

Dell Pro Precision 7 R1

PW7R1260

Service Manual

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

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 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 [Dell Regulatory Compliance Home Page](#).

 **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:** 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.

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

 **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 connector on the cable is correctly oriented and aligned with the port.

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

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. For Windows operating system, 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. Turn off all the attached peripherals.

4. Disconnect your computer from the electrical outlet.

5. Disconnect all attached network devices and peripherals, such as keyboard, mouse, and monitor from your computer.

 **CAUTION:** To disconnect a network cable, unplug the cable from your computer.

6. Remove any media card and optical disc from your computer, if applicable.

Safety precautions

This section details the primary steps to be followed before disassembling any device or component.

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

- Turn off the computer and all attached peripherals.
- Disconnect the computer from AC power.
- Disconnect all network cables and peripherals from the computer.
- Use an ESD field service kit when working inside your computer to avoid electrostatic discharge (ESD) damage.
- Place the removed component on an anti-static mat after removing it from the computer.
- Press and hold the power button for 15 seconds to discharge the 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 by using 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 nonmetal surface. Ensure that the wrist strap is secure and in full contact with your skin. Remove all jewelry, watches, bracelets, or rings before grounding 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 modules, and system boards. A slight charge 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.

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 module that has received a static shock and immediately generates a "No POST/No Video" symptom with a beep code that is 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 memory module receives a static shock, but the tracing is merely weakened and does not immediately produce outward symptoms that are 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, and so on.

Intermittent failures that are also called latent or "walking wounded" are difficult to detect and troubleshoot.

Perform the following steps to prevent ESD damage:

- Use a wired ESD wrist strap that is properly grounded. Wireless anti-static straps 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, use the anti-static wrist strap to discharge the static electricity from your body.

NOTE: You can protect against ESD and discharge static electricity from your body by touching a metal-grounded object before you interact with anything electronic, for example, an unpainted metal surface on your computer's I/O panel. When connecting a peripheral (including handheld digital assistants) to your computer, you should always ground both yourself and the peripheral before connecting it to the computer. In addition, as you work inside the computer, periodically touch a metal-grounded object to remove any static charge that your body may have accumulated.

For more information about the wrist strap and ESD wrist strap tester, see [Components of an ESD Field Service Kit](#).

- 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.

 **CAUTION:** It is critical to keep ESD-sensitive devices away from internal parts that are insulated and often highly charged, such as plastic heat sink casings.

Working environment

Before the ESD Field Service kit is deployed, conduct an evaluation of the site to ensure proper setup and readiness. For example, deploying the kit for a server environment is different than for a desktop or laptop environment. Servers are typically installed in a rack within a data center; desktops or laptops 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 computer 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 component 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 anti-static mat, in the computer, or inside an ESD bag.

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 anti-static mat and to any bare metal on the computer being worked on. Once deployed properly, service parts can be removed from the ESD bag and placed directly on the anti-static mat. ESD-sensitive items are safe in your hand, on the anti-static mat, in the computer, or inside an ESD bag.
- **Wrist Strap and Bonding Wire** – If an anti-static mat is not being used, the wrist strap and bonding wire should be connected directly between your wrist and an exposed metal part of the hardware. If you are using an anti-static mat, connect the wrist strap and bonding wire to the anti-static mat to ensure protection for any hardware placed on the mat. The physical connection of the wrist strap and bonding wire between your skin, the anti-static mat, and the hardware is known as bonding. Use only Field Service kits with a wrist strap, anti-static mat, and bonding wire. Never use wireless wrist straps. Always be cautious 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 an ESD strap are prone to damage over time. When using an unmonitored ESD kit, it is recommended to test the wrist strap regularly—ideally before each service session, and at a minimum, once per week. The most reliable method for testing is with a wrist strap tester. To perform the test, connect the bonding wire of the wrist strap to the tester while wearing the strap. Press the test button to initiate the check. A green LED indicates a successful test, while a red LED and audible alarm signal a failure.

 **NOTE:** It is recommended to always use the traditional wired ESD grounding wrist strap and protective anti-static mat when servicing Dell products. In addition, it is critical to keep sensitive parts separate from all insulator parts while servicing the computer.

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 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 technique 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 components 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.

Information on repairability for Québec - From Dell Canada Inc. - to Quebec consumers

Dell does not guarantee the availability of replacement parts, repair services, or information necessary for maintenance or repair.

BitLocker

When updating the BIOS on a computer with BitLocker enabled, consider the following precautions.

 **CAUTION:** If BitLocker is not suspended before updating the BIOS, the BitLocker key is not recognized the next time you reboot the computer. You will then be prompted to enter the recovery key to proceed, and the computer displays a prompt for the recovery key on each reboot. Failure to provide the recovery key can result in data loss or an operating system reinstall. For more information, refer [Updating the BIOS on Dell systems with BitLocker enabled](#).

The installation of the following components triggers BitLocker:

- Hard disk drive or solid state drive
- System board

Recommended tools

The procedures in this document may require the following tools:

- Phillips screwdriver #1
- Phillips screwdriver #2
- Torx #6 (T6) screwdriver

Screw list

- NOTE:** When removing screws from a component, it is recommended to note the screw type and 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.
- NOTE:** Some computers have magnetic surfaces. Ensure that the screws are not left attached to such surfaces when replacing a component.
- NOTE:** Screw color may vary depending on the configuration ordered.

Table 1. Screw list

Component	Screw type	Quantity	Screw image
M.2 NVMe SSD and Front M.2 NVMe SSD carrier and tray	M3x3.5	6	
M.2 NVMe SSD and Front M.2 NVMe SSD carrier and tray	M2x3.5	1	
M.2 SSD heatsink	Captive (M2)	2	
M.2 SSD	M2x3.5	2	
Processor heat sink	Captive (M3)	4	
Hard-drive cage	Captive (M3.5)	2	
HDD SATA and Power Cables	M3x5.3	2	
PSU block cover	M3x5.3	1	
Power distribution board (PDB)	M3x5.3	3	
Processor fan cage	M3x5.3	2	
Front I/O board	M3x5.3	3	
System board	M3x5.3	9	

Major components of Dell Pro Precision 7 R1 PW7R1260

The following image shows the major components of Dell Pro Precision 7 R1 PW7R1260.

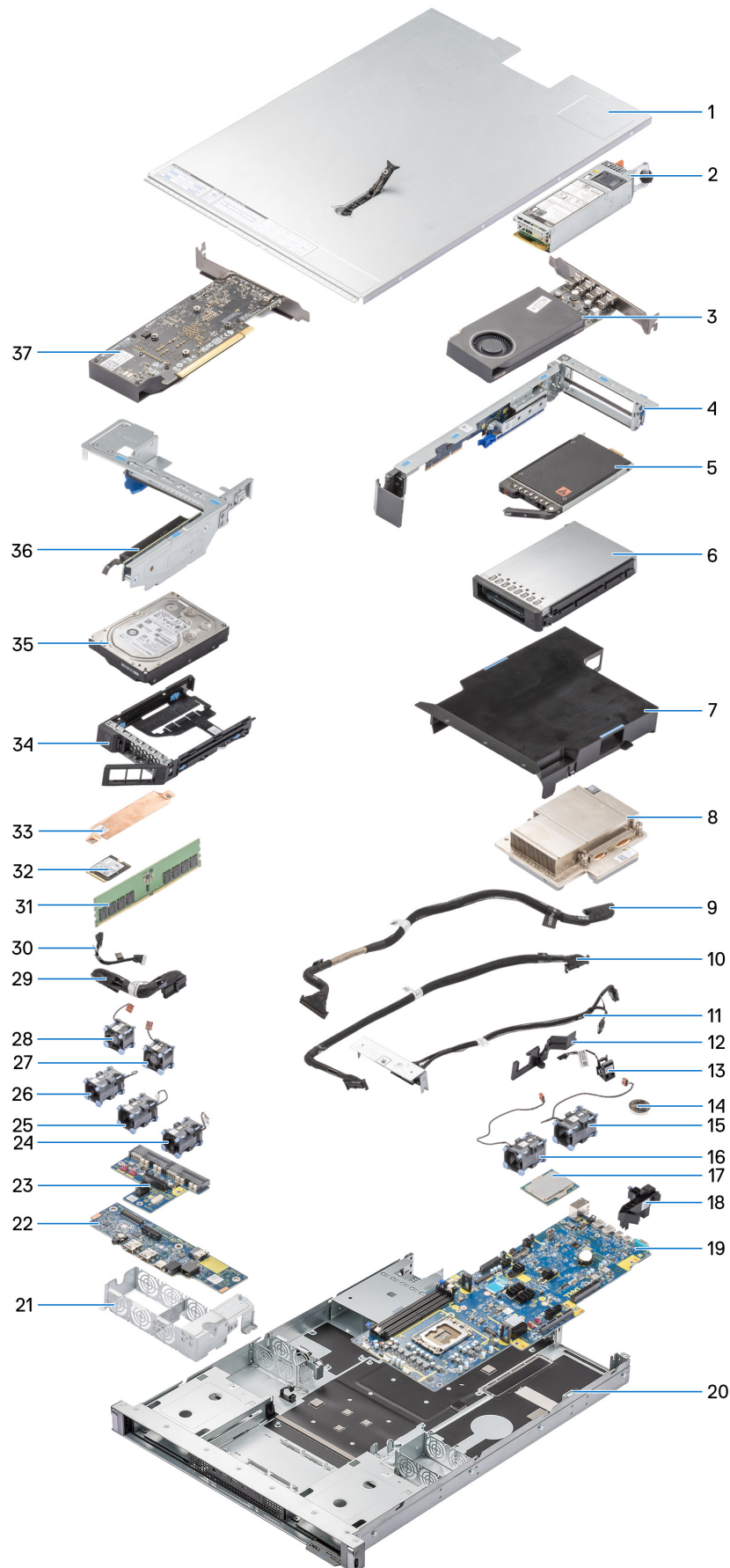


Figure 1. Major components of Dell Pro Precision 7 R1 PW7R1260

1. Top cover
2. Power supply unit (PSU)
3. Graphics card
4. Riser-1 cage module
5. M.2 NVMe SSD carrier and tray
6. NVMe module
7. Air shroud
8. Processor heatsink
9. NVMe data cable
10. NVMe power cable
11. SATA and power cables
12. PSU block cover
13. Intrusion switch assembly
14. Coin-cell battery
15. Riser fans
16. Riser fans
17. Processor
18. COMB support for graphics card
19. System board
20. Chassis
21. Processor fan cage
22. Front I/O-board
23. Power distribution board (PDB)
24. Processor fan
25. Processor fan
26. Processor fan
27. PSU fan
28. PSU fan
29. PDB data cable
30. PDB signal cable
31. Memory module
32. M.2 2230 SSD
33. M.2 SSD heatsink
34. Hard-drive bracket
35. Hard drive
36. Riser-2 cage module
37. PCIe card

Customer Replaceable Units (CRUs) and Field Replaceable Units (FRUs) list

The replaceable components in Dell Pro Precision 7 R1 PW7R1260 are either Customer Replaceable Units (CRUs) or Field Replaceable Units (FRUs).

 **CAUTION:** CRUs may be replaced by the customer, following the safety precautions and replacement procedures.

 **CAUTION:** FRUs should be replaced by an authorized service technician, who is a trained technical repair specialist.

 **CAUTION:** Replacement of FRUs by persons other than authorized service technicians may result in damage to the computer or data loss.

 **NOTE:** Damages resulting from improper replacement or from failure to follow instructions are not covered by your warranty. Consider having a trained technical repair specialist perform replacements of FRU components.

Table 2. CRU and FRU list

Customer Replaceable Unit (CRU)	Field Replaceable Unit (FRU)
Power supply unit (PSU)	Processor heatsink
Security bezel	Processor
Front M.2 NVMe SSD	Riser 1 board
Front M.2 NVMe SSD carrier and tray	Riser 2 board
3.5-inch external hard drive	Front I/O cables
3.5-inch external hard-drive carrier	NVMe SSD cables
E3.S NVMe SSD	Hard drive SATA and power cable
E3.S NVMe SSD carrier	PDB cables
Top cover	PDB
M.2 SSD (Internal)	Front I/O board
M.2 SSD heatsink (Internal)	System board
Air shroud	NVMe drive bay
Memory module	
PSU fans	
Processor fans	
Riser fans	
Intrusion switch	
PCIe Expansion card	
Graphics card	
Coin-cell battery	

Removing and installing Customer Replaceable Units (CRUs)

The replaceable components in this chapter are Customer Replaceable Units (CRUs).

CAUTION: CRUs may be replaced by the customer, following the safety precautions and replacement procedures.

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

Power Supply Unit (PSU)

Removing the power supply unit (PSU)

Prerequisites

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

About this task

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

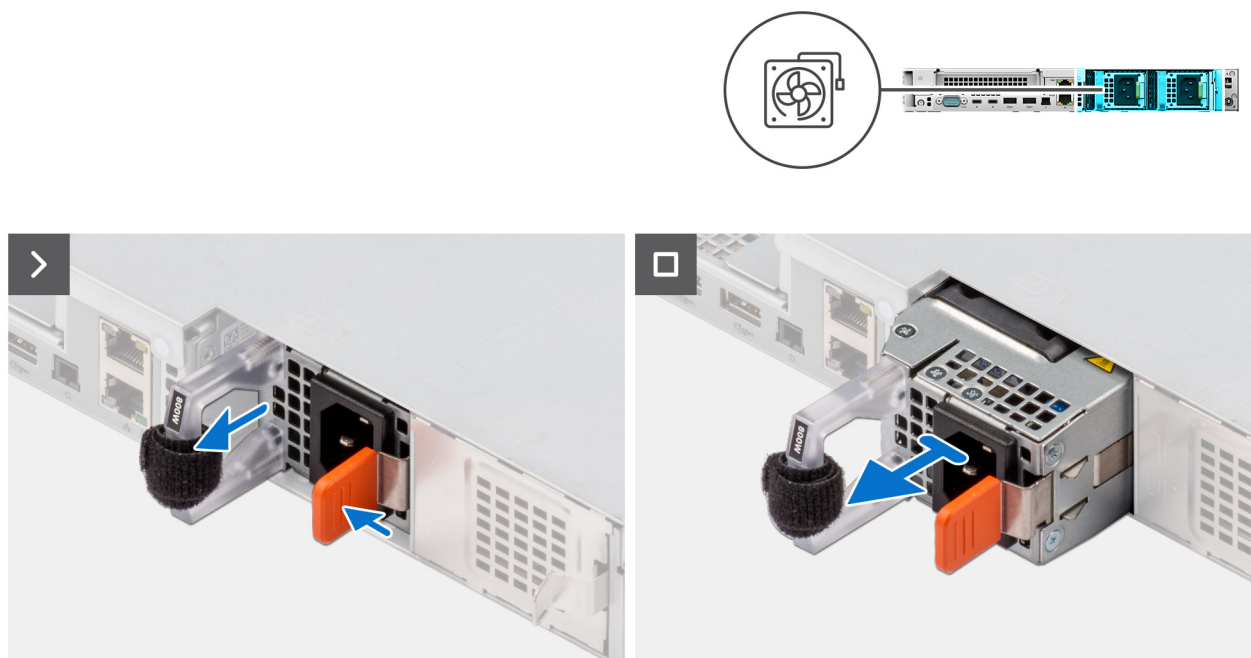


Figure 2. Removing the power supply unit (PSU)

Steps

1. Press the release latch on the PSU to release it from the chassis.
2. Slide the PSU out of the slot.

Installing the power supply unit (PSU)

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 power supply unit (PSU) and provide a visual representation of the installation procedure.

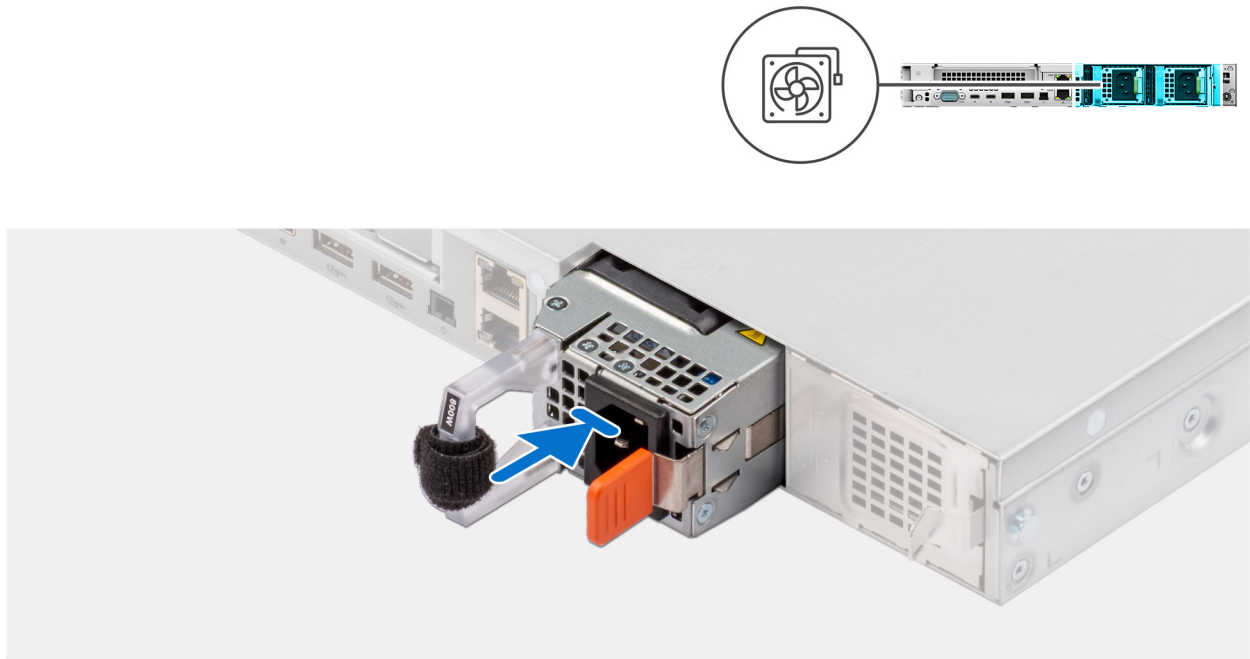


Figure 3. Installing the power supply unit (PSU)

Steps

Insert the PSU in the chassis and slide it into the slot until it locks.

Next steps

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

Security bezel

Removing the security bezel

Prerequisites

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

About this task

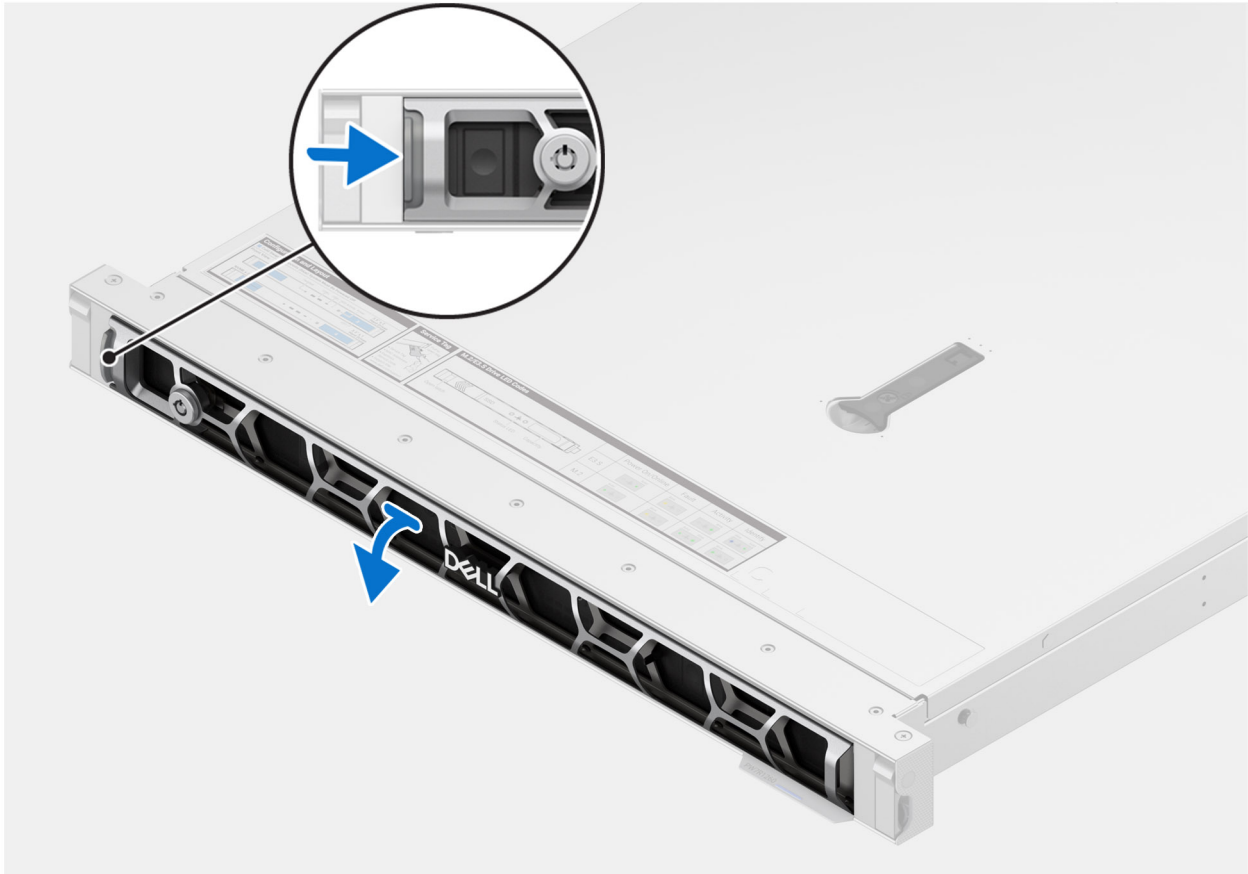


Figure 4. Removing the security bezel

Steps

Press the release latch, rotate the security bezel and pull it away from the chassis.

Installing the security 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 security bezel and provide a visual representation of the installation procedure.

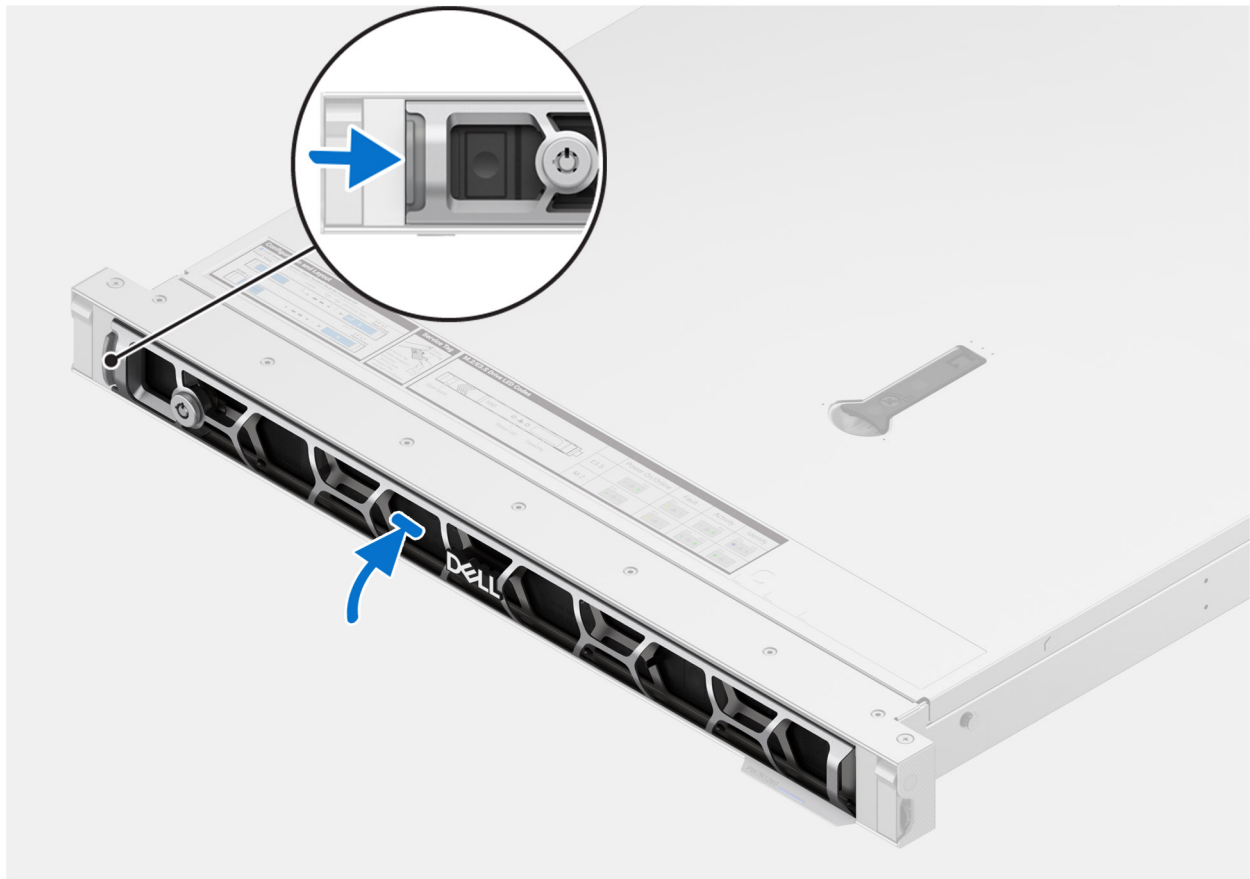


Figure 5. Installing the security bezel

Steps

Insert the security bezel into the chassis and rotate it until the latch clicks into place.

Next steps

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

Front M.2 NVMe SSD carrier and tray

Removing the front M.2 NVMe SSD carrier and tray

Prerequisites

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

About this task

The following images indicate the location of the front M.2 NVMe SSD carrier and tray and provide a visual representation of the removal procedure.



Figure 6. Removing the front M.2 NVMe SSD carrier and tray

Steps

1. Push the latch on the front M.2 NVMe SSD carrier and tray to release the carrier from the front M.2 module.
2. Slide the front M.2 NVMe SSD carrier and tray out of the front M.2 module.

Installing the front M.2 NVMe SSD carrier and tray

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 M.2 NVMe SSD carrier and tray and provide a visual representation of the installation procedure.



Figure 7. Installing the front M.2 NVMe SSD carrier and tray

Steps

1. Align the front M.2 NVMe SSD carrier and tray with the slot on the front M.2 module.
2. Slide the carrier into the slot, until it clicks into place.
3. Push the carrier latch to lock the carrier in the front M.2 module.

Next steps

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

Front M.2 NVMe SSD

Removing the M.2 NVMe SSD from the carrier and tray

Prerequisites

1. Follow the procedure in [Before working inside your computer](#).
2. Remove the [front M.2 NVMe SSD carrier and tray](#).

About this task

The following images indicate the location of the M.2 NVMe SSD and provide a visual representation of the removal procedure.

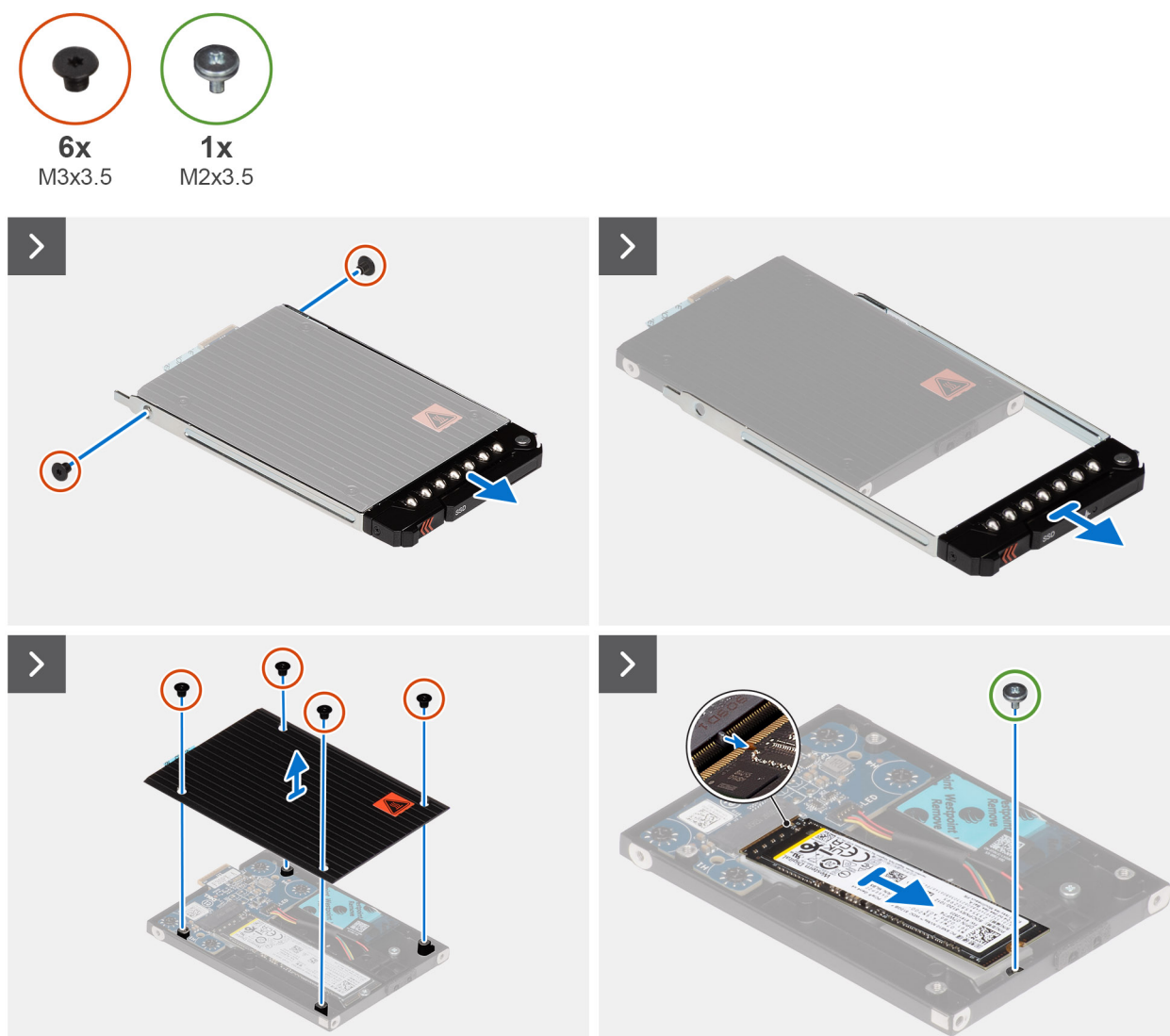


Figure 8. Removing the M.2 NVMe SSD from the carrier and tray

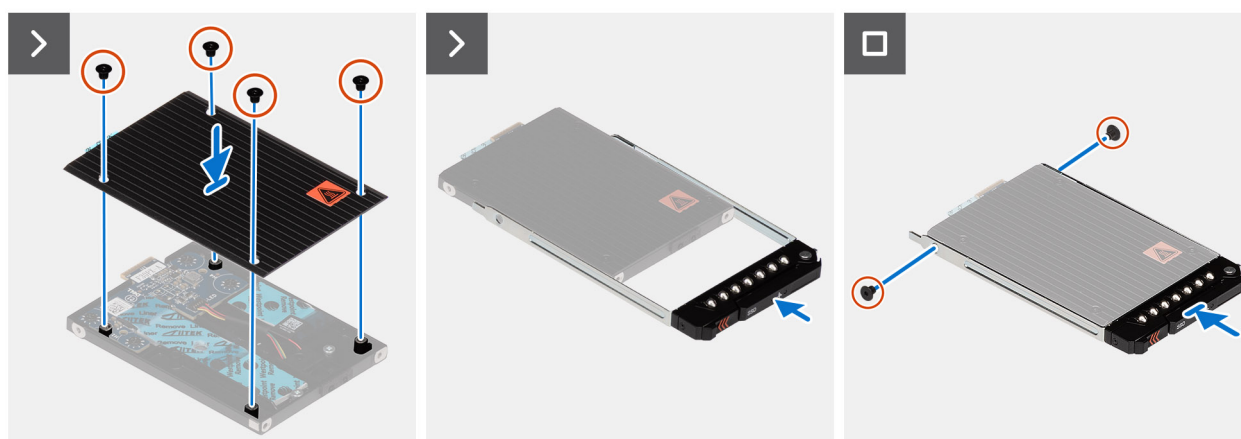


Figure 9. Removing the M.2 NVMe SSD from the carrier and tray

Steps

1. Remove the two screws (M3x3.5) that secure the M.2 carrier handle to the carrier by using Torx 6 (T6) screwdriver.

2. Slide the carrier handle away from the carrier.
3. Remove the four screws (M3x3.5) that secure the carrier cover to the carrier.
4. Lift the cover away from the carrier.
5. Remove the screw (M2x3.5) that secures the M.2 NVMe SSD to the carrier.
6. Slide and remove the M.2 NVMe SSD from the slot on the carrier.
7. Align the screw holes on the carrier cover with the screw holes on the carrier.
8. Replace the four screws (M3x3.5) to secure the carrier cover to the carrier.
9. Align and slide the carrier handle towards the carrier.
10. Replace the two screws (M3x3.5) that secure the M.2 carrier handle to the carrier.

Installing the M.2 NVMe SSD in the carrier and tray

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 M.2 NVMe SSD and provide a visual representation of the installation procedure.

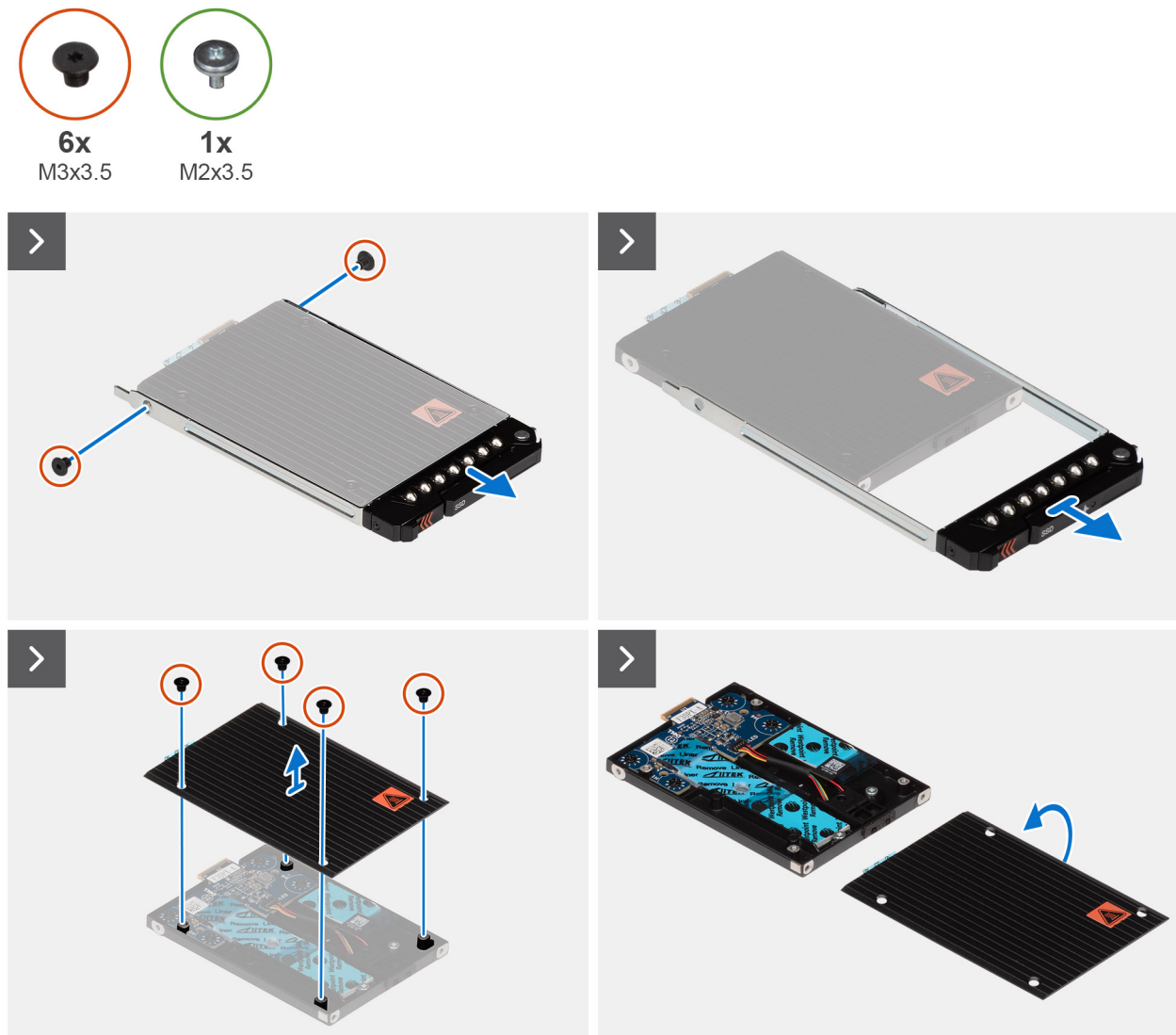


Figure 10. Installing the M.2 NVMe SSD in the carrier and tray

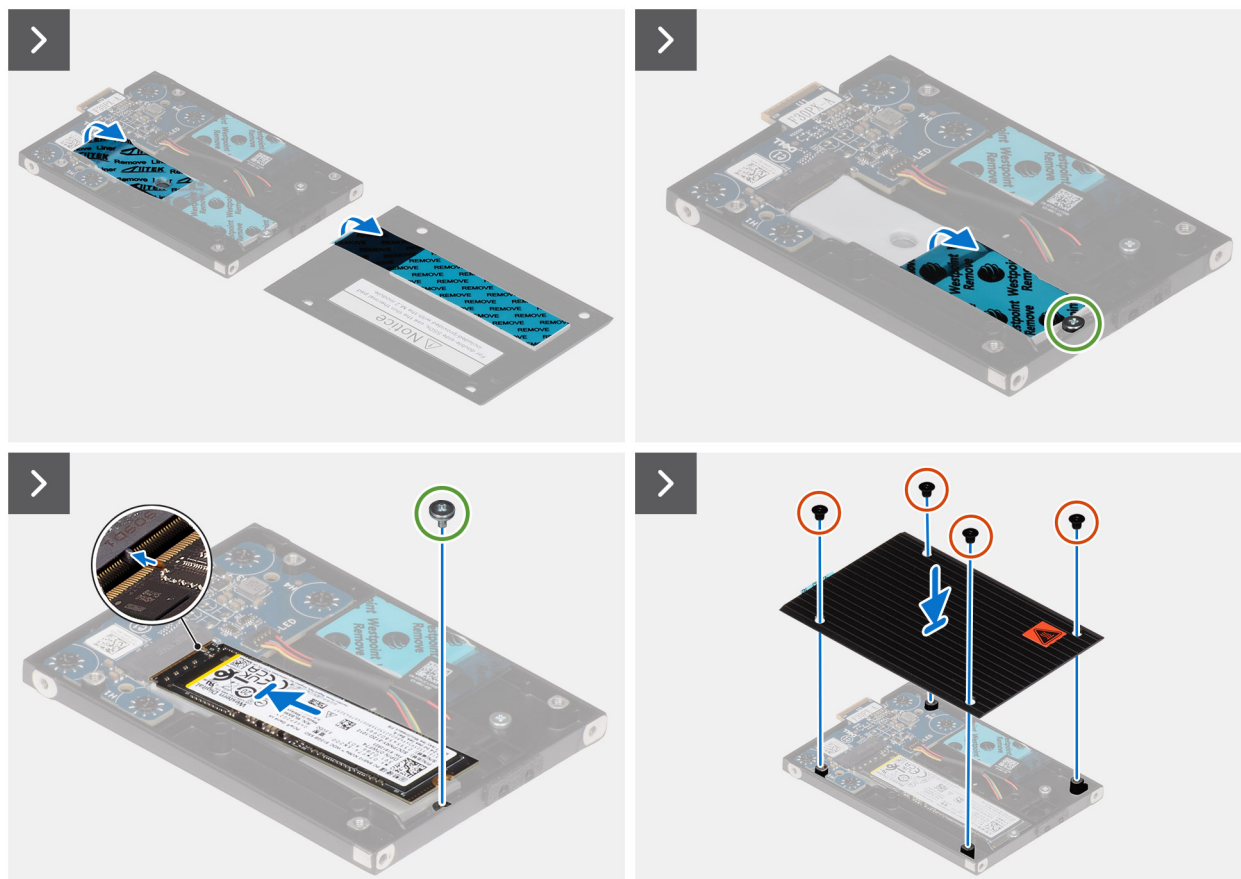


Figure 11. Installing the M.2 NVMe SSD in the carrier and tray

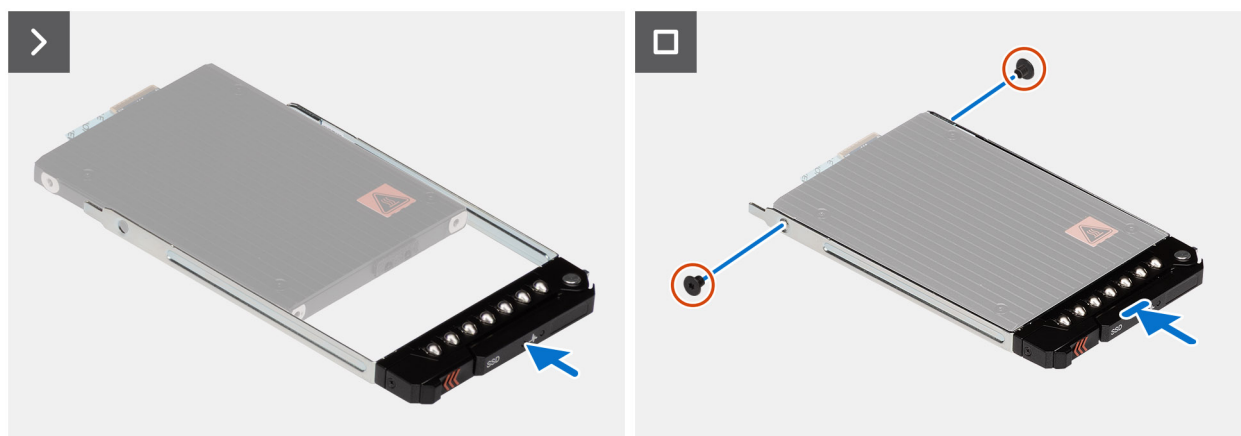


Figure 12. Installing the M.2 NVMe SSD in the carrier and tray

Steps

1. Remove the two screws (M3x3.5) that secure the M.2 carrier handle to the carrier by using Torx 6 (T6) screwdriver.
2. Slide the carrier handle away from the carrier.
3. Remove the four screws (M3x3.5) that secure the carrier cover to the carrier.
4. Lift the cover away from the carrier.
5. Remove the thermal pad protection film from the M.2 NVMe SSD slot on the carrier.
6. Flip the carrier cover and remove the thermal pad protection film from the carrier cover.
7. Remove the screw (M2x3.5) that is secured to the carrier.
8. Align the notch on the M.2 NVMe SSD with the tab on the carrier connector.

9. Insert the M.2 NVMe SSD at an angle into the slot on the carrier.
10. Replace the screw (M2x3.5) to secure the M.2 NVMe SSD to the carrier.
11. Align the screw holes on the carrier cover with the screw holes on the carrier.
12. Replace the four screws (M3x3.5) to secure the carrier cover to the carrier.
13. Align and slide the carrier handle towards the carrier.
14. Replace the two screws (M3x3.5) that secure the M.2 carrier handle to the carrier.

Next steps

1. Install the [front M.2 NVMe SSD carrier and tray](#).
2. Follow the procedure in [After working inside your computer](#).

External storage FlexBay (3.5-inch hard drive)

Removing the external hard-drive assembly

Prerequisites

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

About this task

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

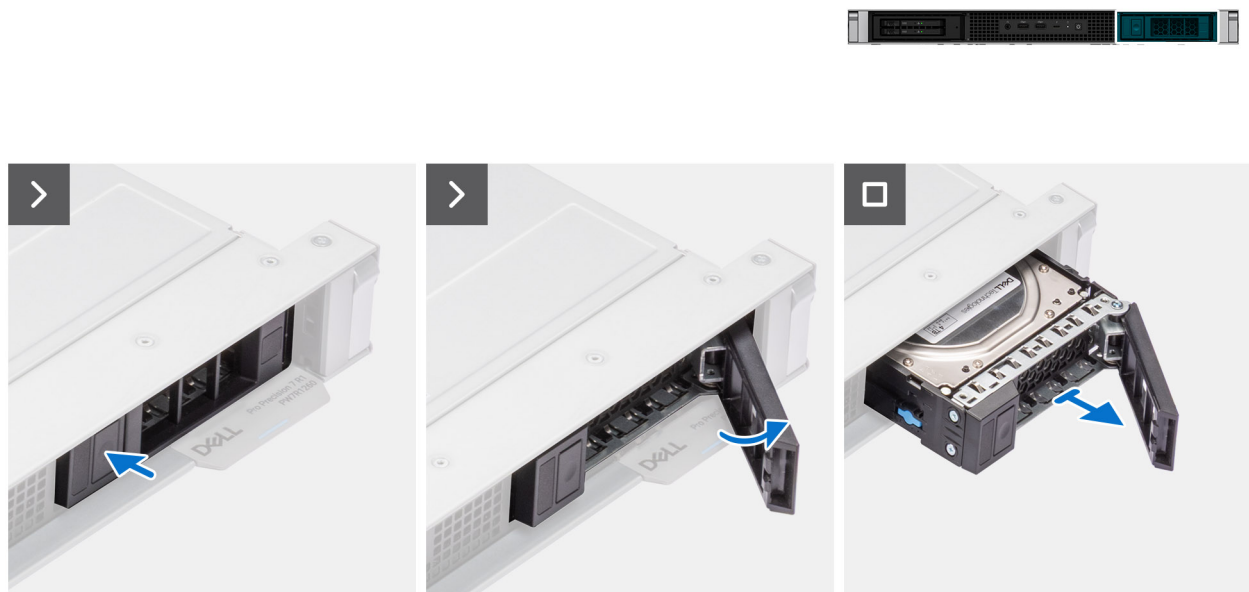


Figure 13. Removing the external hard-drive assembly

Steps

1. Push the release button on the hard-drive assembly to open the release latch.
2. Hold the release latch and slide the hard-drive assembly out of the external FlexBay slot.

Installing the external hard-drive assembly

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 external hard-drive assembly and provide a visual representation of the installation procedure.



Figure 14. Installing the external hard-drive assembly

Steps

1. Slide and insert the hard-drive assembly into the external FlexBay slot.
2. Close the release latch to secure the hard-drive assembly in place.

Next steps

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

Removing the external hard-drive carrier

Prerequisites

1. Follow the procedure in [Before working inside your computer](#).
2. Remove the [security bezel](#).
3. Remove the [external hard drive assembly](#).

About this task

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



Figure 15. Removing the external hard-drive carrier

Steps

1. Pry the sides of the carrier to release the pins on the carrier from the slots on the 3.5-inch hard drive.
2. Lift and remove the 3.5-inch hard drive off the external hard-drive carrier.

Installing the external hard-drive carrier

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 external hard-drive carrier and provide a visual representation of the installation procedure.



Figure 16. Installing the external hard-drive carrier

Steps

1. Place the 3.5-inch hard drive into the external hard-drive carrier and align the pins on the bracket with the slots on the 3.5-inch hard drive.
2. Snap the 3.5-inch hard drive into the external hard-drive carrier.

Next steps

1. Install the [external hard drive assembly](#).
2. Install the [security bezel](#).
3. 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](#).

About this task

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

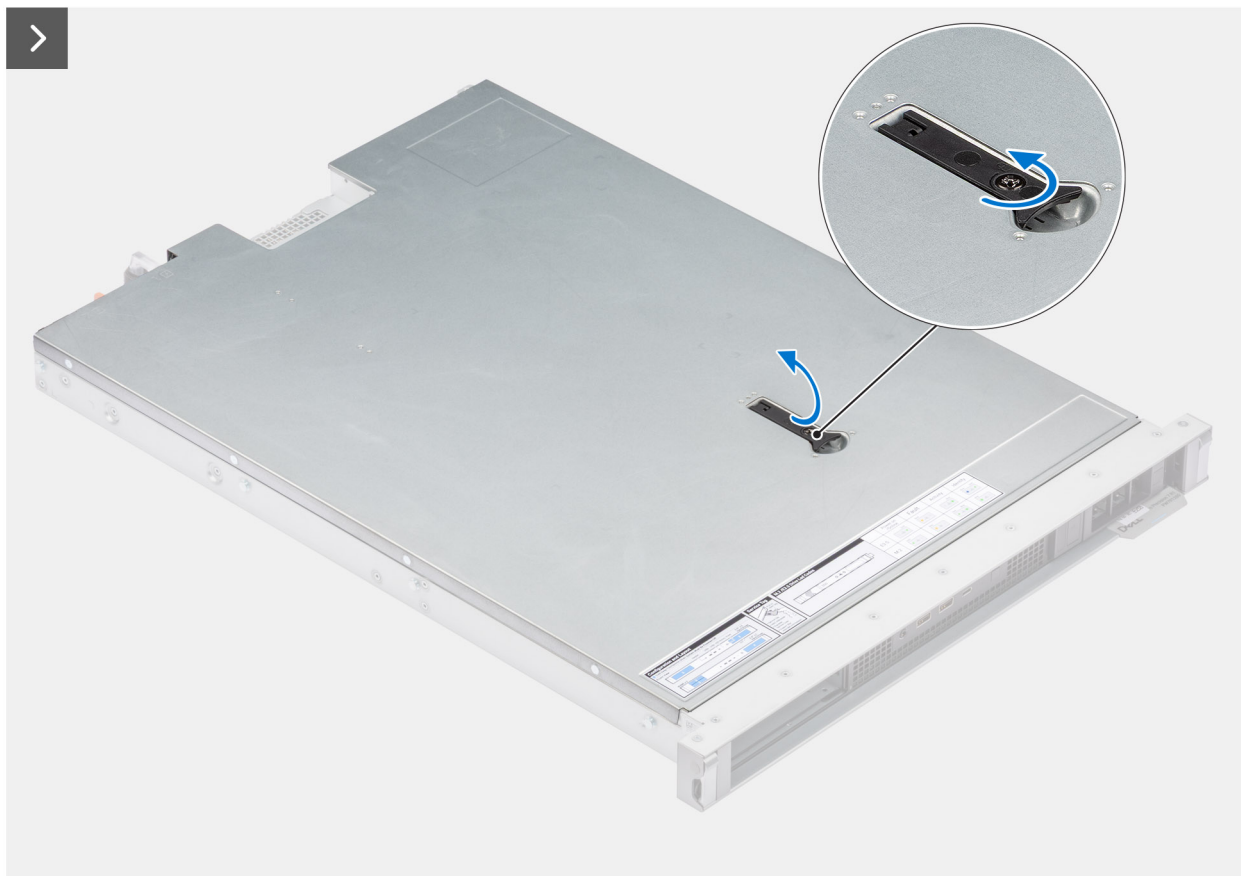


Figure 17. Removing the top cover



Figure 18. Removing the top cover

Steps

1. Rotate the lock on the latch with a Phillips screwdriver#2 to release the lock.
2. Slide the top cover to release the rivets from the grooves on the chassis.
3. Lift the top cover away from the chassis.

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 provide a visual representation of the installation procedure.

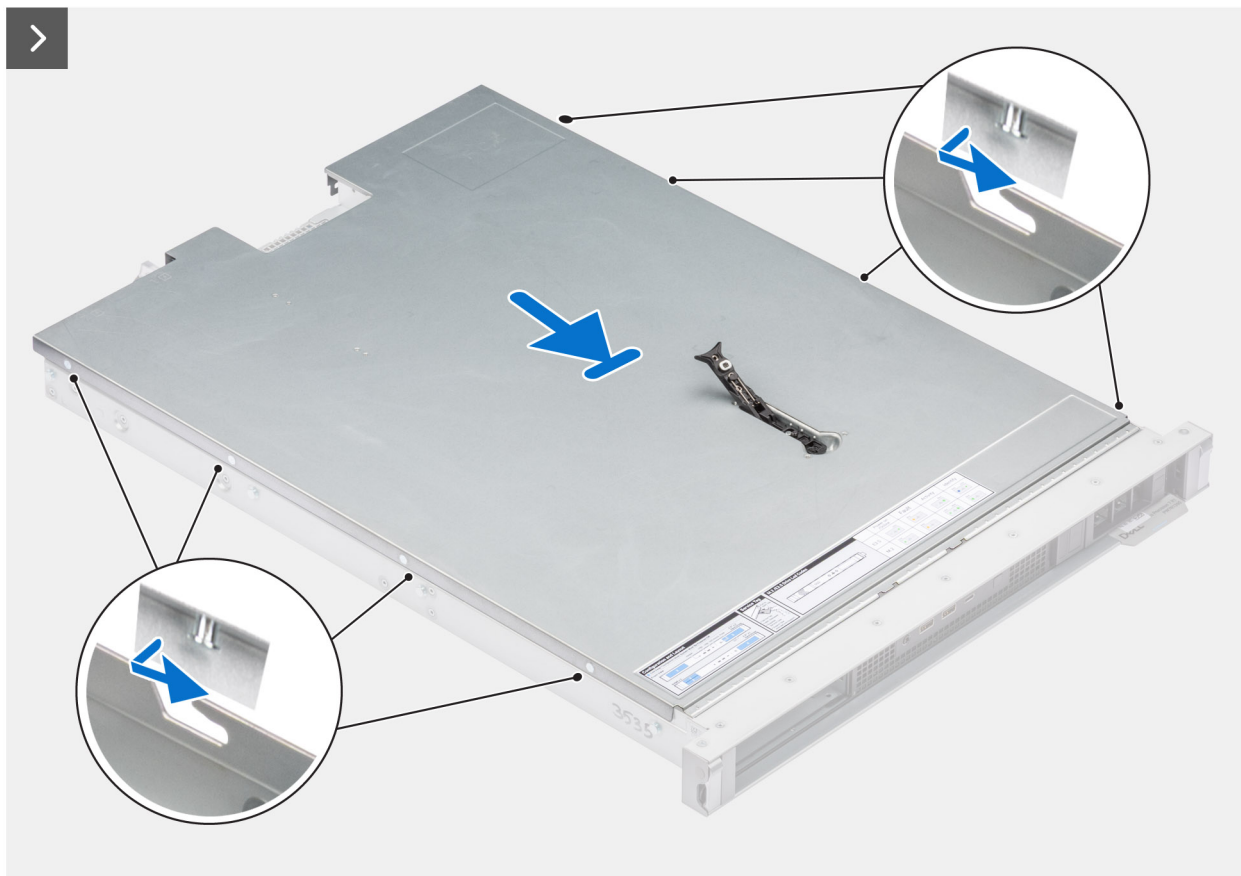


Figure 19. Installing the top cover

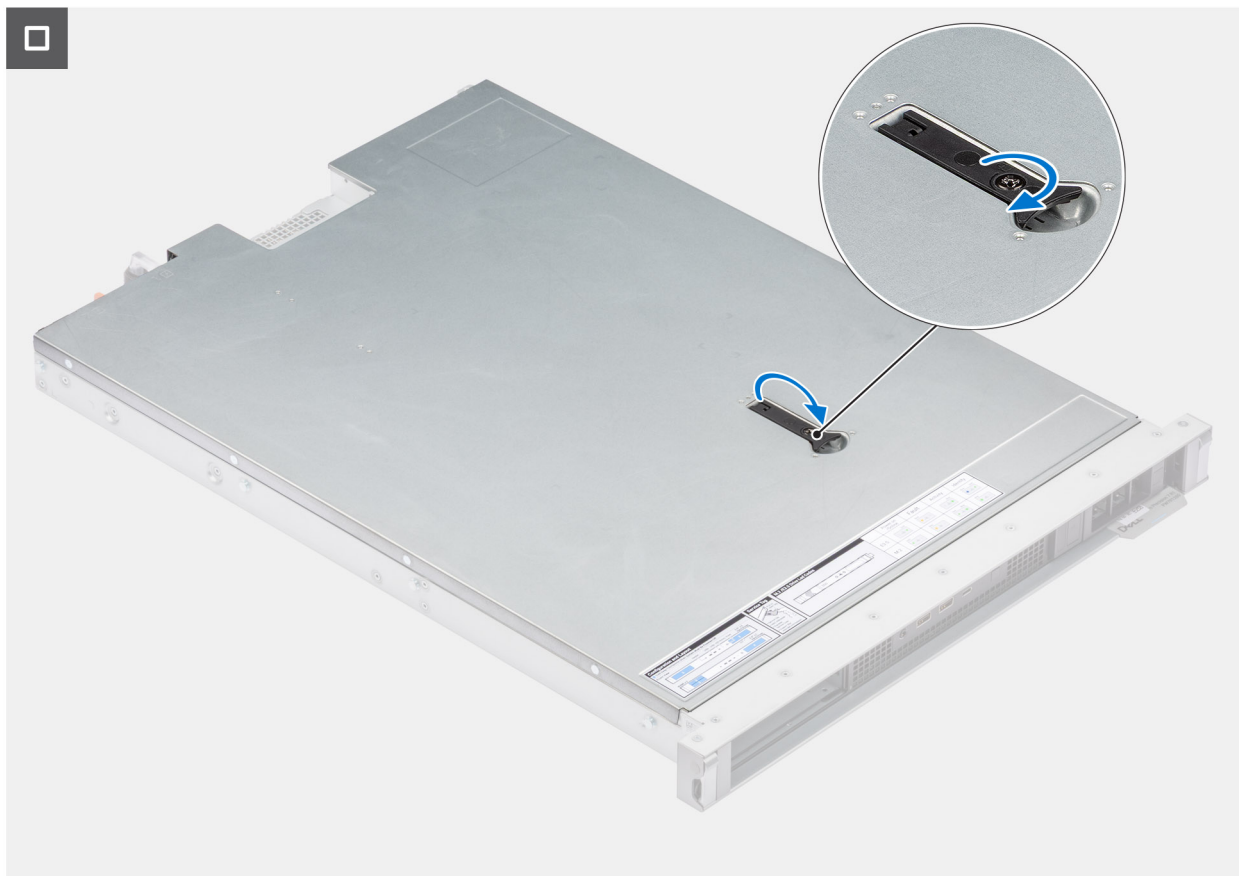


Figure 20. Installing the top cover

Steps

1. Lift the release latch and align the top cover rivets with the grooves on the chassis and lower the top cover.
NOTE: Ensure that all internal cables are routed correctly and connected before securing the top cover.
2. Press the rear side of the cover and then push it forward to close the top cover.
The release latch will close automatically.
3. Using a Philips screwdriver #2, rotate the lock clockwise to secure the release latch.

Next steps

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

Solid state drive

Removing the M.2 2230 SSD from the system board

Prerequisites

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

About this task

The following images indicate the location of the M.2 2230 SSD and provide a visual representation of the removal procedure.

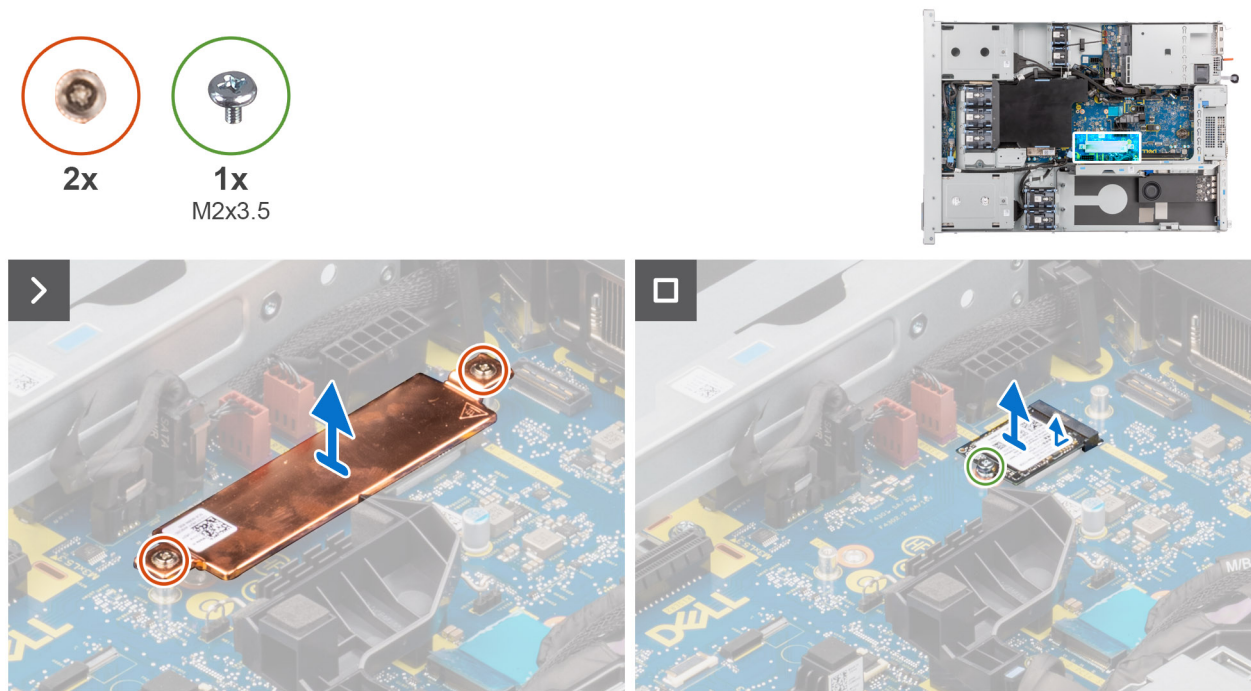


Figure 21. Removing the M.2 2230 SSD from the system board

Steps

1. Loosen the two captive screws (M2) that secure the SSD heatsink to the system board.
2. Lift and remove the SSD heatsink to access the SSD.
3. Remove the screw (M2x3.5) that secures the SSD to the system board.
4. Slide and lift the SSD off the system board.

Installing the M.2 2230 SSD on the system board

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 M.2 2230 SSD and provide a visual representation of the installation procedure.

 **NOTE:** Follow the below procedures for installing SSD on SSD-0 and SSD-1 slots.

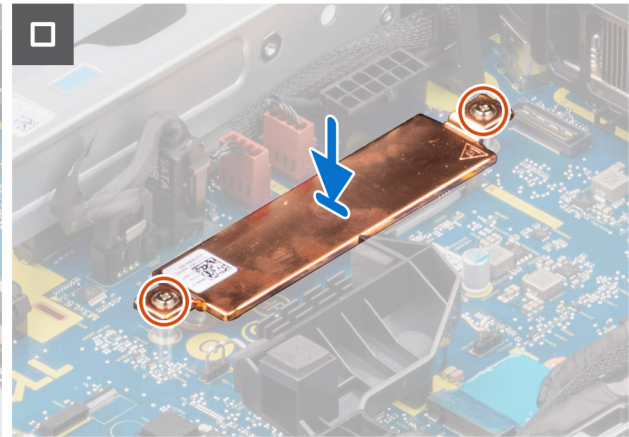
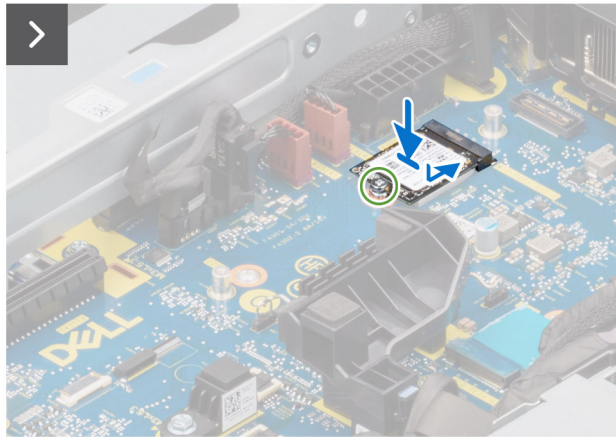
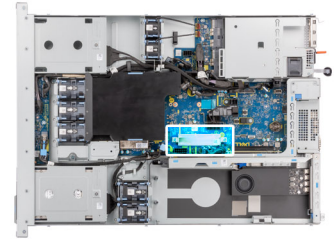


Figure 22. Installing the M.2 2230 SSD on the system board

Steps

1. Insert the SSD at an angle into the slot on the system board.
2. Align the screw hole on the SSD with the screw hole on the system board.
3. Replace the screw (M2x3.5) to secure the SSD to the system board.
4. Align the screw hole on the SSD heatsink with the screw hole on the system board.
5. Press down the SSD heatsink and tighten the two captive screws (M2) to secure the SSD heatsink to the system board.

Next steps

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

Removing the M.2 2280 SSD from the system board

Prerequisites

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

About this task

The following images indicate the location of the M.2 2280 SSD and provide a visual representation of the removal procedure.

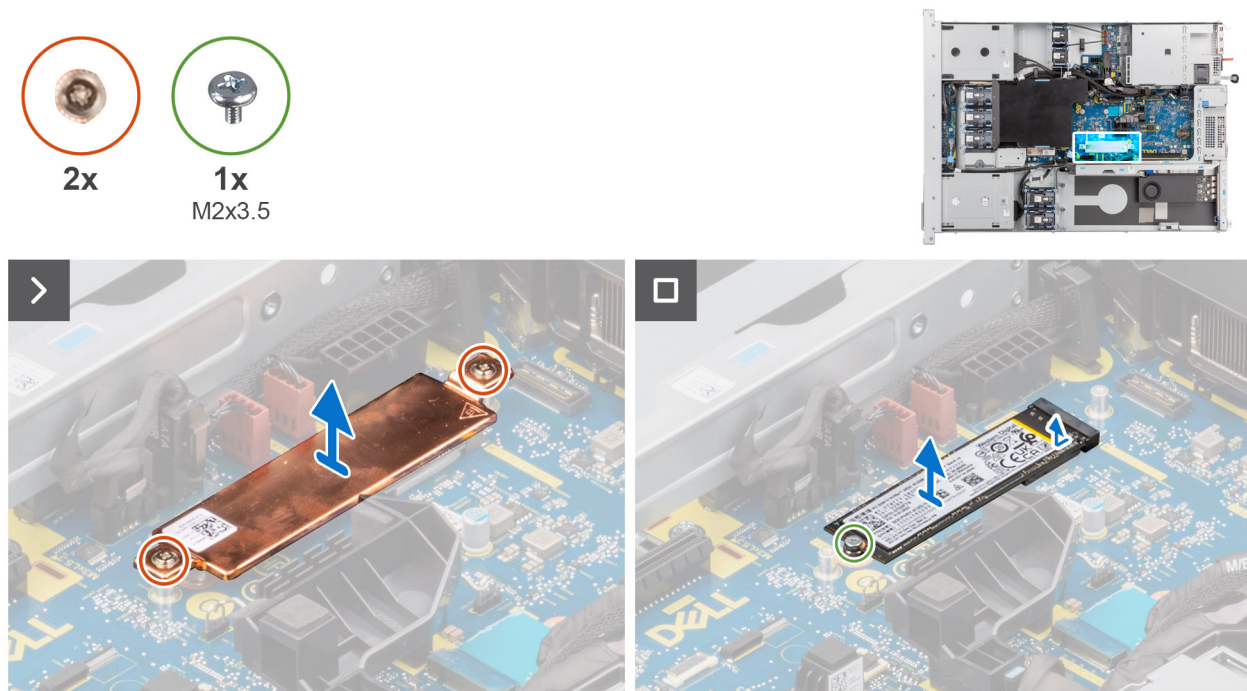


Figure 23. Removing the M.2 2280 SSD from the system board

Steps

1. Loosen the two captive screws (M2) that secure the SSD heatsink to the system board.
2. Lift and remove the SSD heatsink to access the SSD.
3. Remove the screw (M2x3.5) that secures the SSD to the system board.
4. Slide and lift the SSD off the system board.

Installing the M.2 2280 SSD on the system board

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 M.2 2280 SSD and provide a visual representation of the installation procedure.

NOTE: Follow the below procedures for installing SSD on SSD-0 and SSD-1 slots.

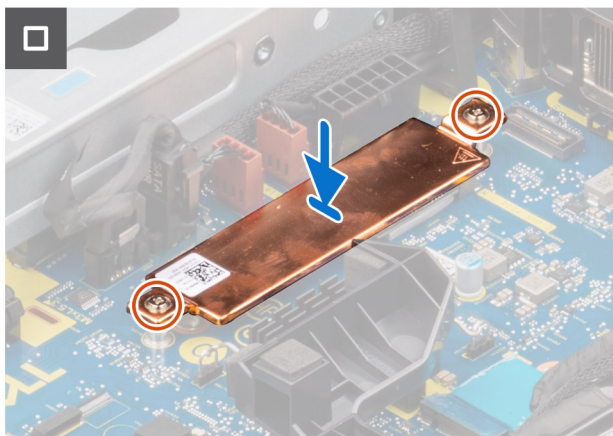
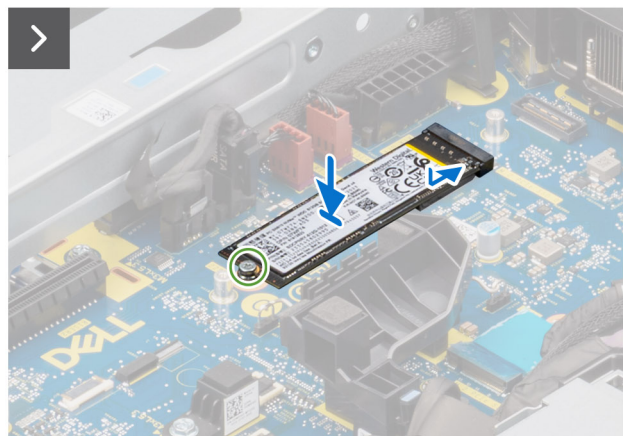
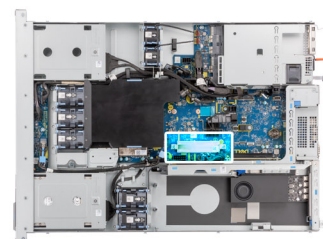
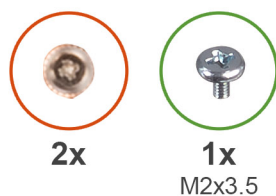


Figure 24. Installing the onboard M.2 2280 SSD

Steps

1. Insert the SSD at an angle into the slot on the system board.
2. Align the screw hole on the SSD with the screw hole on the system board.
3. Replace the screw (M2x3.5) to secure the SSD to the system board.
4. Align the screw hole on the SSD heatsink with the screw hole on the system board.
5. Press down the SSD heatsink and tighten the two captive screws (M2) to secure the SSD heatsink to the system board.

Next steps

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

Air shroud

Removing the air shroud

Prerequisites

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

About this task

The following image indicates the location of the air shroud and provides a visual representation of the removal procedure.

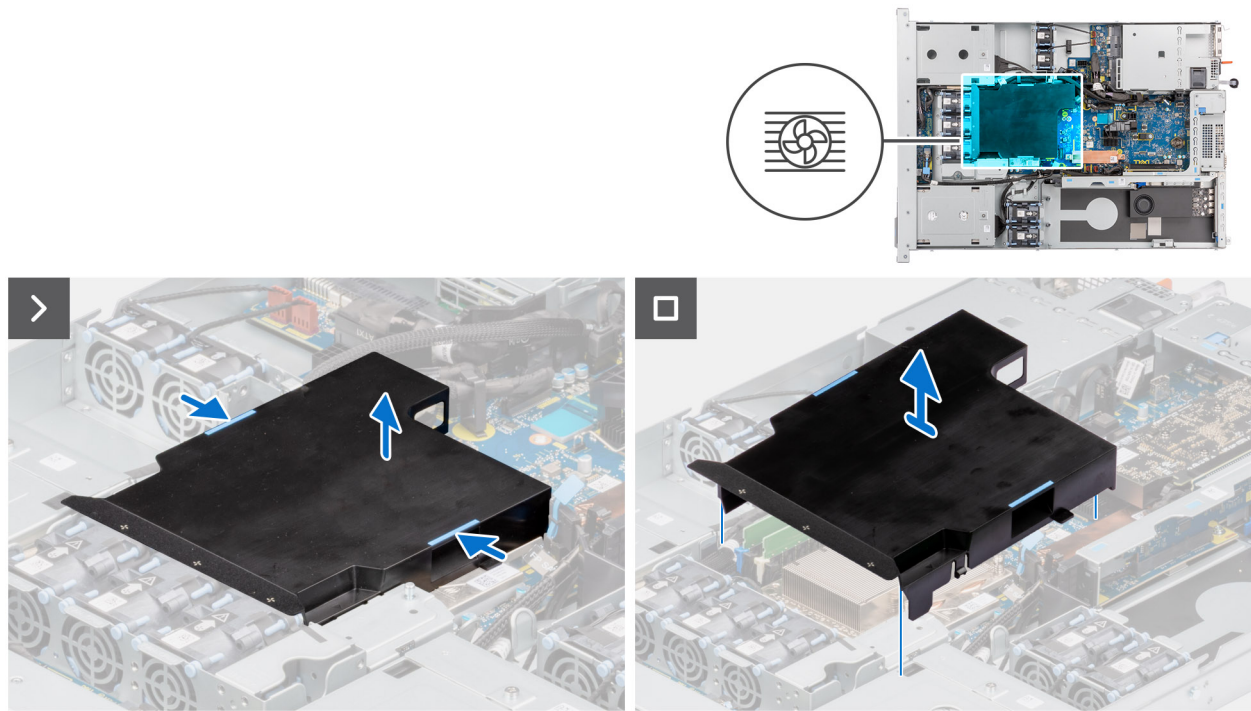


Figure 25. Removing the air shroud

Steps

1. Hold the air shroud at the gripping points.
2. Lift the air shroud straight upward and remove it from the computer.

Installing the air shroud

Prerequisites

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

NOTE: Route all the power cables through the bottom air shroud cover to prevent the air shroud installation interference.

About this task

The following image indicates the location of the air shroud and provides a visual representation of the installation procedure.

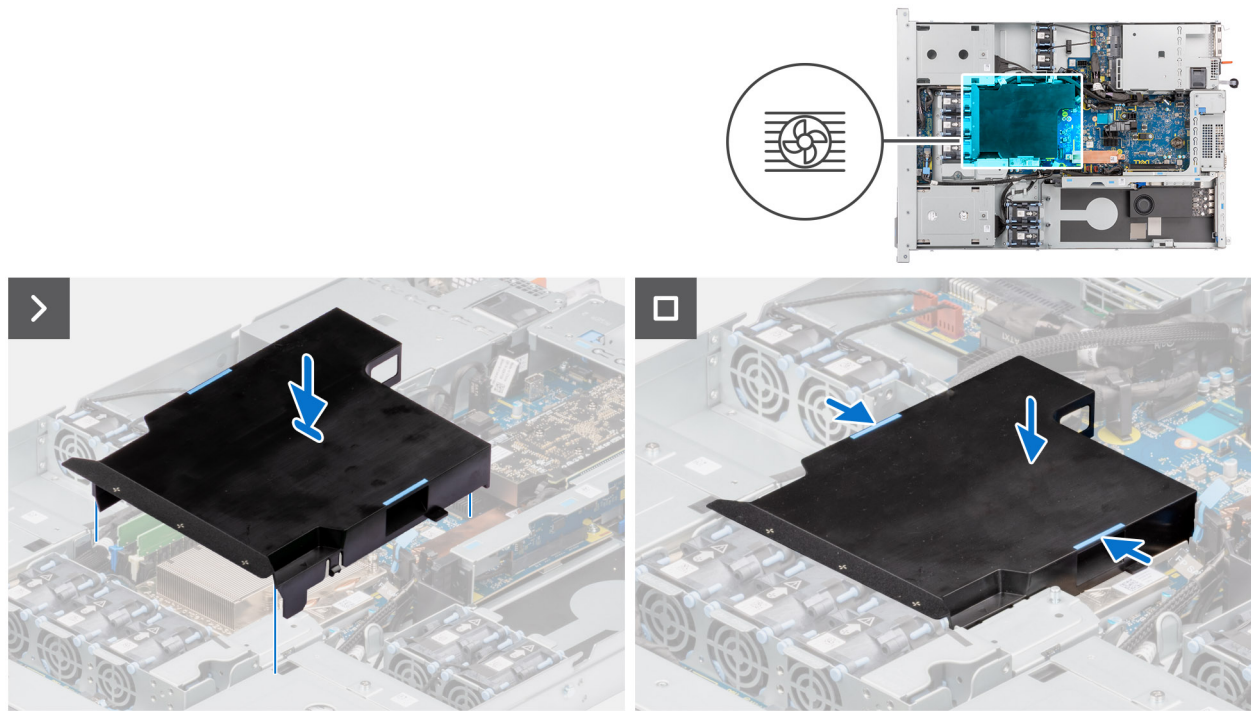


Figure 26. Installing the air shroud

Steps

1. Align the air shroud over the heatsink and system board, and lower it into the slot.
2. Press the air shroud down until the tabs secure into place.

Next steps

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

Memory module

Removing the memory module

Prerequisites

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

About this task

The following image indicates the location of the memory module and provides a visual representation of the removal procedure.

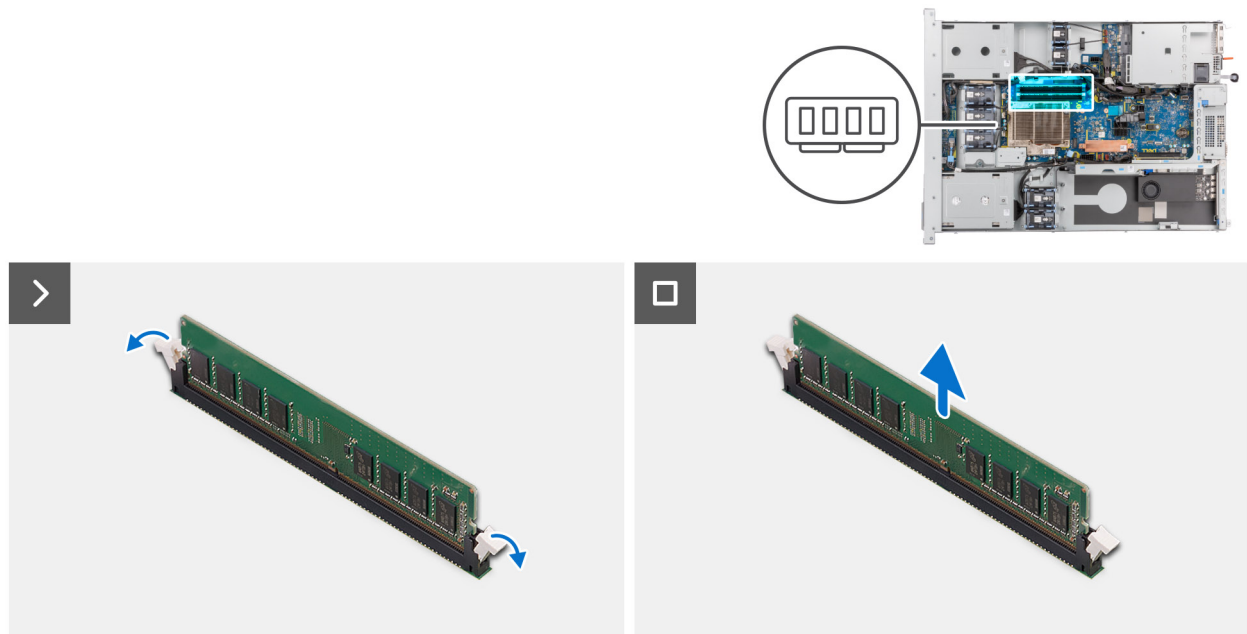


Figure 27. Removing the memory module

Steps

1. Pull the securing clips from both sides of the memory module until the memory module pops out.
2. Slide and remove the memory module from the memory-module slot.

CAUTION: To prevent damage to the memory module, hold the memory module by the edges. Do not touch the components or metallic contacts on the memory module as electrostatic discharge(ESD) can inflict severe damage on the components. To read more about ESD protection, see [ESD protection](#).

Installing the memory module

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 memory module and provides a visual representation of the installation procedure.

WARNING: Memory modules must be installed in the correct DIMM sequence, starting with DIMM1, as indicated by the orange warning label on the system board. Installing memory modules out of sequence may cause the computer to fail POST.

WARNING : MUST install the memory starting from DIMM 1, or system will fail POST.

Figure 28. Memory installation order warning label on the system board

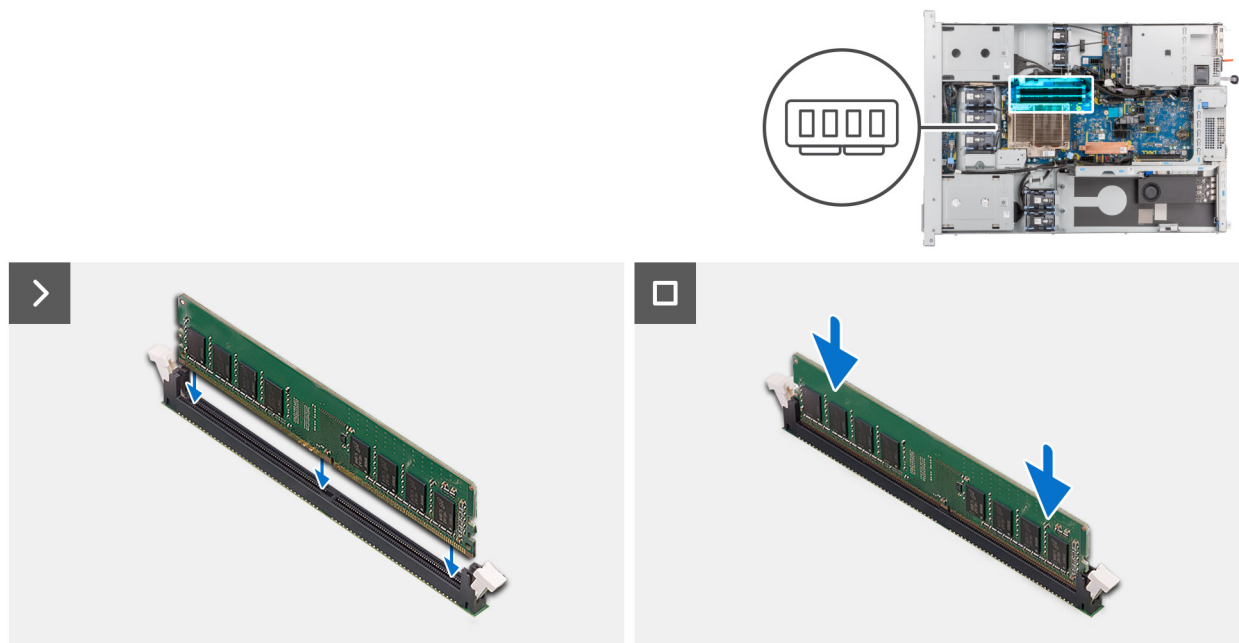


Figure 29. Installing the memory module

Steps

1. Align the notch on the memory module with the tab on the memory-module slot.
2. Slide the memory module firmly into the slot at an angle and press the memory module down until it secures into place.

NOTE: If the memory module is not secure, then remove the memory module and reinstall it.

CAUTION: To prevent damage to the memory module, hold the memory module by the edges. Do not touch the components or metallic contacts on the memory module as electrostatic discharge(ESD) can inflict severe damage on the components. To read more about ESD protection, see [ESD protection](#).

Next steps

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

PSU fans

Removing the PSU fans

Prerequisites

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

About this task

The following image indicates the location of the PSU fans and provides a visual representation of the removal procedure.

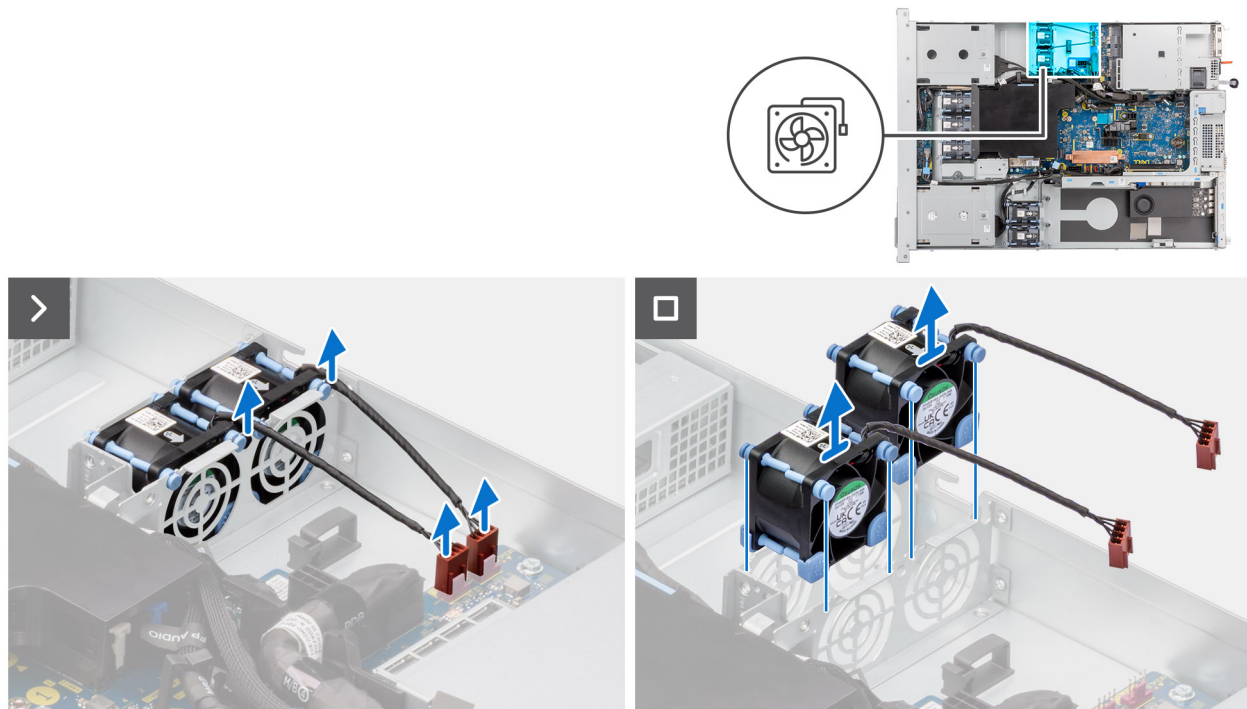


Figure 30. Removing the PSU fans

Steps

1. Disconnect the PSU fan cables from the connectors on the power distribution board (PDB).
2. Release the rubber grommets from the PSU-fan cage.
3. Lift and remove the PSU fans from the chassis.

Installing the PSU fans

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 PSU fans and provides a visual representation of the installation procedure.



Figure 31. Installing the PSU fans

Steps

1. Align the notch and press down the rubber grommets to the PSU-fan cage.
2. Align and place the PSU fans on the chassis.
3. Connect the PSU fan cables to the connectors on the power distribution board (PDB).

Next steps

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

Processor fans

Removing the processor fans

Prerequisites

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

About this task

The following image indicates the location of the processor fans and provides a visual representation of the removal procedure.

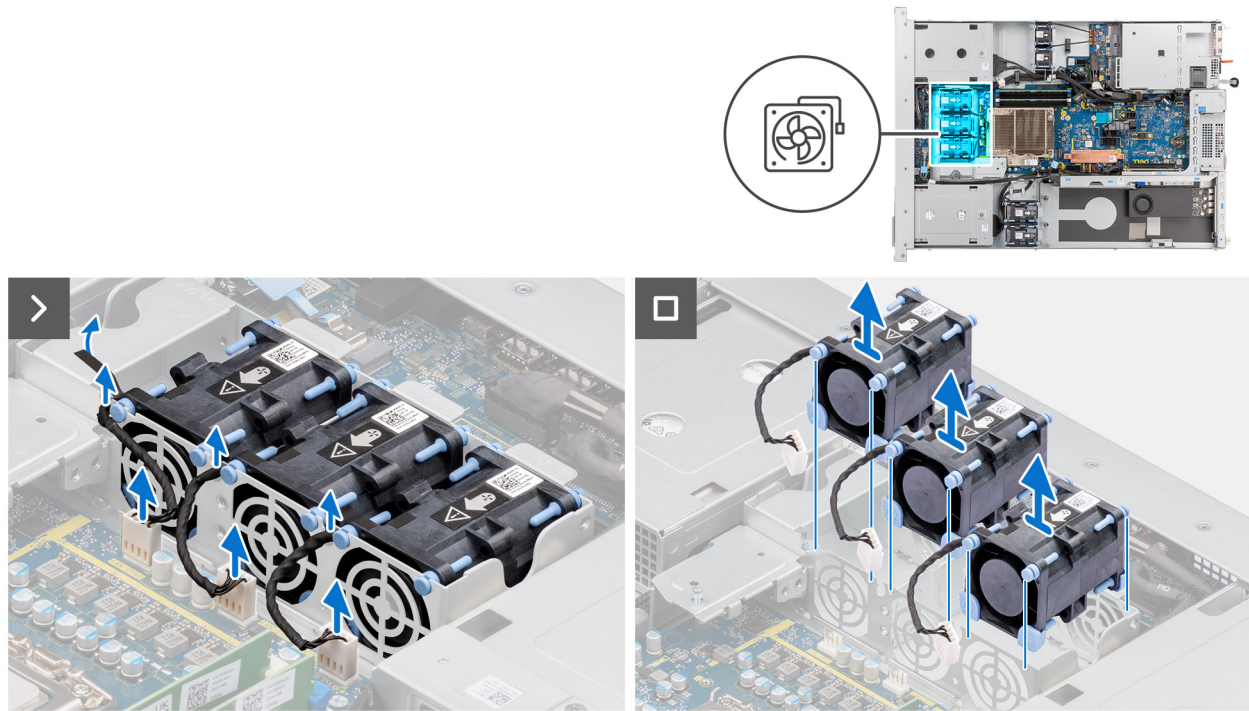


Figure 32. Removing the processor fans

Steps

1. Disconnect the processor fan cables from the system board.
2. Unroute and remove the processor fan cables from the hook grooves on the processor-fan cage.
3. Release the rubber grommets from the processor-fan cage.
4. Lift and remove the processor fans from the processor-fan cage.

Installing the processor fans

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 processor fans and provides a visual representation of the installation procedure.

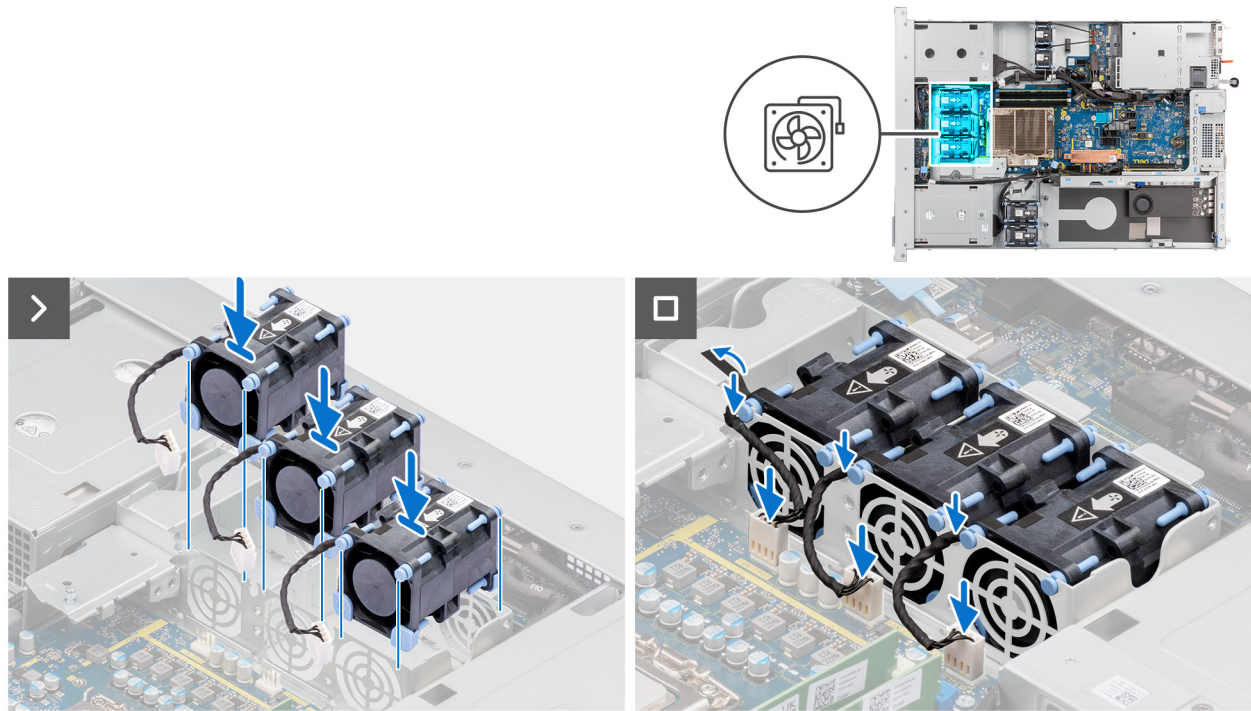


Figure 33. Installing the processor fans

Steps

1. Align the notch and press down the rubber grommets to the processor-fan cage.
2. Align and place the processor fans inside the processor-fan cage.
3. Route the processor fan cables through the hook grooves on the processor-fan cage.
4. Connect the processor fan cables to the system board.

Next steps

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

GPU fans

Removing the GPU fans

Prerequisites

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

About this task

The following image indicates the location of the GPU fans and provides a visual representation of the removal procedure.

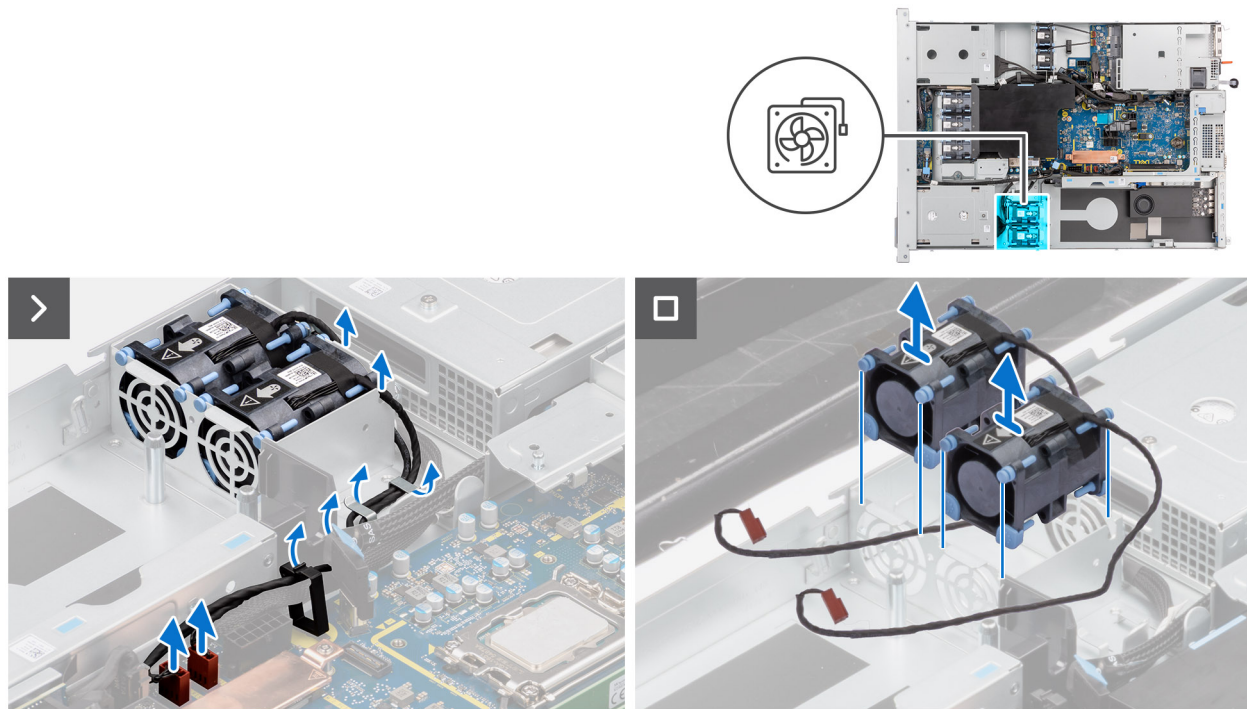


Figure 34. Removing the GPU fans

Steps

1. Disconnect the GPU fan cables from the connectors on the system board.
2. Release the GPU fan cables from the plastic clip and metal latch that secures them to the chassis.
3. Release the rubber grommets from the GPU-fan cage.
4. Lift and remove the GPU fans from the chassis.

Installing the GPU fans

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 GPU fans and provides a visual representation of the installation procedure.

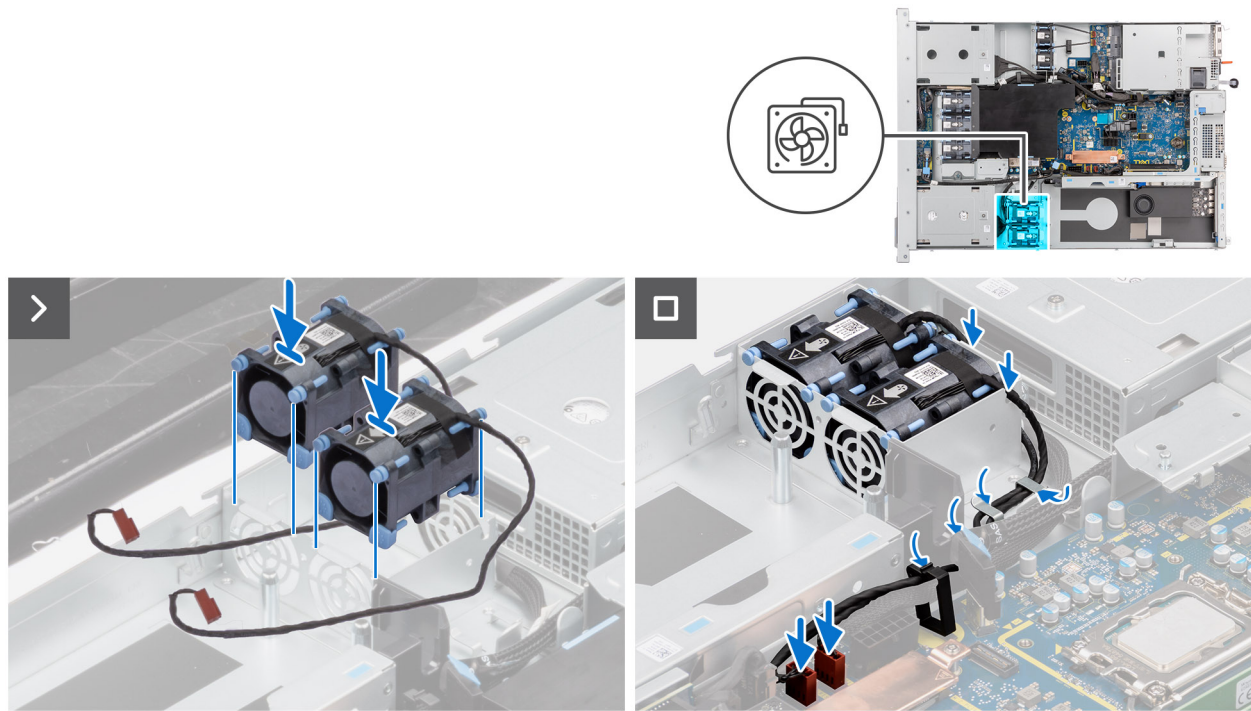


Figure 35. Installing the GPU fans

Steps

1. Align the notch and press down the rubber grommets to the GPU-fan cage.
2. Align and place the GPU fans on the chassis.
3. Route the GPU fan cables from the plastic clip and metal latch to secure them to the chassis.
4. Connect the GPU fan cables to the system board.

Next steps

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

Intrusion switch

Removing the intrusion switch

Prerequisites

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

About this task

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

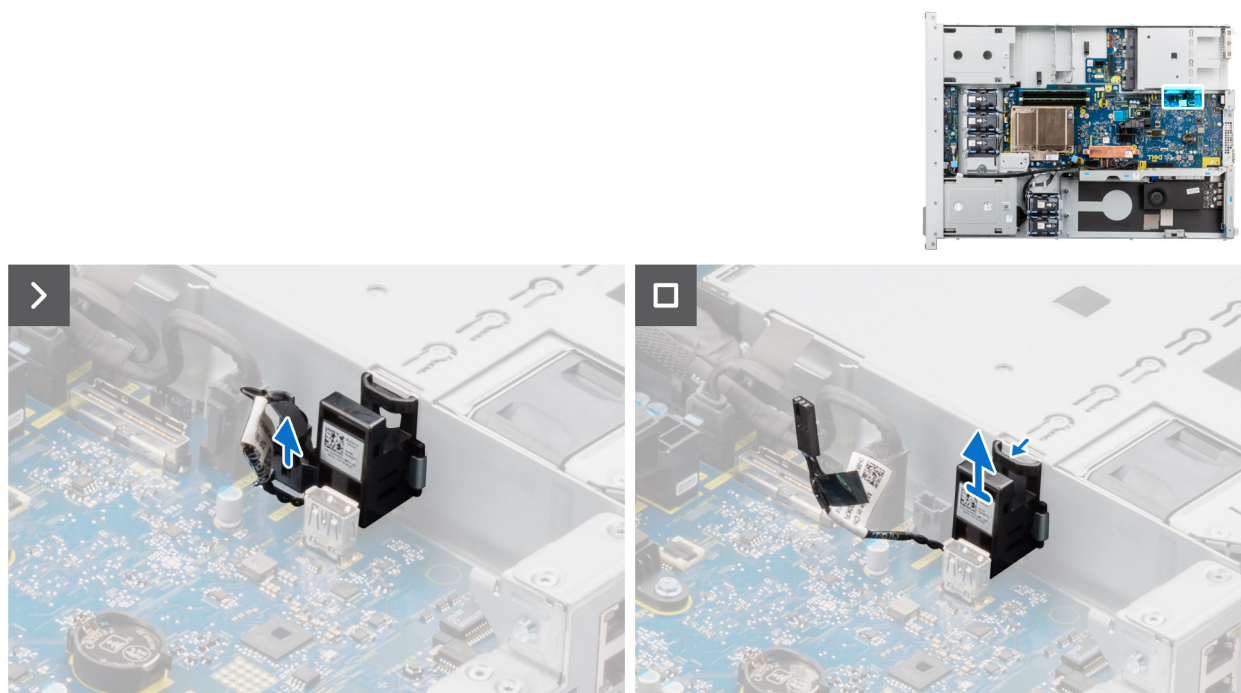


Figure 36. Removing the intrusion switch

Steps

1. Disconnect the intruder switch cable from the connector on the system board.
2. Press the release latch and lift the intrusion switch from the chassis.

Installing the intrusion switch

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 intrusion switch and provides a visual representation of the installation procedure.

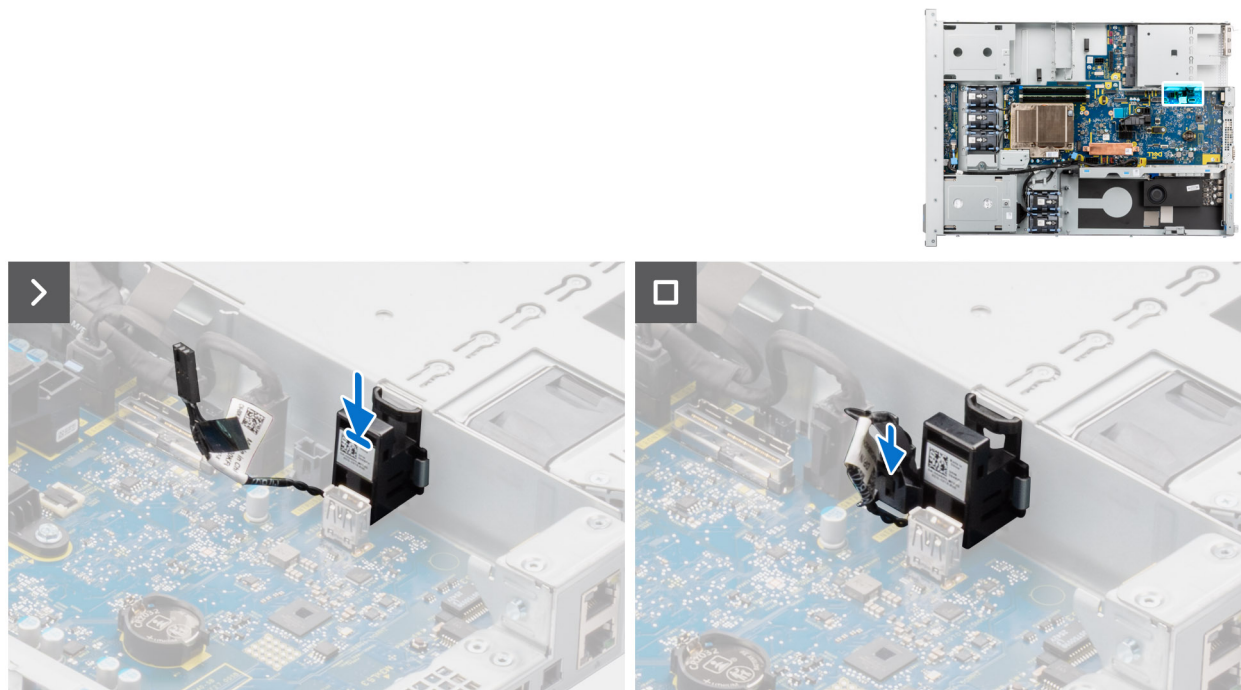


Figure 37. Installing the intrusion switch

Steps

1. Insert the intrusion switch into its slot.
2. Connect the intruder cable to the connector on the system board.

Next steps

1. Install the [top cover](#).
2. 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](#).
2. Remove the [top cover](#).

About this task

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

CAUTION: Removing the coin-cell battery clears the CMOS and resets BIOS settings.

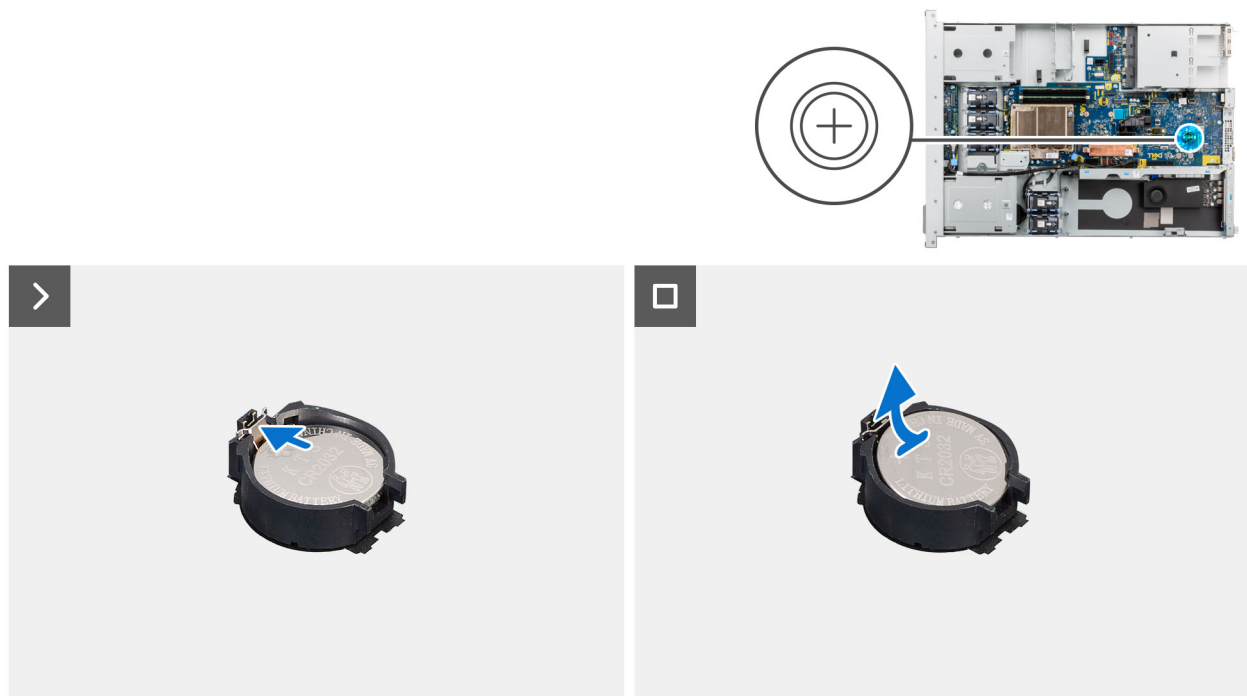


Figure 38. Removing the coin-cell battery

Steps

1. Using a plastic scribe, gently pry the coin-cell battery out of the slot on the system board.
2. Remove the coin-cell battery away from the computer.

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.

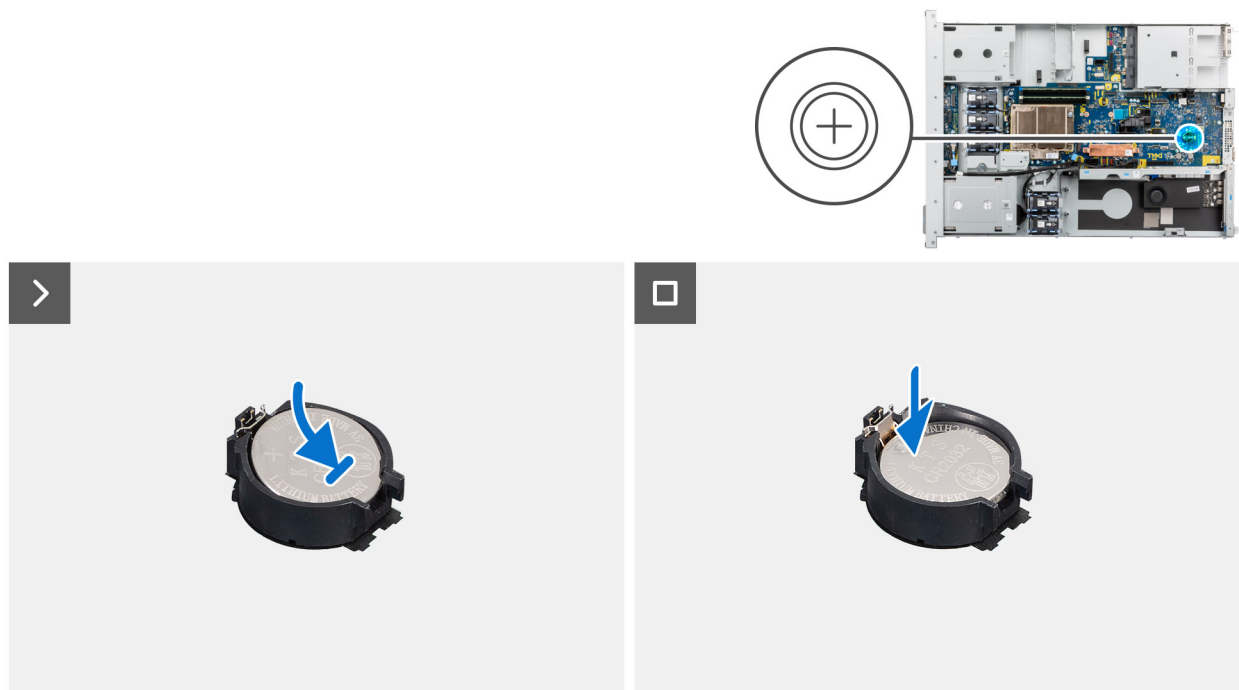


Figure 39. Installing the coin-cell battery

Steps

1. Insert the coin-cell battery with the "+" sign facing up and slide it under the securing tabs at the positive side of the connector.
2. Press the battery into the connector until it locks into place.

Next steps

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

Removing and installing Field Replaceable Units (FRUs)

The replaceable components in this chapter are Field Replaceable Units (FRUs).

CAUTION: FRUs should be replaced by an authorized service technician, who is a trained technical repair specialist.

NOTE: Damages resulting from improper replacement or from failure to follow instructions are not covered by your warranty. Consider having a trained technical repair specialist perform replacements of FRU components.

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

Processor heatsink

Removing the processor heatsink

Prerequisites

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

About this task

The following image indicates the location of the processor heatsink and provides a visual representation of the removal procedure.

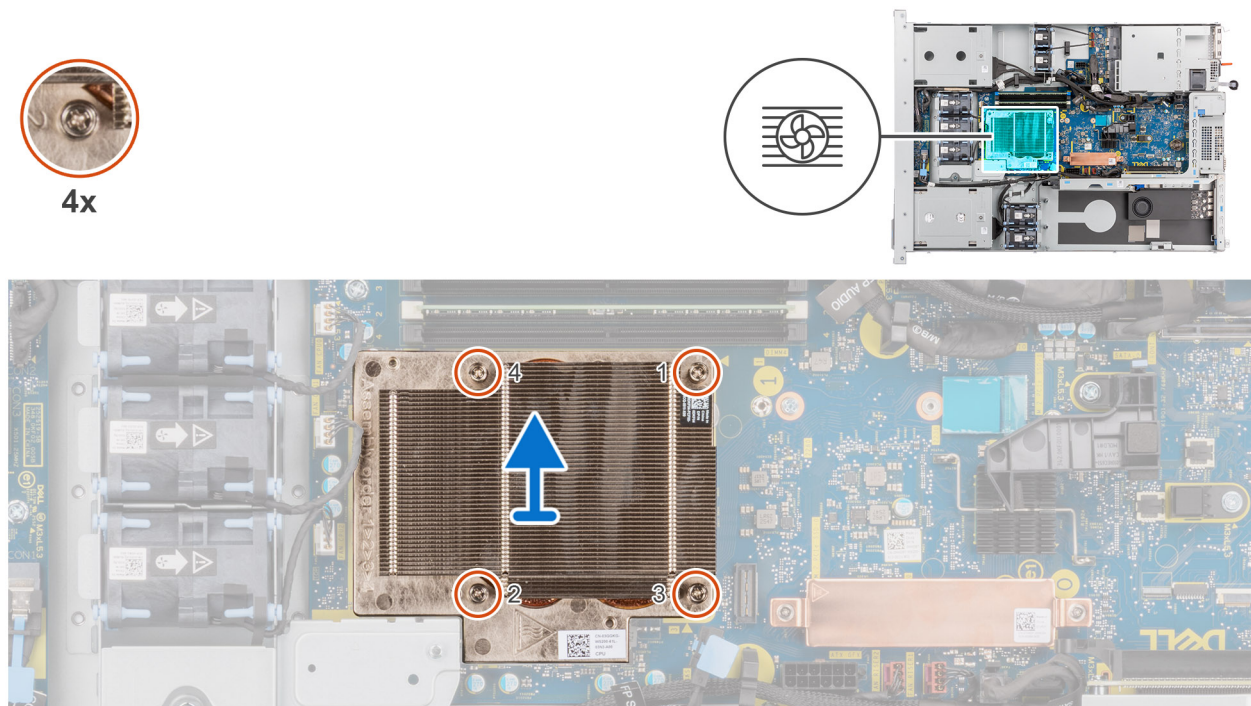


Figure 40. Removing the processor heatsink

Steps

1. In reverse sequential order (4->3->2->1), loosen the four captive screws that secure the processor heatsink to the system board.
2. Lift the processor heatsink off the system board.

Installing the processor heatsink

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 processor heatsink and provides a visual representation of the installation procedure.

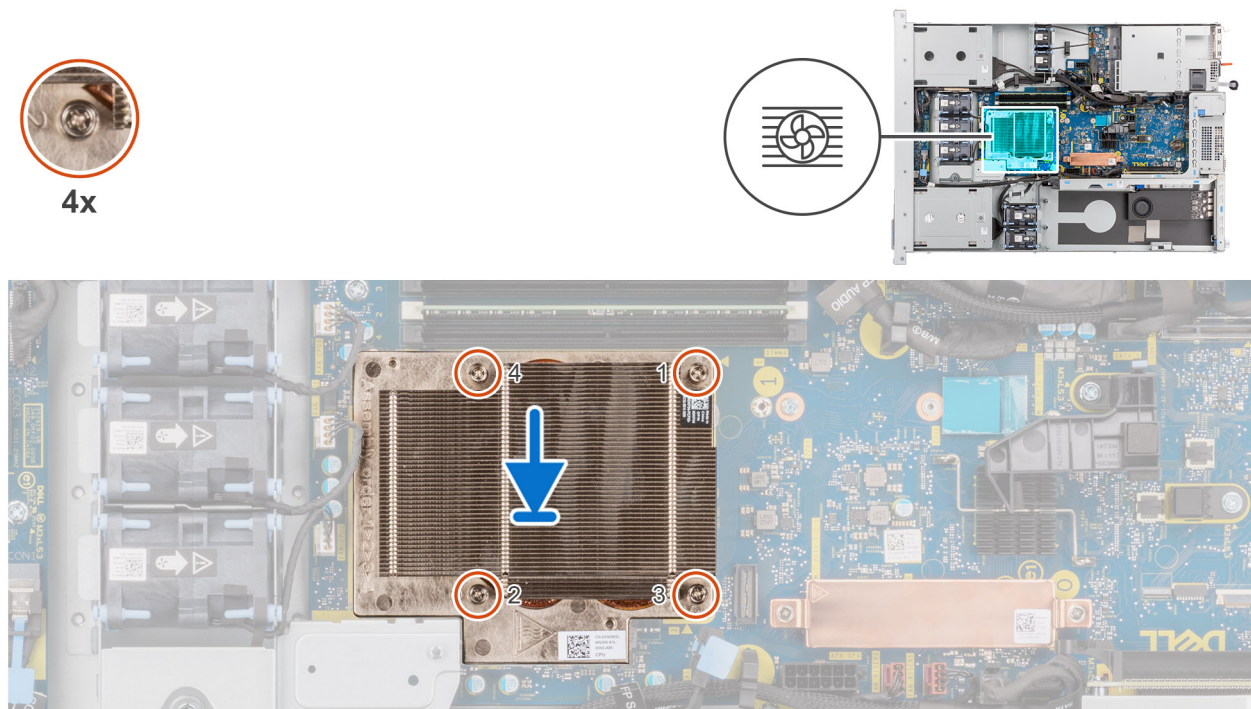


Figure 41. Installing the processor heatsink

Steps

1. Place the processor heatsink on the system board.
2. Align the screw holes on the processor heatsink with the screw holes on the system board.
3. In sequential order (1->2->3->4), tighten the four captive screws that secure the processor heatsink to the system board.

Next steps

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

Processor

Removing the processor

Prerequisites

1. Follow the procedure in [Before working inside your computer](#).
2. Remove the [top cover](#).
3. Remove the [air shroud](#).
4. Remove the [processor heat sink](#).

About this task

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

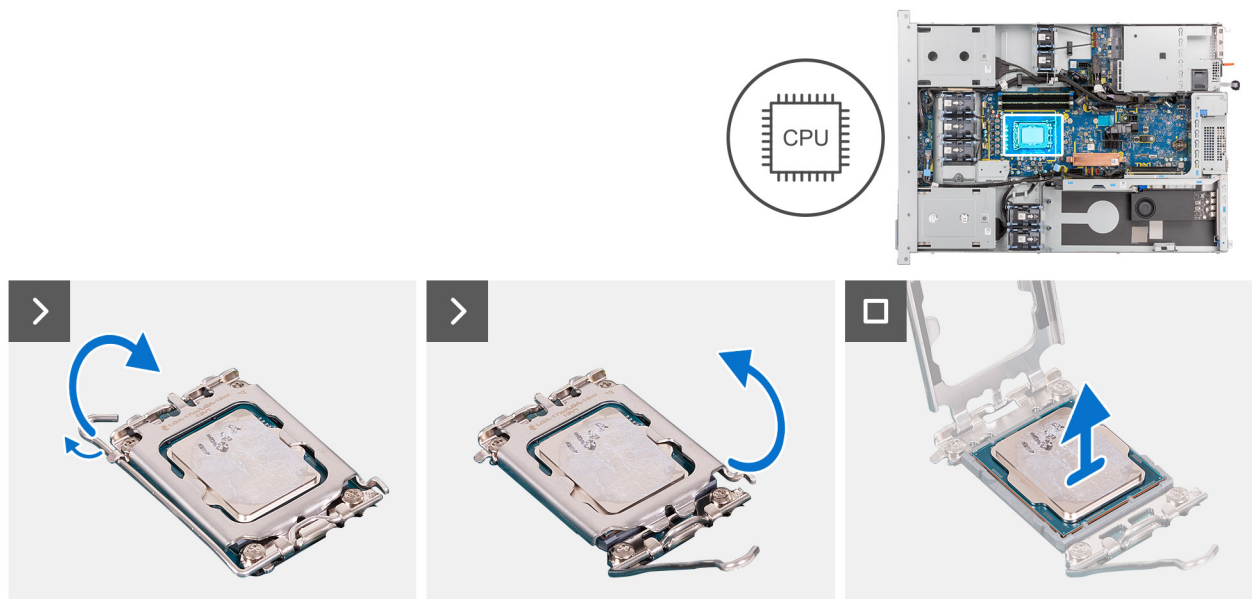


Figure 42. Removing the processor

Steps

1. Press the load lever and move it to the right to release the load lever from the retention tab.
2. Pull the load lever to release the processor cover plate from the retaining tab.
3. Open the processor cover plate and remove the processor.

Installing the processor

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 processor and provides a visual representation of the installation procedure.

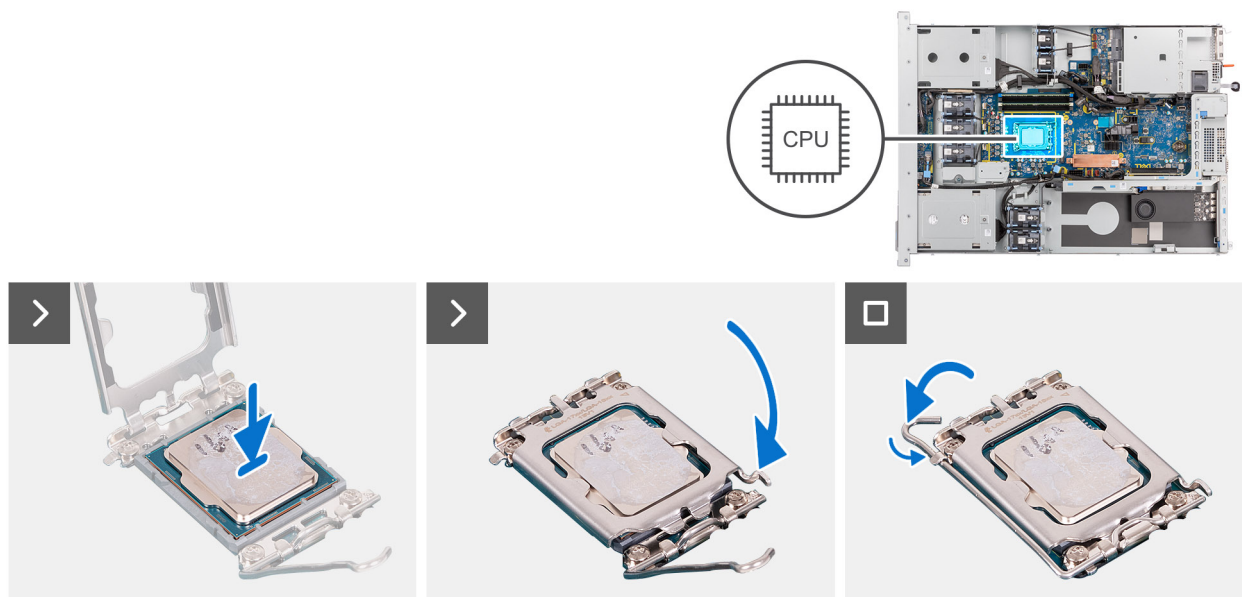


Figure 43. Installing the processor

Steps

1. Align and place the processor on the system board.
2. Close the processor cover plate. Lower the load lever to lock the processor cover plate on the retaining tab.
3. Press the load lever and move it to the left to lock the load lever on the retention tab.

Next steps

1. Install the [processor heat sink](#).
2. Install the [air shroud](#).
3. Install the [top cover](#).
4. Follow the procedure in [After working inside your computer](#).

Riser1 module

Removing the Riser1 module

Prerequisites

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

About this task

The following image indicates the location of the riser1 module and provides a visual representation of the removal procedure.



Figure 44. Removing the riser1 module

Steps

Hold the blue lift points and pull the riser1 module from the slot.

Installing the riser1 module

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 riser1 module and provides a visual representation of the installation procedure.

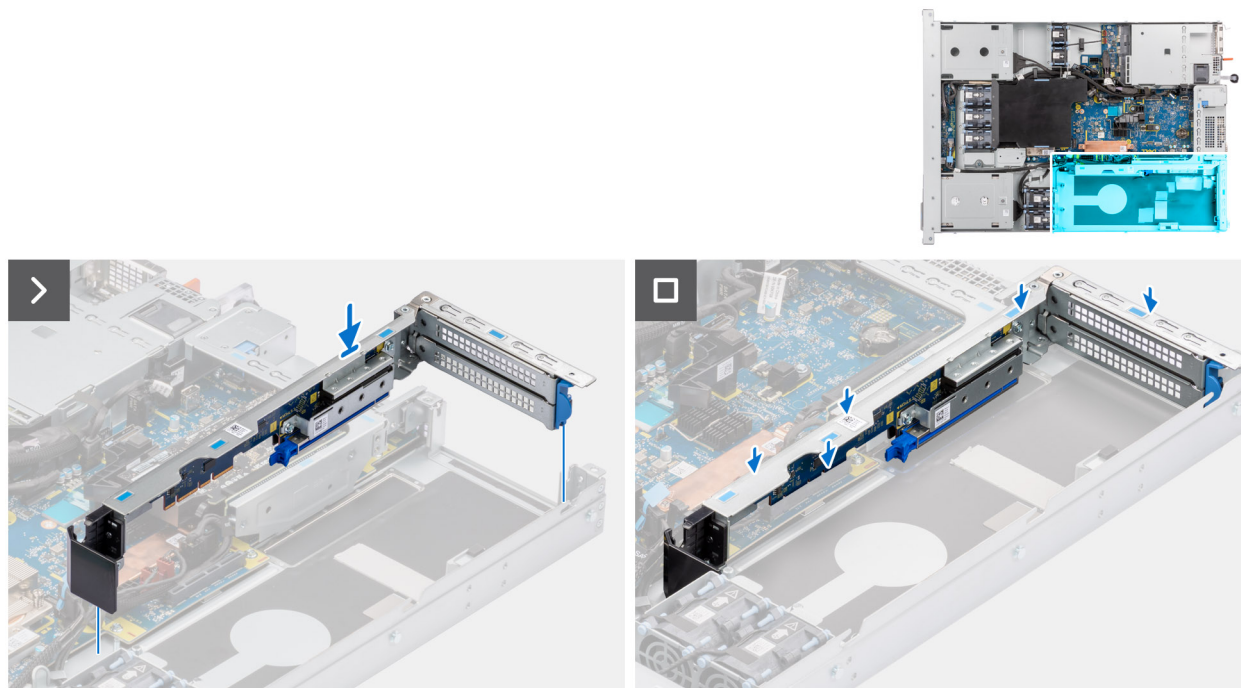


Figure 45. Installing the riser1 module

Steps

1. Hold the blue contact points and align the riser1 module with the alignment pins on the chassis.
2. Then insert the riser1 module into the slot.

Next steps

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

Removing the graphics card from the riser1 module

Prerequisites

1. Follow the procedure in [Before working inside your computer](#).
2. Remove the [top cover](#).
3. Remove the [riser1 module](#).

About this task

The following image indicates the location of the graphics card in the riser1 module and provides a visual representation of the removal procedure.

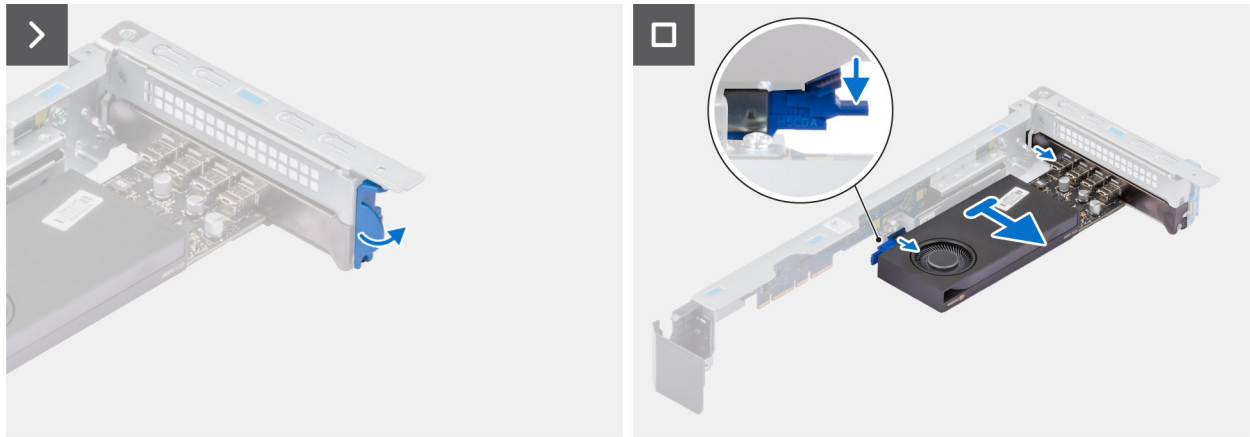


Figure 46. Removing the graphics card from the riser1 module

Steps

1. Open the latch on the riser1 module.
2. Push the release tab on the PCIe slot and slide the graphics card away from the slot.

Installing the graphics card in the riser1 module

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 graphics card in the riser1 module and provides a visual representation of the installation procedure.

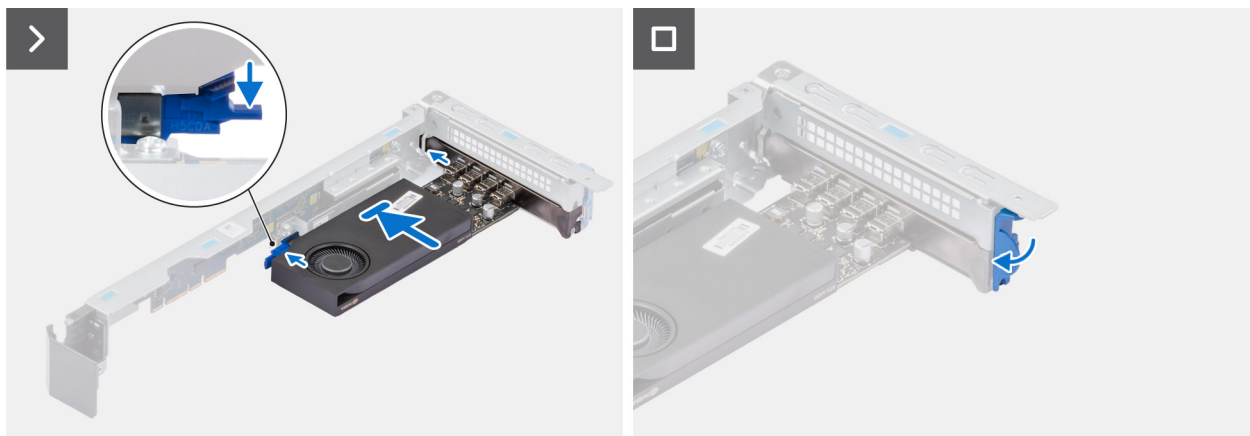


Figure 47. Installing the graphics card in the riser1 module

Steps

1. Remove the PCIe fillers from the riser1 module.
2. Insert the graphics card into the slot and close the release tab to secure the graphics card in the riser1 module in place.

NOTE: Ensure that the graphics-card bracket is installed correctly in the slot.

Next steps

1. Install the [riser1 module](#).
2. Install the [top cover](#).

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

Riser2 module

Removing the riser2 module

Prerequisites

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

About this task

The following image indicates the location of the riser2 module and provides a visual representation of the removal procedure.

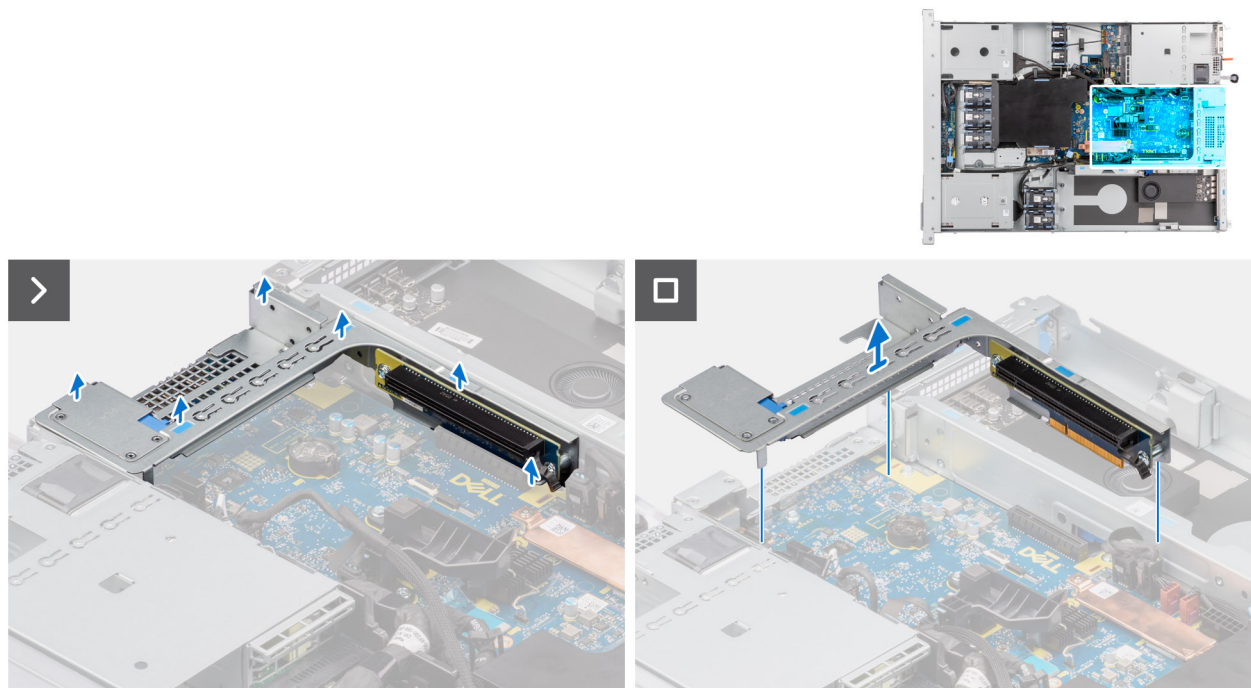


Figure 48. Removing the riser2 module

Steps

Locate the blue points on the riser2 module. Grab the blue points, and lift the riser2 module away from the chassis.

Installing the riser2 module

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 riser2 module and provides a visual representation of the installation procedure.

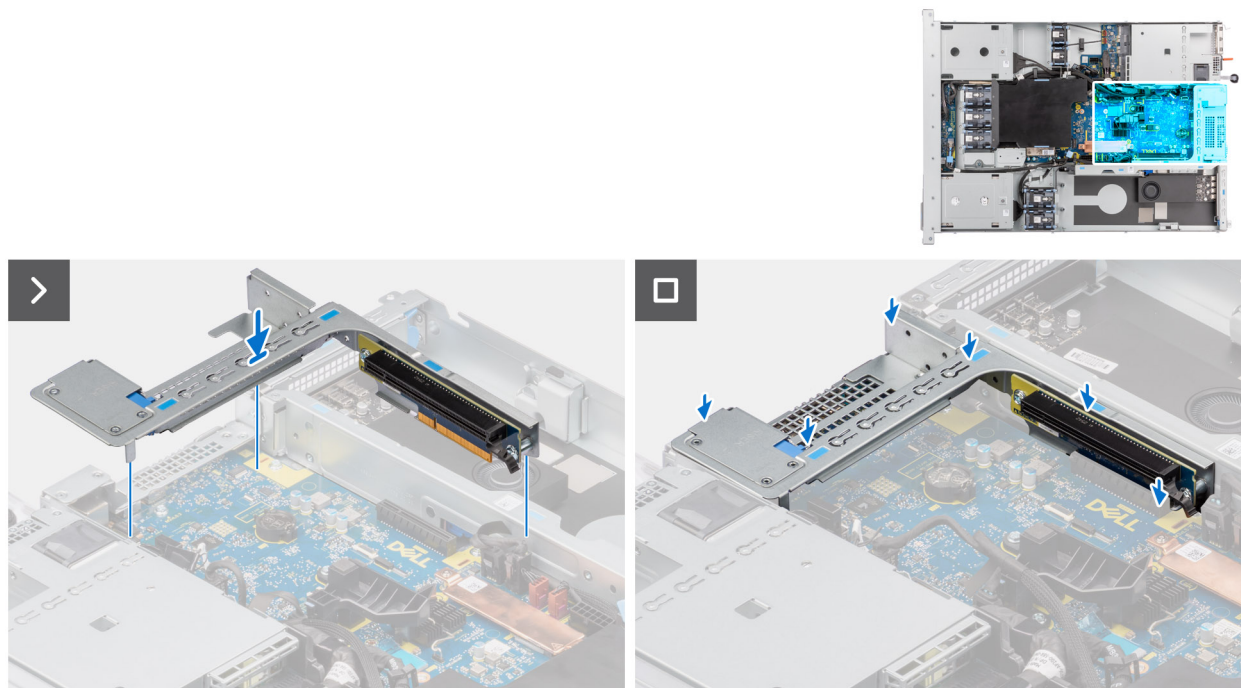


Figure 49. Installing the riser2 module

Steps

1. Hold the blue points on the riser2 module, and align it with the guide pins to install.
2. Press down the riser2 module and ensure that it is seated in the PCIe slot.

Next steps

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

Removing the graphics card from the riser2 module

Prerequisites

1. Follow the procedure in [Before working inside your computer](#).
2. Remove the [top cover](#).
3. Remove the [riser2 module](#).

About this task

The following image indicates the location of the graphics card from the riser2 module and provides a visual representation of the removal procedure.

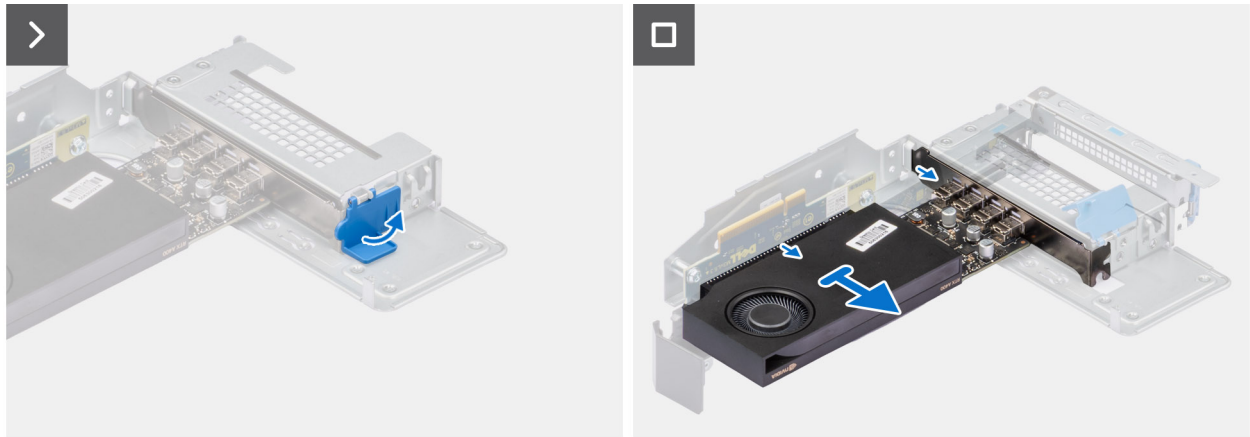


Figure 50. Removing the graphics card from the riser2 module

Steps

1. Open the latch on the riser2 module.
2. Push the release tab on the PCIe slot and slide the graphics card away from the slot.

Installing the graphics card in the riser2 module

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 graphics card in the riser2 module and provides a visual representation of the installation procedure.

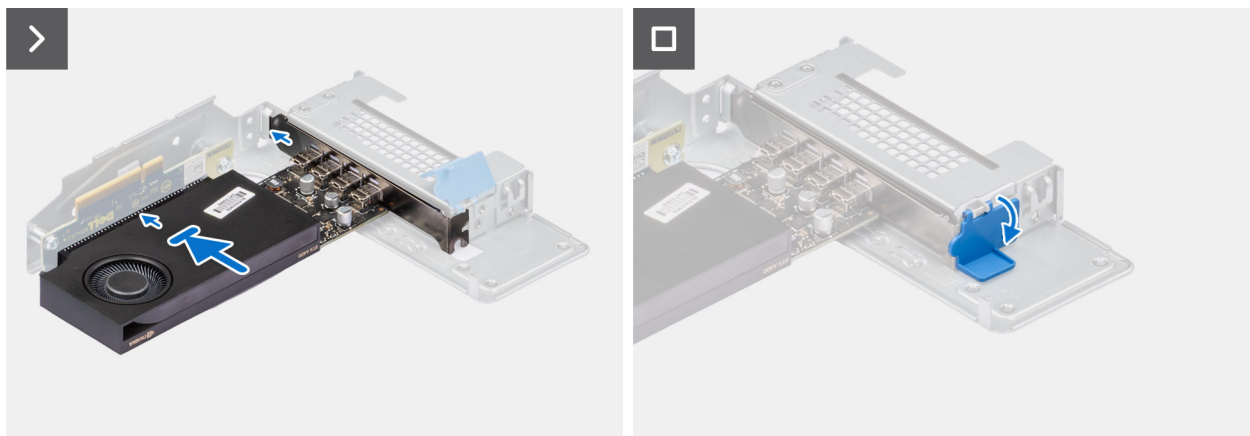


Figure 51. Installing the graphics card in the riser2 module

Steps

1. Remove the PCIe fillers from the riser2 module.
2. Insert the graphics card into the slot and close the release tab to secure the graphics card in the riser2 module in place.

NOTE: Ensure that the graphics-card bracket is installed correctly in the slot.

Next steps

1. Install the [riser2 module](#).
2. Install the [top cover](#).

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

Front I/O cables

Removing the front I/O cables

Prerequisites

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

About this task

The following image indicates the location of the front I/O cables and provides a visual representation of the removal procedure.

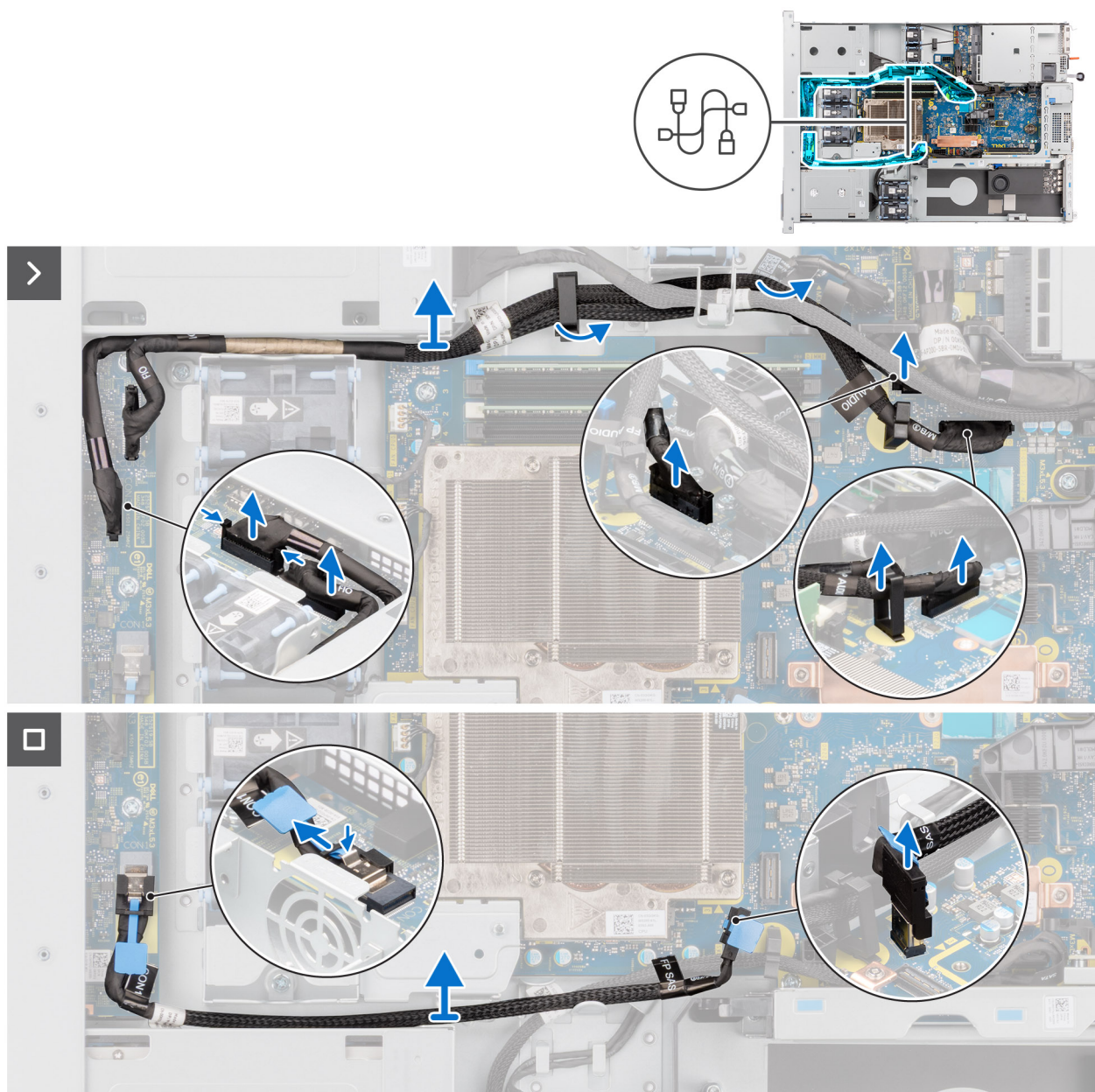


Figure 52. Removing the front I/O cables

Steps

1. Disconnect the front I/O power cable and front I/O signal cable from the front I/O board.
2. Release these cables from the plastic clips and metal latch that secure them to the chassis and system board.
3. Disconnect and remove the front I/O power cable and front I/O signal cable from the system board.

Installing the front I/O cables

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 front I/O cables and provides a visual representation of the installation procedure.

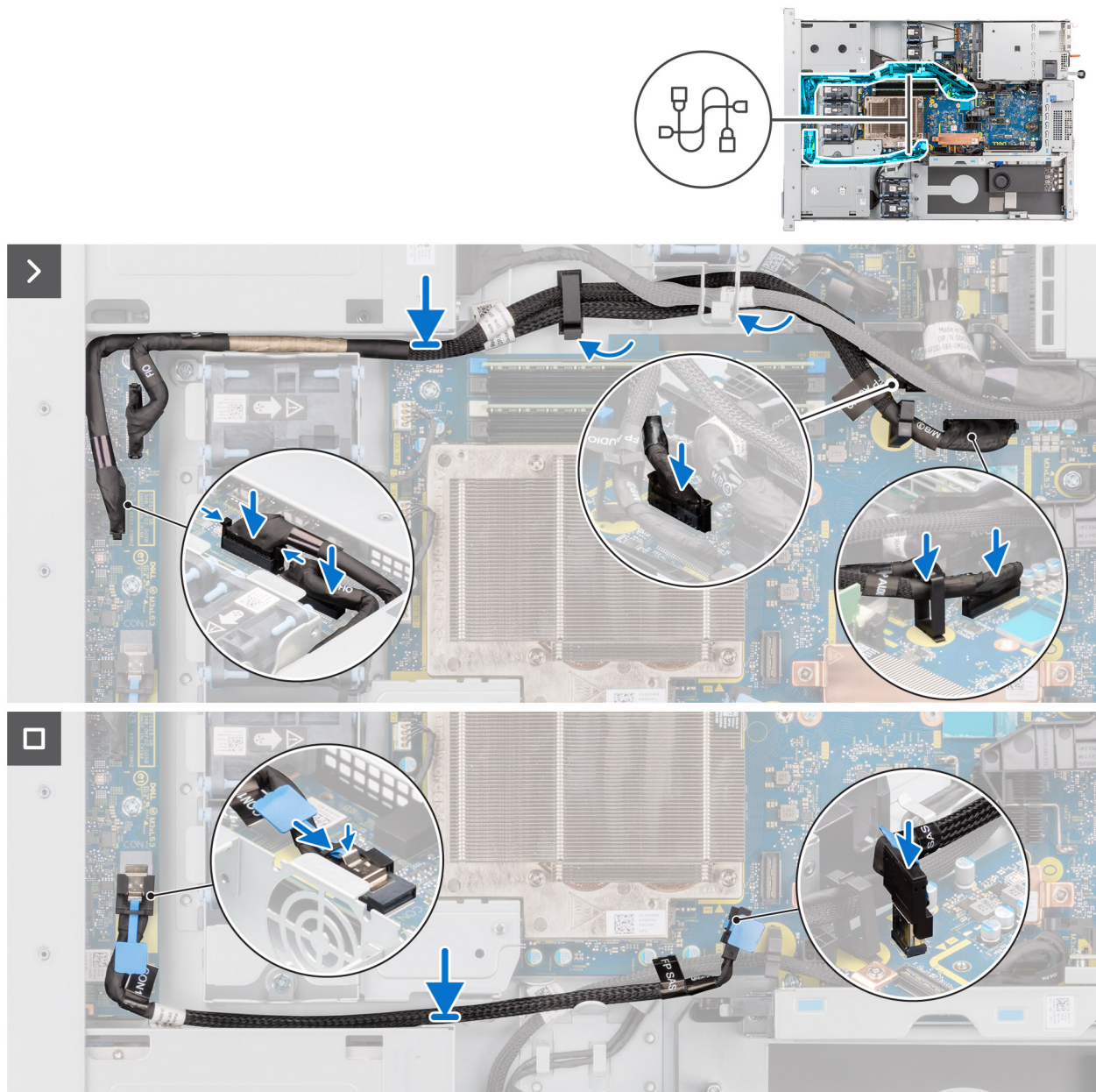


Figure 53. Installing the front I/O cables

Steps

1. Connect the front I/O power cable and front I/O signal cable to the system board.
2. Route these cables towards the front I/O board securing them to the chassis and system board using plastic clips and metal latch.
3. Connect the front I/O power cable and front I/O signal cable to the front I/O board.

Next steps

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

Processor fan cage

Removing the processor fan cage

Prerequisites

1. Follow the procedure in [Before working inside your computer](#).
2. Remove the [top cover](#).
3. Remove the [air shroud](#).
4. Remove the [processor fan](#).
5. Remove the [front I/O cables](#).

About this task

The following image indicates the location of the processor fan cage and provides a visual representation of the removal procedure.



2x
M3x5.3

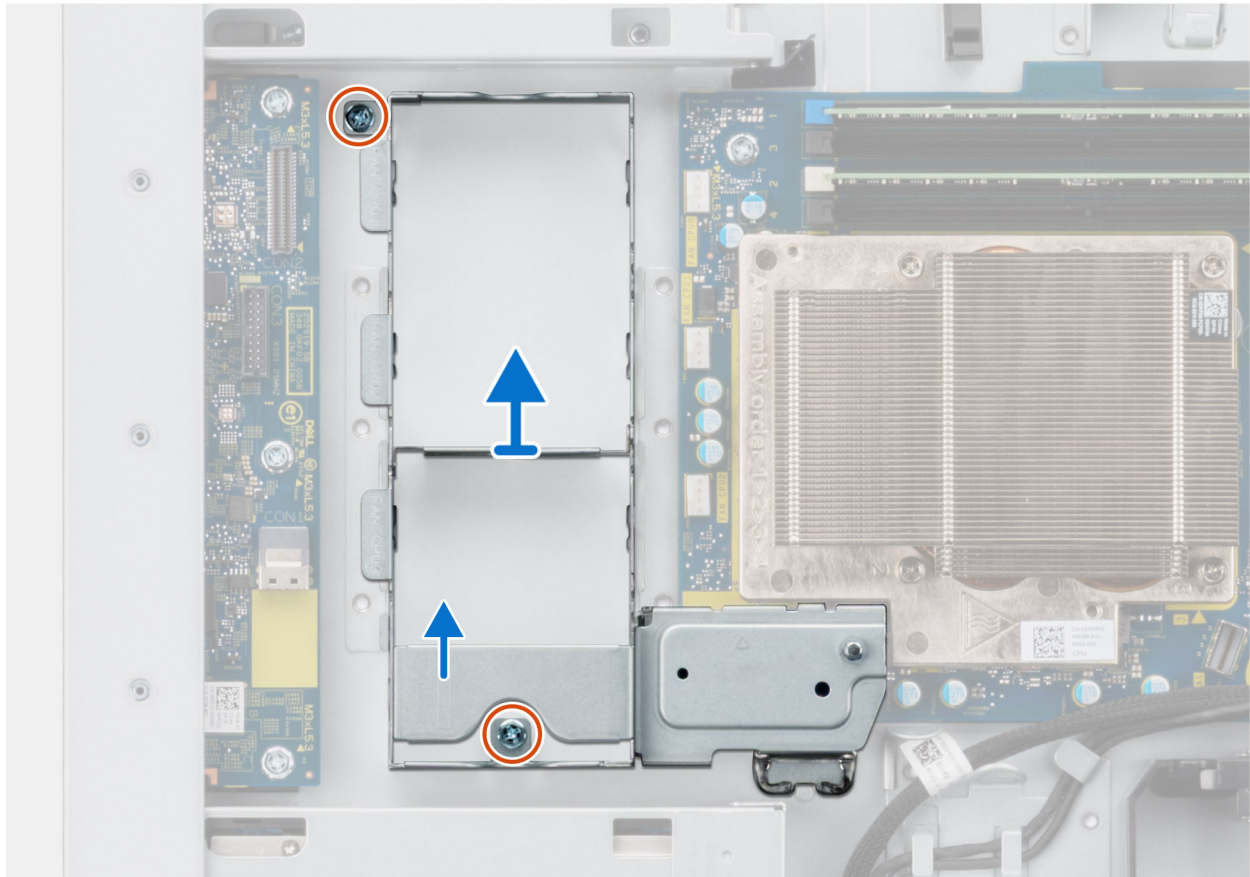
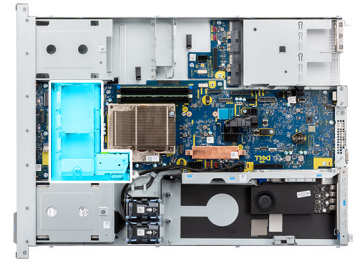


Figure 54. Removing the processor fan cage

Steps

1. Remove the two screws (M3x5.3) that secures the processor fan cage to the chassis.
2. Slide the processor fan cage to the right until the retention clips disengages.
3. Lift the fan cage away from the chassis.

Installing the processor fan cage

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 processor fan cage and provides a visual representation of the installation procedure.



2x
M3x5.3

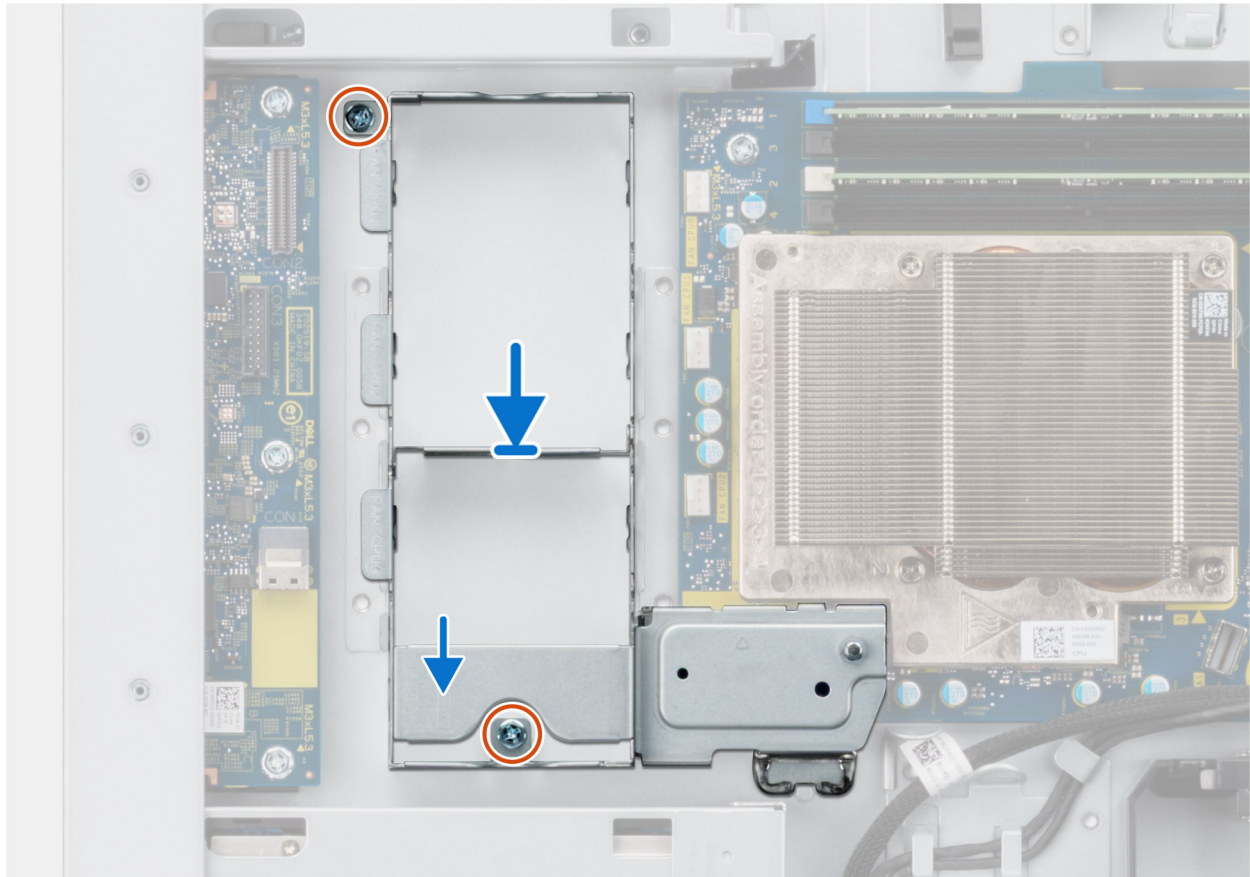
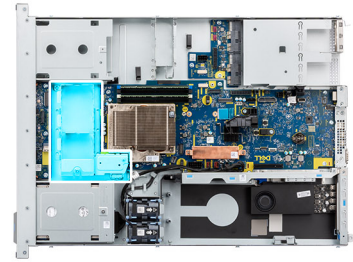


Figure 55. Installing the processor fan cage

Steps

1. Align and place the processor fan cage into the chassis aligning the retention clips into the guide slots.
2. Slide the processor fan cage to the left until the retention clips engages.
3. Replace the two screws (M3x5.3) to secure the processor fan cage to the chassis.

Next steps

1. Install the [front I/O cables](#).
2. Install the [processor fan](#).
3. Install the [air shroud](#).
4. Install the [top cover](#).
5. Follow the procedure in [After working inside your computer](#).

Front I/O-board

Removing the front I/O-board

Prerequisites

1. Follow the procedure in [Before working inside your computer](#).
2. Remove the [top cover](#).
3. Remove the [air shroud](#).
4. Remove the [processor fan](#).
5. Remove the [front I/O cables](#).
6. Remove the [processor fan cage](#).

About this task

The following image indicates the location of the front I/O-board and provides a visual representation of the removal procedure.

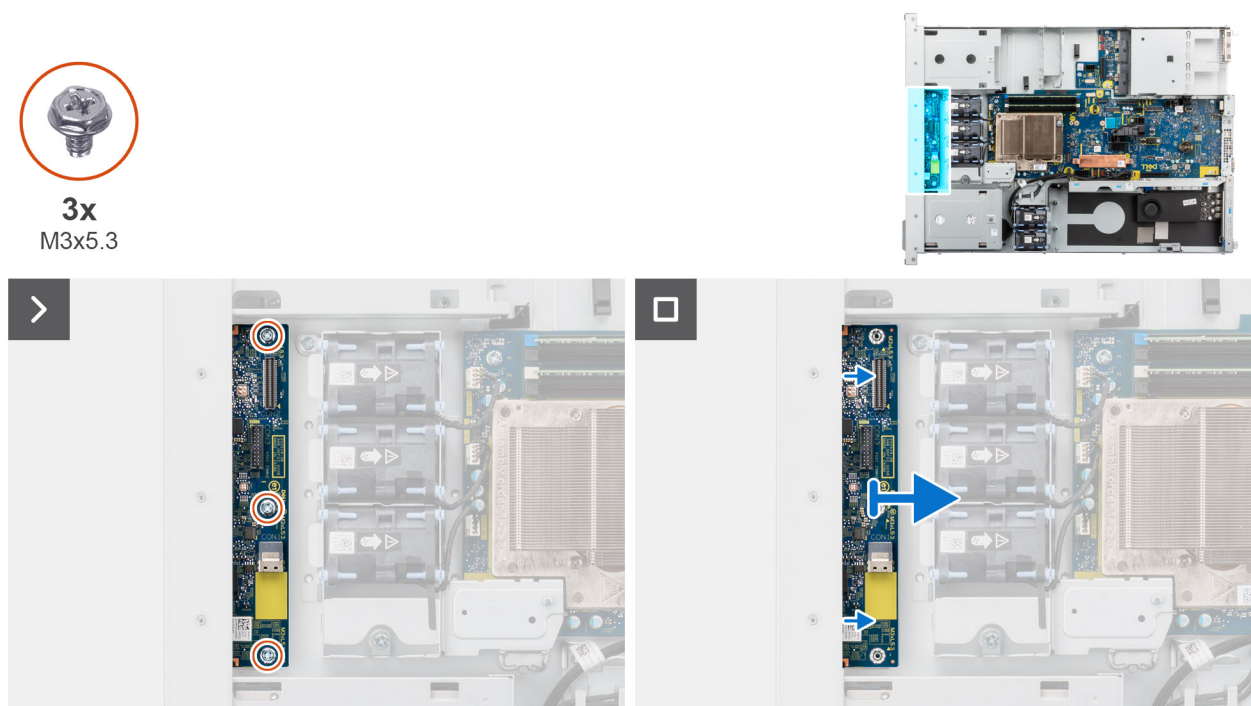


Figure 56. Removing the front I/O-board

Steps

1. Remove the three screws (M3x5.3) that secure the front I/O-board to the chassis.
2. Slide the front I/O-board to the right and remove from the chassis.

Installing the front I/O-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 location of the front I/O-board and provides a visual representation of the installation procedure.



3x
M3x5.3

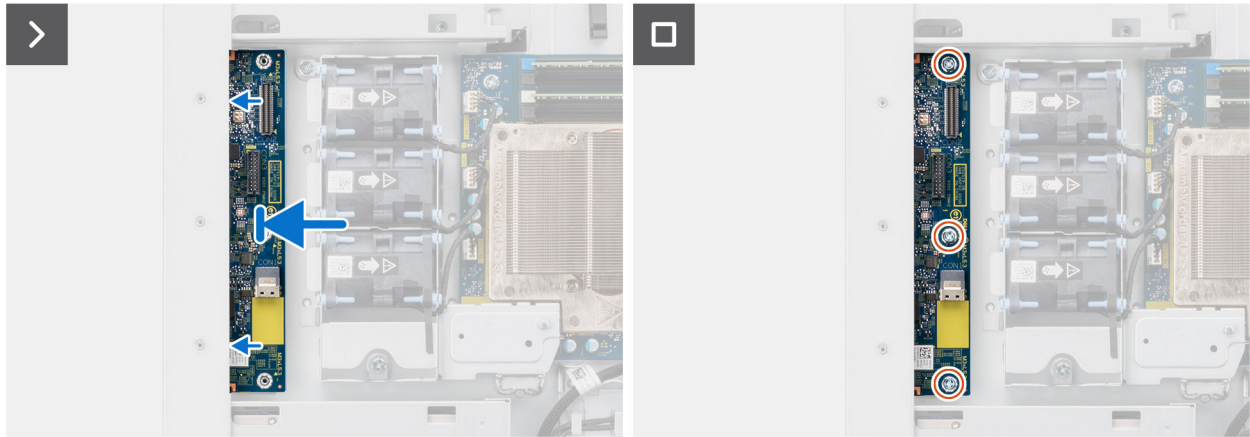
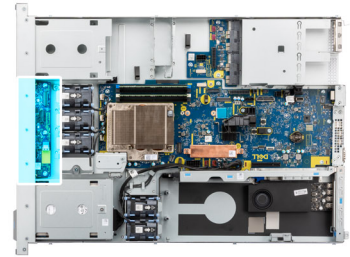


Figure 57. Installing the front I/O-board

Steps

1. Slide the front I/O-board to the left in the slot.
2. Align the screw holes of the front I/O-board with the screw holes on the chassis.
3. Replace the three screws (M3x5.3) to secure the front I/O-board to the chassis.

Next steps

1. Install the [processor fan cage](#).
2. Install the [front I/O cables](#).
3. Install the [processor fan](#).
4. Install the [air shroud](#).
5. Install the [top cover](#).
6. Follow the procedure in [After working inside your computer](#).

NVMe SSD cables

Removing the NVMe SSD cables

Prerequisites

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

About this task

The following image indicates the location of the NVMe SSD cables and provides a visual representation of the removal procedure.



Figure 58. Removing the NVMe SSD cables

Steps

1. Disconnect the NVMe SSD cables from the M.2 NVMe SSD module.
2. Unroute and release the NVMe SSD cables from the plastic clips and metal latch that secure them to the chassis.
3. Disconnect and remove the NVMe SSD cables from the system board.

Installing the NVMe SSD cables

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 NVMe SSD cables and provides a visual representation of the installation procedure.

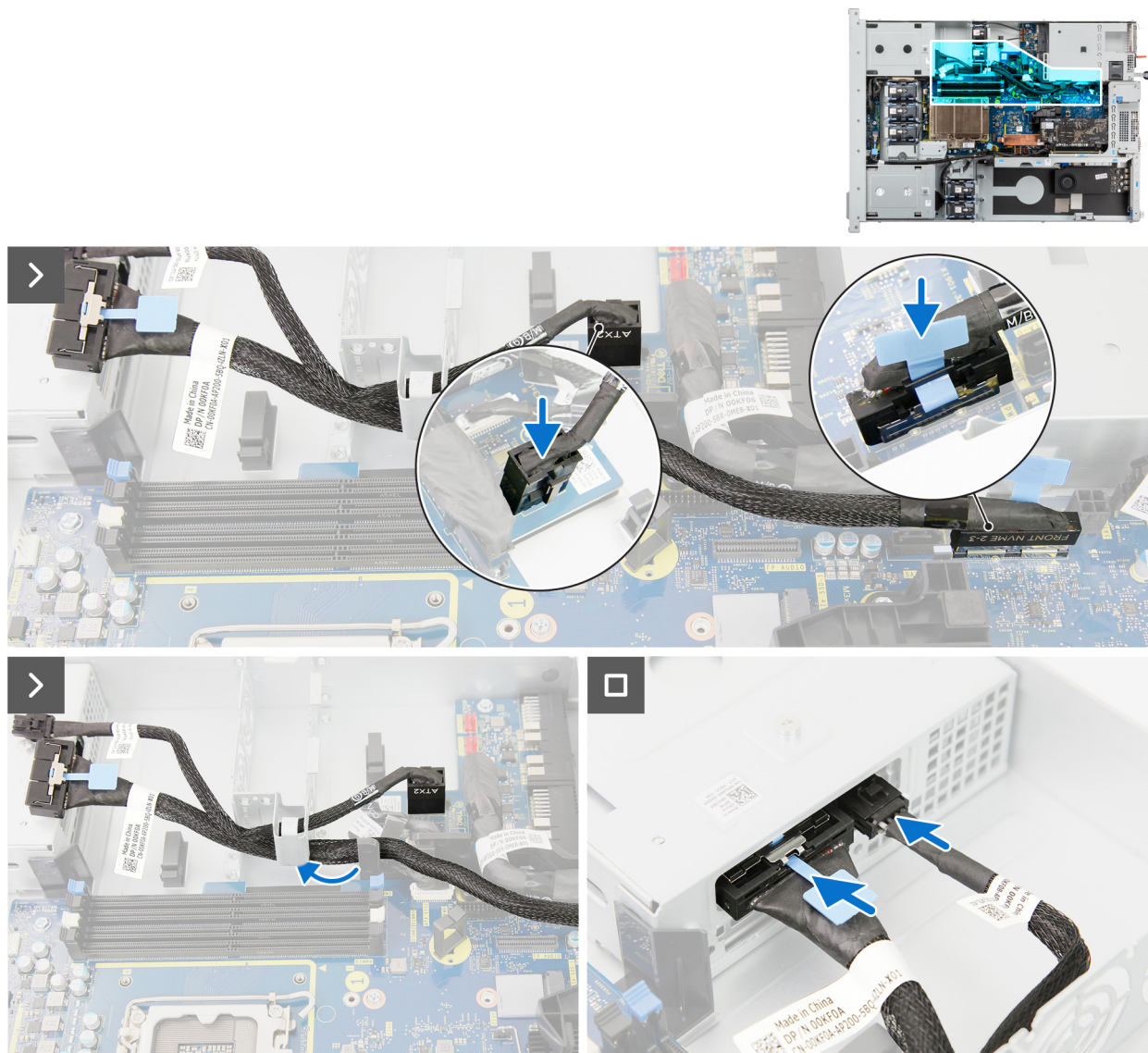


Figure 59. Installing the NVMe SSD cables

Steps

1. Connect the NVMe SSD cables to the system board.
2. Route the cables through the routing guides towards the M.2 NVMe SSD module securing them to the chassis using plastic clips and metal latch.
3. Connect the NVMe SSD cables to the M.2 NVMe SSD module.

Next steps

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

Hard drive SATA and power cables

Removing the hard drive SATA and power cables

Prerequisites

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

About this task

The following image indicates the location of the hard drive SATA and power cables and provides a visual representation of the removal procedure.

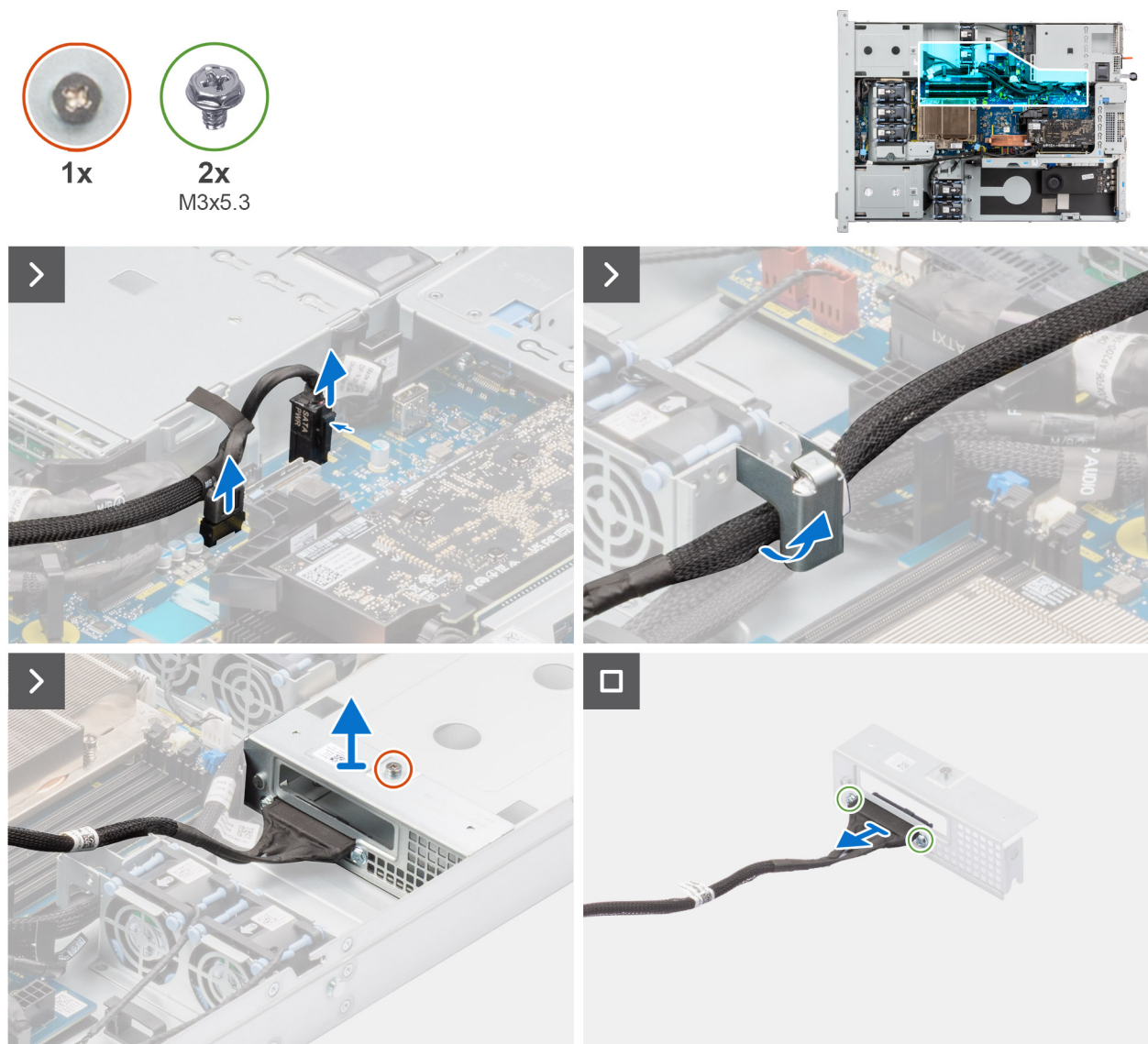


Figure 60. Removing the hard drive SATA and power cables

Steps

1. Disconnect the hard drive SATA and power cables from the system board.
2. Release the hard drive SATA and power cables from the metal clips that secure them to the chassis.

3. Loosen the screw (M3x5.3) on the left external FlexBay hard-drive bracket and lift the left hard-drive bracket away from the chassis.

 **NOTE:** Loosen the screw (M3x5.3) on the right external FlexBay hard-drive bracket and lift the right hard-drive bracket away from the chassis.

4. Remove the two screws (M3x5.3) on left external FlexBay hard-drive bracket the and remove the hard drive SATA and power cables from the chassis.

 **NOTE:** Remove the two screws (M3x5.3) on right external FlexBay hard-drive bracket the and remove the hard drive SATA and power cables from the chassis.

Installing the hard drive SATA and power cables

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 hard drive SATA and power cables and provides a visual representation of the installation procedure.

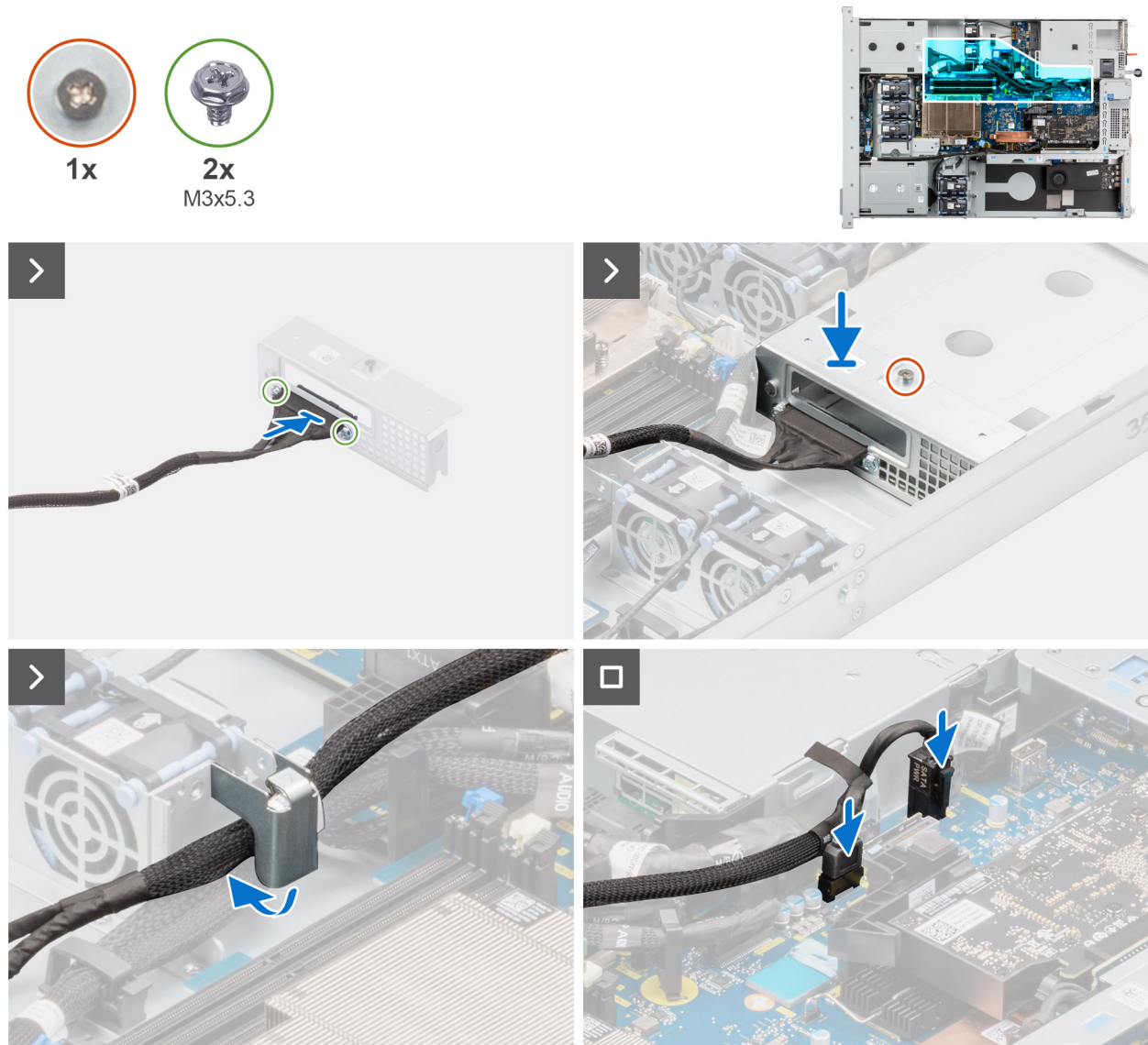


Figure 61. Installing the hard drive SATA and power cables

Steps

1. Insert the hard drive SATA and power cables in the left external FlexBay hard-drive bracket and replace the two screws (M3x5.3).
NOTE: Insert the hard drive SATA and power cables in the right external FlexBay hard-drive bracket and replace the two screws (M3x5.3).
2. Align and place the left external FlexBay hard-drive bracket on the chassis. Route the hard drive SATA and power cables through the left external FlexBay hard-drive bracket and tighten the screw (M3x5.3) on the left external FlexBay hard-drive bracket.
NOTE: Align and place the right external FlexBay hard-drive bracket on the chassis. Route the hard drive SATA and power cables through the right external FlexBay hard-drive bracket and tighten the screw (M3x5.3) on the right external FlexBay hard-drive bracket.
3. Route the hard drive SATA and power cables through the routing guides and secure them to the chassis using the metal clips.
4. Connect the hard drive SATA and power cables to the system board.

Next steps

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

PDB cables

Removing the PDB cables

Prerequisites

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

About this task

The following image indicates the location of the PDB cables and provides a visual representation of the removal procedure.

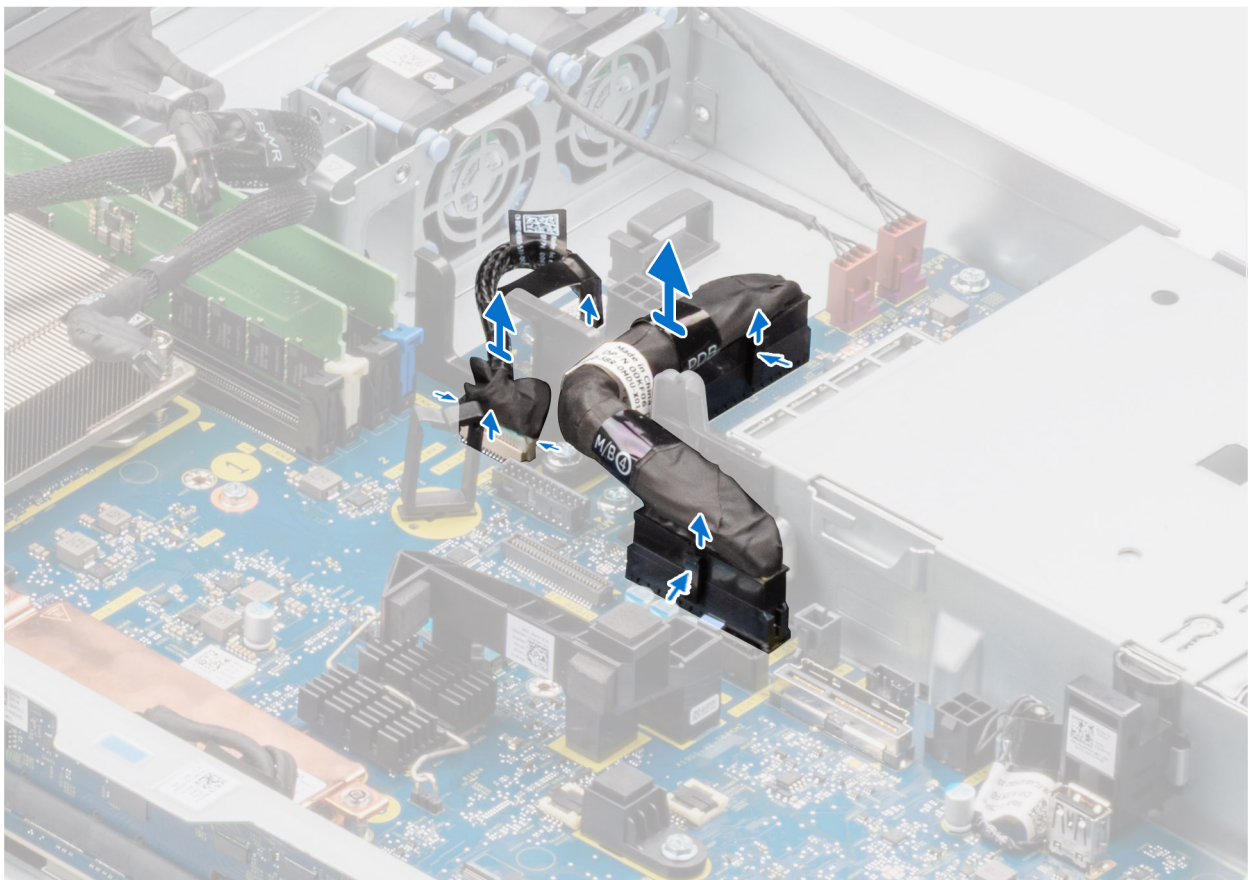
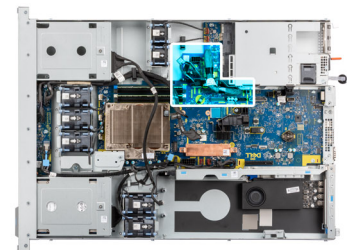


Figure 62. Removing the PDB cables

Steps

1. Press the release tabs on the sides of the PDB signal cable to disconnect from the PDB.
2. Disconnect the PDB power cable from the PDB.
3. Unroute the PDB power cable and PDB signal cable through the routing guides.
4. Press the release tabs on the sides of the PDB signal cable to disconnect from the system board.
5. Disconnect the PDB power cable from the system board.

Installing the PDB cables

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 PDB cables and provides a visual representation of the installation procedure.

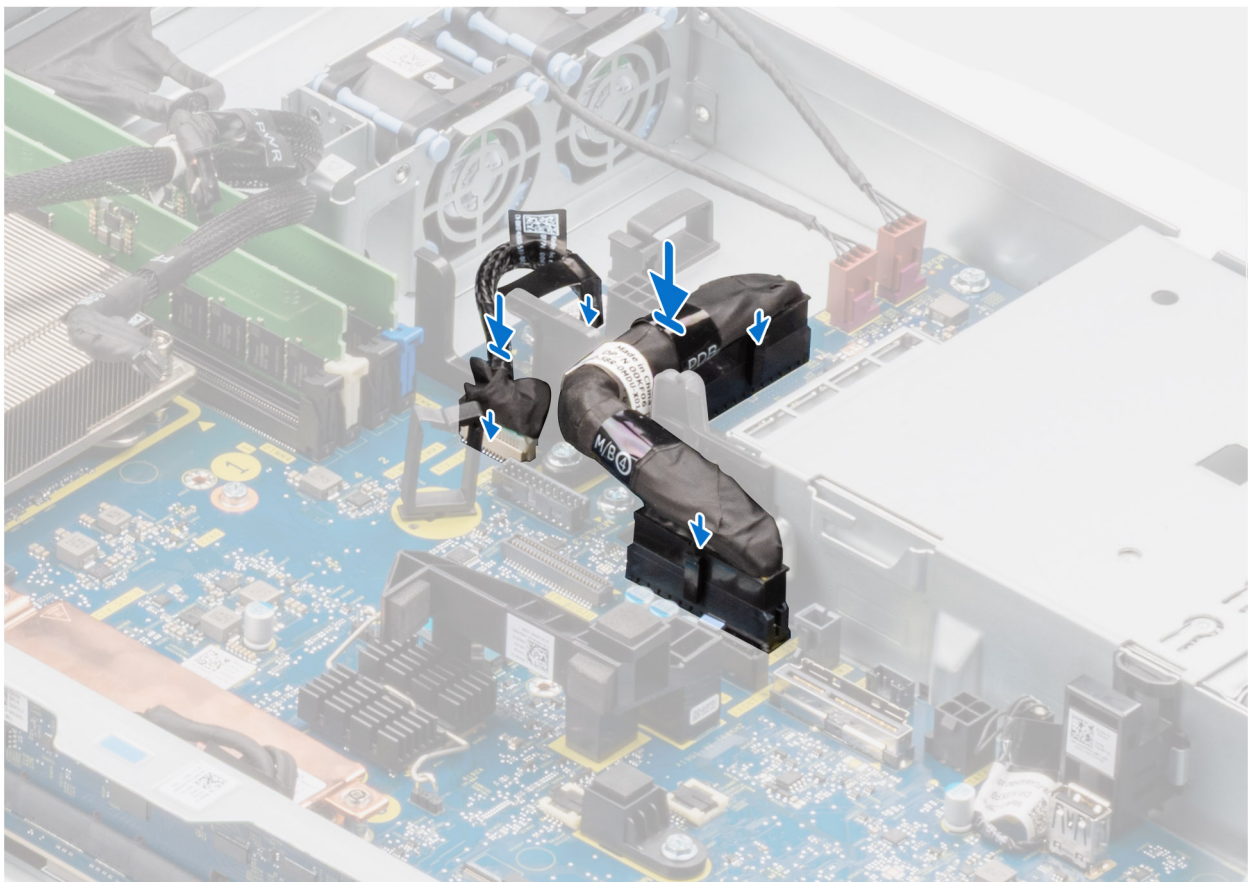
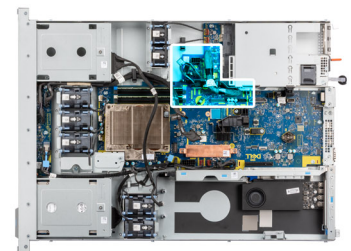


Figure 63. Installing the PDB cables

Steps

1. Align the pins on the PDB signal cable with the connector on the system board.

2. Press the release tab on the sides on the PDB signal cable and insert it on the connector on the system board.
3. Connect the PDB power cable to the system board.
4. Route the PDB power cable and PDB signal cable through the routing guides.
5. Align the pins on the PDB signal cable with the connector on the PDB.
6. Press the release tab on the sides on the PDB signal cable and insert it on the connector on the PDB.
7. Connect the PDB power cable to the PDB.

Next steps

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

PSU block cover

Removing the PSU block cover

Prerequisites

1. Follow the procedure in [Before working inside your computer](#).
2. Remove the [top cover](#).
3. Remove the [air shroud](#).
4. Remove the [PDB cables](#).

About this task

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

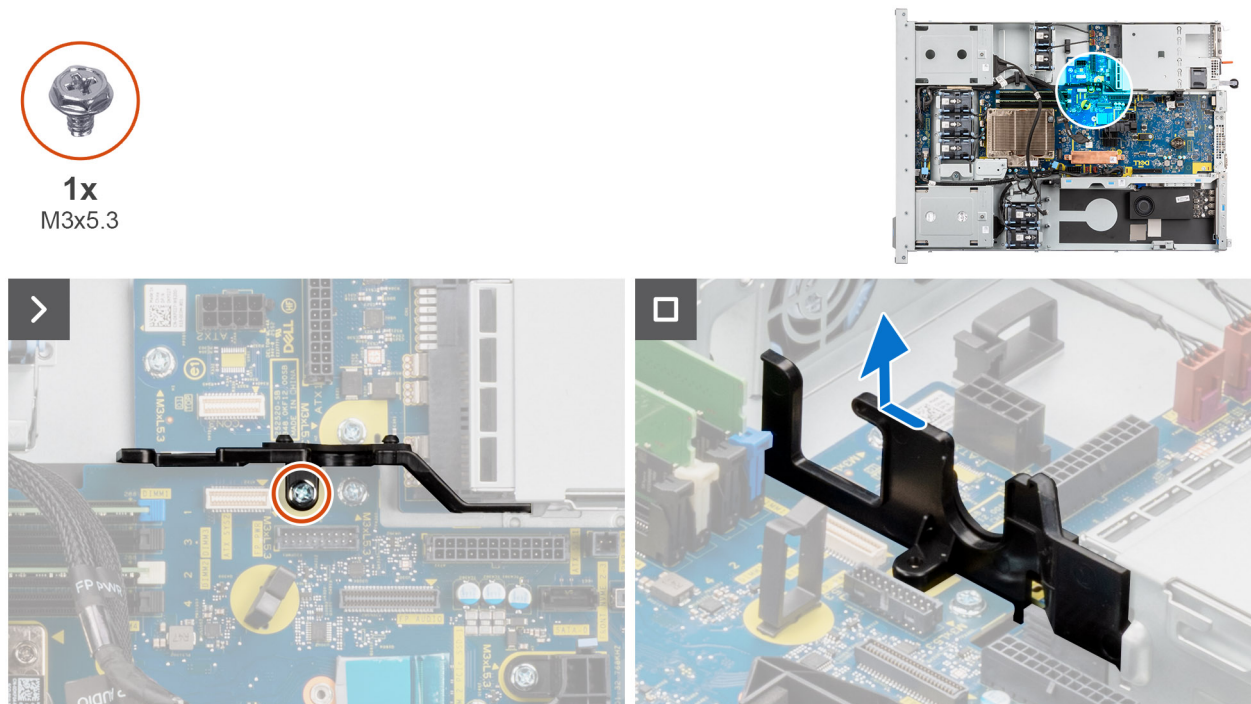


Figure 64. Removing the PSU block cover

Steps

1. Remove the screw (M3x5.3) that secures the PSU block cover to the system board.
2. Lift and remove the PSU block cover from the system board.

Installing the PSU block 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 PSU block cover and provides a visual representation of the installation procedure.



1x
M3x5.3

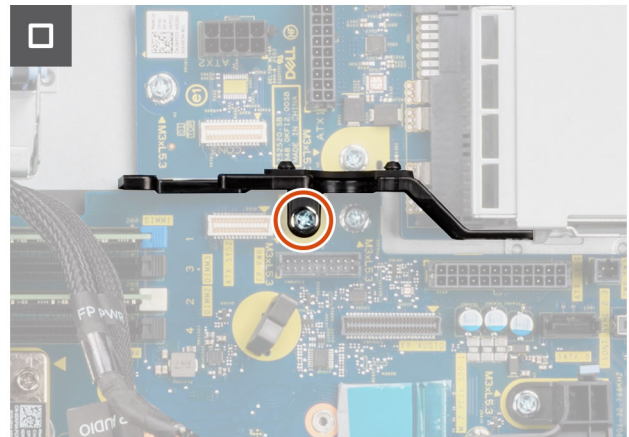
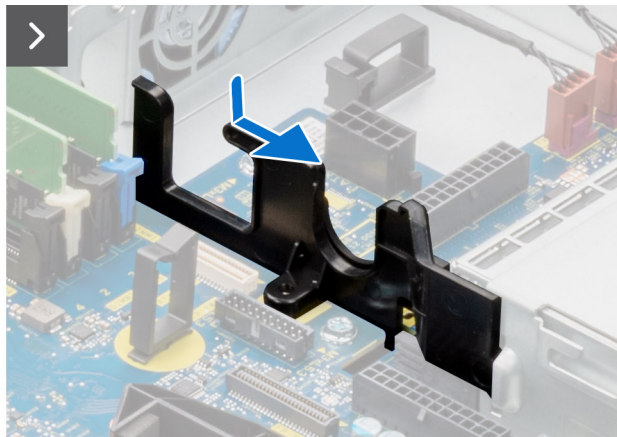
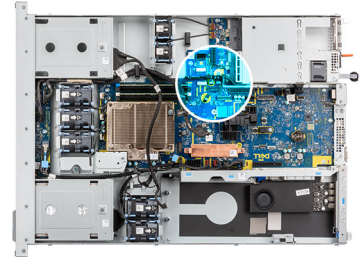


Figure 65. Installing the PSU block cover

Steps

1. Align the screw hole of the PSU block cover with the screw hole on the system board.
2. Place the PDU block cover on the system board.
3. Replace the screw (M3x5.3) that secures the PSU block cover to the system board.

Next steps

1. Install the [PDB cables](#).
2. Install the [air shroud](#).
3. Install the [top cover](#).
4. Follow the procedure in [After working inside your computer](#).

PDB

Removing the PDB

Prerequisites

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

4. Remove the [PDB cables](#).
5. Remove the [PSU block cover](#).

About this task

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



3x
M3x5.3

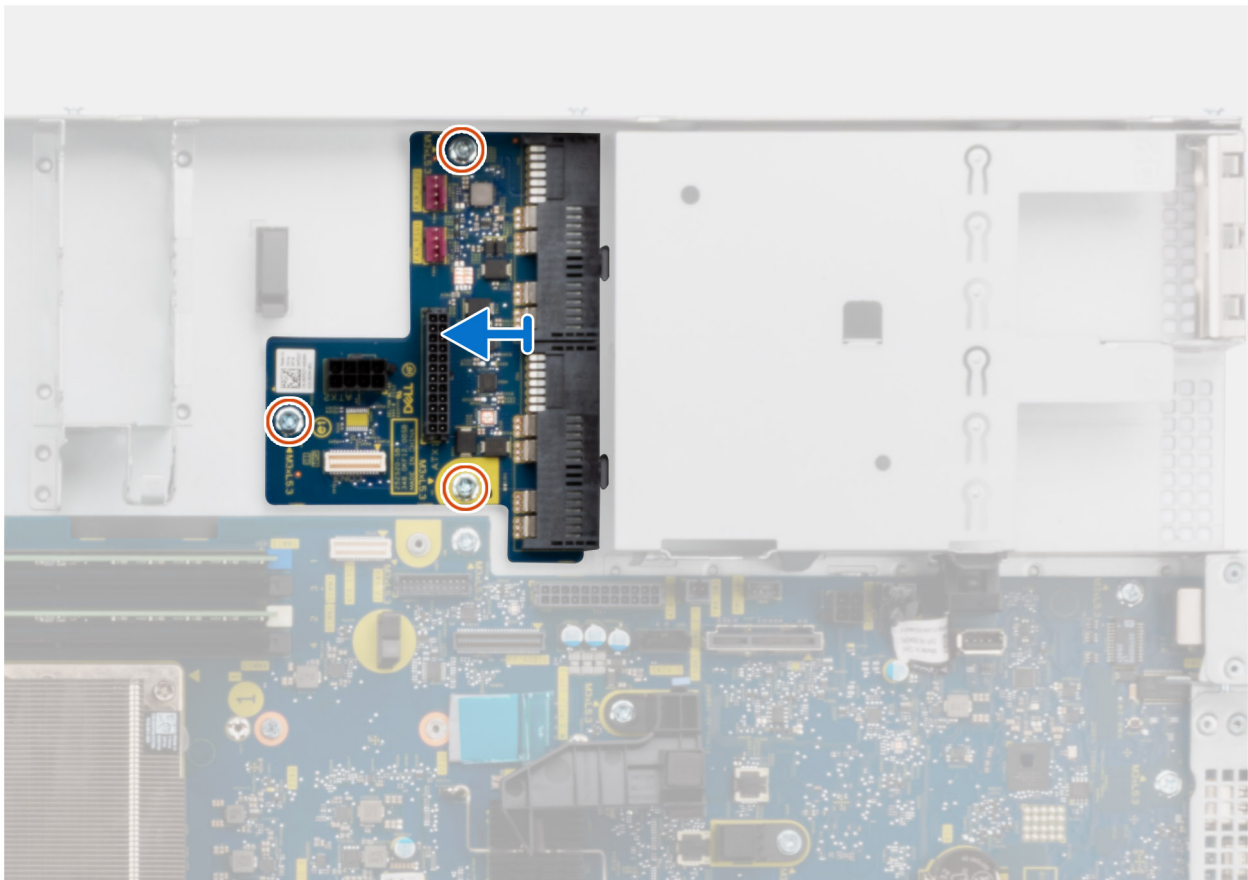
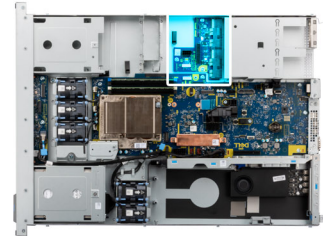


Figure 66. Removing the PDB

Steps

1. Remove the three screws (M3x5.3) that secure the PDB to the chassis.
2. Lift and remove the PDB from the chassis.

Installing the PDB

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 PDB and provides a visual representation of the installation procedure.



3x
M3x5.3

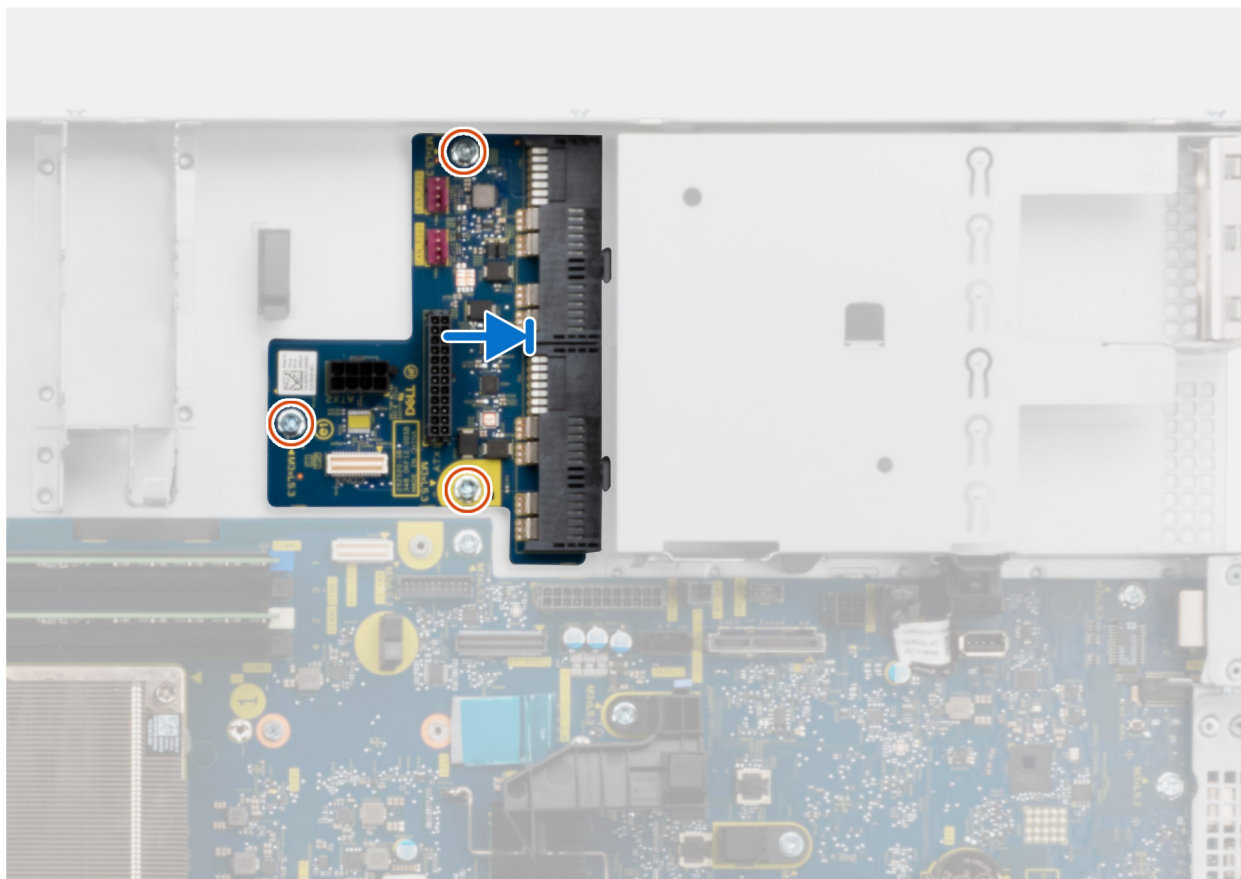
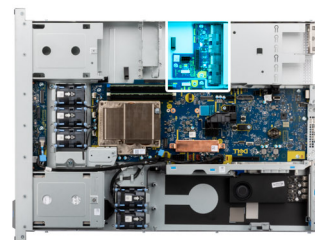


Figure 67. Installing the PDB

Steps

1. Align the screw holes of the PDB with the screw holes on the chassis.
2. Place the PDB on the chassis.
3. Replace the three screws (M3x5.3) that secure the PSU block cover to the chassis.

Next steps

1. Install the [PSU block cover](#).
2. Install the [PDB cables](#).
3. Install the [air shroud](#).
4. Install the [top cover](#).
5. 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](#).
2. Remove the [top cover](#).
3. Remove the [riser1](#) and [riser2](#).
4. Remove the [M.2 2230 SSD](#) or [M.2 2280 SSD](#), whichever is applicable.
5. Remove the [air shroud](#).
6. Remove the [memory modules](#).
7. Remove the [processor heat sink](#).
8. Remove the [intrusion switch](#).
9. Remove the [processor fan](#).
10. Remove the [front I/O cables](#).
11. Remove the [PDB cables](#).
12. Remove the [PSU block cover](#).
13. Remove the [PDB](#).
14. Remove the [processor fan cage](#).

About this task

The following images indicate the system board connectors.

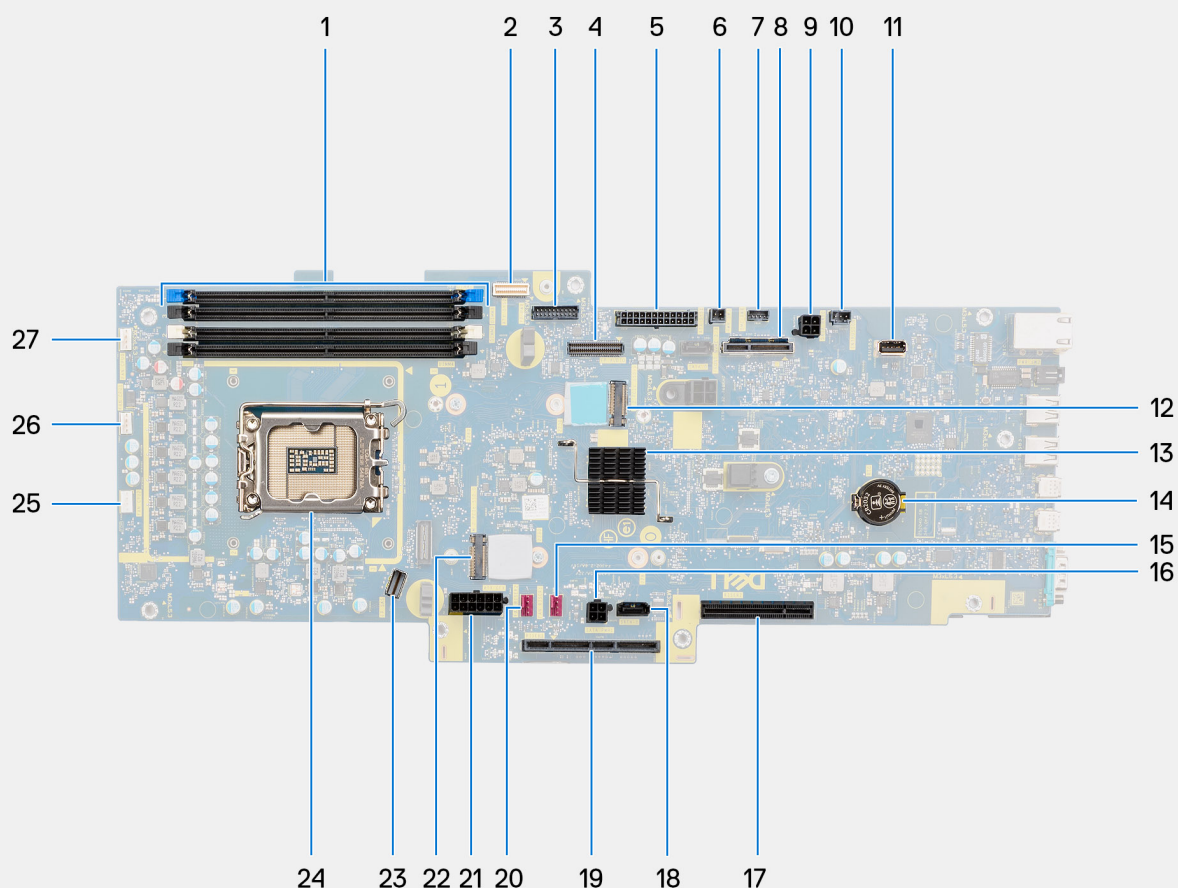


Figure 68. System board connectors

1. Memory-module slots
2. Power distribution board (PDB) signal cable connector
3. Front I/O power cable connector
4. Front I/O USB-2 connector
5. Power supply unit board connector
6. Power button
7. PCIe BMC Power
8. Front NVMe connector for externally facing M.2 FlexBay drive
9. SATA power 0 connector
10. Intrusion switch connector
11. Internal USB 2.0
12. M.2 SSD slot-1
13. Platform Controller Hub (PCH)
14. Coin-cell battery
15. Graphics card fan connector 2
16. SATA power 1 connector
17. Riser2 PCIe Gen4 x8
18. HDD slot-1
19. Riser1 PCIe Gen5 x16
20. Graphics card fan connector 1
21. Graphics card power connector
22. M.2 SSD slot-0
23. Front I/O USB-1 connector
24. Front I/O USB-1 connector
25. Front I/O USB-1 connector
26. Front I/O USB-1 connector
27. Front I/O USB-1 connector

- 24. Processor
- 25. CPU fan 1 connector
- 26. CPU fan 2 connector
- 27. CPU fan 3 connector

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

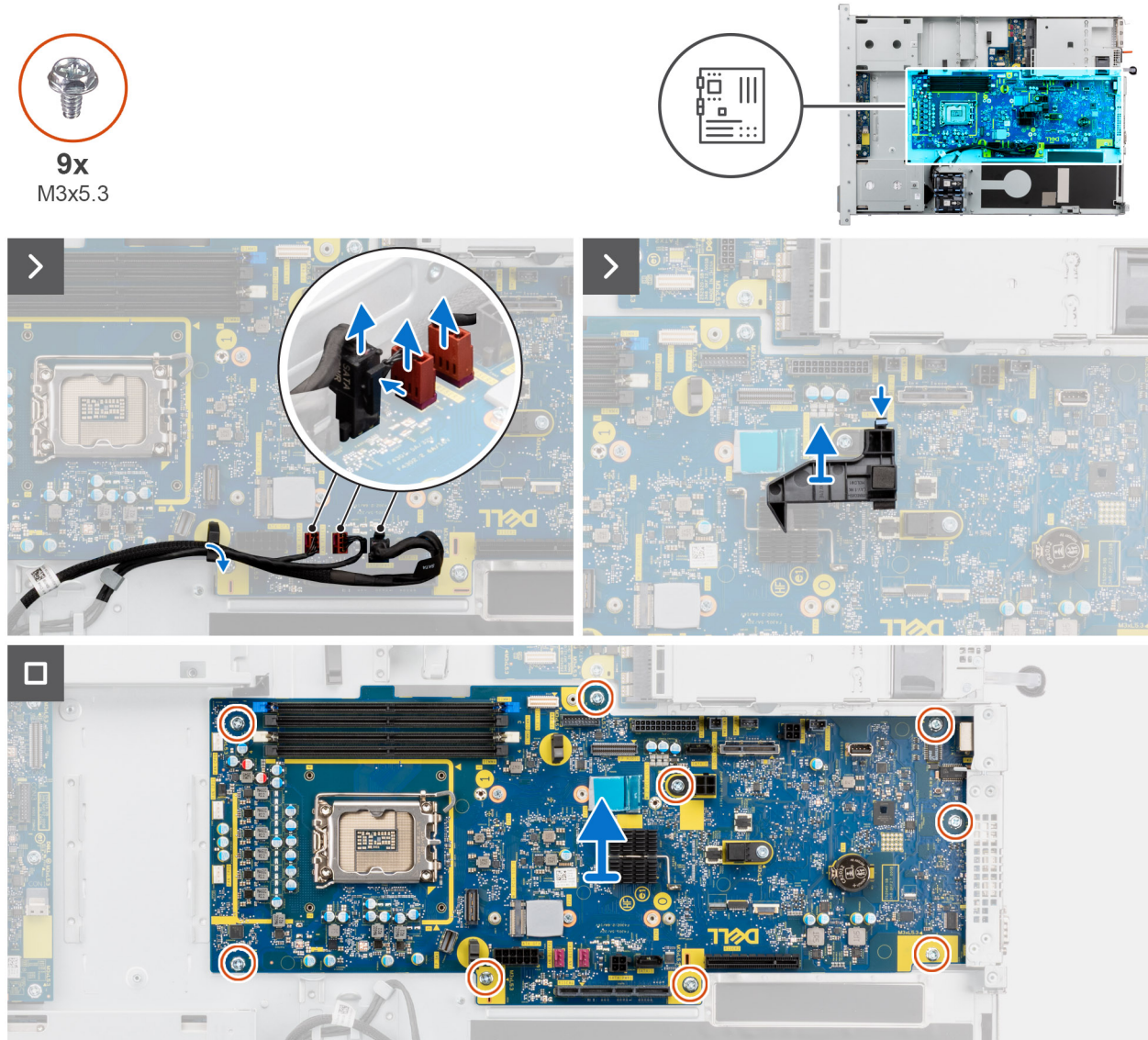


Figure 69. Removing the system board

Steps

1. Press the release latch and remove the riser plastic support from the system board.
2. Remove the nine screws (M3x5.3) that secure the system board to the chassis.
3. Slide the system board to the left and remove the system board at an angle away 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 images indicate the system board connectors.

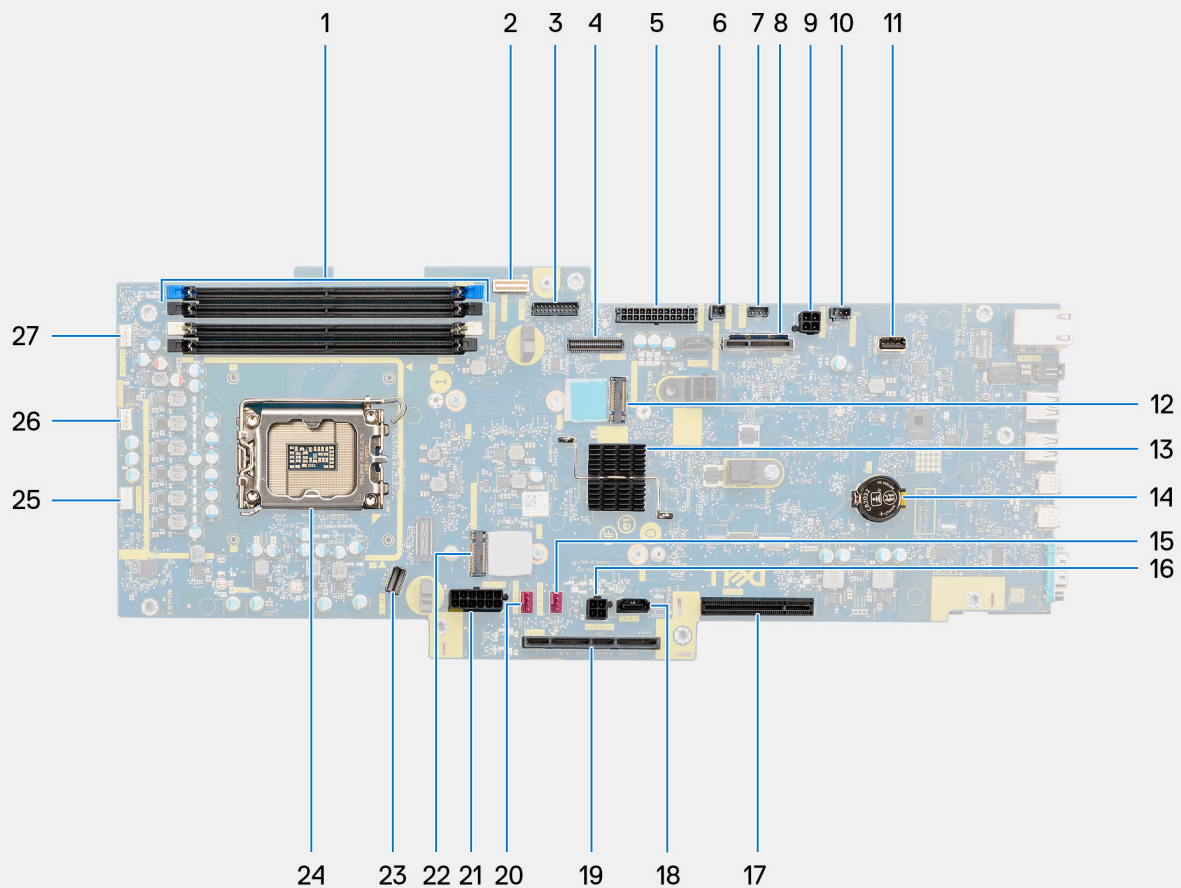


Figure 70. System board connectors

1. Memory-module slots
2. Power distribution board (PDB) signal cable connector
3. Front I/O power cable connector
4. Front I/O USB-2 connector
5. Power supply unit board connector
6. Power button
7. PCIe BMC Power
8. Front NVMe connector for externally facing M.2 FlexBay drive
9. SATA power 0 connector
10. Intrusion switch connector
11. Internal USB 2.0
12. M.2 SSD slot-1
13. Platform Controller Hub (PCH)
14. Coin-cell battery
15. Graphics card fan connector 2
16. SATA power 1 connector
17. Riser2 PCIe Gen4 x8
18. HDD slot-1
19. Riser1 PCIe Gen5 x16
20. Graphics card fan connector 1
21. Graphics card power connector

- 22. M.2 SSD slot-0
- 23. Front I/O USB-1 connector
- 24. Processor
- 25. CPU fan 1 connector
- 26. CPU fan 2 connector
- 27. CPU fan 3 connector

The following image indicates the location of the system board and provides a visual representation of the installation procedure.

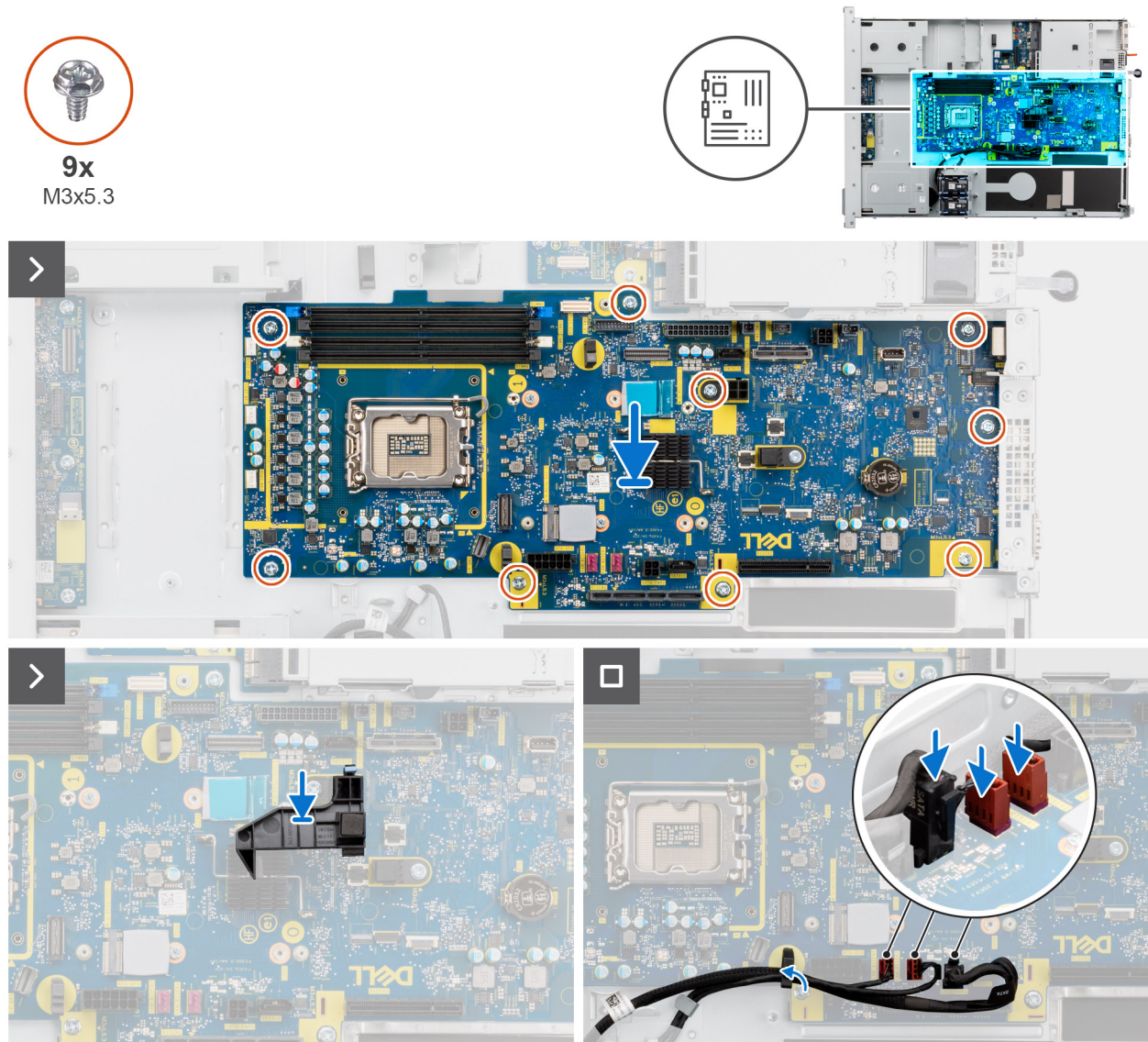


Figure 71. Installing the system board

Steps

1. Align and replace the system board at an angle into the chassis.
2. Align the screw holes of the system board with the screw holes on the chassis.
3. Press down the system board on to the chassis.
4. Replace the nine screws (M3x5.3) to secure the system board to the chassis.

Next steps

1. Install the [processor fan cage](#).
2. Install the [PDB](#).
3. Install the [PDB cables](#).

4. Install the [PSU block cover](#).
5. Install the [front I/O cables](#).
6. Install the [processor fan](#).
7. Install the [intrusion switch](#).
8. Install the [processor heat sink](#).
9. Install the [memory modules](#).
10. Install the [air shroud](#).
11. Install the [M.2 2230 SSD](#) or [M.2 2280 SSD](#), whichever is applicable.
12. Install the [riser1](#) and [riser2](#).
13. Install the [top cover](#).
14. Follow the procedure in [After working inside your computer](#).

Front NVMe module

Removing the front NVMe module

Prerequisites

1. Follow the procedure in [Before working inside your computer](#).
2. Remove the [security bezel](#).
3. Remove the [NVMe SSD cables](#).
4. Remove the [M.2 NVMe SSD carrier and tray](#).

About this task

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

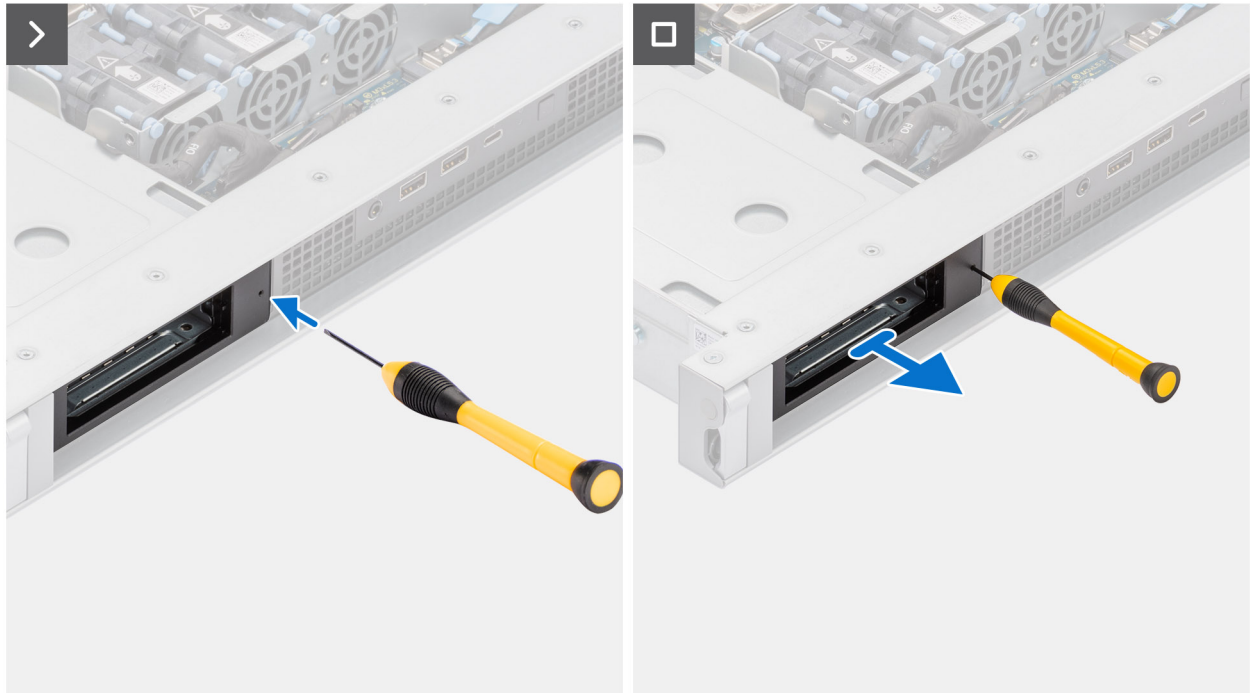


Figure 72. Removing the front NVMe module

Steps

1. Insert the ejector pin or a thin metal object in the eject hole to eject the front NVMe module.
2. Pull the front NVMe module out of the slot on the chassis.

Installing the front NVMe module

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 NVMe module and provide a visual representation of the installation procedure.

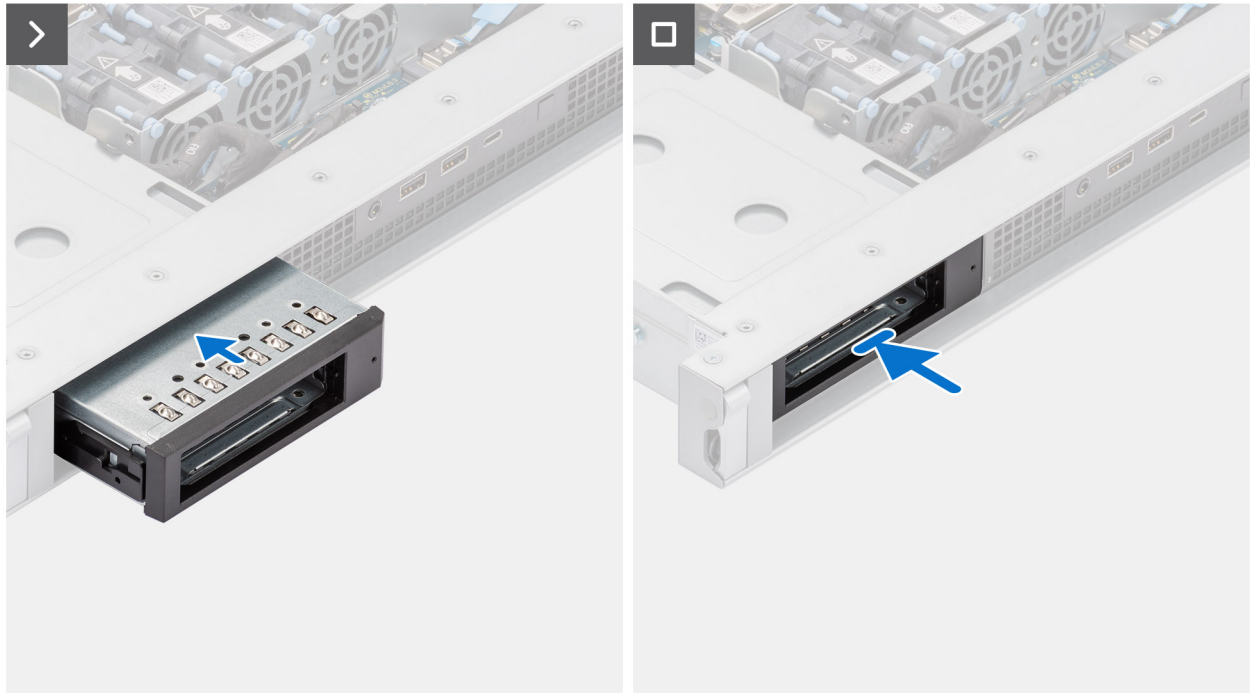


Figure 73. Installing the front NVMe module

Steps

Slide the front NVMe module into the slot in the chassis, and push it to lock in place.

Next steps

1. Install the [M.2 NVMe SSD carrier and tray](#).
2. Install the [NVMe SSD cables](#).
3. Install the [security bezel](#).
4. Follow the procedure in [After working inside your computer](#).

Software

This chapter details the supported operating systems along with instructions on how to install the drivers.

Operating system

Your Dell Pro Precision 7 R1 PW7R1260 supports the following operating systems:

- Windows 11 Home
- Windows 11 Pro
- Ubuntu Linux 24.04 LTS

Drivers and downloads

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

BIOS Setup

CAUTION: Certain changes can make your computer work incorrectly. Before you change the settings in BIOS Setup, it is recommended that you note down the original settings for future reference.

NOTE: Depending on the computer and the installed devices, the options that are listed in below may differ.

Use BIOS Setup for the following purposes:

- Get information about the hardware installed in your computer, such as the amount of RAM and the capacity of the storage device.
- Change the system configuration information.
- Set or change user-selectable options such as the user password, enabling or disabling base devices, and configuring hard drive settings.

Entering BIOS Setup program

Turn on or restart your computer and press F2 immediately.

Navigation keys

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

Table 3. 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 follows the link in the field.
Spacebar	Expands or collapses a drop-down list, if applicable.
Tab	Moves to the next focus area.
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 restart the computer.

F12 One Time Boot menu

To enter the One Time Boot menu, turn on or restart your computer, and then press F12 immediately.

NOTE: If you are unable to enter the One Time Boot menu, repeat the above action.

The One Time Boot menu displays the devices that you can boot from and also display the options to start diagnostics. The boot menu options are:

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

 **NOTE:** XXX denotes the SATA drive number.

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

The One Time Boot menu screen also displays the option to access BIOS Setup.

BIOS Setup options

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

Table 4. BIOS Setup options—Overview menu

Overview	Description
Dell Pro Precision 7 R1 PW7R1260	
BIOS Version	Displays the BIOS version number.
Service Tag	Displays the Service Tag of the computer.
Asset Tag	Displays the Asset Tag of the computer.
Manufacture Date	Displays the manufacture date of the computer.
Ownership Date	Displays the ownership date of the computer.
Express Service Code	Displays the Express Service Code of the computer.
Ownership Tag	Displays the Ownership Tag of the computer.
System UUID	Displays the UUID of the computer.
Processor Information	
Processor Type	Displays the processor type.
Maximum Clock Speed	Displays the maximum processor clock speed.
Core Count	Displays the number of cores on the processor.
Processor ID	Displays the processor identification code.
Processor L2 Cache	Displays the processor L2 cache size.
Processor L3 Cache	Displays the processor L3 cache size.
Microcode Version	Displays the microcode version.
Intel Hyper-Threading Capable	Displays whether the processor is Hyper-Threading (HT) capable.
Intel vPro Technology	Displays whether the processor is vPro Technology capable.
Memory Information	
Memory Installed	Displays the total memory that is installed on the computer.
Memory Available	Displays the total memory available on the computer.
Memory Speed	Displays the memory speed.
Memory Technology	Displays the technology that is used for the memory.
DIMM 1 Size	Displays the DIMM 1 memory size.
DIMM 2 Size	Displays the DIMM 2 memory size.
DIMM 3 Size	Displays the DIMM 3 memory size.
DIMM 4 Size	Displays the DIMM 4 memory size.

Table 4. BIOS Setup options—Overview menu (continued)

Overview	Description
Devices Information	
Video Controller	Displays the type of video controller available on the computer.
Video Memory	Displays the video memory information of the computer.
Native Resolution	Displays the native resolution of the computer.
Video BIOS Version	Displays the video BIOS version of the computer.
Audio Controller	Displays the audio controller information of the computer.
LOM MAC Address	Displays the MAC address of the Ethernet adapter installed on the computer.
LOM 2 MAC Address	Displays the MAC address of the Ethernet adapter installed on the computer.
Slot 1	Displays the PCIe slot information of the system.
Slot 2	Displays the PCIe slot information of the system.
Slot 3	Displays the PCIe slot information of the system.

Table 5. BIOS Setup options—Boot Configuration menu

Boot Configuration	Description
Boot Sequence	
Boot Sequence	Displays the boot sequence.
Enable PXE Boot Priority	Allows the computer to turn PXE network booting On or Off . By default, Enable PXE Boot Priority is Off .
Force PXE on Next Boot	Allows the computer to bypass its normal boot order and boot via the network (PXE) on the next boot. By default, Force PXE on Next Boot is disabled.
Secure Boot	Secure Boot is a method of guaranteeing the integrity of the boot path by performing additional validation of the operating system and PCI add-in cards. The computer stops booting to the operating system when a component is not authenticated during the boot process. Secure Boot can be enabled in BIOS setup or using management interfaces like Dell Command Configure, but can only be disabled from BIOS setup.
Enable Secure Boot	Enables the computer to boot using only validated boot software. By default, the Enable Secure Boot option is Off . For additional security, Dell Technologies recommends keeping the Secure Boot option enabled to ensure that the UEFI firmware validates the operating system during the boot process.  NOTE: For Secure Boot to be enabled, the computer must be in UEFI boot mode and the Enable Legacy Option ROMs option must be turned off.
Enable Microsoft UEFI CA	Allows you to control whether the computer trusts the Microsoft UEFI Third-Party Certificate Authority certificate in the Secure Boot database. By default, the Enable Microsoft UEFI CA option is Disabled .  NOTE: For Microsoft UEFI CA to be enabled the Secure Boot options must be enabled.
Secure Boot Mode	Enables or disables the Secure Boot operation mode. By default, the Deployed Mode is selected.

Table 5. BIOS Setup options—Boot Configuration menu (continued)

Boot Configuration	Description
	 NOTE: Deployed Mode should be selected for normal operation of Secure Boot.
Expert Key Management	
Enable Custom Mode	Enables or disables the ability to modify the keys in the PK, KEK, db, and dbx security key databases to be modified. By default, the Enable Custom Mode option is disabled.
Custom Mode Key Management	Selects the custom values for expert key management. By default, the PK option is selected.

Table 6. BIOS Setup options—Integrated Devices menu

Integrated Devices	Description
Date/Time	
Date	Sets the computer date in MM/DD/YYYY format. Changes to the date format take effect immediately.
Time	Sets the computer time in HH/MM/SS 24-hour format. You can select between a 12-hour and 24-hour clock. Changes to the time format take effect immediately.
Audio	
Enable Audio	Enables all integrated audio controller. By default, Enable Audio is On .
Enable Microphone	Enables the microphone. By default, the Enable Microphone option is enabled.  NOTE: Depending on the configuration ordered, the microphone setup option may not be available.
Serial Port	
Serial Port 1 Configuration	Enables the Serial port of the computer. By default, the COM1: Port is configured at 3F8h with IRQ 4 option is selected.
USB/Thunderbolt Configuration	
Enable USB Boot Support	Enables booting from USB mass storage devices that are connected to external USB ports. By default, all the options are selected.
Enable Thunderbolt Technology Support	
Enable Thunderbolt Technology Support	Enables the associated ports and adapters for Thunderbolt Technology support. By default, the Enable Thunderbolt Technology Support option is enabled.
Enable Thunderbolt Boot Support	
Enable Thunderbolt Boot Support	Enables the Thunderbolt adapter-peripheral device and USB devices that are connected to the Thunderbolt adapter to be used during BIOS Preboot. By default, the Enable Thunderbolt Boot Support option is disabled.
Disable USB4 PCIE Tunneling	Disables the USB4 PCIE Tunneling option. By default, the Disable USB4 PCIE Tunneling option is disabled.

Table 6. BIOS Setup options—Integrated Devices menu (continued)

Integrated Devices	Description
Front USB Configuration	Enables the individual USB ports. By default, all the options are selected.
Rear USB Configuration	Enables the individual USB ports. By default, all the options are selected.
Dust Filter Maintenance	
Dust Filter Maintenance	Enables a pre-boot reminder message for cleaning or replacing the optional dust filter installed on the computer. By default, the Dust Filter Maintenance option is disabled.

Table 7. BIOS Setup options—Storage menu

Storage	Description
SATA/NVMe Operation	
SATA/NVMe Operation	Sets the operating mode of the integrated SATA hard drive controller. By default, the RAID On option is selected. The storage device is configured for RAID On mode.
Storage Interface	Displays the information of various onboard drives.
Port Enablement	Enables or disables the M.2 PCIe SSD option. By default, all the options are enabled.
Smart Reporting	Allows the computer to run a test on all connected drives during POST (Power-On Self-Test) at every boot. If a problem is detected, a warning message is displayed. By default, Enable Smart Reporting option is Off .
Drive Information	Displays the information of onboard drives.

Table 8. BIOS Setup options—Display menu

Display	Description
Primary Display	
Auto	Allows to determine which graphics adapter is present and selects the appropriate one. If a discrete GPU is detected, it is prioritized; otherwise, integrated graphics are used.

Table 9. BIOS Setup options—Connection menu

Connection	Description
Network Controller Configuration	
Integrated NIC	Allows to control the on-board LAN controller. By default, Enabled with PXE option is selected.
Integrated NIC 2	Allows to control the on-board LAN controller. By default, Enabled option is selected.
Enable UEFI Network Stack	
Enable UEFI Network Stack	Enables or disables the Enable UEFI Network Stack. By default, the Auto Enabled option is selected.

Table 9. BIOS Setup options—Connection menu (continued)

Connection	Description
HTTP(s) Boot Feature	
HTTP(s) Boot	Allows the computer to boot and deploy operating systems over a network using the HTTP or HTTPS protocol. By default, the HTTP(s) Boot option is enabled.
HTTP(s) Boot Mode	Allows the computer to automatically obtain the boot URL from the DHCP server response. The DHCP server provides the location of the boot file as part of the network configuration. By default, Auto Mode option is selected.

Table 10. BIOS Setup options—Power menu

Power	Description
Thermal Management	
Thermal Management	Allows you to manage the fan settings to regulate processor temperature and control computer performance, noise, and thermal levels. By default, the Optimized option is selected.
CPU/Memory Zone	Allows to control the fan speed in processor or memory module zone.
Riser Zone	Allows to control the fan speed in the Riser zone.
PSU Zone	Allows to control the fan speed in the PSU zone.
USB Wake Support	
Enable USB Wake Support	Allows the USB devices to wake the system from sleep state. By default, the Enable USB Wake Support option is enabled.
Front Power Button	Enables or disables the power button located on the front panel from turning off the computer. The front power button will still power on the computer, even when set to enabled .
AC Behavior	
AC Recovery	Determines how the computer behaves when AC power is lost and then restored. By default, the Power Off option is selected.
Active State Power Management	Set the Active State Power Management level. By default, the Auto option is selected.
Block Sleep	Enables or disables the computer from entering Sleep (S3) mode in the operating system. By default, the Block Sleep option is disabled.  NOTE: When enabled, the computer does not go to Sleep, Intel Rapid Start is disabled automatically, and the operating system power option is blank if it was set to Sleep.
Deep Sleep Control	Enables or disables the computer from conserving power while in Shutdown (S5) and Hibernation (S4) states. By default, the Enabled in S4 and S5 option is selected.
Fan Control Override	Allows to determine the system fan's speed. By default, Fan Control Override option is disabled.

Table 11. BIOS Setup options—Security menu

Security	Description
TPM 2.0 Security	The TPM 2.0 Security provides various cryptographic services which serve as the cornerstone for many platform security technologies. TPM 2.0 Security is a security device that stores computer-generated keys for encryption and features such as BitLocker, Virtual Secure Mode, remote Attestation. By default, the TPM 2.0 Security option is enabled. For additional security, Dell Technologies recommends keeping TPM 2.0 Security enabled to allow these security technologies to fully function.  NOTE: The options that are listed apply to computers with a discrete TPM 2.0 Security chip.
TPM 2.0 Security On	Allows you to enable or disable TPM 2.0 Security. By default, the TPM 2.0 Security On option is enabled. For additional security, Dell Technologies recommends keeping TPM 2.0 Security On enabled to allow these security technologies to fully function.
Attestation Enable	The Attestation Enable option controls the endorsement hierarchy of the TPM. Disabling the Attestation Enable option prevents TPM from being used to digitally sign certificates. By default, the Attestation Enable option is enabled. For additional security, Dell Technologies recommends keeping the Attestation Enable option enabled.  NOTE: When disabled, this feature may cause compatibility issues or loss of functionality in some operating systems.
Key Storage Enable	The Key Storage Enable option controls the storage hierarchy of TPM, which is used to store digital keys. Disabling the Key Storage Enable option restricts the ability of TPM to store owner's data. By default, the Key Storage Enable option is enabled. For additional security, Dell Technologies recommends keeping the Key Storage Enable option enabled.  NOTE: When disabled, this feature may cause compatibility issues or loss of functionality in some operating systems.
Clear	When enabled, the Clear option clears information that is stored in the TPM after exiting the BIOS setup of your computer. This option returns to the disabled state when the computer restarts. By default, the Clear option is disabled. Dell Technologies recommends enabling the Clear option only when TPM data is required to be cleared.
Physical Presence Interface (PPI) Bypass for Clear Commands	The PPI Bypass for Clear Commands option allows the operating system to manage certain aspects of PTT. When enabled, you are not prompted to confirm changes to the PTT configuration. By default, the PPI Bypass for Clear Commands option is disabled. For additional security, Dell Technologies recommends keeping the PPI Bypass for Clear Commands option disabled.
Intel Total Memory Encryption	
Multi-Key Total Memory Encryption(Up to 16 keys)	Up to 16 keys (as enumerated on supported processor implementations). For additional security, Dell Technologies recommends keeping the Multi-Key Total Memory Encryption(Up to 16 keys) option disabled.

Table 11. BIOS Setup options—Security menu (continued)

Security	Description
Chassis intrusion	
Chassis Intrusion Detection	The chassis intrusion detection enables a physical switch that triggers an event when the computer cover is opened. When set to Enabled, a notification is displayed on the next boot and the event is logged in the BIOS Events log. When set to On-Silent, the event is logged in the BIOS Events log, but no notification is displayed. When set to Disabled, no notification is displayed and no event is logged in the BIOS Events log. By default, the Chassis Intrusion Detection option is disabled. For additional security, Dell Technologies recommends keeping the Chassis Intrusion Detection option enabled.
Block Boot Until Cleared	When enabled, if the system detects that the computer case has been physically opened, it will refuse to boot. By default, the Block Boot Until Cleared is Off.
Data Wipe on Next Boot	
Start Data Wipe	Data Wipe is a secure wipe operation that deletes information from a storage device.  CAUTION: The secure Data Wipe operation deletes information in a way that it cannot be reconstructed. Commands such as delete and format in the operating system may remove files from showing up in the file system. However, they can be reconstructed through forensic means as they are still represented on the physical media. Data Wipe prevents this reconstruction and the data can no longer be recovered. When enabled, the data wipe option provides prompts to wipe any storage devices that are connected to the computer on the next boot. By default, the Start Data Wipe option is disabled.
HDD Security	
SED Block SID Authentication	Allows to manage and configure a self-encrypting drive. By default, the SED Block SID Authentication option is enabled.
PPI Bypass for SED Block SID Command	Controls whether Physical Presence Confirmation is required before the system issues a Block SID Authentication command to a Self-Encrypting Drive (SED). By default, the PPI Bypass for SED Block SID Command option is disabled.
Absolute	Absolute Software provides various cyber security solutions, some requiring software preloaded on Dell computers and integrated into the BIOS. To use these features, you must enable the Absolute BIOS setting and contact Absolute for configuration and activation. By default, the Absolute option is enabled. For additional security, Dell Technologies recommends keeping the Absolute option enabled.  NOTE: When the Absolute features are activated, the Absolute integration cannot be disabled from the BIOS setup screen.
UEFI Boot Path Security	Enables or disables the computer to prompt the user to enter the Administrator password (if set) when booting to a UEFI boot path device from the F12 boot menu.

Table 11. BIOS Setup options—Security menu (continued)

Security	Description
	By default, the Always Except Internal HDD option is enabled.
Authenticated BIOS Interface	
Enable Authenticated BIOS Interface	Allows to control whether authorized software and management tools can communicate with and configure BIOS settings through a secure, authenticated programmatic interface. By default, the Enable Authenticated BIOS Interface option is disabled.
Legacy Manageability Interface Access	Controls the older (legacy) management interfaces and protocols that can be used to access and configure BIOS settings from within the operating system. By default, the Legacy Manageability Interface AccessInterface option is disabled.
Firmware Device Tamper Detection	Allows you to control the firmware device tamper detection feature. This feature notifies the user when the firmware device is tampered. When enabled, a screen warning messages are displayed on the computer and a tamper detection event is logged in the BIOS Events log. The computer fails to reboot until the event is cleared. By default, the Firmware Device Tamper Detection is selected as Silent . For additional security, Dell Technologies recommends keeping the Firmware Device Tamper Detection option enabled.
Clear Firmware Device Tamper Detection	Allows an administrator to acknowledge and clear alerts triggered when the system detects that firmware on internal devices has been tampered with or unexpectedly changed. By default, the Clear Firmware Device Tamper Detection is disabled .

Table 12. BIOS Setup options—Passwords menu

Passwords	
Admin Password	The Administrator Password prevents unauthorized access to the BIOS Setup options. Once the administrator password is set, the BIOS setup options can only be modified after providing the correct password. The following rules and dependencies apply to the Administrator Password - • The administrator password cannot be set if computer and/or internal storage device passwords are already set. • The administrator password can be used in place of the computer and/or internal storage passwords. • When set, the administrator password must be provided during a firmware update. • Clearing the administrator password also clears the computer password (if set). Dell Technologies recommends using an administrator password to prevent unauthorized changes to BIOS setup options.
System Password	The System Password prevents the computer from booting to an operating system without entering the correct password. The following rules and dependencies apply when the System Password is used - • The computer shuts down when idle for approximately 10 minutes at the computer password prompt. • The computer shuts down after three incorrect attempts to enter the computer password. • The computer shuts down when the Esc key is pressed at the System Password prompt.

Table 12. BIOS Setup options—Passwords menu (continued)

Passwords	
	The computer password is not prompted when the computer resumes from standby mode. Dell Technologies recommends using the computer password in situations where it is likely that a computer may be lost or stolen.
M.2 PCIe SSD-1	M.2 PCIe SSD-1 Password can be set to prevent unauthorized access of the data stored on the M.2 PCIe SSD-1. The computer prompts for the M.2 PCIe SSD-1 password during boot in order to unlock the drive. A password-secured M.2 PCIe SSD-1 stays locked even when removed from the computer or placed into another computer. It prevents an attacker from accessing data on the drive without authorization. The following rules and dependencies apply when the M.2 PCIe SSD-1 Password is used - - The M.2 PCIe SSD-1 password option cannot be accessed when a M.2 PCIe SSD-1 is disabled in the BIOS setup. - The computer shuts down when idle for approximately 10 minutes at the M.2 PCIe SSD-1 password prompt. - The computer shuts down after three incorrect attempts to enter the M.2 PCIe SSD-1 password and treats the M.2 PCIe SSD-1 as not available. - The M.2 PCIe SSD-1 does not accept password unlock attempts after five incorrect attempts to enter the M.2 PCIe SSD-1 password from the BIOS Setup. The M.2 PCIe SSD-1 password must be reset for the new password unlock attempts. - The computer treats the M.2 PCIe SSD-1 as not available when the Esc key is pressed at the M.2 PCIe SSD-1 password prompt. - The M.2 PCIe SSD-1 password is not prompted when the computer resumes from standby mode. When the M.2 PCIe SSD-1 is unlocked by the user before the computer goes into standby mode, it remains unlocked after the computer resumes from standby mode. - If the computer and M.2 PCIe SSD-1 passwords are set to the same value, the M.2 PCIe SSD-1 unlocks after the correct computer password is entered. Dell Technologies recommends using a M.2 PCIe SSD-1 password to protect unauthorized data access.
Password Configuration	The Password configuration page includes several options for changing the requirements of BIOS passwords. You can modify the minimum and maximum length of the passwords and require passwords to contain certain character classes (upper case, lower case, digit, special character). Dell Technologies recommends setting the minimum password length to at least eight characters.
Password Bypass	The Password Bypass option allows the computer to reboot from the operating system without entering the computer or hard drive password. If the computer has already booted to the operating system, it is presumed that the user has already entered the correct computer or hard drive password.  NOTE: This option does not remove the requirement to enter the password after shutting down. By default, the Password Bypass option is disabled. For additional security, Dell Technologies recommends keeping the Password Bypass option enabled.
Password Changes	
Allow Non-Admin Password Changes	The Allow Non-Admin Password Changes option in BIOS setup allows an end user to set or change the computer or hard drive passwords without entering the administrator password. This gives an administrator control over the BIOS settings but enables an end user to provide their own password.

Table 12. BIOS Setup options—Passwords menu (continued)

Passwords	
	By default, the Allow Non-Admin Password Changes option is enabled. For additional security, Dell Technologies recommends keeping the Allow Non-Admin Password Changes option disabled.
Admin Setup Lockout	
Enable Admin Setup Lockout	The Admin Setup Lockout option prevents an end user from even viewing the BIOS setup configuration without first entering the administrator password (if set). By default, the Admin Setup Lockout option is disabled. For additional security, Dell Technologies recommends keeping the Admin Setup Lockout option disabled.
Master Password Lockout	
Enable Master Password Lockout	The Master Password Lockout setting allows you to disable the Recovery Password feature. If the computer, administrator, or hard drive password is forgotten, the computer becomes unusable. NOTE: When the owner password is set, the Master Password Lockout option is not available. NOTE: When an internal hard drive password is set, it must first be cleared before Master Password Lockout can be changed. By default, the Enable Master Password Lockout option is disabled. Dell does not recommend enabling the Master Password Lockout unless you have implemented your own password recovery computer.
Allow Non-Admin PSID Revert	
Enable Allow Non-Admin PSID Revert	Controls the access to the Physical Security ID (PSID) revert of NVMe SSDs from the Dell Security Manager prompt. By default, the Enable Allow Non-Admin PSID Revert option is disabled.

Table 13. BIOS Setup options—Update, Recovery menu

Update, Recovery	
UEFI Capsule Firmware Updates	
BIOS Recovery from Hard Drive	Enables or disables the user to recover from certain corrupted BIOS conditions from a recovery file on the user primary hard drive or an external USB key. By default, the BIOS Recovery from Hard Drive option is enabled. NOTE: BIOS Recovery from Hard Drive is not available for self-encrypting drives (SED). NOTE: BIOS recovery is designed to fix the main BIOS block and cannot work if the Boot Block is damaged. In addition, this feature cannot work in the event of EC corruption, ME corruption, or a hardware issue. The recovery image must exist on an unencrypted partition on the drive.
BIOS Downgrade	
Allow BIOS Downgrade	Controls flashing of the computer firmware to previous revisions. By default, the Allow BIOS Downgrade option is enabled.
SupportAssist OS Recovery	Enables or disables the boot flow for SupportAssist OS Recovery tool in the event of certain computer errors. By default, the SupportAssist OS Recovery option is enabled.

Table 13. BIOS Setup options—Update, Recovery menu (continued)

Update, Recovery	
BIOSConnect	Enables or disables cloud Service operating system recovery if the main operating system fails to boot with the number of failures equal to or greater than the value specified by the Auto OS Recovery Threshold setup option and local Service operating system does not boot or is not installed. By default, the BIOSConnect option is enabled.
Dell Auto OS Recovery Threshold	Allows you to control the automatic boot flow for SupportAssist System Resolution Console and for Dell OS Recovery Tool. By default, the Dell Auto OS Recovery Threshold value is set to 2.

Table 14. BIOS Setup options—System Management menu

System Management	
Service Tag	Displays the Service Tag of the computer.
Asset Tag	Creates a computer Asset Tag that can be used by an IT administrator to uniquely identify a particular computer.  NOTE: Once set in BIOS, the Asset Tag cannot be changed.
Wake on LAN	Enables or disables the computer to turn on by a special LAN signal. By default, the Wake on LAN option is disabled.
Auto On Time	Enable to set the computer to turn on automatically every day or on a preselected date and time. This option can be configured only if the Auto On Time is set to Everyday, Weekdays, or Selected Days. By default, the Auto On Time option is disabled.
Intel AMT Capability	
Enable Intel AMT Capability	Enables or disables the Intel Active Management Technology (AMT) . Intel AMT is a hardware-based remote management and monitoring platform built into Intel processors and chipsets with Intel vPro technology. By default, the Restrict Preboot Access option is selected.
SERR Messages	
Enable SERR Messages	Controls the SERR (System Error) signal on the PCI/PCIe bus is enabled or disabled. By default, the Enable SERR Messages option is On .
First Power On Date	
Set Ownership Date	Allows to set the ownership date. By default, the Set Ownership Date option is disabled.
Diagnostics	
Power-on-Self-Test Automatic Recovery	Enable or disable the Power-on-Self-Test Automatic Recovery option. By default, the Power-on-Self-Test Automatic Recovery option is enabled.

Table 15. BIOS Setup options—Keyboard menu

Keyboard	Description
Numlock LED	
Enable Numlock LED	Enables or disables the Num lock option. By default, the Enable Numlock LED option is enabled.

Table 15. BIOS Setup options—Keyboard menu (continued)

Keyboard	Description
Device Configuration HotKey Access	Allows you to control whether you can access device configuration screens through hotkeys during computer startup. By default, the Device Configuration HotKey Access option is enabled. i NOTE: This setting controls only the Intel RAID (CTRL+I), MEBX (CTRL+P), and LSI RAID (CTRL+C) Option ROMs. Other preboot Option ROMs, which support entry using a key sequence, are not affected by this setting.

Table 16. BIOS Setup options—Pre-boot Behavior menu

Preboot Behavior	
Adapter Warnings	
Warnings and Errors	Enables or disables the action to be taken when a warning or error is encountered. By default, the Prompt on Warnings and Errors option is selected. i NOTE: Errors deemed critical to the operation of the computer hardware stop the functioning of the computer.
Extend BIOS POST Time	Sets the BIOS POST (Power-On Self-Test) load time. By default, the 0 seconds option is selected.

Table 17. BIOS Setup options—Virtualization menu

Virtualization Support	
Intel Trusted Execution Technology (TXT)	
Enable Intel Virtualization Technology (VT)	When enabled, the computer can run a Virtual Machine Monitor (VMM). By default, the Enable Intel Virtualization Technology (VT) option is disabled.
VT for Direct I/O	
Enable Intel VT for Direct I/O	When enabled, the computer can perform Virtualization Technology for Direct I/O (VT-d). VT-d is an Intel method that provides virtualization for memory map I/O. By default, the Enable Intel VT for Direct I/O option is enabled.
Intel Trusted Execution Technology (TXT)	Intel Trusted Execution Technology (TXT) is a set of hardware extensions to Intel processors and chipsets. It provides a hardware-based root of trust to ensure that a platform boots with a known good configuration of firmware, BIOS, virtual machine monitor, and operating system. The following must be enabled in order to enable Intel TXT - • Intel Virtualization Technology - X • Intel Virtualization Technology - Direct By default, the Intel Trusted Execution Technology (TXT) option is enabled. For additional security, Dell Technologies recommends keeping the Intel Trusted Execution Technology (TXT) option enabled.
DMA Protection	
Enable Pre-Boot DMA Support	Allows you to control the Pre-Boot DMA protection for both internal and external ports. This option does not directly enable DMA protection in the operating system. i NOTE: This option is not available when the virtualization setting for IOMMU is disabled (VT-d/AMD Vi). By default, the Enable Pre-Boot DMA Support option is enabled.

Table 17. BIOS Setup options—Virtualization menu (continued)

Virtualization Support	
	For additional security, Dell Technologies recommends keeping the Enable Pre-Boot DMA Support option enabled.  NOTE: This option is provided only for compatibility purposes, since some older hardware is not DMA capable.
Enable OS Kernel DMA Support	Allows you to control the Kernel DMA protection for both internal and external ports. This option does not directly enable DMA protection in the operating system. For operating systems that support DMA protection, this setting indicates to the operating system that the BIOS supports the feature.  NOTE: This option is not available when the virtualization setting for IOMMU is disabled (VT-d/AMD Vi). By default, the Enable OS Kernel DMA Support option is enabled.  NOTE: This option is provided only for compatibility purposes, since some older hardware is not DMA capable.
Internal Port DMA Compatibility Mode	Internal Port DMA Compatibility Mode is a BIOS security setting on Dell systems that controls how internal DMA-capable ports handle Direct Memory Access (DMA) requests, particularly during the pre-boot phase and in relation to DMA protection policies. By default, the Internal Port DMA Compatibility Mode option is disabled.

Table 18. BIOS Setup options—Performance menu

Performance	Description
Enable Dell RMT	Enable or disable Dell Reliable Memory Technology (RMT) to identify and isolate memory errors in the system RAM. By default, the Enable Dell RMT option is enabled.
Clear Dell RMT Log	By default, the Clear Dell RMT Log option is disabled.
Intel SpeedStep	
Enable Intel SpeedStep Technology	Enables the computer to dynamically adjust processor voltage and core frequency, decreasing average power consumption and heat production. By default, the Enable Intel SpeedStep Technology option is enabled.
PCIe Resizable Base Address Register (BAR)	Enable or disable the PCIe resizable BAR support. By default, the PCIe Resizable Base Address Register (BAR) option is disabled.

Table 19. BIOS Setup options—System Logs menu

System Logs	
BIOS Event Log	
Clear BIOS Event Log	Allows you to select option to keep or clear BIOS events logs. By default, the Keep Log option is selected.
Power Event Log	
Clear Power Event Log	Allows you to select option to keep or clear power events logs. By default, the Keep Log option is selected.
Dell Reliable Memory Technology Events	Displays the Dell Reliable Memory Technology events.

Updating the BIOS

Updating the BIOS in Windows

About this task

 **CAUTION:** If BitLocker is not suspended before updating the BIOS, the BitLocker key is not recognized the next time you reboot the computer. You will then be prompted to enter the recovery key to proceed, and the computer displays a prompt for the recovery key on each reboot. Failure to provide the recovery key can result in data loss or an operating system reinstall. For more information, refer [Updating the BIOS on Dell systems with BitLocker enabled](#).

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

Steps

1. Go to [Dell Support Site](#).
2. Go to **Identify your product or ask support**. In the box, enter the product identifier, model, service request or describe what you are looking for, and then click **Search**.
 **NOTE:** If you do not have the Service Tag, click **Detect This PC**. The site automatically detects your device, and you can then click **Explore Product Support** to go to the support page for your device. You can also use the product ID or manually browse for your computer model.
3. Click **Drivers & Downloads**.
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, navigate to the folder where the BIOS update file has been saved.
8. Double-click the BIOS update file and follow the on-screen instructions.
For more information, search [Dell Support Site](#).

Updating the BIOS using the USB drive in Windows

About this task

 **CAUTION:** If BitLocker is not suspended before updating the BIOS, the BitLocker key is not recognized the next time you reboot the computer. You will then be prompted to enter the recovery key to proceed, and the computer displays a prompt for the recovery key on each reboot. Failure to provide the recovery key can result in data loss or an operating system reinstall. For more information, refer [Updating the BIOS on Dell systems with BitLocker enabled](#).

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

Steps

1. Go to [Dell Support Site](#).
2. Go to **Identify your product or ask support**. In the box, enter the product identifier, model, service request or describe what you are looking for, and then click **Search**.
 **NOTE:** If you do not have the Service Tag, click **Detect This PC**. The site automatically detects your device, and you can then click **Explore Product Support** to go to the support page for your device. You can also use the product ID or manually browse for your computer model.
3. Click **Drivers & Downloads**.

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. Create a bootable USB drive. For more information, search [Dell Support Site](#).
8. Copy the BIOS setup program file to the bootable USB drive.
9. Connect the bootable USB drive to the computer that needs the BIOS update.
10. Restart the computer and press **F12**.
11. Select the USB drive from the **One Time Boot Menu**.
12. Type the BIOS setup program filename and press **Enter**.
The **BIOS Update Utility** appears.
13. Follow the on-screen instructions to complete the BIOS update.

Updating the BIOS from the One-Time boot menu

To update the BIOS from the One-Time boot menu, see [Updating the BIOS from the One Time Boot Menu](#) at [Dell Support Site](#).

Updating the BIOS in Linux and Ubuntu

To update the system BIOS on a computer that is installed with Linux or Ubuntu, see [How to Update the Dell BIOS in the Ubuntu or Linux Environment](#) at [Dell Support Site](#).

System and setup password

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

 **CAUTION:** Ensure that your computer is locked when it is not in use. Anyone can access the data that is stored on your computer, when left unattended.

Table 20. System and setup password

Password type	Description
System password	Password that you must enter to boot to your operating system.
Setup password	Password that you must enter to access and change the BIOS settings of your computer.

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

 **NOTE:** The System and setup password feature is disabled by default.

Assigning a System Setup password

Prerequisites

You can assign a new System or Admin Password only when the status is set to **Not Set**. To enter BIOS System Setup, press F2 immediately after a power-on or reboot.

Steps

1. To enter the **System Setup**, press **F2** immediately after a power-on or reboot.
2. In the **System BIOS** or **System Setup** screen, select **Security** and press Enter.
The **Security** screen is displayed.
3. Select **System/Admin Password** and create a password in the **Enter the new password** field.
Use the following guidelines to create the system password:

- Password can be up to 32 characters.
 - Password must contain at least one special character: "(! " # \$ % & ' * + , - . / : ; < = > ? @ [\] ^ _ ` { | })"
 - The password can contain numbers from 0 to 9.
 - The password can contain alphabets A to Z and a to z.
4. Type the system password that you entered earlier in the **Confirm new password** field and click **OK**.
 5. Press Y to save the changes.
The computer restarts.

Deleting or changing an existing system password or setup password

Prerequisites

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

Steps

1. To enter the **System Setup**, press **F2** immediately after a power-on or reboot.
2. In the **System BIOS** or **System Setup** screen, select **System Security** and press Enter.
The **System Security** screen is displayed.
3. In the **System Security** screen, verify that the **Password Status** is Unlocked.
4. Select **System Password**. Update or delete the existing system password, and press Enter or Tab.
5. Select **Setup Password**. Update or delete the existing setup password, and press Enter or Tab.
 **NOTE:** If you change the system password and/or setup password, reenter the new password when prompted. If you delete the system password and/or setup password, confirm the deletion when prompted.
6. Press Esc. A message prompts you to save the changes.
7. Press Y to save the changes and exit from **System Setup**.
The computer restarts.

Clearing system and setup passwords

About this task

To clear the system or setup passwords, contact Dell technical support as described at [Contact Support](#).

 **NOTE:** For information about how to reset Windows or application passwords, see the documentation accompanying Windows or your application.

Clearing CMOS settings

About this task

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

Steps

1. Remove the [top cover](#).
2. Remove the [air shroud](#).
3. Remove the [coin-cell battery](#).
4. Wait for one minute.
5. Replace the [coin-cell battery](#).
6. Replace the [air shroud](#).

7. Replace the [top cover](#).

Troubleshooting

Dell SupportAssist Pre-boot System Performance Check diagnostics

About this task

SupportAssist diagnostics (also known as system diagnostics) performs a complete check of your hardware. The Dell SupportAssist Pre-boot System Performance Check diagnostics is embedded within the BIOS and launched by the BIOS internally. The embedded system diagnostics provides options for particular devices or device groups allowing you to:

- Run tests automatically or in an interactive mode.
- Repeat the tests.
- Display or save test results.
- Run thorough tests to add more options and obtain details about any failed devices.
- View status messages that inform you when the tests are completed successfully.
- View error messages that inform you of problems encountered during testing.

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

For more information, see [How to Run Dell Preboot Diagnostics and Hardware Tests on Your Dell Computer](#).

Running the SupportAssist Pre-Boot System Performance Check

Steps

1. Turn on your computer.
2. As the computer boots, press the F12 key.
3. On the boot menu screen, select **Diagnostics**.
The quick diagnostic test begins.

 **NOTE:** For more information about running the SupportAssist Pre-Boot System Performance Check on a specific device, see [Dell Support Site](#).

4. If there are any issues, error codes are displayed.
Note the error code and validation number and contact Dell.

Power-Supply Unit Built-in Self-Test

Built-in Self-Test (BIST) helps determine if the power-supply unit is working. To run self-test diagnostics on the power-supply unit of a desktop or all-in-one computer, search in the Knowledge Base Resource at [Dell Support Site](#).

System-diagnostic lights

This section lists the system-diagnostic lights of your Dell Pro Precision 7 R1 PW7R1260.

The following table shows different Service LED blinking patterns and associated problems. The diagnostic light codes consist of a two-digit number, and the digits are separated by a comma. The number stands for a blinking pattern; the first digit shows the number of blinks in amber color, and the second digit shows the number of blinks in white color. The Service LED blinks in the following manner:

- The Service LED blinks the number of times equal to the value of the first digit and turns off with a short pause.

- After that, the Service LED blinks the number of times equal to the value of the second digit.
- The Service LED turns off again with a longer pause.
- After the second pause, the blinking pattern will be repeated.

Table 21. 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
1,8	Chipset "Catastrophic Error" signal has tripped
2,1	CPU configuration or CPU failure
2,2	System board: BIOS or Read-Only Memory (ROM) failure
2,3	No memory, or Random-Access Memory (RAM) detected
2,4	Memory, or Random-Access Memory (RAM) failure
2,5	Invalid memory module
2,6	System board/Chipset Error
2,7	LCD failure SBIOS message
2,8	Display power-rail failure on the system board
3,1	CMOS battery failure
3,2	PCI of Video card/chip failure
3,3	Recovery image not found
3,4	Recovery image found but invalid
3,5	EC power-rail error
3,6	Flash corruption detected by SBIOS
3,7	Timeout waiting on ME to reply to HECI message
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 on Dell computers running the 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, and 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 the 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 [Serviceability Tools at the Dell Support Site](#). Click **SupportAssist** and then click **SupportAssist OS Recovery**.

 **NOTE:** Windows 11 IoT Enterprise LTSC 2024 and Dell ThinOS 10 do not support Dell SupportAssist. For more information about recovering ThinOS 10, see [Recovery mode using R-Key](#).

Real-Time Clock (RTC Reset)

The Real-Time Clock (RTC) reset function enables you or the service technician to recover Dell computers from No POST/No Power/No Boot situations.

Start the RTC reset with the computer powered off and connected to AC power. Press and hold the power button for twenty-five seconds. The computer RTC Reset occurs after you release the power button.

Backup media and recovery options

It is recommended to create a recovery drive to troubleshoot and fix problems that may occur with Windows. Dell provides multiple options for recovering the Windows operating system on your Dell computer. For more information, see [Dell Windows Backup Media and Recovery Options](#).

Getting help and contacting Dell

Self-help resources

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

Table 22. Self-help resources

Self-help resources	Resource location
Information about Dell products and services	Dell Site
Contact Support	In Windows search, type <code>Contact Support</code> , and press Enter.
Online help for operating system	Windows Support Site Linux Support Site
Access top solutions, diagnostics, drivers and downloads, and learn more about your computer through videos, manuals, and documents.	Your Dell computer is uniquely identified using 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 Dell Support Site . For more information about how to find the Service Tag for your computer, see Locate the Service Tag on your computer .
Dell knowledge base articles	1. Go to Dell Support Site. 2. On the menu bar at the top of the Support page, select Support > Support Library. 3. In the Search field on the Support Library page, type the keyword, topic, or model number, and then click or tap the search icon to view the related articles.

Contacting Dell

To contact Dell for sales, technical support, or customer service issues, see [Contact Support at Dell Support Site](#).

 **NOTE:** Availability of the services may vary depending on the country or region, and product.

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

Revision history

Tracks all updates that are made to the document. It typically includes the date of change, version number, and a brief description of the modification. This log helps maintain transparency, accountability, and a clear timeline of progress.

Table 23. Revision history

Revision	Date	Description
A00	07-2026	Original publish date.