

Alienware Aurora R15

Service Manual

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A L I E N W A R E 

Notes, cautions, and warnings

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

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

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

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Working inside your computer

Before working inside your computer

About this task

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

Steps

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.
 **CAUTION:** To disconnect a network cable, first unplug the cable from your computer and then unplug the cable from the network device.
5. Remove any media card and optical disc from your computer, if applicable.

Safety instructions

Use the following safety guidelines to protect your computer from potential damage and to ensure your personal safety. Unless otherwise noted, each procedure included in this document assumes that you have read the safety information that shipped with your computer.

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

 **WARNING:** Disconnect your computer from 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 your computer to an electrical outlet.

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

 **CAUTION:** To avoid damaging the components and cards, handle them by their edges, and avoid touching the pins and the 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 is 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 it by its connector or its pull tab, not the cable itself. Some cables have connectors with locking tabs or thumbscrews that you must disengage before disconnecting the cable. When disconnecting cables, keep them evenly aligned to avoid bending the connector pins. When connecting cables, ensure that the ports and the connectors are correctly oriented and aligned.

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

 **CAUTION:** Exercise caution when handling Lithium-ion batteries in laptops. Swollen batteries should not be used and should be replaced and disposed properly.

 **NOTE:** The color of your computer and certain components may appear differently than shown in this document.

Safety precautions

The safety precautions chapter details the primary steps to be taken before performing any disassembly instructions.

Observe the following safety precautions before you perform any installation or break/fix procedures involving disassembly or reassembly:

- Turn off the system and all attached peripherals.
- Disconnect the system and all attached peripherals from AC power.
- Disconnect all network cables, telephone, and telecommunications lines from the system.
- Use an ESD field service kit when working inside any to avoid electrostatic discharge (ESD) damage.
- After removing any system component, carefully place the removed component on an anti-static mat.
- Wear shoes with non-conductive rubber soles to reduce the chance of getting electrocuted.

Standby power

Dell products with standby power must be unplugged before you open the case. Systems that incorporate standby power are essentially powered while turned off. The internal power enables the system to be remotely turned on (wake on LAN) and suspended into a sleep mode and has other advanced power management features.

Unplugging, pressing and holding the power button for 20 seconds should discharge residual power in the system board.

Bonding

Bonding is a method for connecting two or more grounding conductors to the same electrical potential. This is done through the use of a field service electrostatic discharge (ESD) kit. When connecting a bonding wire, ensure that it is connected to bare metal and never to a painted or non-metal surface. The wrist strap should be secure and in full contact with your skin, and ensure that you remove all jewelry such as watches, bracelets, or rings prior to bonding yourself and the equipment.

Electrostatic discharge—ESD protection

ESD is a major concern when you handle electronic components, especially sensitive components such as expansion cards, processors, memory DIMMs, and system boards. Very slight charges can damage circuits in ways that may not be obvious, such as intermittent problems or a shortened product life span. As the industry pushes for lower power requirements and increased density, ESD protection is an increasing concern.

Due to the increased density of semiconductors used in recent Dell products, the sensitivity to static damage is now higher than in previous Dell products. For this reason, some previously approved methods of handling parts are no longer applicable.

Two recognized types of ESD damage are catastrophic and intermittent failures.

- **Catastrophic** – Catastrophic failures represent approximately 20 percent of ESD-related failures. The damage causes an immediate and complete loss of device functionality. An example of catastrophic failure is a memory DIMM that has received a static shock and immediately generates a "No POST/No Video" symptom with a beep code emitted for missing or nonfunctional memory.
- **Intermittent** – Intermittent failures represent approximately 80 percent of ESD-related failures. The high rate of intermittent failures means that most of the time when damage occurs, it is not immediately recognizable. The DIMM receives a static shock, but the tracing is merely weakened and does not immediately produce outward symptoms related to the damage. The weakened trace may take weeks or months to melt, and in the meantime may cause degradation of memory integrity, intermittent memory errors, etc.

The more difficult type of damage to recognize and troubleshoot is the intermittent (also called latent or "walking wounded") failure.

Perform the following steps to prevent ESD damage:

- Use a wired ESD wrist strap that is properly grounded. The use of wireless anti-static straps is no longer allowed; they do not provide adequate protection. Touching the chassis before handling parts does not ensure adequate ESD protection on parts with increased sensitivity to ESD damage.
- Handle all static-sensitive components in a static-safe area. If possible, use anti-static floor pads and workbench pads.
- When unpacking a static-sensitive component from its shipping carton, do not remove the component from the anti-static packing material until you are ready to install the component. Before unwrapping the anti-static packaging, ensure that you discharge static electricity from your body.
- Before transporting a static-sensitive component, place it in an anti-static container or packaging.

ESD field service kit

The unmonitored Field Service kit is the most commonly used service kit. Each Field Service kit includes three main components: anti-static mat, wrist strap, and bonding wire.

Components of an ESD field service kit

The components of an ESD field service kit are:

- **Anti-Static Mat** – The anti-static mat is dissipative and parts can be placed on it during service procedures. When using an anti-static mat, your wrist strap should be snug and the bonding wire should be connected to the mat and to any bare metal on the system being worked on. Once deployed properly, service parts can be removed from the ESD bag and placed directly on the mat. ESD-sensitive items are safe in your hand, on the ESD mat, in the system, or inside a bag.
- **Wrist Strap and Bonding Wire** – The wrist strap and bonding wire can be either directly connected between your wrist and bare metal on the hardware if the ESD mat is not required, or connected to the anti-static mat to protect hardware that is temporarily placed on the mat. The physical connection of the wrist strap and bonding wire between your skin, the ESD mat, and the hardware is known as bonding. Use only Field Service kits with a wrist strap, mat, and bonding wire. Never use wireless wrist straps. Always be aware that the internal wires of a wrist strap are prone to damage from normal wear and tear, and must be checked regularly with a wrist strap tester in order to avoid accidental ESD hardware damage. It is recommended to test the wrist strap and bonding wire at least once per week.
- **ESD Wrist Strap Tester** – The wires inside of an ESD strap are prone to damage over time. When using an unmonitored kit, it is a best practice to regularly test the strap prior to each service call, and at a minimum, test once per week. A wrist strap tester is the best method for doing this test. If you do not have your own wrist strap tester, check with your regional office to find out if they have one. To perform the test, plug the wrist-strap's bonding-wire into the tester while it is strapped to your wrist and push the button to test. A green LED is lit if the test is successful; a red LED is lit and an alarm sounds if the test fails.
- **Insulator Elements** – It is critical to keep ESD sensitive devices, such as plastic heat sink casings, away from internal parts that are insulators and often highly charged.
- **Working Environment** – Before deploying the ESD Field Service kit, assess the situation at the customer location. For example, deploying the kit for a server environment is different than for a desktop or portable environment. Servers are typically installed in a rack within a data center; desktops or portables are typically placed on office desks or cubicles. Always look for a large open flat work area that is free of clutter and large enough to deploy the ESD kit with additional space to accommodate the type of system that is being repaired. The workspace should also be free of insulators that can cause an ESD event. On the work area, insulators such as Styrofoam and other plastics should always be moved at least 12 inches or 30 centimeters away from sensitive parts before physically handling any hardware components
- **ESD Packaging** – All ESD-sensitive devices must be shipped and received in static-safe packaging. Metal, static-shielded bags are preferred. However, you should always return the damaged part using the same ESD bag and packaging that the new part arrived in. The ESD bag should be folded over and taped shut and all the same foam packing material should be used in the original box that the new part arrived in. ESD-sensitive devices should be removed from packaging only at an ESD-protected work surface, and parts should never be placed on top of the ESD bag because only the inside of the bag is shielded. Always place parts in your hand, on the ESD mat, in the system, or inside an anti-static bag.
- **Transporting Sensitive Components** – When transporting ESD sensitive components such as replacement parts or parts to be returned to Dell, it is critical to place these parts in anti-static bags for safe transport.

ESD protection summary

It is recommended to use the traditional wired ESD grounding wrist strap and protective anti-static mat at all times when servicing Dell products. In addition, it is critical to keep sensitive parts separate from all insulator parts while performing service and that they use anti-static bags for transporting sensitive components.

Transporting sensitive components

When transporting ESD sensitive components such as replacement parts or parts to be returned to Dell, it is critical to place these parts in anti-static bags for safe transport.

Lifting equipment

Adhere to the following guidelines when lifting heavy weight equipment:

 **CAUTION: Do not lift greater than 50 pounds. Always obtain additional resources or use a mechanical lifting device.**

1. Get a firm balanced footing. Keep your feet apart for a stable base, and point your toes out.
2. Tighten stomach muscles. Abdominal muscles support your spine when you lift, offsetting the force of the load.
3. Lift with your legs, not your back.
4. Keep the load close. The closer it is to your spine, the less force it exerts on your back.
5. Keep your back upright, whether lifting or setting down the load. Do not add the weight of your body to the load. Avoid twisting your body and back.
6. Follow the same techniques in reverse to set the load down.

After working inside your computer

About this task

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

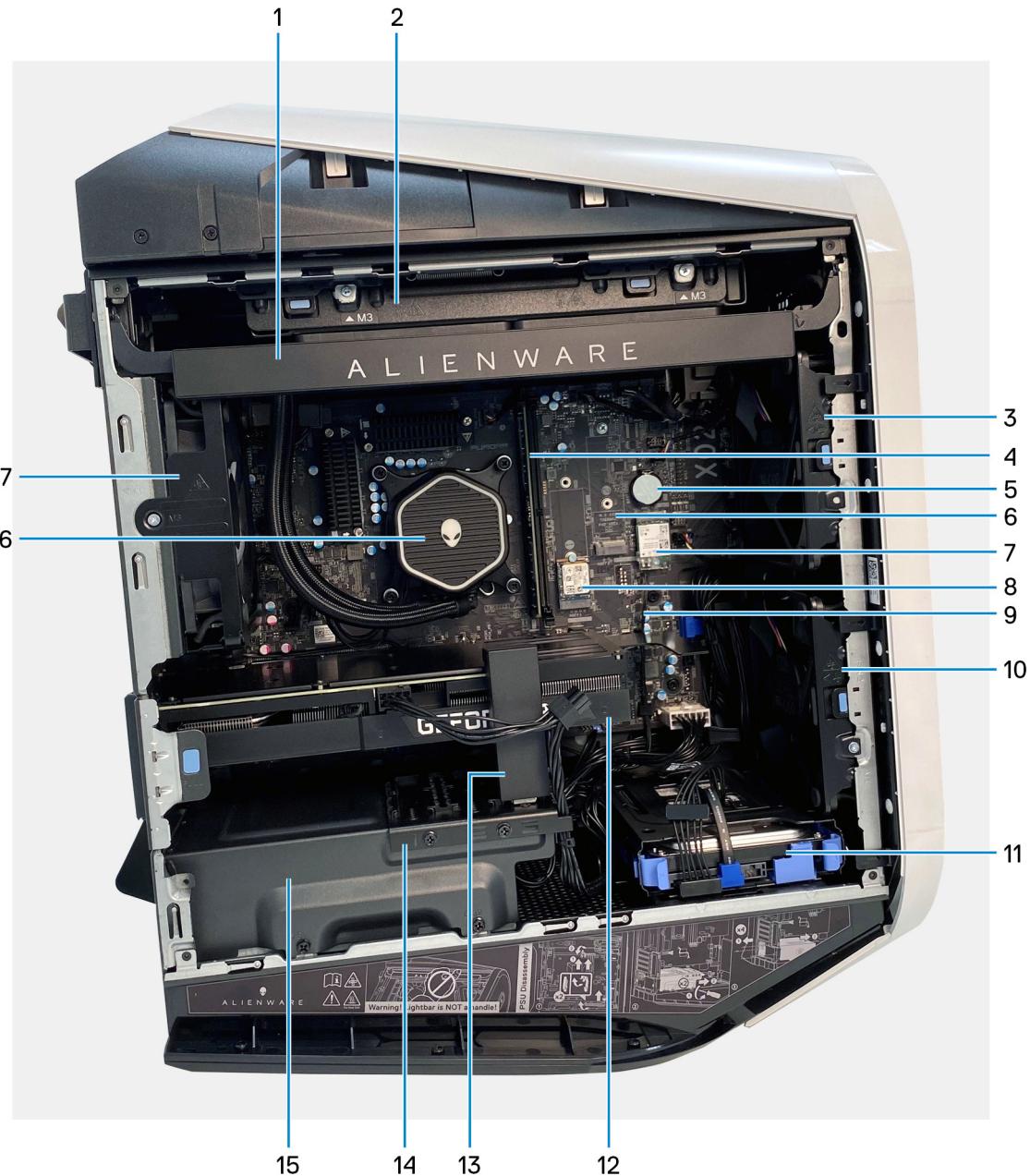
Steps

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.

Removing and installing components

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

Inside view of your computer



1. Side light (optional)	2. Liquid-cooling fan assembly (optional)
3. Upper front-chassis fan	4. Memory modules
5. Coin-cell battery	6. Solid-state drive slot 1
7. Wireless card	8. Solid-state drive slot 2
9. SMA antenna-cable	10. Lower front-chassis fan
11. 3.5-inch hard drive	12. Graphics card
13. Graphics-card bracket (optional)	14. Power-supply unit bracket

15. Power-supply unit
17. Rear-chassis fan (optional)

16. Liquid-cooling assembly (optional)

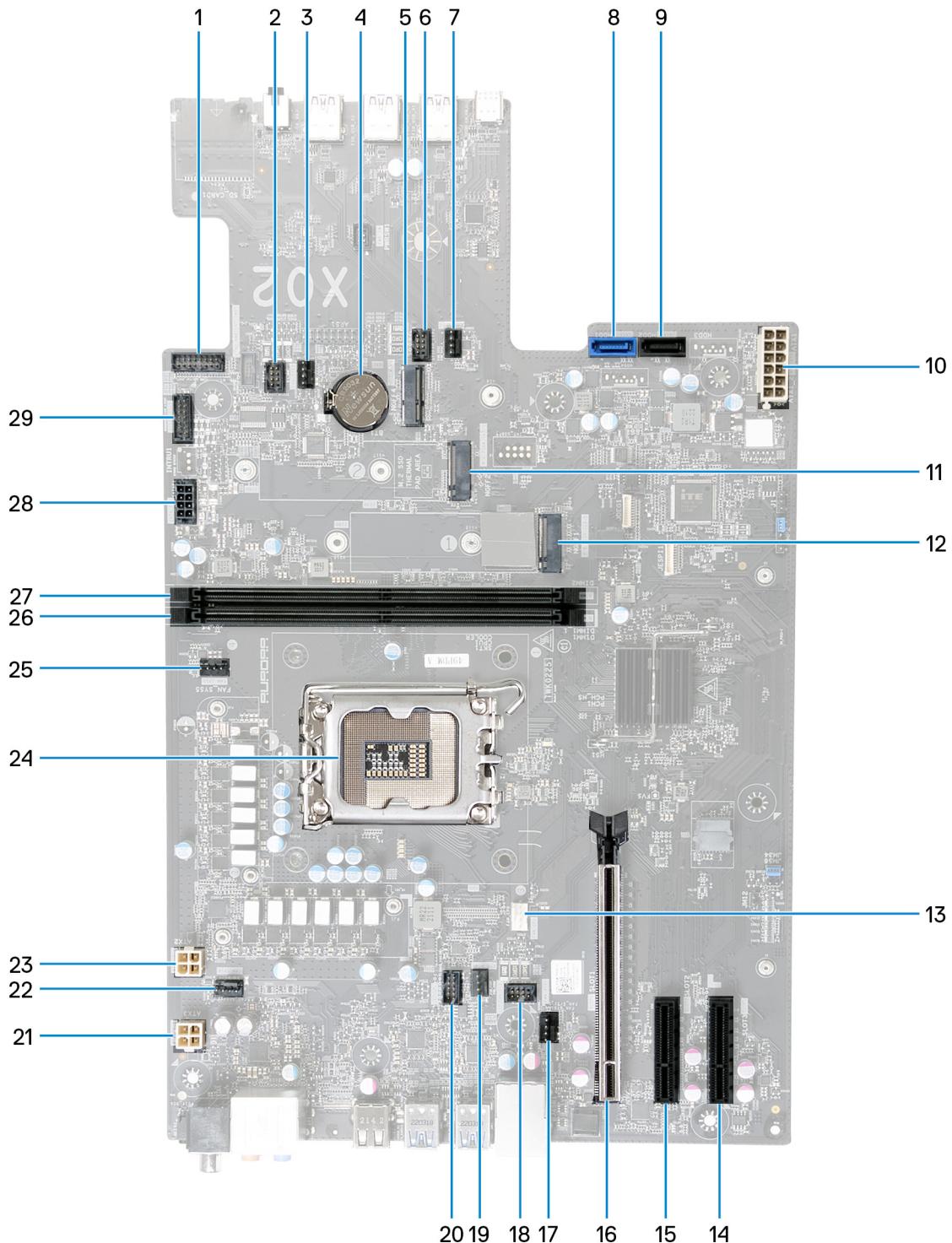
(i) | NOTE: The optional components may not be present in your computer, depending on its configuration.



1. VR heat sink (2)
2. Processor fan and heat-sink assembly

(i) | NOTE: The side light is not featured for the computer shown in the image.

System-board components



- 1. Front I/O-panel cable
- 3. Upper front-chassis connector (FAN_SYS3)
- 5. Wireless-card slot
- 7. Lower front-chassis fan connector (FAN_SYS2)
- 9. SATA 6 Gbps drive connector (HDD2)
- 11. Solid-state drive slot (M.2 PCIe SSD-1)
- 13. Air-cooling fan connector (FAN_CPU)
- 15. PCI-Express x4 slot (SLOT2)
- 2. SYSFAN_LED3 connector
- 4. Coin-cell battery
- 6. SYSFAN_LED2 connector
- 8. SATA 6 Gbps drive connector (HDD1)
- 10. Power-supply connector (ATX1)
- 12. Solid-state drive slot (M.2 PCIe SSD-0)
- 14. PCI-Express x4 slot (SLOT3)
- 16. PCI-Express x16 mechanical/x16 electrical slot (SLOT1)

- 17. Rear-chassis fan connector (FAN SYS1)
- 19. Liquid cooling pump fan connector (FAN PUMP)
- 21. Power-supply connector (ATX3)
- 23. Power-supply connector (ATX2)
- 25. Top-chassis fan connector two (FAN_SYS5)
- 27. Memory-module slot, DIMM2
- 29. Side-light connector (SIDE LIGHT)
- 18. Rear-chassis fan LED connector (LED FAN SYS1)
- 20. Liquid-cooling pump LED connector
- 22. Top-chassis fan connector one (FAN_SYS4)
- 24. CPU socket
- 26. Memory-module slot, DIMM1
- 28. SATA power connector (SATA PWR)

Recommended tools

The procedures in this document may require the following tools:

- Philips screwdriver #1
- Flat-head screwdriver
- Plastic scribe

Screw list

- (i) NOTE:** When removing screws from a component, it is recommended to note the screw type, the quantity of screws, and then place them in a screw storage box. This is to ensure that the correct number of screws and correct screw type is restored when the component is replaced.
- (i) NOTE:** Some computers have magnetic surfaces. Ensure that the screws are not left attached to such surfaces when replacing a component.
- (i) NOTE:** Screw color may vary with the configuration ordered.

Table 1. Screw list

Component	Screw type	Quantity	Screw image
Power-supply unit bracket	#6-32x1/4"	2	
Power-supply unit bracket (for computers shipped with clear left-side cover)	#6-32x1/4"	2	
Power-supply unit	#6-32x1/4"	4	
Power-supply unit (for computers shipped with clear left-side cover)	#6-32x1/4"	4	
Side light (for computers shipped with clear left-side cover)	M3x5	2	
Radiator and fan assembly for liquid cooler	M3x5	2	
Rear-chassis fan	M3x5	1	
Lower front-chassis fan	M3x5	1	

Table 1. Screw list (continued)

Component	Screw type	Quantity	Screw image
Solid-state drive (M.2 slot one)	M2x3	1	
Solid-state drive (M.2 slot two)	M2x3	1	
Wireless card	M2x3	1	
System board	#6-32x1/4"	9	
Front I/O bracket	#6-32x1/4"	1	
Liquid-cooling assembly fan	#6-32x1/4"	4	

Cable cover

Removing the cable cover

Prerequisites

1. Follow the procedure in [Before working inside your computer](#).

About this task

The following image indicates the location of the cable cover and provides a visual representation of the removal procedure.

 **NOTE:** The cable cover is an optional accessory.



Steps

Pull the cable cover from the top to lift the cable cover from the chassis.

Installing the cable cover

Prerequisites

If you are replacing a component, remove the existing component before performing the installation procedure.

About this task

The following image indicates the location of the cable cover and provides a visual representation of the installation procedure.

(i) NOTE: The cable cover is an optional accessory.



Steps

1. Align the cable cover with the slots at the rear of the chassis.
2. Slide the cable cover back into its place on the rear of the chassis.

Next steps

1. Follow the procedure in [After working inside your computer](#).

Left-side cover

Removing the left-side cover

Prerequisites

1. Follow the procedure in [Before working inside your computer](#).

About this task

The following images indicate the location of the left-side cover and provide a visual representation of the removal procedure.

(i) | NOTE: The clear left-side cover is shipped with some computers.



1x
#6x32



Steps

1. Loosen the captive screw (#6-32) that secures the side-cover release latch to the chassis.
2. Pull the side-cover release latch to release the left-side cover away from the chassis.
3. Lift the left-side panel from the chassis.

Installing the left-side cover

Prerequisites

If you are replacing a component, remove the existing component before performing the installation procedure.

About this task

The following images indicate the location of the left-side cover and provide a visual representation of the installation procedure.

(i) NOTE: The clear left-side cover is shipped with some computers.



1x
#6x32



Steps

1. Locate the tabs on the left-side cover and slots on the chassis.
2. Rotate the left-side cover towards the chassis until it snaps into place.
3. Tighten the captive screw (#6-32) that secures the side-cover release latch to the chassis.

Next steps

1. Follow the procedure in [After working inside your computer](#).

Top cover

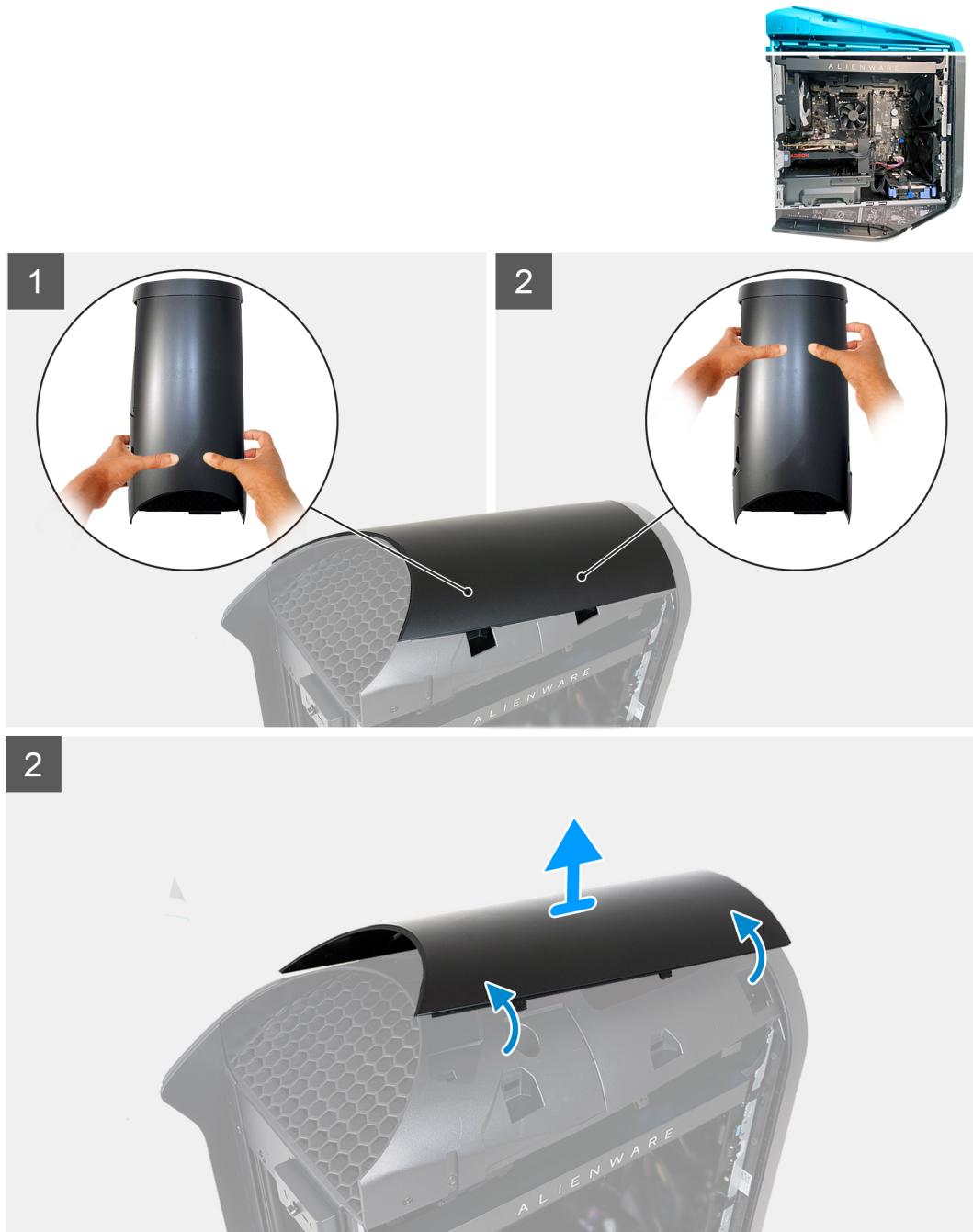
Removing the top cover

Prerequisites

1. Follow the procedure in [Before working inside your computer](#).
2. Remove the [left-side cover](#).

About this task

The following images indicate the location of the top cover and provide a visual representation of the removal procedure.



Steps

1. Press your thumbs down at the rear of the top cover, and use your fingers to pull the two rear latches out to loosen the top cover at its rear.
2. Press your thumbs down at the front of the top cover, and use your fingers to pull the two front latches out to loosen the top cover at its front.
3. Press your thumbs down at the middle of the top cover to release the remaining two latches and lift the top cover.

(i) NOTE: The top cover is secured tight to the chassis by four latches.

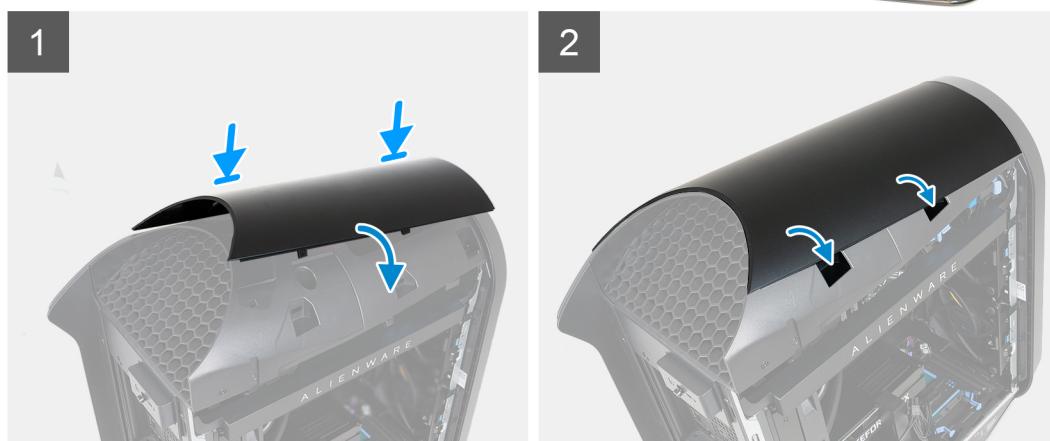
Installing the top cover

Prerequisites

If you are replacing a component, remove the existing component before performing the installation procedure.

About this task

The following images indicate the location of the top cover and provides a visual representation of the installation procedure.



Steps

Align the tabs on the top cover with the slots on the chassis and snap the top cover into place.

Next steps

1. Install the [left-side cover](#).
2. Follow the procedure in [After working inside your computer](#).

Right-side cover

Removing the right-side cover

Prerequisites

1. Follow the procedure in [Before working inside your computer](#).
2. Remove the [left-side cover](#).
3. Remove the [top cover](#).

About this task

The following images indicate the location of the right-side cover and provide a visual representation of the removal procedure.



Steps

1. Knock the top rear tab of the right-side cover until the top of right-side cover is detached from the chassis.
2. Knock the bottom rear tab of the right-side cover until the bottom of the right-side cover is detached from the chassis.
3. Remove the right-side cover from the chassis.

Installing the right-side cover

Prerequisites

If you are replacing a component, remove the existing component before performing the installation procedure.

About this task



Steps

1. Align the tabs on the right-side cover with the slots on the chassis.
2. Push the right-side cover towards the chassis until it snaps into place.

Next steps

1. Install the [top cover](#).
2. Install the [left-side cover](#).
3. Follow the procedure in [After working inside your computer](#).

Front bezel

Removing the front bezel

Prerequisites

1. Follow the procedure in [Before working inside your computer](#).
2. Remove the [left-side cover](#).
3. Remove the [top cover](#).
4. Remove the [right-side cover](#).

About this task

The following images indicate the location of the front bezel and provide a visual representation of the removal procedure.



Steps

1. Place the computer in an upright position.
2. Disconnect the front I/O-panel cable from the system board.
3. Pull the tabs of the front bezel from the slots on the front panel.
(i) NOTE: Start with tab on top, proceed to the tabs on the left of the front bezel, and then to the tabs on the right of the front bezel.
4. Pull the front bezel, together with the front I/O-panel cable, away from the chassis slowly.

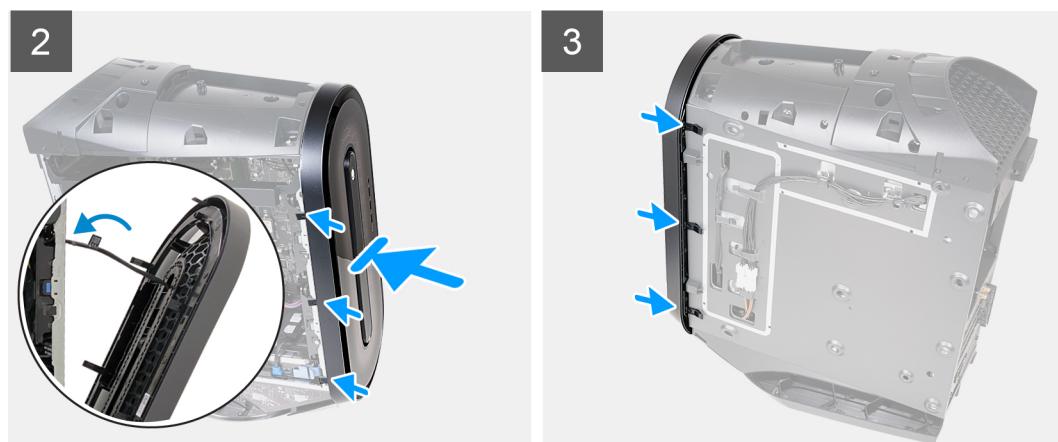
Installing the front bezel

Prerequisites

If you are replacing a component, remove the existing component before performing the installation procedure.

About this task

The following images indicate the location of the front bezel and provide a visual representation of the installation procedure.



Steps

1. Align the front bezel with the front panel.
2. Route the front I/O-panel cable through the slot on the front panel.
3. Push the front bezel towards the front panel and ensure the tabs clip onto the slots of the front panel.
(i) | NOTE: Start with tab on top, proceed to the tabs on the left of the front bezel, and then to the tabs on the right of the front bezel.
4. Connect the front I/O-panel cable to the system board.

Next steps

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

2. Install the [top cover](#).
3. Install the [left-side cover](#).
4. Follow the procedure in [After working inside your computer](#).

Side light

Removing the side light

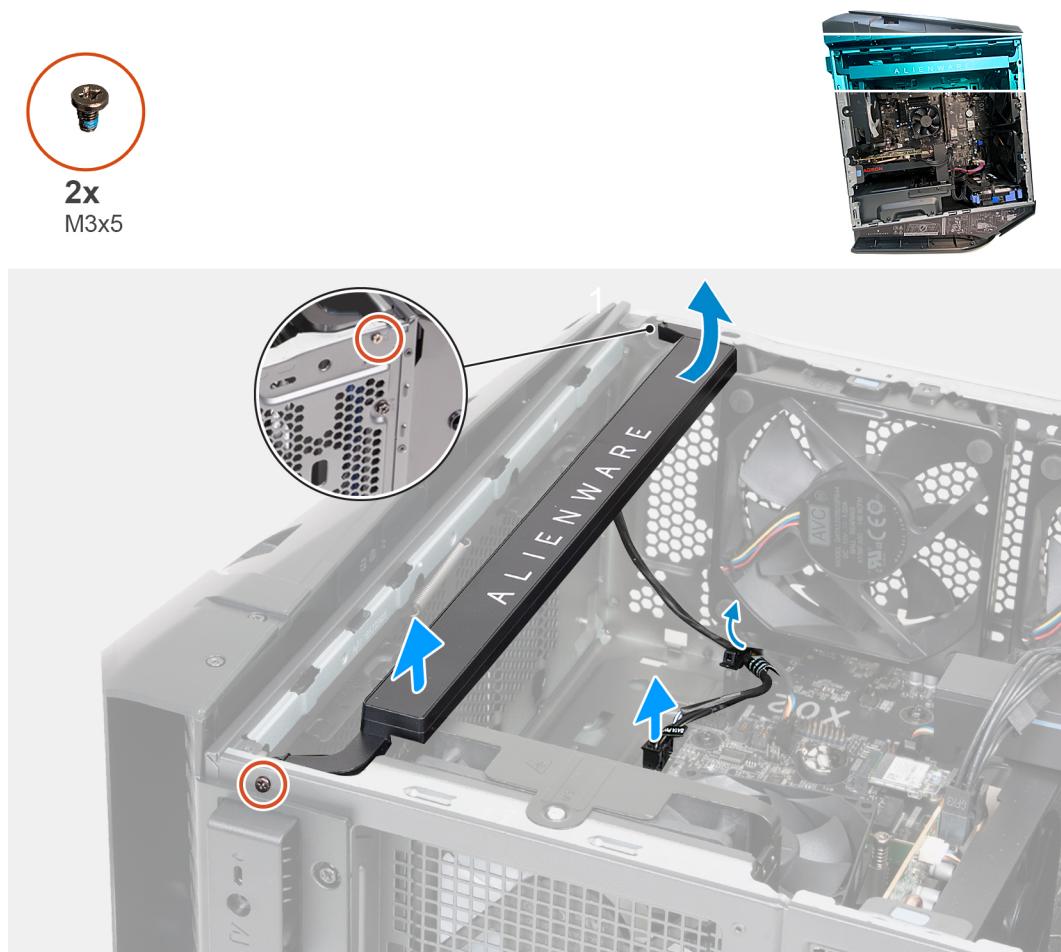
Prerequisites

1. Follow the procedure in [Before working inside your computer](#).
2. Remove the [left-side cover](#).
3. Remove the [top cover](#).
4. Remove the [right-side cover](#).
5. Remove the [front bezel](#).

About this task

 **NOTE:** Side light is available only on computers that are shipped with clear left-side covers.

The following images indicate the location of the side light and provide a visual representation of the removal procedure.



Steps

1. Lay the computer on its right side.
2. Disconnect the side-light cable from the system board.

3. Remove the side-light cable from the securing clip on the chassis.
4. Remove the two screws (M3x5) that secure the side light to the chassis.
5. Lift the left side of the side-light bar slightly from the screw hole at the rear of the chassis.
6. Lift the right side of the side-light bar slowly from the screw hole at the front of the chassis.
7. Lift the side-light bar from the chassis.

Installing the side light

Prerequisites

If you are replacing a component, remove the existing component before performing the installation procedure.

About this task

NOTE: Side light is available only on computers that are shipped with clear left-side covers.

The following images indicate the location of the Side light and provide a visual representation of the installation procedure.



Steps

1. Lay the computer on its right side.
2. Align the left screw hole of the Side light with the screw on the rear of the chassis.
3. Lift the right side of the Side light slowly until the right screw of the Side light is aligned with the screw hole on the front of the chassis.
4. Replace the two screws (M3x5) that secure the Side light to the chassis.
5. Route the side-light cable through the securing clip on the chassis.
6. Connect the side-light cable to the system board.

Next steps

1. Install the [front bezel](#).
2. Install the [right-side cover](#).
3. Install the [top cover](#).
4. Install the [left-side cover](#).
5. Follow the procedure in [After working inside your computer](#).

3.5-inch hard drive

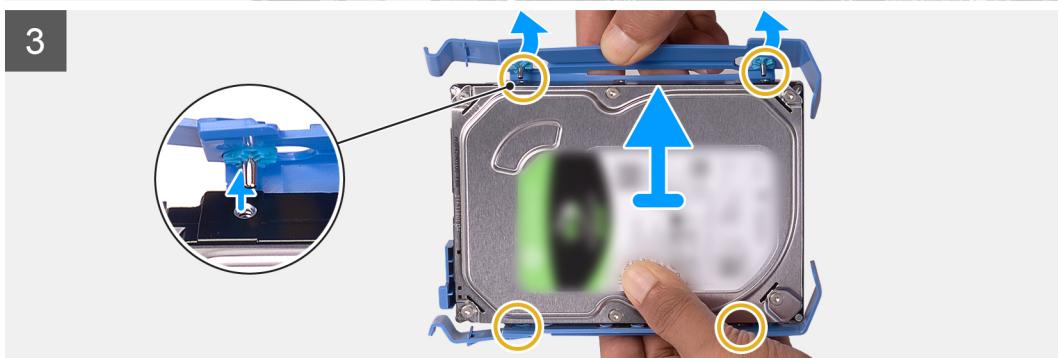
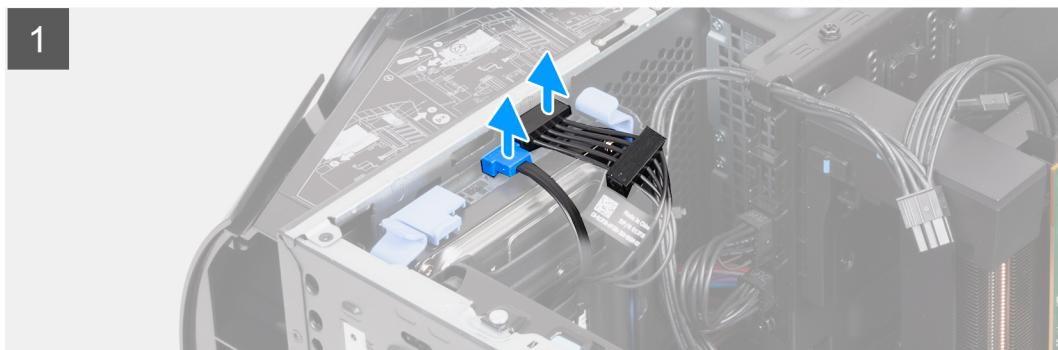
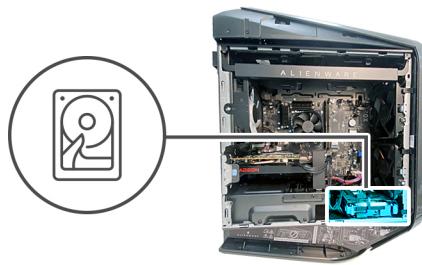
Removing the 3.5-inch hard drive

Prerequisites

1. Follow the procedure in [Before working inside your computer](#).
2. Remove the [left-side cover](#).

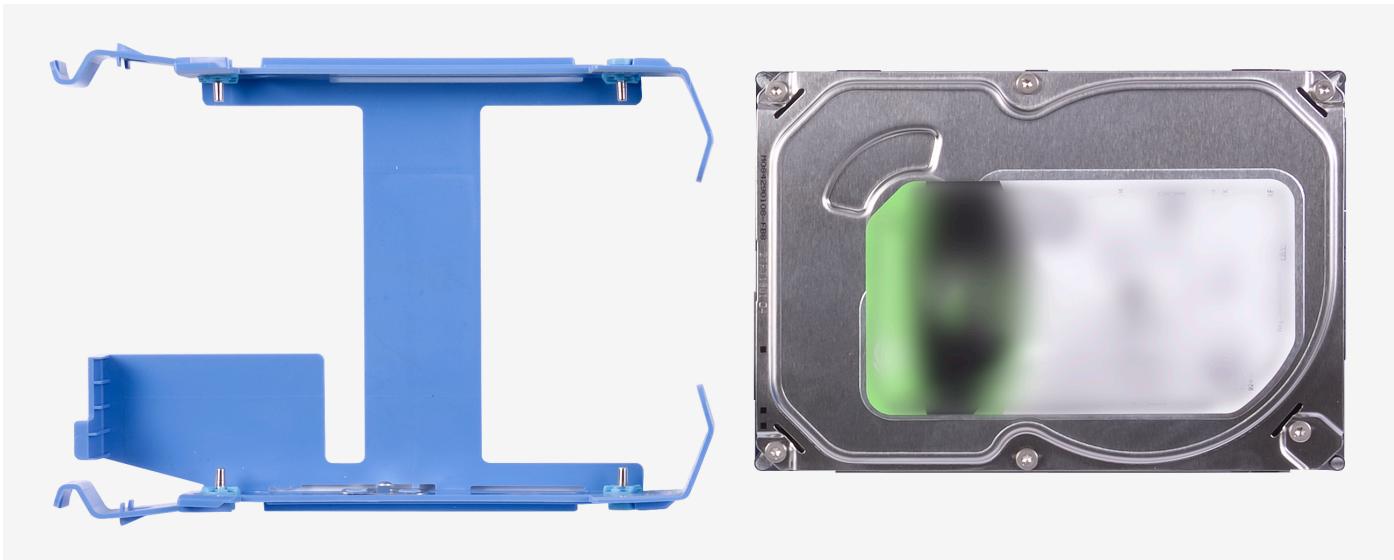
About this task

The following images indicate the location of the 3.5-inch hard drive and provide a visual representation of the removal procedure.



Steps

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.
3. Pry the hard-drive carrier to release the tabs on the carrier from the slots on the hard drive.
4. Lift the hard drive out of the hard-drive carrier.



① **NOTE:** Note the orientation of the hard drive so that you can replace it correctly.

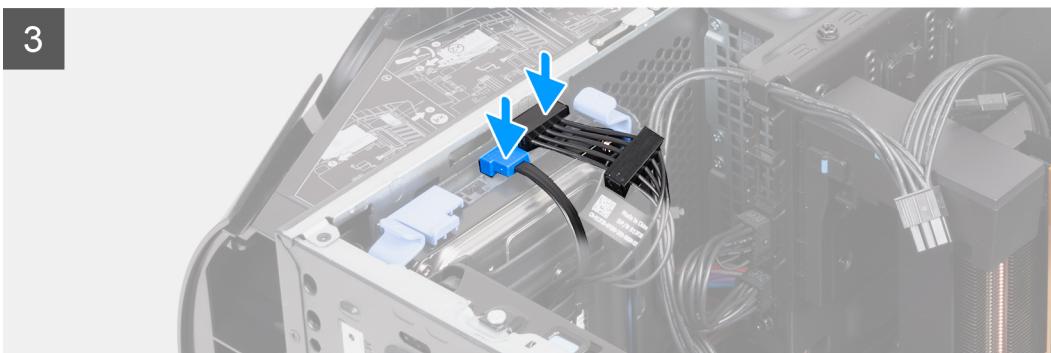
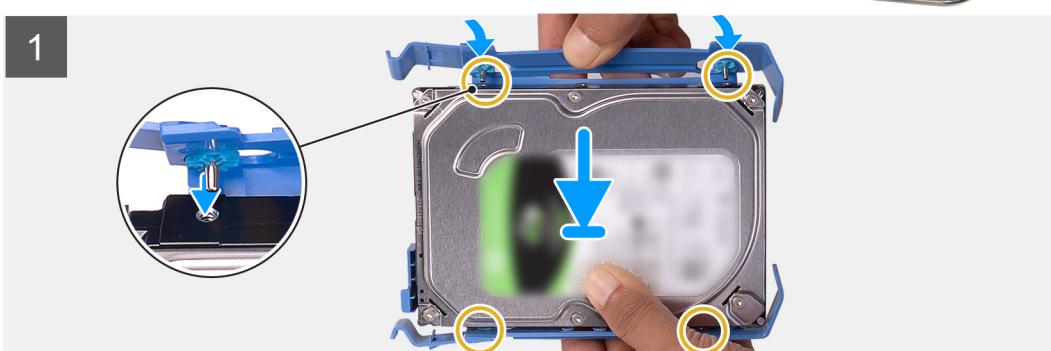
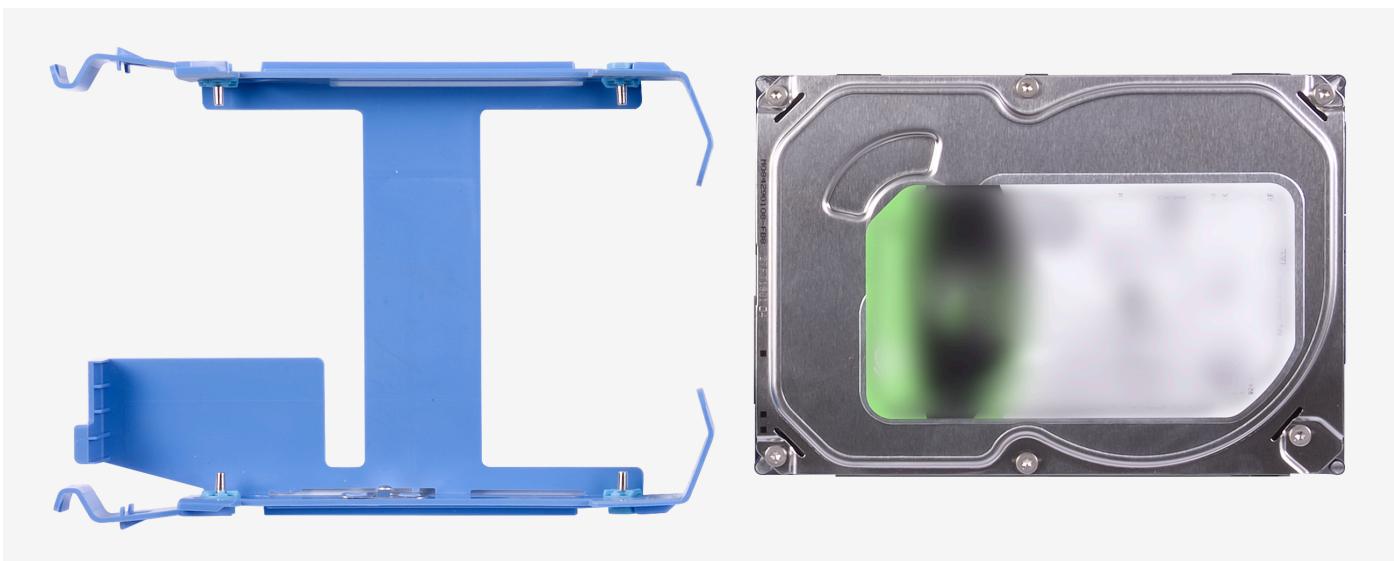
Installing the 3.5-inch hard drive

Prerequisites

If you are replacing a component, remove the existing component before performing the installation procedure.

About this task

The following images indicate the location of the 3.5-inch hard drive and provide a visual representation of the installation procedure.



(i) | NOTE: Note the orientation on the hard-drive carrier to replace it correctly.

Steps

1. Align the hard drive with the pins on the hard-drive carrier.
2. Using the tabs on the opposite side, flex open the carrier to insert the pins on the other side.
3. Slide the hard-drive assembly into the hard-drive cage until it snaps into place.
4. Connect the data and power cables to the hard drive.

Next steps

1. Install the [left-side cover](#).
2. Follow the procedure in [After working inside your computer](#).
3. Verify if the storage device is installed correctly (optional):
 - a. If you are replacing a storage device which does not have the operating system installed, follow the steps in [Identifying storage device in device manager](#).
 - b. If you are replacing a storage device which does not have the operating system installed, follow the steps in [Identifying your storage device in system setup \(BIOS\)](#).

(i) | NOTE: To install the operating system on to your storage device, see **Reinstall Windows to the Dell factory image using recovery media** in the Knowledge Base Resource at www.dell.com/support.

Identifying the storage device in Device Manager

Steps

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

Identifying the storage device in system setup (BIOS)

Steps

1. Turn on or restart your computer.
2. Press F2 when the Dell logo is displayed on the screen to enter the BIOS setup program.
A list of hard drives are displayed under the **System Information** in the **General** group.

Power-supply unit

Removing the power-supply unit

Prerequisites

1. Follow the procedure in [Before working inside your computer](#).
2. Remove the [left-side cover](#).
3. Remove the [top cover](#).
4. Remove the [right-side cover](#).

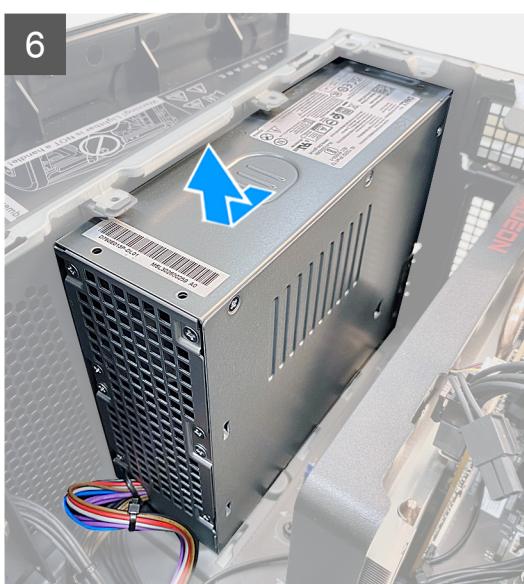
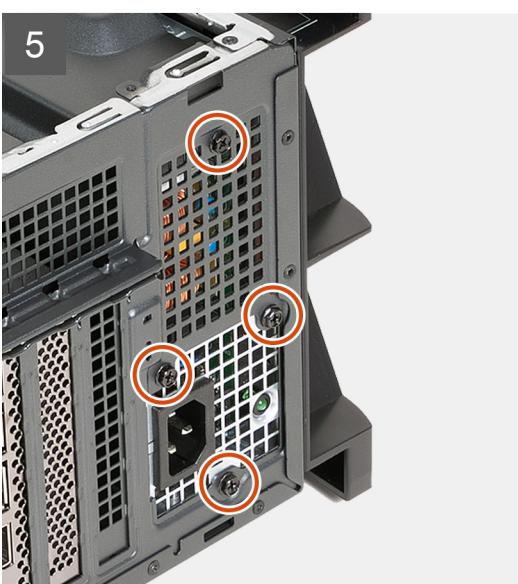
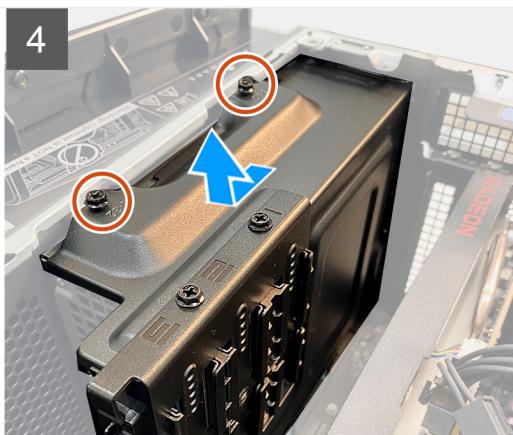
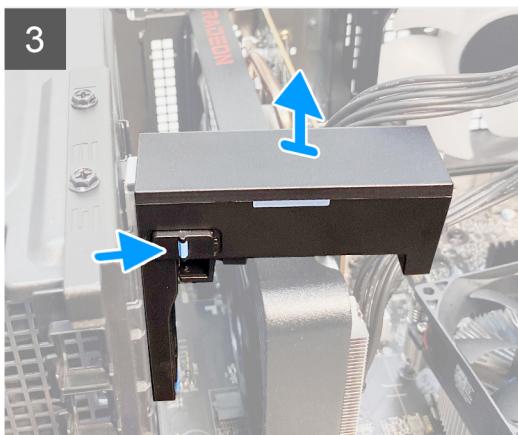
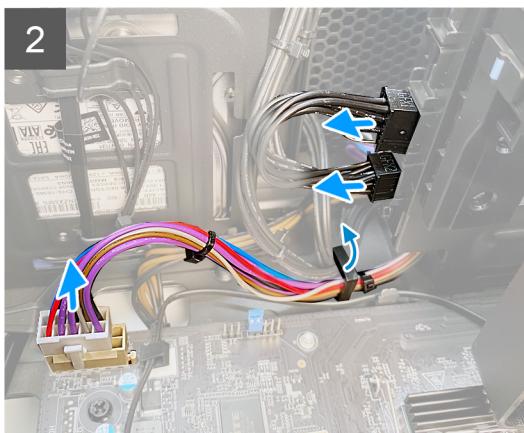
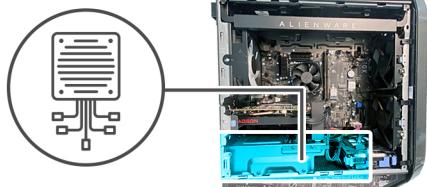
(i) | NOTE: Note the routing of all cables as you remove them so that you can route them correctly after you replace the power-supply unit.

About this task

The following images indicate the location of the power-supply unit and provide a visual representation of the removal procedure.



6x
#6-32x1/4"



Steps

1. Disconnect the power-supply unit cables from the power-supply unit extension cables on the right side of the computer.
2. Note the cable routing when removing the power-supply unit cables through the slot on the right side of the computer.
3. Lay the computer on the right side.
4. Release the power-supply unit cables from the securing clip.
5. Press the release clips on the power-supply connectors and disconnect the power-supply cables from the system board.
6. Press the release clips on the graphics-card power connectors and disconnect the graphics-card power cables from the power-supply unit.
7. Slide the release latch to the unlock position and lift the graphics-card bracket away from the graphics card.
8. Remove the two screws (#6-32x1/4") that secure the power-supply unit bracket to the power-supply unit.
9. Slide and lift the power-supply unit bracket from the power-supply unit.
10. Remove the four screws (#6-32x1/4") that secure the power-supply unit to the chassis.
11. Slide and lift the power-supply unit, along with the cables, off the chassis.

Installing the power-supply unit

Prerequisites

If you are replacing a component, remove the existing component before performing the installation procedure.

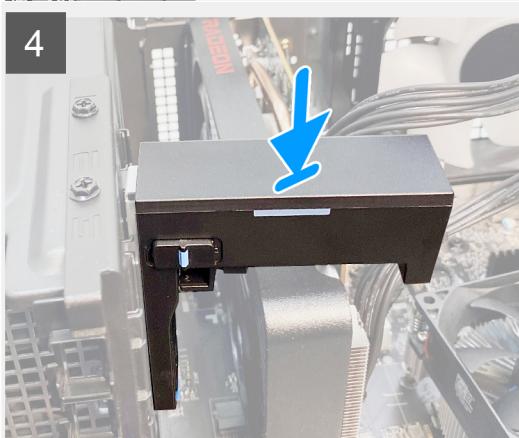
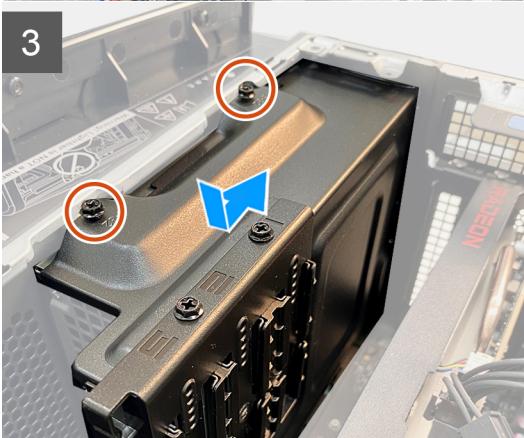
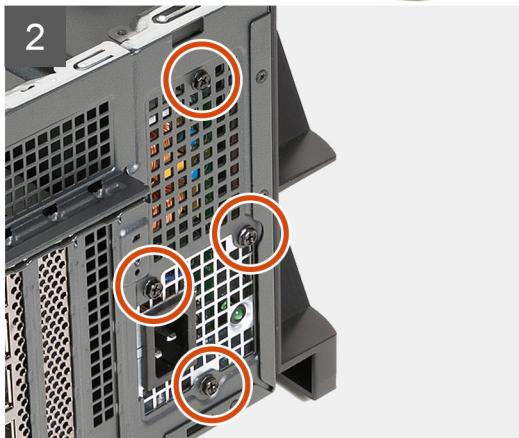
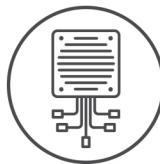
⚠️ WARNING: The cables and ports on the back of the power-supply unit are color-coded to indicate the different power wattage. Ensure that you plug in the cable to the correct port. Failure to do so may result in damaging the power-supply unit and/or system components.

About this task

The following images indicate the location of the power-supply unit and provide a visual representation of the installation procedure.



6x
#6-32x1/4"



Steps

1. Lay the computer on the right side.
2. Slide and place the power-supply unit on the chassis.
3. Align the screw holes on the power-supply unit with the screw holes on the chassis.
4. Replace the four screws (#6-32x1/4") that secure the power-supply unit to the chassis.
5. Align and place the power-supply unit bracket on the power-supply unit.

6. Replace the two screws (#6-32x1/4") that secure the power-supply unit bracket to the power-supply unit.
7. Replace the graphics-card bracket and slide the release latch to the lock position.
8. Route the power-supply unit cables through the securing clip.
9. Connect the power-supply cables to the system board.
10. Connect the graphics-card power cables to the power-supply unit.
11. Place the computer in an upright position.
12. Route the power-supply unit cables through the slot on the right side of the computer.
13. Connect the power-supply unit cables to the power-supply unit extension cables on the right side of the computer.

Next steps

1. Install the [right-side cover](#).
2. Install the [top cover](#).
3. Install the [left-side cover](#).
4. Follow the procedure in [After working inside your computer](#).

Coin-cell battery

Removing the coin-cell battery

Prerequisites

1. Follow the procedure in [Before working inside your computer](#).

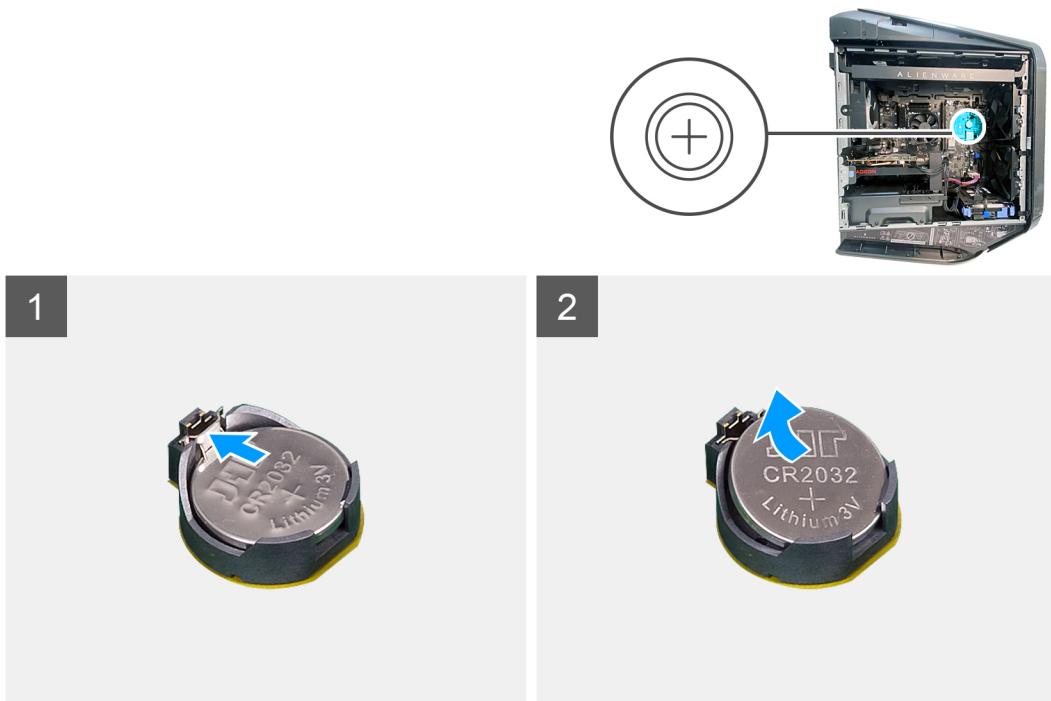
⚠️ WARNING: Before working inside your computer, read the safety information that is shipped with your computer. For more safety best practices, see the Regulatory Compliance home page at www.dell.com/regulatory_compliance.

⚠️ 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.

2. Remove the [left-side cover](#).

About this task

The following images indicate the location of the coin-cell battery and provide a visual representation of the removal procedure.



Steps

1. Lay the computer on the right side.
2. Press the battery-release lever away from the coin-cell battery until the coin-cell battery pops up.
3. Lift the coin-cell battery out of its socket.

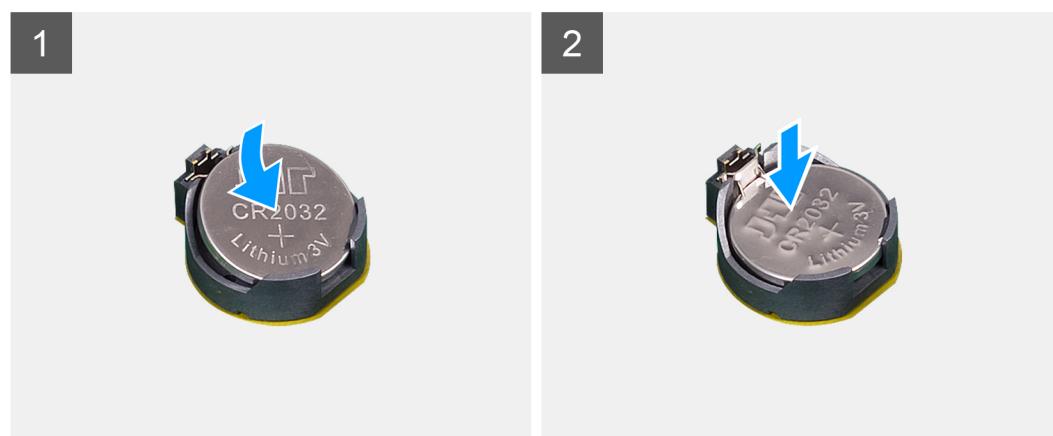
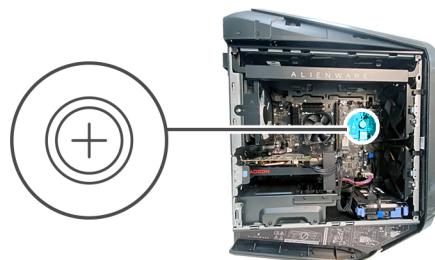
Installing the coin-cell battery

Prerequisites

If you are replacing a component, remove the existing component before performing the installation procedure.

About this task

The following images indicate the location of the coin-cell battery and provide a visual representation of the installation procedure.



Steps

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

Next steps

1. Install the [left-side cover](#).
2. Follow the procedure in [After working inside your computer](#).

Memory modules

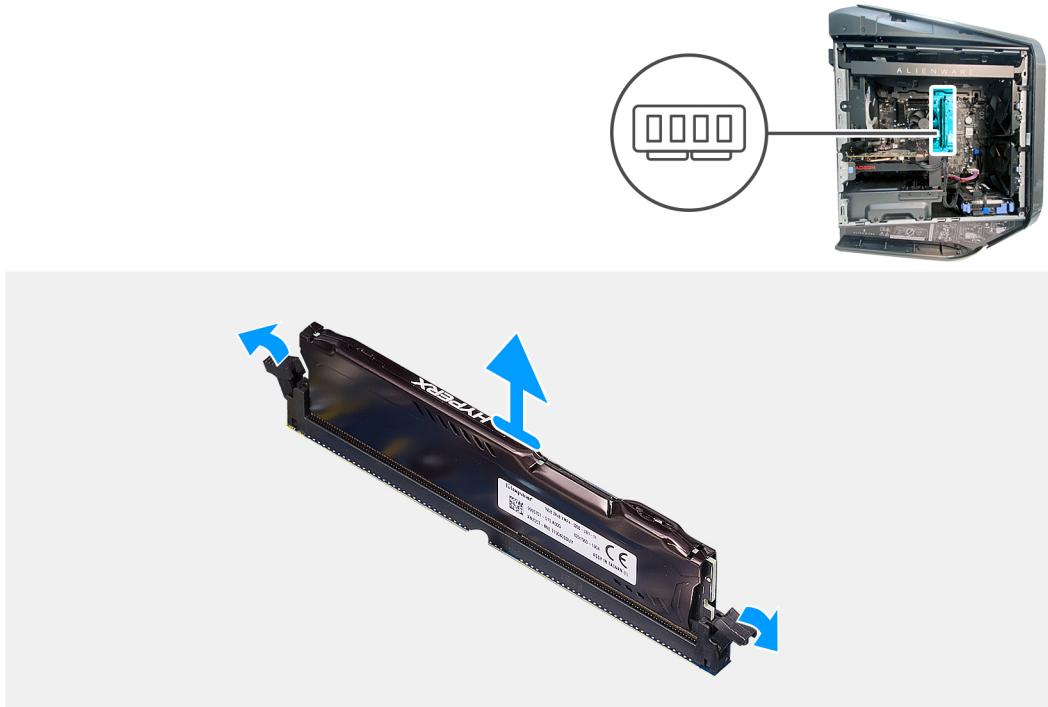
Removing the memory modules

Prerequisites

1. Follow the procedure in [Before working inside your computer](#).
2. Remove the [left-side cover](#).

About this task

The following images indicate the location of the memory modules and provide a visual representation of the removal procedure.



Steps

1. Lay the computer on the right side.
2. Push the securing clips away from the memory module.
3. Lift the memory module off the memory-module slot.

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

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

Installing the memory modules

Prerequisites

If you are replacing a component, remove the existing component before performing the installation procedure.

About this task

The following images indicate the location of the memory modules and provide a visual representation of the installation procedure.



Steps

1. Ensure that the securing clips are extended away from the memory-module slot.
2. Align the notch on the memory module with the tab on the memory-module slot.
3. Insert the memory module into the memory-module slot and press the memory module down until it snaps into position and the securing clips lock in place.

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

i **NOTE:** Repeat step 1 to step 3 to replace any other memory modules installed in your computer.

Table 2. Memory configuration matrix

Configuration	Slot	
	DIMM1	DIMM2
8 GB DDR5	8 GB	
16 GB DDR5	8 GB	8 GB
16 GB DDR5	16 GB	
32 GB DDR5	16 GB	16 GB
64 GB DDR5	32 GB	32 GB
16 GB XMP	16 GB	
32 GB XMP	16 GB	16 GB
64 GB XMP	32 GB	32 GB

Next steps

1. Install the [left-side cover](#).
2. Follow the procedure in [After working inside your computer](#).

Single-graphics card

Removing the single-graphics card

Prerequisites

1. Follow the procedure in [Before working inside your computer](#).
2. Remove the [left-side cover](#).

About this task

The following images indicate the location of the single-graphics card and provide a visual representation of the removal procedure.



Steps

1. Lay the computer on the right side.
2. Slide the release latch to its unlock position and lift the graphics-card end holder away from the PCIe fan.
 **NOTE:** Skip this step if your graphics card does not ship with a graphics-card end holder.
3. Slide the release latch to its unlock position and lift the graphics-card bracket away from the chassis.
 **NOTE:** Skip this step if your graphics card does not ship with a graphics-card end holder.
4. Press the releasing clip on the graphics-card power connectors and disconnect the graphics-card power cables from the graphics card.
5. Lift the pull tab and open the expansion-card door.
6. 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.

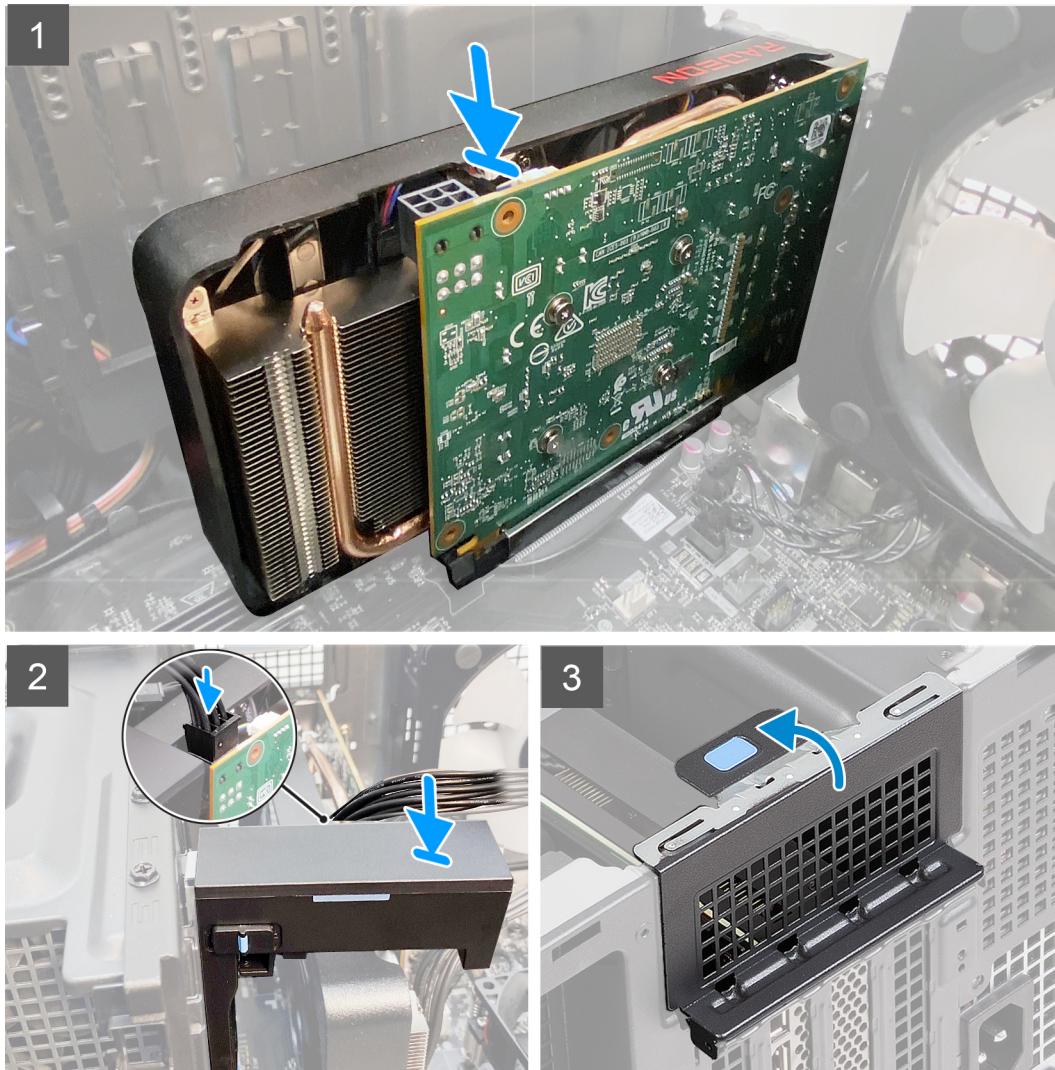
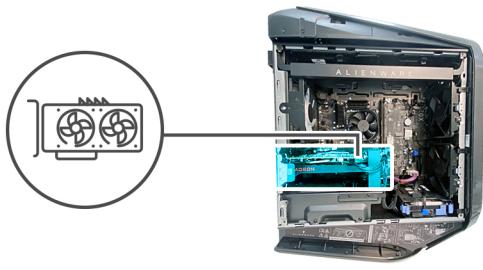
Installing the single-graphics card

Prerequisites

If you are replacing a component, remove the existing component before performing the installation procedure.

About this task

The following images indicate the location of the single-graphics card and provide a visual representation of the installation procedure.



Steps

1. Place the card into the PCIe slot and press down firmly until the single-graphics card snaps into place.
2. Close the expansion-card door and snap the latch back into position.
3. Replace the graphics-card end holder over the PCIe fan and slide the latch into its lock position.
NOTE: Skip this step if your graphics card does not ship with a graphics-card end holder.
4. Align and place the graphics-card bracket on the chassis and slide the latch to its lock position.
NOTE: Skip this step if your graphics card does not ship with a graphics-card end bracket or a graphics-card bracket holder.
5. Connect the graphics-card power cables to the graphics card.

Next steps

1. Install the [left-side cover](#).
2. Follow the procedure in [After working inside your computer](#).

Graphics-card bracket and graphics-card end holder

The following table shows whether the graphics-card bracket or/and the graphics-card end holder is/are shipped with your Alienware Aurora R15.

Table 3. Graphics-card bracket and graphics-card end holder

Graphics card	Graphics-card bracket	Graphics-card end holder
AMD Radeon RX 6500 XT	Yes	No
AMD Radeon RX 6600 XT	Yes	No
AMD Radeon RX 6700 XT	Yes	No
AMD Radeon RX 6800 XT	Yes	Yes
AMD Radeon RX 6900 XT	Yes	Yes
NVIDIA GeForce RTX 3050	No	No
NVIDIA GeForce RTX 3060	Yes	No
NVIDIA GeForce RTX 3060 Ti	Yes	No
NVIDIA GeForce RTX 3070	Yes	Yes
NVIDIA GeForce RTX 3070 Ti	Yes	Yes
NVIDIA GeForce RTX 3080	Yes	Yes
NVIDIA GeForce RTX 3080 Ti	Yes	Yes
NVIDIA GeForce RTX 3090	Yes	Yes
NVIDIA GeForce RTX 3090 Ti	Yes	Yes
NVIDIA GeForce RTX 4090	Yes	Yes

Solid-state drive

Removing the 2230 solid-state drive in SSD slot one

Prerequisites

1. Follow the procedure in [Before working inside your computer](#).
2. Remove the [left-side cover](#).

About this task

 **NOTE:** This procedure applies only to computers shipped with a 2230 solid-state drive installed in SSD slot one.

The following images indicate the location of the 2230 solid-state drive that is installed in SSD slot one and provide a visual representation of the removal procedure.



Steps

1. Remove the screw (M2x3) that secures the 2230 solid-state drive to the system board.
2. Slide and lift the 2230 solid-state drive off solid-state drive slot one on the system board.

Installing the 2230 solid-state drive in SSD slot one

Prerequisites

If you are replacing a component, remove the existing component before performing the installation procedure.

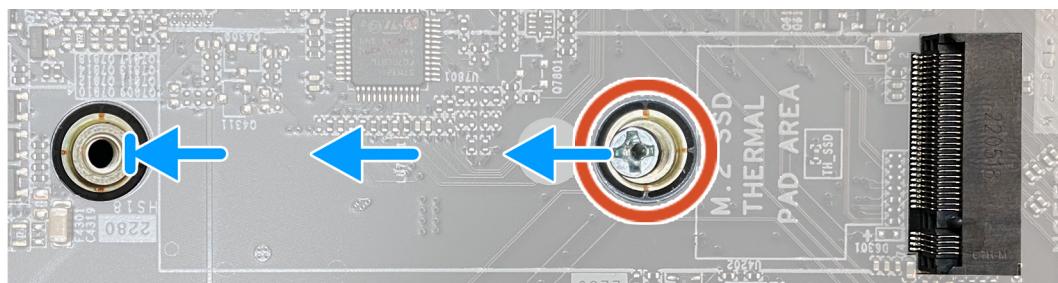
CAUTION: Solid-state drives are fragile. Exercise care when handling the solid-state drive.

About this task

i **NOTE:** This procedure applies only to computers shipped with a 2230 solid-state drive installed in SSD slot one.

i **NOTE:** Depending on the configuration ordered, your computer may support either a 2230 solid-state drive or a 2280 solid-state drive in SSD slot one.

If you want to replace your 2230 solid-state drive with a 2280 solid-state drive, the solid-state drive screw mount must be shifted to fit the M.2 2280 solid-state drive.



Follow the procedure in [Installing the 2280 solid-state drive in SSD slot one](#), to install a 2280 solid-state drive.

The following images indicate the location of the 2230 solid-state drive that is installed in SSD slot one and provide a visual representation of the installation procedure.



Steps

1. Align the notch on the 2230 solid-state drive with the tab on the SSD slot one on the system board.
2. Insert the 2230 solid-state drive at a 45-degree angle into the system board.
3. Press the other end of the 2230 solid-state drive down and replace the screw (M2x3) that secures the 2230 solid-state drive to the system board.

Next steps

1. Install the [left-side cover](#).
2. Follow the procedure in [After working inside your computer](#).
3. Verify if the storage device is installed correctly (optional):
 - a. If you are replacing a storage device which does not have the operating system installed, follow the steps in [Identifying storage device in device manager](#).
 - b. If you are replacing a storage device which does not have the operating system installed, follow the steps in [Identifying your storage device in system setup \(BIOS\)](#).

(i) | NOTE: To install the operating system on to your storage device, see [Reinstall Windows to the Dell factory image using recovery media](#) in the Knowledge Base Resource at www.dell.com/support.

Removing the 2280 solid-state drive in SSD slot one

Prerequisites

1. Follow the procedure in [Before working inside your computer](#).
2. Remove the [left-side cover](#).

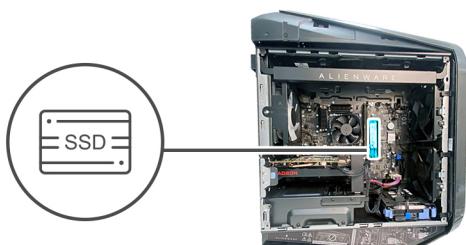
About this task

(i) | NOTE: This procedure applies only to computers shipped with a 2280 solid-state drive installed in SSD slot one.

The following images indicate the location of the 2280 solid-state drive that is installed in SSD slot one and provide a visual representation of the removal procedure.



1x
M2x3



Steps

1. Remove the screw (M2x3) that secures the 2280 solid-state drive to the system board.
2. Slide and lift the 2280 solid-state drive off SSD slot one on the system board.

Installing the 2280 solid-state drive in SSD slot one

Prerequisites

If you are replacing a component, remove the existing component before performing the installation procedure.

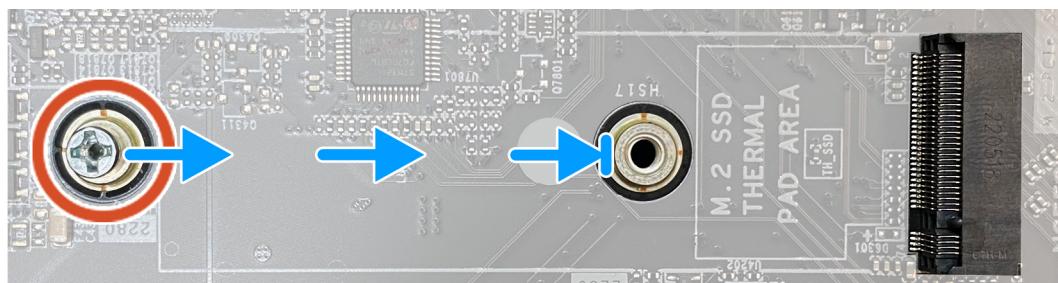
CAUTION: Solid-state drives are fragile. Exercise care when handling the solid-state drive.

About this task

i **NOTE:** This procedure applies only to computers shipped with a 2280 solid-state drive installed in SSD slot one.

i **NOTE:** Depending on the configuration ordered, your computer may support either a 2280 solid-state drive or a 2230 solid-state drive in SSD slot one.

If you want to replace your 2280 solid-state drive with a 2230 solid-state drive, the solid-state drive screw mount must be shifted to fit the M.2 2230 solid-state drive.



Follow the procedure in [Installing the 2230 solid-state drive in SSD slot one](#), to install a 2230 solid-state drive.

The following images indicate the location of the 2280 solid-state drive that is installed in SSD slot one and provide a visual representation of the installation procedure.



Steps

1. Align the notch on the 2280 solid-state drive with the tab on the SSD slot one on the system board.
2. Insert the 2280 solid-state drive at a 45-degree angle into the system board.
3. Press the other end of the 2280 solid-state drive down and replace the screw (M2x3) that secures the 2280 solid-state drive to the system board.

Next steps

1. Install the [left-side cover](#).
2. Follow the procedure in [After working inside your computer](#).
3. Verify if the storage device is installed correctly (optional):
 - a. If you are replacing a storage device which does not have the operating system installed, follow the steps in [Identifying storage device in device manager](#).
 - b. If you are replacing a storage device which does not have the operating system installed, follow the steps in [Identifying your storage device in system setup \(BIOS\)](#).

(i) | NOTE: To install the operating system on to your storage device, see [Reinstall Windows to the Dell factory image using recovery media](#) in the Knowledge Base Resource at www.dell.com/support.

Removing the 2230 solid-state drive in SSD slot two

Prerequisites

1. Follow the procedure in [Before working inside your computer](#).
2. Remove the [left-side cover](#).

About this task

(i) | NOTE: This procedure applies only to computers shipped with a 2230 solid-state drive installed in SSD slot two.

The following images indicate the location of the 2230 solid-state drive that is installed in SSD slot two and provide a visual representation of the removal procedure.



Steps

1. Remove the screw (M2x3) that secures the 2230 solid-state drive to the system board.
2. Slide and lift the 2230 solid-state drive off SSD slot two on the system board.

Installing the 2230 solid-state drive in SSD slot two

Prerequisites

If you are replacing a component, remove the existing component before performing the installation procedure.

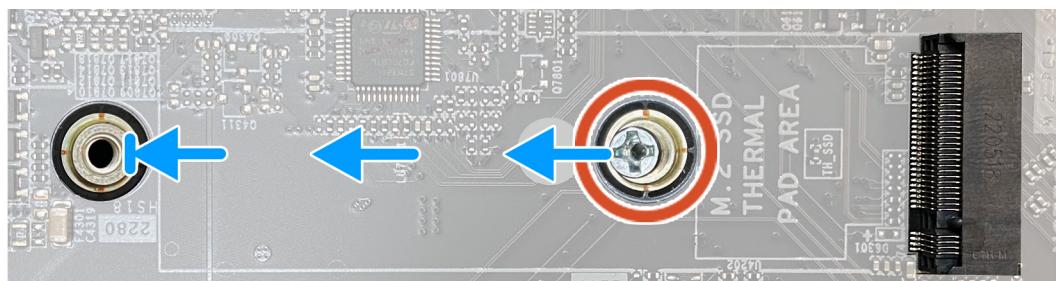
CAUTION: Solid-state drives are fragile. Exercise care when handling the solid-state drive.

About this task

i **NOTE:** This procedure applies only to computers shipped with a 2230 solid-state drive installed in SSD slot two.

i **NOTE:** Depending on the configuration ordered, your computer may support either 2230 solid-state drive or 2280 solid-state drive in SSD slot two.

If you want to replace your 2230 solid-state drive with a 2280 solid-state drive, the solid-state drive screw mount must be shifted to fit the M.2 2280 solid-state drive.



Follow the procedure in [Installing the 2280 solid-state drive in SSD slot two](#), to install a 2280 solid-state drive.

The following images indicate the location of the 2230 solid-state drive that is installed in SSD slot two and provide a visual representation of the installation procedure.



Steps

1. Align the notch on the 2230 solid-state drive with the tab on the SSD slot two on the system board.
2. Insert the 2230 solid-state drive at a 45-degree angle into the system board.
3. Press the other end of the 2230 solid-state drive down and replace the screw (M2x3) that secures the 2230 solid-state drive to the system board.

Next steps

1. Install the [left-side cover](#).
2. Follow the procedure in [After working inside your computer](#).
3. Verify if the storage device is installed correctly (optional):
 - a. If you are replacing a storage device which does not have the operating system installed, follow the steps in [Identifying storage device in device manager](#).
 - b. If you are replacing a storage device which does not have the operating system installed, follow the steps in [Identifying your storage device in system setup \(BIOS\)](#).

(i) | NOTE: To install the operating system on to your storage device, see [Reinstall Windows to the Dell factory image using recovery media](#) in the Knowledge Base Resource at www.dell.com/support.

Removing the 2280 solid-state drive in SSD slot two

Prerequisites

1. Follow the procedure in [Before working inside your computer](#).
2. Remove the [left-side cover](#).

About this task

(i) | NOTE: This procedure applies only to computers shipped with a 2280 solid-state drive installed in SSD slot two.

The following images indicate the location of the 2280 solid-state drive that is installed in SSD slot two and provide a visual representation of the removal procedure.



Steps

1. Remove the screw (M2x3) that secures the 2280 solid-state drive to the system board.
2. Slide and lift the 2280 solid-state drive off SSD slot two on the system board.

Installing the 2280 solid-state drive in SSD slot two

Prerequisites

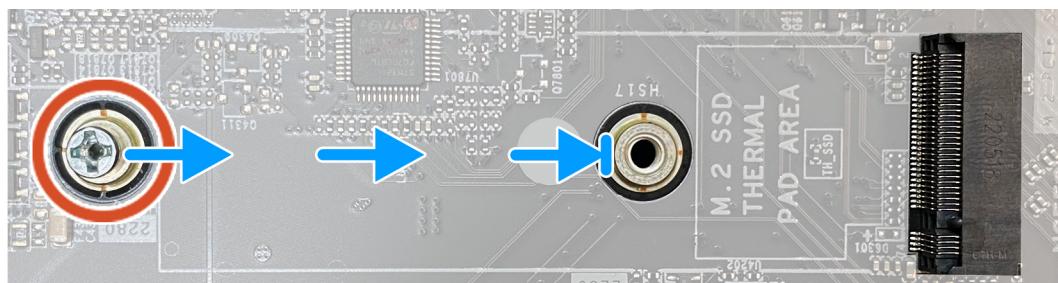
If you are replacing a component, remove the existing component before performing the installation procedure.

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

About this task

- NOTE:** This procedure applies only to computers shipped with a 2280 solid-state drive installed in SSD slot two.
- NOTE:** Depending on the configuration ordered, your computer may support either 2230 solid-state drive or 2280 solid-state drive in SSD slot two.

If you want to replace your 2280 solid-state drive with a 2230 solid-state drive, the solid-state drive screw mount must be shifted to fit the M.2 2230 solid-state drive.



Follow the procedure in [Installing the 2230 solid-state drive in SSD slot two](#), to install a 2230 solid-state drive.

The following images indicate the location of the 2280 solid-state drive that is installed in SSD slot two and provide a visual representation of the installation procedure.



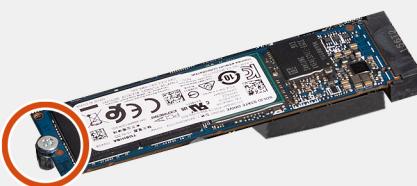
1x
M2x3



1



2



Steps

1. Align the notch on the 2280 solid-state drive with the tab on the SSD slot two on the system board.
2. Insert the 2280 solid-state drive at a 45-degree angle into the system board.
3. Press the other end of the 2280 solid-state drive down and replace the screw (M2x3) that secures the 2280 solid-state drive to the system board.

Next steps

1. Install the [left-side cover](#).
2. Follow the procedure in [After working inside your computer](#).
3. Verify if the storage device is installed correctly (optional):
 - a. If you are replacing a storage device which does not have the operating system installed, follow the steps in [Identifying storage device in device manager](#).
 - b. If you are replacing a storage device which does not have the operating system installed, follow the steps in [Identifying your storage device in system setup \(BIOS\)](#).

(i) NOTE: To install the operating system on to your storage device, see [Reinstall Windows to the Dell factory image using recovery media](#) in the Knowledge Base Resource at www.dell.com/support.

Processor fan and heat-sink assembly

Removing the processor fan and heat-sink assembly

Prerequisites

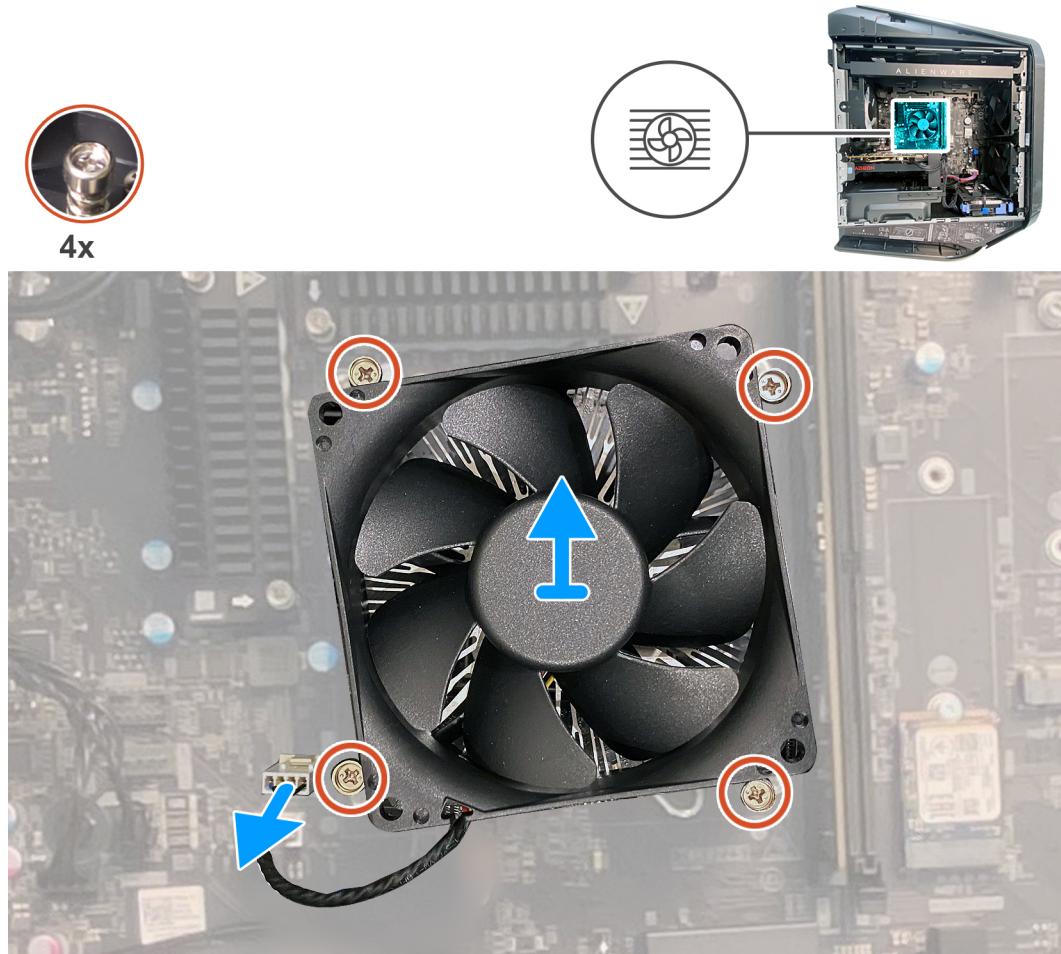
1. Follow the procedure in [Before working inside your computer](#).

(i) NOTE: 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.
2. Remove the [left-side cover](#).

About this task

The following images indicate the location of the processor fan and heat-sink assembly and provide a visual representation of the removal procedure.



Steps

1. Lay the computer on the right side.
2. Disconnect the processor-fan cable from the system board.
3. In the reverse sequential order, loosen the four captive screws that secure the processor fan and heat-sink assembly to the system board.
4. Lift the processor fan and heat-sink assembly off the system board.

Installing the processor fan and heat-sink assembly

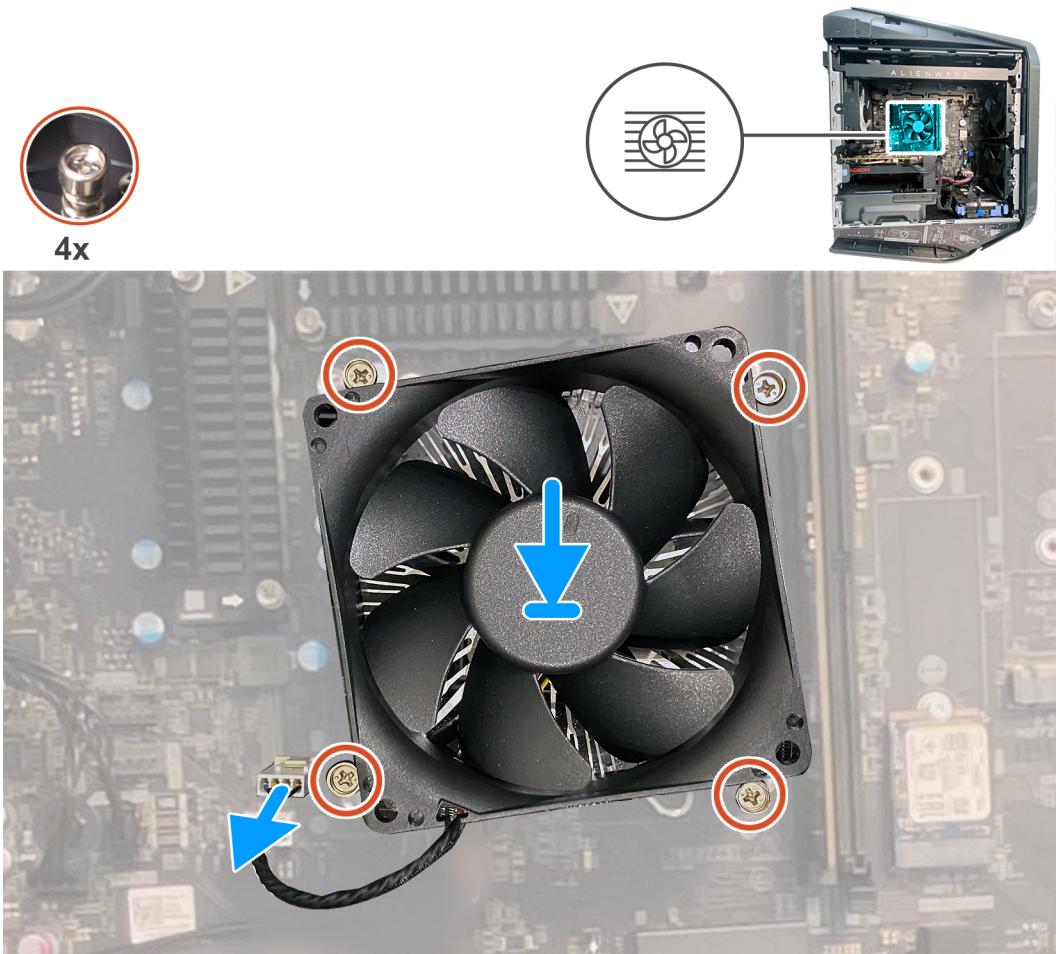
Prerequisites

If you are replacing a component, remove the existing component before performing the installation procedure.

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

About this task

The following images indicate the location of the processor fan and heat-sink assembly and provide a visual representation of the installation procedure.



Steps

1. Place the processor fan and heat-sink assembly on the processor.
2. Align the captive screws on the processor fan heat-sink assembly with the screw holes on the system board.
3. In sequential order, tighten the four 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.

Next steps

1. Install the [left-side cover](#).
2. Follow the procedure in [After working inside your computer](#).

Processor liquid-cooling assembly

Removing the processor liquid-cooling assembly

Prerequisites

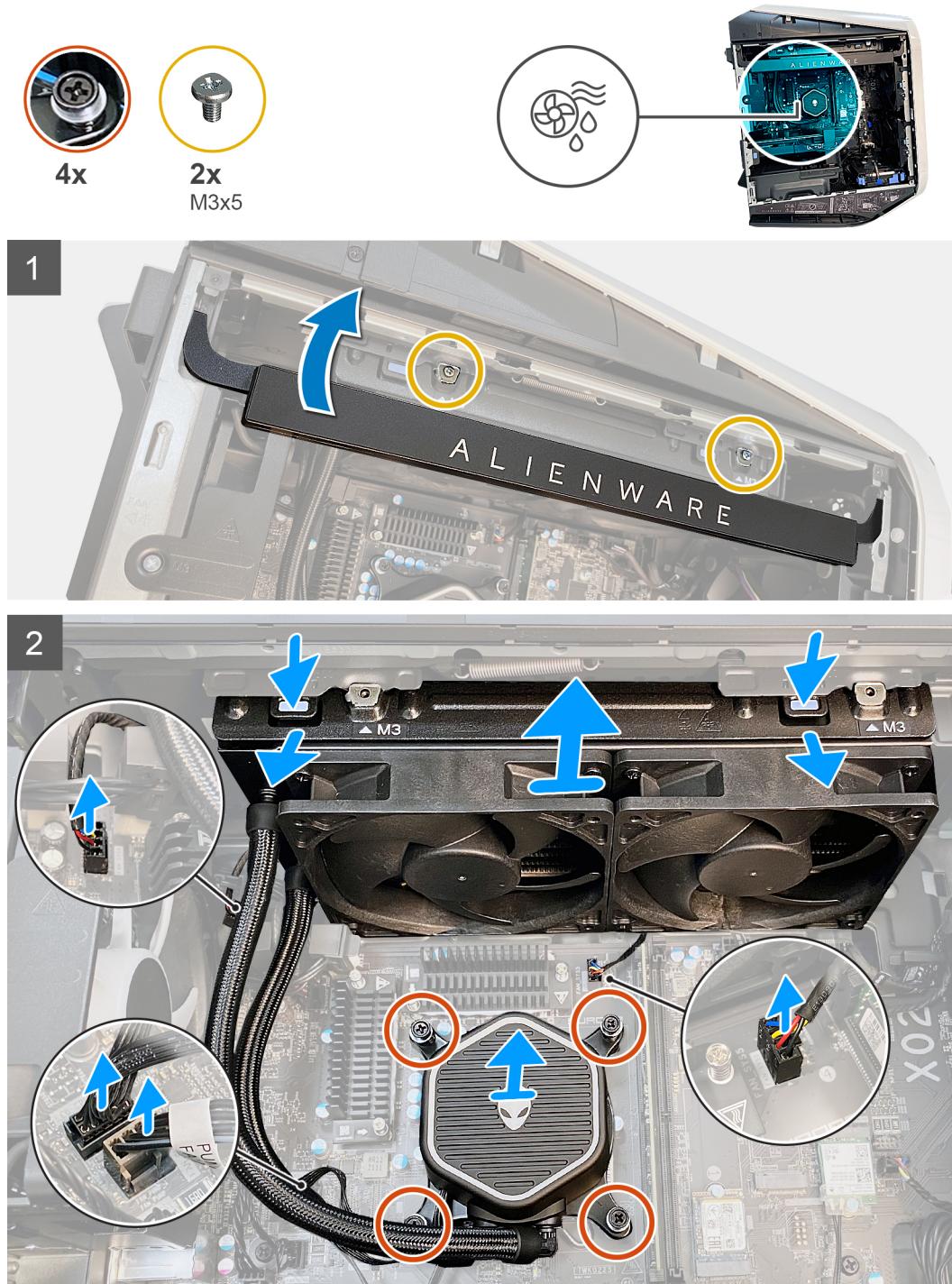
1. Follow the procedure in [Before working inside your computer](#).

⚠️ 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: 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.
2. Remove the [left-side cover](#).

About this task

The following images indicate the location of the processor liquid-cooling assembly and provide a visual representation of the removal procedure.



Steps

1. Lay the computer on the right side.
2. Lift the side light bar.
3. Remove the two screws (M3x5) that secures the radiator and fan assembly to the chassis.
4. Disconnect the radiator and fan assembly cable from the system board.
5. Disconnect the processor-cooling assembly cables from the system board.
6. Loosen the four captive screws that secure the processor-cooling assembly to the system board.

7. Release the spring latch and lift the processor-cooling assembly, along with the cables, off the system board.

Installing the processor liquid-cooling assembly

Prerequisites

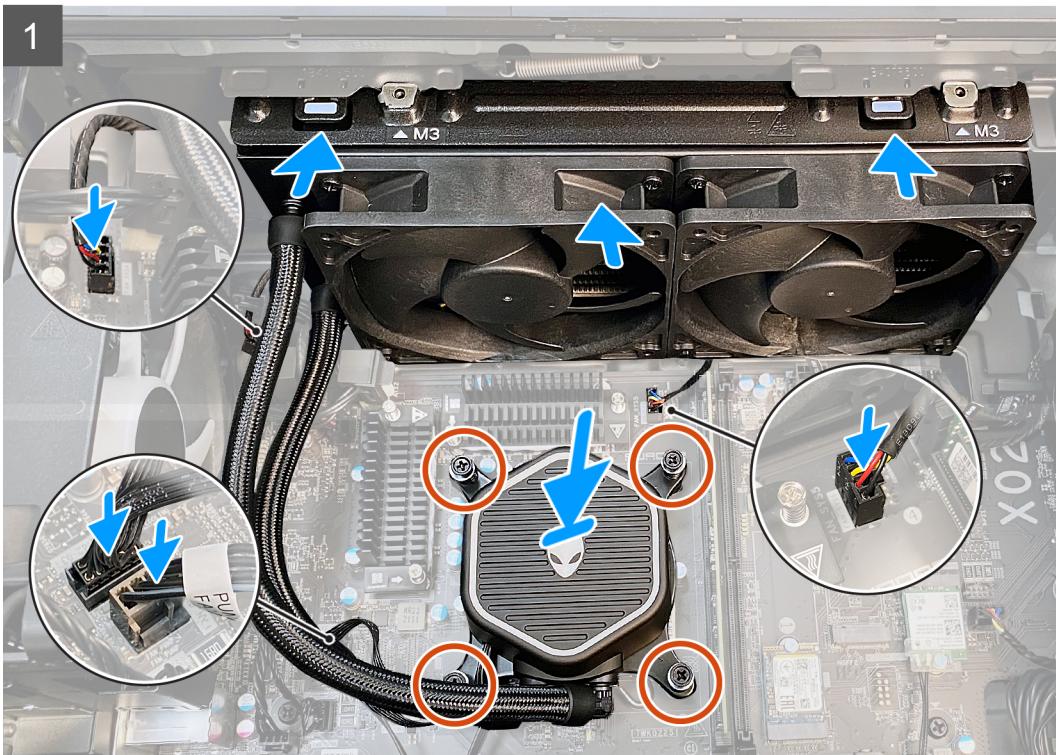
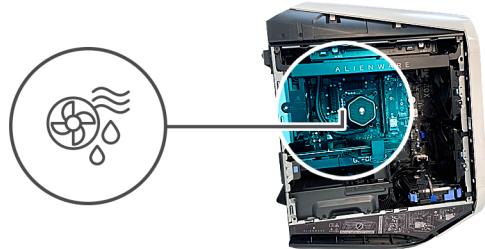
If you are replacing a component, remove the existing component before performing the installation procedure.

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

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

About this task

The following images indicate the location of the processor liquid-cooling assembly and provide a visual representation of the installation procedure.



Steps

1. Align the screw hole of the radiator and fan assembly to the screw hole on the chassis and make sure that the spring latch is locked.
2. Replace the two screws (M3x5) that secures the radiator and fan assembly to the chassis.
3. Connect the radiator and fan assembly cable to the system board.
4. Align the screw holes on the processor-cooling assembly with the screw holes on the system board.
5. In the sequential order, tighten the four captive screws that secure the processor-cooling assembly to the system board.
6. Connect the processor-cooling assembly cables to the system board.

(i) | NOTE: Ensure that the hoses are facing the front of the computer.

7. Push the side light bar down.

Next steps

1. Install the [left-side cover](#).
2. Follow the procedure in [After working inside your computer](#).

Liquid-cooling assembly fan

Removing the liquid-cooling assembly fan

Prerequisites

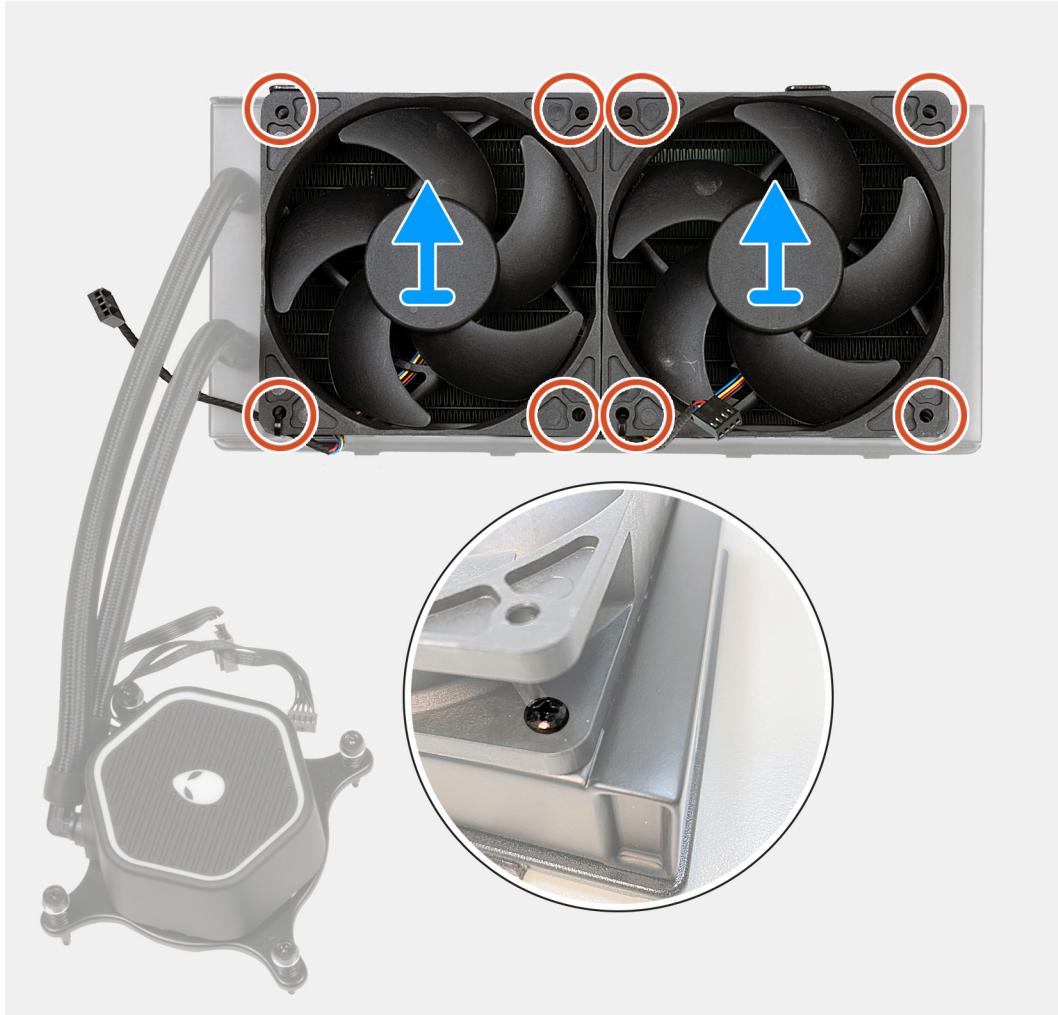
1. Follow the procedure in [Before working inside your computer](#).
2. Remove the [left-side cover](#).

About this task

The following images indicate the location of the liquid-cooling assembly fan and provide a visual representation of the removal procedure.



8x
6x32 1/4



Steps

1. Remove the four screws (#6-32x1/4") that secures the left liquid-cooling assembly fan to the liquid-cooling assembly.
2. Lift the left liquid-cooling assembly fan off the liquid-cooling assembly.
3. Remove the four screws (#6-32x1/4") that secures the right liquid-cooling assembly fan to the liquid-cooling assembly.
4. Lift the right liquid-cooling assembly fan off the liquid-cooling assembly.

Installing the liquid-cooling assembly fan

Prerequisites

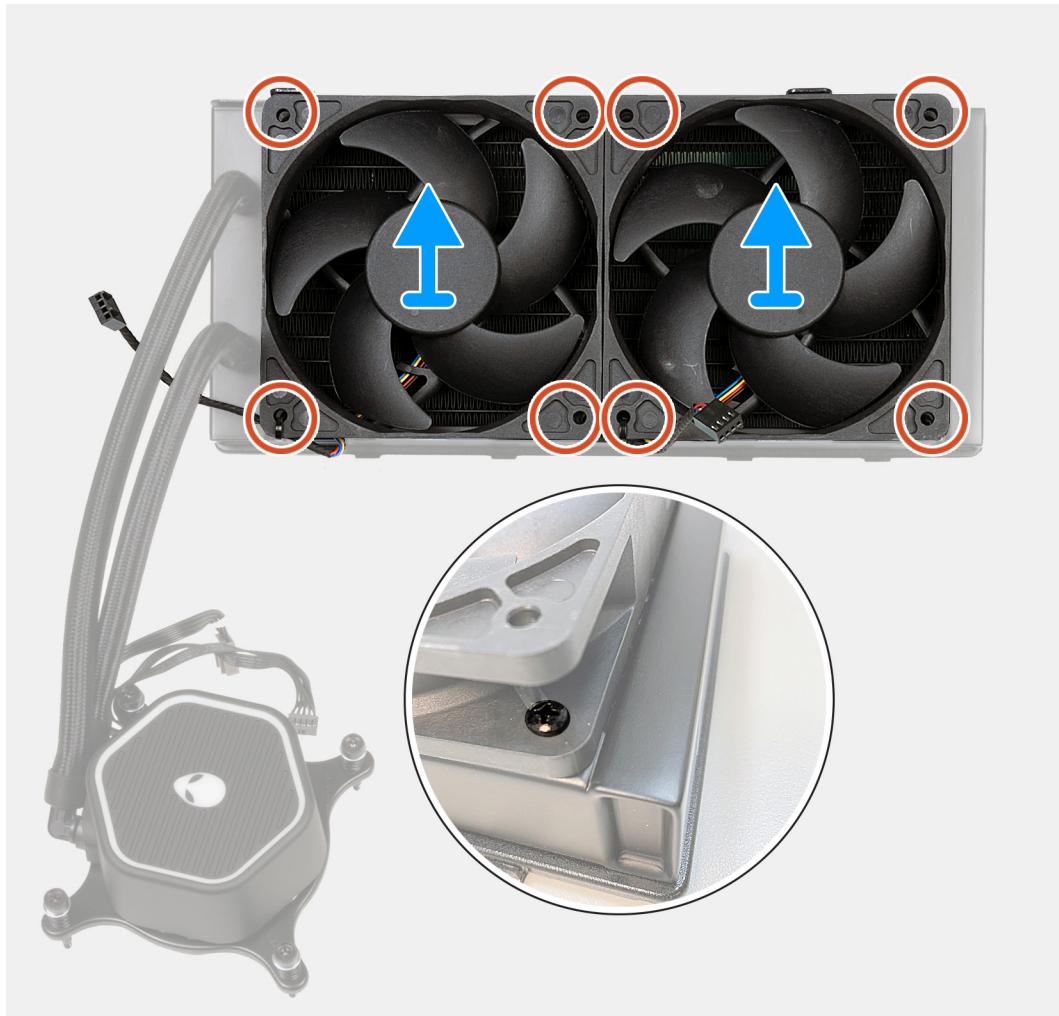
1. Follow the procedure in [Before working inside your computer](#).
2. Remove the [left-side cover](#).

About this task

The following images indicate the location of the liquid-cooling assembly fan and provide a visual representation of the removal procedure.



8x
6x32 1/4



Steps

1. Align and place the left liquid-cooling assembly fan on the liquid-cooling assembly.
2. Replace the four screws (#6-32x1/4") that secures the left liquid-cooling assembly fan to the liquid-cooling assembly.
3. Align and place the right liquid-cooling assembly fan off the liquid-cooling assembly.
4. Replace the four screws (#6-32x1/4") that secures the right liquid-cooling assembly fan to the liquid-cooling assembly.

Processor

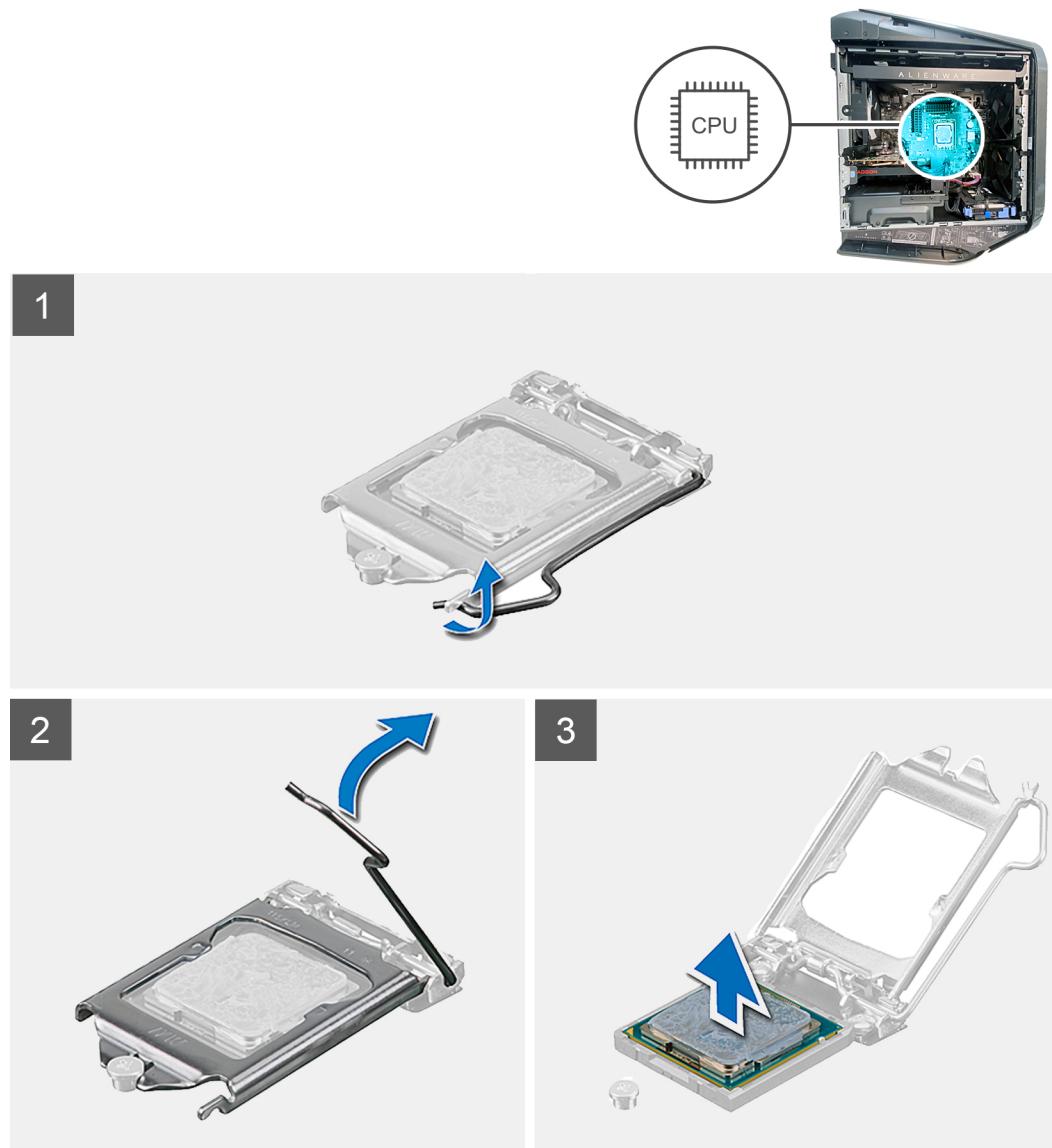
Removing the processor

Prerequisites

1. Follow the procedure in [Before working inside your computer](#).
2. Remove the [left-side cover](#).
3. Remove the [processor liquid-cooling assembly](#) or [processor fan and heat-sink assembly](#), as applicable.

About this task

The following images indicate the location of the processor and provide a visual representation of the removal procedure.



Steps

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

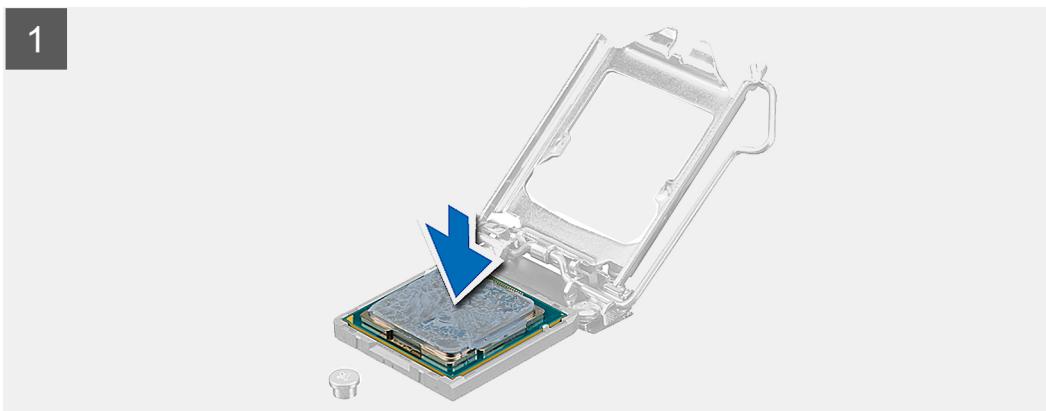
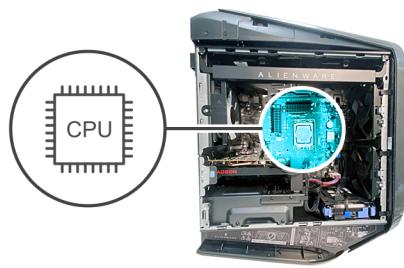
Installing the processor

Prerequisites

If you are replacing a component, remove the existing component before performing the installation procedure.

About this task

The following images indicate the location of the processor and provide a visual representation of the installation procedure.



Steps

1. Ensure that the release lever on the processor socket is fully extended and the processor cover is fully open.
CAUTION: Position the processor correctly in the processor socket to avoid permanent damage to the processor.
2. Align the pin-1 corner on the processor with the pin-1 corner on the processor socket, and then place the processor in the processor socket.
CAUTION: Ensure that the processor-cover notch is positioned underneath the alignment post.
3. When the processor is fully seated in the socket, close the processor cover.
4. Push the release lever down and place it under the tab on the processor cover.

Next steps

1. Install the [processor liquid-cooling assembly](#) or [processor fan and heat-sink assembly](#), as applicable.
2. Install the [left-side cover](#).
3. Follow the procedure in [After working inside your computer](#).

Wireless card

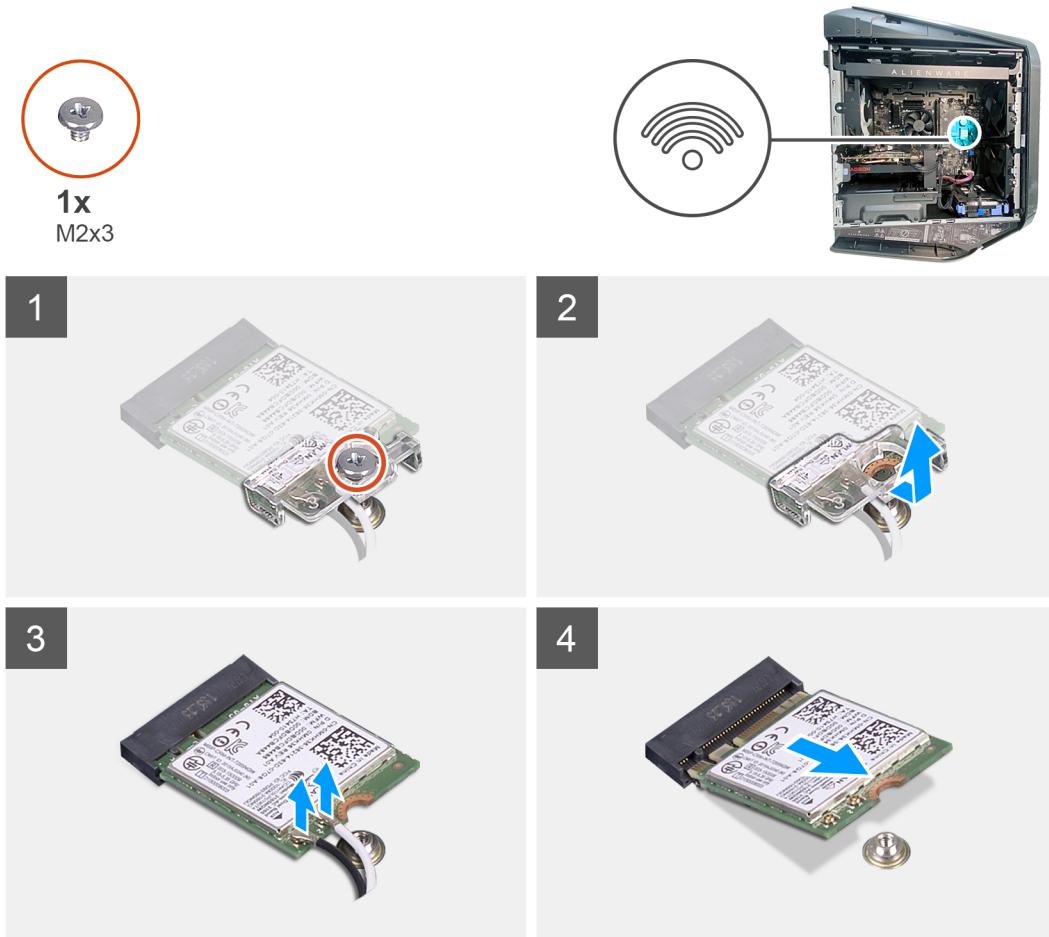
Removing the wireless card

Prerequisites

1. Follow the procedure in [Before working inside your computer](#).
2. Remove the [left-side cover](#).

About this task

The following images indicate the location of the wireless card and provide a visual representation of the removal procedure.



Steps

1. Remove the screw (M2x3) that secures the wireless card to the system board.
2. Lift the wireless-card bracket off the wireless card.
3. Disconnect the antenna cables from the wireless card.
4. Slide and remove the wireless card from the wireless-card slot.

Installing the wireless card

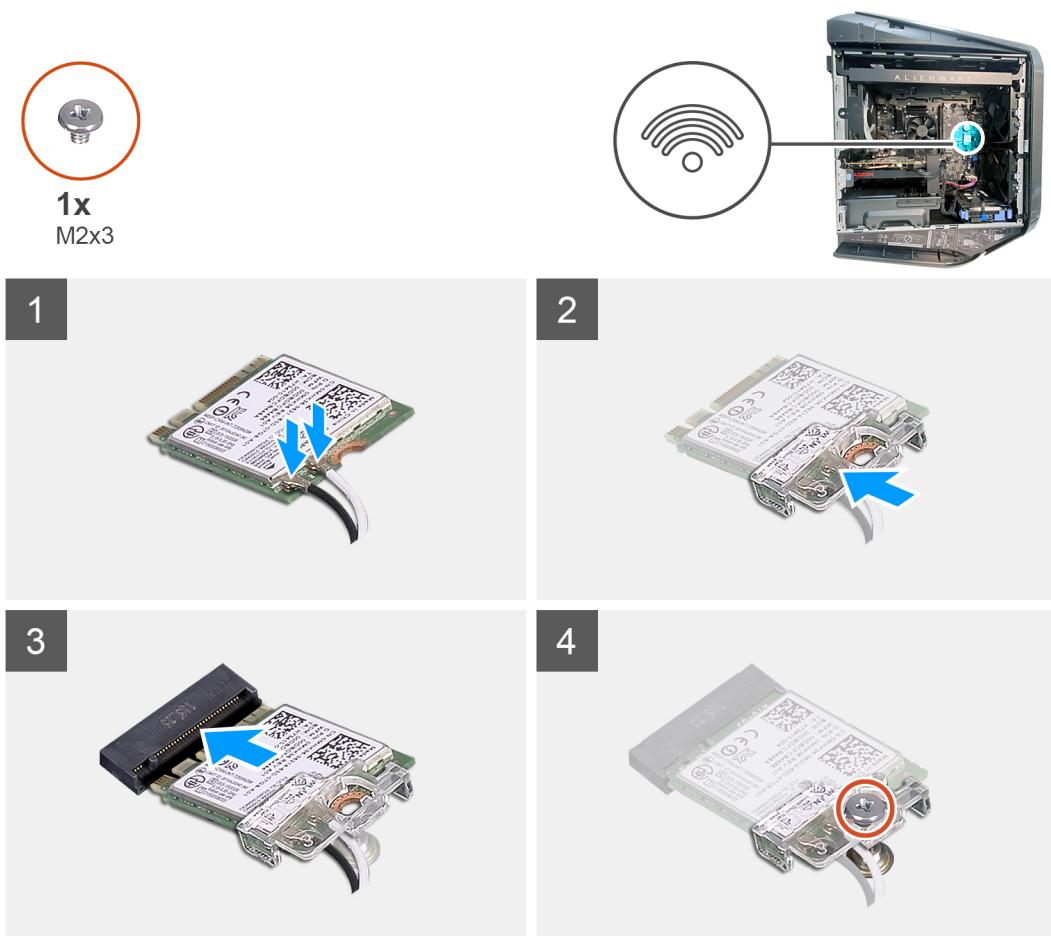
Prerequisites

If you are replacing a component, remove the existing component before performing the installation procedure.

 **CAUTION:** To avoid damage to the wireless mini-card, do not place any cables under it.

About this task

The following images indicate the location of the wireless card and provide a visual representation of the installation procedure.



Steps

1. 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 4. Antenna-cable color scheme

Connectors on the wireless card	Antenna-cable color	Silkscreen marking	
Main	White	MAIN	△ (white triangle)
Auxiliary	Black	AUX	▲ (black triangle)

2. Place the wireless-card bracket on the wireless card.
3. Align the notch on the wireless card with the tab on the wireless-card slot.
4. Slide the wireless card at an angle into the wireless-card slot.
5. Replace the screw (M2x3) that secures the wireless card to the system board.

Next steps

1. Install the [left-side cover](#).
2. Follow the procedure in [After working inside your computer](#).

SMA antenna-cable

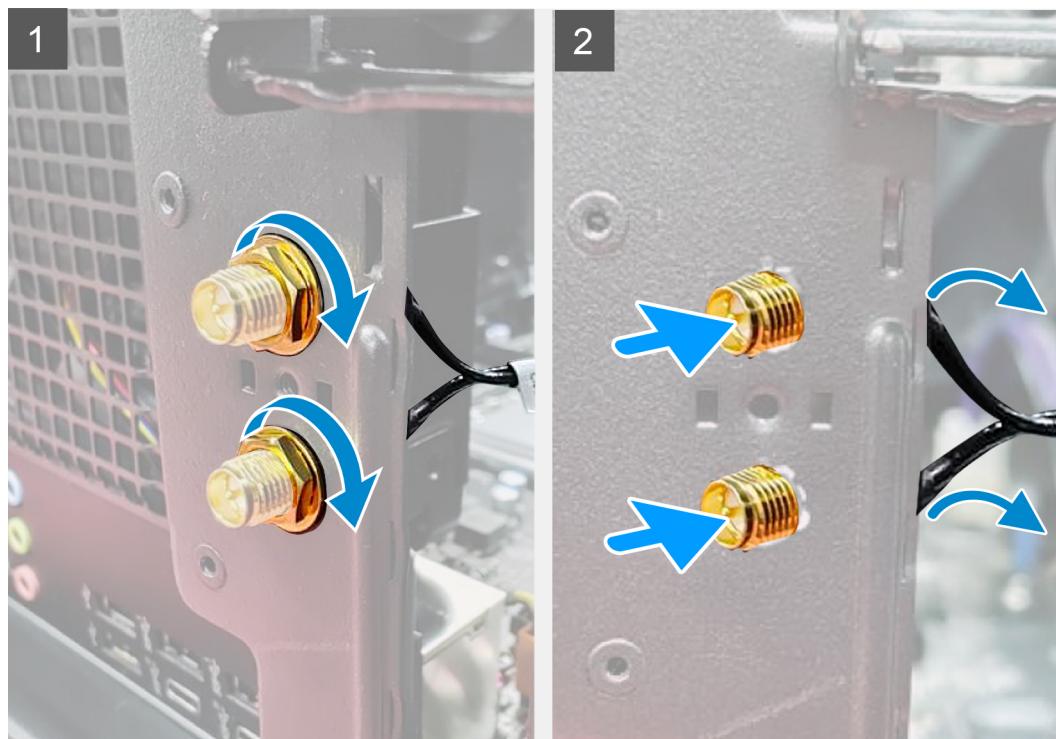
Removing the SMA antenna-cable

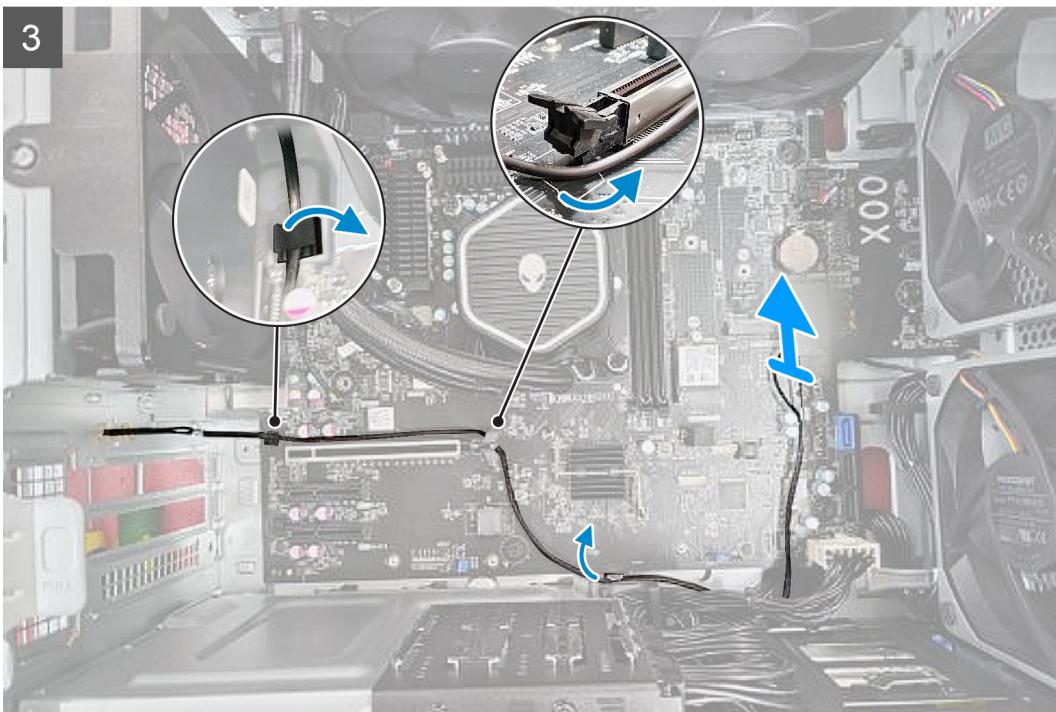
Prerequisites

1. Follow the procedure in [Before working inside your computer](#).
2. Remove the [left-side cover](#).
3. Remove the [wireless card](#).
4. Remove the [top cover](#).
5. Remove the [right-side cover](#).
6. Remove the [front bezel](#).

About this task

The following images indicate the location of an SMA antenna-cable and provide a visual representation of the removal procedure.





Steps

1. Remove the washer and nuts that secures the SMA antenna-cable connector to the chassis.
2. Route the SMA antenna-cable assembly through the slot on the rear IO.
3. Remove the SMA antenna-cable from the securing clip on the system board.
4. Remove the SMA antenna-cable routing from the PCIe x16 slot.
5. Lift the SMA antenna-cable connector off the chassis.

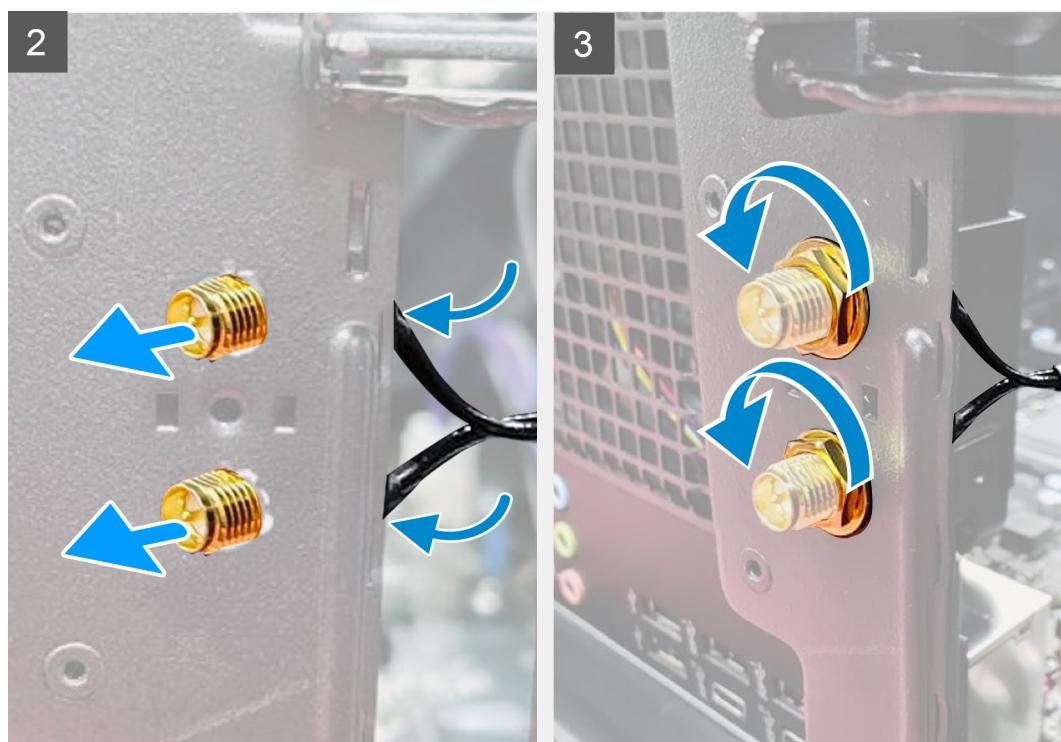
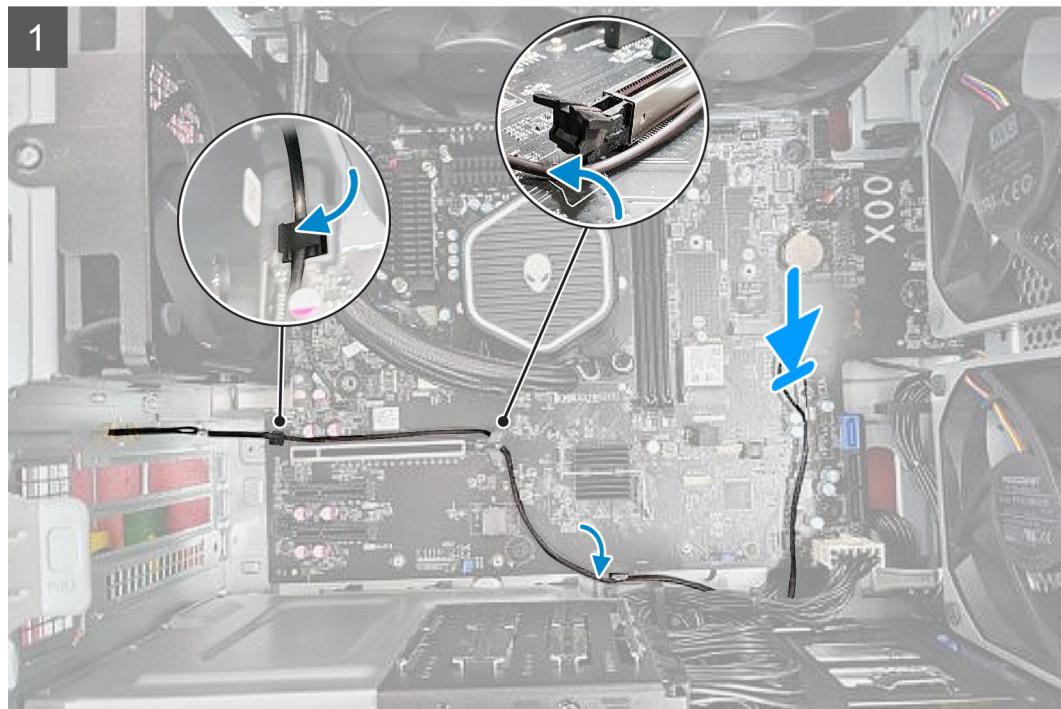
Installing the SMA antenna-cable

Prerequisites

If you are replacing a component, remove the existing component before performing the installation procedure.

About this task

The following images indicate the location of the SMA antenna-cable and provide a visual representation of the removal procedure.



Steps

1. Align and place the SMA antenna-cable connector on the chassis.
2. Route the SMA antenna-cable under the PCIe x16 slot.
3. Insert the SMA antenna-cable to the securing clip on the system board.
4. Route the SMA antenna-cable assembly through the slot on the rear IO.
5. Replace the washer and nuts that secures the SMA antenna-cable connector to the chassis.

Next steps

1. Install the [left-side cover](#).
2. Install the [front bezel](#).
3. Install the [right-side cover](#).
4. Install the [top cover](#).
5. Install the [wireless card](#).
6. Install the [left-side cover](#).
7. Follow the procedure in [After working inside your computer](#).

Rear-chassis fan

Removing the rear-chassis fan

Prerequisites

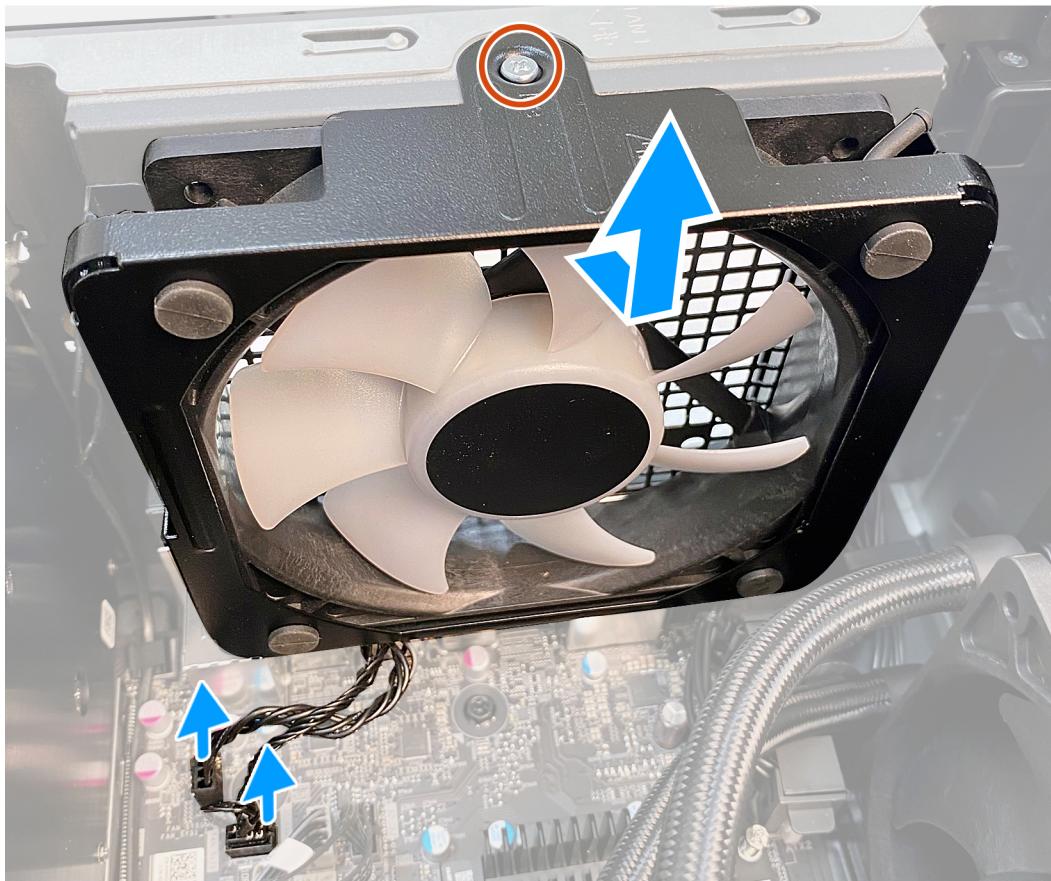
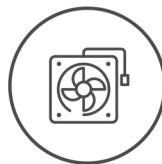
1. Follow the procedure in [Before working inside your computer](#).
2. Remove the [left-side cover](#).

About this task

The following images indicate the location of the rear-chassis fan and provide a visual representation of the removal procedure.



1x
M3x5



Steps

1. Lay the computer on its right side.
2. Disconnect the rear-chassis fan cable from the system board.
3. Remove the screw (M3x5) that secures the rear-chassis fan to the chassis.
4. Slide and lift the rear-chassis off the chassis.

Installing the rear-chassis fan

Prerequisites

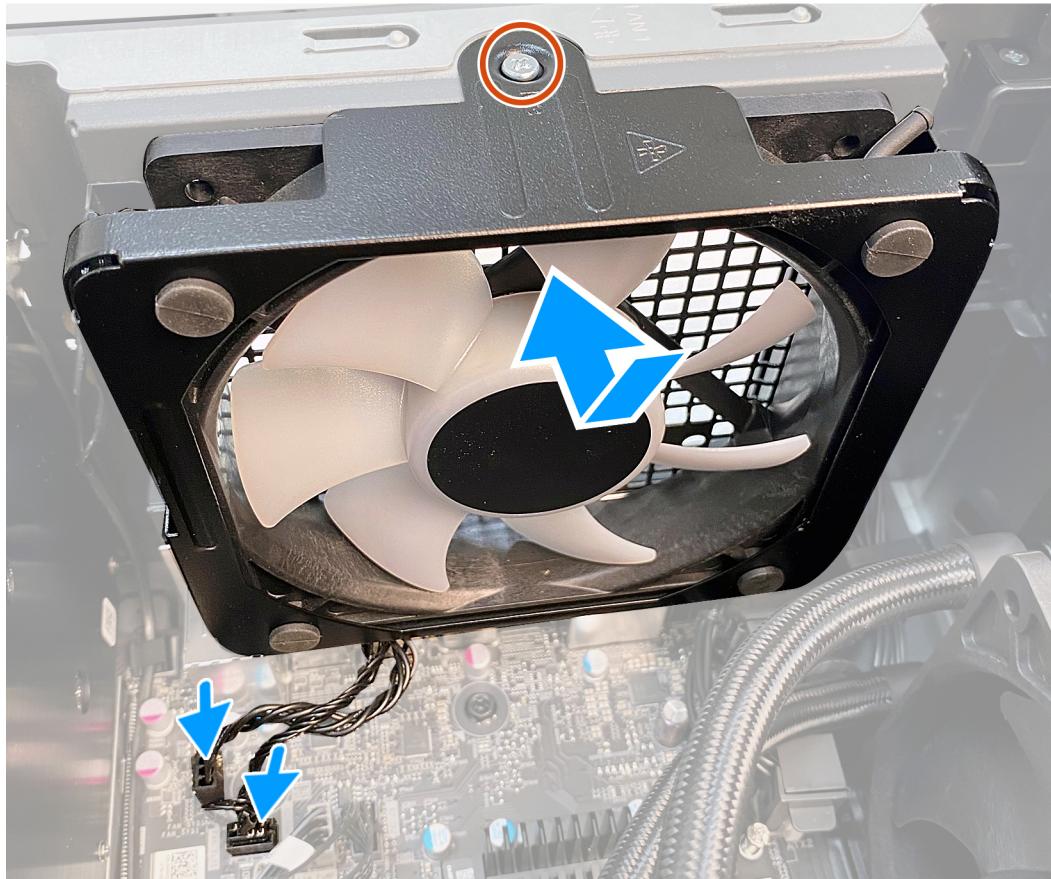
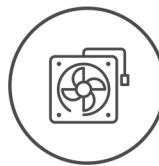
If you are replacing a component, remove the existing component before performing the installation procedure.

About this task

The following images indicate the location of the rear-chassis fan and provide a visual representation of the installation procedure.



1x
M3x5



Steps

1. Lay the computer on its right side.
2. Align the rear-chassis fan with the slot on the chassis.
3. Replace the screw (M3x5) that secures the rear-chassis fan to the chassis.
4. Connect the rear-chassis fan cable to the system board.

Next steps

1. Install the [left-side cover](#).
2. Follow the procedure in [After working inside your computer](#).

Lower front-chassis fan

Removing the lower front-chassis fan

Prerequisites

1. Follow the procedure in [Before working inside your computer](#).

2. Remove the [left-side cover](#).

About this task

The following images indicate the location of the lower front-chassis fan and provide a visual representation of the removal procedure.



Steps

1. Lay the computer on its right side.
2. Disconnect the lower front-chassis fan cable from the system board.
3. Remove the screw (M3x5) that secures the lower front-chassis fan to the chassis.
4. Push the tab to release the lower front-chassis fan from the chassis.
5. Slide and lift the lower front-chassis fan off the chassis.

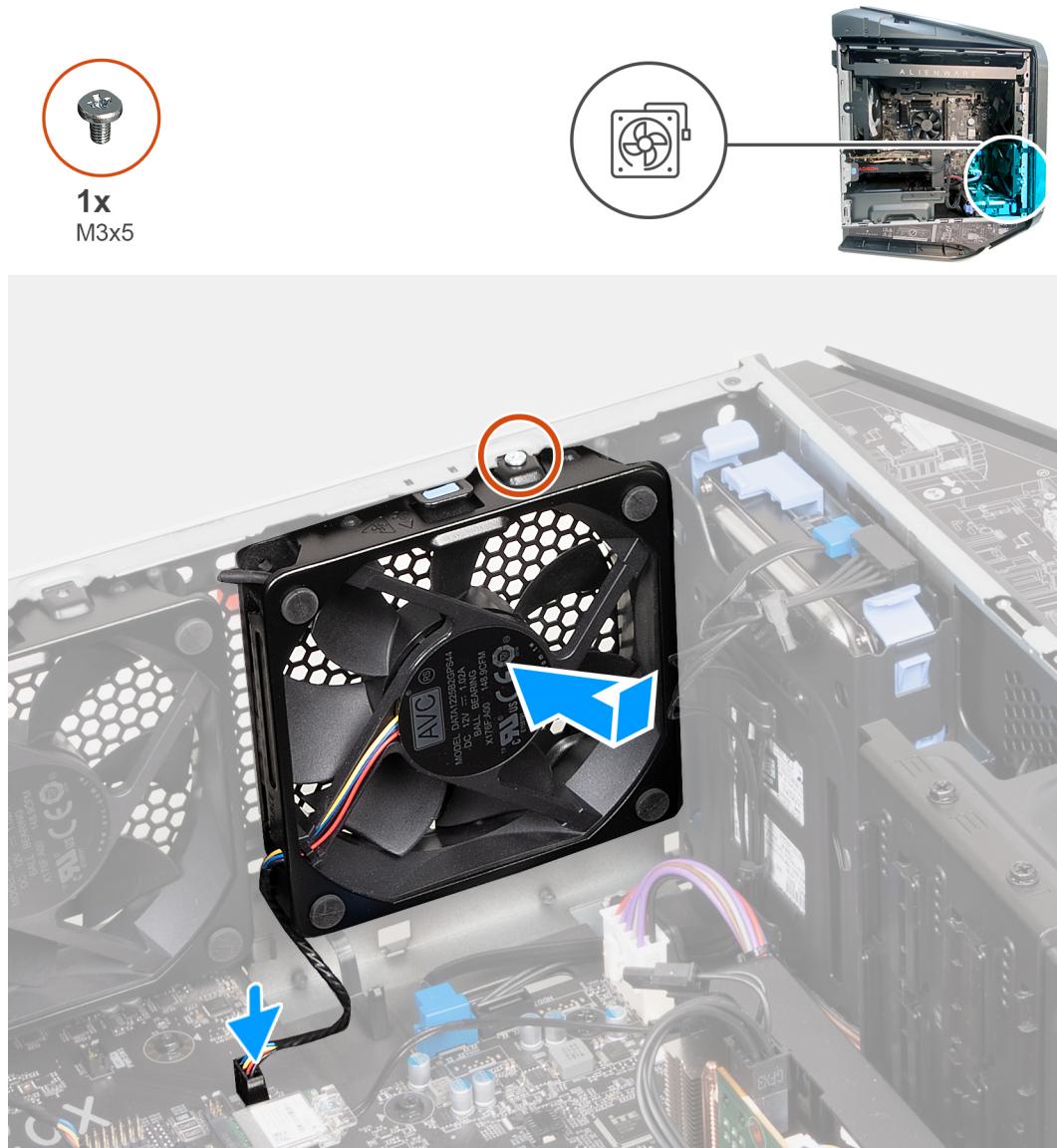
Installing the lower front-chassis fan

Prerequisites

If you are replacing a component, remove the existing component before performing the installation procedure.

About this task

The following images indicate the location of the lower front-chassis fan and provide a visual representation of the installation procedure.



Steps

1. Lay the computer on its right side.
2. Align the tabs on the lower front-chassis fan with the slots on the chassis.
3. Slide and push the fan until the releasing clip snaps into position on the chassis.
4. Replace the screw (M3x5) that secures the lower front-chassis fan to the chassis.
5. Connect the lower front-chassis fan cable to the system board.
6. Replace the graphics-card end holder and slide the release latch to the lock position.

Next steps

1. Install the [left-side cover](#).
2. Follow the procedure in [After working inside your computer](#).

Upper front-chassis fan

Removing the upper front-chassis fan

Prerequisites

1. Follow the procedure in [Before working inside your computer](#).
2. Remove the [left-side cover](#).

About this task

The following images indicate the location of the upper front-chassis fan and provide a visual representation of the removal procedure.



Steps

1. Lay the computer on the right side.
2. Disconnect the upper front-chassis fan cable from the system board.
3. Press the releasing clip of the upper front-chassis fan.
4. Slide and lift the upper front-chassis fan from the chassis.

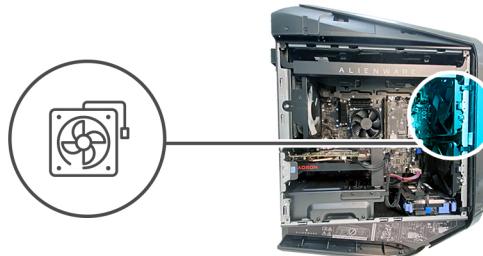
Installing the upper front-chassis fan

Prerequisites

If you are replacing a component, remove the existing component before performing the installation procedure.

About this task

The following images indicate the location of the upper front-chassis fan and provide a visual representation of the installation procedure.



Steps

1. Lay the computer on its right side.
2. Align the upper front-chassis fan with the slot on the chassis.
3. Push the upper front-chassis fan into the slot on the chassis until its releasing clip is locked into place.
4. Connect the upper front-chassis fan cable to the system board.

Next steps

1. Install the [left-side cover](#).
2. Follow the procedure in [After working inside your computer](#).

Top-chassis fan

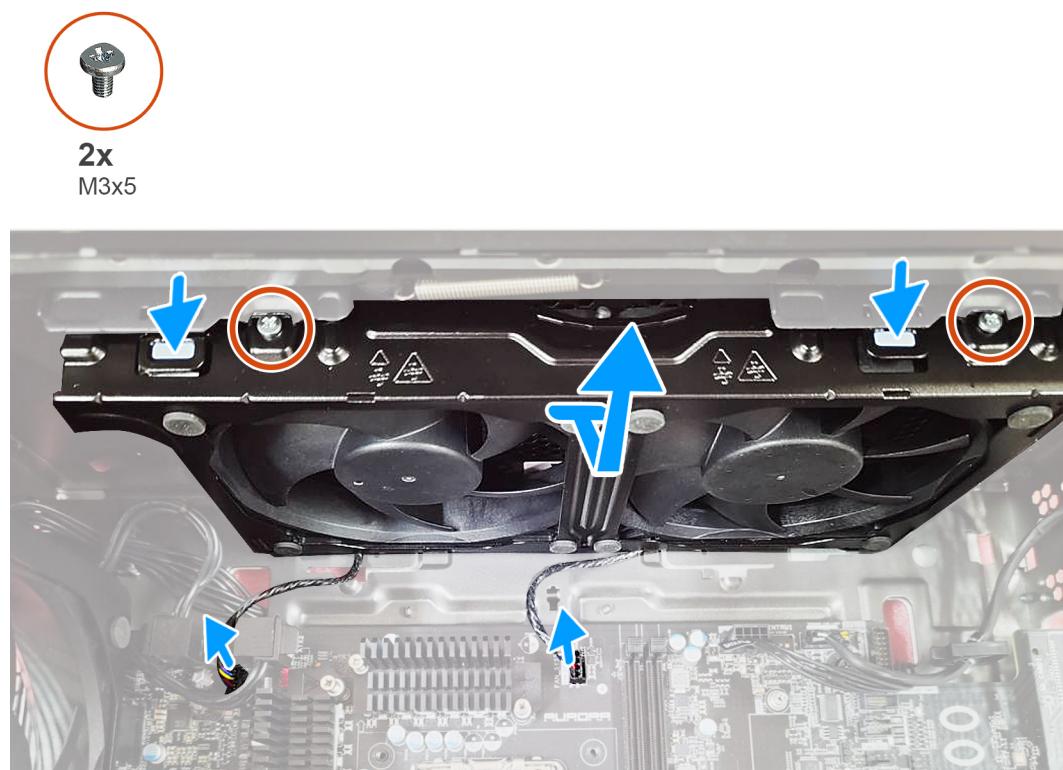
Removing the top-chassis fan

Prerequisites

1. Follow the procedure in [Before working inside your computer](#).
2. Remove the [left-side cover](#).

About this task

The following images indicate the location of the top-chassis fan and provide a visual representation of the removal procedure.



Steps

1. Lay the computer on the right side.
2. Disconnect the top-chassis fan cables from the system board.
3. Remove the two screws (M3x5) that secures the top-chassis fan to the chassis.
4. Press the releasing clip of the top-chassis fan.
5. Slide and lift the top-chassis fan off the chassis.

Installing the top-chassis fan

Prerequisites

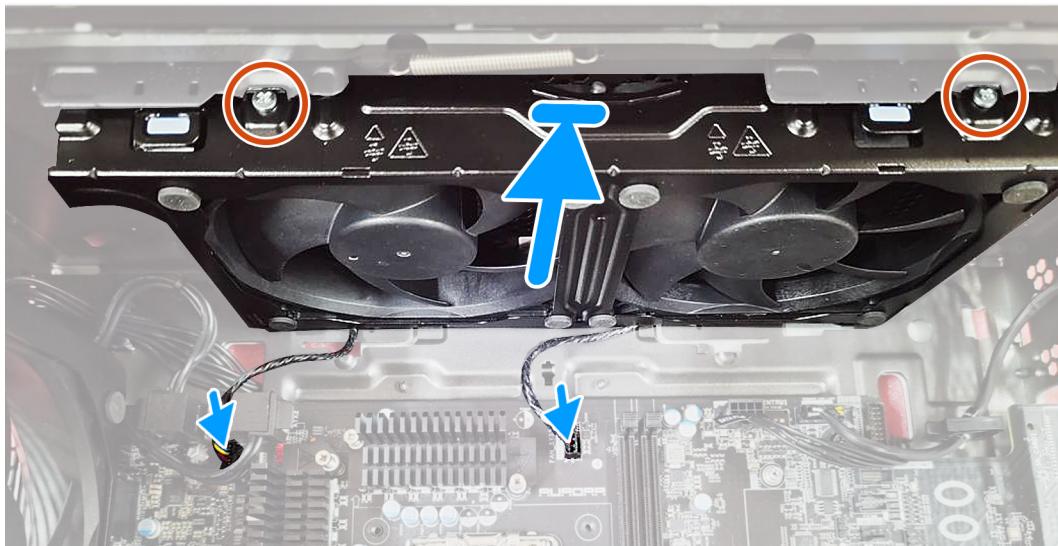
1. Follow the procedure in [Before working inside your computer](#).
2. Remove the [left-side cover](#).

About this task

The following images indicate the location of the top-chassis fan and provide a visual representation of the installation procedure.



2x
M3x5



Steps

1. Lay the computer on the right side.
2. Align and place the top-chassis fan on the chassis.
3. Connect the top-chassis fan cables from the system board.
4. Replace the two screws (M3x5) that secures the top-chassis fan to the chassis.

VR heat sink

Removing the VR heat sink

Prerequisites

1. Follow the procedure in [Before working inside your computer](#).
NOTE: The heat sink may become hot during normal operation. Allow sufficient time for the heat sink to cool before you touch it.
2. Remove the [left-side cover](#).

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

NOTE: 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.

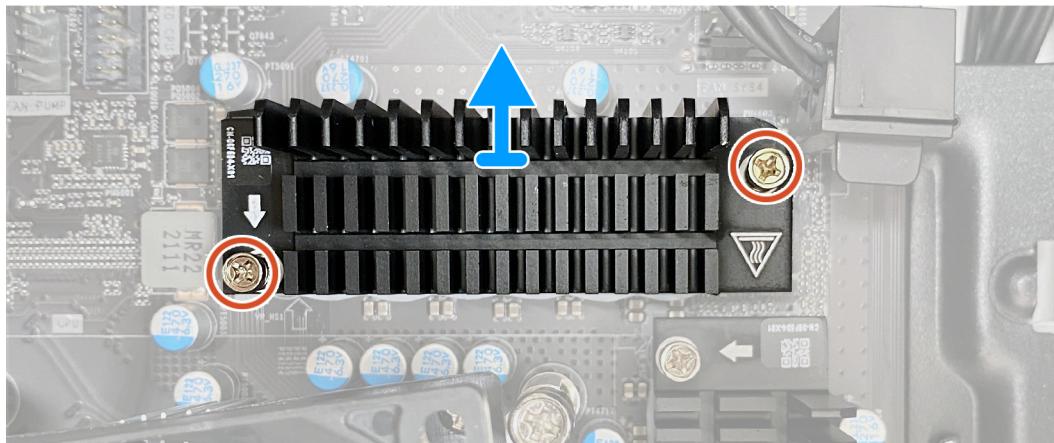
NOTE: The VR heat sink (2) are shipped as separate units and they do not ship along with the new system board. Remove the VR heat sink (2) from old system board for transfer to the new system board.

About this task

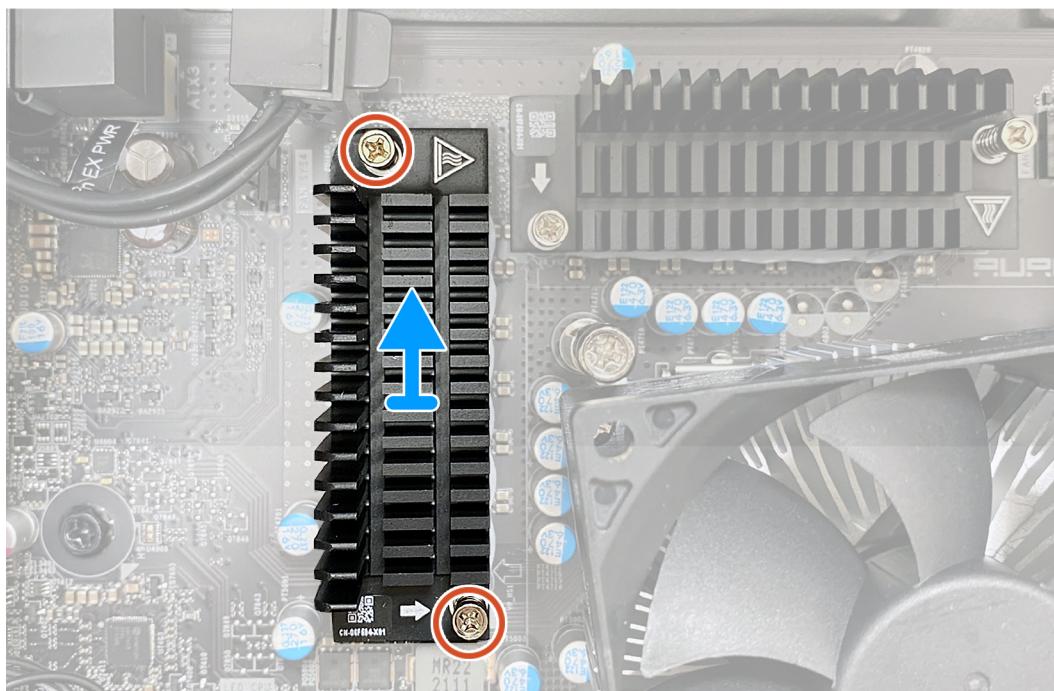
The following images indicate the location of the VR heat sink and provide a visual representation of the removal procedure.



2x



2x



Steps

1. Lay the computer on the right side.
2. Loosen the captive screws that secure the VR heat sink to the system board.

3. Repeat the same process for the other VR heat sink.
4. Lift the VR heat sink (2) off the system board.

Installing the VR heat sink

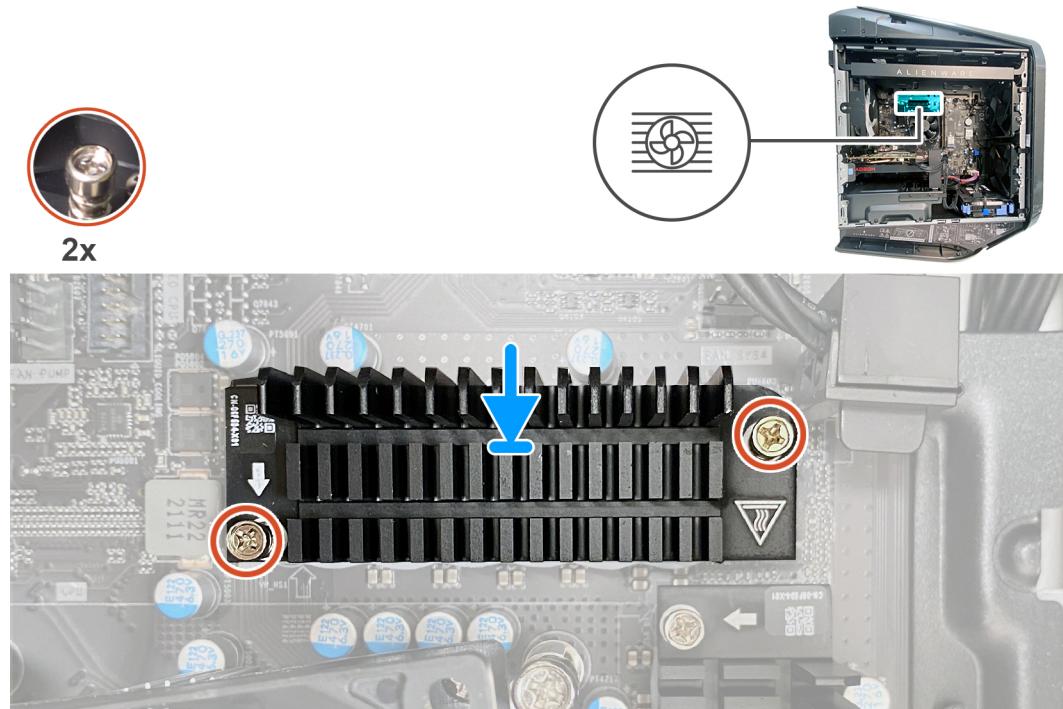
Prerequisites

If you are replacing a component, remove the existing component before performing the installation procedure.

(i) NOTE: Before installing the new VR heatsink, ensure to remove the protective foil from the thermal pad.

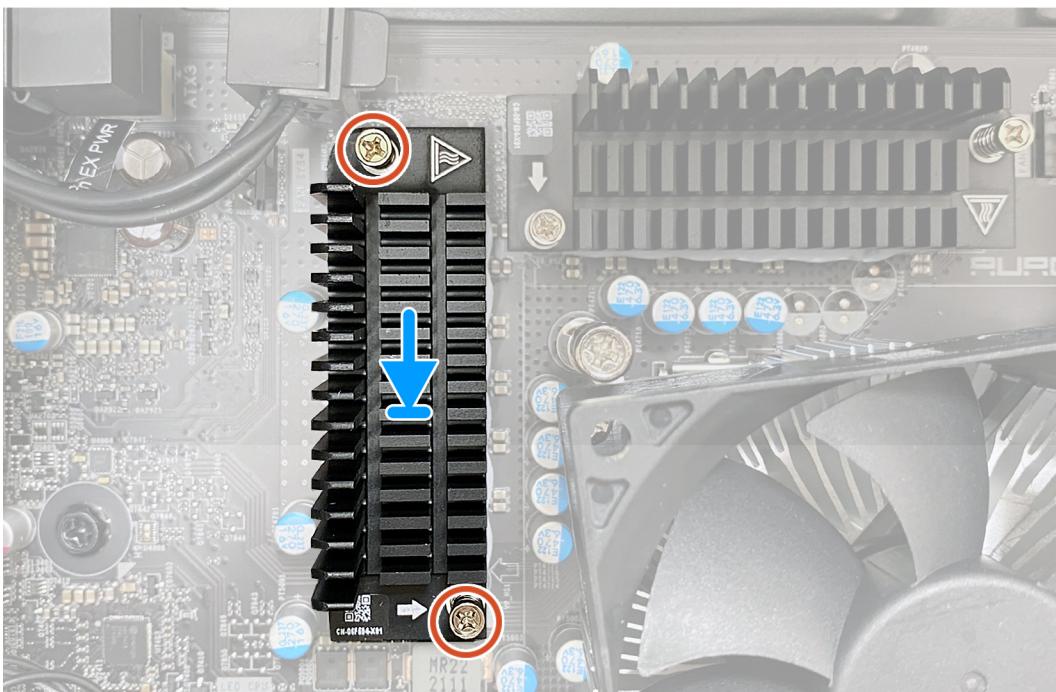
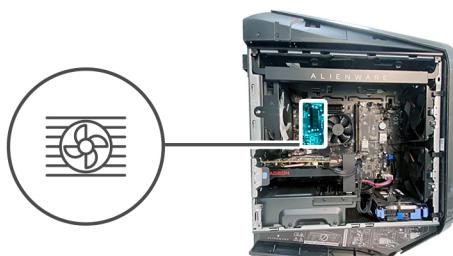
About this task

The following images indicate the location of the VR heat sink and provide a visual representation of the installation procedure.





2x



Steps

1. Align the captive screws of the VR heat sink with the screw holes on the system board.
2. Tighten the two captive screws that secure the VR heat sink to the system board.
3. Repeat the same procedure for the other VR heat sink.

Next steps

1. Install the [left-side cover](#).
2. Follow the procedure in [After working inside your computer](#).

System board

Removing the system board

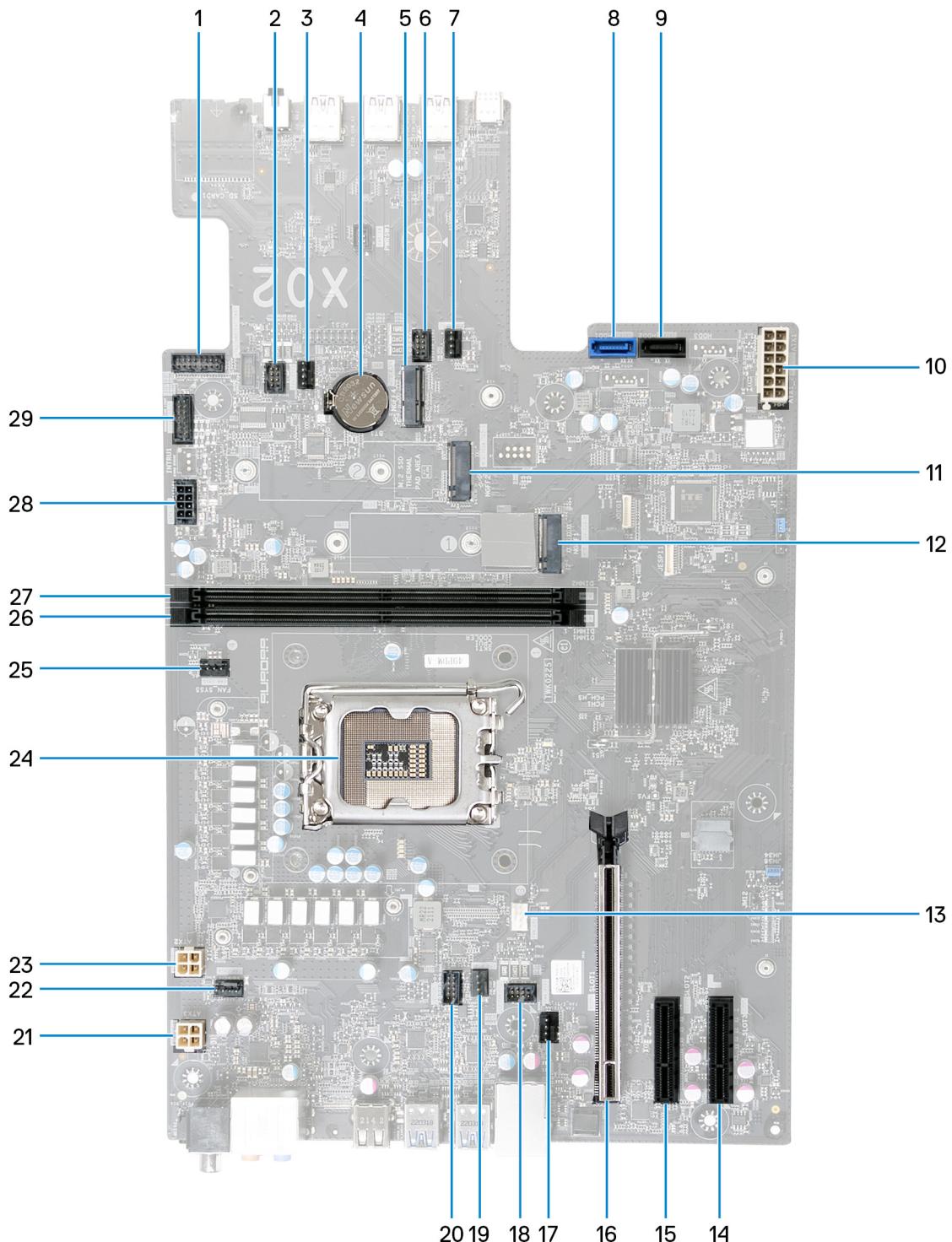
Prerequisites

1. Follow the procedure in [Before working inside your computer](#).
 - 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 that 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.

2. Remove the [left-side cover](#).
3. Remove the [top cover](#).
4. Remove the [right-side cover](#).
5. Remove the [front bezel](#).
6. Remove the [memory modules](#).
7. Remove the [single-graphics card](#).
8. Remove the [2230 solid-state drive](#) or the [2280 solid-state drive](#) in SSD slot one, as applicable.
9. Remove the [2230 solid-state drive](#) or the [2280 solid-state drive](#) in SSD slot two, as applicable.
10. Remove the [wireless card](#).
11. Remove the [processor liquid-cooling assembly](#) or [processor fan and heat-sink assembly](#), as applicable.
12. Remove the [processor](#).
13. Remove the [VR heat sink](#).

About this task

The following image indicates the connectors on your system board.

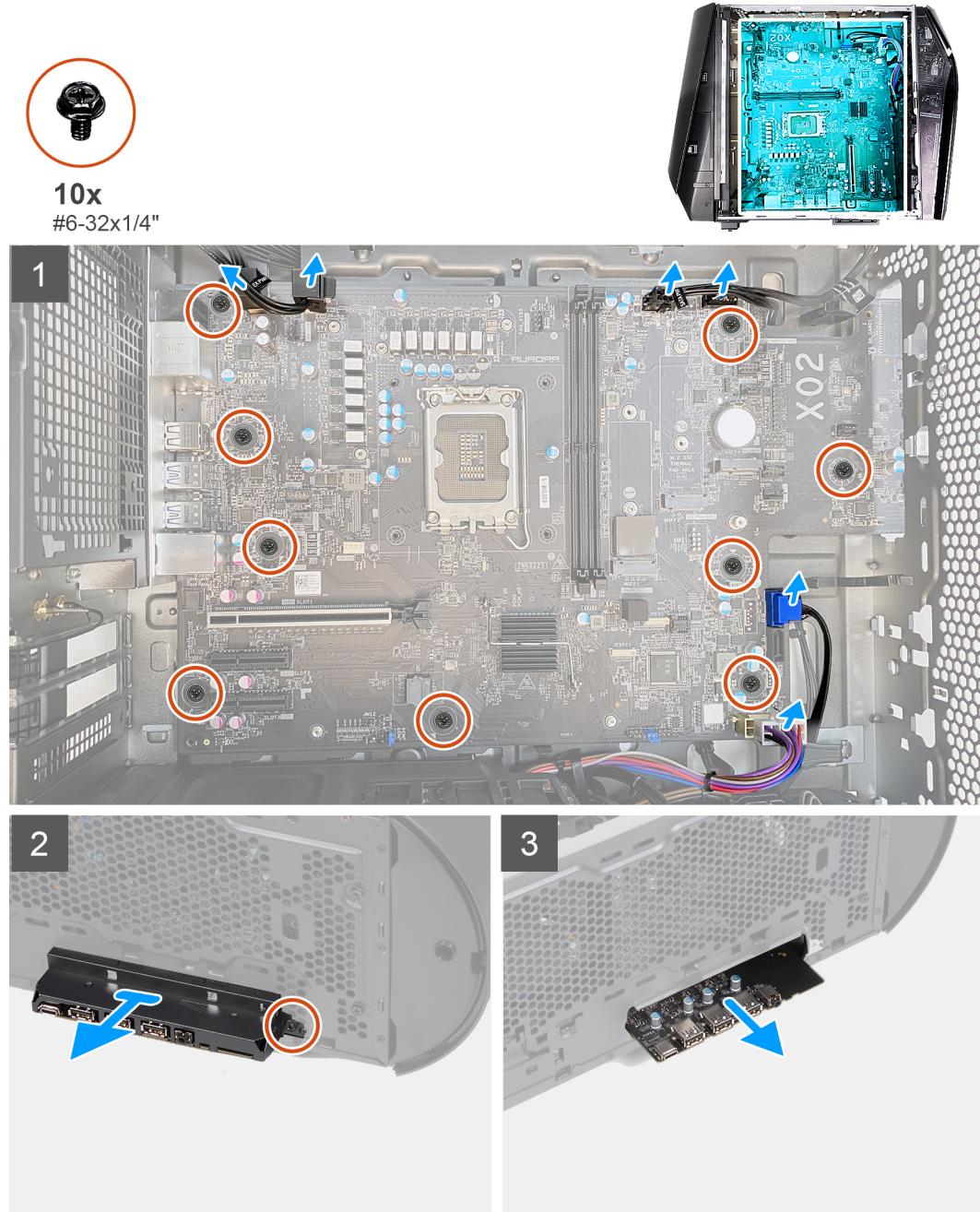


- 1. Front I/O-panel cable
- 2. SYSFAN_LED3 connector
- 3. Upper front-chassis connector (FAN_SYS3)
- 4. Coin-cell battery
- 5. Wireless-card slot
- 6. SYSFAN_LED2 connector
- 7. Lower front-chassis fan connector (FAN_SYS2)
- 8. SATA 6 Gbps drive connector (HDD1)
- 9. SATA 6 Gbps drive connector (HDD2)
- 10. Power-supply connector (ATX1)
- 11. Solid-state drive slot (M.2 PCIe SSD-1)
- 12. Solid-state drive slot (M.2 PCIe SSD-0)
- 13. Air-cooling fan connector (FAN CPU)
- 14. PCI-Express x4 slot (SLOT3)
- 15. PCI-Express x4 slot (SLOT2)
- 16. PCI-Express x16 mechanical/x16 electrical slot (SLOT1)
- 17. Rear-chassis fan connector (FAN_SYS1)
- 18. Rear-chassis fan LED connector (LED_FAN_SYS1)
- 19. Liquid cooling pump fan connector (FAN_PUMP)
- 20. Liquid cooling pump LED connector
- 21
- 22
- 23
- 24
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- 26
- 27
- 28
- 29
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- 4
- 3
- 2
- 1

- 21. Power-supply connector (ATX3)
- 23. Power-supply connector (ATX2)
- 25. Top-chassis fan connector two (FAN_SYS5)
- 27. Memory-module slot, DIMM2
- 29. Side-light connector (SIDE LIGHT)

- 22. Top-chassis fan connector one (FAN_SYS4)
- 24. CPU socket
- 26. Memory-module slot, DIMM1
- 28. SATA power connector (SATA PWR)

The following images indicate the location of the system board and provide a visual representation of the removal procedure.



4



Steps

1. Disconnect the hard-drive data cables from the system board.
2. Disconnect the processor-power cables from the system board.
3. Disconnect the system-board power cables from the system board.
4. Disconnect the top-chassis fan power cable from the system board.
5. Disconnect the rear-chassis fan power cable from the system board.
6. Disconnect the side-light power cable from the system board.
7. Disconnect the SATA power cable from the system board.
8. Disconnect all the cables that are connected to the system board.

NOTE: Note the routing of all cables as you remove them so that you can route them correctly after you replace the system board. For information about system-board connectors, see "[system-board components](#)".

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

9. Remove the nine screws (#6-32x1/4") that secure the system board to standoffs on the chassis.
10. Remove the screw (#6-32x1/4") that secures the front I/O-bracket to the chassis and remove the front I/O-bracket.
11. Hold the edge of the system board where the front I/O-ports are located.
12. Hold the edge of the system board where the rear ports are located.
13. Lift the system board off the chassis at an angle and remove the system board from the chassis.

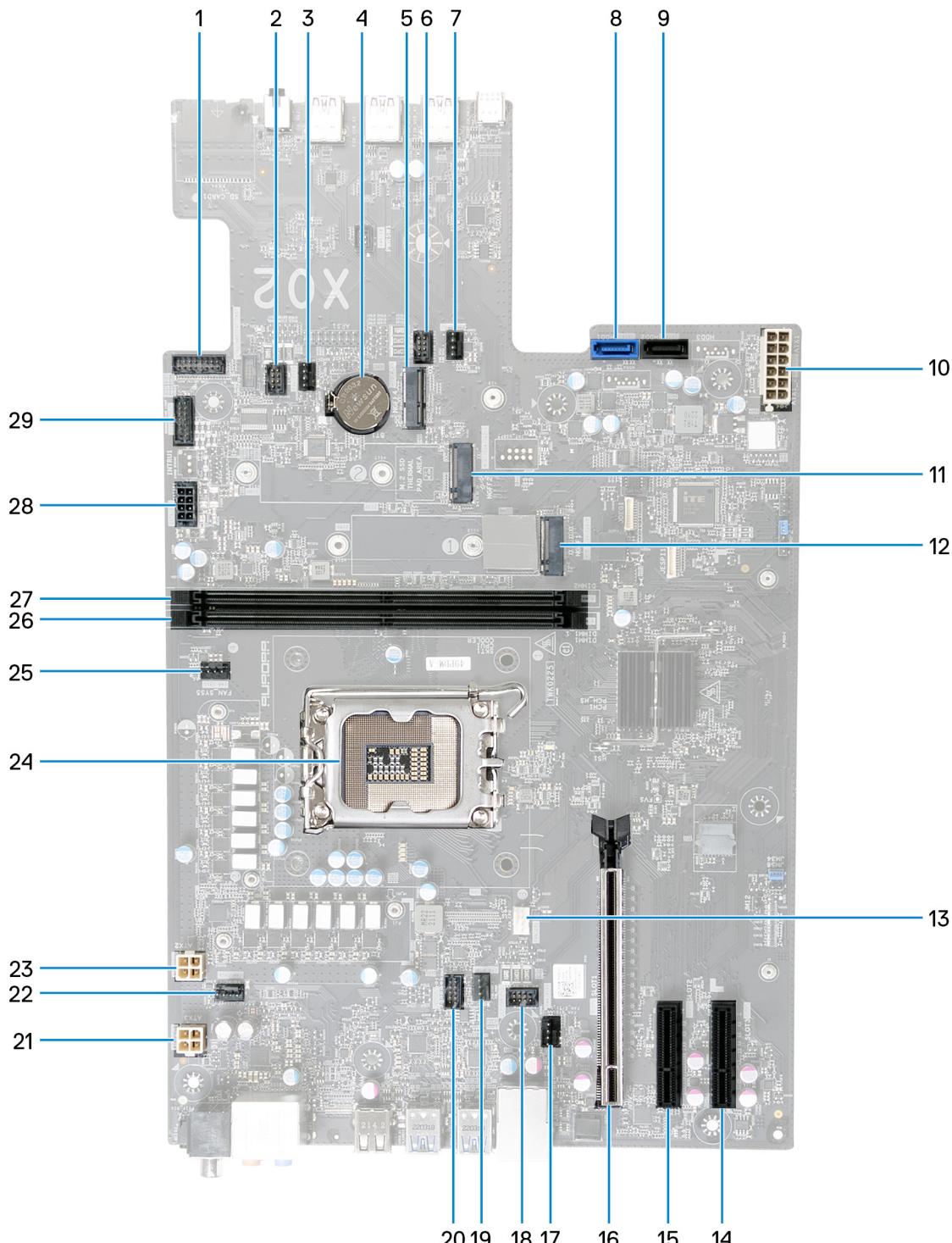
Installing the system board

Prerequisites

If you are replacing a component, remove the existing component before performing the installation procedure.

About this task

The following image indicates the connectors on your system board.



1. Front I/O-panel cable
2. SYSFAN_LED3 connector
3. Upper front-chassis connector (FAN_SYS3)

2. SYSFAN_LED3 connector
4. Coin-cell battery

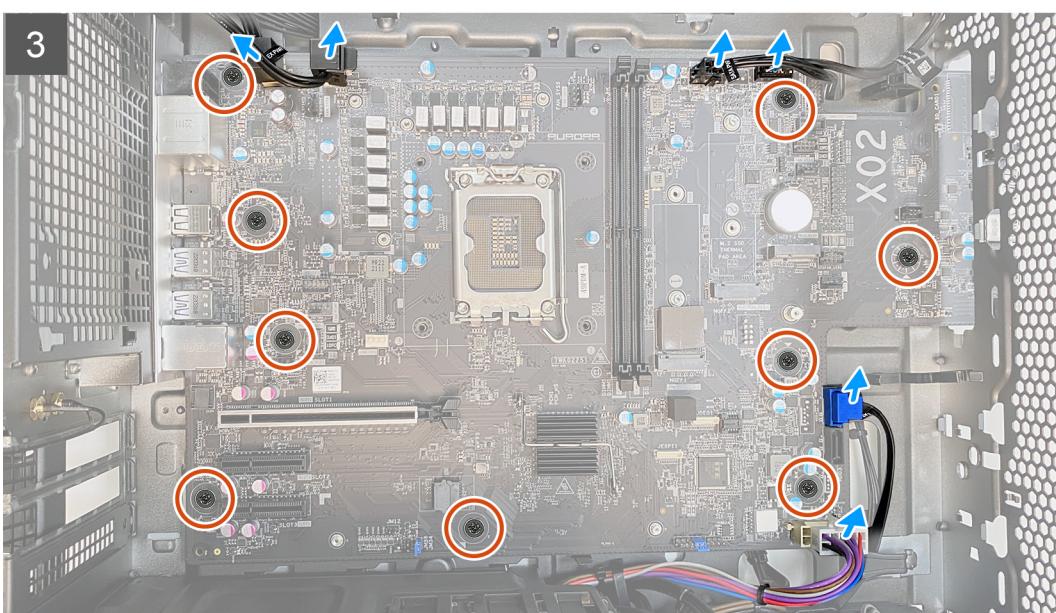
- 5. Wireless-card slot
- 7. Lower front-chassis fan connector (FAN_SYS2)
- 9. SATA 6 Gbps drive connector (HDD2)
- 11. Solid-state drive slot (M.2 PCIe SSD-1)
- 13. Air-cooling fan connector (FAN CPU)
- 15. PCI-Express x4 slot (SLOT2)
- 17. Rear-chassis fan connector (FAN_SYS1)
- 19. Liquid cooling pump fan connector (FAN PUMP)
- 21. Power-supply connector (ATX3)
- 23. Power-supply connector (ATX2)
- 25. Top-chassis fan connector two (FAN_SYS5)
- 27. Memory-module slot, DIMM2
- 29. Side-light connector (SIDE LIGHT)
- 6. SYSFAN_LED2 connector
- 8. SATA 6 Gbps drive connector (HDD1)
- 10. Power-supply connector (ATX1)
- 12. Solid-state drive slot (M.2 PCIe SSD-0)
- 14. PCI-Express x4 slot (SLOT3)
- 16. PCI-Express x16 mechanical/x16 electrical slot (SLOT1)
- 18. Rear-chassis fan LED connector (LED FAN_SYS1)
- 20. Liquid-cooling pump LED connector
- 22. Top-chassis fan connector one (FAN_SYS4)
- 24. CPU socket
- 26. Memory-module slot, DIMM1
- 28. SATA power connector (SATA PWR)

The following images indicate the location of the system board and provide a visual representation of the installation procedure.



10x
#6-32x1/4"





Steps

1. Slide the front I/O-ports on the system board into the front I/O-slot on the chassis and align the screw holes on the system board with the standoffs on the chassis.
2. Place the system board on the standoffs on the chassis.
3. Align the front I/O-bracket to the front I/O-ports and install the bracket on the chassis.
4. Replace the screw (#6-32x1/4") that secures the front I/O-bracket to the chassis.
5. Replace the nine screws (#6-32x1/4") that secure the system board assembly to the standoffs on the chassis.
6. Route and connect all the cables that were disconnected from the system board.
7. Connect the SATA power cable from the system board.
8. Connect the side-light power cable from the system board.
9. Connect the rear-chassis fan power cable from the system board.
10. Connect the top-chassis fan power cable from the system board.
11. Connect the system-board power cables from the system board.
12. Connect the processor-power cables from the system board.
13. Connect the hard-drive data cables from the system board.

Next steps

1. Install the [VR heat sink](#).
2. Install the [processor](#).
3. Install the [processor liquid-cooling assembly](#) or [processor fan and heat-sink assembly](#), as applicable.

4. Install the [wireless card](#).
5. Install the [2230 solid-state drive](#) or the [2280 solid-state drive](#) in SSD slot one, as applicable.
6. Install the [2230 solid-state drive](#) or the [2280 solid-state drive](#) in SSD slot two, as applicable.
7. Install the [single-graphics card](#).
8. Install the [memory modules](#).
9. Install the [front bezel](#).
10. Install the [right-side cover](#).
11. Install the [top cover](#).
12. Install the [left-side cover](#).
13. Follow the procedure in [After working inside your computer](#).

Drivers and downloads

When troubleshooting, downloading or installing drivers it is recommended that you read the Dell Knowledge Based article, Drivers and Downloads FAQ [000123347](#).

System setup

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

 **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

About this task

Turn on (or restart) your computer and press F2 immediately.

Navigation keys

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

Table 5. Navigation keys

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

Boot Sequence

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

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

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

- Removable Drive (if available)
- STXXXX Drive (if available)

(i) | NOTE: XXX denotes the SATA drive number.

- Optical Drive (if available)
- SATA Hard Drive (if available)
- Diagnostics

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

System setup options

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

Table 6. System setup options—Main menu

Main	
System Time	Displays the current time in hh:mm:ss format.
System Date	Displays the current date in mm/dd/yy format.
BIOS Version	Displays the BIOS version number.
Product Name	Displays the product name. Default: Alienware Aurora R15
Service Tag	Displays the service tag of your computer.
Asset Tag	Displays the asset tag of your computer.
CPU Type	Displays the processor type.
CPU Speed	Displays the speed of the processor.
CPU ID	Displays the processor identification code.
CPU Cache	
L1 Cache	Displays the processor L1 cache size.
L2 Cache	Displays the processor L2 cache size.
L3 Cache	Displays the processor L3 cache size.
Discrete Graphics 1	Displays the primary discrete graphics of your computer.
First HDD	Allows you to configure the first HDD.
M.2 PCIe SSD-0/1	Enables or disables the M.2 PCIe SSD-0/1.
System Memory	Displays the total computer memory installed.
Memory Speed	Displays the memory speed.

Table 7. System setup options—Advanced menu

Advanced	
Intel(R)SpeedStep	
Intel(R)SpeedStep	Enables or disables Intel(R)SpeedStep. Default: Enabled
Intel Speed Shift Technology	
Intel Speed Shift Technology	Enables or disables Intel Speed Shift Technology. Default: Enabled
HyperThread Control	
HyperThread Control	Enables or disables HyperThread Control. Default: Enabled
Multiple-Core Support	

Table 7. System setup options—Advanced menu (continued)

Advanced	
Multiple-Core Support	Allows you to configure Multiple-Core support. Default: All
Multiple Atom cores	
Multiple Atom cores	Allows you to configure Multiple Atom cores. Default: All
Trusted Execution	
Trusted Execution	Allows you to enable or disable Trusted Execution. Default: Enabled
Integrated NIC	
Integrated NIC	Allows you to enable or disable the integrated NIC. Default: Enabled
SATA/NVME Operation	
SATA/NVME Operation	Sets the operating mode of the integrated storage device controller. Default: RAID on
PCIeResizable Base Address Register	
PCIeResizable Base Address Register	Allows you to enable or disable the Resizable Base Address Register (BAR) feature. Default: Disabled
IPv4 HTTP Support	
IPv4 HTTP Support	Allows you to enable or disable IPv4 HTTP Support. Default: Disabled
IPv6 HTTP Support	
IPv6 HTTP Support	Allows you to enable or disable IPv6 HTTP Support. Default: Disabled
USB Configuration	
Front USB Ports	Allows you to enable or disable the Front USB ports. Default: Enabled
Rear USB Ports	Allows you to enable or disable the Rear USB ports. Default: Enabled
Power Options	
Wake Up by Integrated LAN	Allow the computer to be powered on by special LAN signals. Default: Disabled
AC Recovery	Sets what action the computer takes when power is restored. Default: Power Off
Deep Sleep Control	Allows you to define the controls when Deep Sleep is enabled. Default: Enabled in S4 and S5
USB Wake Support	Allows you to enable the USB devices to wake the system from Standby.

Table 7. System setup options—Advanced menu (continued)

Advanced	
USB PowerShare in S4/S5 state	Default: Enabled Allows you to charge external devices.
USB PowerShare in Sleep State	Default: Disabled Allows you to enable front the USB devices to wake the system from sleep state.
Auto Power On	Default: Normal Allows you to enable or disable Auto Power On.
Auto Power On Mode	Default: Disabled 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	Default: Selected Day 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	Default: 15 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.
Numlock Key	Default: 12:30:30 Allows you to set the status of the Num Lock key during boot to On or Off.
Performance Options	
Overclocking Feature	Default: Enabled Allows you to enable or disable the Overclocking Feature.
Overclocking Feature	Default: Disabled Allows you to configure the Core Over Clocking Level.
Core Over Clocking Level#	Default: Disabled
Customization	
Core Ratio Limit Override	Allows you to configure the Core Ratio Limit Override.
Core Voltage Override	Allows you to configure the Core Voltage Override.
Long Duration PWR Limit	Allows you to configure the Long Duration PWR Limit.
Short Duration PWR Limit	Allows you to configure the Short Duration PWR Limit.
XMP Memory	Allows you to configure the XMP Memory.
	Default: Disabled
Maintenance	
Data Wipe on next boot	Default: Disabled When enabled, the BIOS will schedule a data wipe cycle for all storage devices that are connected to the system board on the next reboot.

Table 7. System setup options—Advanced menu (continued)

Advanced	
BIOS Recovery from Hard Drive	Enables the computer to recover from certain corrupted BIOS conditions from a recovery file on the user primary hard drive or an external USB key. NOTE: BIOS Recovery from Hard Drive is not available for Self-encrypting drives (SED). Default: Enabled
BIOS Auto-Recovery	When enabled, the autorecovery will be performed if BIOS image integrity check fails and there is a recovery image on the hard drive. NOTE: BIOS Auto-Recovery is not possible from other media. Default: Disabled
SupportAssist System Resolution	
Auto OS Recovery Threshold	Controls the automatic boot flow for SupportAssist System Resolution Console and for Dell operating system Recovery tool. Default: 2
SupportAssist OS Recovery	Allows you to enable or disable the SupportAssist OS Recovery. Default: Enabled

Table 8. System setup options—Security menu

Security	
Unlock Setup Status	Displays the unlock setup status.
Admin Password Status	Displays whether the admin password is set. Default: Not Set
System Password Status	Displays whether the system password is set. Default: Not Set
HDD Password Status	Displays if the hard drive password is set. Default: Not Set
Asset Tag	Creates a system Asset Tag that can be used by an IT administrator to uniquely identify a particular system. Once set in BIOS, the Asset Tag cannot be changed.
Admin Password	Enables the user to set, change, or delete the admin password.
System Password	Enables the user to set, change, or delete the system password.
HDD Password	Enables the user to set, change, or delete the hard drive password.
SED Block SID Authentication	Allows you to enable or disable SED Block SID Authentication. Default: Disabled
PPI Bypass for SED Block SID Command	Allows you to enable or disable PPI Bypass for SED Block SID Command. Default: Disabled

Table 8. System setup options—Security menu (continued)

Security	
Password Change	Allows you to enable or disable password change on the computer. Default: Permitted
Absolute	Enable or disable the BIOS module interface of the optional Absolute Persistence Module service from Absolute Software. Default: Enabled
Firmware TPM	Displays the firmware TPM state. Default: Enabled
PPI Bypass for Clear Command	Enable or disable the TPM Physical Presence Interface (PPI). When enabled, this setting will allow the OS to skip BIOS PPI user prompts when issuing the Clear command. Changes to this setting take effect immediately. Default: Disabled
UEFI Firmware Capsule Updates	Enables or disables BIOS updates through UEFI capsule update packages. Default: Enabled
Windows SMM Security Mitigations Table	Enables or disables Windows SMM Security Mitigation protections. Default: Disabled
Enable Pre-Boot DMA Protection	Enables or disables Pre-Boot DMA Protection. Default: Enabled
Enable OS Kernel DMA Support	Enables or disables OS Kernel DMA Support. Default: Enabled
Secure Boot	
Secure Boot	Enables secure boot using only validated boot software. Default: Disabled
Secure Boot Mode	Modifies the behavior of Secure Boot to allow evaluation or enforcement of UEFI driver signatures. Deployed Mode should be selected for normal operation of Secure Boot. Default: Deployed Mode
Expert Key Management	
Custom Mode	Allows you to enable or disable Custom Mode. When enabled, it allows the PK, KEK, db, and dbx security key databases to be modified. Default: Disabled
Enable Microsoft UEFI CA	Allows you to enable or disable Microsoft UEFI CA. Default: Enabled
PK	Allows for selection of key database.
KEK	<ul style="list-style-type: none">• Delete All Keys will delete the selected key.
db	<ul style="list-style-type: none">• Reset All Keys will reset all four keys to their default settings.
dbx	

Table 8. System setup options—Security menu (continued)

Security
Reset all Keys
Delete all Keys

Table 9. System setup options—Boot menu

Boot	
Boot List Option	Displays the available boot devices. Default: UEFI
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.
Boot Option Priorities	Displays the available boot devices.
Boot Option #1	Displays the first boot device. Default: Windows Boot Manager.
Boot Option #2	Displays the second boot device. Default: Onboard NIC (IPV4)
Boot Option #3	Displays the third boot device. Default: Onboard NIC (IPV6)

Table 10. System setup options—Exit menu

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

System and setup password

Table 11. System and setup password

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

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

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

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

 **NOTE:** System and setup password feature is disabled.

Assigning a system setup password

Prerequisites

You can assign a new **System or Admin Password** only when the status is in **Not Set**.

About this task

To enter the system setup, press F12 immediately after a power-on or reboot.

Steps

1. In the **System BIOS** or **System Setup** screen, select **Security** and press Enter.
The **Security** screen is displayed.
2. Select **System/Admin Password** and create a password in the **Enter the new password** field.
Use the following guidelines to assign the system password:
 - A password can have up to 32 characters.
 - At least one special character: ! " # \$ % & ' () * + , - . / : ; < = > ? @ [\] ^ _ ` { | }
 - Numbers 0 through 9.
 - Upper case letters from A to Z.
 - Lower case letters from a to z.
3. Type the system password that you entered earlier in the **Confirm new password** field and click **OK**.
4. Press Esc and save the changes as prompted by the pop-up message.
5. Press Y to save the changes.
The computer restarts.

Deleting or changing an existing system setup password

Prerequisites

Ensure that the **Password Status** is **Unlocked** (in the System Setup) before attempting to delete or change the existing System and/or Setup password. You cannot delete or change an existing System or Setup password, if the **Password Status** is **Locked**.

About this task

To enter the System Setup, press F12 immediately after a power-on or reboot.

Steps

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

 **NOTE:** If you change the System and/or Setup password, reenter the new password when prompted. If you delete the System and/or Setup password, confirm the deletion when prompted.

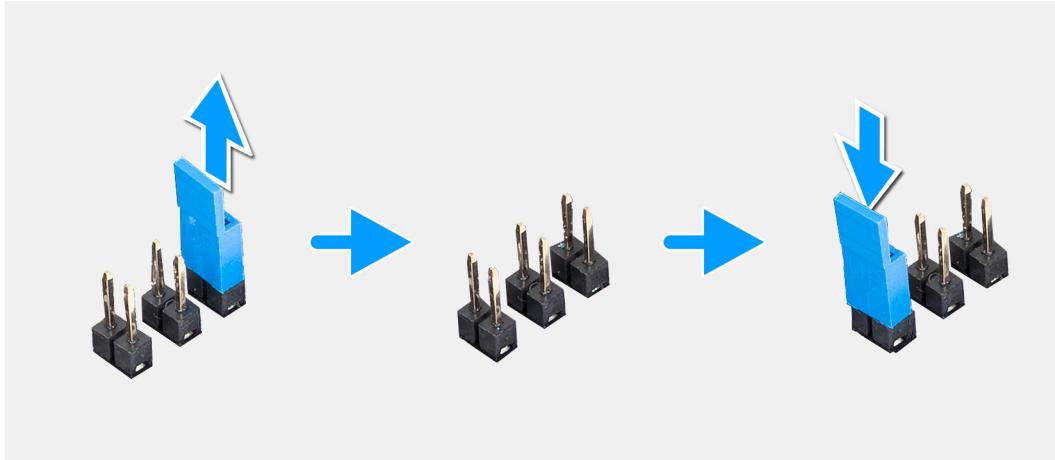
5. Press Esc and a message prompts you to save the changes.
6. Press Y to save the changes and exit from System Setup.
The computer restarts.

Clearing CMOS settings

About this task

 **CAUTION:** Clearing CMOS settings will reset the BIOS settings on your computer.

The following images indicate the location of the CMOS jumper on the system board and provide a visual representation of the clearing CMOS procedure.



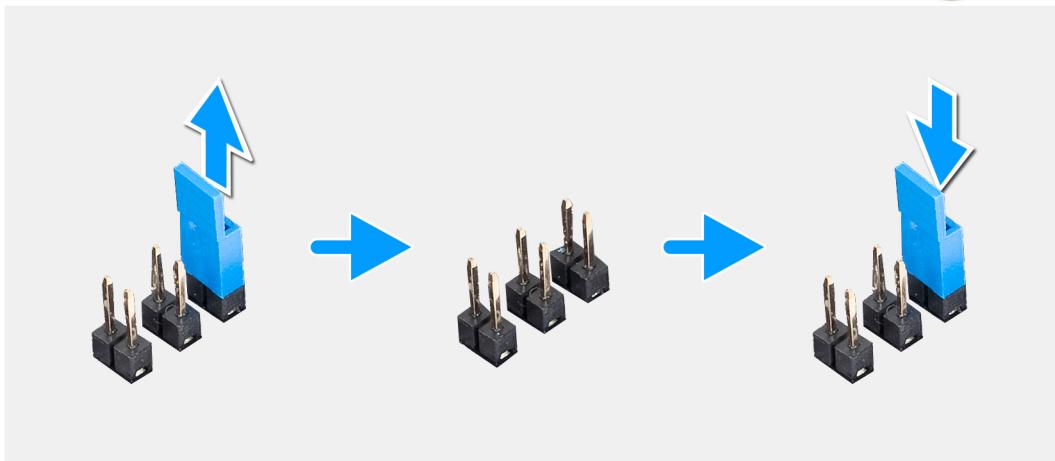
Steps

1. Turn off the computer and disconnect the power cable from the computer.
2. Remove the [left-side cover](#).
3. Lay the computer on its right side.
4. Locate the 2-pin CMOS jumper on the system board.
5. Ensure that the jumper is on the pair of password pins (JM34).
6. Move the jumper to the pair of CMOS pins (JM12).
7. Plug the power cable to the computer.
8. Wait for 10 seconds for the CMOS to clear.
9. Disconnect the power cable from the computer.
10. Move the jumper to the pair of password pins (JM34).
11. Install the [left-side cover](#).

Clearing BIOS (System Setup) and System passwords

About this task

The following images indicate the location of the password reset jumper on the system board and provide a visual representation of the clearing passwords procedure.



Steps

1. Turn off the computer and disconnect the power cable from the computer.
2. Remove the [left-side cover](#).
3. Lay the computer on its right side.
4. Locate the 2-pin password reset jumper on the system board.
5. Ensure that the jumper is on the pair of password pins (JM34) and remove the jumper.
6. Plug the power cable to the computer and turn on the computer to clear the password.
7. Wait for until the desktop is loaded and then shut down the computer.
8. Disconnect the power cable from the computer.
9. Replace the jumper on the pair of password pins (JM34).
10. Install the [left-side cover](#).

Updating the BIOS

Updating the BIOS in Windows

Steps

1. Go to www.dell.com/support.
2. Click **Product support**. In the **Search support** box, enter the Service Tag of your computer, and then click **Search**.
NOTE: If you do not have the Service Tag, use the SupportAssist feature to automatically identify your computer. You can also use the product ID or manually browse for your computer model.
3. Click **Drivers & Downloads**. Expand **Find drivers**.
4. Select the operating system installed on your computer.
5. In the **Category** drop-down list, select **BIOS**.
6. Select the latest version of BIOS, and click **Download** to download the BIOS file for your computer.
7. After the download is complete, browse the folder where you saved the BIOS update file.
8. Double-click the BIOS update file icon and follow the on-screen instructions.

For more information, see knowledge base article [000124211](http://www.dell.com/support) at www.dell.com/support.

Updating the BIOS using the USB drive in Windows

Steps

1. Follow the procedure from step 1 to step 6 in [Updating the BIOS in Windows](#) to download the latest BIOS setup program file.
2. Create a bootable USB drive. For more information, see the knowledge base article [000145519](http://www.dell.com/support) at www.dell.com/support.
3. Copy the BIOS setup program file to the bootable USB drive.
4. Connect the bootable USB drive to the computer that needs the BIOS update.
5. Restart the computer and press **F12**.
6. Select the USB drive from the **One Time Boot Menu**.
7. Type the BIOS setup program filename and press **Enter**.
The **BIOS Update Utility** appears.
8. Follow the on-screen instructions to complete the BIOS update.

Updating the BIOS from the F12 One-Time boot menu

Update your computer BIOS using the BIOS update.exe file that is copied to a FAT32 USB drive and booting from the F12 One-Time boot menu.

About this task

BIOS Update

You can run the BIOS update file from Windows using a bootable USB drive or you can also update the BIOS from the F12 One-Time boot menu on the computer.

Most of the Dell computers built after 2012 have this capability, and you can confirm by booting your computer to the F12 One-Time Boot Menu to see if BIOS FLASH UPDATE is listed as a boot option for your computer. If the option is listed, then the BIOS supports this BIOS update option.

 **NOTE:** Only computers with BIOS Flash Update option in the F12 One-Time boot menu can use this function.

Updating from the One-Time boot menu

To update your BIOS from the F12 One-Time boot menu, you need the following:

- USB drive formatted to the FAT32 file system (key does not have to be bootable)
- BIOS executable file that you downloaded from the Dell Support website and copied to the root of the USB drive
- AC power adapter that is connected to the computer
- Functional computer battery to flash the BIOS

Perform the following steps to perform the BIOS update flash process from the F12 menu:

 **CAUTION: Do not turn off the computer during the BIOS update process. The computer may not boot if you turn off your computer.**

Steps

1. From a turn off state, insert the USB drive where you copied the flash into a USB port of the computer.
2. Turn on the computer and press F12 to access the One-Time Boot Menu, select BIOS Update using the mouse or arrow keys then press Enter.
The flash BIOS menu is displayed.
3. Click **Flash from file**.
4. Select external USB device.
5. Select the file and double-click the flash target file, and then click **Submit**.
6. Click **Update BIOS**. The computer restarts to flash the BIOS.
7. The computer will restart after the BIOS update is completed.

Troubleshooting

SupportAssist diagnostics

About this task

The SupportAssist diagnostics (previously known as ePSA diagnostics) performs a complete check of your hardware. The SupportAssist diagnostics is embedded in the BIOS and is launched by it internally. The SupportAssist diagnostics provides a set of options for particular devices or device groups. It allows you to:

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

(i) NOTE: Some tests are meant for specific devices and require user interaction. Ensure that you are present in front of the computer when the diagnostic tests are performed.

For more information, see [SupportAssist Pre-Boot System Performance Check](#).

System-diagnostic lights

The power-status light indicates the power status of the computer. These are the power states:

Solid white—Computer is in S0 state. This is the normal power state of the computer.

Blinking white—Computer is in a low-power state, S3. This does not indicate a fault.

Solid amber—Computer is experiencing a boot failure, including the power-supply unit.

Blinking amber—Computer is experiencing a boot failure but the power-supply unit is functioning correctly.

Off—Computer is in hibernation mode or turned off.

The power-status light may also blink amber or white according to predefined "beep codes" indicating various failures.

For example, the power and battery-status light blinks amber two times followed by a pause, and then blinks white three times followed by a pause. This 2,3 pattern continues until the computer is turned off, indicating no memory or RAM is detected.

The following table shows different power and battery-status light patterns and associated problems.

(i) NOTE: The following diagnostic light codes and recommended solutions are intended for Dell service technicians to troubleshoot problems. You should only perform troubleshooting and repairs as authorized or directed by the Dell technical support team. Damage due to servicing that is not authorized by Dell is not covered by your warranty.

Table 12. Diagnostic light codes

Diagnostic light codes (Amber, White)	Problem description
1,1	TPM Detection Failure
1,2	Unrecoverable SPI Flash Failure
1,5	EC unable to program i-Fuse
1,6	Generic catch-all for ungraceful EC code flow errors
1,7	Non-RPMC Flash on Boot Guard fused system
2,1	CPU configuration or CPU failure
2,2	System board: BIOS or Read-Only Memory (ROM) failure

Table 12. Diagnostic light codes (continued)

Diagnostic light codes (Amber, White)	Problem description
2,3	No memory or Random-Access Memory (RAM) detected
2,4	Memory or Random-Access Memory (RAM) failure
2,5	Invalid memory installed
2,6	System board/Chipset Error
3,1	CMOS battery failure
3,2	PCI of Video card/chip failure
3,3	BIOS Recovery 1: BIOS recovery image not found
3,4	BIOS Recovery 2: Recovery image found but invalid
3,5	Power Rail Failure: EC ran into power sequencing failure
3,6	Flash corruption detected by SBIOS
4,1	Memory DIMM power rail failure
4,2	CPU Power cable connection issue

Recovering the operating system

When your computer is unable to boot to the operating system even after repeated attempts, it automatically starts Dell SupportAssist OS Recovery.

Dell SupportAssist OS Recovery is a standalone tool that is preinstalled in all Dell computers installed with Windows operating system. It consists of tools to diagnose and troubleshoot issues that may occur before your computer boots to the operating system. It enables you to diagnose hardware issues, repair your computer, back up your files, or restore your computer to its factory state.

You can also download it from the Dell Support website to troubleshoot and fix your computer when it fails to boot into their primary operating system due to software or hardware failures.

For more information about the Dell SupportAssist OS Recovery, see *Dell SupportAssist OS Recovery User's Guide* at www.dell.com/serviceabilitytools. Click **SupportAssist** and then, click **SupportAssist OS Recovery**.

WiFi power cycle

About this task

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

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

Steps

1. Turn off your computer.
2. Turn off the modem.
3. Turn off the wireless router.
4. Wait for 30 seconds.
5. Turn on the wireless router.
6. Turn on the modem.
7. Turn on your computer.

Drain residual flea power (perform hard reset)

About this task

Flea power is the residual static electricity that remains in the computer even after it has been powered off and the battery is removed.

For your safety, and to protect the sensitive electronic components in your computer, you are requested to drain residual flea power before removing or replacing any components in your computer.

Draining residual flea power, also known as a performing a "hard reset", is also a common troubleshooting step if your computer does not power on or boot into the operating system.

To drain residual flea power (perform a hard reset)

Steps

1. Turn off your computer.
2. Disconnect the power adapter from your computer.
3. Press and hold the power button for 20 seconds to drain the flea power.
4. Connect the power adapter to your computer.
5. Turn on your computer.

 **NOTE:** For more information about performing a hard reset, see the knowledge base article [000130881](http://www.dell.com/support) at www.dell.com/support.

Getting help and contacting Alienware

Self-help resources

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

Table 13. Alienware products and online self-help resources

Self-help resources	Resource location
Information about Alienware products and services	www.alienware.com
My Dell app	
Tips	
Contact Support	In Windows search, type Contact Support , and press Enter .
Online help for operating system	www.dell.com/support/windows
Access top solutions, diagnostics, drivers and downloads, and learn more about your computer through videos, manuals and documents.	Your Alienware computer is uniquely identified by a Service Tag or Express Service Code. To view relevant support resources for your Dell computer, enter the Service Tag or Express Service Code at www.dell.com/support . For more information on how to find the Service Tag for your computer, see Locate the Service Tag on your computer .
VR Support	www.dell.com/VRsupport
Videos providing step-by-step instructions to service your computer	www.youtube.com/alienwareservices

Contacting Alienware

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

(i) | NOTE: Availability varies by country/region and product, and some services may not be available in your country/region.

(i) | NOTE: If you do not have an active Internet connection, you can find contact information about your purchase invoice, packing slip, bill, or Dell product catalog.