

- 1 Replace the [blower and heat-sink assembly](#). (if installed)
- 2 Follow the procedure from step 9 to step 10 in "[Replacing the power-supply unit](#)".



3 Replace the [right-side cover](#).



Removing 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.

Prerequisites



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

- 1 Remove the [right-side cover](#).
- 2 Follow the procedure from step 1 to step 2 in “[Removing the power-supply unit](#)”.

Procedure

- 1 Locate the graphics card on the system board and make note of the graphics-card slot (PCI-Express x16).
For more information, see “[System-board components](#)”.



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

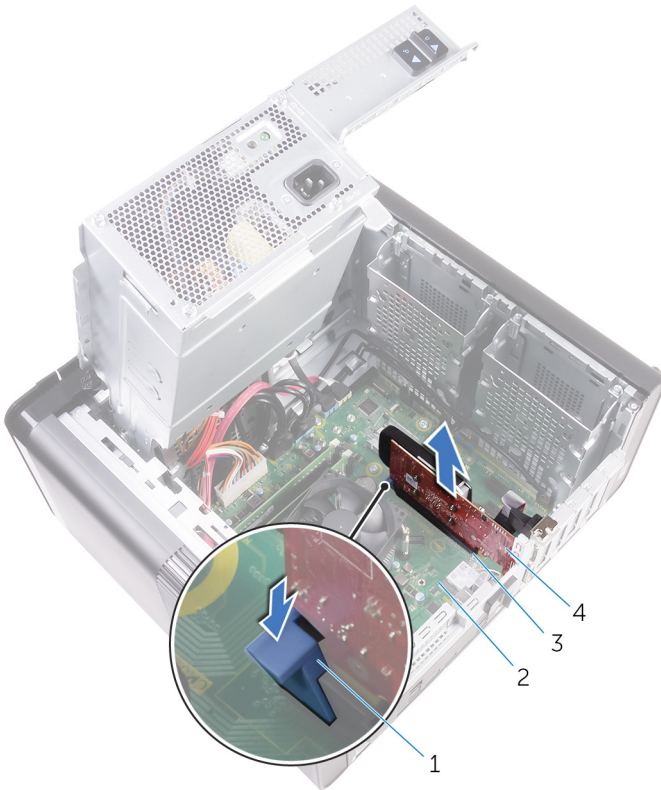


Figure 20. Removing the graphics card

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

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 Locate the PCI-Express x16 card slot on the system board.
For more information, see "[System-board components](#)".
- 2 Align the notch on the graphics card with the tab on the slot and snap the graphics card in place.

Post-requisites

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



Removing the full-length graphics cards



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



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

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

Procedure

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

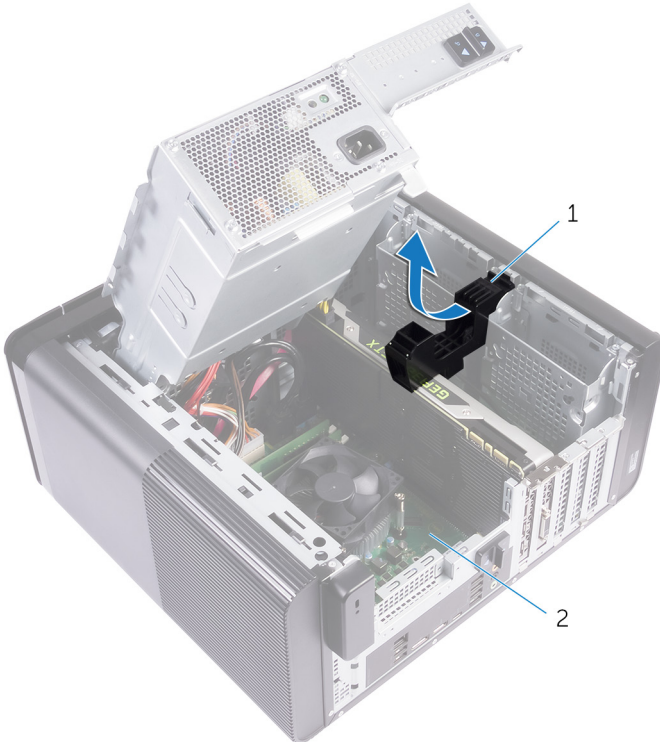


Figure 21. Removing the graphics-card bracket

- | | | | |
|---|-----------------------|---|---------|
| 1 | graphics-card bracket | 2 | chassis |
|---|-----------------------|---|---------|
- 2 Press the releasing clip on the power-cable connectors and disconnect the power cables from the graphics card.



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

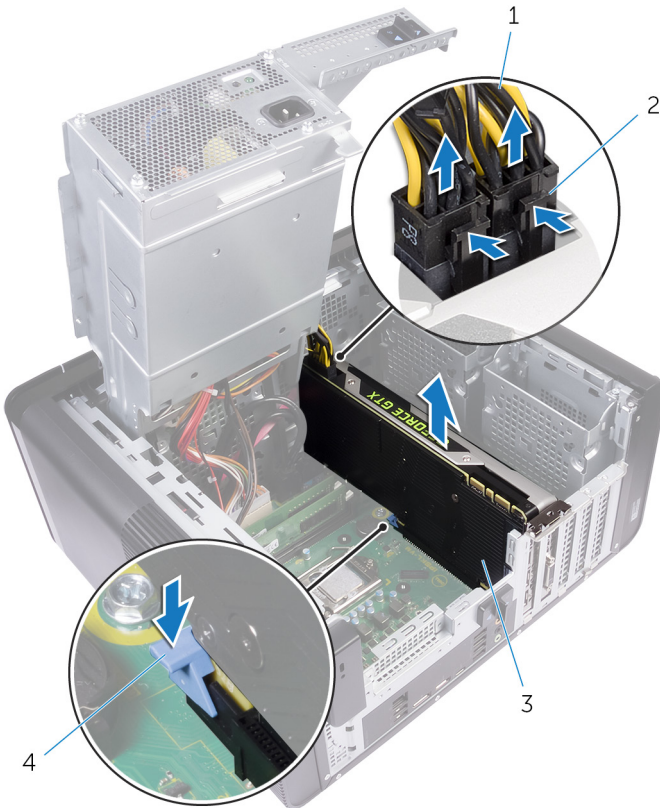


Figure 22. Removing the power cable

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

Replacing the full-length graphics cards



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Procedure

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

Post-requisites

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



Removing the memory modules



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

Prerequisites

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

Procedure

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

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

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

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

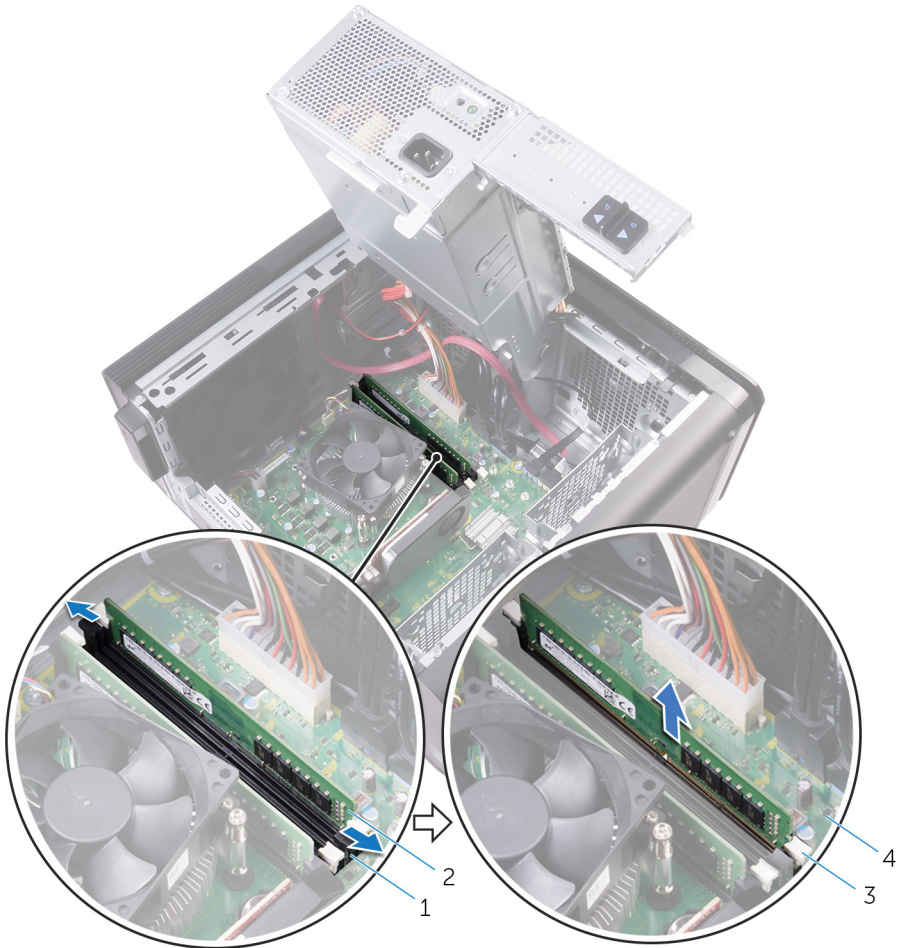


Figure 23. Removing the memory module

- 1 memory-module slot
3 securing clips (2)

- 2 memory module
4 system board



Replacing the memory modules



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Procedure

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

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

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



Figure 24. Replacing the memory module

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





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

The following table lists the available memory configuration matrix:

Table 2. Memory configuration matrix

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

Post-requisites

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

Removing the optical drive



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Prerequisites

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

Procedure

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



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

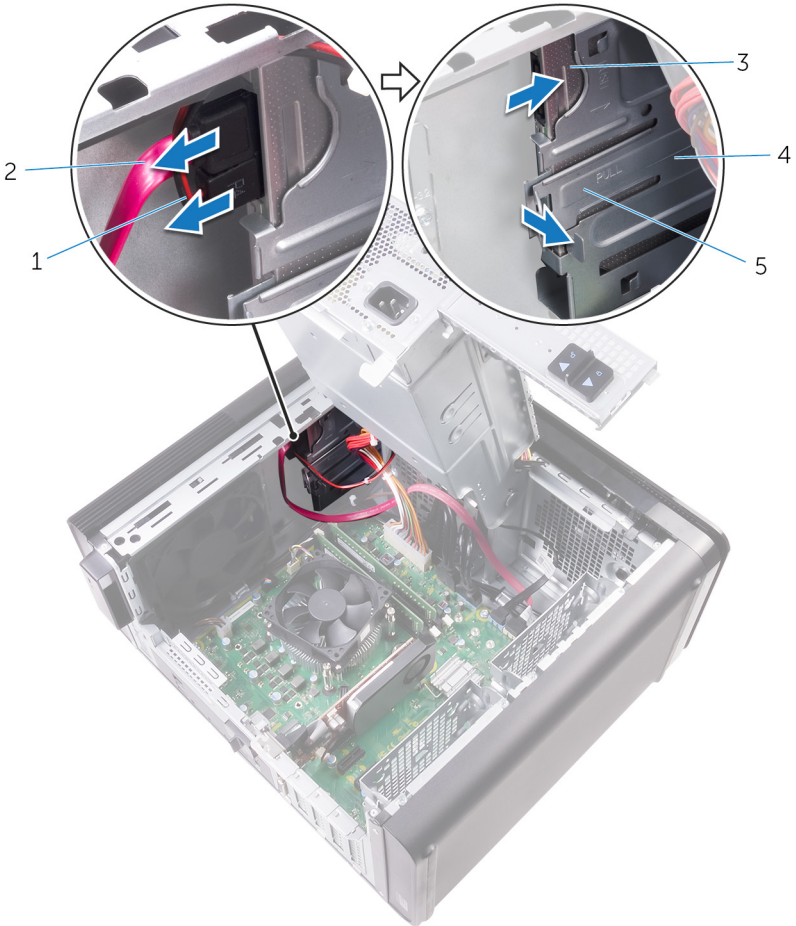


Figure 25. Removing the optical drive

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

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

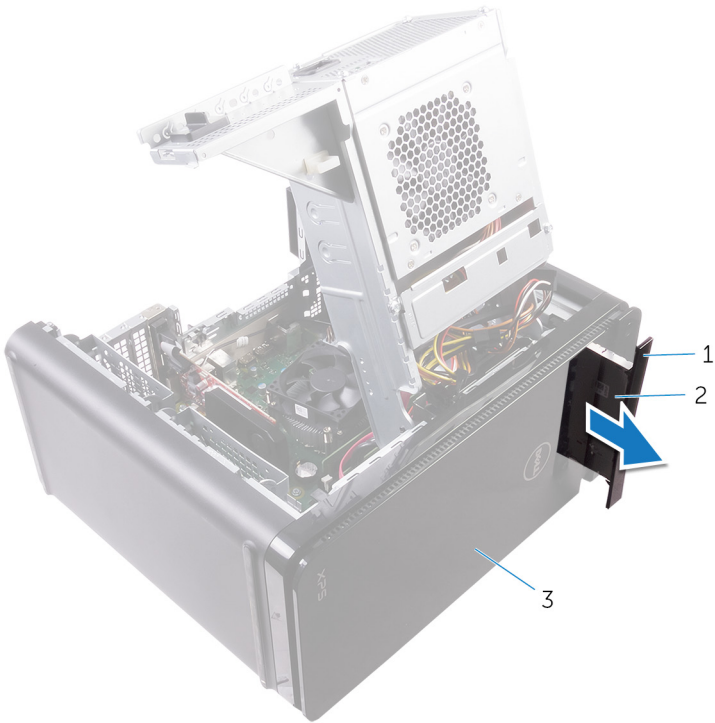


Figure 26. Removing the optical drive

- | | | | |
|---|---------------------|---|---------------|
| 1 | optical-drive bezel | 2 | optical drive |
| 3 | front bezel | | |

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



Figure 27. Removing the optical drive

- | | | | |
|---|---------------|---|-----------------------|
| 1 | M2x2.5 screw | 2 | optical-drive bracket |
| 3 | optical drive | | |

Replacing the optical drive



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Procedure

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

Post-requisites

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



Removing the power-button module



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

Prerequisites

- 1 Remove the [right-side cover](#).
- 2 Remove the [top cover](#).
- 3 Remove the [front bezel](#).

Procedure



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

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

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

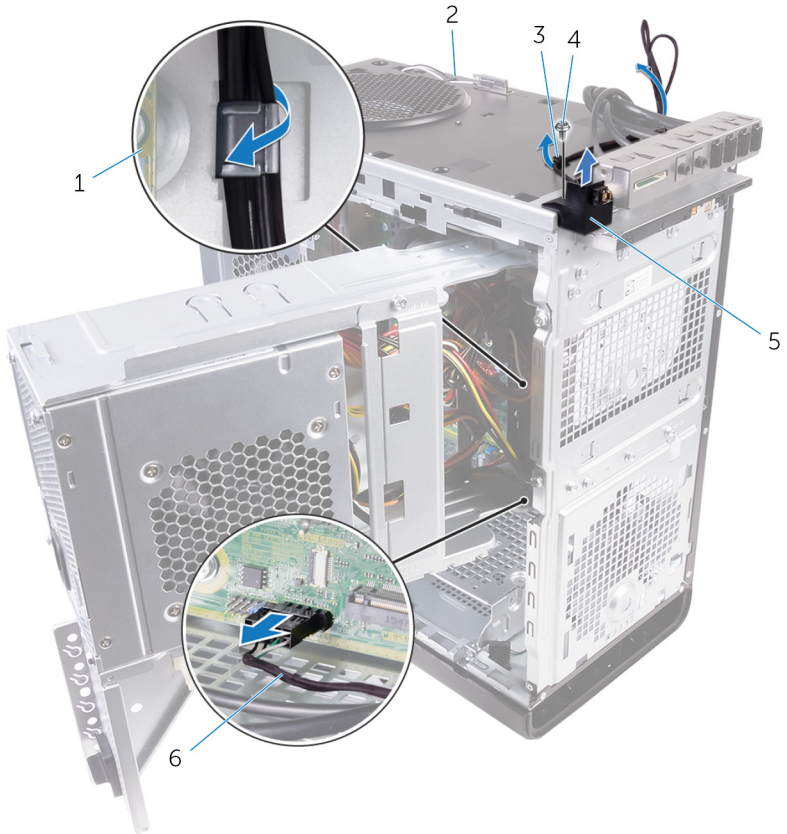


Figure 28. Disconnect the power-button module cable

- | | | | |
|---|---------------------|---|---------------------------|
| 1 | system board | 2 | chassis |
| 3 | routing guide | 4 | #6-32x1/4" screw |
| 5 | power-button module | 6 | power-button module cable |

Replacing the power-button module



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Procedure

- 1 Route the cable through the slot on the top of the chassis.
 - 2 Align the screw hole on the power-button module with the screw hole on the chassis.
 - 3 Replace the screw that secures the power-button module to the top chassis.
 - 4 Route the power-button module cable through the routing guides on the chassis.
 - 5 Connect the power-button module cable to the system board.
- For more information, see "[System-board components](#)".

Post-requisites

- 1 Replace the [front bezel](#).
- 2 Replace the [top cover](#).
- 3 Replace the [right-side cover](#).

Removing the top I/O-panel



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

Prerequisites

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

Procedure

- 1 Disconnect the top I/O-panel cables from the system board.
For more information, see "[System-board components](#)".
- 2 Note the I/O-panel cables routing and remove them from the routing guides next to the system board on the chassis.



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

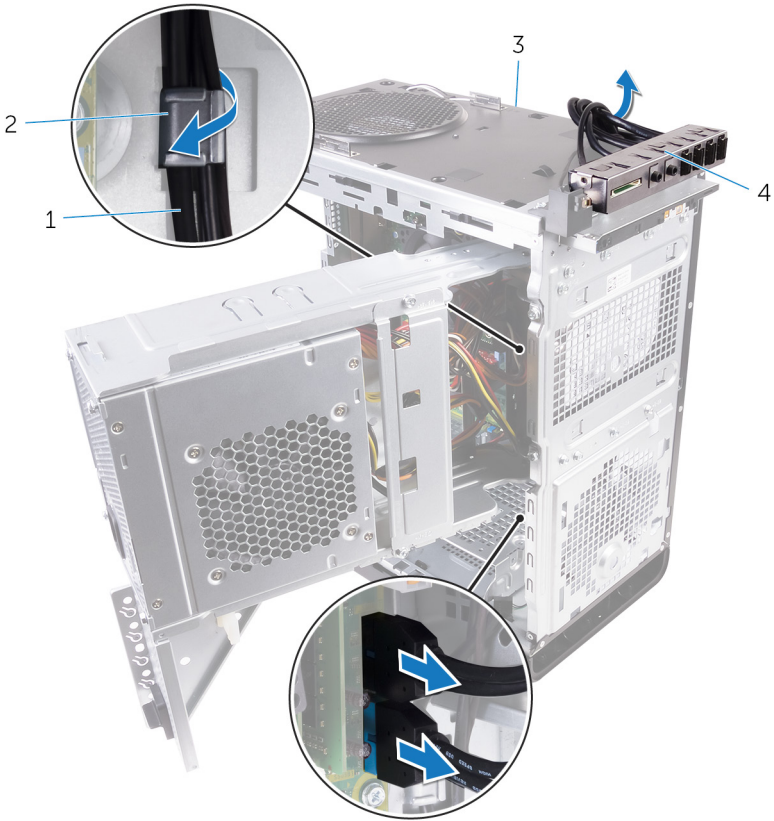


Figure 29. Disconnecting the cables

1 I/O-panel cables (2)

2 routing guide

3 chassis

4 top I/O panel bracket

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

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



Figure 30. Removing the USB panel

- | | | | |
|---|----------------|---|-----------------------|
| 1 | #6-32x1/4" (4) | 2 | top I/O-panel bracket |
| 3 | chassis | | |



Replacing the top I/O-panel



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

For more information, see "[System-board components](#)".

Post-requisites

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

Removing blower and heat-sink assembly



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 [right-side cover](#).
- 2 Follow the procedure from step 1 to step 2 in "[Removing the power-supply unit](#)".

Procedure

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



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

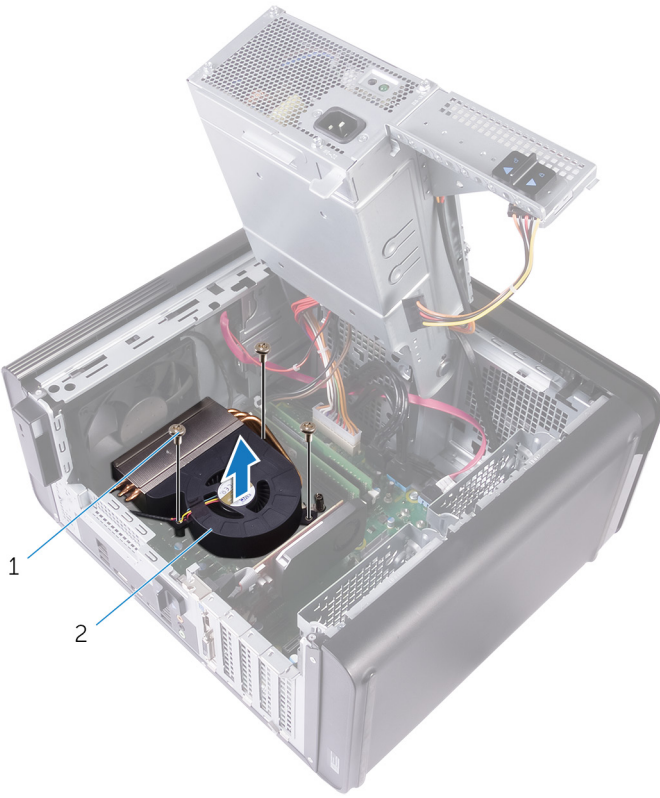


Figure 31. Removing the blower

1 #6-32x1/4" screws (3)

2 blower

- 3 In a non-adjacent sequence, loosen the captive screws that secure the heat-sink assembly to the system board.

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

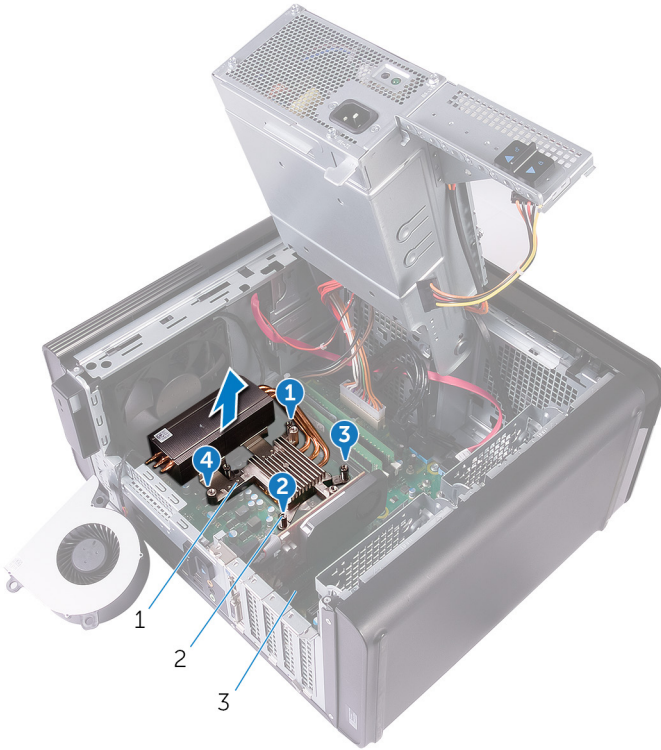


Figure 32. Removing the captive screws

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



- 5 Disconnect the blower cable from the system board.
For more information, see “[System-board components](#)”.

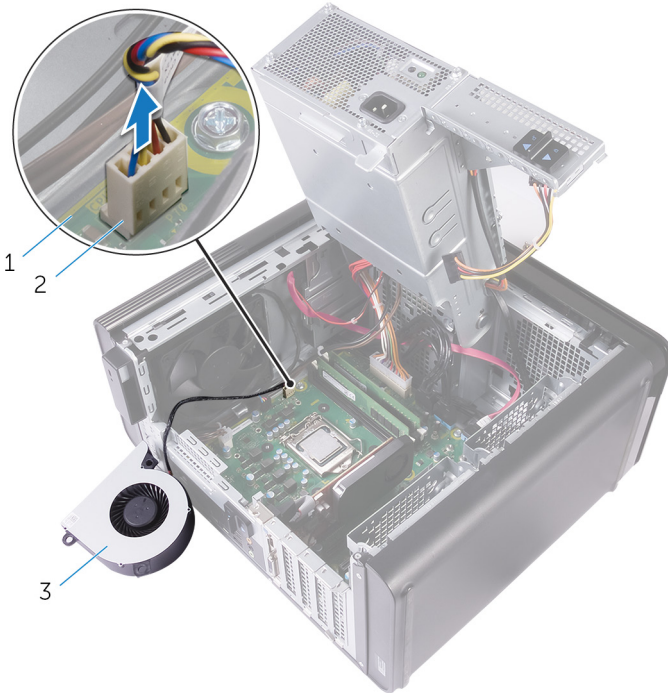


Figure 33. Removing the blower cable

- | | | | |
|---|--------------|---|--------------|
| 1 | system board | 2 | blower cable |
| 3 | blower | | |

Replacing blower 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



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



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

- 1 Connect the blower cable to the system board.
For more information, see "[System-board components](#)".
- 2 Place the heat-sink assembly over the processor.
- 3 Align the captive screws on the heat-sink assembly with the screw holes on the system board.
- 4 In a non-adjacent sequence, tighten the captive screws that secure the heat-sink assembly to the system board.
- 5 Place the blower over the heat-sink assembly.
- 6 Align the screw holes on the blower to the screw holes on the heat-sink assembly.
- 7 Replace the screws that secure the blower to the heat-sink assembly.

Post-requisites




- 1 Follow the procedure from step 9 to step 10 in "[Replacing the power-supply unit](#)".



- 2 Replace the [right-side cover](#).



Removing the processor fan and heat-sink assembly

-  **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 [right-side cover](#).
- 2 Follow the procedure from step 1 to step 2 in "[Removing the power-supply unit](#)".

Procedure

- 1 Disconnect the processor-fan cable from the system board.
For more information, see "[System-board components](#)".
- 2 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 34. Removing the processor fan and heat sink

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

Replacing the processor fan and heat-sink assembly



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

Procedure



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



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

- 1 Place the processor fan and heat-sink assembly over the processor.
- 2 Align the captive screws on the processor fan heat-sink assembly with the screw holes on the system board.
- 3 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.
For more information, see "[System-board components](#)".

Post-requisites

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



Removing the processor



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

Prerequisites

- 1 Remove the [right-side cover](#).
- 2 Follow the procedure from step 1 to step 2 in “[Removing the power-supply unit](#)”.
- 3 Remove the [processor fan and heat-sink assembly](#).
- 4 Remove the [blower and heat-sink assembly](#). (if installed)

Procedure

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

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

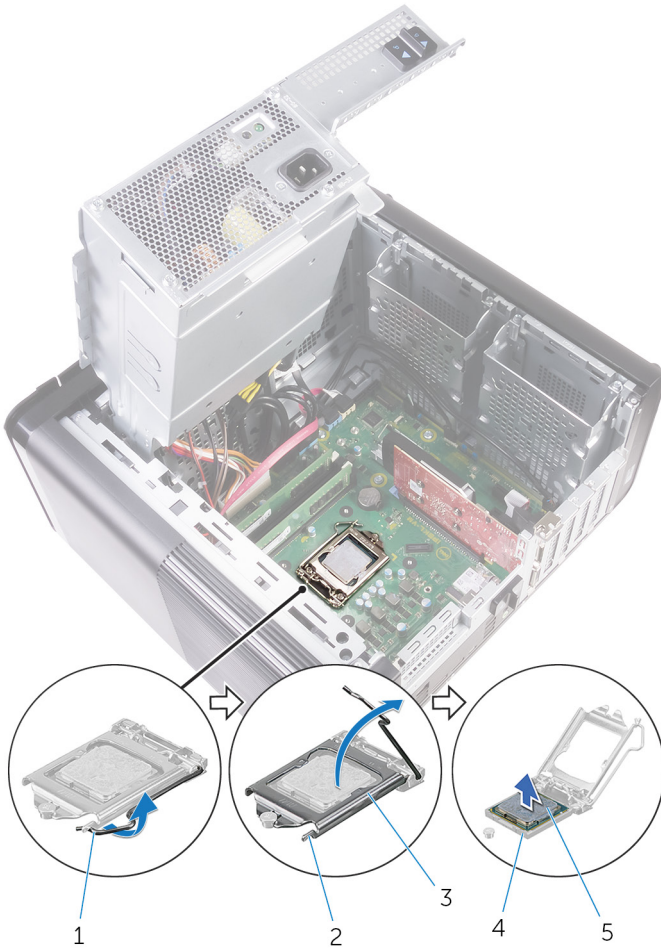




Figure 35. Removing processor


- | | | | |
|---|-------------------------|---|------------------|
| 1 | processor release-lever | 2 | securing tab |
| 3 | processor cover | 4 | processor socket |
| 5 | 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 in the open position.

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

- 2 Align the pin-1 corner on the processor with the pin-1 corner on the processor socket, and then place the processor in the processor socket.
- 3 When the processor is fully seated in the socket, close the processor cover.

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

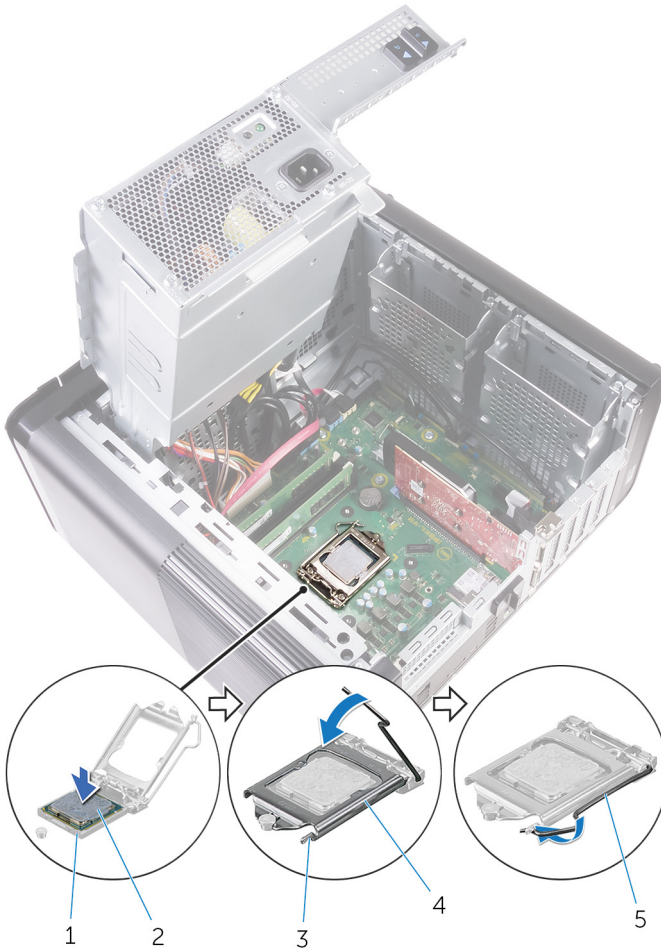


Figure 36. Replacing processor

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



Post-requisites

- 1 Replace the [blower and heat-sink assembly](#). (if installed)
- 2 Replace the [processor fan and heat-sink assembly](#).
- 3 Follow the procedure from step 9 to step 10 in “[Replacing the power-supply unit](#)”.
- 4 Replace the [right-side cover](#).



Removing the wireless card



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

Prerequisites

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

Procedure

- 1 Locate the wireless-card slot on the system board.
For more information, see "[System-board components](#)".
- 2 Remove the screw that secures the wireless-card bracket to the wireless card and the system board.
- 3 Remove the wireless-card bracket and disconnect the antenna cables from the wireless card.



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

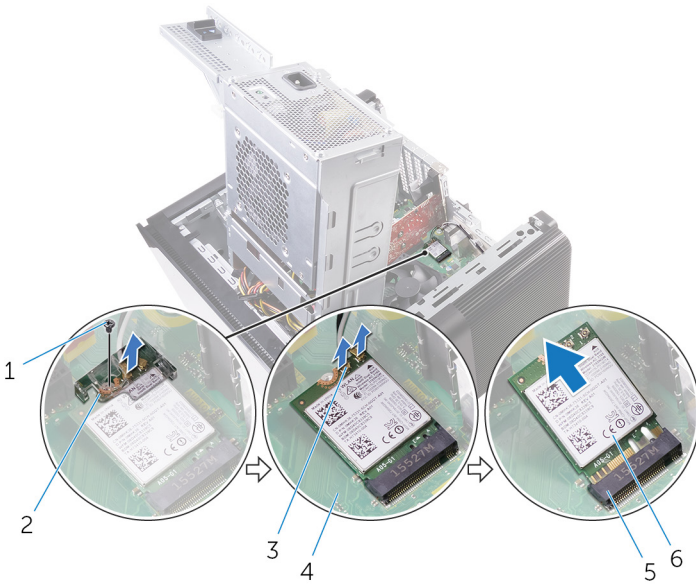



Figure 37. Removing the wireless card

- | | | | |
|---|--------------------|---|-----------------------|
| 1 | M2x2.5 screw | 2 | wireless-card bracket |
| 3 | antenna cables (2) | 4 | system board |
| 5 | wireless-card slot | 6 | wireless card |

Replacing the wireless card

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

Procedure

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

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

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

Table 3. Antenna-cable color scheme

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

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



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

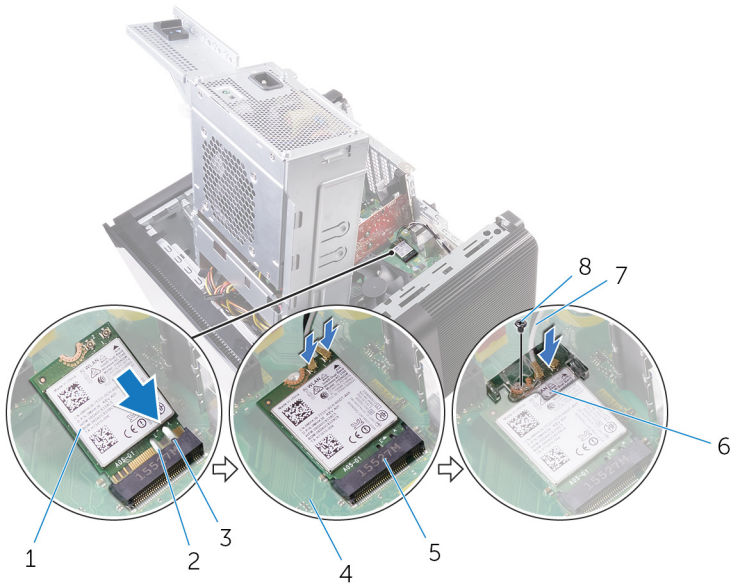


Figure 38. Replacing the wireless card

- | | | | |
|---|--------------------|---|-----------------------|
| 1 | wireless card | 2 | notch (2) |
| 3 | tab | 4 | system board |
| 5 | wireless card slot | 6 | wireless card bracket |
| 7 | antenna cables | 8 | M2x2.5 screw |

Post-requisites

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

Removing the antenna



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

Prerequisites

- 1 Remove the [right-side cover](#).
- 2 Follow the procedure from step 1 to step 2 in “[Removing the power-supply unit](#)”.
- 3 Remove the [top cover](#).
- 4 Follow the procedure from step 1 to step 4 in [Removing the wireless card](#).

Procedure

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



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

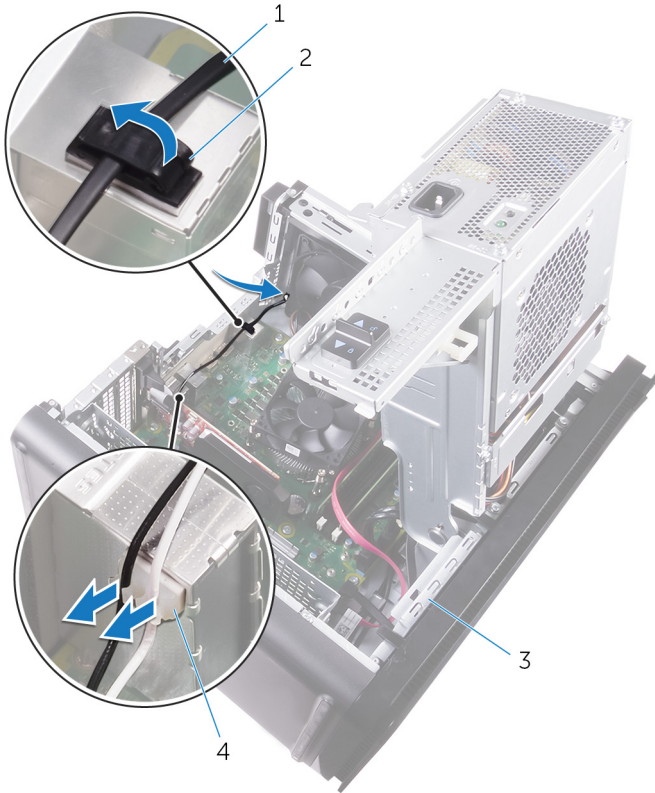


Figure 39. Disconnecting the antenna cables

- | | | | |
|---|---------------|---|---------------|
| 1 | antenna cable | 2 | securing clip |
| 3 | chassis | 4 | routing guide |

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

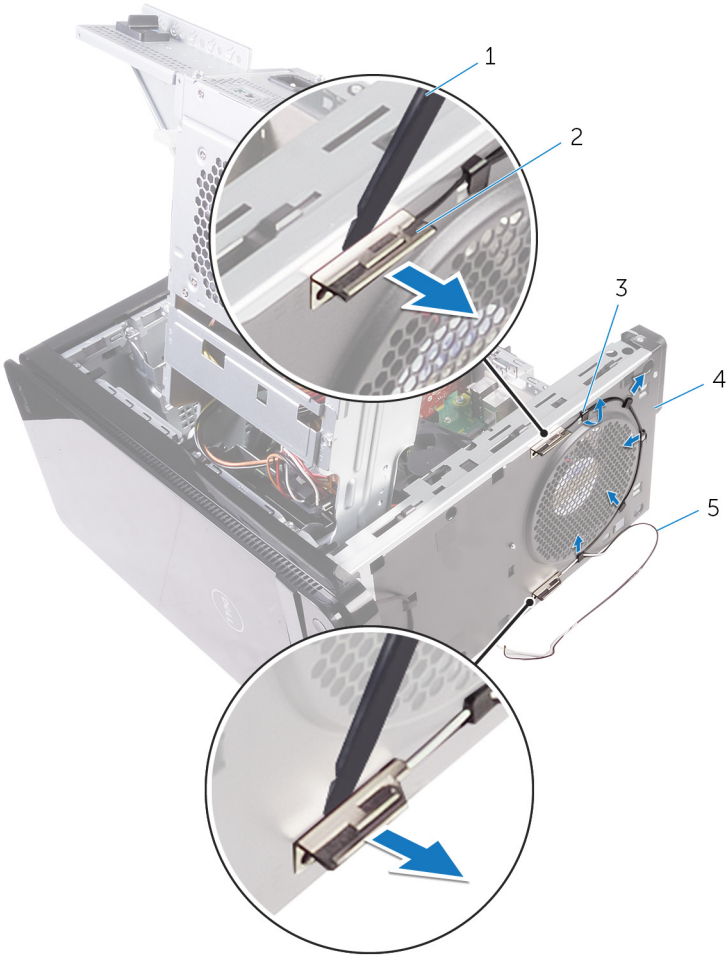


Figure 40. Removing the antenna

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



Replacing the antenna



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Procedure

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

Post-requisites

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

Removing the system board



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



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



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

Prerequisites

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

Procedure

- 1 Disconnect all the cables connected to the system board.
For more information, see "[System-board components](#)".



- 2 Make note of the cable routing and remove the cables from the routing guides.
- 3 Remove the screws that secure the system board to the chassis.
- 4 Lift the system board at an angle and remove it from the computer.

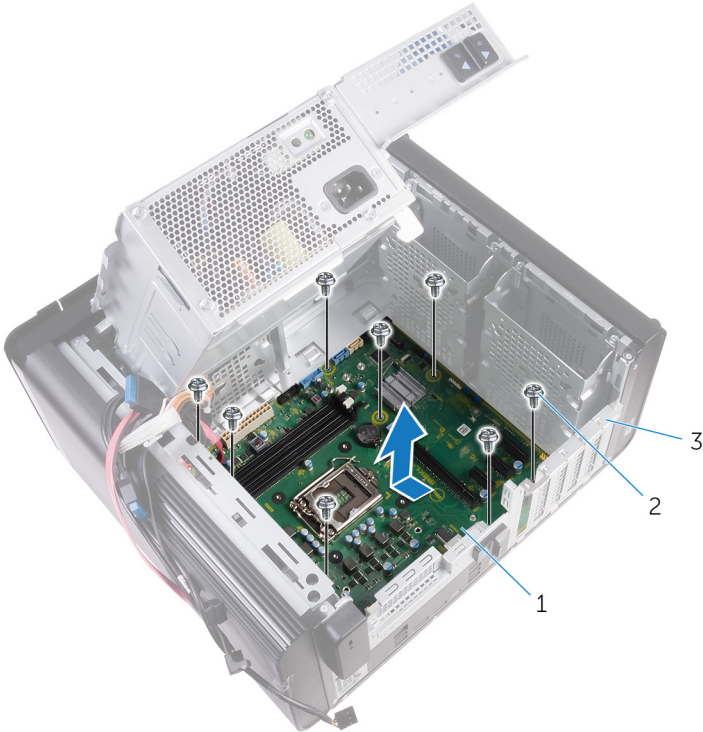



Figure 41. Removing the system board


- 1 system board
- 3 chassis

- 2 #6-32x1/4" screws (8)

Replacing the system board

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

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

Procedure

- 1 Slide the I/O ports on the system board into the slots on the chassis and align the screw holes on the system board with the screw holes on the chassis.
- 2 Replace the screws that secure the system board to the chassis.
- 3 Route and connect the cables that you disconnected from the system board.
For more information, see "[System-board components](#)."

Post-requisites

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



9 Replace the [right-side cover](#).



Flashing the BIOS

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

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




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

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



BIOS setup program

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

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

System Setup Options

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

Table 4. System setup options—Main menu

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




Table 5. System setup options—Advanced menu

Advanced

Advanced BIOS Features

| | |
|----------------------------|---|
| Intel SpeedStep Technology | Allows you to enable or disable Intel Speedstep Technology. Default: Enabled. |
|----------------------------|---|

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

| | |
|---------------------------------|--|
| Intel Virtualization Technology | Allows you to enable or disable Intel Virtualization Technology feature for the processor. |
|---------------------------------|--|

| | |
|-------------------|---|
| VT for Direct I/O | Allows you to enable or disable Intel Virtualization Technology feature for the Direct I/O. |
|-------------------|---|

| | |
|----------------|--|
| SATA Operation | Allows you to configure the operating mode of the integrated SATA hard drive controller. |
|----------------|--|

| | |
|-----------------------------|--|
| Intel Ready Mode Technology | Allows you to enable or disable the Intel Ready Mode Technology. |
|-----------------------------|--|

| | |
|---------------------------------|--|
| Intel Software Guard Extensions | Allows you to enable or disable Intel Software Guard Extensions. |
|---------------------------------|--|

| | |
|-------------------------------|--|
| BIOS Recovery from Hard Drive | Allows you to enable or disable BIOS Recovery from hard drive. |
|-------------------------------|--|

USB Configuration

| | |
|-----------------|--|
| Front USB Ports | Allows you to enable or disable the front USB ports. |
|-----------------|--|

| | |
|----------------|---|
| Rear USB Ports | Allows you to enable or disable the rear USB ports. |
|----------------|---|

Power Options

| | |
|-------------|--|
| Numlock Key | Allows you to set the status of the Num Lock key during boot to On or Off. |
|-------------|--|

| | |
|---------------------------|---|
| Wake Up by Integrated LAN | Allow the computer to be powered on by special LAN signals. |
|---------------------------|---|

Advanced

| | |
|-------------------------------------|--|
| AC Recovery | Sets what action the computer takes when power is restored. |
| Deep Sleep Control | Allows you to define the controls when Deep Sleep is enabled. |
| USB Wake Support (S3) | Allows you to enable the USB devices to wake the computer from Standby. |
| USB PowerShare (S4/S5) | Allows you to charge external devices. |
| USB PowerShare Wake Support (S4/S5) | Allows you to enable USB devices to wake the computer from S4/S5. |
| Auto Power On | |
| Auto Power On Mode | Allows you to set the computer to turn on automatically every day or on a preselected date. This option can be configured only if the Auto Power On mode is set to Enabled Everyday or Selected Day. |
| Auto Power On Date | Allows you to set the date on which the computer must turn on automatically. This option can be configured only if the Auto Power On mode is set to Enabled 1 to 31. |
| Auto Power On Time | Allows you to set the time at which the computer must turn on automatically. This option can be configured only if the Auto Power On mode is set to Enabled hh:mm:ss. |

Performance Options

| | |
|---------------------------|--|
| Overclocking Feature | |
| Core Over Clocking Level | Allows you enable or disable the processor to adjust the flex ratio and voltage in a turbo mode environment. |
| Core Ratio Limit Override | Allows you to set the core ratio limit. |
| Single Core | Allows you to select single core or multiple cores. |



Advanced

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

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. |

Boot

| | |
|------------------------|--|
| Load Legacy OPROM | Allows you to enable or disable the Legacy Option ROM. |
| Boot Option Priorities | Displays the available boot devices. |
| Boot Option #1 | Displays the first boot device. Default: UEFI: Windows Boot Manager. |
| Boot Option #2 | Displays the second boot device. Default: Onboard NIC Device. |
| Boot Option #3 | Displays the third boot device. Default: Onboard NIC Device. |

Table 8. System setup options—Exit menu

Save & Exit

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

Clearing forgotten passwords



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Prerequisites

- 1 Remove the [right side-cover](#).



- 2 Follow the procedure from step 1 to step 3 in [“Removing the power-supply unit”](#).

Procedure

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



NOTE: For more information on the location of the password reset jumper, see [“System-board components”](#).

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

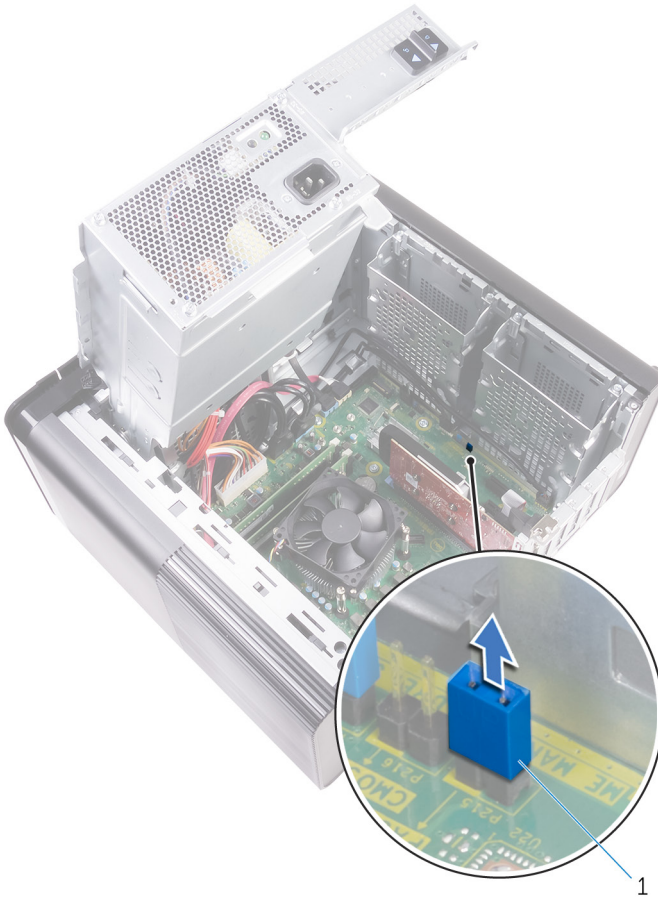


Figure 42. Removing the jumper plug

- 1 jumper plug

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

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

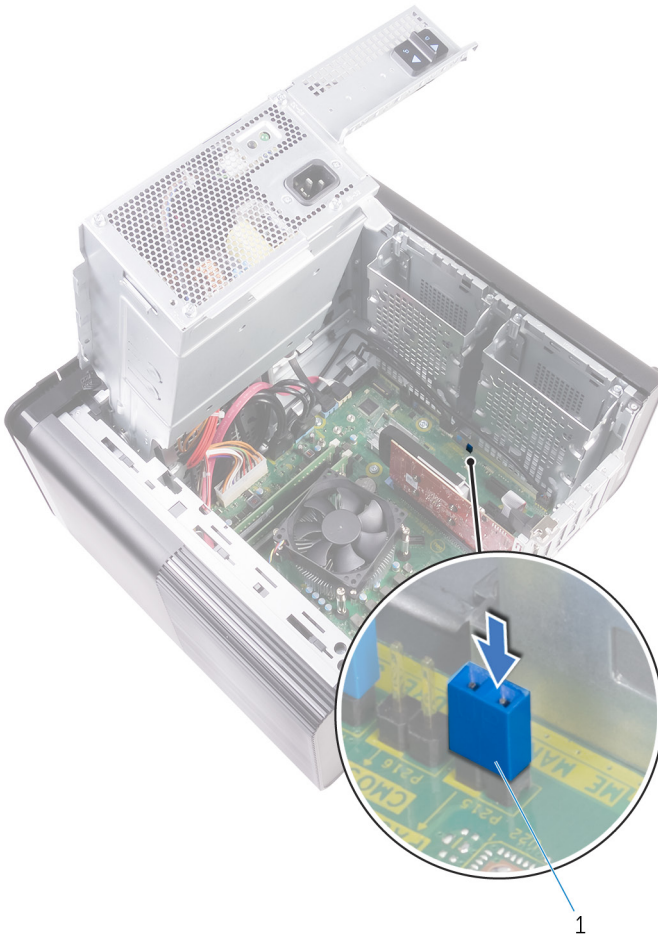


Figure 43. Clearing the password

- 1 jumper plug

Post-requisites

- 1 Replace the [right side-cover](#).

- 2 Follow the procedure from step 9 to step 10 in “[Replacing the power-supply unit](#)”.

Clearing CMOS settings



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Prerequisites

- 1 Remove the [right side-cover](#).
- 2 Follow the procedure from step 1 to step 3 in “[Removing the power-supply unit](#)”.

Procedure

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



NOTE: For more information on the location of the CMOS jumper, see “[System-board components](#)”.

- 2 Remove the power cord.
- 3 Remove the jumper plug from the password jumper-pins (PSWD) and connect it to the CMOS jumper-pins.



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

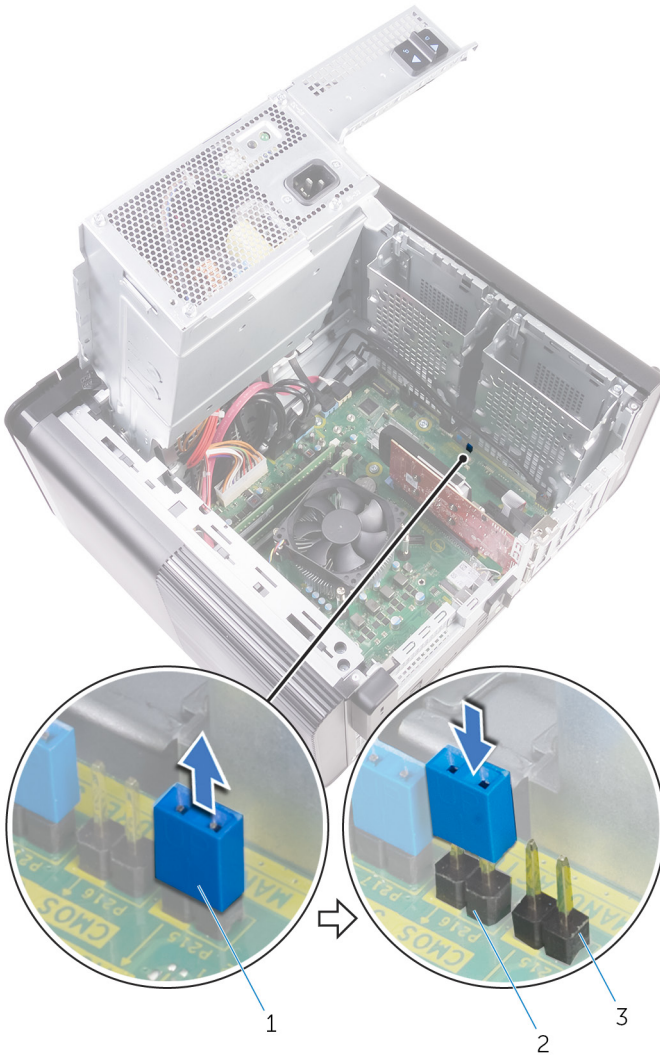


Figure 44. Clearing the CMOS

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

Post-requisites

- 1 Replace the [right side-cover](#).
- 2 Follow the procedure from step 9 to step 10 in “[Replacing the power-supply unit](#)”.



Diagnostics

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

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

Table 9. Diagnostics



| Number of 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 | Recovery image not found |
| 3,7 | Recovery image found but invalid |

Getting help and contacting Dell

Self-help resources

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

Table 10. Self-help resources

| | |
|--|--|
| Information about Dell products and services | www.dell.com |
| Dell Help & Support app |  |
| Get started app |  |
| Accessing help | In Windows search, type Help and Support , and press Enter. |
| Online help for operating system | www.dell.com/support/windows www.dell.com/support/linux |
| Troubleshooting information, user manuals, setup instructions, product specifications, technical help blogs, drivers, software updates, and so on. | www.dell.com/support |
| Learn about your operating system, setting up and using your computer, data backup, diagnostics, and so on. | See <i>Me and My Dell</i> at www.dell.com/support/manuals . |

Contacting Dell

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





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



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