

Alienware Area-51 Service Manual

Notes, Cautions, and Warnings

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

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

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

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Before Working Inside Your Computer

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

 **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 8.1: On the **Start** screen, click or tap the power icon  > **Shut down**.
 - Windows 7: Click or tap **Start** > **Shut down**.

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

3. Disconnect your computer and all attached devices from their electrical outlets.
4. Disconnect all cables such as telephone cables, network cables and so on, from your computer.
5. Disconnect all attached devices and peripherals, such as keyboard, mouse, monitor, and so on, from your computer.
6. Remove any media card and optical disc from your computer, if applicable.
7. After the computer is unplugged, press and hold the power button for 5 seconds to ground the system board.

Safety Instructions

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

 **NOTE:** 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 dell.com/regulatory_compliance.

 **NOTE:** 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 power source.

 **CAUTION:** To avoid damaging the computer, make sure 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:** Only a certified service technician is authorized to remove the computer cover and access any of the components inside the computer. See the safety instructions for complete information about safety precautions, working inside your computer, and protecting against electrostatic discharge.

 **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, make sure that the ports and connectors are correctly oriented and aligned.

 **CAUTION:** To disconnect a network cable, first unplug the cable from your computer and then unplug the cable from the network device.

 **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

After Working Inside Your Computer

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

1. Replace all screws and make sure that no stray screws remain inside your computer.
2. Connect any external devices, peripherals, and cables you removed before working on your computer.
3. Replace any media cards, discs, and any other part(s) 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.

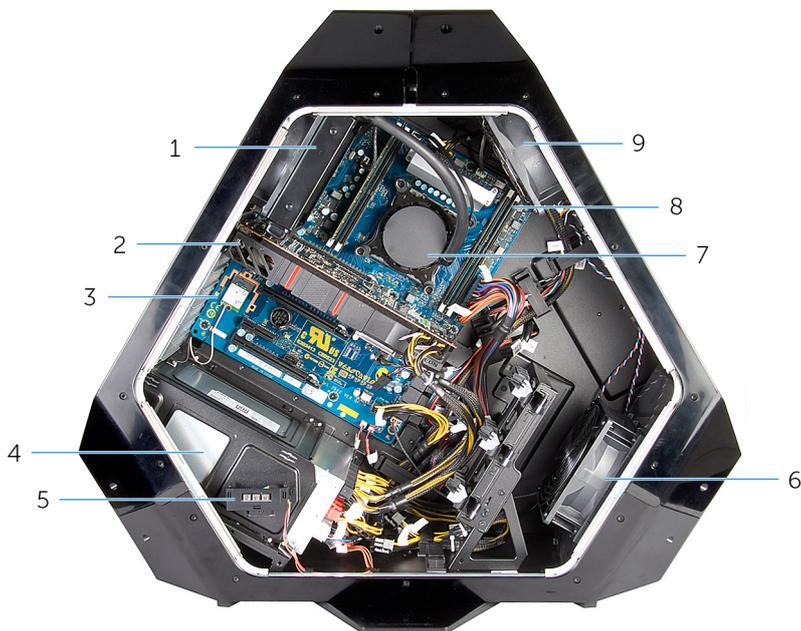
Technical Overview

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Inside View of Your Computer

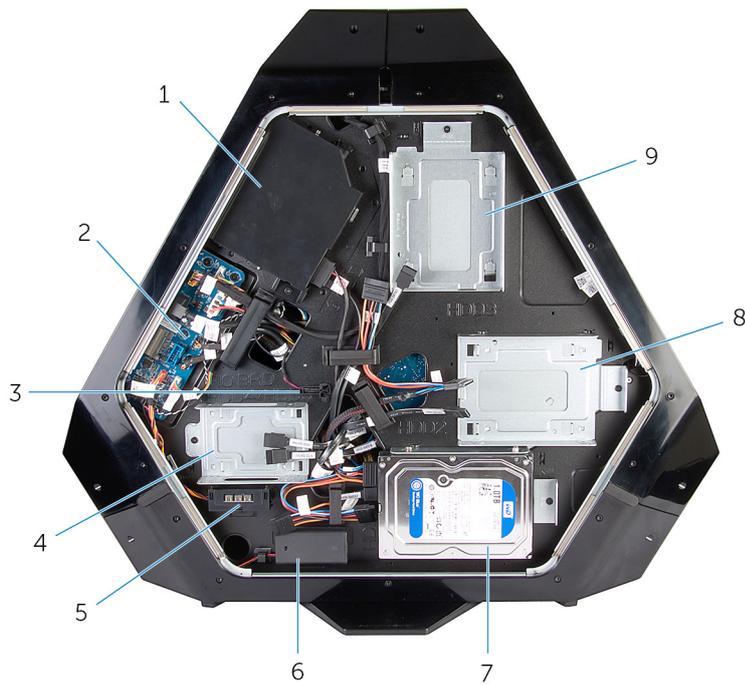
To view the different components installed in your computer. See "[Right View](#)" and "[Left View](#)".

Right View



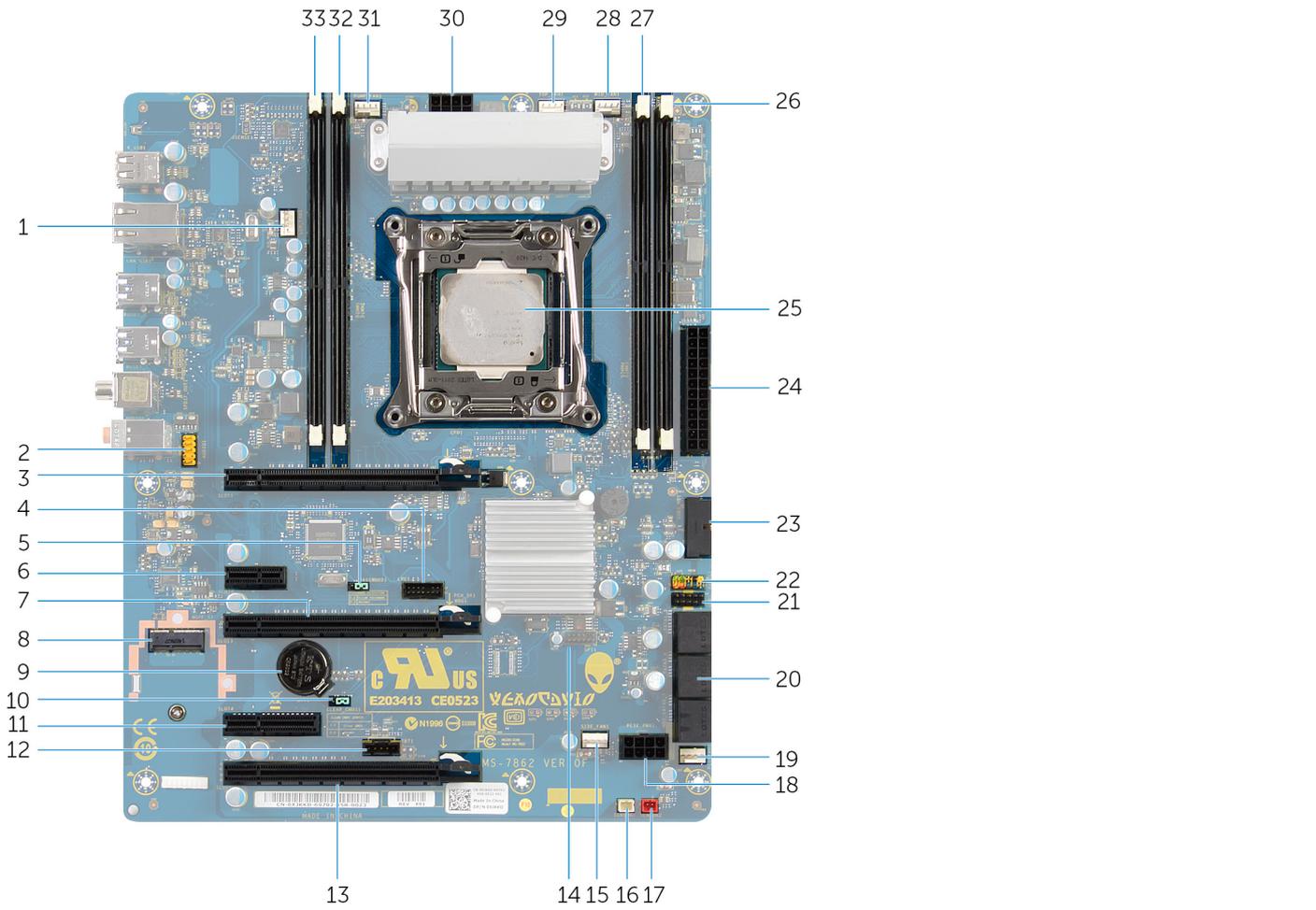
- | | |
|---|-------------------|
| 1. processor liquid-cooling assembly-fan | 2. graphics card |
| 3. system board | 4. power-supply |
| 5. AlienFX side-panel connector | 6. PCI fan |
| 7. processor liquid-cooling assembly pump | 8. memory modules |
| 9. memory fan (top fan) | |

Left View



1. optical drive (ODD)
2. I/O board (IO BRD)
3. drive-bay heat-sensor
4. 2.5 inch drive bracket (HDD4/HDD5)
5. AlienFX side-panel connector
6. rear I/O accessibility lighting batteries
7. 3.5 inch drive bracket (HDD1)
8. 3.5 inch drive bracket (HDD2)
9. 3.5 inch drive bracket (HDD3)

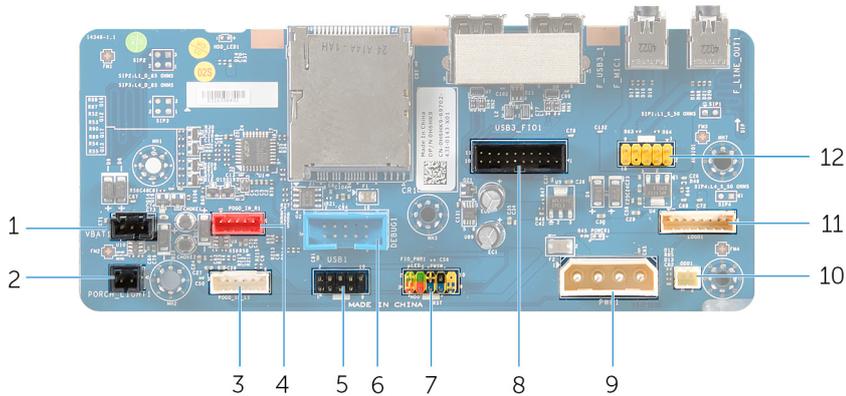
System-Board Components



- | | |
|--|--|
| 1. processor liquid cooling-assembly fan (LCM_FAN1) | 2. audio connector (AUDIO101) |
| 3. PCI-Express x16 slot (SLOT1) | 4. low pin count debug header (LPC1) |
| 5. password reset jumper (PASSWORD1) | 6. PCI-Express x1 slot (SLOT2) |
| 7. PCI-Express x16 slot (SLOT3) | 8. M.2 connector (wireless card) |
| 9. coin-cell battery socket (BAT1) | 10. CMOS reset jumper (CLEAR CMOS1) |
| 11. PCI-Express x4 slot (SLOT4) | 12. Thunderbolt connector (TBT1) |
| 13. PCI-Express x16 slot (SLOT5) | 14. Serial Peripheral Interface connector (SP11) |
| 15. PCI-fan connector (SIDE_FAN1) | 16. drive-bay heat-sensor connector (SENSOR1) |
| 17. chassis heat-sensor connector (SENSOR2) | 18. PCI-Express power connector (PCIE_PWR1) |
| 19. PCI-Express fan 1 connector (PCI_FAN1) | 20. SATA drive connectors |
| 21. USB connector (USB1) | 22. LED Power Switch (PANEL1) |
| 23. USB connector (USB3_MB1) | 24. Advanced Technology xTended (ATX) power connector (ATX PWR1) |
| 25. processor socket (CPU1) | 26. memory-module slot (DIMM3) |
| 27. memory-module slot (DIMM4) | 28. processor liquid-cooling assembly fan connector (MID_FAN1) |
| 29. memory fan connector (TOP_FAN1) | 30. processor-power connector (CPU PWR1) |
| 31. processor liquid-cooling assembly pump-fan connector (PUMP_FAN1) | 32. memory-module slot (DIMM2) |
| 33. memory-module slot (DIMM1) | |

I/O Board Components

i NOTE: The location of the connectors may vary based on the selections you made at the time of purchase.



- | | |
|--|---|
| 1. rear I/O accessibility lighting battery connector (VBAT1) | 2. rear I/O accessibility lighting connector (PORCH_LIGHT1) |
| 3. left theater-lighting connector (POGO_IN_L1) | 4. right theater-lighting connector (POGO_IN_R1) |
| 5. USB connector (USB1) | 6. debug connector (DEBUG1) |
| 7. front I/O control connector (FIO_PWR1) | 8. front I/O connector (USB3_FIO1) |
| 9. main-power connector (PWR1) | 10. optical drive power connector (ODD1) |
| 11. logo board connector (LOGO1) | 12. audio connector (AUDIOIO1) |

Lifting the Computer

Procedure

1. With both hands, hold the handle on top of the computer.
2. Lift the computer.



- a. handle
- b. computer

Removing the Stability Foot

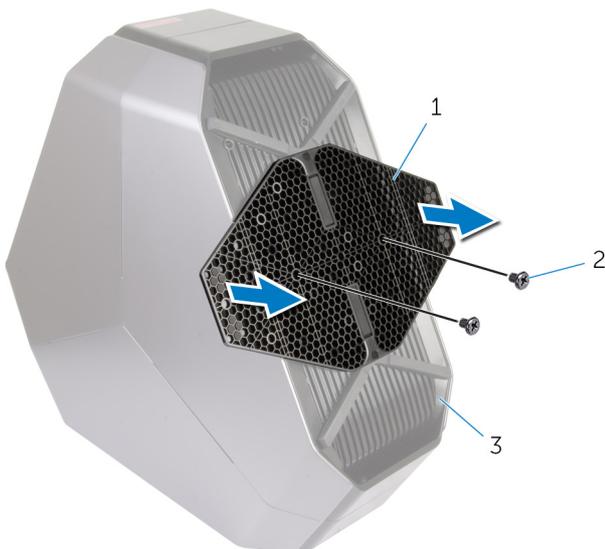
NOTE: Before working inside your computer, read the safety information that shipped with your computer and follow the steps in [Before Working Inside Your Computer](#). After working inside your computer, follow the instructions in [After Working Inside Your Computer](#). For more safety best practices,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

Procedure

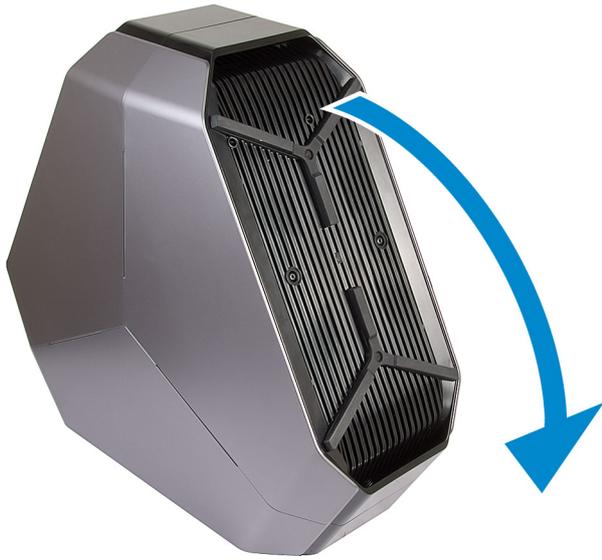
1. Tilt the computer towards the front until the base is facing up.



2. Remove the screws that secure the stability foot to the computer.
3. Lift the stability foot off the computer.



- a. stability foot
 - b. screws (2)
 - c. computer
4. Tilt the computer back to the upright position.



Replacing the Stability Foot

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Procedure

1. Tilt the computer towards the front until the base is facing up.
2. Align the screw holes on the stability foot with the screw holes on the base of the computer and replace the screws.
3. Tilt the computer back to the upright position.

Removing the Side Panels

NOTE: 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 dell.com/regulatory_compliance.

Procedure

NOTE: Make sure that you remove the security cable from the security cable slot (if applicable).

1. Remove the screw that secures the security-cable slot latch.
The security-cable slot slides to the unlocked position.
2. Lift the release panel to open the right side-panel.
3. Pull and lift the right side-panel away from the chassis.



- | | |
|------------------|------------------------------|
| 1. screw | 2. security-cable slot latch |
| 3. release panel | 4. right side-panel |

4. Repeat the procedure from step 2 to step 3 on the left side-panel.

Replacing the Side Panels

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Procedure

1. Align the tabs on the right side-panel with the slots on the right side of the computer and snap the panel to lock it in place.
2. Repeat step 1 to replace the left side-panel.
3. Slide and hold the security-cable slot latch in the locked position.
4. Replace the screw that secures the security-cable slot latch.

Removing the Battery

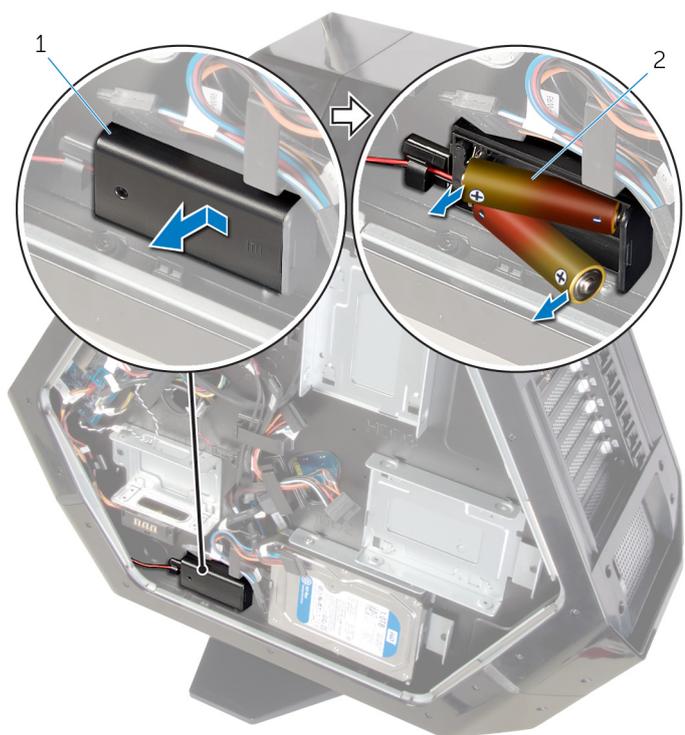
(i) NOTE: Before working inside your computer, read the safety information that shipped with your computer and follow the steps in [Before Working Inside Your Computer](#). After working inside your computer, follow the instructions in [After Working Inside Your Computer](#). For more safety best practices,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

Prerequisites

Remove the right side-panel. See "[Removing the Side Panels](#)".

Procedure

Slide and open the battery-case door and remove the batteries from the battery-case.



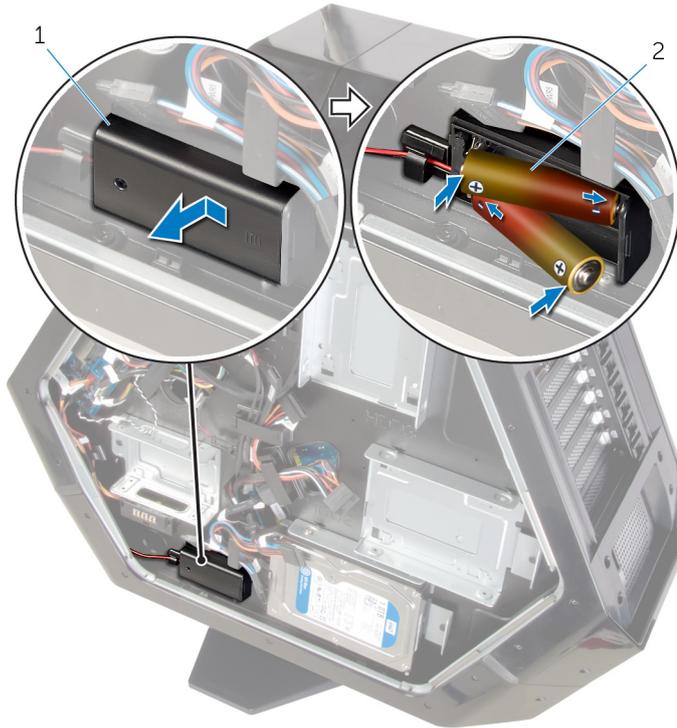
- a. battery-case door
- b. AA batteries (2)

Replacing the Battery

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Procedure

Insert the batteries and close the battery-case door.



1. battery-case door
2. AA batteries (2)

Post-requisites

Replace the right side-panel. See ["Replacing the Side Panels"](#).

Removing the Battery Case

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Prerequisites

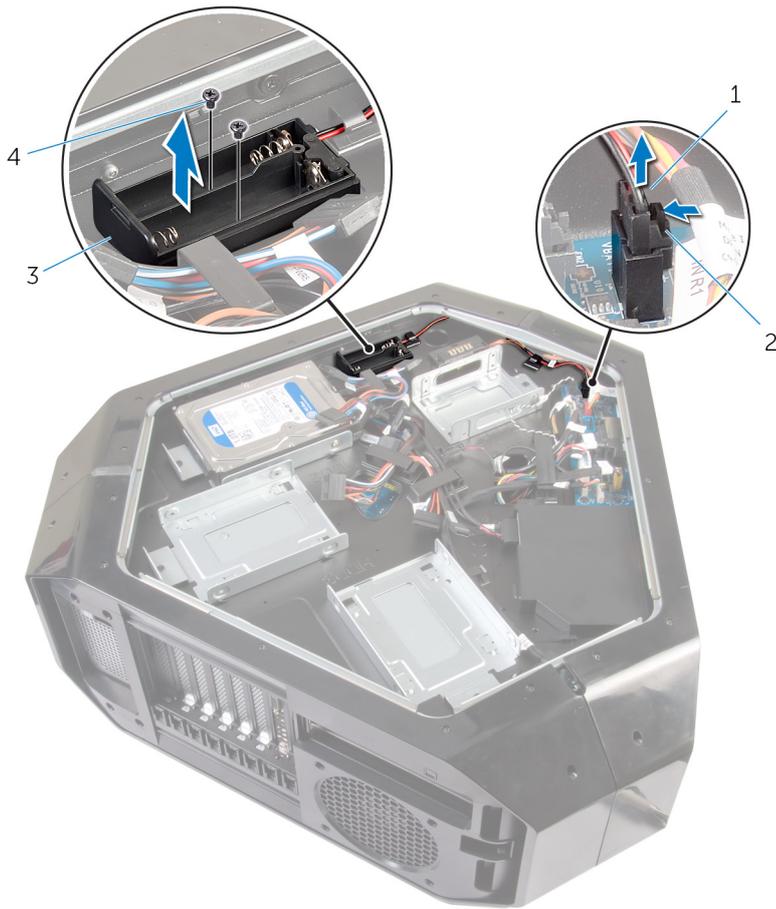
1. Remove the [stability foot](#).
2. Remove the right side-panel. See "[Removing the Side Panels](#)".

Procedure

1. Lay the chassis on the right side.
2. Slide and open the battery-compartment door.
3. Remove the batteries from the battery-compartment.



- a. battery-case door
 - b. AA batteries (2)
4. Press the releasing clips on the cable connector to disconnect the battery-case cable from the chassis.
 5. Remove the screws that secure the battery compartment to the chassis.
 6. Lift the battery-case off the chassis.



- 1. battery-case cable
- 3. battery-case

- 2. battery-case connector
- 4. screws (2)

Replacing the Battery Case

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Procedure

1. Align the screw holes on the battery-case with the screw holes on the chassis.
2. Replace the screws that secure the battery-case to the chassis.
3. Connect the battery-case cable to the chassis.
4. Insert the batteries and close the battery-compartment door.

Post-requisites

1. Replace the right side-panel. See "[Replacing the Side Panels](#)".
2. Replace the [stability foot](#).

Removing the Hard Drive

i NOTE: 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 dell.com/regulatory_compliance.

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

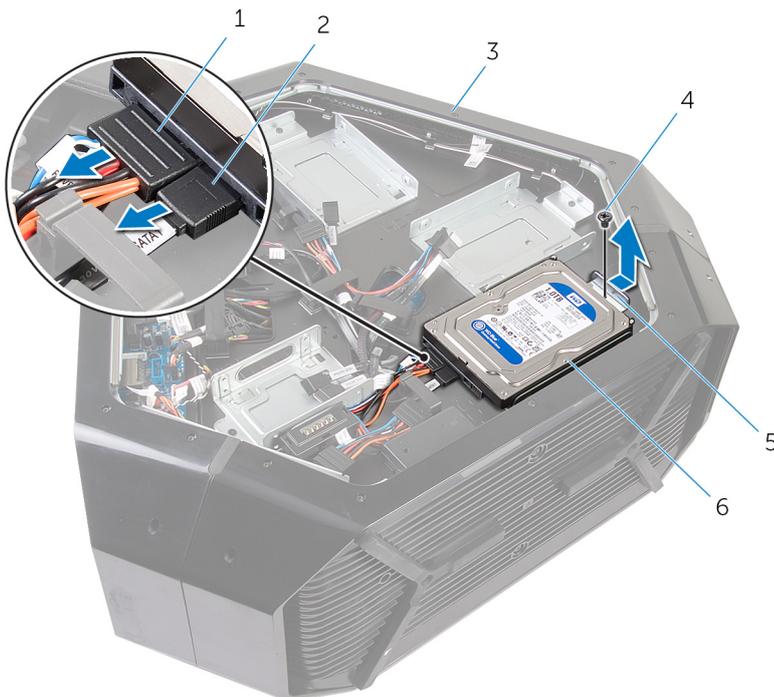
△ CAUTION: To avoid data loss, do not remove the hard drive while the computer is in sleep or on state.

Prerequisites

1. Remove the [stability foot](#).
2. Remove both the left and right side-panels. See "[Removing the Side Panels](#)".

Procedure

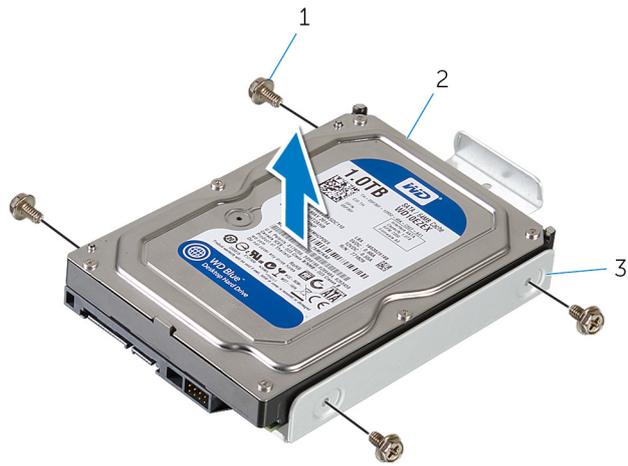
1. Lay the chassis on the right side.
2. Disconnect the power cable and data cable from the hard drive.
3. Remove the screw that secures the hard-drive assembly to the chassis.
4. Using the tab, slide and remove the hard-drive assembly from the chassis.



- | | |
|------------------------|---------------|
| 1. power cable | 2. data cable |
| 3. chassis | 4. screw |
| 5. hard-drive assembly | |

5. Remove the screws that secure the hard-drive bracket to the hard drive.
6. Slide and remove the hard drive from the hard-drive bracket.

i NOTE: Repeat step 2 to step 5 to remove any other hard drives installed in your computer.



- a. screws (4)
- b. hard drive
- c. hard-drive bracket

Replacing the Hard Drive

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

Procedure

1. Align the screw holes on the hard-drive bracket with the screw holes on the hard drive.
2. Replace the screws that secures the hard drive to the hard-drive bracket.
3. Place the hard-drive assembly in the chassis.
4. Replace the screws that secure the hard-drive assembly to the chassis.
5. Connect the power cable and data cable to the hard-drive.

NOTE: Repeat step 2 to step 5 to replace any other hard drives installed in your computer.

Post-requisites

1. Replace both the left and right side-panels. See "[Replacing the Side Panels](#)".
2. Replace the [stability foot](#).

Removing the Optical Drive

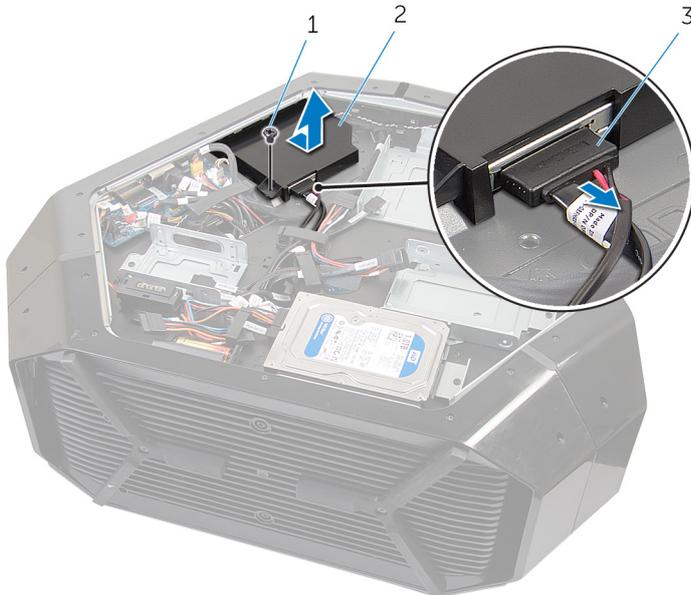
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Prerequisites

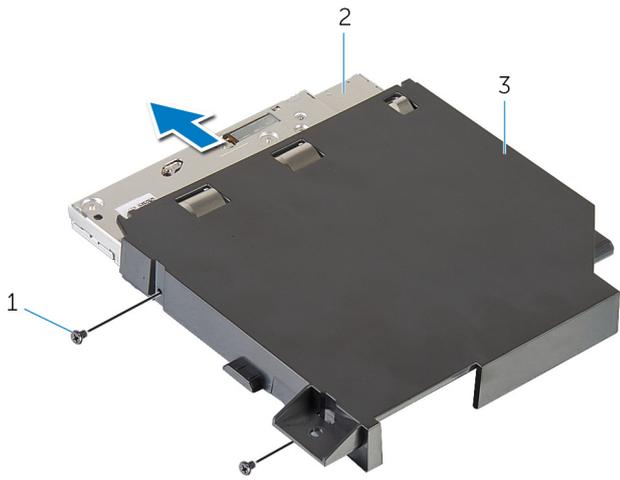
1. Remove the [stability foot](#).
2. Remove both the left and right side-panels. See "[Removing the Side Panels](#)".

Procedure

1. Lay the chassis on the right side.
2. Disconnect the power and data cable from the optical drive.
3. Remove the screw that secures the optical-drive assembly to the chassis.
4. Slide and lift the optical-drive assembly of the chassis.



- a. screw
 - b. optical-drive assembly
 - c. data cable and power cable
5. Remove the screws that secure the optical-drive bracket to the optical drive.
 6. Slide and remove the optical drive from the optical-drive bracket.



- a. screws (2)
- b. optical drive
- c. optical-drive bracket

Replacing the Optical Drive

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Procedure

1. Align the screw holes on the optical-drive bracket with the screw holes on the optical drive.
2. Replace the screws that secures the optical drive to the optical-drive bracket.
3. Align the screw holes on the optical-drive assembly with the screw holes on the chassis.
4. Replace the screws that secure the optical-drive bay assembly to the chassis.
5. Plug the power cable and data cable to the optical drive.

Post-requisites

1. Replace both the left and right side-panels. See "[Replacing the Side Panels](#)".
2. Replace the [stability foot](#).

Removing the Right AlienFX Side-Panel Connector

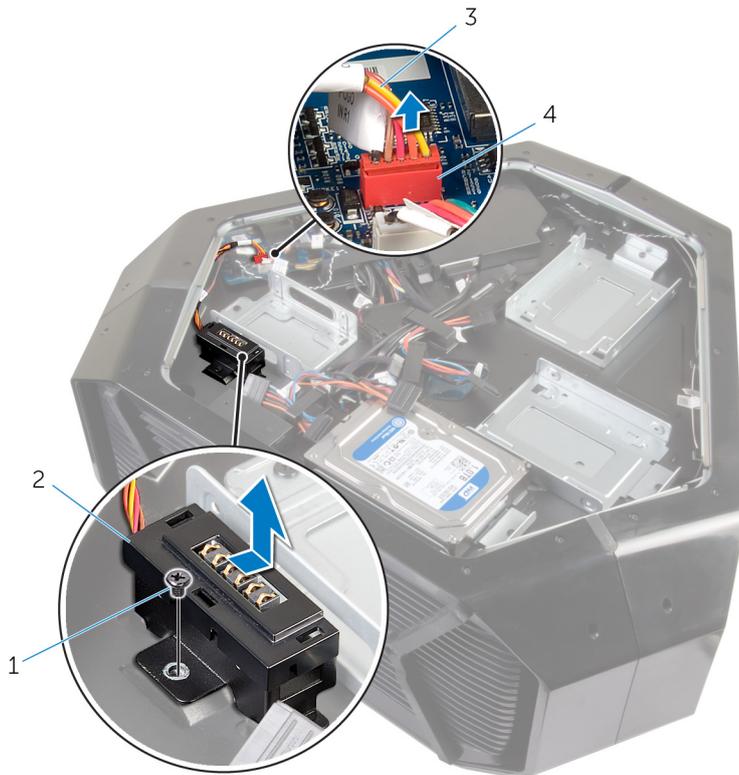
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Prerequisites

1. Remove the [stability foot](#).
2. Remove both the left and right side-panels. See "[Removing the Side Panels](#)".

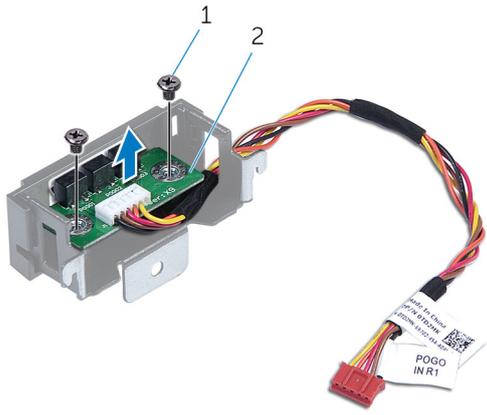
Procedure

1. Lay the chassis on the left side.
2. Disconnect the cable that connects the right AlienFX side-panel connector to the I/O board. See "[I/O Board Components](#)".
3. Remove the screw that secures the right AlienFX side-panel connector assembly to the chassis.
4. Remove the right AlienFX side-panel connector assembly from the chassis.



1. screw
2. right AlienFX side-panel connector assembly
3. AlienFX side-panel cable
4. AlienFX side-panel connector

5. Remove the screws that secure the right AlienFX side-panel connector to the bracket and set it aside in a secure location.



- a.** screws (2)
- b.** right AlienFX side-panel connector

Replacing the Right AlienFX Side-Panel Connector

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Procedure

1. Replace the screws that secure the right AlienFX side-panel connector to the bracket.
2. Replace the screws that secure the right AlienFX side-panel connector to the chassis.
3. Connect the cable that connects the right AlienFX side-panel connector to the I/O board. See "[I/O Board Components](#)".

Post-requisites

1. Replace both the left and right side-panels. See "[Replacing the Side Panels](#)".
2. Replace the [stability foot](#).

Removing the Left AlienFX Side-Panel Connector

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Prerequisites

1. Remove the [stability foot](#).
2. Remove both the left and right side-panels. See "[Removing the Side Panels](#)".

Procedure

1. Lay the chassis on the left side.
2. Disconnect the cable that connects the left AlienFX side-panel connector to the I/O board.

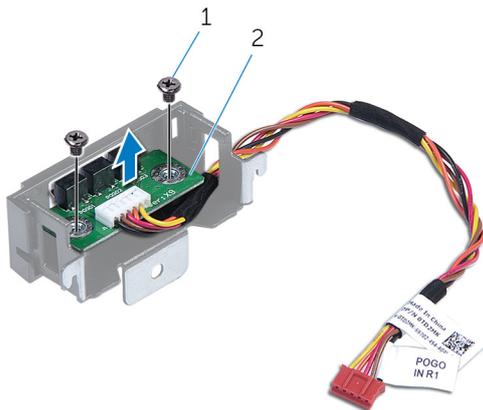


- a. AlienFX side-panel connector
 - b. left AlienFX side-panel cable
 - c. I/O board
3. Turn the chassis over.
 4. Remove the AlienFX side-panel cable through the routing holes.
 5. Remove the screw that secures the left AlienFX side-panel connector assembly to the chassis.
 6. Remove the left AlienFX side-panel connector assembly from the chassis.



- a. screw
- b. left AlienFX side-panel connector assembly

7. Remove the screws that secure the AlienFX side-panel connector to the bracket and set it aside in a secure location.



- a. screw
- b. left AlienFX side-panel connector

Replacing the Left AlienFX Side-Panel Connector

NOTE: 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 dell.com/regulatory_compliance.

Procedure

1. Replace the screws that secure the left AlienFX side-panel connector to the bracket.
2. Replace the screws that secure the left AlienFX side-panel connector to the chassis.
3. Connect the cable that connects the left AlienFX side-panel connector to the system board.

Post-requisites

1. Replace both the left and right side-panels. See "[Replacing the Side Panels](#)".
2. Replace the [stability foot](#).

Removing the I/O Board

NOTE: 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 dell.com/regulatory_compliance.

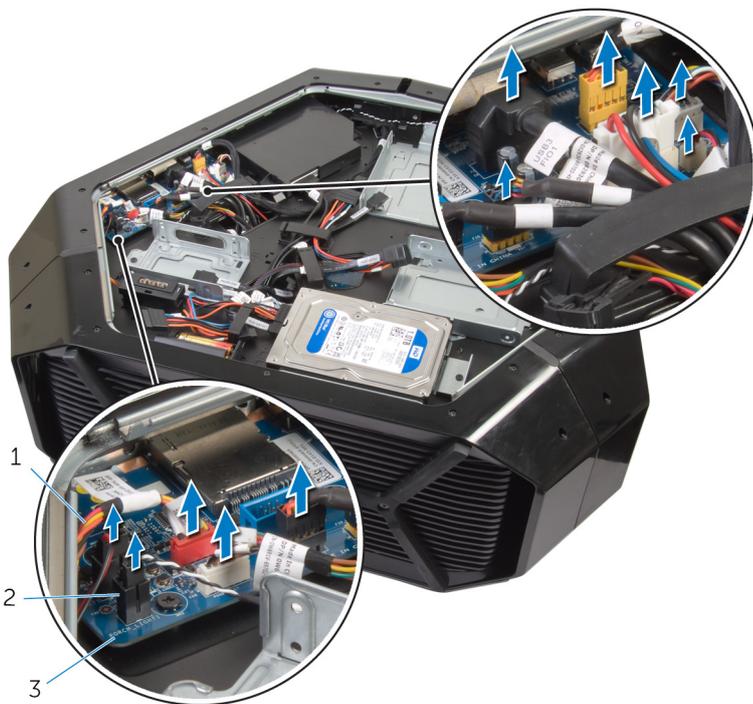
Prerequisites

1. Remove the [stability foot](#).
2. Remove the left and right side-panels. See "[Removing the Side Panels](#)".

Procedure

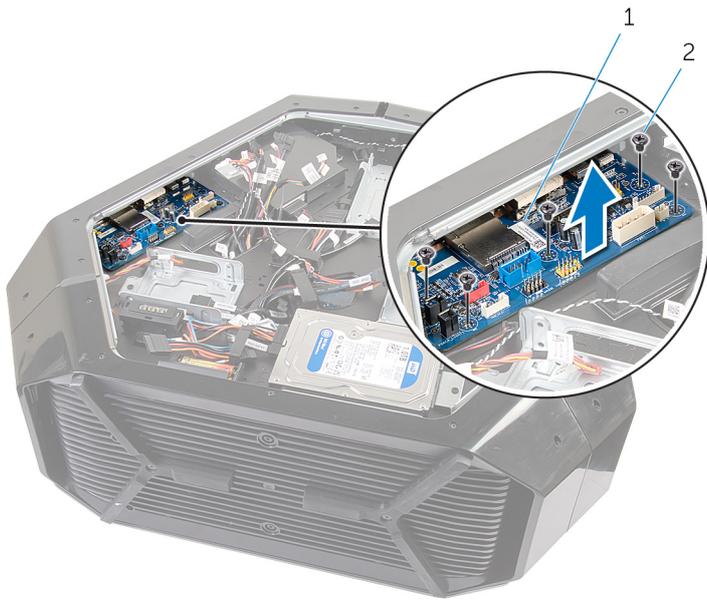
1. Lay the system on the right side.
2. Disconnect all cables from the connectors on the I/O board.

NOTE: Note the routing of all cables as you remove them so that you can reroute them correctly after you replace the I/O board.



- a. cables
- b. connector
- c. I/O board

3. Remove the screws that secure the I/O board to the chassis.
4. Remove the I/O board out of the chassis.



- a.** I/O board
- b.** screws (2)

Replacing the I/O Board

(i) NOTE: 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 dell.com/regulatory_compliance.

Procedure

1. Align the screw holes on the I/O board to the screw holes on the chassis and place the I/O board in the chassis.
2. Replace the screws that secure the master I/O board to the chassis.
3. Route and connect the cables that you removed from the connectors on the I/O board.

(i) NOTE: The connectors on the I/O board are color coded. Make sure that you match the color of the I/O board connector with the cable connector. For more information on I/O connectors, see [I/O Board Components](#).

Post-requisites

1. Replace the left and right side-panels. See "[Replacing the Side Panels](#)".
2. Replace the [stability foot](#).

Removing the Drive-Bay Heat-Sensor

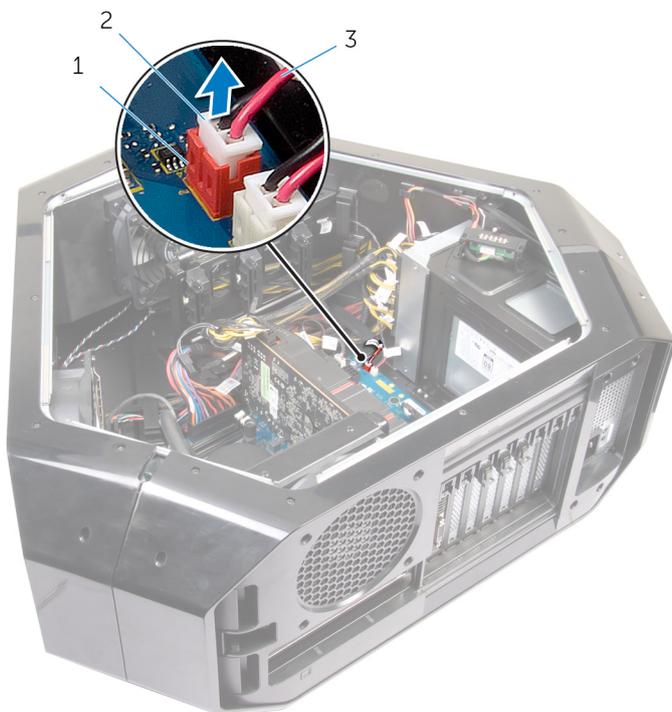
NOTE: Before working inside your computer, read the safety information that shipped with your computer and follow the steps in [Before Working Inside Your Computer](#). After working inside your computer, follow the instructions in [After Working Inside Your Computer](#). For more safety best practices,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

Prerequisites

1. Remove the [stability foot](#).
2. Remove both the left and right side-panels. See "[Removing the Side Panels](#)".

Procedure

1. Lay the chassis on the left side.
2. Locate the drive-bay heat-sensor connector (SENSOR1) on the system board. For more information on the drive-bay heat-sensor connector, see "[System-Board Components](#)".
3. Disconnect the drive-bay heat-sensor cable from the connector on the system board.



- a. drive-bay heat-sensor connector
 - b. drive-bay heat-sensor cable connector
 - c. drive-bay heat-sensor cable
4. Turn the chassis over.
 5. Remove the cable through the sensor bracket.
 6. Locate the drive-bay heat-sensor. See "[Left View](#)".
 7. Press the release tab on the securing clip.
 8. Pry out the drive-bay heat-sensor cable from the securing clip.
 9. Slide the drive-bay heat-sensor cable out of the sensor bracket.



- a.** release tab
- b.** securing clip
- c.** drive-bay heat-sensor cable

Replacing the Drive-Bay Heat-Sensor

(i) NOTE: 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 dell.com/regulatory_compliance.

Procedure

1. Reroute the drive-bay heat-sensor in the sensor bracket.
2. Align the drive-bay heat-sensor in the securing clip.
3. Close and press the release tab on the securing clip.
4. Lay the chassis on the left side.
5. Connect the drive-bay heat-sensor cable to the connector on the system board. See "[System Board Components](#)".

Post-requisites

1. Replace both the left and right side-panels. See "[Replacing the Side Panels](#)".
2. Replace the [stability foot](#).

Removing the Memory Module(s)

i NOTE: 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 dell.com/regulatory_compliance.

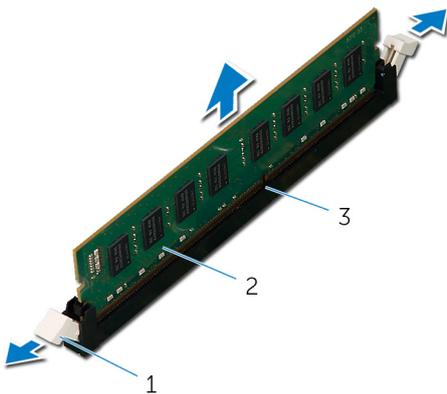
Prerequisites

1. Remove the [stability foot](#).
2. Remove both the left and right side-panels. See "[Removing the Side Panels](#)".

Procedure

1. Lay the computer on the left side.
2. Locate the memory modules on the system board. For more information on the memory modules see "[System-Board Components](#)".
3. Push the securing clips away from the memory module.
4. Grasp the memory module near the securing clip, and then gently ease the memory module out of the memory-module slot.

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



- a. securing clips (2)
- b. memory module
- c. memory-module slot

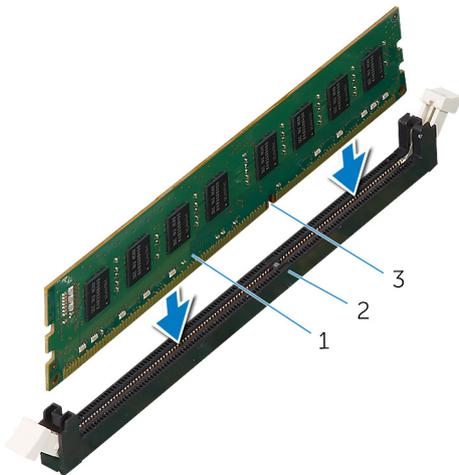
Replacing the Memory Module(s)

(i) NOTE: 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 dell.com/regulatory_compliance.

Procedure

1. Align the notch on the bottom of the memory module with the tab on the memory-module slot.
2. Insert the memory module into the memory-module connector until the memory module snaps into position and the securing clips lock in place.

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



- a. memory module
- b. memory-module slot
- c. notch

Post-requisites

1. Remove both the left and right side-panels. See "[Removing the Side Panels](#)".
2. Replace the [stability foot](#).

Removing the Graphics Card

NOTE: 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 dell.com/regulatory_compliance.

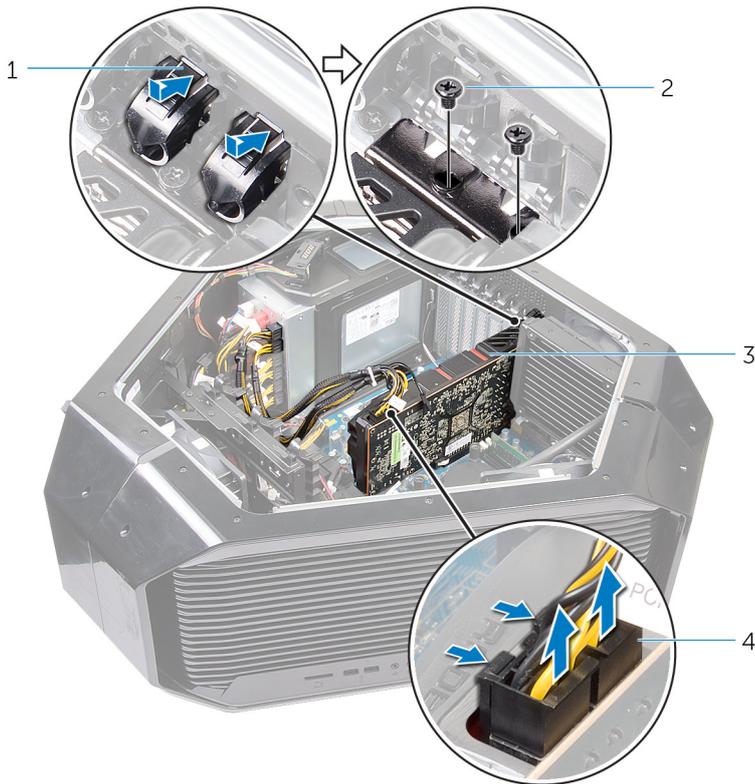
Prerequisites

1. Remove the [stability foot](#).
2. Remove both the left and right side-panels. See "[Removing the Side Panels](#)".

Procedure

1. Lay the computer on the right side.
2. Locate the graphics card (PCI-Express x16 card) on the system board. For more information on graphics card see "[System Board Components](#)".
3. Press and push the screw covers covering the screws that secure the graphics card.
4. Remove the screws that secure the graphics card to the chassis.
5. Press the releasing clips on the power-cable connectors to disconnect the power cables from the graphics card.

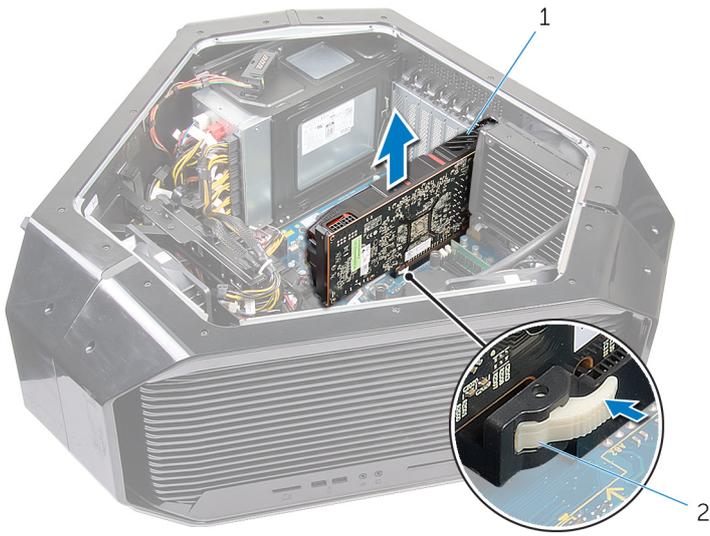
NOTE: The location of the power supply connector varies depending on the video card installed.



1. screw cover
3. graphics card

2. screws (2)
4. power cables (2)

6. Press and hold the securing tab on the card connector, grasp the card by its top corners, and then ease the card out of the slot.



- a. graphics card
- b. releasing clips

Replacing the Graphics Card

(i) NOTE: 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 dell.com/regulatory_compliance.

Procedure

1. Align the graphics card with the PCI-Express x16 card connector on the system board.
2. Place the card in the connector and press down firmly. Ensure that the card is firmly seated.
3. Replace the screws that secure the graphics card to the chassis.
4. Connect the power cables to the graphics card.

(i) NOTE: The location of the power supply connector varies depending on the video card installed.

5. From outside the chassis, push the screw covers inside to cover the screws that secure the graphics card.

Post-requisites

1. Replace both the left and right side-panels. See "[Replacing the Side Panels](#)".
2. Replace the [stability foot](#).

Removing the Multiple Graphics Cards

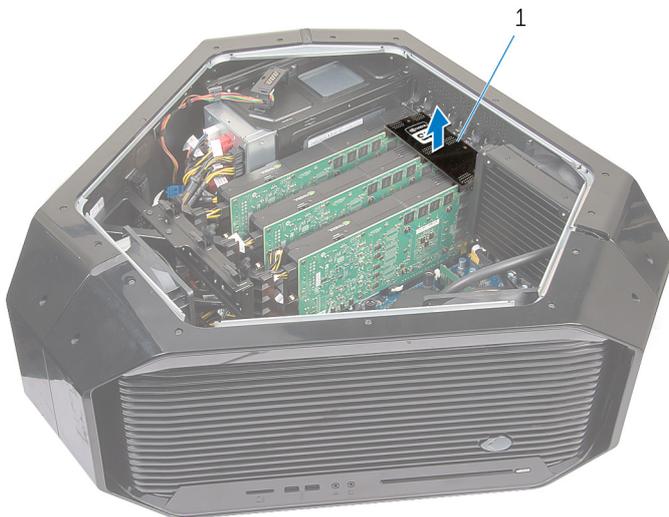
(i) NOTE: Before working inside your computer, read the safety information that shipped with your computer and follow the steps in [Before Working Inside Your Computer](#). After working inside your computer, follow the instructions in [After Working Inside Your Computer](#). For more safety best practices,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

Prerequisites

1. Remove the [stability foot](#).
2. Remove both the left and right side-panels. See "[Removing the Side Panels](#)".

Procedure

1. Lay the chassis on the left side.
2. Locate the graphics cards (PCI-Express x16 card) on the system board. For more information on the graphics card connector, see "[System Board Components](#)".
3. Remove the graphics bridge that connects the graphics cards.



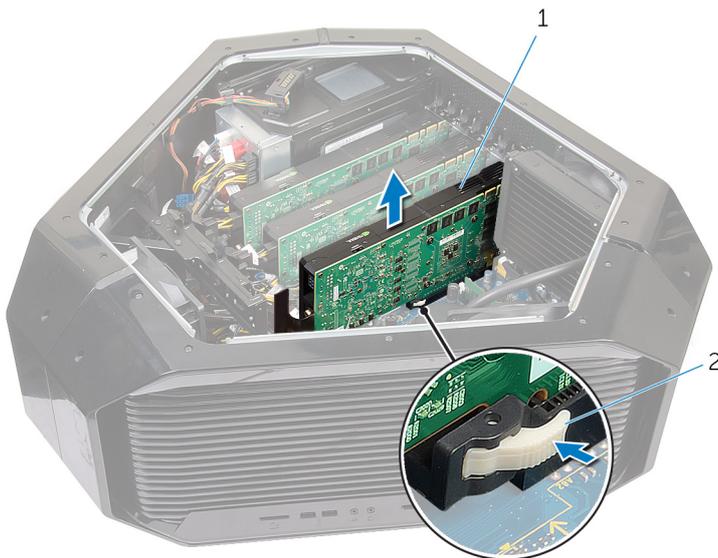
- a. graphics bridge
4. Starting with the graphics card on the PCI-Express x16 card SLOT1, press and push the screw covers covering the screws that secure the graphics card.
 5. Remove the screws that secure the graphics card to the chassis.
 6. Press the releasing clips on the power-cable connectors to disconnect the power cables from the graphics card.

(i) NOTE: The location of the power supply connector varies depending on the video card installed.



- a. screw cover
- b. screws (2)
- c. power cables (2)

7. Press and hold the securing tab on the card connector, grasp the card by its top corners, and then ease the card out of the card connector.



- a. graphics card
- b. releasing clips

8. Repeat steps 2 to 5 to remove graphics card on the PCI-Express x16 card connector (SLOT3) and PCI-Express x16 card connector (SLOT5).

Replacing the Multiple Graphics Cards

NOTE: 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 dell.com/regulatory_compliance.

Procedure

1. Locate the graphics (PCI-Express x16 (SLOT5)) connector on the system board. For more information on the graphics connector, see "[System Board Components](#)".
2. Align the graphics card with the PCI-Express x16 card connector (SLOT5) on the system board.
3. Place the card in the connector and press down firmly. Ensure that the card is firmly seated in the slot.

NOTE: Repeat steps 2 to 3 to install graphics card on the PCI-Express x16 card connector (SLOT3) and PCI-Express x16 card connector (SLOT1).

4. Replace the screws that secure the graphics card to the chassis.
5. Connect the graphics bridge that connects the graphics cards.
6. Connect the power cables to the graphics card.

NOTE: The location of the power supply connector varies depending on the video card installed.

7. From outside the chassis, push the screw covers inside to cover the screws that secure the graphics card.

Post-requisites

1. Replace both the left and right side-panels. See "[Replacing the Side Panels](#)".
2. Replace the [stability foot](#).

Removing the Full-length Graphics Cards

NOTE: 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 dell.com/regulatory_compliance.

Prerequisites

1. Remove the [stability foot](#).
2. Remove both the left and right side-panels. See "[Removing the Side Panels](#)".

Procedure

1. Lay the computer on the right side.
2. Locate the graphics (PCI-Express x16) connector on the system board. For more information on the graphics connector, see "[System Board Components](#)".
3. Press and hold the securing tab on the clamp.
4. Pull the clamp away from the bracket.



- a. clamp
- b. bracket

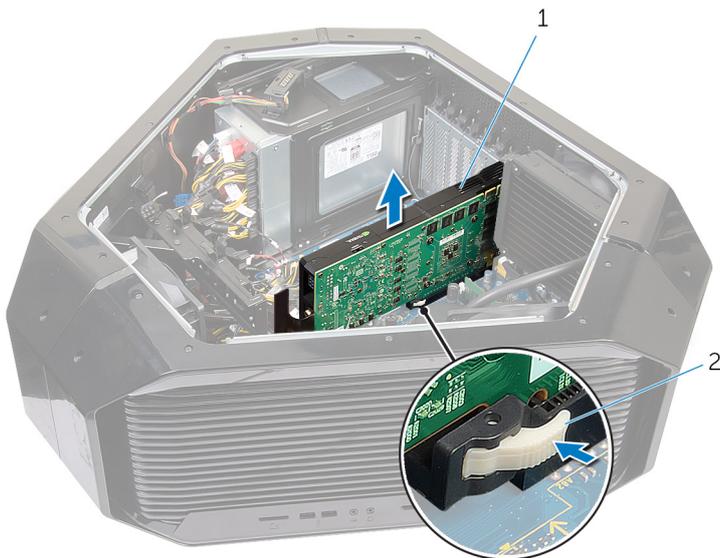
5. Press and push the screw covers covering the screws that secure the graphics card.
6. Remove the screws that secure the graphics card to the chassis.
7. Press the releasing clips on the power-cable connectors to disconnect the power cables from the graphics card.

NOTE: The location of the power supply connector varies depending on the video card installed.



- a. screw cover
- b. screws (2)
- c. power cables (2)

8. Press and hold the securing tab on the card connector, grasp the card by its top corners, and then ease the card out of the card connector.



- a. graphics card
- b. releasing clips

Replacing the Full-length Graphics Cards

(i) NOTE: 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 dell.com/regulatory_compliance.

Procedure

1. Align the graphics card with the PCI-Express x16 card connector on the system board.
2. Place the card in the connector and press down firmly. Ensure that the card is firmly seated.
3. Press and hold the securing tab on the clamp.
4. Push the clamp back into the bracket.
5. Replace the screws that secure the graphics card to the chassis.
6. Connect the power cables to the graphics card.
(i) NOTE: The location of the power supply connector varies depending on the video card installed.
7. From outside the chassis, push the screw covers inside to cover the screws that secure the graphics card.

Post-requisites

1. Replace both the left and right side-panels. See "[Replacing the Side Panels](#)".
2. Replace the [stability foot](#).

Removing the PCI Fan

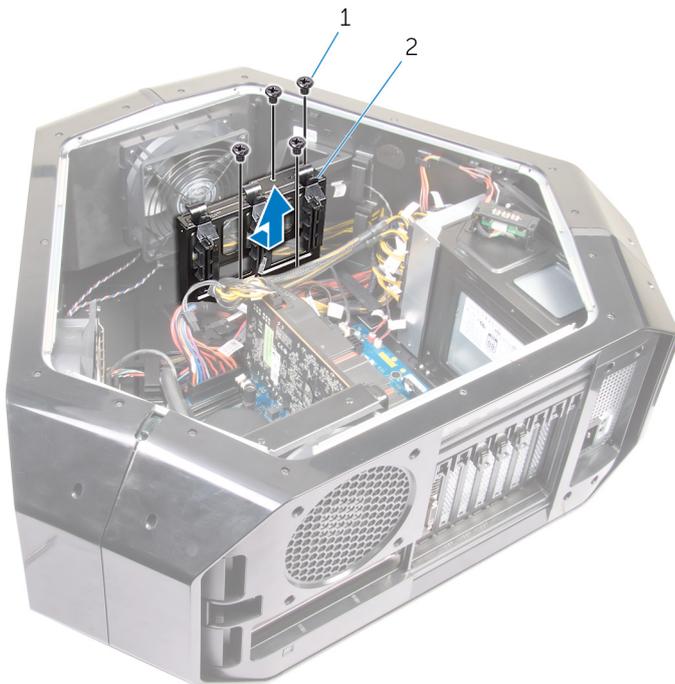
NOTE: Before working inside your computer, read the safety information that shipped with your computer and follow the steps in [Before Working Inside Your Computer](#). After working inside your computer, follow the instructions in [After Working Inside Your Computer](#). For more safety best practices,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

Prerequisites

1. Remove the [stability foot](#).
2. Remove both the left and right side-panels. See "[Removing the Side Panel](#)".

Procedure

1. Lay the chassis on the left side.
2. Remove the screws that secure the graphics-card bracket to the chassis.

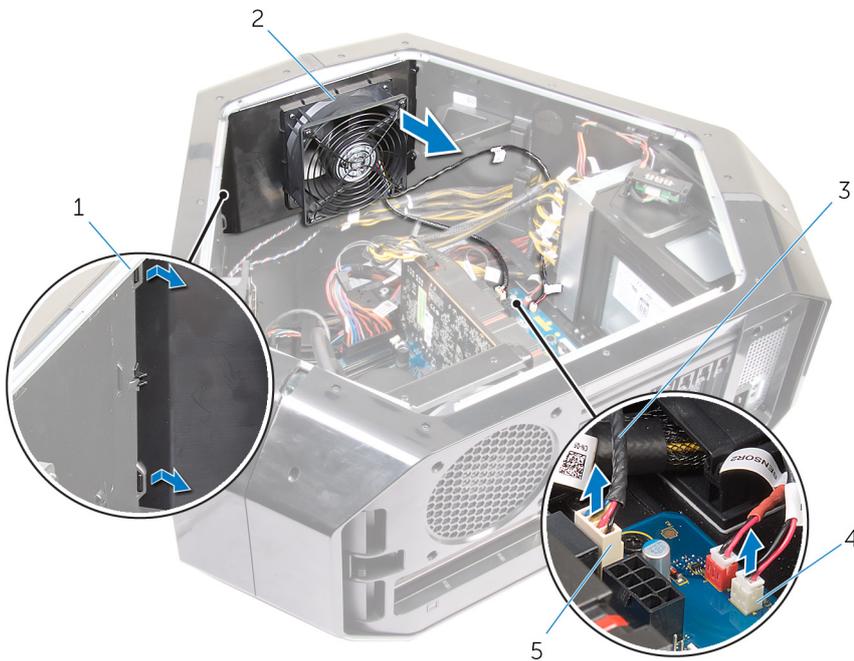


- a. screws (4)
 - b. graphics-card bracket
3. Remove the screws that secure the PCI fan to the chassis.



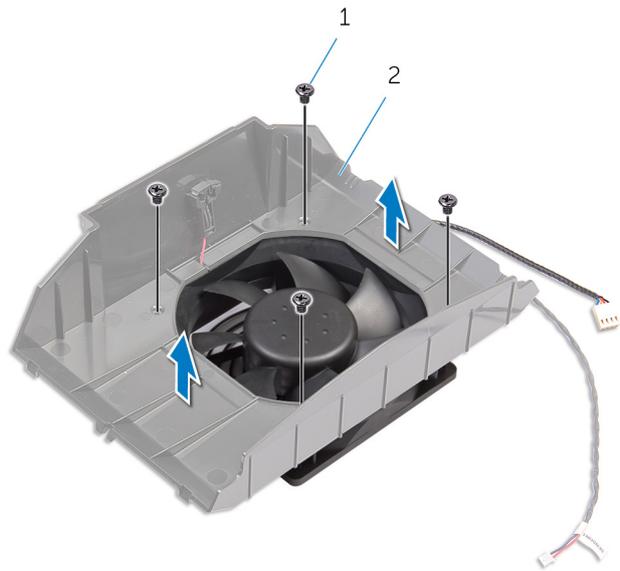
- a. PCI fan
- b. screws (2)

4. Disconnect the PCI-fan cable and front-bezel heat-sensor cable from the connector on the system board.
5. Pry out the PCI fan from the tabs securing it to the chassis.



- 1. tabs
- 3. PCI-fan cable
- 5. PCI-fan connector
- 2. PCI fan
- 4. front-bezel heat-sensor

6. Remove the screws securing the fan shroud to the PCI fan.
7. Pry out the PCI fan from the fan shroud by lifting the fan shroud upwards.



- a. screws (4)
- b. fan shroud

Replacing the PCI Fan

NOTE: 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 dell.com/regulatory_compliance.

Procedure

1. Align the tabs on the fan shroud with the slots on the PCI fan and snap the fan shroud in place.
2. Replace the screws securing the fan shroud to the PCI fan.
3. Align the tabs on the PCI-fan shroud with the slots on the chassis and slide the fan until it snaps into position.
4. Connect the PCI-fan cable and front-bezel heat-sensor cable to the connectors on the system board.
5. Replace the screws that secure the PCI fan to the chassis.
6. Align the screw holes on the on the graphics-card bracket with the screw holes on the chassis.
7. Replace the screws that secure the graphics-card bracket to the chassis.

Post-requisites

1. Replace both the left and right side-panels. See "[Replacing the Side Panels](#)".
2. Replace the [stability foot](#).

Removing the Front-bezel Heat-sensor

(i) NOTE: 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 dell.com/regulatory_compliance.

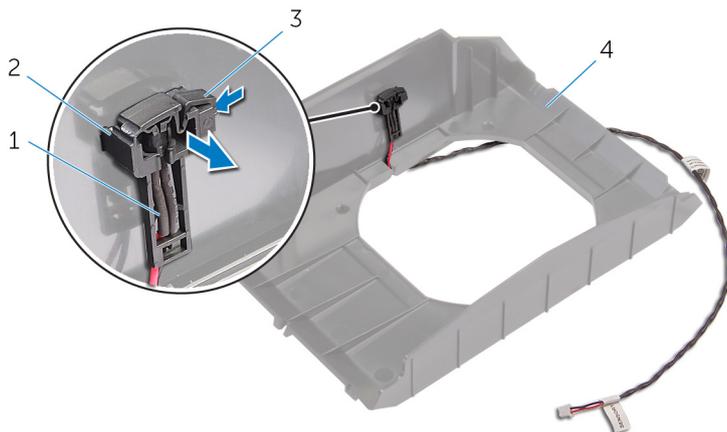
Prerequisites

1. Remove the [stability foot](#).
2. Remove both the left and right side-panels. See "[Removing the Side Panels](#)".
3. Remove the PCI fan. See "[Removing the PCI fan](#)".

Procedure

(i) NOTE: After removing the PCI fan, locate the sensor on the fan shroud.

1. Lay the computer on the left side.
2. Press the release tab on the securing clip.
3. Pry out the chassis heat-sensor cable from the securing clip.
4. Slide the chassis heat-sensor cable out of the bracket.



1. chassis heat-sensor cable
3. release tab

2. securing clip
4. fan shroud

Replacing the Front-bezel Heat-sensor

NOTE: 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 dell.com/regulatory_compliance.

Procedure

1. Reroute the chassis heat-sensor in the bracket.
2. Align the chassis heat-sensor in the securing clip.
3. Close and press the release tab on the securing clip.

Post-requisites

1. Replace the [PCI fan](#).
2. Replace both the left and right side-panels. See "[Replacing the Side Panels](#)".
3. Replace the [stability foot](#).

Removing the Memory Fan

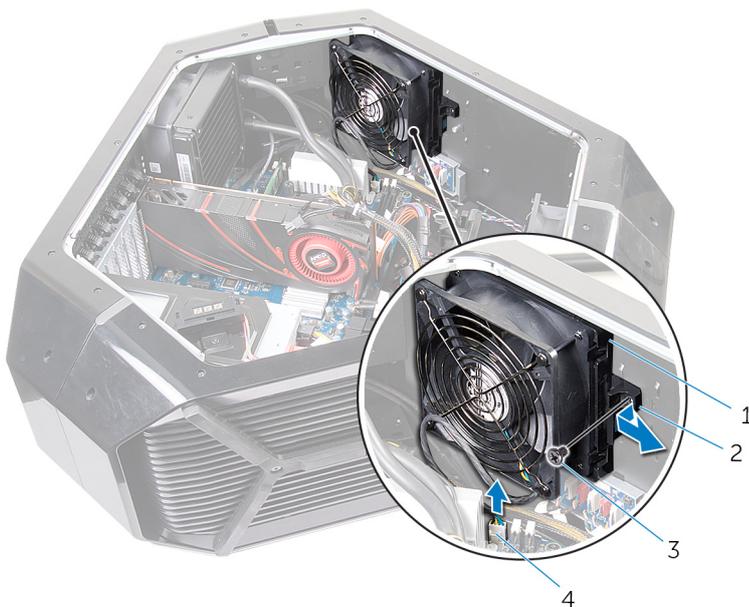
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Prerequisites

1. Remove the [stability foot](#).
2. Remove both the left and right side-panels. See "[Removing the Side Panels](#)".

Procedure

1. Lay the computer on the right side.
2. Disconnect the memory-fan cable from the connector on the system board. For more information on the memory-fan cable connector, see "[System Board Components](#)".
3. Remove the screw that secures the memory fan on the chassis.
4. Pull the release tab away from the chassis and move the fan towards the right side.
5. Lift the memory fan out of the chassis.



1. memory-fan
3. screw

2. release tab
4. memory-fan cable

Replacing the Memory Fan

NOTE: 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 dell.com/regulatory_compliance.

Procedure

1. Align the tabs on the memory fan with the slots on the chassis and slide the fan until it snaps into position.
2. Replace the screw that secures the memory fan on the chassis.
3. Connect the memory fan cable from the connector on the system board. For more information on the memory fan cable connector, see "[System Board Components](#)".

Post-requisites

1. Replace both the left and right side-panels. See "[Replacing the Side Panels](#)".
2. Replace the [stability foot](#).

Removing the Processor Cooling-Assembly

NOTE: 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 dell.com/regulatory_compliance.

Prerequisites

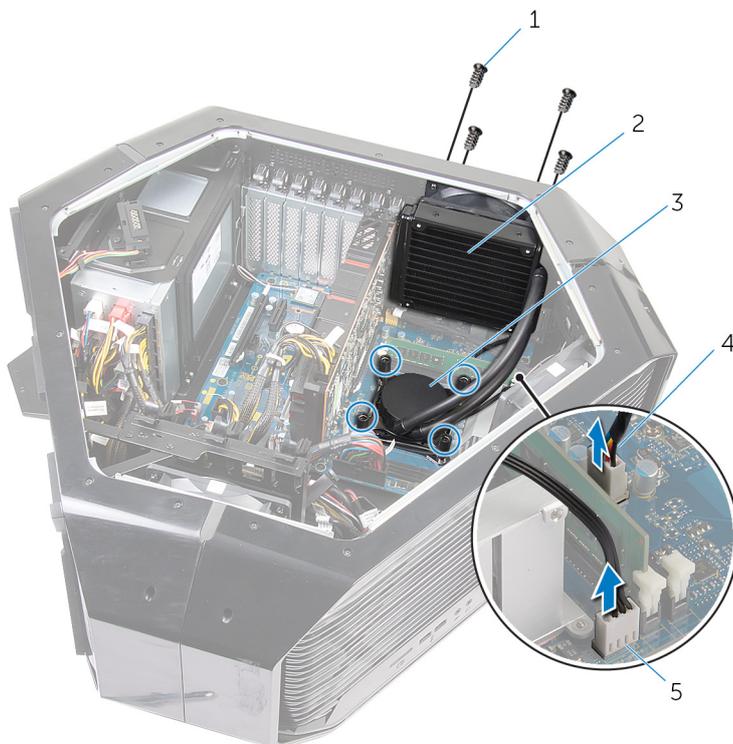
1. Remove the [stability foot](#).
2. Remove both the left and right side-panels. See "[Removing the Side Panel](#)".

Procedure

WARNING: Despite having a plastic shield, the processor liquid-cooling assembly may be very hot during normal operation. Ensure that it had sufficient time to cool before you touch it.

CAUTION: To ensure maximum cooling for the processor, do not touch the heat transfer areas on the processor liquid-cooling assembly. The oils in your skin can reduce the heat transfer capability of the thermal grease.

1. Lay the chassis on the right side.
2. Disconnect the processor liquid-cooling assembly pump-fan cable from the system board. For more information on the processor liquid-cooling assembly pump-fan cable connector, see "[System-Board Components](#)".
3. Disconnect the processor liquid-cooling assembly fan cable from the system board. For more information on the processor liquid-cooling assembly fan cable connector, see "[System-Board Components](#)".
4. In sequential order as indicated on the processor cooling-assembly, loosen the captive screws that secure the processor liquid-cooling assembly to the system board.
5. Remove the screws that secure the processor liquid-cooling assembly fan to the chassis.



- | | |
|---|---|
| 1. screws (4) | 2. processor liquid-cooling assembly fan |
| 3. processor liquid-cooling assembly pump | 4. processor liquid-cooling assembly pump cable |

5. processor liquid-cooling assembly fan cable
6. Slide and lift the processor liquid-cooling assembly out of the chassis.



- a. processor liquid-cooling assembly
- b. processor liquid-cooling assembly pump

Replacing the Processor Cooling Assembly

(i) NOTE: 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 dell.com/regulatory_compliance.

Procedure

△ CAUTION: Incorrect alignment of the processor liquid-cooling assembly can damage the system board and processor.

1. Align the screw holes on the processor liquid-cooling assembly with the screw holes on the chassis.
2. Replace the screws that secure the processor liquid-cooling assembly to the chassis.

(i) NOTE: The original thermal grease can be reused if the original processor and processor liquid-cooling are reinstalled together. If either the processor or the processor liquid-cooling is replaced, use the thermal grease provided in the kit to ensure that thermal conductivity is achieved.

3. Apply thermal grease between the processor liquid-cooling assembly and the processor.
4. In sequential order as indicated on the processor cooling-assembly, tighten the captive screws that secure the processor liquid-cooling assembly to the system board.
5. Connect the processor liquid-cooling assembly fan and the processor liquid-cooling assembly pump-fan cable to the connectors on the system board.

Post-requisites

1. Replace both the left and right side-panels. See "[Removing the Side Panels](#)".
2. Replace the [stability foot](#).

Removing the Processor

NOTE: 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 dell.com/regulatory_compliance.

Prerequisites

1. Remove the [stability foot](#).
2. Remove both the left and right side-panels. See "[Removing the Side Panels](#)".
3. Remove the [processor liquid-cooling assembly fan](#).

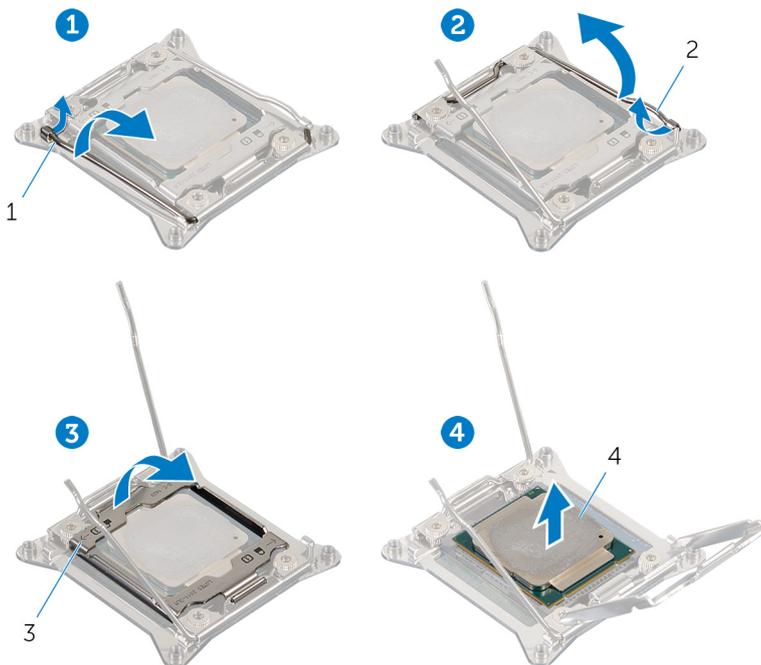
Procedure

WARNING: The processor might still be hot after the computer is shut down. Allow the processor to cool down before removing it.

1. Lay the computer on the left side.
2. Press down and push the left-release lever away from the processor to release it from the securing tab.
3. Press down and push the right-release lever away from the processor to release it from the securing tab.
4. Extend the right-release lever completely to open the processor cover.

CAUTION: When removing the processor, do not touch any of the pins inside the socket or allow any objects to fall on the pins in the socket.

5. Open the processor cover and gently lift the processor from the processor socket.



1. left release-lever
3. processor cover

2. right release-lever
4. processor

Replacing the Processor

NOTE: 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 dell.com/regulatory_compliance.

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

Procedure

1. Ensure that the right-release lever is fully extended in the open position.

CAUTION: You must position the processor correctly in the processor socket to avoid damage to the processor.

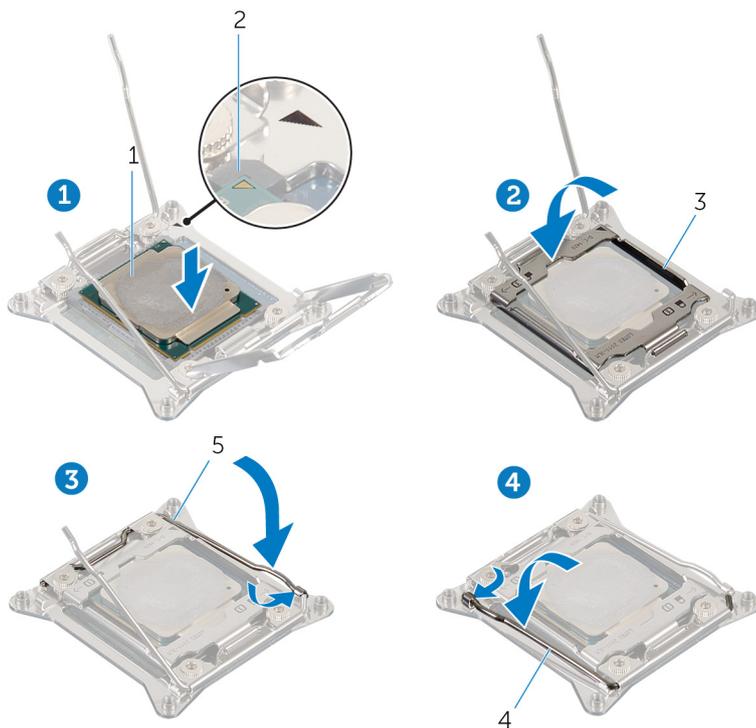
2. Align the pin-1 corner of the processor with the pin-1 corner of the processor socket, and then place the processor in the processor socket.

NOTE: 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.

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

4. Press down and push the left-release lever. Place it under the tab on the processor cover.

5. Press down and push the right-release lever. Place it under the tab on the processor cover.



1. processor

3. processor cover

5. right release-lever

2. processor pin-1 connector

4. left release-lever

Post-requisites

1. Replace the [processor liquid-cooling assembly fan](#).
2. Replace both the left and right side-panels. See "[Replacing the Side Panels](#)".
3. Replace the [stability foot](#).

Removing the Power-Supply Unit

i NOTE: 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 dell.com/regulatory_compliance.

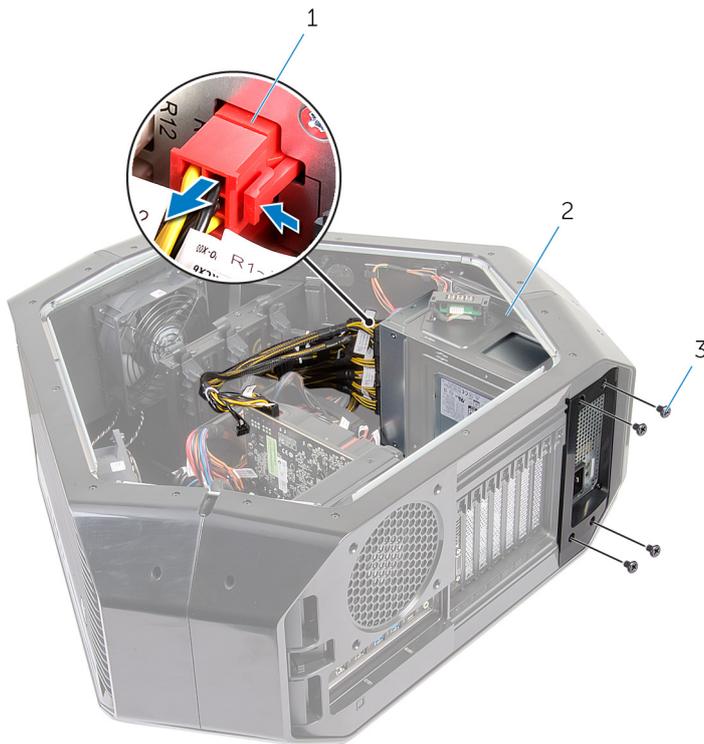
Prerequisites

1. Remove the [stability foot](#).
2. Remove both the left and right side-panels. See "[Removing the Side Panels](#)".
3. Remove [multiple graphics cards](#).
4. Remove the [full length graphics cards](#).

Procedure

i 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 left side.
2. Press the tab on the power cables and disconnect all the cables from the power supply.
3. Remove the screws that secure the power-supply unit to the back of the chassis.



- a. power cable
 - b. power supply
 - c. screws (4)
4. Lift the power-supply cover away from the chassis.



- a. power supply
- b. power-supply cover

5. Slide the power-supply unit out through the back of the chassis and remove it from the computer.



- a. chassis
- b. power-supply unit

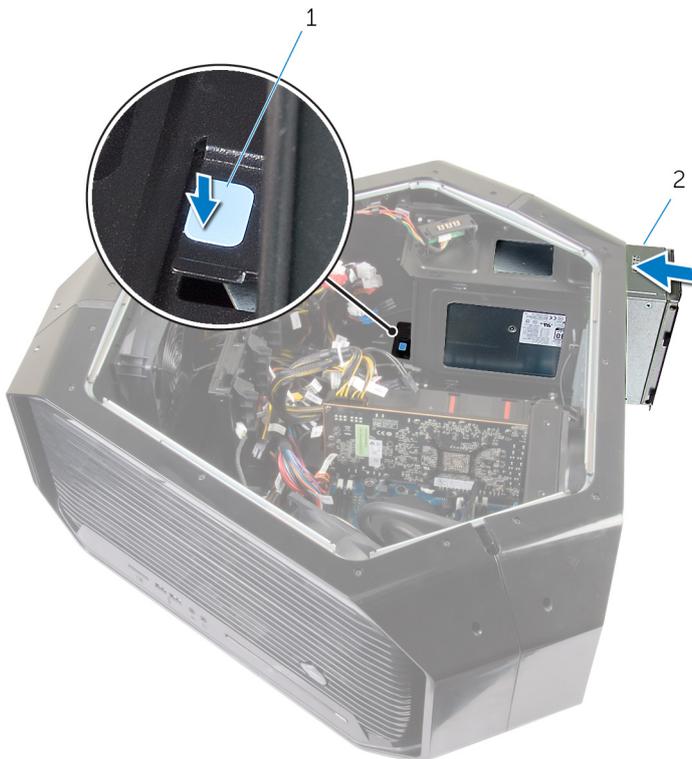
Replacing the Power-Supply Unit

NOTE: 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 dell.com/regulatory_compliance.

Procedure

WARNING: The cables and ports on the back of the power supply are color-coded to indicate the different power wattage. Ensure that you plug in the cable to the correct port. Failure to do so may result in damaging the power supply and/or system components.

1. Press and hold the securing tab on the chassis and slide the power-supply unit into the chassis until it snaps into position.



- a. securing tab
 - b. power supply unit
2. Align the notch on the power-supply cover with the tab on the chassis.
 3. Slide the power-supply cover towards the tabs until it locks in place.
 4. Replace the screws that secure the power-supply unit to the bezel.
 5. Connect the power cable to the power-supply unit.

Post-requisites

1. Replace the [full length graphics cards](#).
2. Replace the [graphics card](#).
3. Replace both the left and right side-panels. See "[Removing the Side Panels](#)".
4. Replace the [stability foot](#).

Removing the Coin-Cell Battery

NOTE: 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 dell.com/regulatory_compliance.

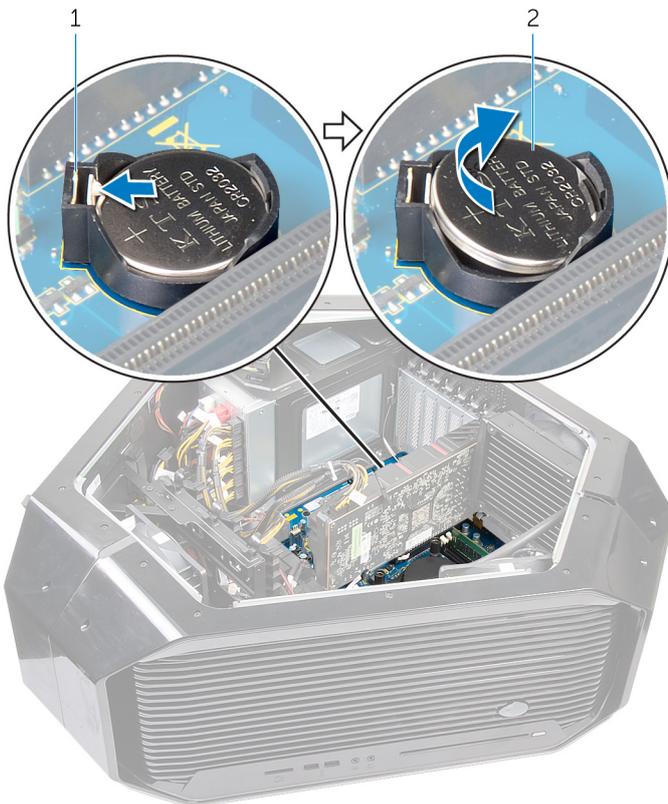
CAUTION: Removing the coin-cell battery resets the BIOS settings to default. It is recommended that you note the BIOS settings before removing the coin-cell battery.

Prerequisites

1. Remove the [stability foot](#).
2. Remove both the left and right side-panels. See "[Removing the Side Panels](#)".
3. If you have multiple graphics cards installed, remove the graphics card. See "[Removing the Graphics Card](#)".

Procedure

1. Lay the computer on the left side.
2. Press the battery-release lever to remove the battery.



- a. battery-release lever
- b. coin-cell battery

Replacing the Coin-Cell Battery

NOTE: 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 dell.com/regulatory_compliance.

Procedure

Insert the battery into the socket with the side labeled + facing up and press down the battery in the socket.

Post-requisites

1. If you have multiple graphics cards installed, replace the graphics cards. See "[Replacing the Graphics Card](#)".
2. Replace both the left and right side-panels. See "[Replacing the Side Panels](#)".
3. Remove the [stability foot](#).

Removing the Wireless Card

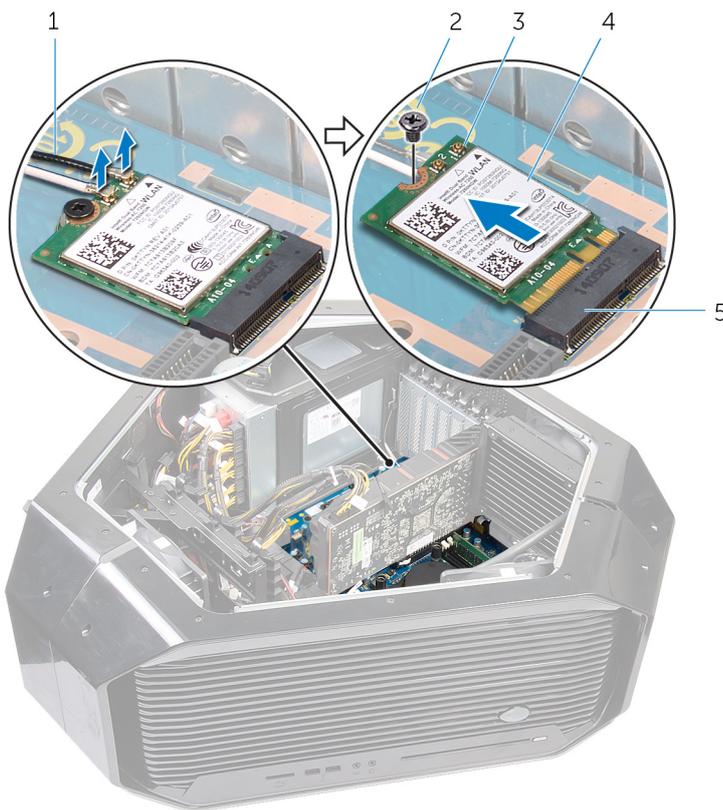
NOTE: Before working inside your computer, read the safety information that shipped with your computer and follow the steps in [Before Working Inside Your Computer](#). After working inside your computer, follow the instructions in [After Working Inside Your Computer](#). For more safety best practices,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

Prerequisites

1. Remove the stability foot. See "[Removing the Stability Foot](#)".
2. Remove both the left and right side-panels. See "[Removing the Side Panels](#)".
3. If you have multiple graphics cards installed, remove the graphics card. See "[Removing the Graphics Card](#)".

Procedure

1. Lay the computer on the left side.
2. Disconnect the antenna cables from the wireless card.
3. Remove the screw that secures the wireless card to the chassis.
4. Slide and pull the wireless card away from the wireless-card slot.



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

Replacing the Wireless Card

NOTE: 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 dell.com/regulatory_compliance.

Procedure

1. Align the notch on the wireless card with the tab on the wireless-card slot.
2. Insert the wireless card at an angle into the connector.
3. Push the securing tab out and secure the wireless card into position.
4. Connect the antenna cables to the wireless card.
A label at the tip of the antenna cables indicates color scheme for the wireless card supported by your computer.

Connectors on the wireless card	Antenna-cable sticker color
Auxiliary (1)	Black
Main (2)	White

Post-requisites

1. If you have multiple graphics cards, replace the graphics card. See "[Replacing the Graphics Card](#)".
2. Replace both the left and right side-panels. See "[Replacing the Side Panels](#)".
3. Replace the [stability foot](#).

Removing the Logo Board

NOTE: 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 dell.com/regulatory_compliance.

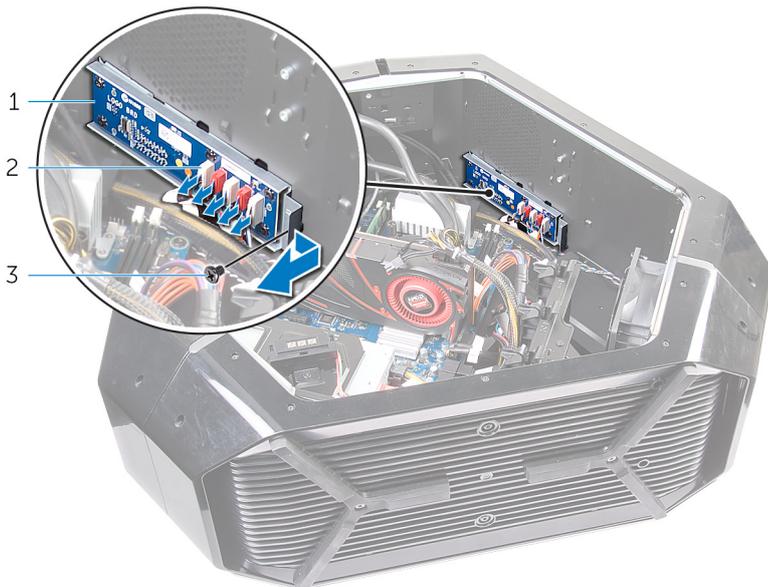
Prerequisites

1. Remove the [stability foot](#).
2. Remove both the left and right side-panels. See "[Removing the Side Panels](#)".
3. Remove the [memory fan](#).

Procedure

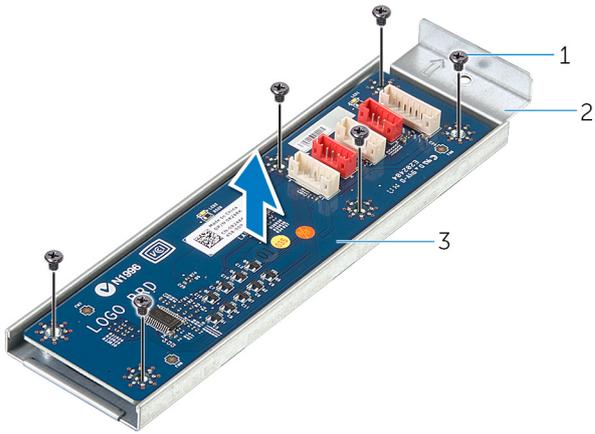
NOTE: Note the routing of all cables as you remove them so that you can reroute them correctly after you replace the logo board.

1. Lay the chassis on the left side.
2. Disconnect all the cables from the connectors on the logo board.
3. Remove the screw that secure the logo board to the chassis.
4. Slide the logo board out of the chassis.



- a. logo board
- b. connector
- c. screw

5. Remove the screws that secure the logo board to the bracket.
6. Lift the logo board out of the bracket.



- a. screws (6)
- b. logo board bracket
- c. logo board

Replacing the Logo Board

(i) NOTE: 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 dell.com/regulatory_compliance.

Procedure

1. Align the screw holes on the logo board to the screw holes on the bracket and slide the logo board in.
2. Replace the screws that secure the logo board to the bracket.
3. Slide the logo board inside the chassis.
4. Replace the screw that secure the logo board to the bracket.
5. Route and connect the cables that you removed from the connectors on the logo board.

Post-requisites

1. Replace both the left and right side-panels. See "[Replacing the Side Panels](#)".
2. Replace the [stability foot](#).

Removing the System Board

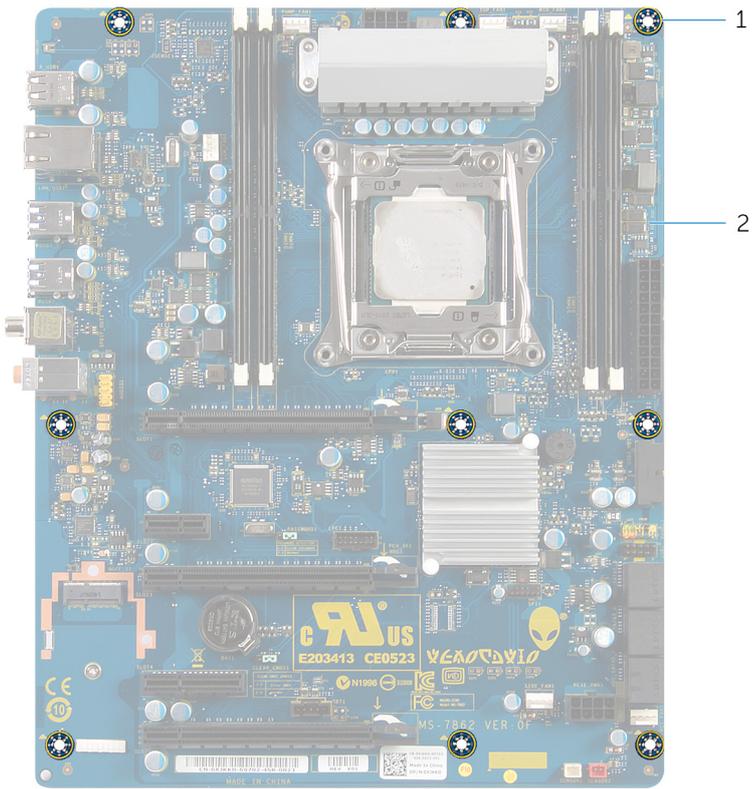
- ⓘ NOTE: Before working inside your computer, read the safety information that shipped with your computer and follow the steps in [Before Working Inside Your Computer](#). After working inside your computer, follow the instructions in [After Working Inside Your Computer](#). For more safety best practices, see the Regulatory Compliance home page at 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 desired 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 them correctly after you replace the system board.

Prerequisites

1. Remove the both the left and right side-panels. See "[Removing the Side Panels](#)".
2. Remove the [memory fan](#).
3. Remove the [graphics card](#).
4. Remove the [multiple graphics cards](#).
5. Remove the [coin cell battery](#).
6. Remove the [memory modules](#).
7. Remove the [processor liquid-cooling assembly fan](#).
8. Remove the [wireless card](#).
9. 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. Lay the computer on the left side.
 2. Disconnect all the cables connected to the system-board assembly.
 3. Remove the screws that secure the system-board assembly to the chassis.
 4. Slide the system-board assembly towards the front of the chassis to disengage it from the latches that secure it to the chassis.
 5. Lift the system-board assembly out of the chassis.



- a. screws (9)
- b. system board

Replacing the System Board

- ① **NOTE:** 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 dell.com/regulatory_compliance.
- ① **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.
- ① **NOTE:** Replacing the system board removes any changes you have made to the BIOS using the BIOS setup program. You must make the desired 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 towards the back of the chassis and 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.

① **NOTE:** For information on system board connectors, see "[System-Board Components](#)".

Post-requisites

1. Replace the [processor](#).
2. Replace the [processor liquid-cooling assembly fan](#).
3. Replace the [memory module](#).
4. Replace the [coin-cell battery](#).
5. Replace the [graphics card](#).
6. Replace the [multiple graphics cards](#).
7. Replace the [memory fan](#).
8. Replace the [wireless card](#).
9. Replace both the left and right side-panels. See "[Replacing the Side Panels](#)".
10. Replace the [stability foot](#).

System Setup

Overview

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

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

Use system setup to:

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

Entering System Setup

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 has 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 operating system's desktop. Then, turn off your computer and try again.

System Setup Options

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

Main

System Date	Displays the current date in mm/dd/yyyy format.
System Time	Displays the current time in hh:mm:ss format.

BIOS Information

BIOS Version	Displays the BIOS version number.
Build Date	Displays the BIOS release date.

Product Information

Product Name	Displays the product name. Default: Alienware Area-51 R2.
Set Service Tag	Allows you to enter the service tag of your computer.
Asset Tag	Displays the asset tag of your computer.

ME Information

ME Firmware Version	Displays the Management Engine firmware version.
---------------------	--

EC Information

EC Firmware Version	Displays the Embedded Controller firmware version.
---------------------	--

Memory Information

Total Memory	Displays the total computer memory installed.
Memory Available	Displays the amount of memory available on the computer.
Memory Technology	Displays the type of memory technology used.
Memory Speed	Displays the memory speed.

Main

CPU Information

Processor Type	Displays the processor type
Processor ID	Displays the processor identification code.
CPU Speed	Displays the CPU speed.
Cache L2	Displays the processor L2 cache size.
Cache L3	Displays the processor L3 cache size.

Device Information

SATA Port1	Displays the SATA 1 drive installed in the computer.
SATA Port2	Displays the SATA 2 drive installed in the computer.
SATA Port3	Displays the SATA 3 drive installed in the computer.
SATA Port4	Displays the SATA 4 drive installed in the computer.
SATA Port5	Displays the SATA 5 drive installed in the computer.
SATA Port6	Displays the SATA 6 drive installed in the computer.

Advanced

Advanced BIOS Features

OptionRom Display Screen	Allows you to display or hide the RAID Option ROM screen during POST. Default: Display.
--------------------------	---

CPU Configuration

Hyper-Threading Technology	Allows you to enable or disable the HyperThreading in the processor. Default: Enabled.
XD Bit Capability	Enable XD Bit Capability to allow the processor to distinguish between the bits of code that can be executed and the ones that cannot be executed. Default: Enabled.
Intel(R) SpeedStep Technology	Allows you to enable or disable Intel (R) Speedstep Technology. Default: Enabled. NOTE: If enabled, the processor clock speed and core voltage are adjusted dynamically based on the processor load.
CPU C states	Allows you to enable or disable CPU C states. Default: Enabled.
Active Processor Cores	Allows you to enable the number of cores in each processor. Options: one to five cores.

Integrated Devices

USB Controller	Allows you to enable or disable the integrated USB controller. Default: Enabled.
HD Audio	Allows you to enable or disable the integrated audio controller. Default: Enabled.
Onboard LAN Controller	Allows you to enable or disable the onboard LAN controller. Default: Enabled.
Pxe Option	Allows you to enable or disable the boot option for legacy network devices. Default: Disabled.
Launch PXE OpROM	Allows you to enable or disable the PXE OpROM. Default: Disabled.
UEFI PXE Driver	Allows you to enable or disable the UEFI PXE Driver. Default: Disabled.
PCIE GEN3	Allows you to enable or disable the PCIE GEN3. Default: Enabled.

Advanced

Power Management Setup

AC Recovery	Sets what action the computer takes when power is restored. Default: Last State.
Deep Sleep Control	Allows you to define the controls when Deep Sleep is enabled. Default: Enabled in S5 Only.

Chipset

Spread Spectrum	Enabling this option could reduce the EMI. Default: Enabled.
CPU Base Clock (MHz)	Base clock for CPU. Default: 100.00.
Adjust CPU Base Clock Strap	Allows you to adjust the CPU Base Clock Strap. Default: Auto.
Ring Ratio	Allows you to change the Ring Ratio mode. Default: Auto.
DRAM Frequency	Allows you to adjust the DRAM frequency. Default: Auto.
DRAM Timing Mode	Allows you to change the memory timing mode. Default: Auto.
CPU Ratio	Allows you to adjust the CPU ratio. Default: Auto.
CPU Ratio Mode	Allows you to change the CPU Ratio mode. Default: Dynamic Mode.
Overvoltage Configuration	Allows you to access the Overvoltage Configuration submenu.
Memory voltage (24h OUT1)	Adjusts the memory voltage. Default: 0.
Memory voltage (26h OUT1)	Adjusts the memory voltage. Default: 0.
DMI and Uncore voltage (2Ah OUT1)	2Ah OUT1. Default: 0.
CPU VCCIN	2Ah OUT2. Default: 1.8 V.
Advanced DRAM Configuration	Allows you to change the Advance DRAM Configuration. Default: Disabled.
Command Rate	Displays the Command Rate (editable in Manual Mode).
tCL	Displays the Column Address Strobe Latency (editable in Manual Mode).
tRCD	Displays timing of RAS to CAS delay (editable in Manual Mode).
tRP	Displays timing of RAS Precharge (editable in Manual Mode).
tRAS	Displays timing of Row Address Strobe (editable in Manual Mode).
tRFC	Displays timing of Refresh to Archive/Refresh cycle time (editable in Manual Mode).
tREFI	Displays timing of Refresh Intervals (editable in Manual Mode).
tWR	Displays timing of Write Recover (editable in Manual Mode).
tWTR	Displays Write to Read Delay (editable in Manual Mode).
tRRD	Displays RAS to RAS delay (editable in Manual Mode).
tRTP	Displays Read to Precharge Command Delay (editable in Manual Mode).

Chipset

tFAW	Displays the Four Activate Window (editable in Manual Mode).
tWCL	Displays the Write CAS Latency (editable in Manual Mode).
tCKE	Displays the Minimum CKE High and Low Pulse Width (editable in Manual Mode).
CPU Power Management Configuration	Allows you to access the CPU Power Management Configuration submenu.
Turbo Mode	If enabled, allows processor to run at faster frequencies than marked. Default: Enabled.
Long duration power limit	Allows you to change the long duration power limit. Default: 140.
Long duration maintained	Allows you to change the long duration time limit. Default: 12.
Short duration power limit	Allows you to change the short duration power limit. Default: 160.
1-Core Ratio Limit	Allows you to change the ratio limit of the processor's first core. Default: 0.
2-Core Ratio Limit	Allows you to change the ratio limit of the processor's second core. Default: 0.
3-Core Ratio Limit	Allows you to change the ratio limit of the processor's third core. Default: 0.
4-Core Ratio Limit	Allows you to change the ratio limit of the processor's fourth core. Default: 0.
5-Core Ratio Limit	Allows you to change the ratio limit of the processor's fifth core. Default: 0.
6-Core Ratio Limit	Allows you to change the ratio limit of the processor's sixth core. Default: 0.
7-Core Ratio Limit	Allows you to change the ratio limit of the processor's seventh core. Default: 0.
8-Core Ratio Limit	Allows you to change the ratio limit of the processor's eighth core. Default: 0.
VID override for Max Turbo Ratio	Allows you to change the VID override for max turbo ration value. Default: 0.
CPU Current Limit (A)	Default: 0.
Mailbox Configuration	Allows you to change the mailbox configuration.
SVID Communication	Allows you to change the Serial Voltage Identification support. Default: Auto.
VCCIN Voltage	Allows you to change the Eventual CPU Input Voltage support. Default: Auto.
CPU Core/Ring Voltage Mode	Allows you to change the CPU Core/Ring Voltage Mode. Default: Auto.
CPU Core Voltage	Allows you to change the CPU Core Voltage. Default: Auto.
CPU Core Voltage Offset Mode	Allows you to change the CPU Core Voltage Offset Mode. Default: Auto.
CPU Core Voltage Offset	Allows you to change the CPU Core Voltage Offset. Default: Auto.
CPU Ring Voltage	Allows you to change the CPU Ring Voltage. Default: Auto.

Chipset

CPU Ring Voltage Offset Mode	Allows you to change the CPU Ring Voltage Offset Mode. Default: Auto.
CPU Ring Voltage Offset	Allows you to change the CPU Ring Voltage Offset. Default: Auto.
CPU SA Voltage Mode	Allows you to change the CPU System Agent Voltage Mode. Default: Manual Mode.
CPU SA Voltage	Allows you to change the CPU System Agent Voltage. Default: Auto.
CPU SA Voltage Offset Mode	Allows you to change the CPU System Agent Voltage Offset Mode. Default: Auto.
CPU SA Voltage Offset	Allows you to change the CPU System Agent Voltage Offset. Default: Auto.
Load Level 1 OC Settings	Allows you to select OC Level Profile 1.
Load Level 2 OC Settings	Allows you to select OC Level Profile 2

Security

Supervisor Password	Displays the supervisor password.
User Password	Displays the user password.
Set Supervisor Password	Allows you to set, change, or delete the supervisor password. The supervisor password controls access to the system setup utility.

i **NOTE: Deleting the supervisor password deletes the user password. Set the supervisor password before setting the user password.**

Boot

Boot Configuration	
Bootup Numlock State	Allows you to set the status of the Num Lock key during boot On or Off . Default: On.
Wait for 'F1' If Error	Allows you to enable or disable the F1 screen. Default: All, but KB.
Secure Boot Control	Allows you to enable or disable the secure boot control. Default: Disabled.
Load Legacy OPROM	Default: Enabled.
Set Boot Priority	
Boot Mode	Allows you to enable or disable USB Boot support. Default: Legacy.
USB Boot Support	Allows you to enable or disable USB Boot support. Default: Enabled.
1st Boot	Allows you to enable or disable the 1st boot device. Default: Hard Disk.
2nd Boot	Allows you to enable or disable the 2nd boot device. Default: USB Hard Disk.
3rd Boot	Allows you to enable or disable the 3rd boot device. Default: CD/DVD.
4th Boot	Allows you to enable or disable the 4th boot device. Default: Floppy.

Boot

5th Boot	Allows you to enable or disable the 5th boot device. Default: Network.
Hard Disk Drive BBS Priorities	Sets the hard drive boot priority. The items displayed are dynamically updated according to the hard drives detected.
USB Storage Drive BBS Priorities	Sets the USB storage drive boot priority.
USB Hard Disk Drive BBS Priorities	Sets the USB hard disk drive storage drive boot priority.

Save & Exit

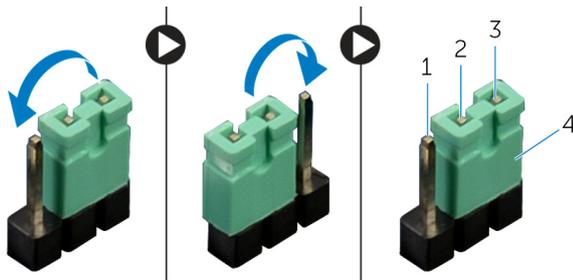
Save Changes and Reset	Allows you to exit system setup and save your changes.
Discard Changes and Reset	Allows you to exit system setup and load previous values for all system setup options.
Restore Defaults	Allows you to load default values for all system setup options.

Clearing Forgotten Passwords

WARNING: Before working inside your computer, read the safety information that shipped with your computer and follow the steps in "[Before You Begin](#)." For additional safety best practices information, see the Regulatory Compliance Homepage at dell.com/regulatory_compliance.

NOTE: The computer must be disconnected from the electrical outlet to clear the CMOS setting.

1. Lay the chassis on the left side.
2. Remove the [stability foot](#)
3. Remove both the left and right side-panel. See "[Removing the Side Panels](#)".
4. Locate the password reset jumper (PASSWORD1) on the system board. See "[System Board Components](#)".
5. Remove the jumper plug from pins 2 and 3 and fix it on pins 1 and 2.
6. Wait for approximately five seconds to clear the password setting.
7. Remove the jumper plug from pins 1 and 2 and replace it on pins 2 and 3.



1. pin 1
3. pin 3

2. pin 2
4. jumper plug

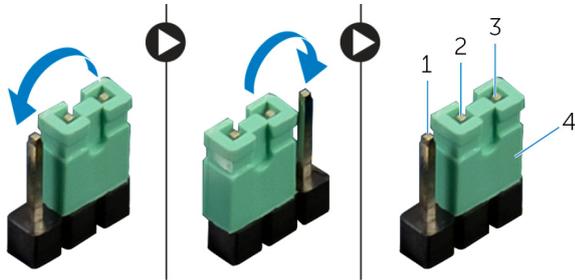
8. Replace the left side-panel. See "[Replacing the Side Panels](#)".
9. Replace the [stability foot](#).

Clearing CMOS Settings

NOTE: 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 dell.com/regulatory_compliance.

1. Lay the system on the right side.
2. Remove the [stability foot](#)

3. Remove the both the left and right side-panels. See "[Removing the Side Panels](#)".
4. Locate the CMOS jumper (CLEAR_CMOS1) on the system board. See "[System-Board Components](#)".
5. Remove the jumper plug from pins 2 and 3 and fix it on pins 1 and 2.
6. Wait for approximately five seconds to clear the CMOS setting.
7. Remove the jumper plug from pins 1 and 2 and replace it on pins 2 and 3.



1. pin 1
3. pin 3

2. pin 2
4. jumper plug

8. Replace the left side-panel. See "[Replacing the Side Panels](#)".
9. Replace the [stability foot](#).

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 the computer.
2. Go to dell.com/support.
3. If you have your computer's Service Tag, type your computer's Service Tag and click **Submit**.
If you do not have your computer's Service Tag, click **Detect My Product** to allow automatic detection of the Service Tag.
- (i) NOTE: If the Service Tag cannot be detected automatically, select your product under the product categories.**
4. Click **Get Drivers and Downloads**.
5. Click **View All Drivers**.
6. In the **Operating System** drop-down, select the operating system installed on your computer.
7. Click **BIOS**.
8. Click **Download File** to download the latest version of the BIOS for your computer.
9. On the next page, select **Single-file download** and click **Continue**.
10. Save the file and once the download is complete, navigate to the folder where you saved the BIOS update file.
11. Double-click the BIOS update file icon and follow the instructions on the screen.