



# ThinkEdge SE360 V2

## Hardware Maintenance Guide



**Machine Types:** 7DAM

## Note

Before using this information and the product it supports, be sure to read and understand the safety information and the safety instructions, which are available at:

[https://pubs.lenovo.com/safety\\_documentation/](https://pubs.lenovo.com/safety_documentation/)

In addition, be sure that you are familiar with the terms and conditions of the Lenovo warranty for your server, which can be found at:

<http://datacentersupport.lenovo.com/warrantylookup>

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## Safety

Before installing this product, read the Safety Information.

قبل تركيب هذا المنتج، يجب قراءة الملاحظات الأمنية

Antes de instalar este produto, leia as Informações de Segurança.

在安装本产品之前，请仔细阅读 Safety Information（安全信息）。

安裝本產品之前，請先閱讀「安全資訊」。

Prije instalacije ovog produkta obavezno pročitajte Sigurnosne Upute.

Před instalací tohoto produktu si přečtěte příručku bezpečnostních instrukcí.

Læs sikkerhedsforskrifterne, før du installerer dette produkt.

Lees voordat u dit product installeert eerst de veiligheidsvoorschriften.

Ennen kuin asennat tämän tuotteen, lue turvaohjeet kohdasta Safety Information.

Avant d'installer ce produit, lisez les consignes de sécurité.

Vor der Installation dieses Produkts die Sicherheitshinweise lesen.

Πριν εγκαταστήσετε το προϊόν αυτό, διαβάστε τις πληροφορίες ασφάλειας (safety information).

לפני שתתקינו מוצר זה, קראו את הוראות הבטיחות.

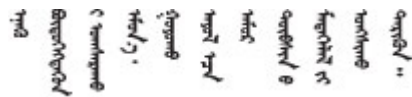
A termék telepítése előtt olvassa el a Biztonsági előírásokat!

Prima di installare questo prodotto, leggere le Informazioni sulla Sicurezza.

製品の設置の前に、安全情報をお読みください。

본 제품을 설치하기 전에 안전 정보를 읽으십시오.

Пред да се инсталира овој продукт, прочитајте информацијата за безбедност.



Les sikkerhetsinformasjonen (Safety Information) før du installerer dette produktet.

Przed zainstalowaniem tego produktu, należy zapoznać się z książką "Informacje dotyczące bezpieczeństwa" (Safety Information).

Antes de instalar este produto, leia as Informações sobre Segurança.

Перед установкой продукта прочтите инструкции по технике безопасности.

Pred inštaláciou tohto zariadenia si pečítajte Bezpečnostné predpisy.

Pred namestitvijo tega proizvoda preberite Varnostne informacije.

Antes de instalar este producto, lea la información de seguridad.

Läs säkerhetsinformationen innan du installerar den här produkten.

ཐོན་མཁན་འདི་བདེ་སྤྱད་མ་བྱས་གོང་། སྐྱོར་གྱི་ཡིད་གཟབ་  
བྱ་འདྲ་མིན་ཡིད་པའི་འོད་མེར་བལྟ་དགོས།

Bu ürünü kurmadan önce güvenlik bilgilerini okuyun.

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canjbinj soengq cungj vahgangj ancien siusik.

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## Safety inspection checklist

Use the information in this section to identify potentially unsafe conditions with your server. As each machine was designed and built, required safety items were installed to protect users and service technicians from injury.

**Note:** This device is not intended for use in the direct field of view at visual display workplaces. To avoid incommoding reflections at visual display workplaces, this device must not be placed in the direct field of view.

### CAUTION:

**This equipment must be installed or serviced by trained personnel, as defined by the NEC, IEC 62368-1 & IEC 60950-1, the standard for Safety of Electronic Equipment within the Field of Audio/Video, Information Technology and Communication Technology. Lenovo assumes you are qualified in the servicing of equipment and trained in recognizing hazards energy levels in products. Access to the equipment is by the use of a tool, lock and key, or other means of security, and is controlled by the authority responsible for the location.**

**Important:** Electrical grounding of the server is required for operator safety and correct system function. Proper grounding of the electrical outlet can be verified by a certified electrician.

Use the following checklist to verify that there are no potentially unsafe conditions:

1. Make sure that the power is off and the power cord is disconnected.
2. Check the power cord.
  - Make sure that the third-wire ground connector is in good condition. Use a meter to measure third-wire ground continuity for 0.1 ohm or less between the external ground pin and the frame ground.
  - Make sure that the power cord is the correct type.

To view the power cords that are available for the server:

- a. Go to:

<http://dcsc.lenovo.com/#/>

- b. Click **Preconfigured Model** or **Configure to order**.
  - c. Enter the machine type and model for your server to display the configurator page.
  - d. Click **Power → Power Cables** to see all line cords.
    - Make sure that the insulation is not frayed or worn.
3. Check for any obvious non-Lenovo alterations. Use good judgment as to the safety of any non-Lenovo alterations.
  4. Check inside the server for any obvious unsafe conditions, such as metal filings, contamination, water or other liquid, or signs of fire or smoke damage.
  5. Check for worn, frayed, or pinched cables.
  6. Make sure that the power-supply cover fasteners (screws or rivets) have not been removed or tampered with.



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# Chapter 1. Hardware replacement procedures

This section provides installation and removal procedures for all serviceable system components. Each component replacement procedure references any tasks that need to be performed to gain access to the component being replaced.

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## Installation Guidelines

Before installing components in your server, read the installation guidelines.

Before installing optional devices, read the following notices carefully:

**Attention:** Prevent exposure to static electricity, which might lead to system halt and loss of data, by keeping static-sensitive components in their static-protective packages until installation, and handling these devices with an electrostatic-discharge wrist strap or other grounding system.

- Read the safety information and guidelines to ensure your safety at work:
  - A complete list of safety information for all products is available at:  
[https://pubs.lenovo.com/safety\\_documentation/](https://pubs.lenovo.com/safety_documentation/)
  - The following guidelines are available as well: “Working inside the server with the power on” on page 3 and “Handling static-sensitive devices” on page 4.
- Make sure the components you are installing are supported by your server.
  - For a list of supported optional components for the server, see <https://serverproven.lenovo.com>.
  - For the option package contents, see <https://serveroption.lenovo.com/>.
- For more information about ordering parts:
  1. Go to <http://datacentersupport.lenovo.com> and navigate to the support page for your server.
  2. Click **Parts**.
  3. Enter the serial number to view a listing of parts for your server.
- When you install a new server, download and apply the latest firmware. This will help ensure that any known issues are addressed, and that your server is ready to work with optimal performance. Go to <https://datacentersupport.lenovo.com/products/servers/thinkedge/se360v2/7dam/downloads/driver-list/> to download firmware updates for your server.

**Important:** Some cluster solutions require specific code levels or coordinated code updates. If the component is part of a cluster solution, verify the latest Best Recipe code level menu for cluster supported firmware and driver before you update the code.

- If you replace a part, such as an adapter, that contains firmware, you might also need to update the firmware for that part. For more information about updating firmware, see “Update the firmware” in *User Guide* or *System Configuration Guide*.
- It is good practice to make sure that the server is working correctly before you install an optional component.
- Keep the working area clean, and place removed components on a flat and smooth surface that does not shake or tilt.
- Do not attempt to lift an object that might be too heavy for you. If you have to lift a heavy object, read the following precautions carefully:
  - Make sure that you can stand steadily without slipping.
  - Distribute the weight of the object equally between your feet.

- Use a slow lifting force. Never move suddenly or twist when you lift a heavy object.
- To avoid straining the muscles in your back, lift by standing or by pushing up with your leg muscles.
- Back up all important data before you make changes related to the disk drives.
- Have a small flat-blade screwdriver, a small Phillips screwdriver, and a T8 torx screwdriver available.
- To view the error LEDs on the system board (system board assembly) and internal components, leave the power on.
- You do not have to turn off the server to remove or install hot-swap drives or hot-plug USB devices. However, you must turn off the server before you perform any steps that involve removing or installing adapter cables, and you must disconnect the power source from the server before you perform any steps that involve removing or installing a riser card.
- Blue on a component indicates touch points, where you can grip to remove a component from or install it in the server, open or close a latch, and so on.
- Orange on a component or a orange on or near a component indicates that the component can be hot-swapped if the server and operating system support hot-swap capability, which means that you can remove or install the component while the server is still running. (Orange can also indicate touch points on hot-swap components.) See the instructions for removing or installing a specific hot-swap component for any additional procedures that you might have to perform before you remove or install the component.
- The Red strip on the drives, adjacent to the release latch, indicates that the drive can be hot-swapped if the server and operating system support hot-swap capability. This means that you can remove or install the drive while the server is still running.

**Note:** See the system specific instructions for removing or installing a hot-swap drive for any additional procedures that you might need to perform before you remove or install the drive.

- After finishing working on the server, make sure you reinstall all safety shields, guards, labels, and ground wires.

## Safety inspection checklist

Use the information in this section to identify potentially unsafe conditions with your server. As each machine was designed and built, required safety items were installed to protect users and service technicians from injury.

**Note:** This device is not intended for use in the direct field of view at visual display workplaces. To avoid incommoding reflections at visual display workplaces, this device must not be placed in the direct field of view.

### CAUTION:

**This equipment must be installed or serviced by trained personnel, as defined by the NEC, IEC 62368-1 & IEC 60950-1, the standard for Safety of Electronic Equipment within the Field of Audio/Video, Information Technology and Communication Technology. Lenovo assumes you are qualified in the servicing of equipment and trained in recognizing hazards energy levels in products. Access to the equipment is by the use of a tool, lock and key, or other means of security, and is controlled by the authority responsible for the location.**

**Important:** Electrical grounding of the server is required for operator safety and correct system function. Proper grounding of the electrical outlet can be verified by a certified electrician.

Use the following checklist to verify that there are no potentially unsafe conditions:

1. Make sure that the power is off and the power cord is disconnected.
2. Check the power cord.

- Make sure that the third-wire ground connector is in good condition. Use a meter to measure third-wire ground continuity for 0.1 ohm or less between the external ground pin and the frame ground.
- Make sure that the power cord is the correct type.

To view the power cords that are available for the server:

- Go to:  
<http://dcsc.lenovo.com/#/>
  - Click **Preconfigured Model** or **Configure to order**.
  - Enter the machine type and model for your server to display the configurator page.
  - Click **Power → Power Cables** to see all line cords.
- Make sure that the insulation is not frayed or worn.
- Check for any obvious non-Lenovo alterations. Use good judgment as to the safety of any non-Lenovo alterations.
  - Check inside the server for any obvious unsafe conditions, such as metal filings, contamination, water or other liquid, or signs of fire or smoke damage.
  - Check for worn, frayed, or pinched cables.
  - Make sure that the power-supply cover fasteners (screws or rivets) have not been removed or tampered with.

## System reliability guidelines

Review the system reliability guidelines to ensure proper system cooling and reliability.

Make sure the following requirements are met:

- Adequate space around the server must be spared to allow server cooling system to work properly. Leave approximately 50 mm (2.0 in.) of open space around the front and rear of the server. Do not place any object in front of the fans.
- For proper cooling and airflow, refit the server cover before you turn the power on. Do not operate the server for more than 30 minutes with the server cover removed, for it might damage server components.
- Cabling instructions that come with optional components must be followed.
- A failed fan must be replaced within 48 hours after malfunction.
- A removed hot-swap drive must be replaced within two minutes after removal.
- Every air baffle that comes with the server must be installed when the server starts (some servers might come with more than one air baffle). Operating the server with a missing air baffle might damage the processor.

## Working inside the server with the power on

You might need to keep the power on with the server cover removed to look at system information on the display panel or to replace hot-swap components. Review these guidelines before doing so.

**Attention:** The server might stop and data loss might occur when internal server components are exposed to static electricity. To avoid this potential problem, always use an electrostatic-discharge wrist strap or other grounding systems when working inside the server with the power on.

- Avoid loose-fitting clothing, particularly around your forearms. Button or roll up long sleeves before working inside the server.
- Prevent your necktie, scarf, badge rope, or hair from dangling into the server.
- Remove jewelry, such as bracelets, necklaces, rings, cuff links, and wrist watches.

- Remove items from your shirt pocket, such as pens and pencils, in case they fall into the server as you lean over it.
- Avoid dropping any metallic objects, such as paper clips, hairpins, and screws, into the server.

## Handling static-sensitive devices

Review these guidelines before you handle static-sensitive devices to reduce the possibility of damage from electrostatic discharge.

**Attention:** Prevent exposure to static electricity, which might lead to system halt and loss of data, by keeping static-sensitive components in their static-protective packages until installation, and handling these devices with an electrostatic-discharge wrist strap or other grounding system.

- Limit your movement to prevent building up static electricity around you.
- Take additional care when handling devices during cold weather, for heating would reduce indoor humidity and increase static electricity.
- Always use an electrostatic-discharge wrist strap or other grounding system, particularly when working inside the server with the power on.
- While the device is still in its static-protective package, touch it to an unpainted metal surface on the outside of the server for at least two seconds. This drains static electricity from the package and from your body.
- Remove the device from the package and install it directly into the server without putting it down. If it is necessary to put the device down, put it back into the static-protective package. Never place the device on the server or on any metal surface.
- When handling a device, carefully hold it by the edges or the frame.
- Do not touch solder joints, pins, or exposed circuitry.
- Keep the device from others' reach to prevent possible damages.



---

## Memory module installation rules and order

Memory modules must be installed in a specific order based on the memory configuration that you implement and the number of memory modules installed in the server.

### Supported memory types

For information on the types of memory module supported by this server, see “Memory” section in [“Technical specifications” on page 307](#).

Information about optimizing memory performance and configuring memory is available at the Lenovo Press website:

<https://lenovopress.lenovo.com/servers/options/memory>

In addition, you can take advantage of a memory configurator, which is available at the following site:

[https://dcsc.lenovo.com/#/memory\\_configuration](https://dcsc.lenovo.com/#/memory_configuration)

Specific information about the required installation order of memory modules in your server based on the system configuration and memory mode that you are implementing is shown below.

## Memory modules and processor layout

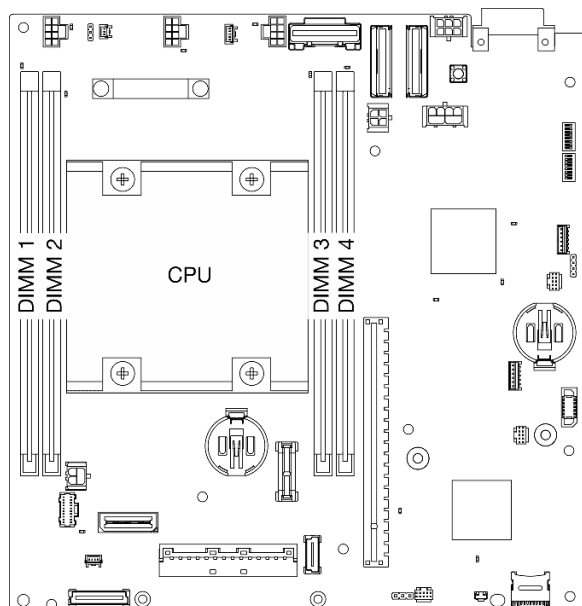


Figure 1. Memory modules and processor layout

The memory-channel configuration table below shows the relationship between the processor, memory controllers, memory channels, and memory module slot numbers.

Table 1. Channel and slot information of DIMMs around a processor

Rear					
Controller	iMC0		Processor	iMC1	
Channel	Channel 0	Channel 1		Channel 1	Channel 0
DIMM slot number	1	2		3	4
Front					

## Memory module installation guideline

- This server supports [“Independent mode” on page 7](#).
- This server supports the following type of memory modules:
  - Double-data-rate 4 (TruDDR4) error correcting code (ECC) 3200 MHz registered DIMM (RDIMM)
- When you replace a DIMM, the server provides automatic DIMM enablement capability without requiring you to use the Setup Utility to enable the new DIMM manually.

### Attention:

- **Do not** mix x4 and x8 DIMMs.
- Install DIMMs of the same speed for optimal performance. Otherwise, the BIOS will find and run the lowest speed among all channels.

## DRAM DIMMs installation order

This section contains information of how to install DRAM DIMMs properly.

### Independent memory mode installation order

In independent memory mode, memory channels can be populated with DIMMs in any order and you can populate all channels for the processor in any order with no matching requirements. Independent memory mode provides the highest level of memory performance, but lacks failover protection.

#### Independent Mode

Independent mode provides high performance memory capability. You can populate all channels with no matching requirements.

Independent memory mode guidelines:

- Individual memory channels can run at different DIMM timings, but all channels must run at the same interface frequency.
- Populate memory channel 0 first.

Table 2. Memory population in independent mode

Number of Memory Modules	Memory Module Slot Number			
	1	2	3	4
1	√			
2	√			√
4*	√	√	√	√

\*DIMM configurations that support Software Guard Extensions (SGX), see “Enable Software Guard Extensions (SGX)” in *User Guide* or *System Configuration Guide* to enable this feature.

---

## M.2 storage drive installation rules and order

This section contains information on the M.2 storage drive installation rules and order.

The following expansion slots(Slot 3-12) / M.2 bays(M.2 Bay 2 to 11) support M.2 storage drives:

- Slot 3 to 6 / M.2 Bay 2 to 5 on M.2 cabled adapter (Left wing of riser assembly)
- Slot 7 to 10 / M.2 Bay 6 to 9 on M.2 adapter (Right wing of riser assembly)
- Slot 11, 12 / M.2 Bay 10, 11 on bottom M.2 cabled adapter (Bottom layer of the node)

The available slots / M.2 bays vary by configuration.

Follow the rules below when installing M.2 storage drives:

#### General rule

- The installation order when mixing drives of different capacity: Drives of smaller capacity → drives of larger capacity.
- The slot / M.2 bays are numbered to indicate the installation order. When installing M.2 storage drives, start from the lowest numbered slot / M.2 bay which supports M.2 storage drive.

## Installation rules and order: Non-RAID configuration

For non-RAID configuration, mixing M.2 storage drives of different form factor is allowed.

See the following table for the installation order of non-RAID configuration.

Number of M.2 storage drives	One, three, five, or seven 80 mm (2280) M.2 drive(s)	Zero, two, four, six, or eight 80 mm (2280) M.2 drive(s)
One, three, five, or seven 110 mm (22110) M.2 drive(s)	110 mm drives → keep one slot as empty → 80 mm drives	80 mm drives → 110 mm drives
Zero, two, four, six, or eight 110 mm (22110) M.2 drive(s)	110 mm drives → 80 mm drives	110 mm drives → 80 mm drives

## Installation rules and order: RAID configuration

For RAID configuration, mixing M.2 storage drives of different form factor is **not allowed**.

---

## Power on and power off the server

Follow the instructions in this section to power on and power off the server.

### Power on the server

After the server performs a short self-test (power status LED flashes quickly) when connected to input power, it enters a standby state (power status LED flashes once per second).

Power button location and power LED locations are specified in:

- “Server components” in *User Guide* or *System Configuration Guide*
- [“Troubleshooting by system LEDs” on page 319](#)

.

The server can be turned on (power LED on) in any of the following ways:

- You can press the power button.
- The server can restart automatically after a power interruption.
- The server can respond to remote power-on requests sent to the Lenovo XClarity Controller.

**Important:** Lenovo XClarity Controller (XCC) supported version varies by product. All versions of Lenovo XClarity Controller are referred to as Lenovo XClarity Controller and XCC in this document, unless specified otherwise. To see the XCC version supported by your server, go to <https://pubs.lenovo.com/lxcc-overview/>.

For information about powering off the server, see [“Power off the server” on page 8](#).

### Power off the server

The server remains in a standby state when it is connected to a power source, allowing the Lenovo XClarity Controller to respond to remote power-on requests. To remove all power from the server (power status LED off), you must disconnect all power cables.

Power button location and power LED locations are specified in:

- “Server components” in *User Guide* or *System Configuration Guide*
- [“Troubleshooting by system LEDs” on page 319](#)

.

To place the server in a standby state (power status LED flashes once per second):

**Note:** The Lenovo XClarity Controller can place the server in a standby state as an automatic response to a critical system failure.

- Start an orderly shutdown using the operating system (if supported by your operating system).
- Press the power button to start an orderly shutdown (if supported by your operating system).

When in a standby state, the server can respond to remote power-on requests sent to the Lenovo XClarity Controller. For information about powering on the server, see [“Power on the server” on page 8](#).

## Configuration guide

Follow instructions in this section to remove and install supporting mounting configurations.

ThinkEdge SE360 V2 node is designed to support the following mounting options:

- **Desktop mount:** The node is oriented horizontally with rubber feet installed at the bottom side. For the locations and replacement of rubber feet, see [“Rubber feet replacement” on page 227](#).
- **Rack mount:** Up to two nodes can be installed to an enclosure, and the enclosure can be installed to the rack. See [“Rack mount configuration” on page 10](#).
- **Wall mount/ceiling mount:** With node sleeve, the node can be mounted on the wall or the ceiling. See [“Wall mount/ceiling mount configuration” on page 24](#).
- **DIN-rail mount:** With node sleeve and DIN rail clips, the node can be mounted on a DIN rail. See [“DIN rail configuration” on page 39](#).

**Important:** The mounting options of SE360 V2 support different system configuration. For proper operation, see the following table for the supported configurations:

Table 3. Supported configurations of SE360 V2 mounting options

	Desktop mount	Rack mount	Wall mount/ ceiling mount	DIN-rail mount
• Wireless module	√		√	√
<b>Electrical input</b>				
• 300W external power adapter*	√			
• DC power source input	√	√	√	√
• AC power source input	√	√	√	√
<b>System fan</b>				
• Front-to-rear air flow direction	√	√		
• Rear-to-front air flow direction	√		√	√
<b>Optional components enabling dust filter measurement feature**</b> The following components are supported only when fans with <b>rear-to-front air flow direction</b> are installed:				

Table 3. Supported configurations of SE360 V2 mounting options (continued)

	Desktop mount	Rack mount	Wall mount/ ceiling mount	DIN-rail mount
• Air flow sensor board	√		√	√
• Rear dust filter	√		√	√

\*When one or two 300W external power adapters are installed, keep ambient temperature lower than 40°C, and the following configuration is required:

- 8 core processor
- Four memory modules
- Up to one ThinkSystem NVIDIA A2 16GB PCIe Gen4 Passive GPU
- Up to two 7mm SATA drives
- Up to two M.2 NVMe boot drives installed on 1GbE I/O module board
- Desktop mount is supported

\*\*With air flow sensor board installed, SE360 V2 BMC supports dust filter measurement feature to check the status of the rear dust filter. See “Set dust filter measurement” in *User Guide* or *System Configuration Guide* for more information.

## Rack mount configuration

Follow instructions in this section to remove and install the rack mount configuration.

### Remove a node from the rack

Follow instructions in this section to remove a node from the rack.

### About this task

#### R006



#### CAUTION:

**Do not place any object on top of a rack-mounted device unless that rack-mounted device is intended for use as a shelf.**

#### Attention:

- Read “[Installation Guidelines](#)” on page 1 and “[Safety inspection checklist](#)” on page 2 to ensure that you work safely.

**Note:** If there is no front shipping bracket installed, start from “[Remove the node from the enclosure](#)” on page 11.

### Remove the front shipping bracket

#### Procedure

Step 1. Loosen the captive screws of the shipping bracket.

- a. Loosen the three captive screws on the front.
- b. Loosen the four captive screws on both sides.
- c. Loosen the captive screw on the top.

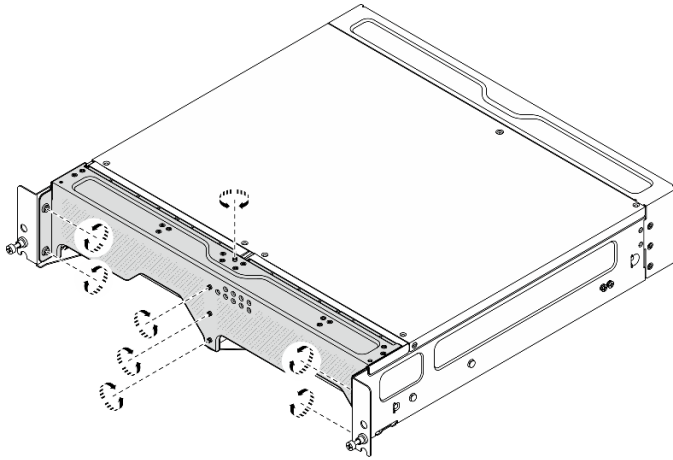


Figure 2. Loosening the screws

Step 2. Pull the shipping bracket to remove it from the enclosure.

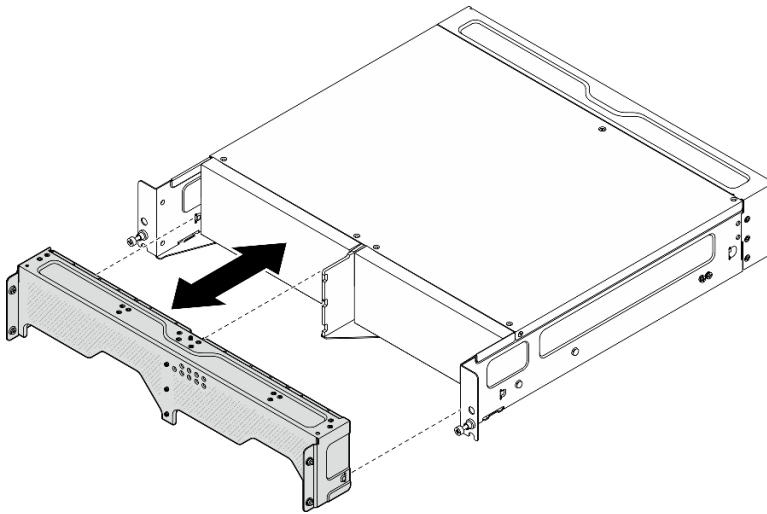


Figure 3. Removing the shipping bracket

**Remove the node from the enclosure**

**S002**



**CAUTION:**

The power-control button on the device and the power switch on the power supply do not turn off the electrical current supplied to the device. The device also might have more than one power cord. To

**remove all electrical current from the device, ensure that all power cords are disconnected from the power source.**

**Attention:** Power off the server and peripheral devices and disconnect the power cords and all external cables. See [“Power off the server” on page 8](#).

## Procedure

Step 1. Remove the node from the enclosure.

**Note:** Before removing the node from the enclosure, make sure to disconnect the grounding wires from the grounding studs.

- a. ① Pull and hold the plungers on the enclosure bracket up to disengage the node from the enclosure.
- b. ② Push the node out of the enclosure.

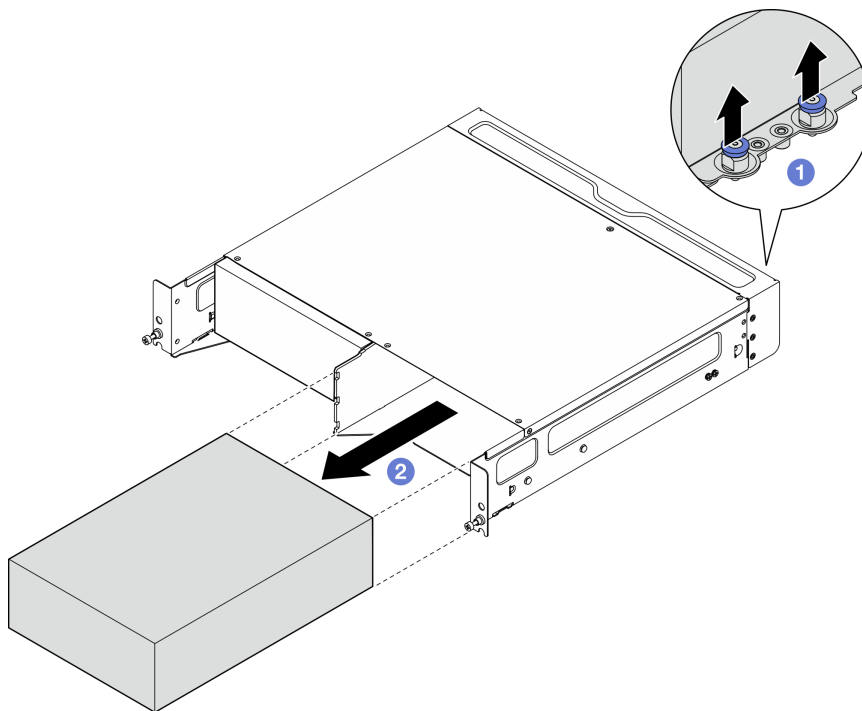


Figure 4. Removing the node

**Note:** A node bay should be installed with a node or a node filler. To install a node filler, insert the filler into the node bay; then, secure the filler with two screws.



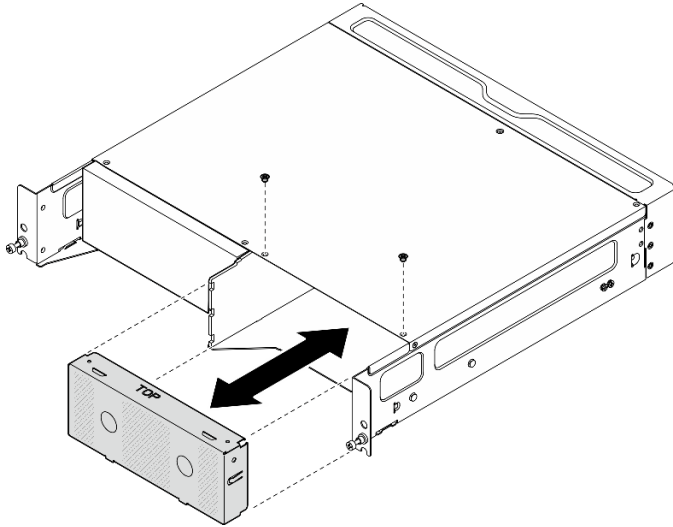


Figure 5. Installing the node filler

- Step 2. (Optional) If the node is not to be reinstalled to the enclosure, remove the enclosure bracket from the node.
- Loosen the four screws that secure the enclosure bracket.
  - Remove the enclosure bracket.

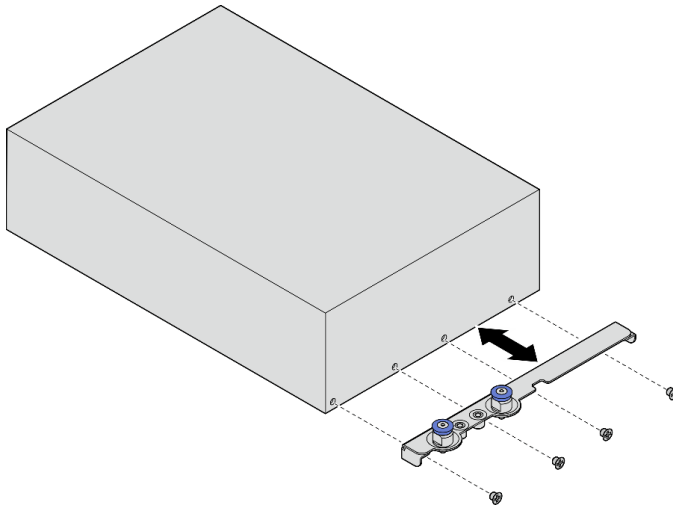


Figure 6. Removing the enclosure bracket

- Step 3. (Optional) If the node is not to be reinstalled to the enclosure, do the following:
- Change the machine type for proper operation. See [“Change the machine type for operating in an enclosure \(trained technician only\)” on page 240](#).
  - When the air flow direction of the system fans is **rear-to-front**, for optimal server operation, it is recommended to install the rear dust filter. See [“Install the rear dust filter” on page 54](#).

## Remove the enclosure from the rack

### Procedure

- Step 1. Loosen the two thumb screws on the front of the enclosure to disengage it from the rack.

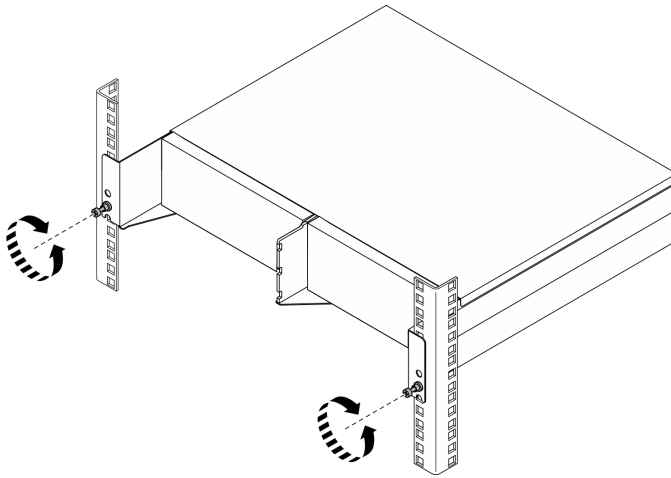


Figure 7. Disengaging the enclosure from the rack

Step 2. Remove the enclosure from the rack.

- a. ① Carefully slide out the enclosure until it stops.
- b. ② Depending on the rail kit, press or lift the release latches.
- c. ③ Carefully pull the enclosure away from the rack.

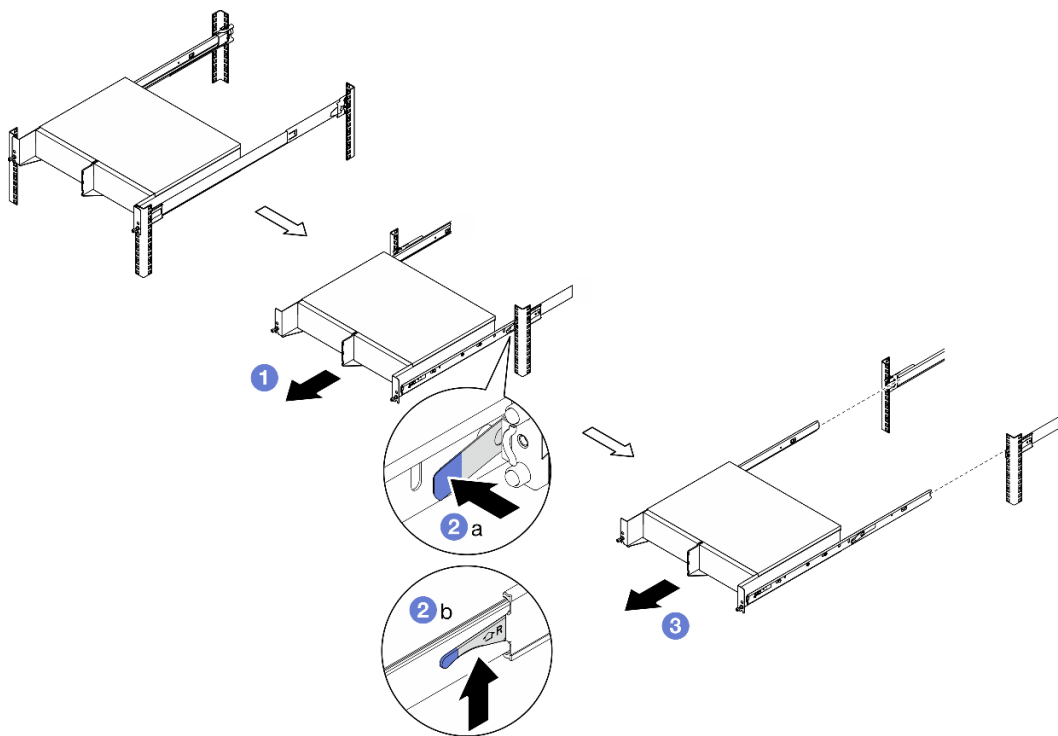


Figure 8. Removing the enclosure from the rack

Step 3. Remove the inner rails from the enclosure.

- a. Loosen the two screws that secure the inner rail.
- b. Open the front latch on the inner rail.

- c. Slightly push the inner rail to the right and release the inner rail from the mounting pins on the enclosure.
- d. Repeat this procedure to remove the other inner rail.

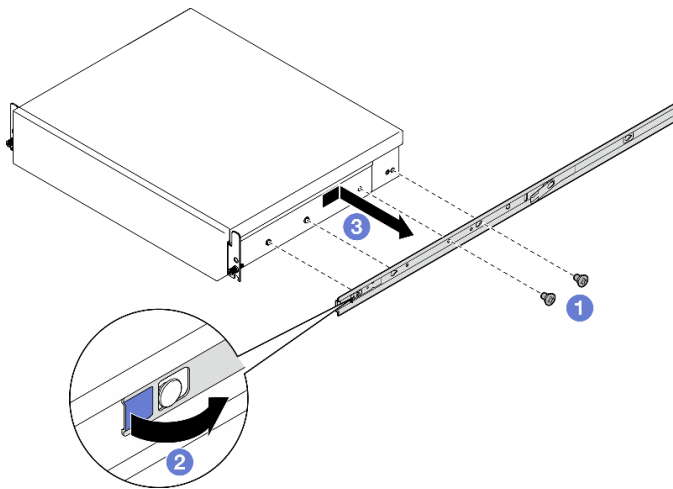


Figure 9. Removing the inner rail

- Step 4. If necessary, remove the rail kit from the rack. See the *Rail Installation Guide* which comes with the rail kit, or download the *Rail Installation Guide* from [“Documents download” on page 355](#).
- Step 5. If necessary, remove the rear shipping bracket.
  - a. Loosen the fifteen screws that secure the rear shipping bracket.

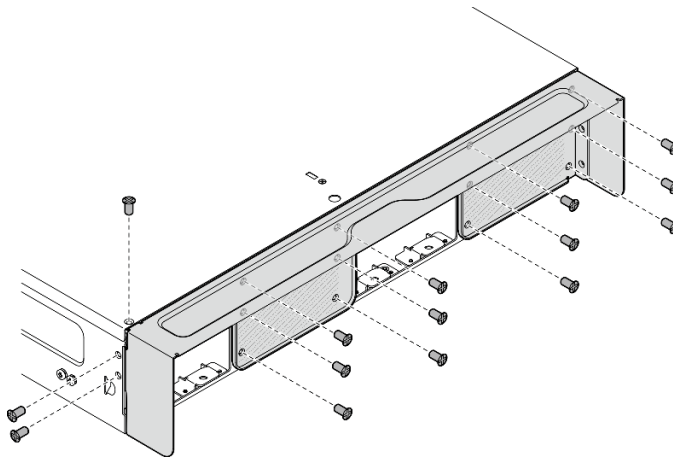


Figure 10. Loosening the screws

- b. Pull the shipping bracket to remove it from the enclosure.

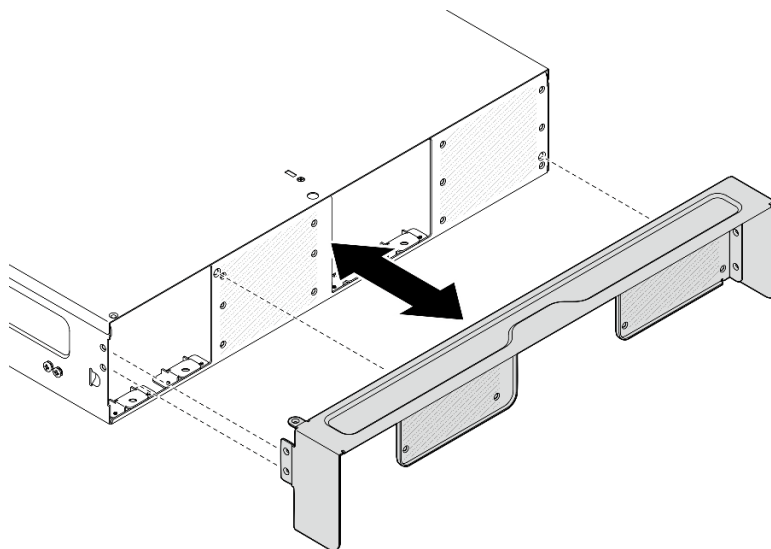


Figure 11. Removing the shipping bracket

## Install a node to the rack

Follow instructions in this section to install a node to the rack.

### About this task

#### S002



#### CAUTION:

The power-control button on the device and the power switch on the power supply do not turn off the electrical current supplied to the device. The device also might have more than one power cord. To remove all electrical current from the device, ensure that all power cords are disconnected from the power source.

#### R006



#### CAUTION:

Do not place any object on top of a rack-mounted device unless that rack-mounted device is intended for use as a shelf.

#### Attention:

- Read [“Installation Guidelines” on page 1](#) and [“Safety inspection checklist” on page 2](#) to ensure that you work safely.
- Power off the server and peripheral devices and disconnect the power cords and all external cables. See [“Power off the server” on page 8](#).

**Note:** To install a node to an enclosure which is already on the rack, start from [“Install the node to the enclosure” on page 20](#).

## Install the enclosure to the rack

### Procedure

Step 1. If applicable, install the rear shipping bracket.

- a. Align the guide pins of the shipping bracket with the holes on the enclosure; then, push the shipping bracket toward the enclosure until it is firmly seated.

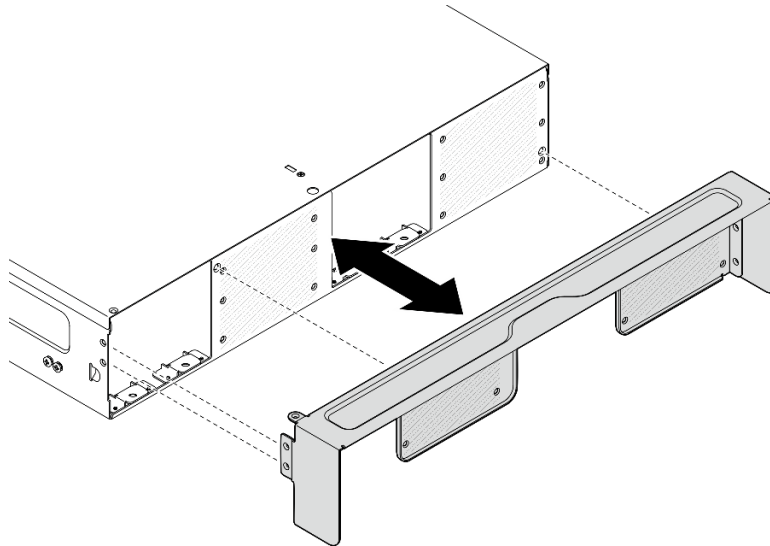


Figure 12. Installing the shipping bracket

- b. Fasten fifteen screws to secure the shipping bracket.

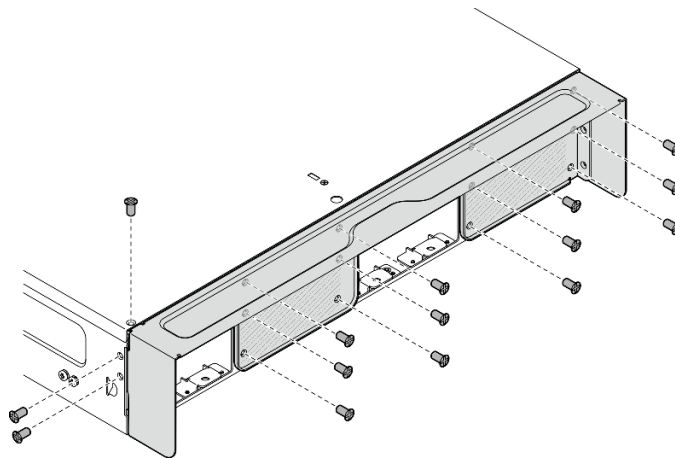


Figure 13. Fastening the screws

Step 2. Make sure the rail kit is installed to the rack properly. See the *Rail Installation Guide* which comes with the rail kit, or download the *Rail Installation Guide* from [“Documents download” on page 355](#).

Step 3. Depending on the rail kit, remove the redundant screws from the enclosure.

- a. To install the enclosure to ThinkEdge 600mm Ball Bearing Rail Kit, remove the middle one of the three screws; one for each side, total two screws should be removed.

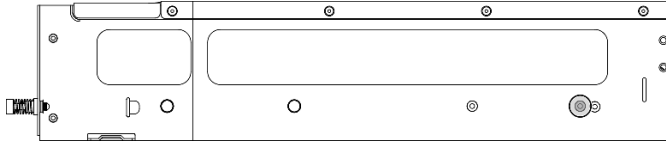


Figure 14. The screw on the enclosure to be removed

- b. To install the enclosure to the rail kit except for ThinkEdge 600mm Ball Bearing Rail Kit, remove the screw which is the closest to the rear of the enclosure; one for each side, total two screws should be removed.

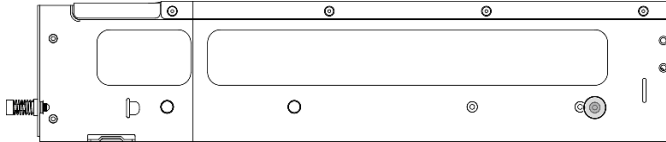


Figure 15. The screw on the enclosure to be removed

Step 4. Install the inner rails to the enclosure.

**Attention:** There are “L” and “R” logos marked on the front of inner rails which represent the left rail and the right rail. Ensure correct rails are installed to the rack accordingly.

- a. Remove the two screws from the side of the enclosure; save the screws for later use.
- b. Align the mounting holes on the inner rail with the corresponding rail mounting pins on the side of the enclosure.
- c. Push the inner rail as shown until the mounting pins on the enclosure are locked in place.
- d. Tighten the two screws to secure the inner rail to the enclosure.
- e. Repeat this procedure to install the other inner rail.

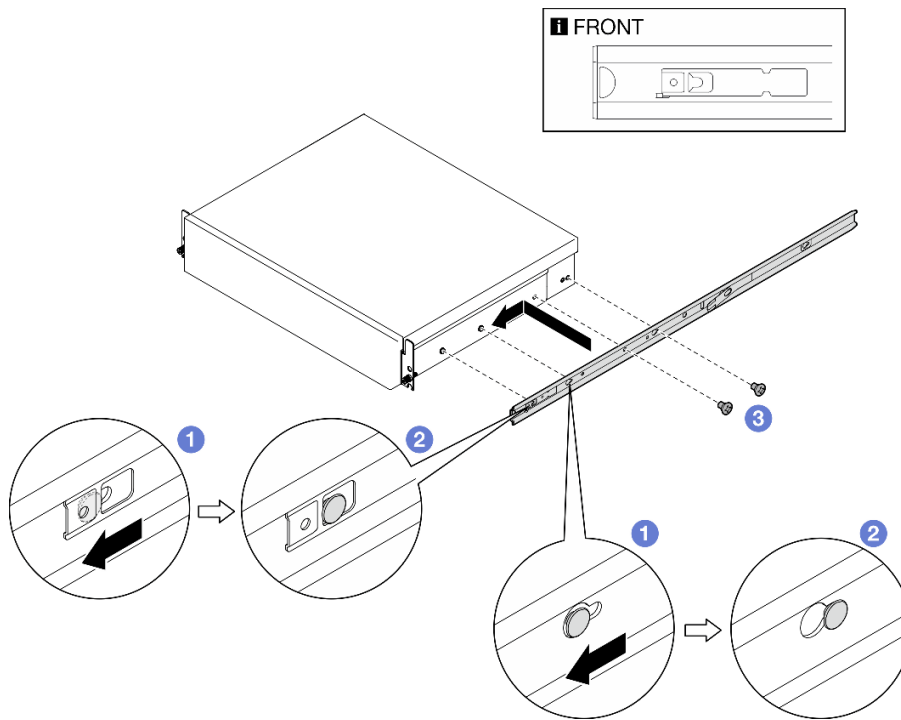


Figure 16. Installing the inner rail

Step 5. Install the enclosure to the rack.

- a. ① Carefully lift the enclosure and align the enclosure with the rails on the rack; then, position the enclosure as shown and push it into the rack.
- b. ② Depending on the rail kit, press or lift the release latches.
- c. ③ Push the enclosure all the way into the rack until the enclosure locks into place with a click.

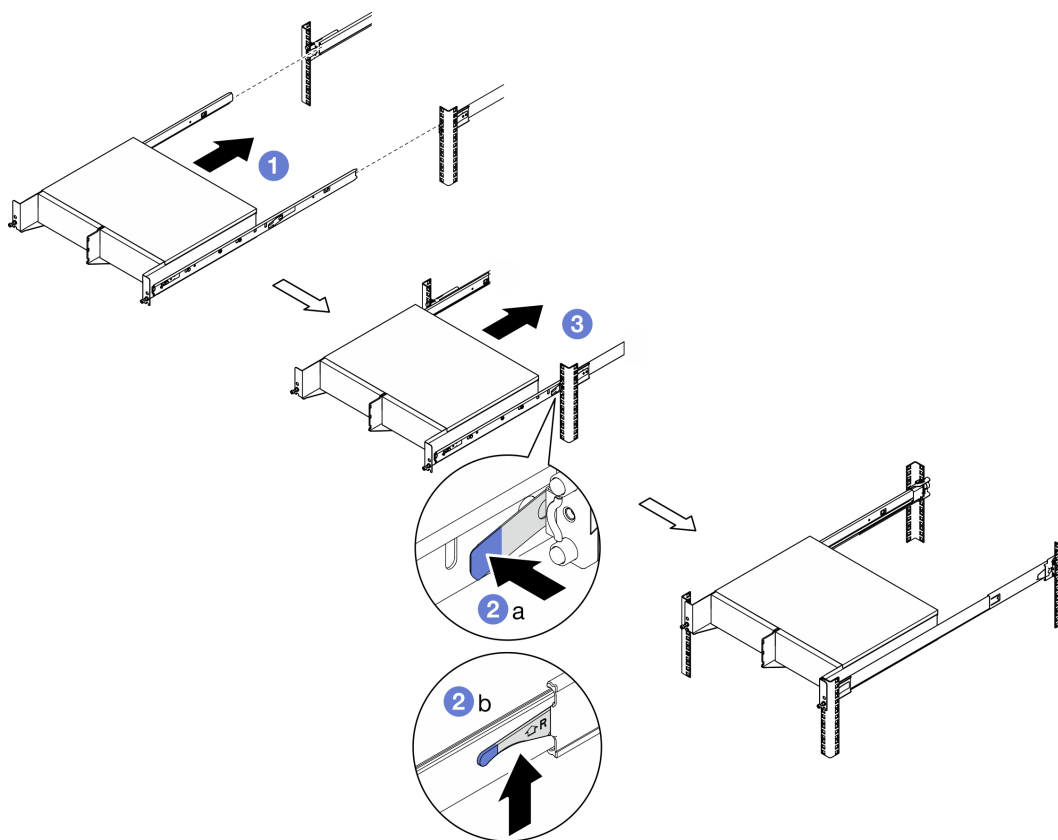


Figure 17. Installing the enclosure to the rack

Step 6. Fasten the two thumb screws on the front of the enclosure to secure it to the rack.

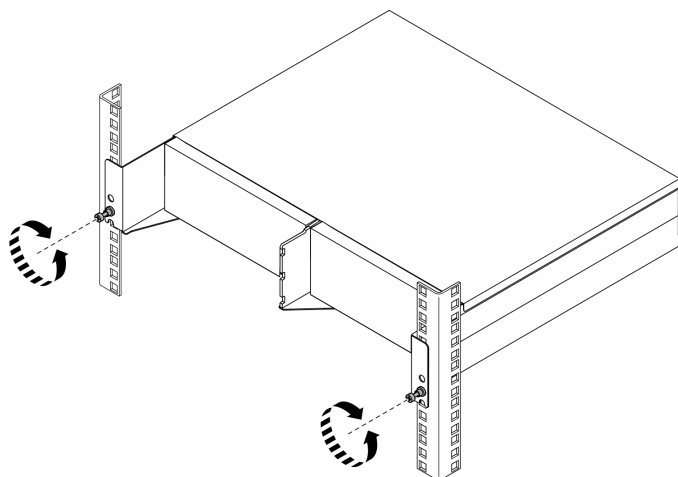


Figure 18. Securing the enclosure to the rack

## Install the node to the enclosure

### Procedure

- Step 1. For proper cooling and airflow, make sure that no rear dust filter is installed, and all installed fan modules are with front-to-rear air flow direction.
- If applicable, remove the rear dust filter. See [“Remove the rear dust filter”](#) on page 52.



- b. If applicable, install fan modules with front-to-rear air flow direction. See [“Install a fan module” on page 103](#).
- Step 2. If the node was not installed in enclosure previously, before installing the node to the enclosure, change the machine type for proper operation. See [“Change the machine type for operating in an enclosure \(trained technician only\)” on page 240](#).
- Step 3. If the node comes with WLAN antennas, remove all the WLAN antennas.
  - a. See [“Remove the WLAN antennas” on page 256](#) to remove all the WLAN antennas.
  - b. If applicable, turn the screw between the two SMA connectors clockwise to shorten the connectors into the chassis.

**Note:** Make sure that the SMA connectors are shortened into the chassis; if the SMA connectors are extended and out of the chassis, the node can not be installed successfully.

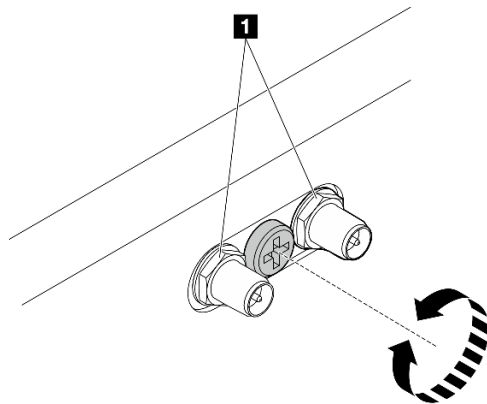


Figure 19. Shortening the SMA connectors

**1** SMA connectors

- Step 4. Make sure that the enclosure bracket is installed to the node.
  - a. Align the guide pins on the enclosure bracket to the rear of the node.
  - b. Push the enclosure bracket to the node; then, secure the enclosure bracket with four screws.

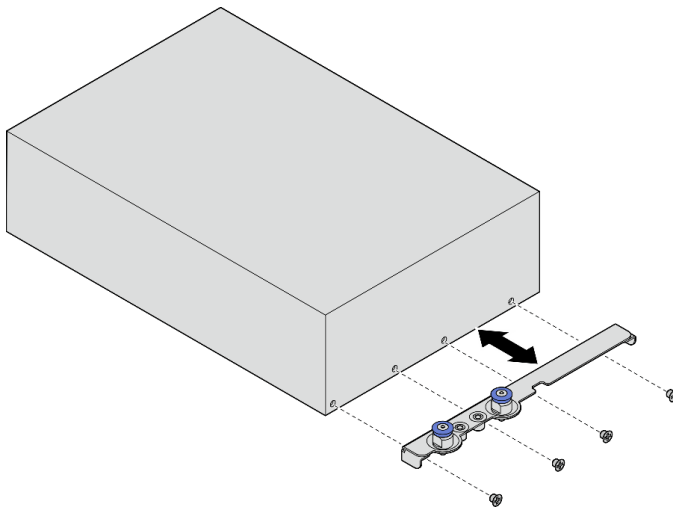
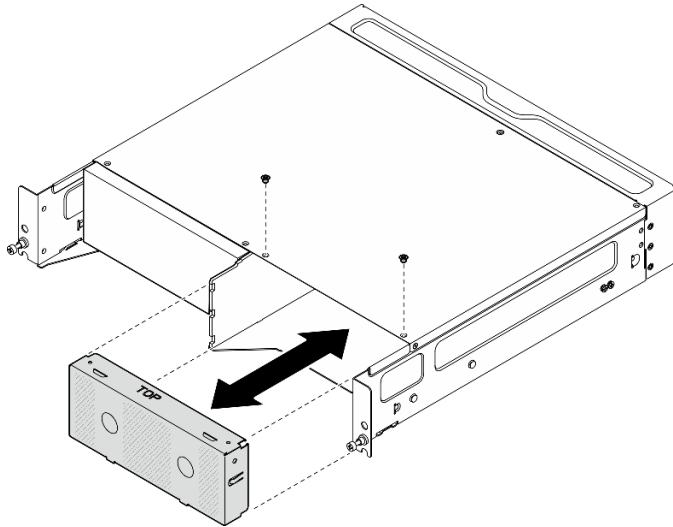


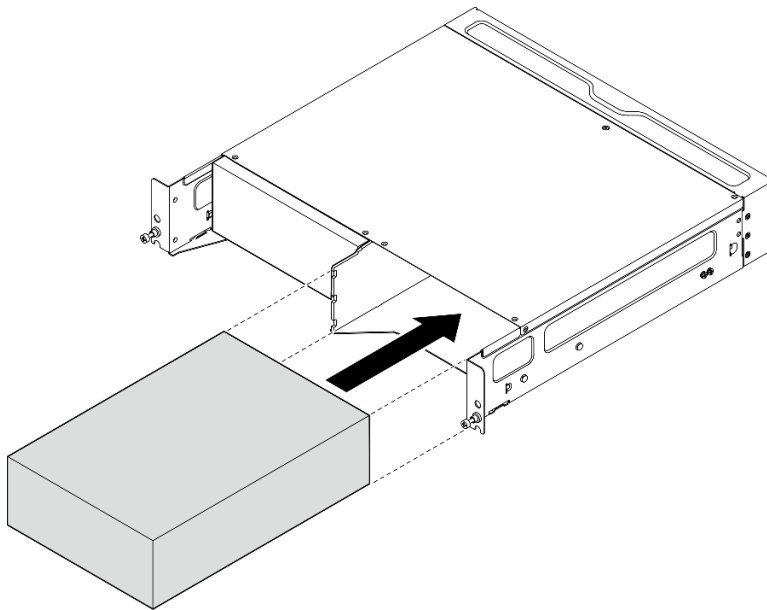
Figure 20. Installing the enclosure bracket

- Step 5. If a node filler is installed in the node bay, remove it first.
- Loosen the two screws that secure the node filler.
  - Remove the node filler from the node bay. Keep the node filler in a safe place for future use.



*Figure 21. Removing the node filler*

- Step 6. Slide the node into the node bay until it clicks into place.



*Figure 22. Installing the node*

- Step 7. (Optional) If the enclosure is with only one node installed, install a node filler into the vacant node bay.
- Insert the node filler into the node bay.
  - Secure the node filler with two screws.

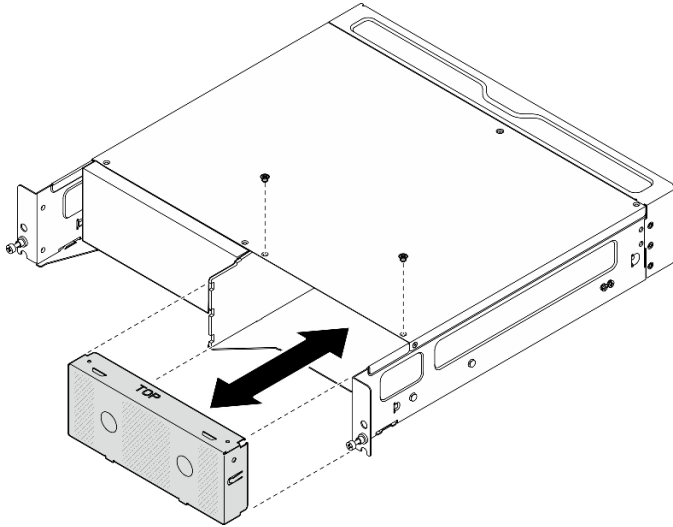


Figure 23. Installing the node filler

### Install the front shipping bracket

**Attention:** When the front shipping bracket is installed, the front operator panel is not accessible. Make sure to complete the following procedure before installing the front shipping bracket:

1. Connect the power cable and other necessary external cables to the node.
2. Power on the server and any peripheral devices. See [“Power on the server” on page 8](#).

### Procedure

Step 1. Push the shipping bracket toward the enclosure until it is firmly seated.

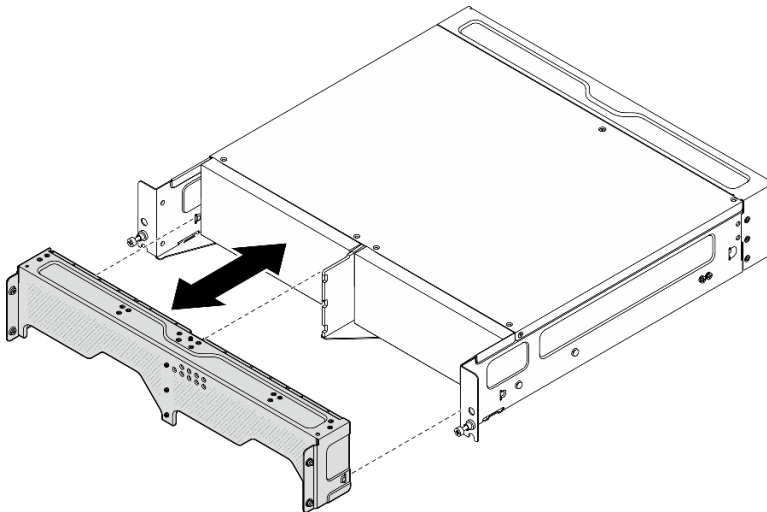


Figure 24. Installing the shipping bracket

- Step 2. Secure the captive screws of the shipping bracket.
- a. Fasten the captive screw on the top.
  - b. Fasten the four captive screws on both sides.
  - c. Fasten the three captive screws on the front.

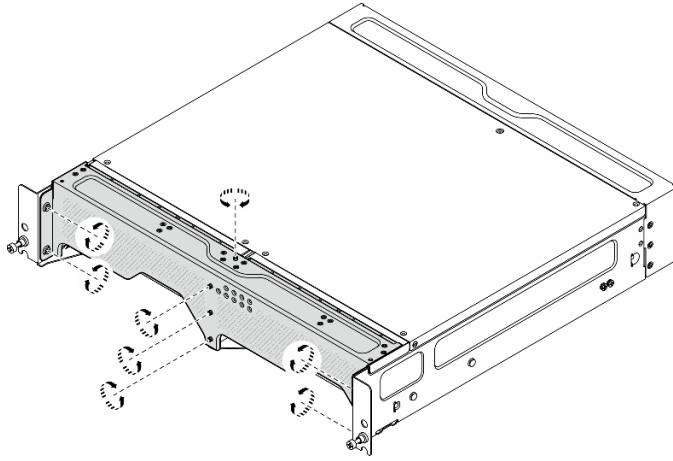


Figure 25. Fastening the screws

## Wall mount/ceiling mount configuration

Follow instructions in this section to remove and install the wall mount/ceiling mount configuration.

### Remove a node from the wall or the ceiling

Follow instructions in this section to remove a node from the wall or the ceiling.

### About this task

#### Attention:

- Read [“Installation Guidelines” on page 1](#) and [“Safety inspection checklist” on page 2](#) to ensure that you work safely.
- Reserve 500 mm of clearance in front of the node for installation/removal procedure.

**Important:** This task must be operated by trained technicians.

**Note:** Depending on the model, your server might look slightly different from the illustration.

### Procedure

Step 1. If applicable, remove the security bezel.

- a. ① Unlock the security bezel with the key.
- b. ② Press the tab to disengage the security bezel.
- c. ③ Pivot the security bezel outward, and remove the security bezel.

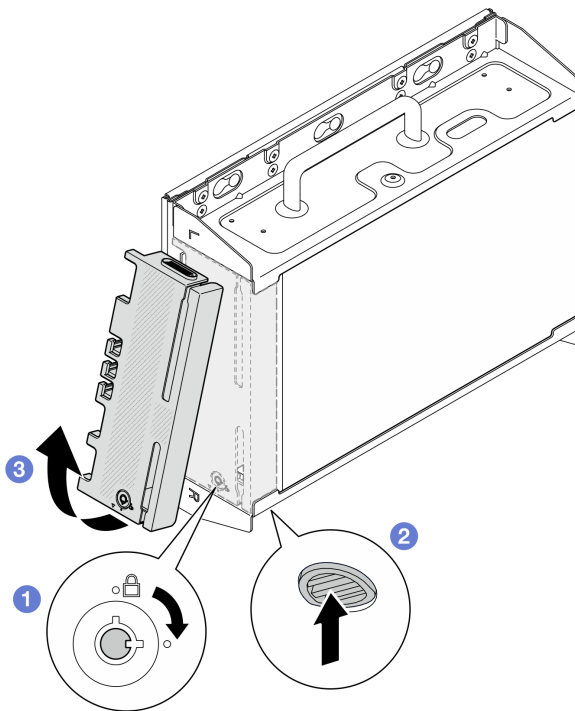


Figure 26. Removing the security bezel

- Step 2. Power off the server and peripheral devices and disconnect the power cords and all external cables. See [“Power off the server” on page 8](#).

#### **S002**



#### **CAUTION:**

The power-control button on the device and the power switch on the power supply do not turn off the electrical current supplied to the device. The device also might have more than one power cord. To remove all electrical current from the device, ensure that all power cords are disconnected from the power source.

- Step 3. Remove the node bracket from the wall-mount plate.
- a. Loosen the eight screws that secure the node bracket.

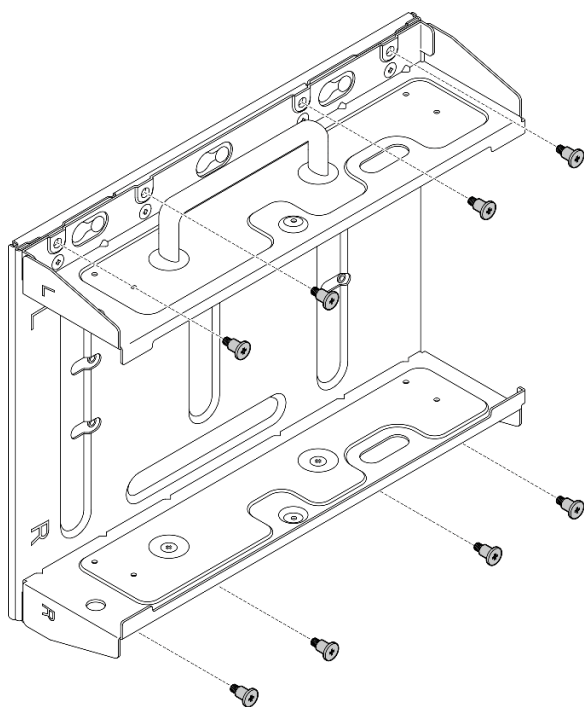


Figure 27. Removing the node bracket

- b. Slide the node bracket until the guide pins on the wall-mount plate are seated in the large opening of the keyhole; then, remove the node bracket from the wall-mount plate.

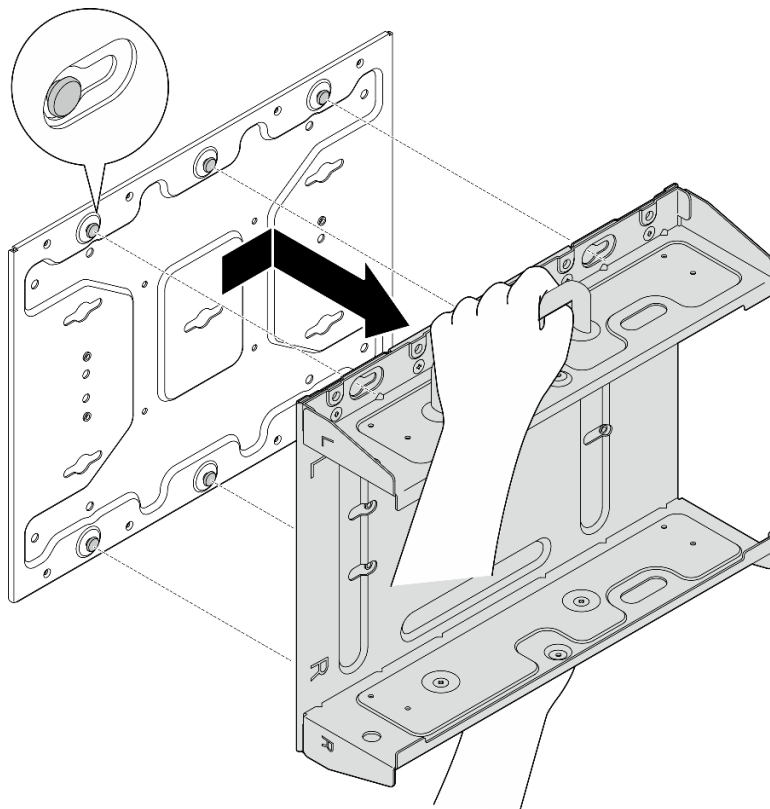


Figure 28. Removing the node bracket

- Step 4. Loosen the four M4 screws and four M6 screws that secure the wall-mount plate; then, remove the wall-mount plate from the wall.

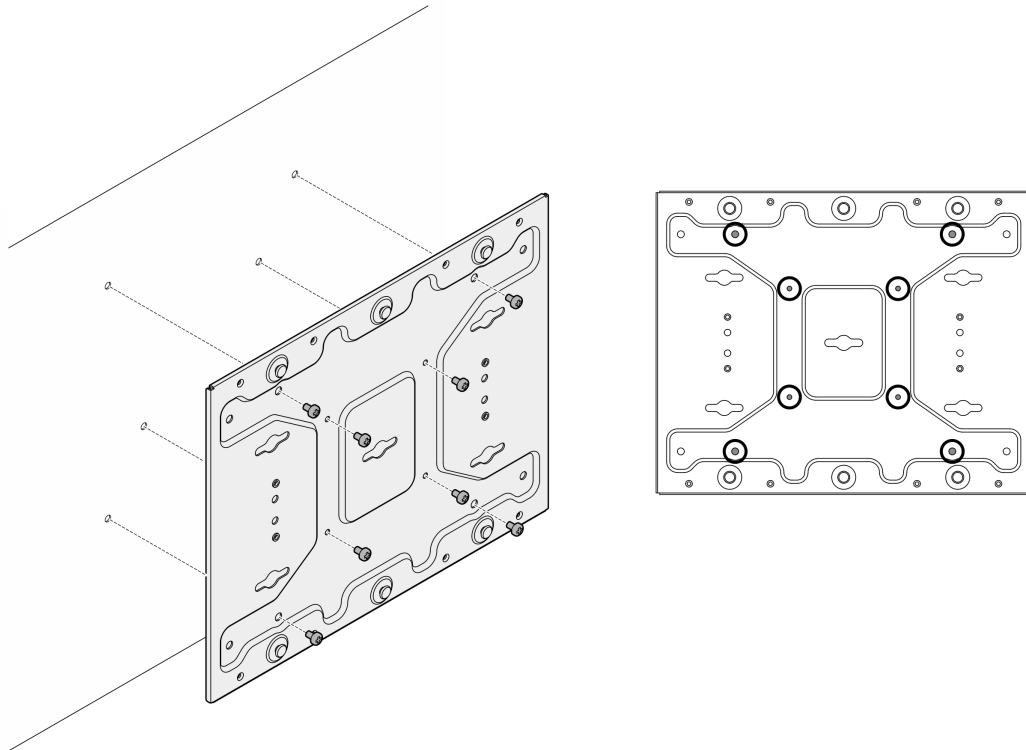


Figure 29. Removing the wall-mount plate

- Step 5. If applicable, remove the WLAN antennas. See [“Remove the WLAN antennas” on page 256](#).
- Step 6. If applicable, turn the screw between the two SMA connectors clockwise to shorten the connectors into the chassis.

**Note:** Make sure that the SMA connectors are shortened into the chassis; if the SMA connectors are extended and out of the chassis, the node can not be removed successfully.

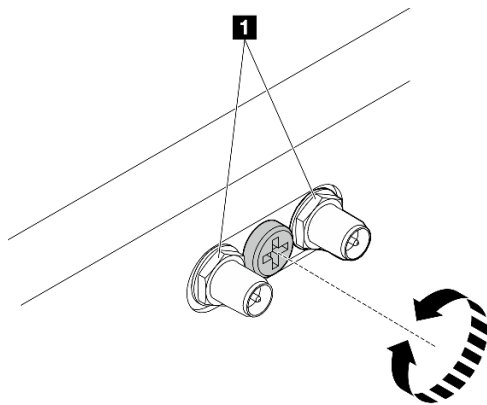


Figure 30. Shortening the SMA connectors

Step 7. Loosen the eight screws (four for each side) that secure the bottom plate to remove the plate from the node.

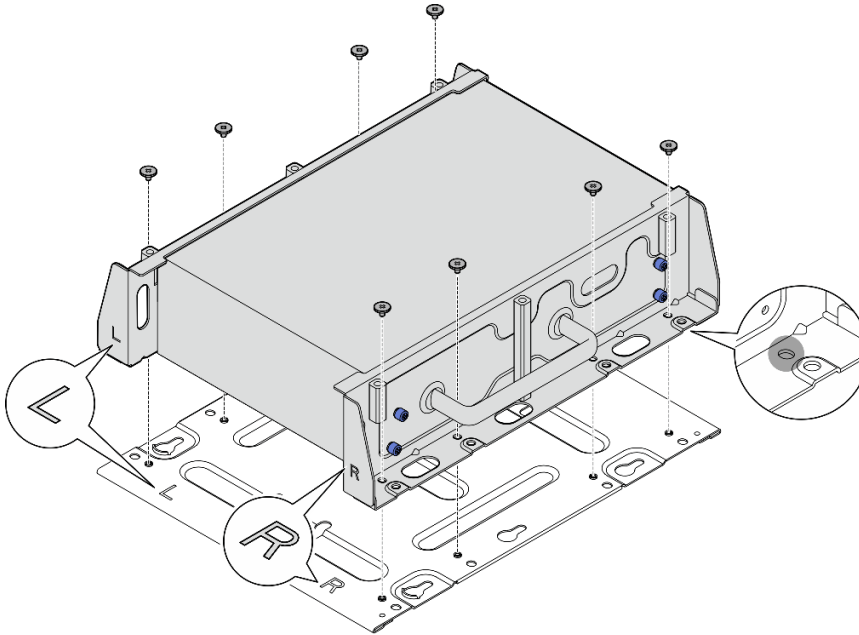


Figure 31. Removing the bottom plate

Step 8. Depending on the model, loosen the four screws or thumbscrews that secure the side bracket to remove the bracket from the node; then, repeat the procedure to the other bracket.

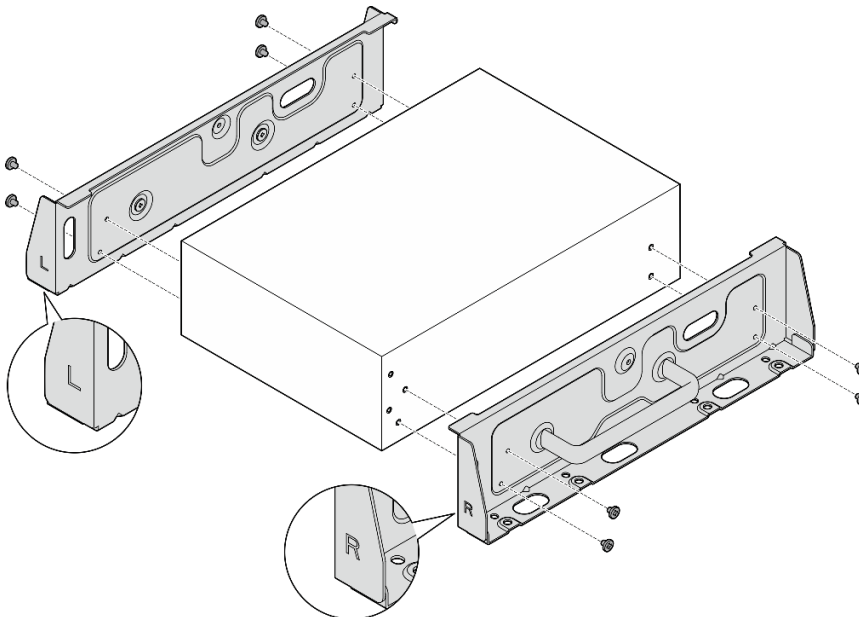


Figure 32. Loosening screws to remove the side brackets



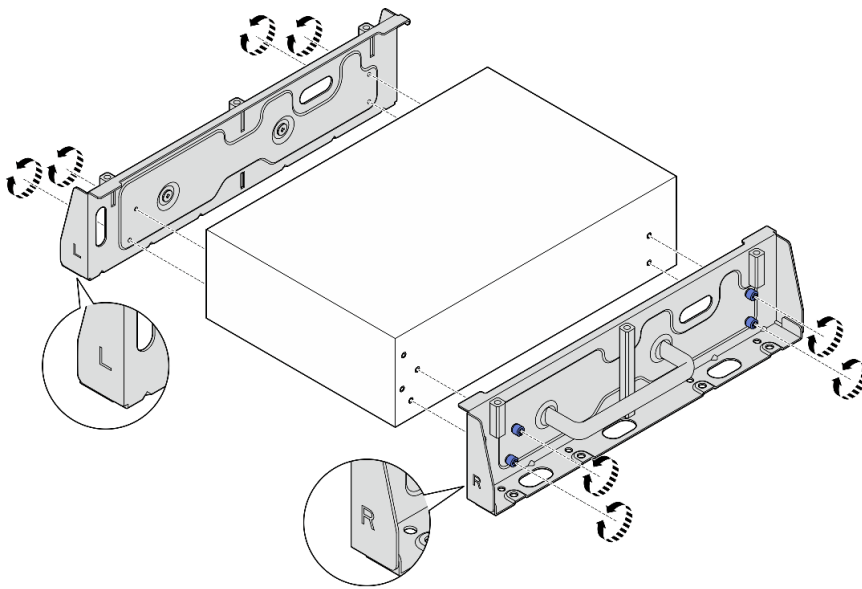


Figure 33. Loosening thumbscrews to remove the side brackets

Step 9. If necessary, secure the two side brackets to the bottom plate with eight screws (four for each bracket) to assemble the node bracket.

**Note:** Make sure to align the “L” and “R” logos on the front of side brackets with the logos on the bottom plate.

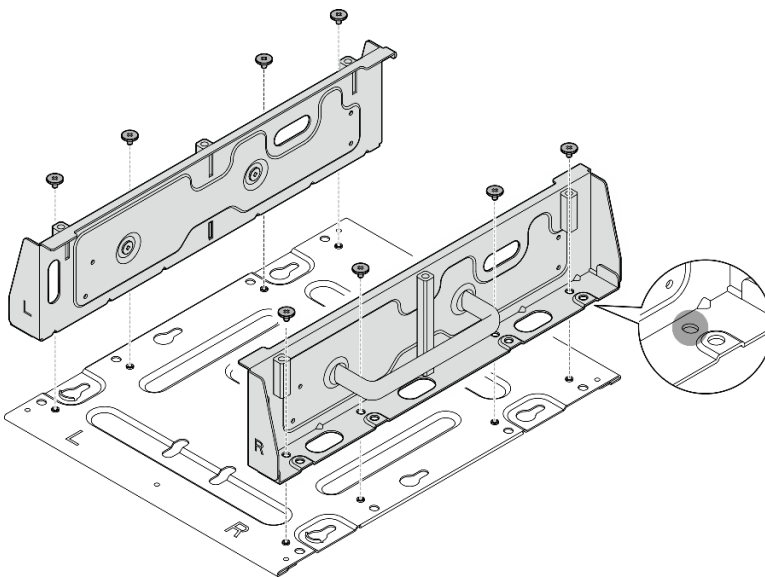


Figure 34. Assembling the node sleeve

Step 10. If necessary, combine the node bracket with the wall-mount plate.

- a. Align the node bracket with the guide pins on the wall-mount plate.
- b. Push the node bracket toward the wall-mount plate; then, slide the node bracket until the guide pins are seated in the small opening of keyholes.

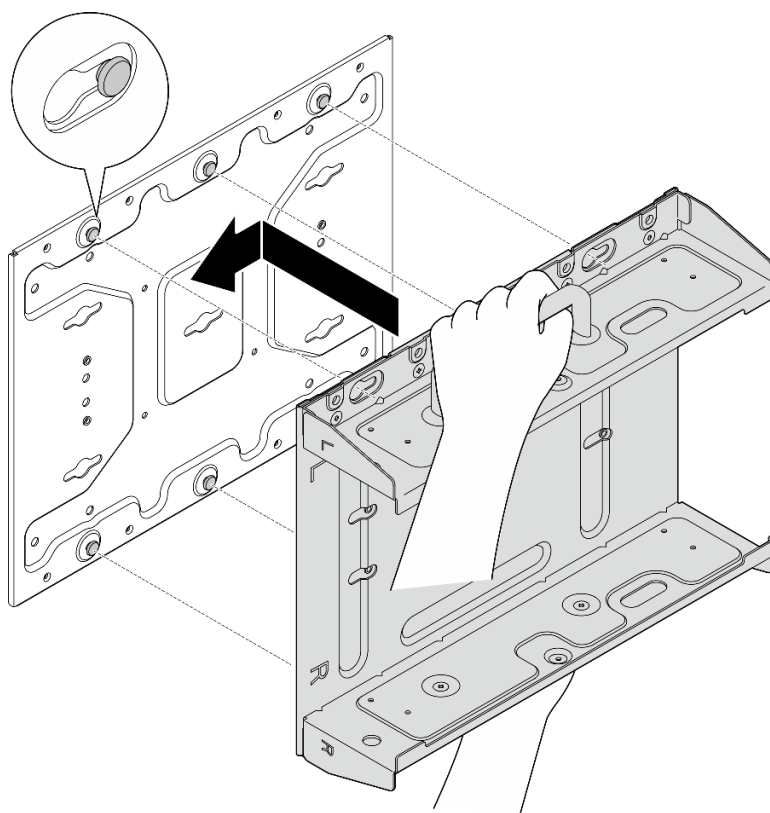


Figure 35. Assembling the node sleeve

- c. Secure the node bracket with eight screws.

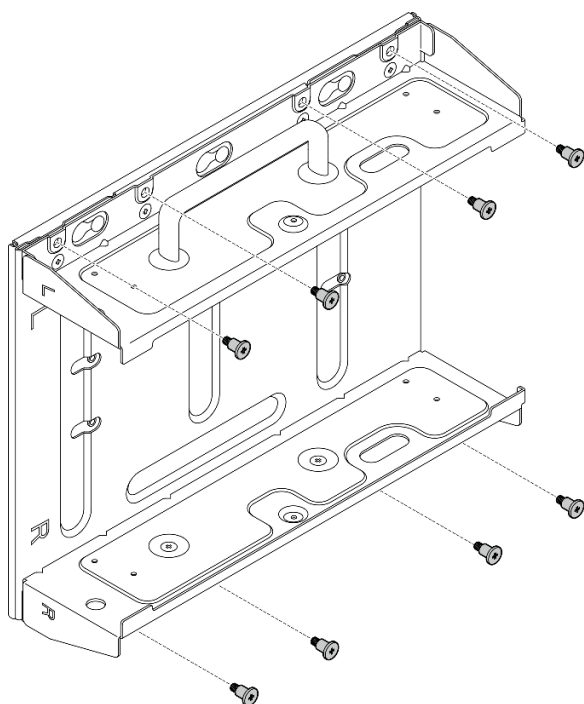


Figure 36. Assembling the node sleeve

## After this task is completed

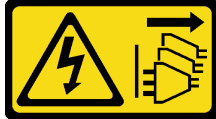
To reinstall the node to the wall, see [“Install a node to the wall or the ceiling” on page 31](#).

## Install a node to the wall or the ceiling

Follow instructions in this section to install a node to the wall or the ceiling.

### About this task

#### S002



#### **CAUTION:**

The power-control button on the device and the power switch on the power supply do not turn off the electrical current supplied to the device. The device also might have more than one power cord. To remove all electrical current from the device, ensure that all power cords are disconnected from the power source.

#### **Attention:**

- Read [“Installation Guidelines” on page 1](#) and [“Safety inspection checklist” on page 2](#) to ensure that you work safely.
- Power off the server and peripheral devices and disconnect the power cords and all external cables. See [“Power off the server” on page 8](#).
- Reserve 500 mm of clearance in front of the node for installation/removal procedure.
- The maximal weight of the SE360 V2 node with node sleeve is 9.54 KG (21.03 lbs). For safe installation, the wall to mount the node must be able to support 4 times of the weight, 38.16 KG (84.12 lbs). If not, the surface must be reinforced to meet this standard.
- Avoid existing in-wall utilities, for example, plumbing, natural gas, or electrical input.

**Important:** This task must be operated by trained technicians.

**Note:** Depending on the model, your server might look slightly different from the illustration.

## Procedure

Step 1. The wall mount configuration requires four M4 screws and four M6 screws. Prepare screws and related parts for this task.

**Note:** The appropriate length of the screw base should be assessed by qualified professionals.

Table 4. Max screw size for the inner four M4 screws

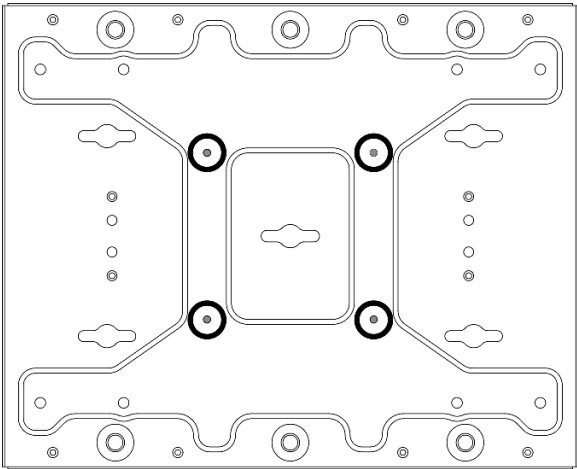
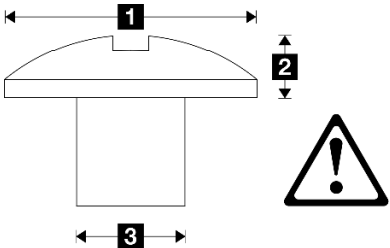
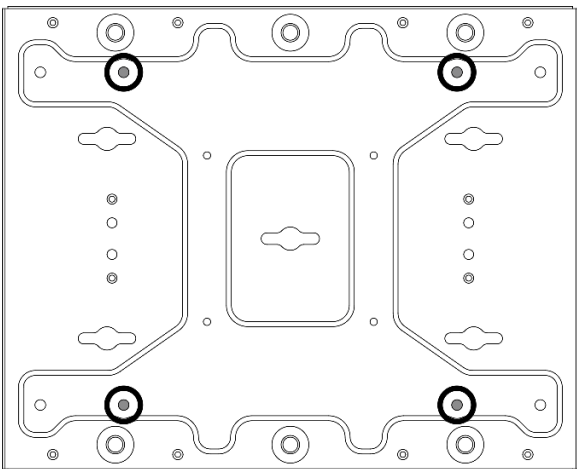
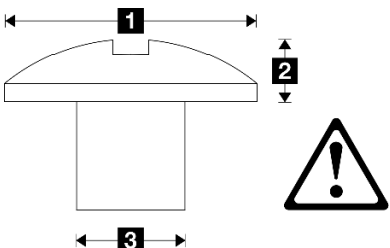
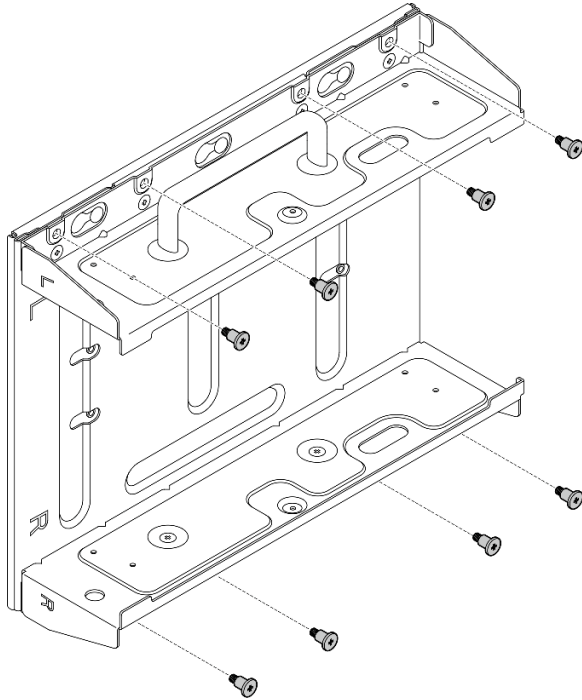
			
	<b>1</b> Ø10 mm	<b>2</b> 3 mm	<b>3</b> 4 mm

Table 5. Screw size for the outer four M6 screws

			
	<b>1</b> Max: Ø14 mm	<b>2</b> Max: 3.4 mm	<b>3</b> 4-6 mm

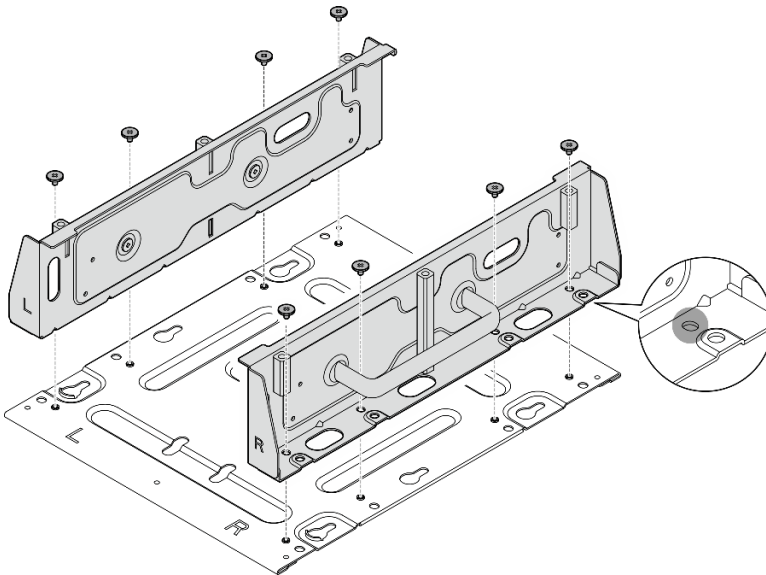
- Step 2. Separate the node bracket from the wall-mount plate.
- Loosen the eight screws that secure the node bracket.



- Slide the node bracket until the guide pins on the wall-mount plate are seated in the large opening of the keyhole; then, remove the node bracket from the wall-mount plate.

*Figure 37. Separating the node bracket*

- Step 3. Loosen the eight screws that secure the two side brackets (four for each side bracket) to disassemble the node bracket.



*Figure 38. Disassembling the node bracket*

- Step 4. If applicable, remove the WLAN antennas. See [“Remove the WLAN antennas” on page 256](#).
- Step 5. If applicable, turn the screw between the two SMA connectors clockwise to shorten the connectors into the chassis.

**Note:** Make sure that the SMA connectors are shortened into the chassis; if the SMA connectors are extended and out of the chassis, the node can not be installed successfully.

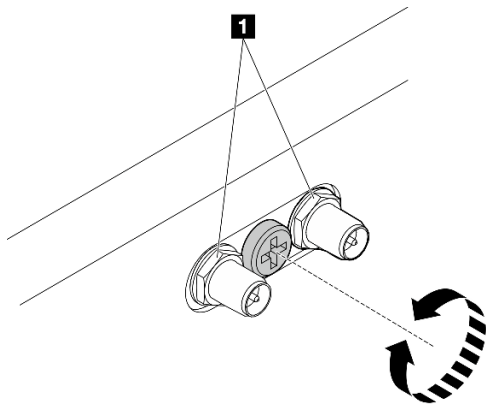


Figure 39. Shortening the SMA connectors

- Step 6. Depending on the model, fasten four screws or thumbscrews to secure one side bracket to the node; then, repeat the procedure to the other side bracket.

**Note:** There are “L” and “R” logos marked on the front of side brackets which represent the left bracket and the right bracket (viewed from the front of the node). Make sure to install the brackets with correct orientation shown in the illustration.

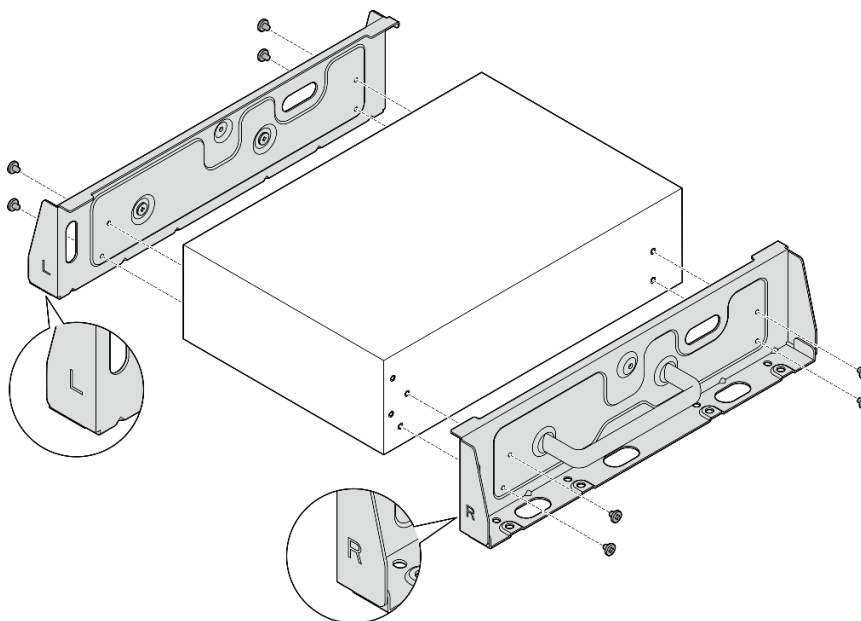


Figure 40. Installing the side brackets with screws

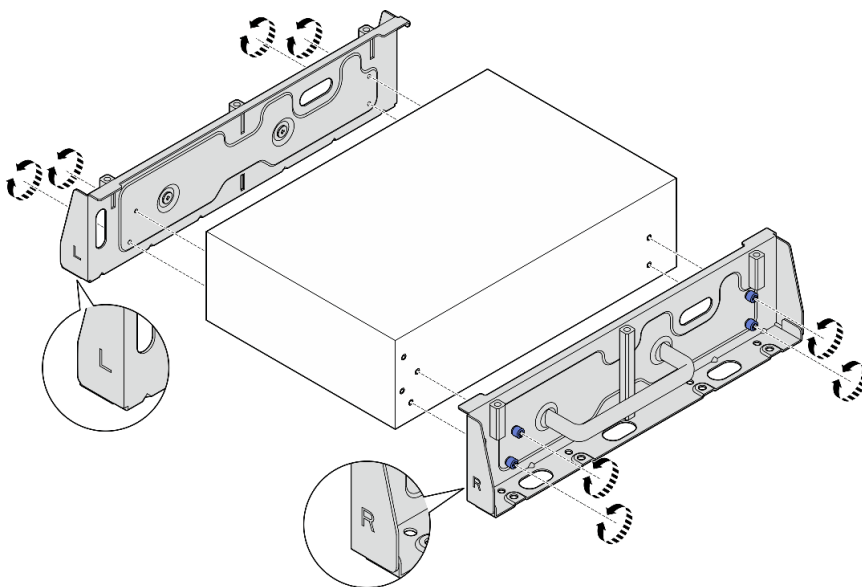


Figure 41. Installing the side brackets with thumbscrews

Step 7. Secure the bottom plate to the node with eight screws (four for each side).

**Note:** Make sure to fasten the screws to the screw holes close to the node.

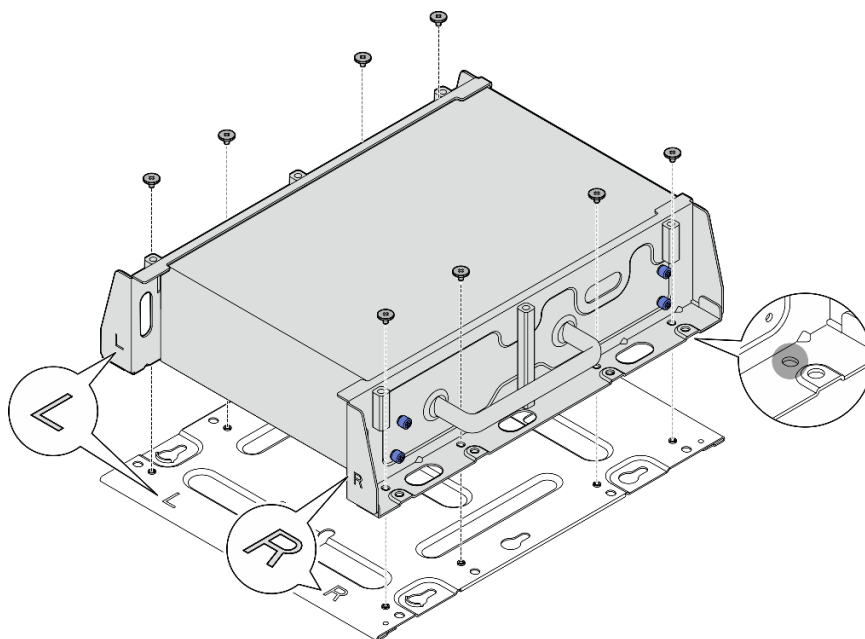


Figure 42. Installing the bottom plate

Step 8. If applicable, fully extend the SMA connectors, and install the WLAN antennas. See [“Install the WLAN antennas” on page 278](#).

- Step 9. (Optional) To mount the node on a flat wall with no screw holes, drill eight screw holes on the wall if necessary.
- Press the wall-mount plate against the mounting location.
  - Mark the locations of screw holes with a pencil.
  - Drill eight screw holes as marked.

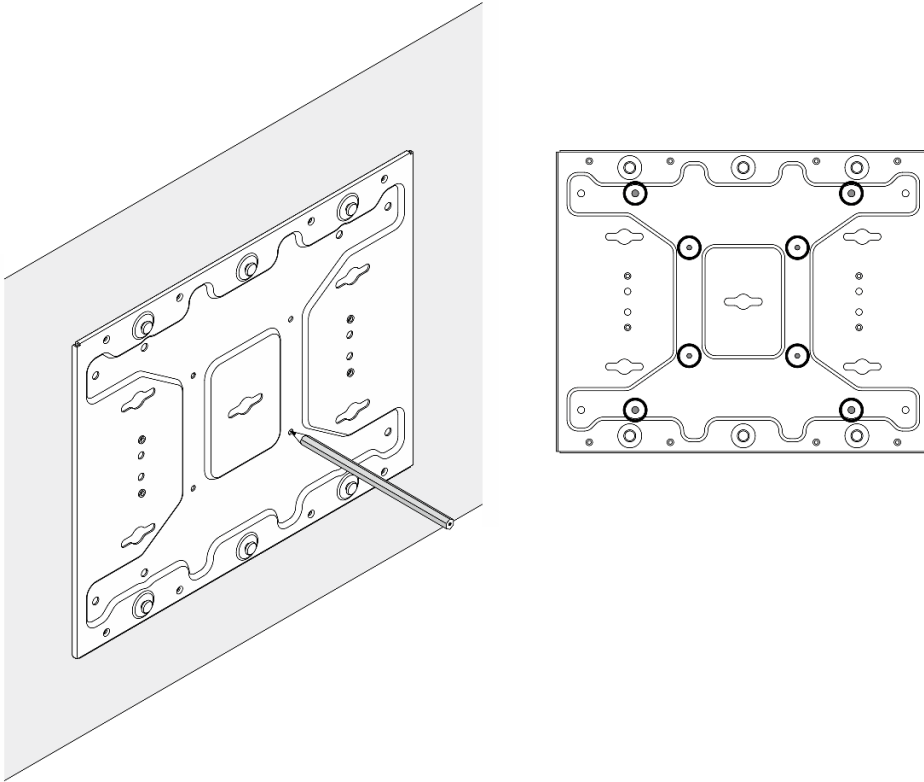


Figure 43. Locations of screw holes



Step 10. Secure the wall-mount plate to the wall with four M4 screws and four M6 screws.

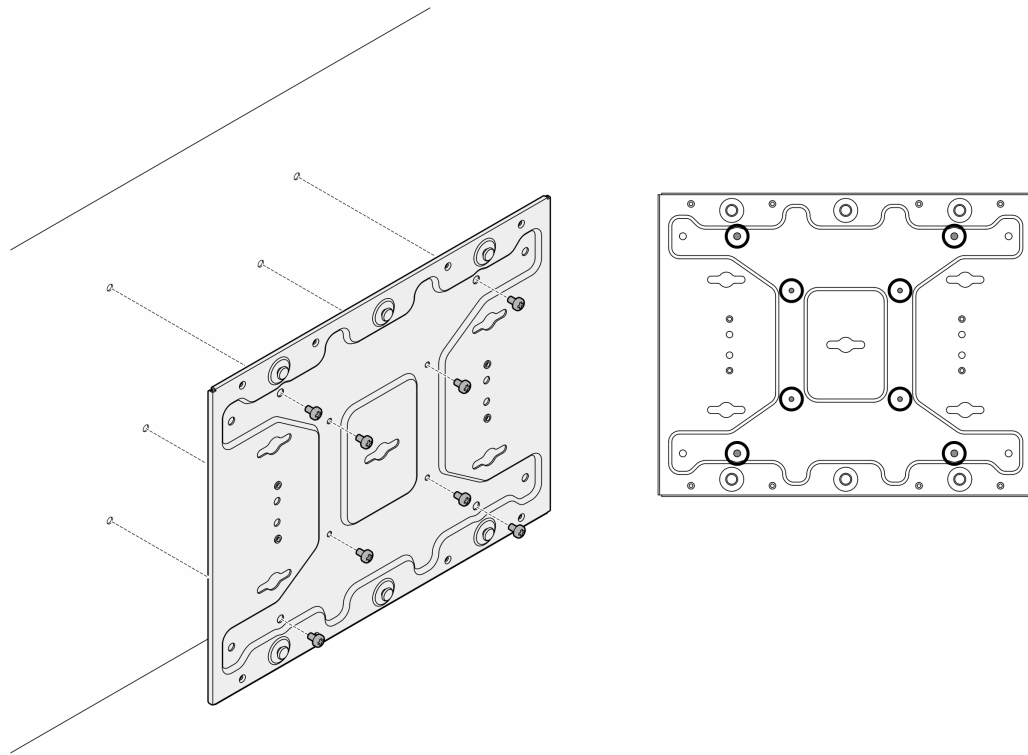


Figure 44. Installing the wall-mount plate

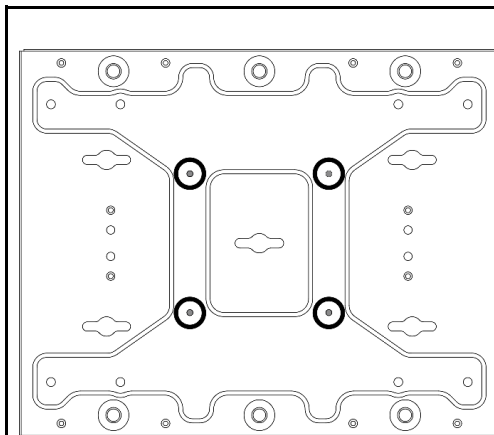


Figure 45. Locations of M4 screws

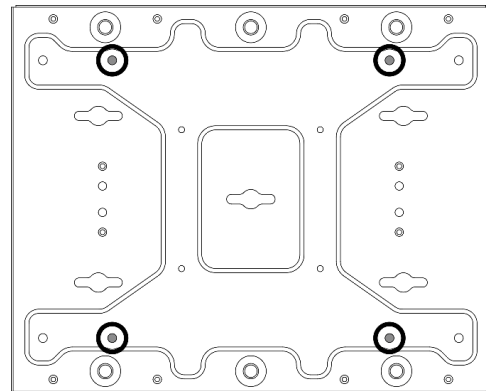


Figure 46. Locations of M6 screws

Step 11. Install the node bracket to the wall-mount plate.

- a. Align the node bracket with the guide pins on the wall-mount plate.
- b. Push the node bracket toward the wall-mount plate; then, slide the node bracket until the guide pins are seated in the small opening of keyholes.

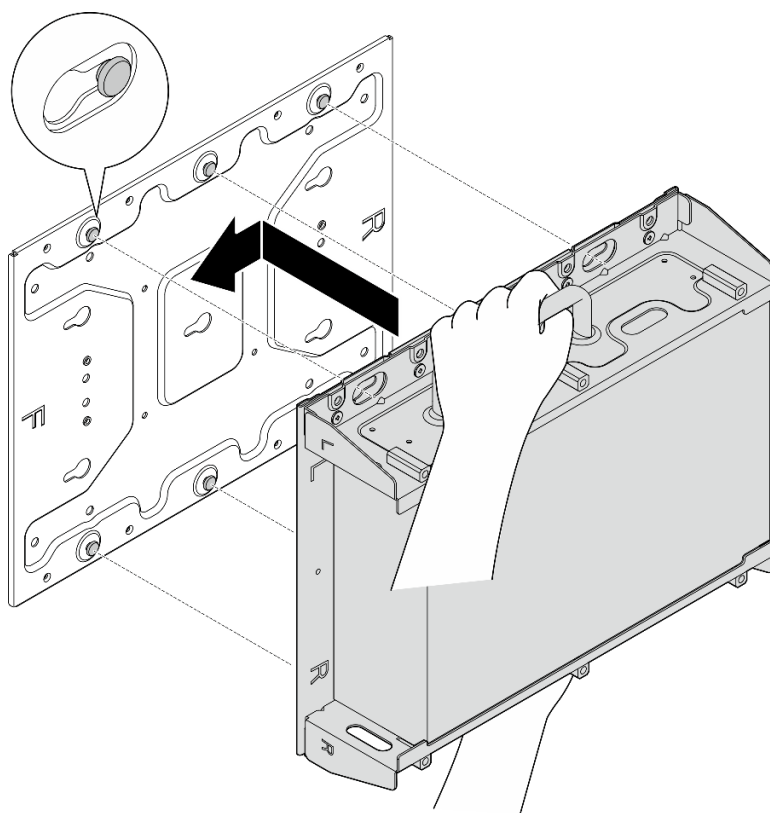


Figure 47. Installing the node bracket

- c. Secure the node sleeve with eight screws.

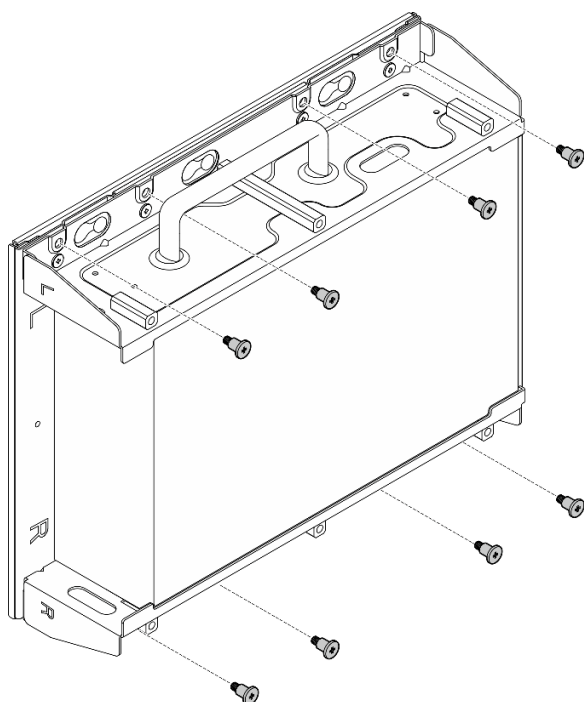


Figure 48. Installing the node bracket

Step 12. Connect the power cable and other necessary external cables to the node.

Step 13. Power on the server and any peripheral devices. See [“Power on the server” on page 8](#).

Step 14. (Optional) If necessary, install the security bezel.

**Note:** When the security bezel is installed, the front operator panel and USB Type-C connectors are not accessible.

- a. ① Insert the tab of security bezel into the slot; then, pivot the security bezel toward the node sleeve until the other side of security bezel clicks into place.

**Note:** Make sure that the external cables in front of the node go through the corresponding openings of the security bezel.

- b. ② Lock the security bezel with the key, and store the key for future use.

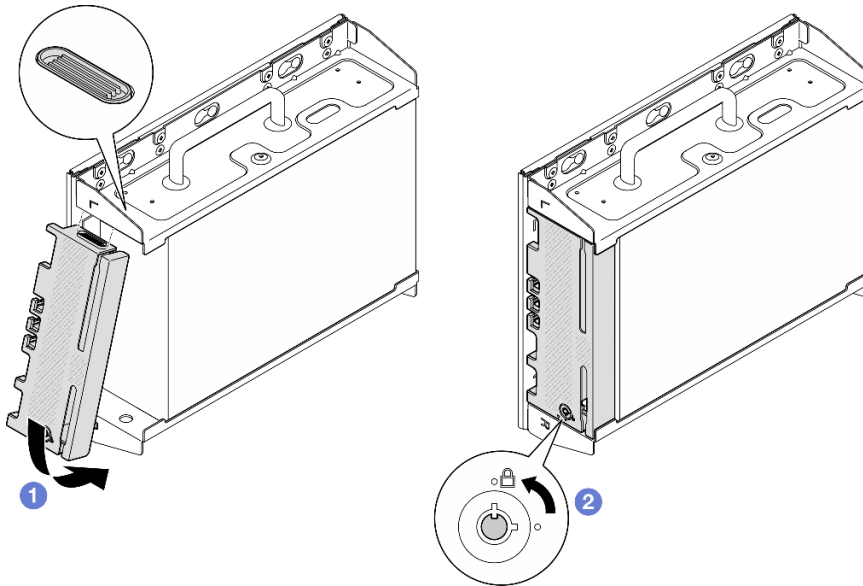


Figure 49. Installing the security bezel

## DIN rail configuration

Follow instructions in this section to remove and install the DIN rail configuration.

### Remove a node from the DIN rail

Follow instructions in this section to remove a node from the DIN rail.

### About this task

#### Attention:

- Read [“Installation Guidelines” on page 1](#) and [“Safety inspection checklist” on page 2](#) to ensure that you work safely.
- Reserve 500 mm of clearance in front of the node for installation/removal procedure.

**Note:** Depending on the model, your server might look slightly different from the illustration.

### Procedure

Step 1. If applicable, remove the security bezel.

- a. ① Unlock the security bezel with the key.
- b. ② Press the tab to disengage the security bezel.
- c. ③ Pivot the security bezel outward, and remove the security bezel.

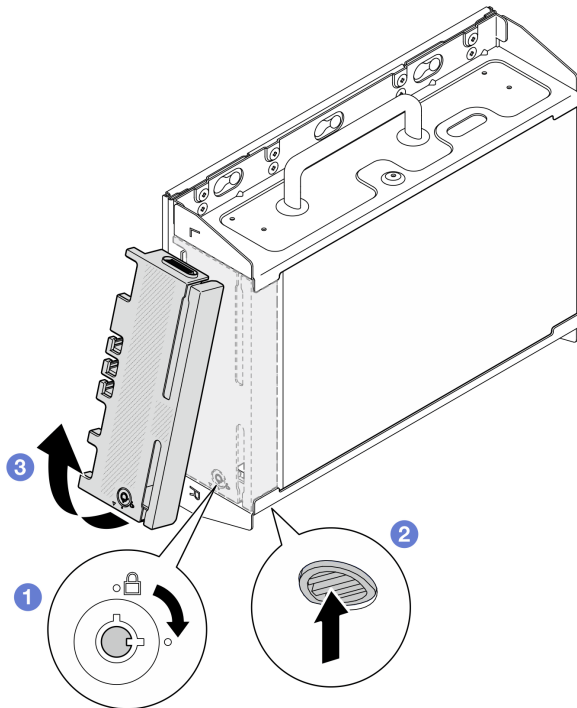


Figure 50. Removing the security bezel

- Step 2. Power off the server and peripheral devices and disconnect the power cords and all external cables. See [“Power off the server” on page 8](#).

#### **S002**



#### **CAUTION:**

The power-control button on the device and the power switch on the power supply do not turn off the electrical current supplied to the device. The device also might have more than one power cord. To remove all electrical current from the device, ensure that all power cords are disconnected from the power source.

- Step 3. Remove the node sleeve from the DIN rail.
- a. ① Lift the node sleeve slightly upward until the top side of DIN rail clips disengage from the rail.
  - b. ② Pivot the node sleeve outward to remove it from the rail.

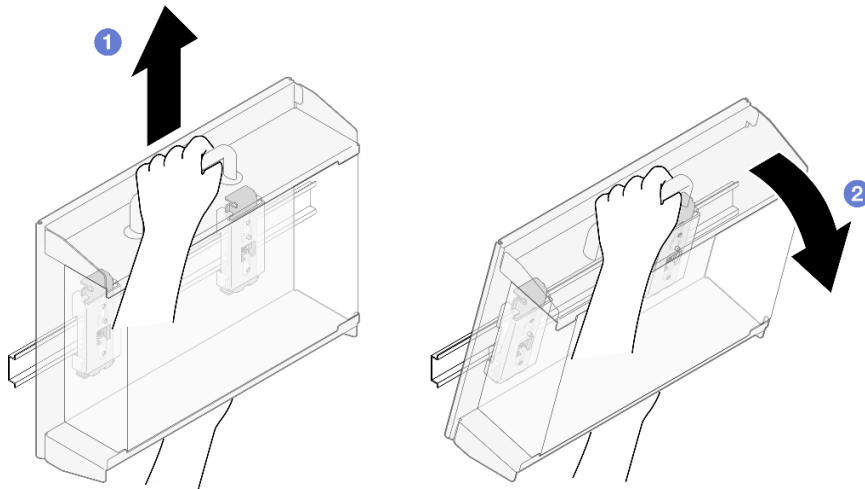


Figure 51. Removing the node sleeve

Step 4. If applicable, remove the WLAN antennas. See [“Remove the WLAN antennas” on page 256](#).

Step 5. If applicable, turn the screw between the two SMA connectors clockwise to shorten the connectors into the chassis.

**Note:** Make sure that the SMA connectors are shortened into the chassis; if the SMA connectors are extended and out of the chassis, the node can not be removed successfully.

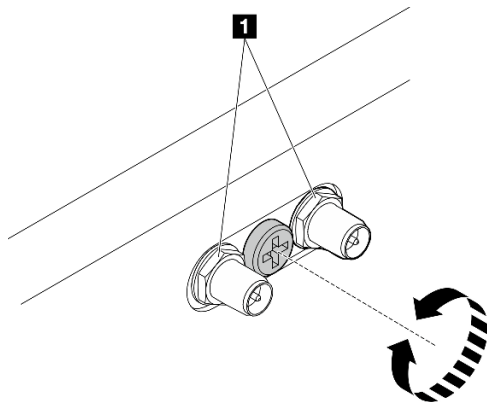


Figure 52. Shortening the SMA connectors

Step 6. Loosen the four screws that secure the two DIN rail clips; then, remove the clips from the node sleeve.

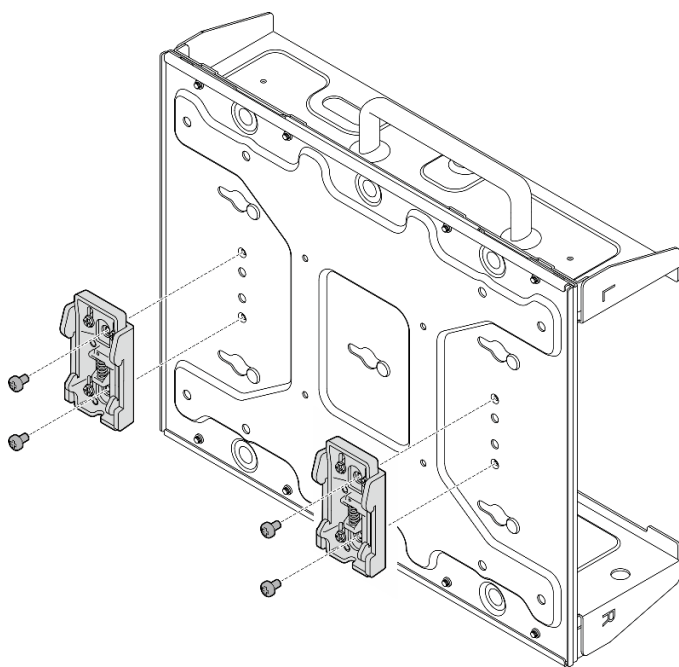


Figure 53. Removing the DIN rail clips

- Step 7. Loosen the eight screws (four for each side) that secure the bottom plate to remove the plate from the node.

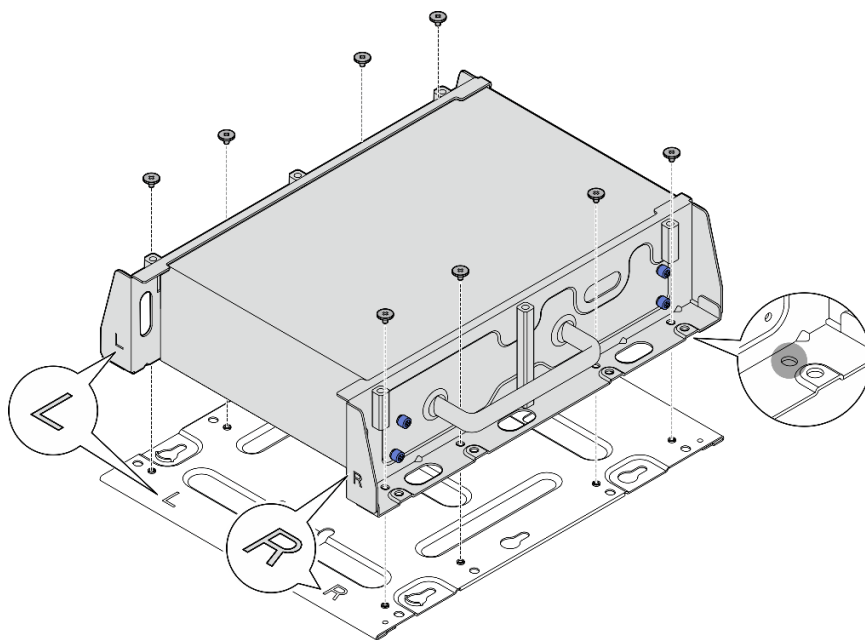


Figure 54. Removing the bottom plate

- Step 8. Depending on the model, loosen the four screws or thumbscrews that secure the side bracket to remove the bracket from the node; then, repeat the procedure to the other bracket.

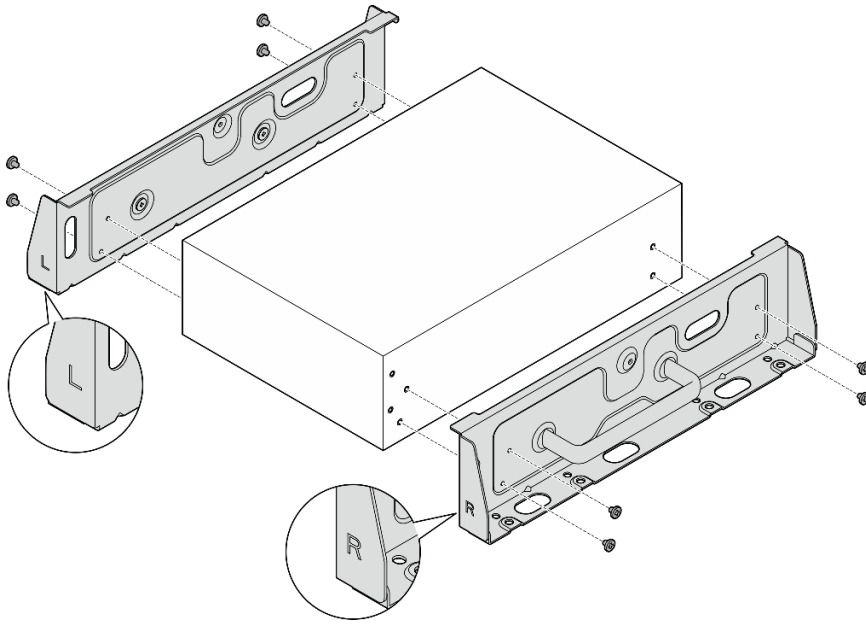


Figure 55. Loosening screws to remove the side brackets

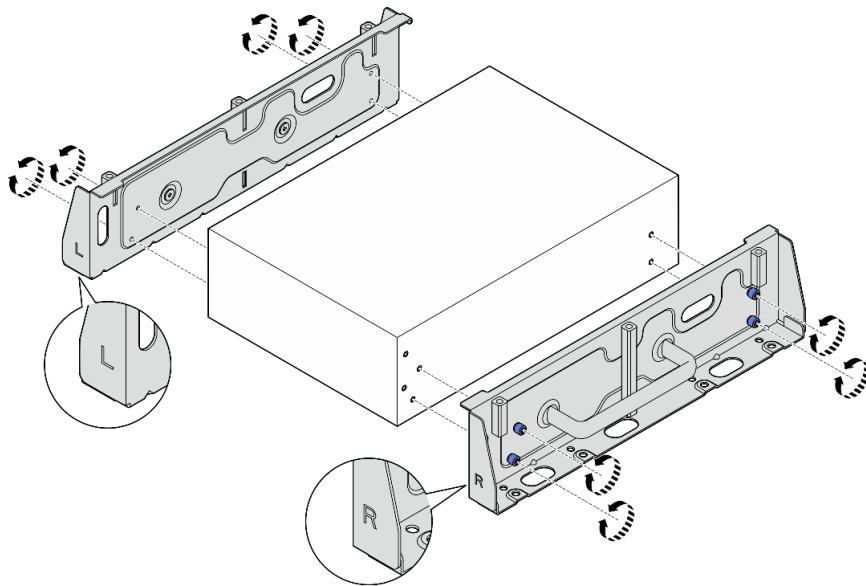


Figure 56. Loosening thumbscrews to remove the side brackets

- Step 9. If necessary, secure the two side brackets to the bottom plate with eight screws (four for each bracket) to assemble the node bracket.

**Note:** Make sure to align the “L” and “R” logos on the front of side brackets with the logos on the bottom plate.

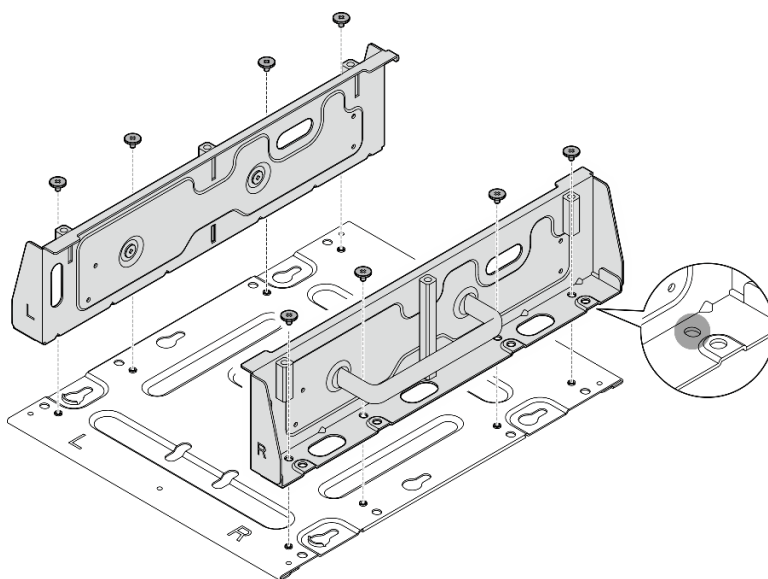


Figure 57. Assembling the node sleeve

## After this task is completed

To reinstall the node to the DIN rail, see [“Install a node to the DIN rail” on page 44](#).

## Install a node to the DIN rail

Follow instructions in this section to install a node to the DIN rail.

## About this task

### S002



### CAUTION:

The power-control button on the device and the power switch on the power supply do not turn off the electrical current supplied to the device. The device also might have more than one power cord. To remove all electrical current from the device, ensure that all power cords are disconnected from the power source.

### Attention:

- Read [“Installation Guidelines” on page 1](#) and [“Safety inspection checklist” on page 2](#) to ensure that you work safely.
- Power off the server and peripheral devices and disconnect the power cords and all external cables. See [“Power off the server” on page 8](#).
- Reserve 500 mm of clearance in front of the node for installation/removal procedure.

**Note:** Depending on the model, your server might look slightly different from the illustration.

## Procedure



- Step 1. If applicable, remove the WLAN antennas. See [“Remove the WLAN antennas” on page 256](#).
- Step 2. If applicable, turn the screw between the two SMA connectors clockwise to shorten the connectors into the chassis.

**Note:** Make sure that the SMA connectors are shortened into the chassis; if the SMA connectors are extended and out of the chassis, the node can not be installed successfully.

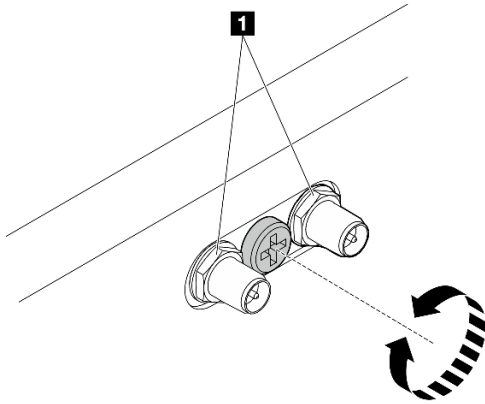


Figure 58. Shortening the SMA connectors

- Step 3. Loosen the eight screws that secure the two side brackets (four for each side bracket) to disassemble the node bracket.

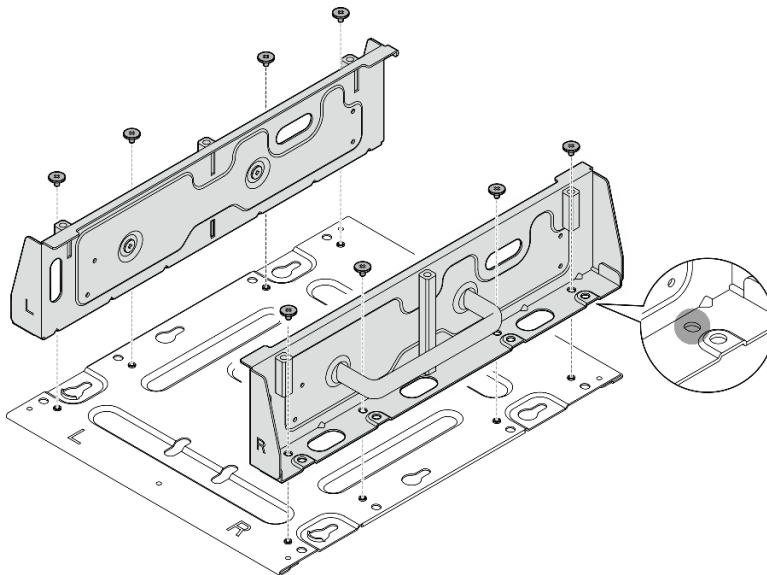


Figure 59. Disassembling the node bracket

- Step 4. Depending on the model, fasten four screws or thumbscrews to secure one side bracket to the node; then, repeat the procedure to the other side bracket.

**Note:** There are “L” and “R” logos marked on the front of side brackets which represent the left bracket and the right bracket (viewed from the front of the node). Make sure to install the brackets with correct orientation shown in the illustration.

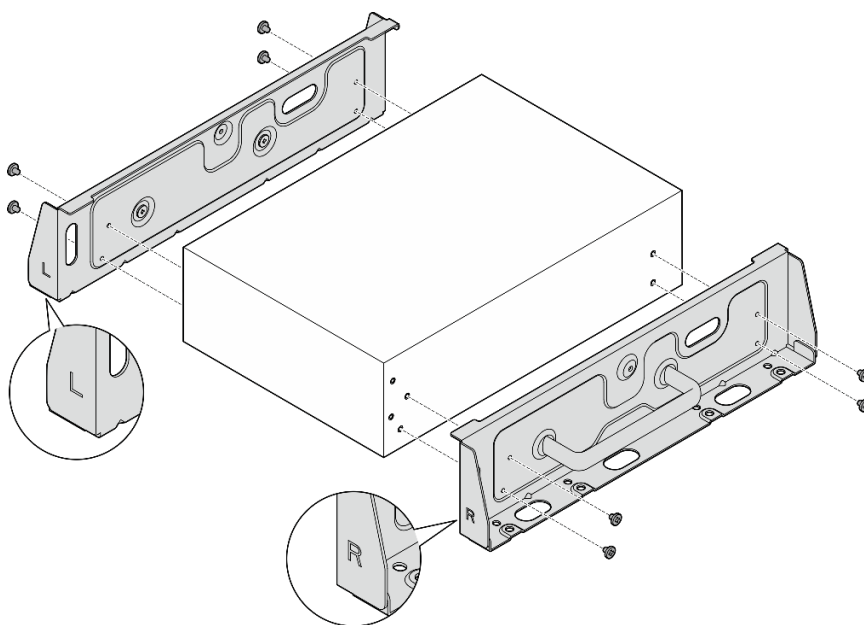


Figure 60. Installing the side brackets with screws

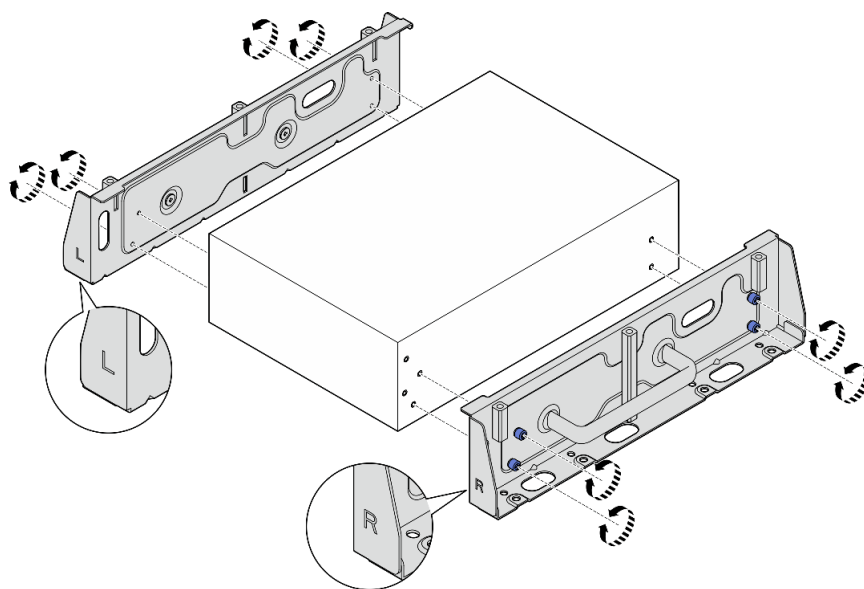


Figure 61. Installing the side brackets with thumbscrews

Step 5. Secure the bottom plate to the node with eight screws (four for each side).

**Note:** Make sure to fasten the screws to the screw holes close to the node.

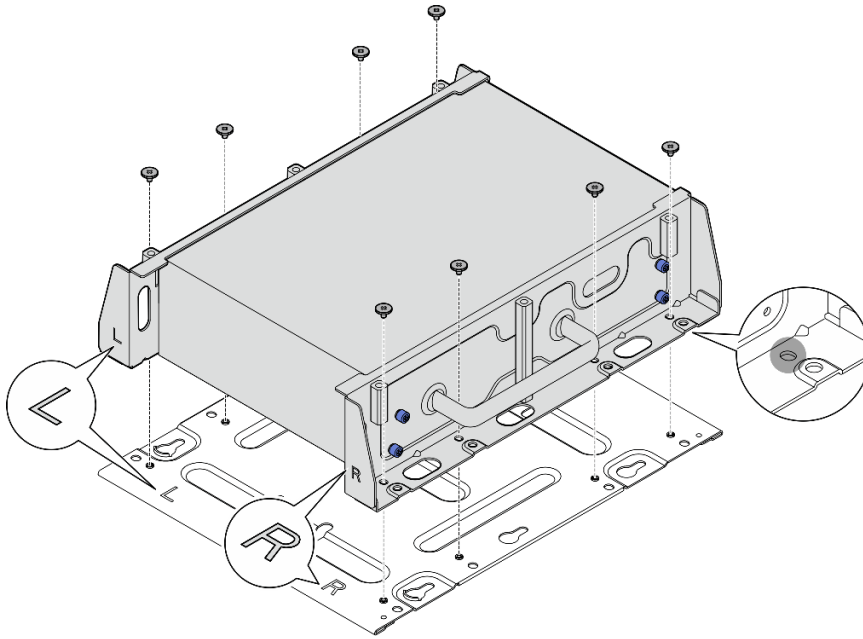


Figure 62. Installing the bottom plate

Step 6. Secure the DIN rail clips to the node sleeve with two screws for each clip.

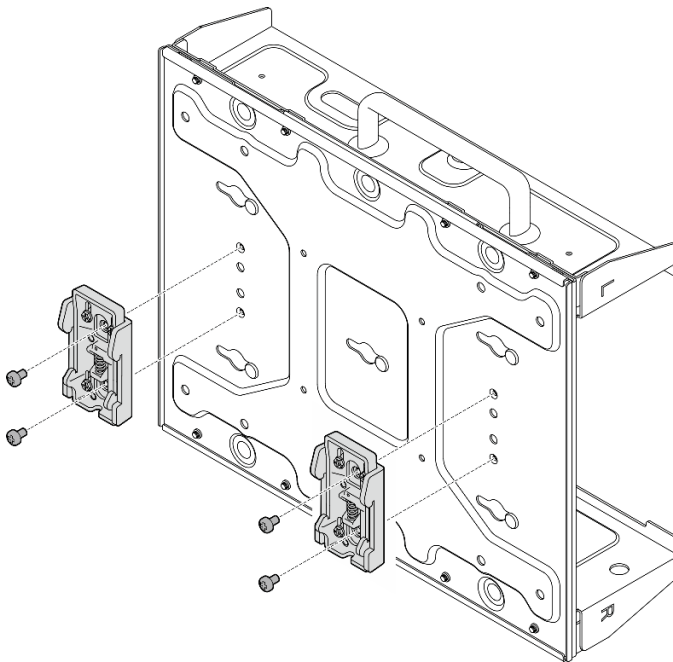


Figure 63. Installing the DIN rail clips

Step 7. If applicable, fully extend the SMA connectors, and install the WLAN antennas. See [“Install the WLAN antennas” on page 278](#).

Step 8. Mount the node sleeve to the DIN rail.

- a. ① Hook the top side of DIN rail clips onto the rail at an angle.
- b. ② Pivot the node sleeve toward the DIN rail, and ensure the DIN rail clips are securely seated.

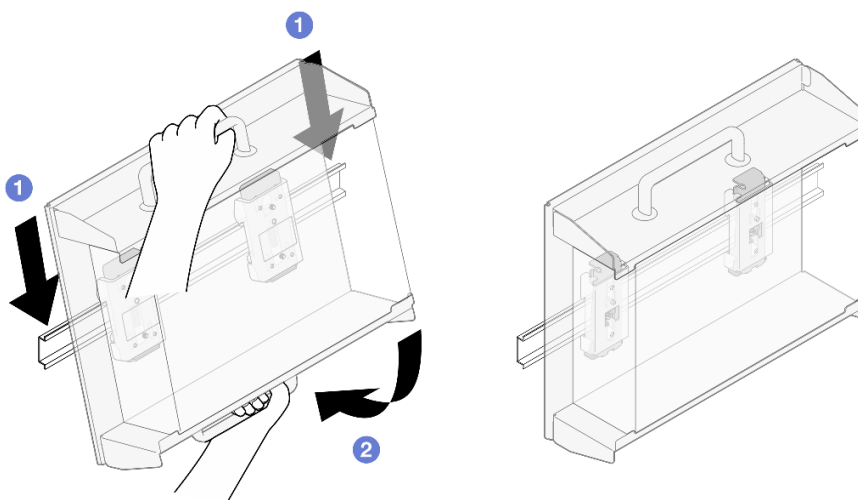


Figure 64. Installing the node sleeve

Step 9. Connect the power cable and other necessary external cables to the node.

Step 10. Power on the server and any peripheral devices. See [“Power on the server” on page 8](#).

Step 11. (Optional) If necessary, install the security bezel.

**Note:** When the security bezel is installed, the front operator panel and USB Type-C connectors are not accessible.

- a. ① Insert the tab of security bezel into the slot; then, pivot the security bezel toward the node sleeve until the other side of security bezel clicks into place.

**Note:** Make sure that the external cables in front of the node go through the corresponding openings of the security bezel.

- b. ② Lock the security bezel with the key, and store the key for future use.

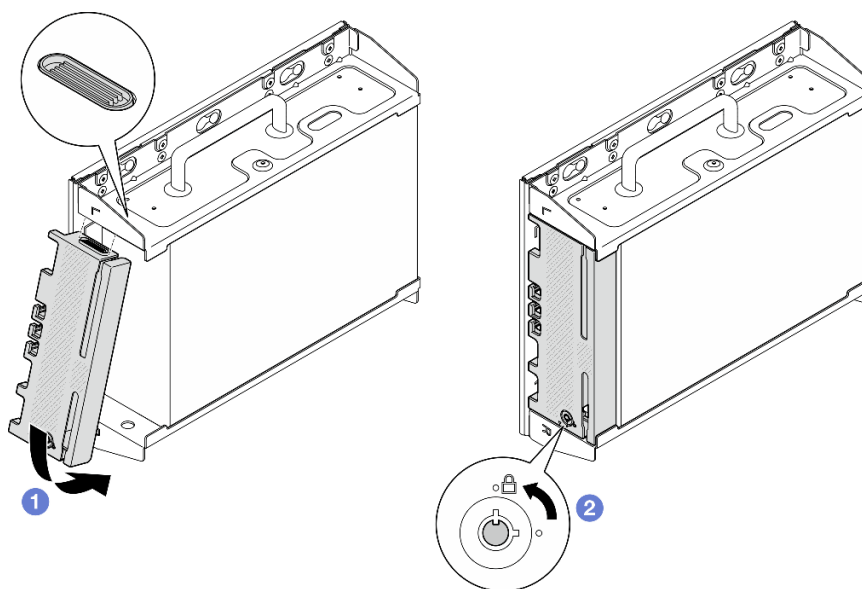


Figure 65. Installing the security bezel

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## Dust filter replacement

Follow instructions in this section to remove and install the dust filters.

### Remove the dust filter from the shipping bracket

Follow instructions in this section to remove the dust filter from the shipping bracket.

#### About this task

##### Attention:

- Read [“Installation Guidelines” on page 1](#) and [“Safety inspection checklist” on page 2](#) to ensure that you work safely.

#### Procedure

- Step 1. Loosen the captive screws of the shipping bracket.
- Loosen the three captive screws on the front.
  - Loosen the four captive screws on both sides.
  - Loosen the captive screw on the top.

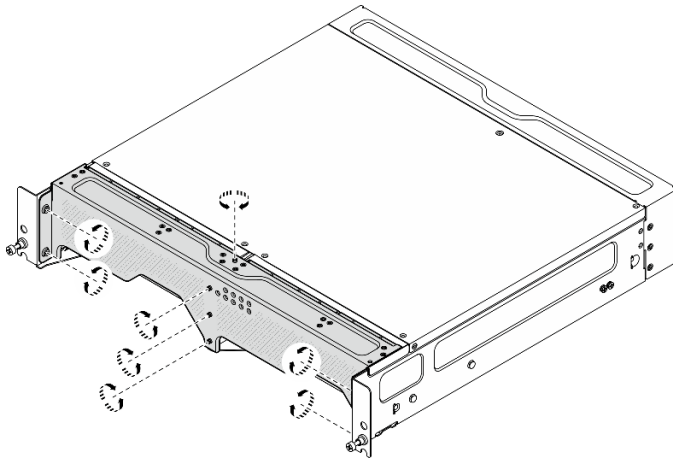


Figure 66. Loosening the screws

- Step 2. Pull the shipping bracket to remove it from the enclosure.

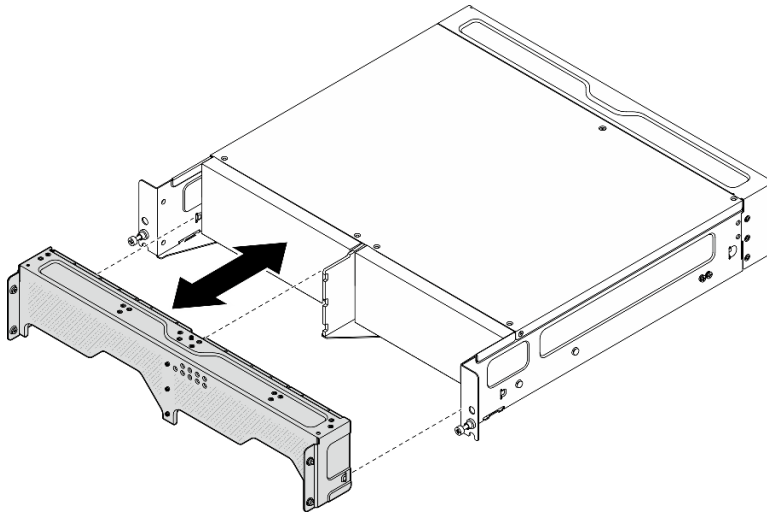


Figure 67. Removing the shipping bracket

Step 3. Remove the dust filters from the shipping bracket.

**Notes:**

- Depending on the configuration, some parts in the following illustration might not come with the system.
- For optimal server operation, make sure to install a replacement dust filter.

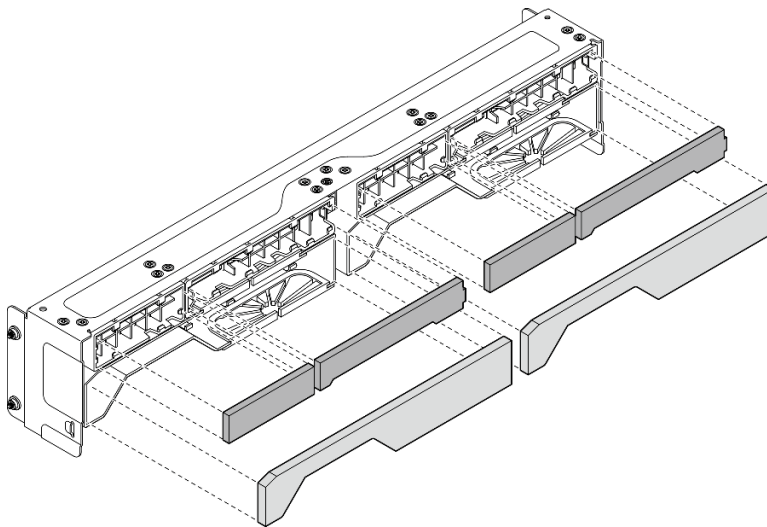


Figure 68. Removing the dust filters

**After this task is completed**

- Install a replacement unit. See [“Install the dust filter to the shipping bracket” on page 50](#).
- If you are instructed to return the component or optional device, follow all packaging instructions, and use any packaging materials for shipping that are supplied to you.

**Install the dust filter to the shipping bracket**

Follow instructions in this section to install the dust filter to the shipping bracket.

## About this task

### Attention:

- Read [“Installation Guidelines” on page 1](#) and [“Safety inspection checklist” on page 2](#) to ensure that you work safely.
- Depends on the operating environment, check the status of the dust filter at least every 3 months to make sure it is functional.

SE360 V2 2U2N Enclosure supports a set of dust filters installed in the front shipping bracket. The dust filter set has a Minimum Efficiency Rating Value (MERV) of 5, per ASHRAE 52.2-2017 / 80% Average Arrestance per ASHRAE 52.1-1992.

### Procedure

Step 1. Insert the dust filters into the corresponding slots of shipping bracket until they are firmly seated.

**Note:** Depending on the configuration, some parts in the following illustration might not come with the system.

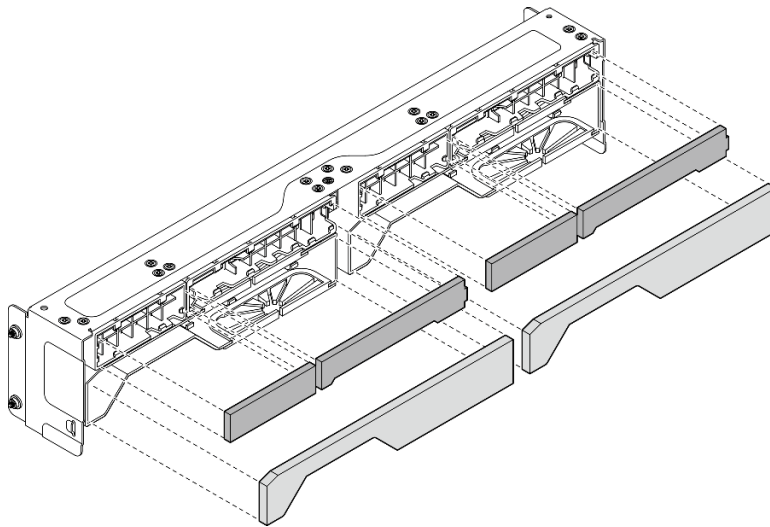


Figure 69. Installing the dust filters

Step 2. Push the shipping bracket toward the enclosure until it is firmly seated.

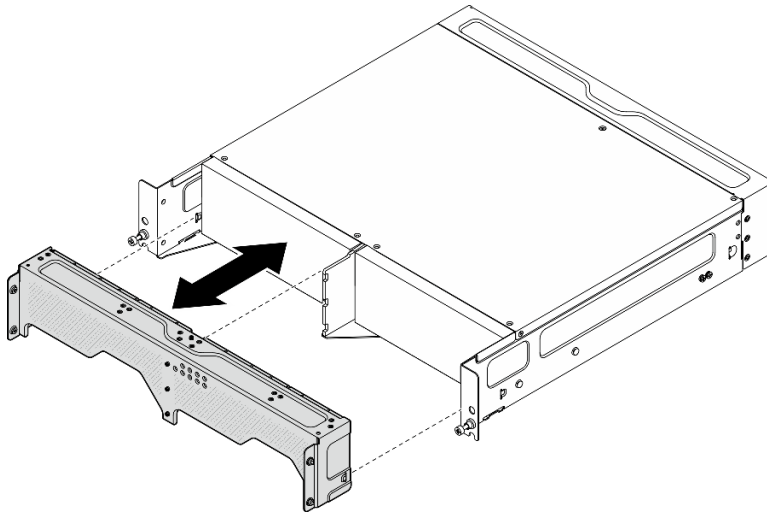


Figure 70. Installing the shipping bracket

Step 3. Secure the captive screws of the shipping bracket.

- a. Fasten the captive screw on the top.
- b. Fasten the four captive screws on both sides.
- c. Fasten the three captive screws on the front.

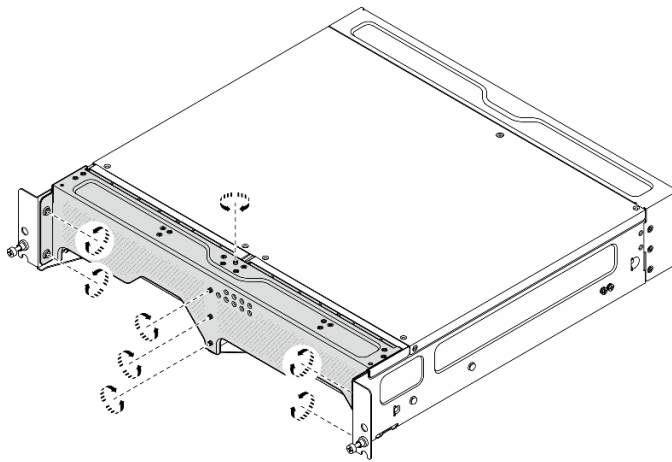


Figure 71. Fastening the screws

## Remove the rear dust filter

Follow instructions in this section to remove the rear dust filter.

### About this task

#### Attention:

- Read [“Installation Guidelines” on page 1](#) and [“Safety inspection checklist” on page 2](#) to ensure that you work safely.
- If the node is installed in an enclosure or mounted, remove the node from the enclosure or mount. See [“Configuration guide” on page 9](#).



## Procedure

Step 1. Loosen the two captive screws that secure the rear bezel; then, remove the bezel.

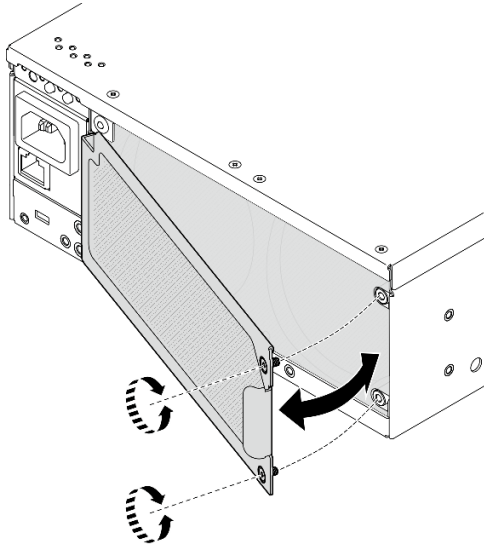


Figure 72. Removing the bezel

Step 2. Remove the dust filter from the chassis.

**Note:** For optimal server operation, make sure to install a replacement dust filter.

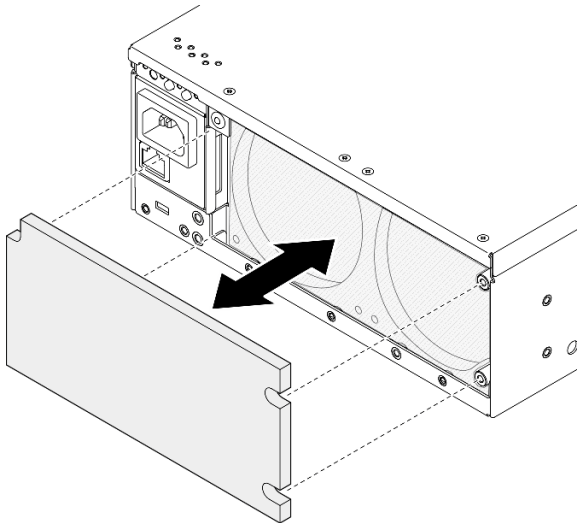


Figure 73. Removing the dust filter

## After this task is completed

- Install a replacement unit. See [“Install the rear dust filter” on page 54](#).
- If you are instructed to return the component or optional device, follow all packaging instructions, and use any packaging materials for shipping that are supplied to you.

## Demo Video

[Watch the procedure on YouTube](#)

## Install the rear dust filter

Follow instructions in this section to install the rear dust filter.

### About this task

#### Attention:

- Read [“Installation Guidelines” on page 1](#) and [“Safety inspection checklist” on page 2](#) to ensure that you work safely.
- Depends on the operating environment, check the status of the dust filter at least every 3 months to make sure it is functional.

**Important:** With air flow sensor board installed, SE360 V2 BMC supports dust filter measurement feature to check the status of the rear dust filter. Log in to Lenovo XClarity Controller web interface, and go to **Utilization → Fan Speed (RPM) → Dust Filter Measurement** to take the measurement by selecting **Run immediately (once)**, or by setting a regular schedule. See “Set dust filter measurement” in *User Guide* or *System Configuration Guide* for more information.

- When taking the measurement, the fans will operate at full fan speed for about 30 seconds.
- After taking the measurement, see Lenovo XClarity Controller Event Log for the status of rear dust filter. For proper operation, replace the rear dust filter according to the action suggestions in the generated event.

SE360 V2 supports a dust filter installed at rear of the node. The dust filter has a Minimum Efficiency Rating Value (MERV) of 5, per ASHRAE 52.2-2017 / 80% Average Arrestance per ASHRAE 52.1-1992.

### Procedure

Step 1. Place the dust filter into the chassis.

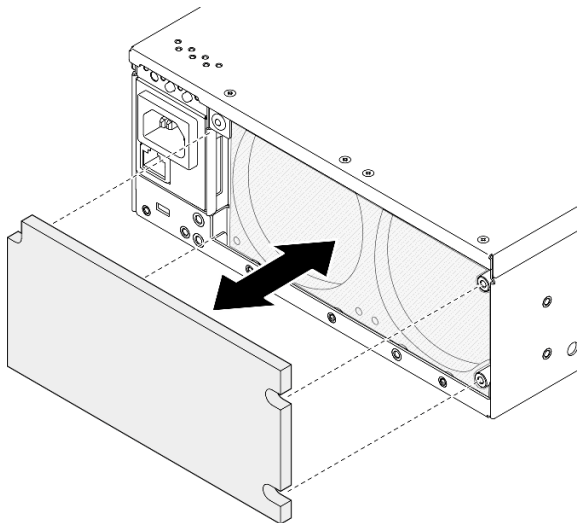


Figure 74. Installing the dust filter

Step 2. Align the rear bezel with the chassis; then, fasten the two captive screws to secure the bezel.

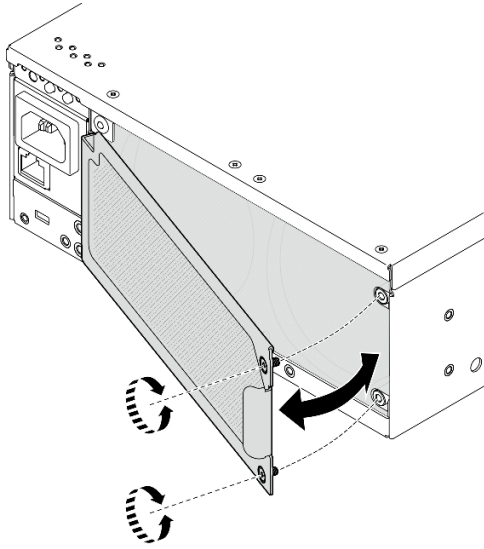


Figure 75. Installing the bezel

## After this task is completed

Complete the parts replacement. See [“Complete the parts replacement” on page 281](#).

## Demo Video

[Watch the procedure on YouTube](#)

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## Node component replacement

Follow instructions in this section to remove and install the node components.

### 7mm hot-swap drive replacement

Follow instructions in this section to remove and install a 7mm hot-swap drive.

#### Remove a 7mm hot-swap drive

Follow instructions in this section to remove a 7mm hot-swap drive.

#### About this task

##### Attention:

- Read [“Installation Guidelines” on page 1](#) and [“Safety inspection checklist” on page 2](#) to ensure that you work safely.
- If the node is installed in an enclosure or mounted, remove the node from the enclosure or mount. See [“Configuration guide” on page 9](#).
- To make sure that there is adequate system cooling, do not operate the server for more than two minutes without either a drive or a filler installed in each bay.
- If one or more NVMe solid-state drives are to be removed, it is recommended to disable them beforehand via the operating system.
- Before you remove or make changes to drives, drive controllers (including controllers that are integrated on the system board), drive backplanes, or drive cables, make sure to back up all important data stored in drives.

- Before you remove any component of a RAID array (drive, RAID card, etc.), back up all RAID configuration information.

**Note:** Make sure you have the drive bay fillers available if some drive bays will be left empty after the removal.

## Procedure

Step 1. Loosen the captive screw that secures the bezel; then, remove the bezel.

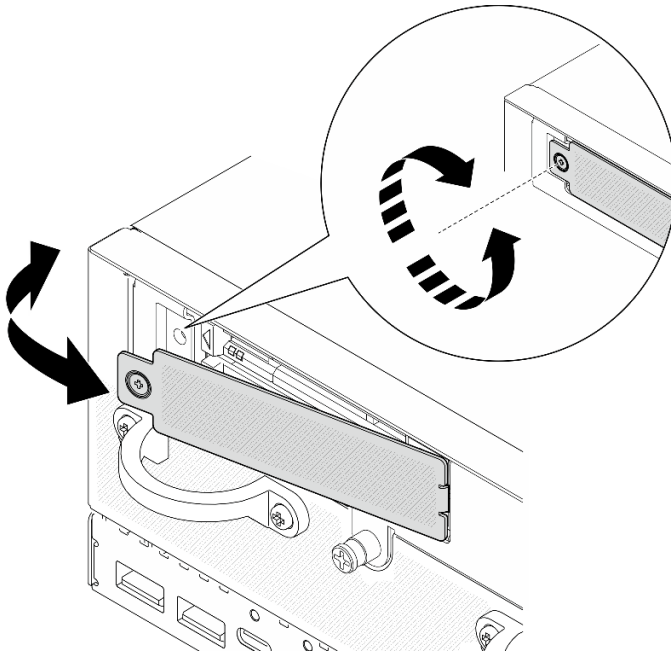


Figure 76. Removing the bezel

Step 2. Remove the 7mm drive.

- 1 Slide the release latch to unlock the drive handle.
- 2 The handle opens automatically.
- 3 Grasp and pull the handle to remove the drive from the drive bay.

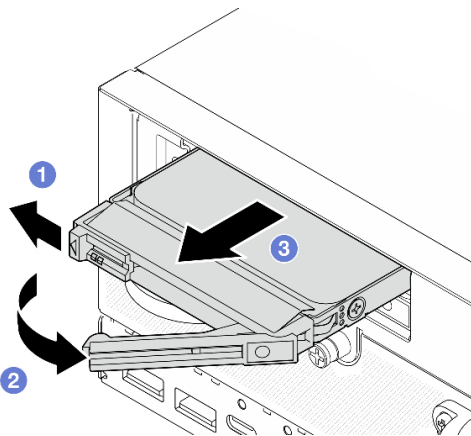


Figure 77. Removing a 7mm drive

## After this task is completed

- Install a new drive or drive filler into the vacant drive bay. See [“Install a 7mm hot-swap drive” on page 57](#).

**Note:** To make sure that there is adequate system cooling, do not operate the server for more than two minutes without either a drive or a filler installed in each bay.

- If you are instructed to return the component or optional device, follow all packaging instructions, and use any packaging materials for shipping that are supplied to you.

## Demo Video

[Watch the procedure on YouTube](#)

## Install a 7mm hot-swap drive

Follow instructions in this section to install a 7mm hot-swap drive.

## About this task

### Attention:

- Read [“Installation Guidelines” on page 1](#) and [“Safety inspection checklist” on page 2](#) to ensure that you work safely.
- Touch the static-protective package that contains the component to any unpainted metal surface on the server; then, remove it from the package and place it on a static-protective surface.
- To make sure that there is adequate system cooling, do not operate the server for more than two minutes without either a drive or a filler installed in each bay.
- Before you remove or make changes to drives, drive controllers (including controllers that are integrated on the system board), drive backplanes, or drive cables, make sure to back up all important data stored in drives.
- Before you remove any component of a RAID array (drive, RAID card, etc.), back up all RAID configuration information.

The following notes describe the type of drives that the server supports and other information that you must consider when you install a drive. For a list of supported drives, see <https://serverproven.lenovo.com>.

- Locate the documentation that comes with the drive and follow those instructions in addition to the instructions in this chapter.
- For a complete list of supported optional devices for the server, see <https://serverproven.lenovo.com>.
- Depending on the models, the server supports up to two 7mm 2.5-inch hot-swap SATA/NVMe drives.
- The drive bays are numbered to indicate the installation order (starting from number “0”). Follow the installation order when you install a drive.
  - The upper bay: Bay 0
  - The lower bay: Bay 1

**Firmware and driver download:** You might need to update the firmware or driver after replacing a component.

- Go to <https://datacentersupport.lenovo.com/products/servers/thinkedge/se360v2/7dam/downloads/driver-list/> to see the latest firmware and driver updates for your server.
- Go to “Update the firmware” in *User Guide* or *System Configuration Guide* for more information on firmware updating tools.

## Procedure

Step 1. If a drive filler is installed in the drive bay, remove it first. Keep the drive filler in a safe place for future use.

- a. ① Slide the release latch to unlock the handle.
- b. ② The handle opens automatically.
- c. ③ Grasp and pull the handle to remove the drive filler from the drive bay.

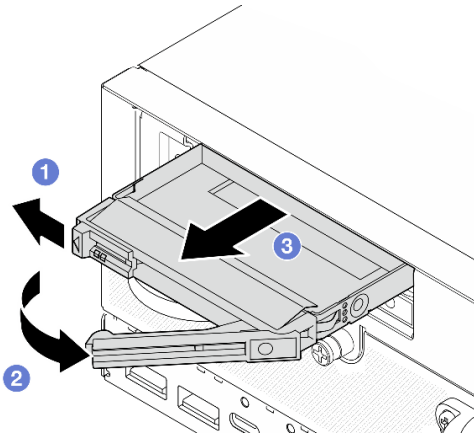


Figure 78. Removing a drive filler

Step 2. Install the 7mm drive.

- a. ① Slide the drive into the drive bay, and push it until it stops.
- b. ② Rotate the handle back to the locked position.

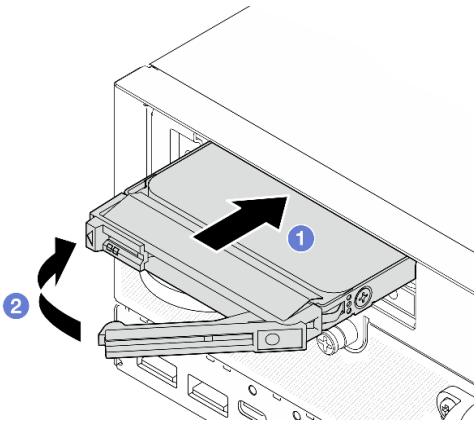


Figure 79. Installing a 7mm drive

Step 3. (Optional) If any of the drive bays is left empty, fill it with a drive filler.

- a. ① Slide the drive filler into the drive bay, and push it until it stops.
- b. ② Rotate the handle back to the locked position.

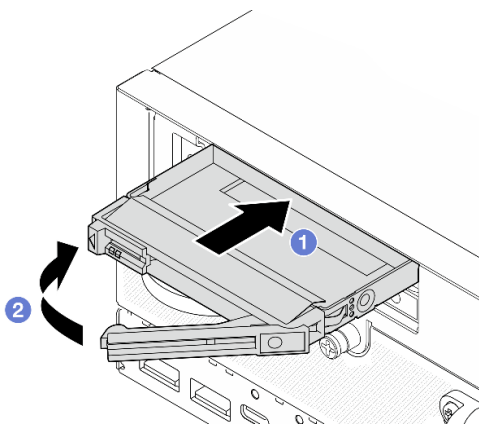


Figure 80. Installing a drive filler

Step 4. Insert the bezel; then, fasten the captive screw to secure the bezel.

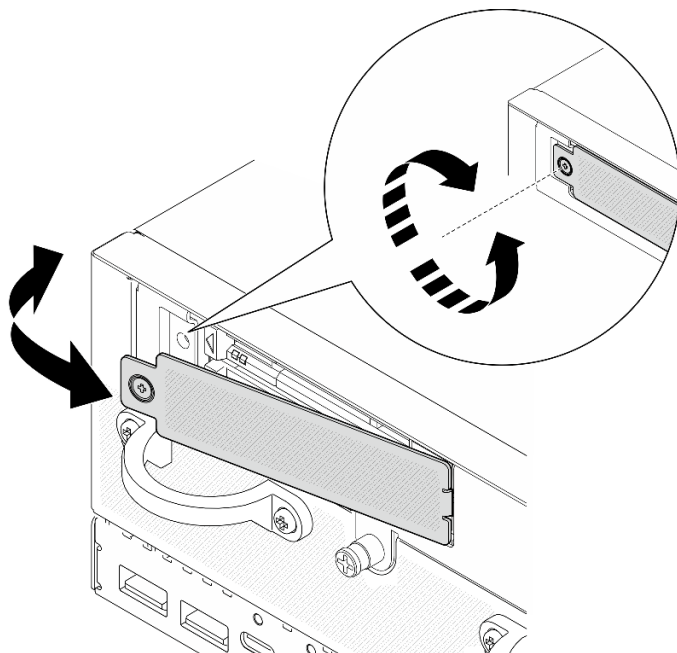


Figure 81. Installing the bezel

### After this task is completed

1. If SED encryption is enabled on the system, reboot the system.

**Note:** When SED encryption is enabled, rebooting the system is required after installing a drive; without rebooting, the drive will not be recognized by the host OS.

2. Check the drive status LED to verify that the drive is operating correctly.
  - If the yellow drive status LED of a drive is lit continuously, the drive is malfunctioning and must be replaced.
  - If the green drive activity LED is flashing, the drive is functioning.

### Demo Video

[Watch the procedure on YouTube](#)

## Air baffle and air flow sensor board replacement

Follow instructions in this section to remove and install the air baffles and the air flow sensor board.

### Remove the bottom air baffle

Follow instructions in this section to remove the bottom air baffle.

#### About this task

##### S002



##### **CAUTION:**

The power-control button on the device and the power switch on the power supply do not turn off the electrical current supplied to the device. The device also might have more than one power cord. To remove all electrical current from the device, ensure that all power cords are disconnected from the power source.

##### S012



##### **CAUTION:**

**Hot surface nearby.**

##### **Attention:**

- Read [“Installation Guidelines” on page 1](#) and [“Safety inspection checklist” on page 2](#) to ensure that you work safely.
- Power off the server and peripheral devices and disconnect the power cords and all external cables. See [“Power off the server” on page 8](#).
- If the node is installed in an enclosure or mounted, remove the node from the enclosure or mount. See [“Configuration guide” on page 9](#).

### Procedure

Step 1. Make preparation for this task.

- a. Remove the bottom cover. See [“Remove the bottom cover” on page 158](#).

Step 2. Pinch the blue touch points on both sides of the air baffle; then, lift the air baffle to remove it.

**Attention:** For proper cooling and airflow, reinstall the air baffle before powering on the server. Operating the server with the air baffle removed might damage server components.



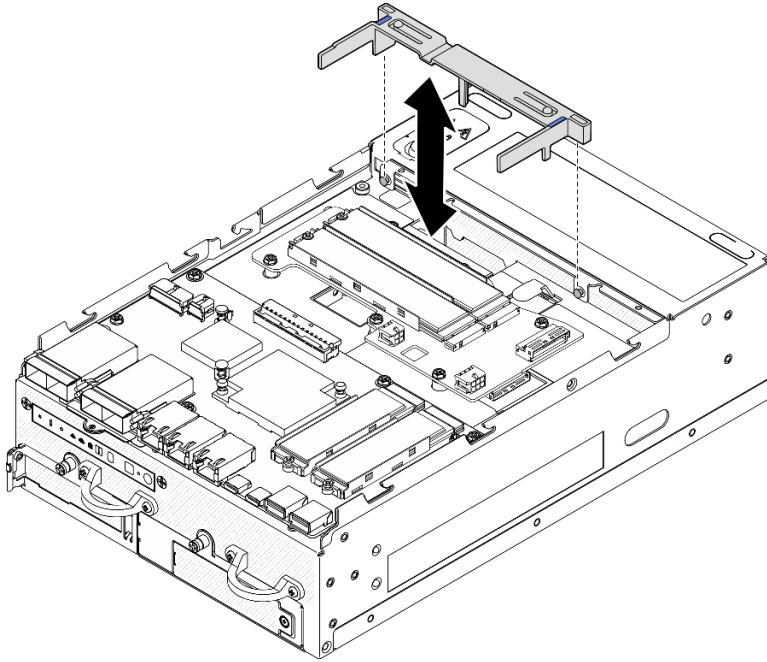


Figure 82. Removing the air baffle

### After this task is completed

- If you are instructed to return the component or optional device, follow all packaging instructions, and use any packaging materials for shipping that are supplied to you.

### Demo Video

[Watch the procedure on YouTube](#)

### Install the bottom air baffle

Follow instructions in this section to install the bottom air baffle.

### About this task

#### S002



#### **CAUTION:**

The power-control button on the device and the power switch on the power supply do not turn off the electrical current supplied to the device. The device also might have more than one power cord. To remove all electrical current from the device, ensure that all power cords are disconnected from the power source.

#### S012



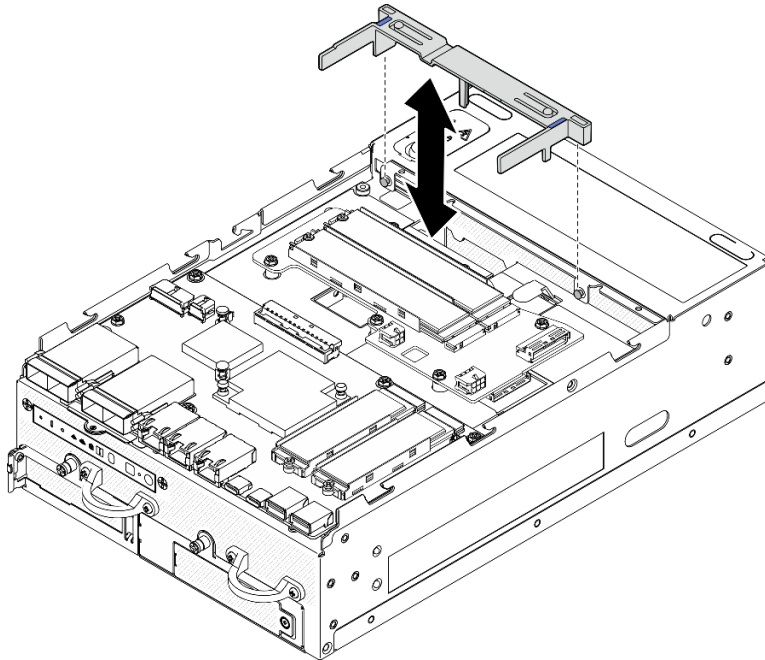
**CAUTION:**  
Hot surface nearby.

**Attention:**

- Read [“Installation Guidelines” on page 1](#) and [“Safety inspection checklist” on page 2](#) to ensure that you work safely.
- For proper cooling and airflow, reinstall the air baffle before powering on the server. Operating the server with the air baffle removed might damage server components.

**Procedure**

- Step 1. Pinch the blue touch points on the air baffle, and align the air baffle with the guide pins on the chassis.
- Step 2. Lower the air baffle into the chassis until it is seated in place.



*Figure 83. Installing the air baffle*

**After this task is completed**

Complete the parts replacement. See [“Complete the parts replacement” on page 281](#).

**Demo Video**

[Watch the procedure on YouTube](#)

**Remove the PMB air baffle**

Follow instructions in this section to remove the PMB air baffle.

## About this task

### S002



#### **CAUTION:**

The power-control button on the device and the power switch on the power supply do not turn off the electrical current supplied to the device. The device also might have more than one power cord. To remove all electrical current from the device, ensure that all power cords are disconnected from the power source.

### S012



#### **CAUTION:**

Hot surface nearby.

#### **Attention:**

- Read [“Installation Guidelines” on page 1](#) and [“Safety inspection checklist” on page 2](#) to ensure that you work safely.
- Power off the server and peripheral devices and disconnect the power cords and all external cables. See [“Power off the server” on page 8](#).
- If the node is installed in an enclosure or mounted, remove the node from the enclosure or mount. See [“Configuration guide” on page 9](#).

## **Procedure**

Step 1. Make preparation for this task.

- a. If necessary, remove all the WLAN antennas. See [“Remove the WLAN antennas” on page 256](#).
- b. Remove the top cover. See [“Remove the top cover” on page 154](#).

Step 2. Pinch the blue touch points on the air baffle; then, lift the air baffle to remove it.

**Attention:** For proper cooling and airflow, reinstall the air baffle before powering on the server. Operating the server with the air baffle removed might damage server components.

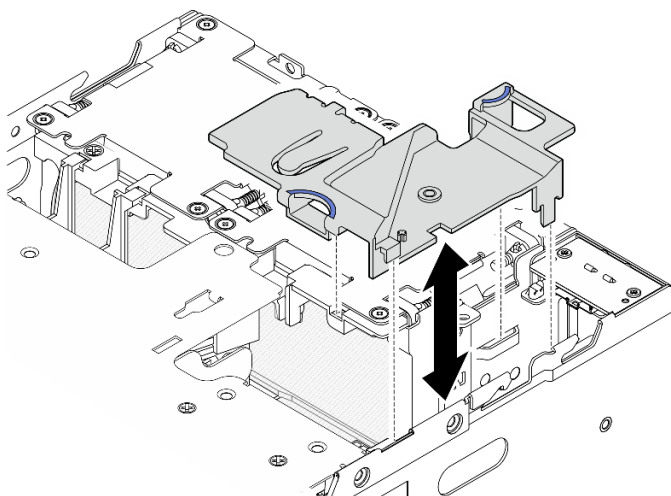


Figure 84. Removing the air baffle

**Note:** Depending on the model, your server might look slightly different from the illustration.

### After this task is completed

- If you are instructed to return the component or optional device, follow all packaging instructions, and use any packaging materials for shipping that are supplied to you.

### Demo Video

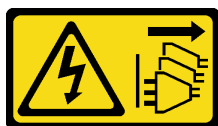
[Watch the procedure on YouTube](#)

### Install the PMB air baffle

Follow instructions in this section to install the PMB air baffle.

### About this task

#### S002



#### CAUTION:

The power-control button on the device and the power switch on the power supply do not turn off the electrical current supplied to the device. The device also might have more than one power cord. To remove all electrical current from the device, ensure that all power cords are disconnected from the power source.

#### S012



#### CAUTION:

**Hot surface nearby.**

**Attention:**

- Read [“Installation Guidelines” on page 1](#) and [“Safety inspection checklist” on page 2](#) to ensure that you work safely.
- For proper cooling and airflow, reinstall the air baffle before powering on the server. Operating the server with the air baffle removed might damage server components.

**Procedure**

- Step 1. Pinch the blue touch points on the air baffle, and align the air baffle tabs with the slots on the chassis.
- Step 2. Lower the air baffle into the chassis until it is seated in place.

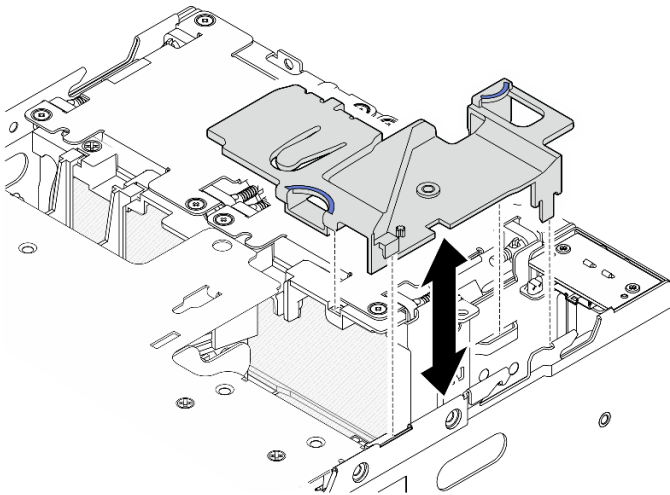


Figure 85. Installing the air baffle

**Note:** Depending on the model, your server might look slightly different from the illustration.

**After this task is completed**

Complete the parts replacement. See [“Complete the parts replacement” on page 281](#).

**Demo Video**

[Watch the procedure on YouTube](#)

**Remove the processor air baffle and air flow sensor board**

Follow instructions in this section to remove the processor air baffle and air flow sensor board.

**About this task**

S002



**CAUTION:**

The power-control button on the device and the power switch on the power supply do not turn off the electrical current supplied to the device. The device also might have more than one power cord. To remove all electrical current from the device, ensure that all power cords are disconnected from the power source.

**S012****CAUTION:**

Hot surface nearby.

**Attention:**

- Read [“Installation Guidelines” on page 1](#) and [“Safety inspection checklist” on page 2](#) to ensure that you work safely.
- Power off the server and peripheral devices and disconnect the power cords and all external cables. See [“Power off the server” on page 8](#).
- If the node is installed in an enclosure or mounted, remove the node from the enclosure or mount. See [“Configuration guide” on page 9](#).

**Procedure**

Step 1. Make preparation for this task.

- a. If necessary, remove all the WLAN antennas. See [“Remove the WLAN antennas” on page 256](#).
- b. Remove the top cover. See [“Remove the top cover” on page 154](#).
- c. Remove the PMB air baffle. See [“Remove the PMB air baffle” on page 62](#).
- d. Lift the riser assembly from the node. See [“Remove the riser assembly from the node” on page 186](#).

Step 2. Proceed to the section corresponding to the configuration:

- If the system comes without air flow sensor board, see [“Remove the processor air baffle” on page 66](#).
- If the system comes with air flow sensor board, see [“Remove the processor air baffle and the air flow sensor board” on page 67](#).

**Remove the processor air baffle**

Step 1. Gently pinch the air baffle as shown; then, lift the air baffle to remove it.

**Attention:** For proper cooling and airflow, reinstall the air baffle before powering on the server. Operating the server with the air baffle removed might damage server components.

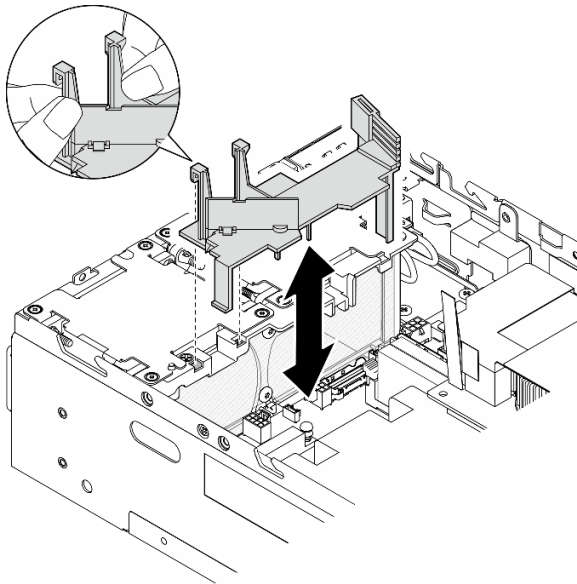


Figure 86. Removing the air baffle

**Remove the processor air baffle and the air flow sensor board**

Step 1. Remove the processor air baffle with air flow sensor board.

- a. ① Gently pinch the air baffle as shown; then, lift the air baffle up.
- b. ② Disconnect the cable of air flow sensor board from the system board.
- c. ③ Lift the air baffle out of the chassis.

**Attention:** For proper cooling and airflow, reinstall the air baffle before powering on the server. Operating the server with the air baffle removed might damage server components.

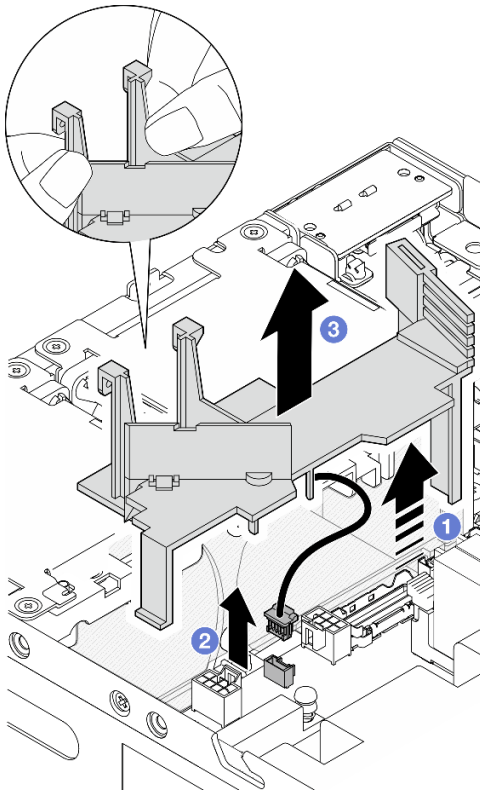


Figure 87. Removing the air baffle

- Step 2. Remove the air flow sensor board from the processor air baffle.
- 1 Loosen the two screws that secure the air flow sensor board.
  - 2 Pull up the Mylar film.
  - 3 Lift the air flow sensor board to remove it from the air baffle.

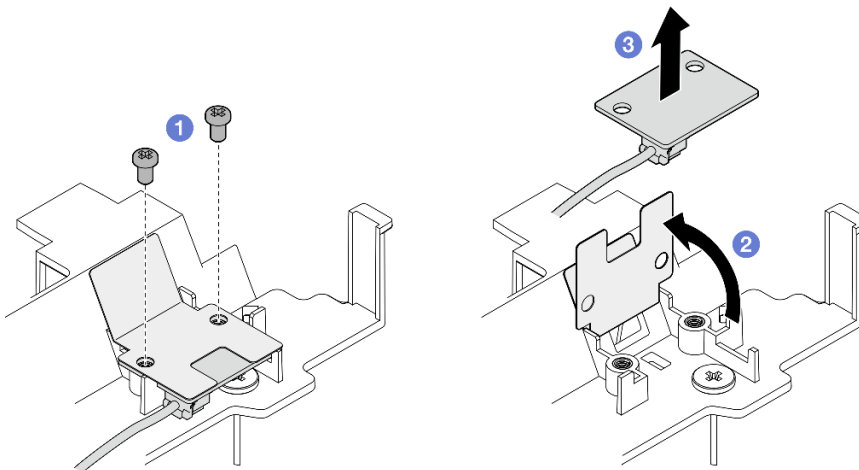


Figure 88. Removing the air flow sensor board

- Step 3. Disconnect the cable from the air flow sensor board.

**After this task is completed**



- If you are instructed to return the component or optional device, follow all packaging instructions, and use any packaging materials for shipping that are supplied to you.

### Demo Video

[Watch the procedure on YouTube](#)

## Install the processor air baffle and air flow sensor board

Follow instructions in this section to install the processor air baffle.

### About this task

#### S002



#### CAUTION:

The power-control button on the device and the power switch on the power supply do not turn off the electrical current supplied to the device. The device also might have more than one power cord. To remove all electrical current from the device, ensure that all power cords are disconnected from the power source.

#### S012



#### CAUTION:

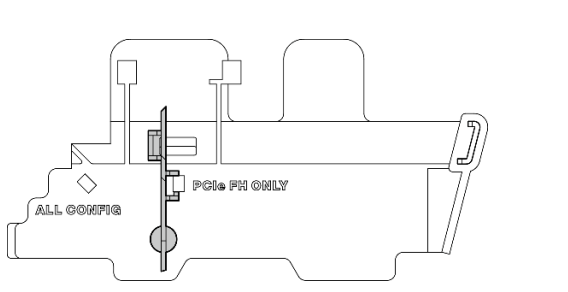
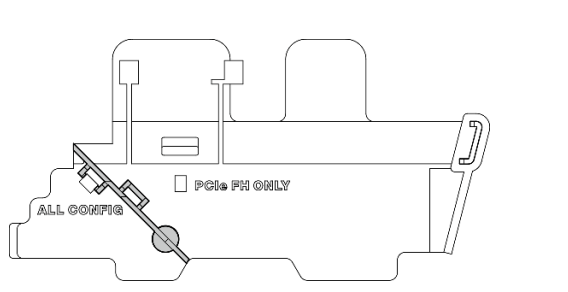
Hot surface nearby.

#### Attention:

- Read [“Installation Guidelines” on page 1](#) and [“Safety inspection checklist” on page 2](#) to ensure that you work safely.
- For proper cooling and airflow, reinstall the air baffle before powering on the server. Operating the server with the air baffle removed might damage server components.

### Procedure

Step 1. Adjust the processor air baffle according to the configuration. Pivot the divider until it clicks into place.

For the configuration with full-height PCIe adapter	For the configuration without full-height PCIe adapter
	

Step 2. Proceed to the section corresponding to the configuration:

- To install the processor air baffle without air flow sensor board, see [“Install the processor air baffle” on page 70](#).
- To install the processor air baffle and the air flow sensor board, see [“Install the processor air baffle and the air flow sensor board” on page 70](#).

### Install the processor air baffle

Step 1. Gently pinch the air baffle as shown, and align the air baffle tabs with the slots on the chassis.

Step 2. Lower the air baffle into the chassis until it is seated in place.

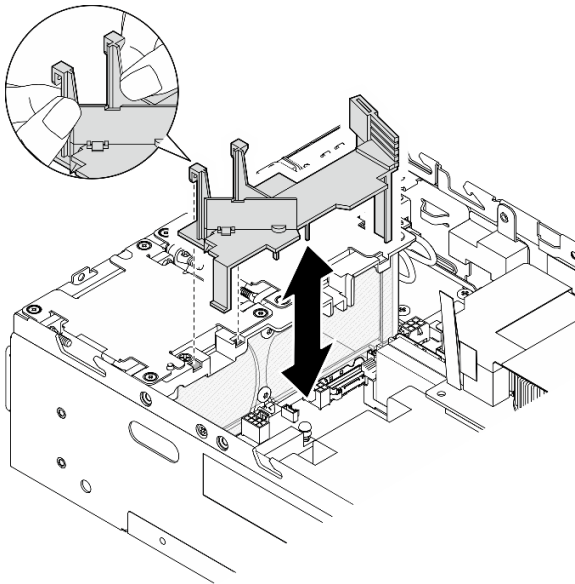


Figure 89. Installing the air baffle

### Install the processor air baffle and the air flow sensor board

Step 1. Make sure that all installed fan modules are with rear-to-front air flow direction. If applicable, install fan modules with rear-to-front air flow direction. See [“Install a fan module” on page 103](#).

Step 2. Connect the cable to the air flow sensor board.

Step 3. Install the air flow sensor board to the processor air baffle.

- 1 Align the air flow sensor board with the processor air baffle; then, lower the air flow sensor board to the air baffle.

**Attention:** The air flow sensor board should be installed with the orientation shown in the following illustration.

- b. ② Stick the Mylar film onto the air flow sensor board.
- c. ③ Secure the air flow sensor board with two screws.

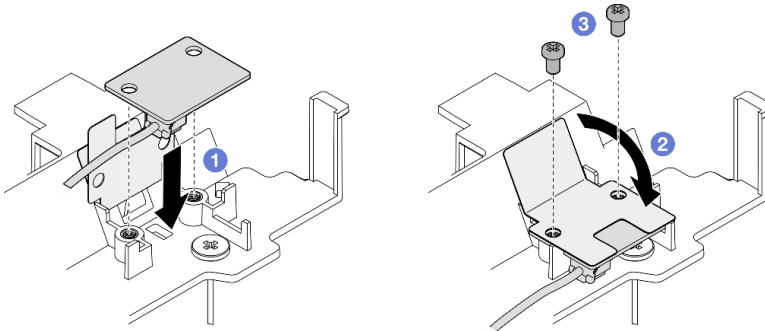


Figure 90. Installing the air flow sensor board

Step 4. Install the processor air baffle with air flow sensor board.

- a. ① Connect the cable of air flow sensor board to the system board.
- b. ② Gently pinch the air baffle as shown, and align the air baffle tabs with the slots on the chassis. Then, lower the air baffle into the chassis until it is seated in place.

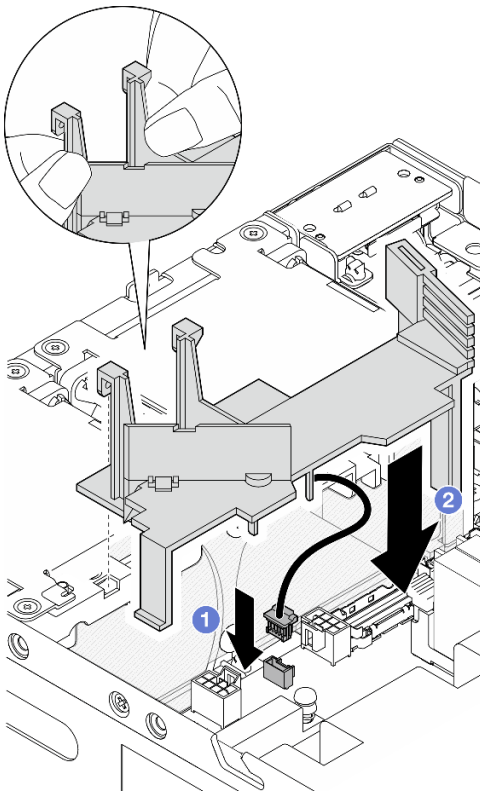


Figure 91. Installing the air baffle

**After this task is completed**

Complete the parts replacement. See [“Complete the parts replacement” on page 281](#).

## Demo Video

[Watch the procedure on YouTube](#)

## Bluetooth antenna replacement

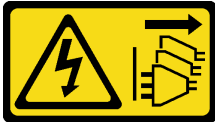
Follow instructions in this section to remove and install the Bluetooth antenna.

### Remove the Bluetooth antenna

Follow instructions in this section to remove the Bluetooth antenna.

## About this task

### S002



#### CAUTION:

The power-control button on the device and the power switch on the power supply do not turn off the electrical current supplied to the device. The device also might have more than one power cord. To remove all electrical current from the device, ensure that all power cords are disconnected from the power source.

#### Attention:

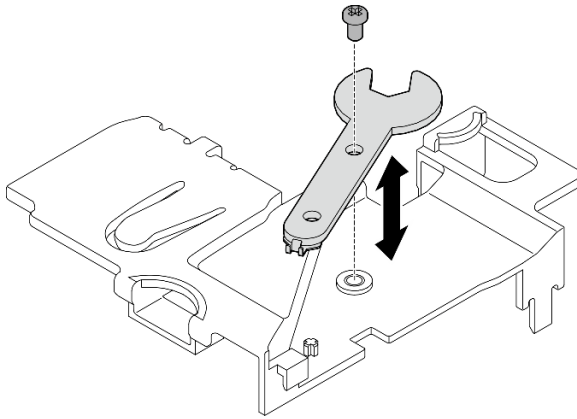
- Read [“Installation Guidelines” on page 1](#) and [“Safety inspection checklist” on page 2](#) to ensure that you work safely.
- Power off the server and peripheral devices and disconnect the power cords and all external cables. See [“Power off the server” on page 8](#).
- If the node is installed in an enclosure or mounted, remove the node from the enclosure or mount. See [“Configuration guide” on page 9](#).

## Procedure

Step 1. Make preparation for this task.

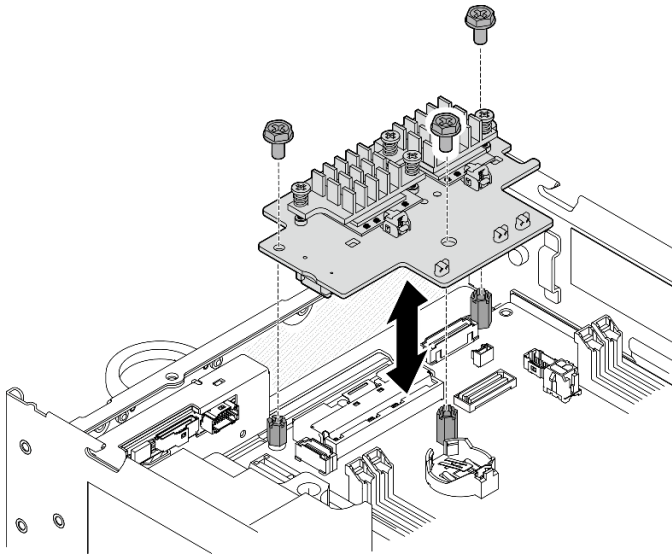
- a. If necessary, remove all the WLAN antennas. See [“Remove the WLAN antennas” on page 256](#).
- b. Remove the top cover. See [“Remove the top cover” on page 154](#).
- c. Remove the PMB air baffle. See [“Remove the PMB air baffle” on page 62](#).
- d. Lift the riser assembly from the node. See [“Remove the riser assembly from the node” on page 186](#).

**Note:** This task requires a wrench. If necessary, use the wrench that comes in the PMB air baffle. Loosen the screw that secures the wrench to disengage the wrench from the air baffle.



*Figure 92. Disengaging the wrench*

- Step 2. Lift the wireless adapter from the node.
- a. Loosen the three screws that secure the wireless adapter.
  - b. Lift the wireless adapter up.



*Figure 93. Lifting the wireless adapter*

- Step 3. Disconnect the Bluetooth antenna cable from the wireless adapter.
- a. Pinch and press the side of the cable holder on the XCC WLAN and Bluetooth module; then, lift up one end of the cable holder from the wireless adapter.

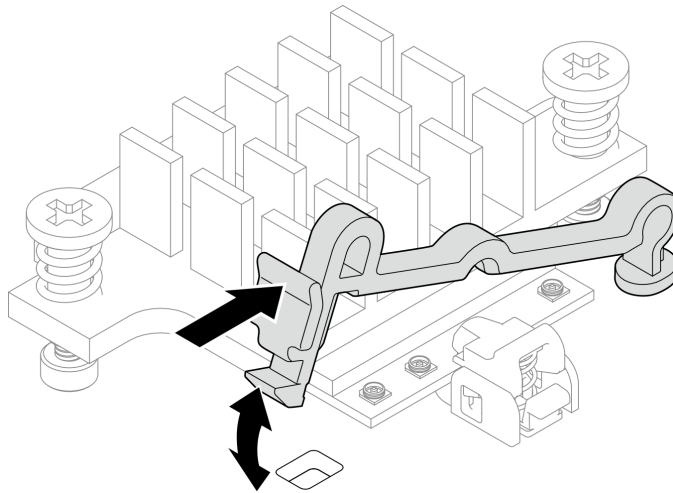


Figure 94. Lifting the cable holder

- b. Pivot the cable holder to **2** unlock position.

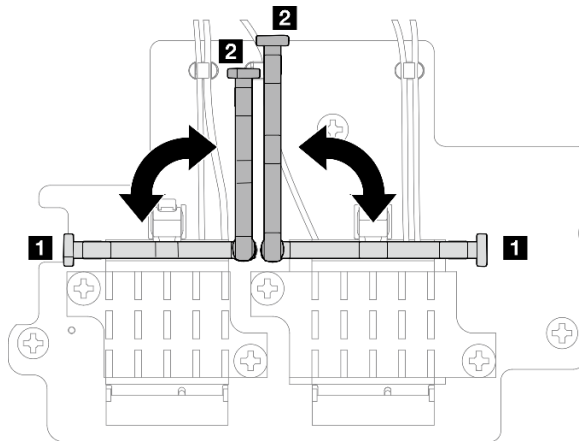


Figure 95. Pivoting the cable holder

- c. Hook the Bluetooth antenna cable with the wrench as shown; then, gently remove the cable from the connector and the cable clip.

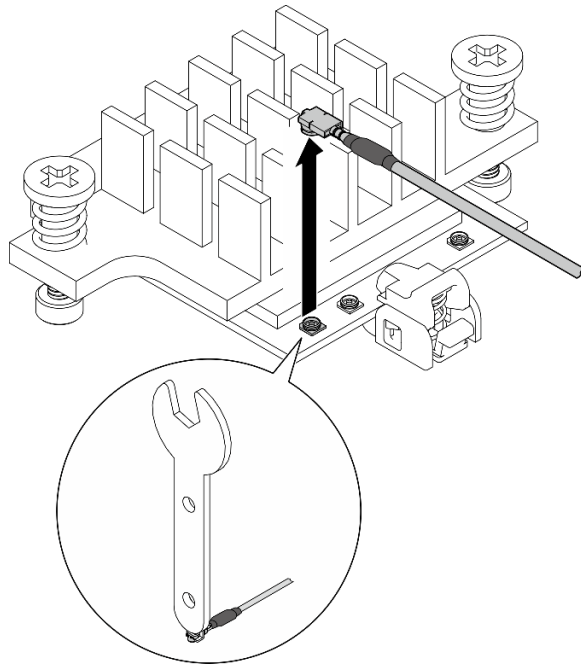


Figure 96. Disconnecting the cable

- d. Pivot the cable holder to **1** lock position.

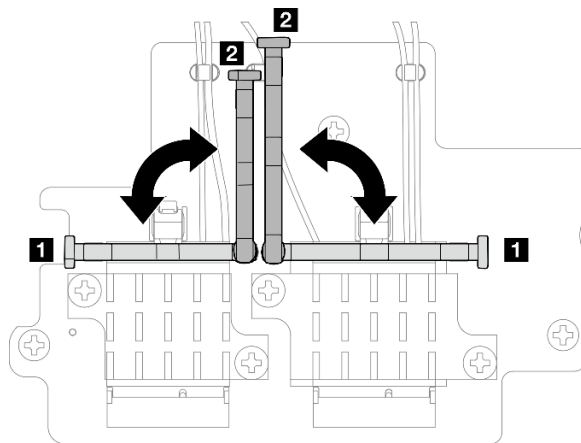
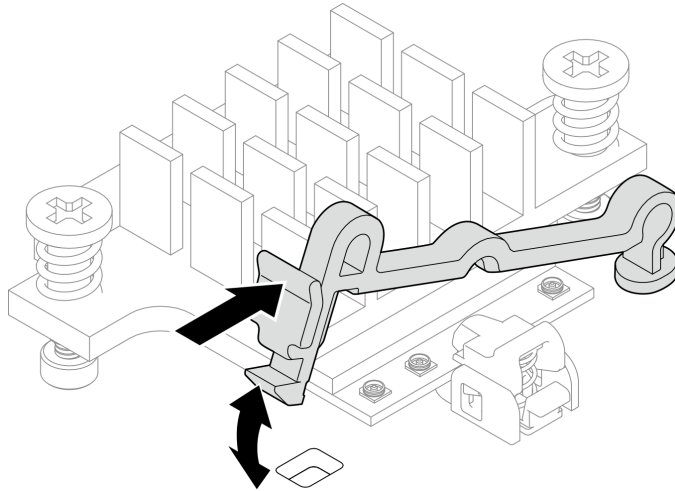


Figure 97. Pivoting the cable holder

- e. Press the side of the cable holder; then, insert the cable holder to the slot on the wireless adapter. Make sure the cables are secured by the cable holder.

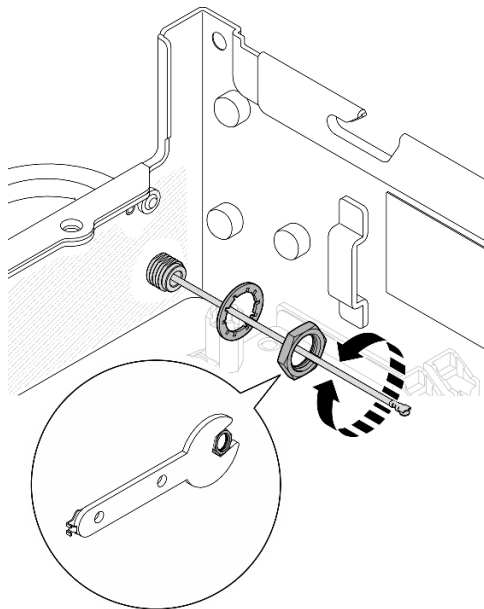


*Figure 98. Inserting the cable holder*

**Step 4. Remove the Bluetooth antenna.**

- a. Loosen the screw nut that secures the Bluetooth antenna with the wrench.
- b. Remove the screw nut, and remove the washer if applicable.

**Note:** The washer is an optional part.



*Figure 99. Removing the Bluetooth antenna*

- c. Remove the Bluetooth antenna from the front of the node.



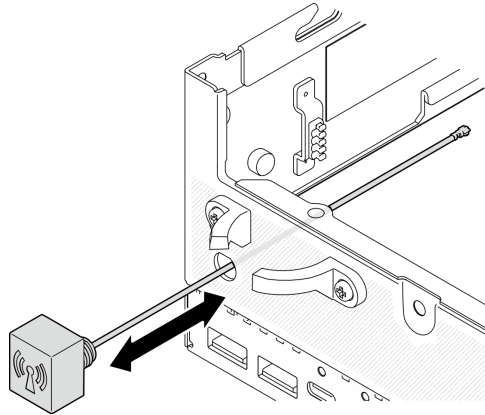


Figure 100. Removing the Bluetooth antenna

### After this task is completed

- Install a replacement unit. See [“Install the Bluetooth antenna” on page 77](#).
- After completing the task with the wrench that comes in the PMB air baffle, store the wrench back to the PMB air baffle for future use, and secure the wrench with one screw.

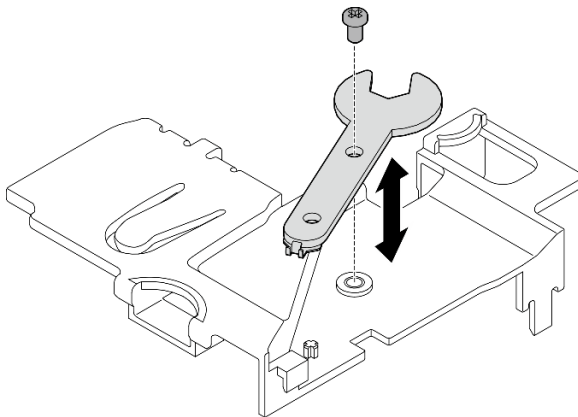


Figure 101. Storing the wrench

- If you are instructed to return the component or optional device, follow all packaging instructions, and use any packaging materials for shipping that are supplied to you.

### Demo Video

[Watch the procedure on YouTube](#)

### Install the Bluetooth antenna

Follow instructions in this section to install the Bluetooth antenna.

### About this task

**S002**

**CAUTION:**

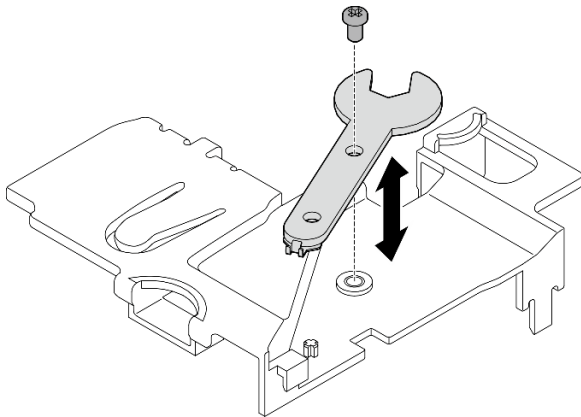
The power-control button on the device and the power switch on the power supply do not turn off the electrical current supplied to the device. The device also might have more than one power cord. To remove all electrical current from the device, ensure that all power cords are disconnected from the power source.

**Attention:**

- Read [“Installation Guidelines” on page 1](#) and [“Safety inspection checklist” on page 2](#) to ensure that you work safely.
- Touch the static-protective package that contains the component to any unpainted metal surface on the server; then, remove it from the package and place it on a static-protective surface.

**Procedure**

**Note:** This task requires a wrench. If necessary, use the wrench that comes in the PMB air baffle. Loosen the screw that secures the wrench to disengage the wrench from the air baffle.



*Figure 102. Disengaging the wrench*

Step 1. Insert the Bluetooth antenna into the slot.

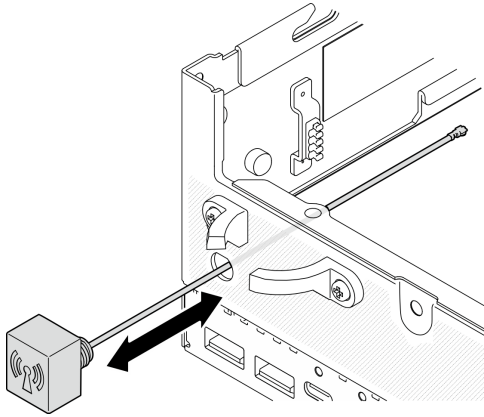


Figure 103. Installing the Bluetooth antenna

- Step 2. Place a washer between the chassis and the screw nut if necessary; then, fasten the screw nut with the wrench to secure the Bluetooth antenna.

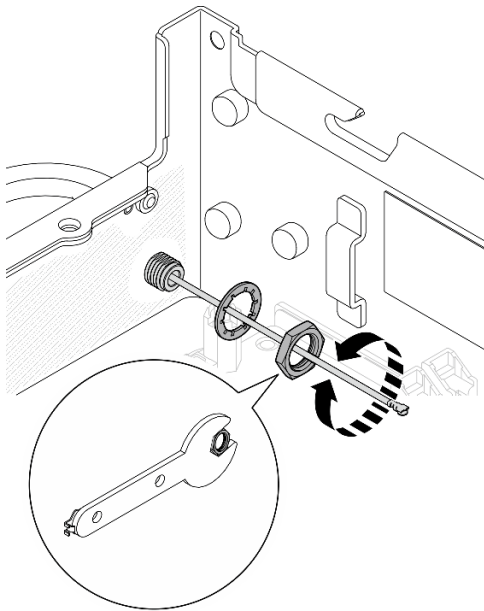


Figure 104. Installing the Bluetooth antenna

**Note:** The optional kit of antenna comes with a washer. However, the washer is an optional part that enhances friction, and is not required in general scenarios. Consider applying it when necessary.

- Step 3. Connect the Bluetooth antenna cable to the wireless adapter.
- a. Pinch and press the side of the cable holder on the XCC WLAN and Bluetooth module; then, lift up one end of the cable holder from the wireless adapter.

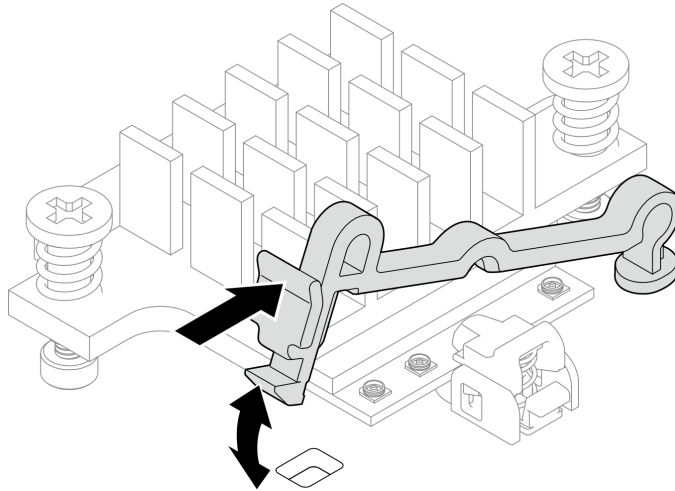


Figure 105. Lifting the cable holder

- b. Pivot the cable holder to **2** unlock position.

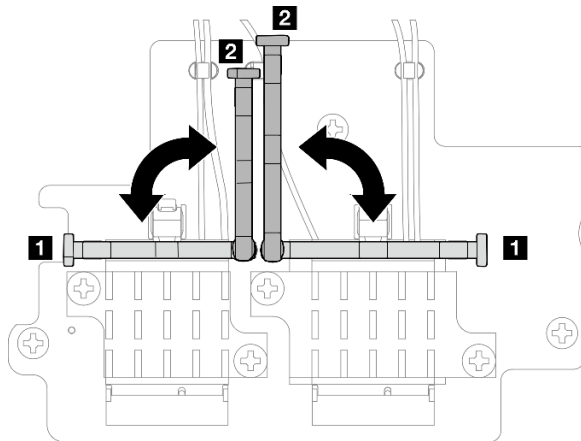


Figure 106. Pivoting the cable holder

- c. If applicable, remove the protection cover from the cable.
- d. Gently press the cable connector down until it clicks in the connector on the WLAN module.

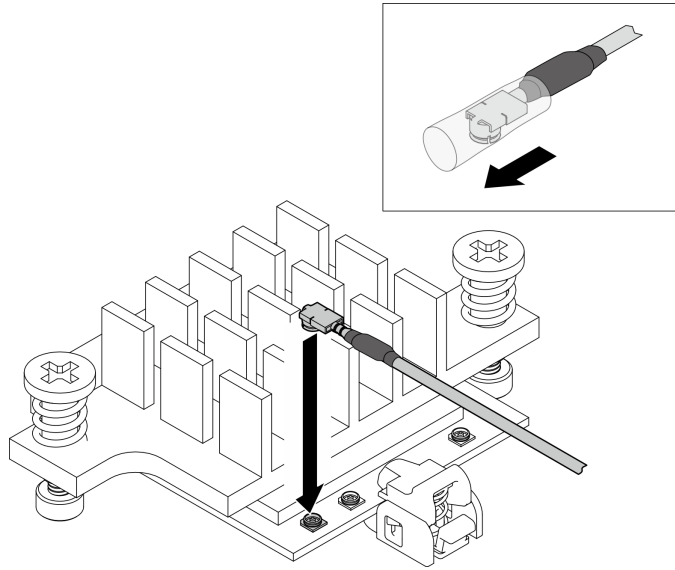


Figure 107. Connecting the cable

- e. Pivot the cable holder to **1** lock position.

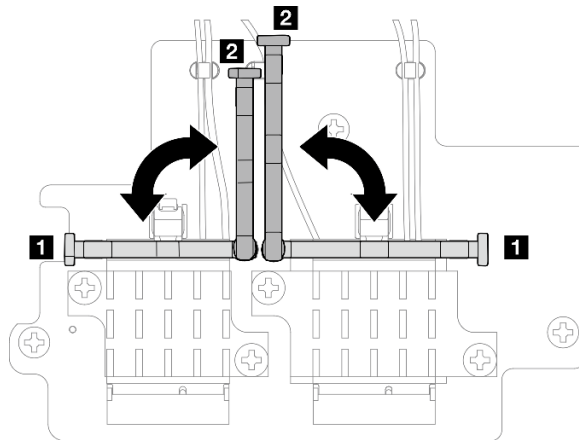
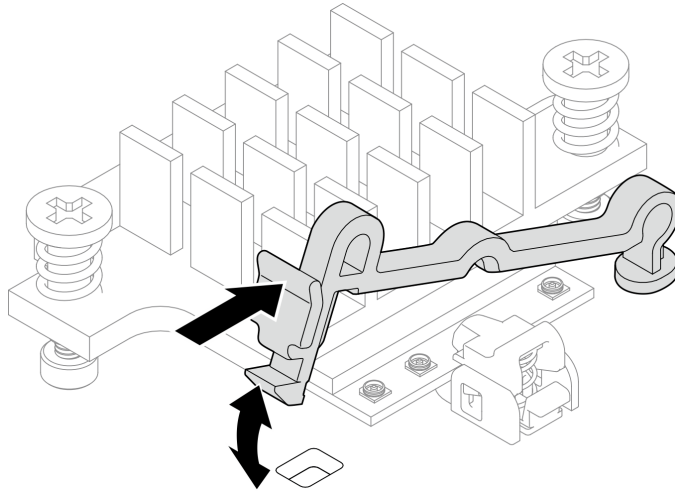


Figure 108. Pivoting the cable holder

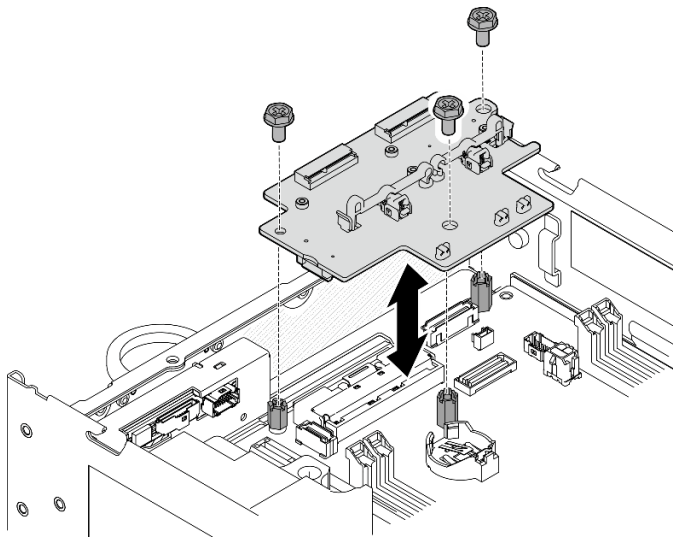
- f. Press the side of the cable holder; then, insert the cable holder to the slot on the wireless adapter. Make sure the cables are secured by the cable holder.



*Figure 109. Inserting the cable holder*

**Step 4. Install the wireless adapter.**

- a. Align the wireless adapter with the standoffs on the system board; then, lower the wireless adapter until it is firmly seated.
- b. Secure the wireless adapter with three screws.



*Figure 110. Installing the wireless adapter*

**After this task is completed**

- After completing the task with the wrench that comes in the PMB air baffle, store the wrench back to the PMB air baffle for future use, and secure the wrench with one screw.

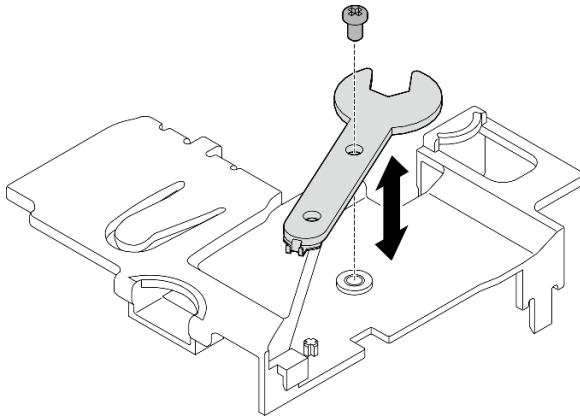


Figure 111. Storing the wrench

- Complete the parts replacement. See [“Complete the parts replacement” on page 281](#).

#### Demo Video

[Watch the procedure on YouTube](#)

## Bottom M.2 cabled adapter and M.2 drive replacement

Follow instructions in this section to remove and install the bottom M.2 cabled adapter and M.2 drives.

### Remove the bottom M.2 cabled adapter and M.2 drives

Follow instructions in this section to remove the bottom M.2 adapter and M.2 drives.

#### About this task

##### S002



#### CAUTION:

The power-control button on the device and the power switch on the power supply do not turn off the electrical current supplied to the device. The device also might have more than one power cord. To remove all electrical current from the device, ensure that all power cords are disconnected from the power source.

#### Attention:

- Read [“Installation Guidelines” on page 1](#) and [“Safety inspection checklist” on page 2](#) to ensure that you work safely.
- Power off the server and peripheral devices and disconnect the power cords and all external cables. See [“Power off the server” on page 8](#).
- If the node is installed in an enclosure or mounted, remove the node from the enclosure or mount. See [“Configuration guide” on page 9](#).
- If one or more NVMe solid-state drives are to be removed, it is recommended to disable them beforehand via the operating system.

- Before you remove or make changes to drives, drive controllers (including controllers that are integrated on the system board), drive backplanes, or drive cables, make sure to back up all important data stored in drives.
- Before you remove any component of a RAID array (drive, RAID card, etc.), back up all RAID configuration information.

## Procedure

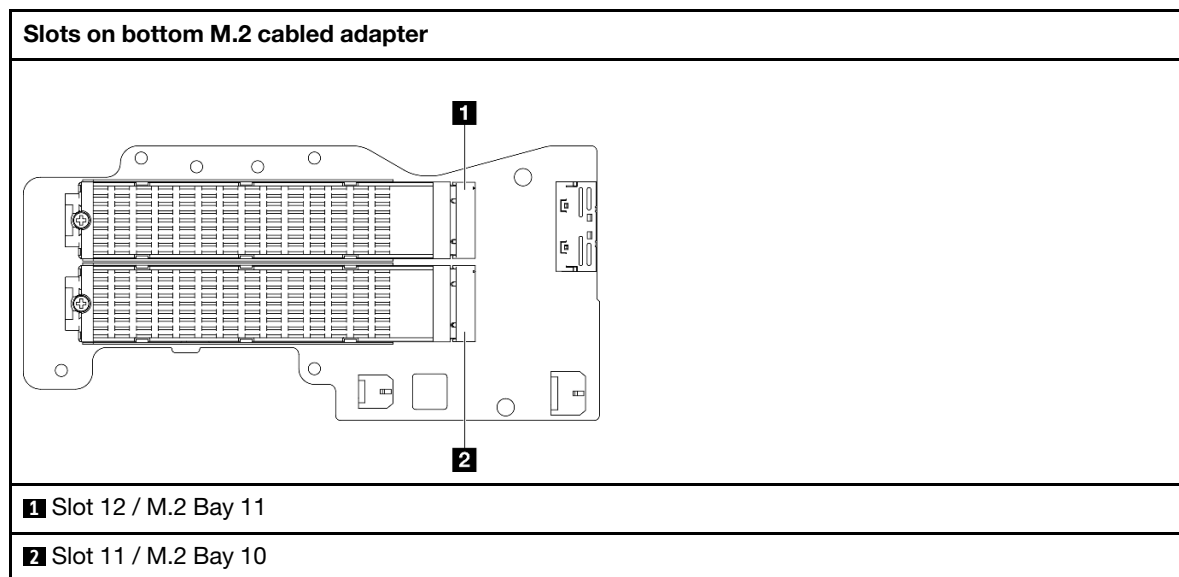
Step 1. Make preparation for this task.

- Remove the bottom cover. See [“Remove the bottom cover” on page 158](#).
- Remove the bottom air baffle. See [“Remove the bottom air baffle” on page 60](#).

### Remove an M.2 drive

If necessary, remove an M.2 drive from the bottom M.2 cabled adapter.

Step 1. Locate the M.2 drive to be removed.



Step 2. Remove the M.2 drive.

- ① Loosen the screw that secures the M.2 drive.
- ② Pivot the rear side of the M.2 drive away from the M.2 adapter.
- ③ Remove the M.2 drive from the slot.

**Note:** If necessary, repeat this procedure to the other M.2 drive to be removed.



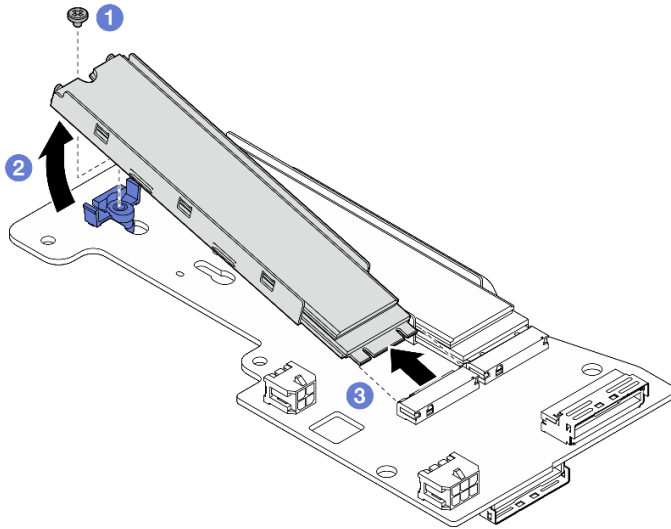


Figure 112. Removing an M.2 drive

### Remove the bottom M.2 cabled adapter

#### Procedure

- Step 1. Disconnect all the cables from the bottom M.2 cabled adapter.
- Step 2. Remove the bottom M.2 cabled adapter.
  - a. Loosen the six screws that secure the bottom M.2 cabled adapter.
  - b. Lift the bottom M.2 cabled adapter to remove it.

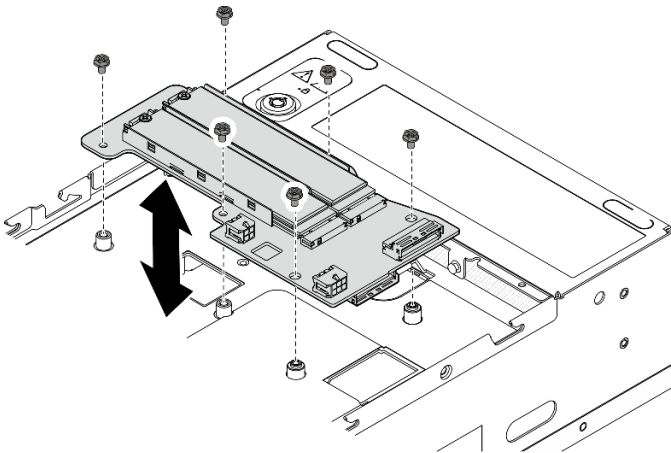


Figure 113. Removing the bottom M.2 cabled adapter

### After this task is completed

- Install a replacement unit. See [“Install the bottom M.2 cabled adapter and M.2 drives” on page 87](#).
- If you are instructed to return the component or optional device, follow all packaging instructions, and use any packaging materials for shipping that are supplied to you.

#### Demo Video

[Watch the procedure on YouTube](#)

## Adjust the retainer on the M.2 adapter

Follow instructions in this section to adjust the retainer on the M.2 adapter.

### About this task

#### Attention:

- Read [“Installation Guidelines” on page 1](#) and [“Safety inspection checklist” on page 2](#) to ensure that you work safely.

### Procedure

- Step 1. Locate the retainer to be adjusted. If the retainer is secured on the M.2 adapter, loosen the screw that secures the retainer.
- Step 2. Select the correct keyhole that can accommodate the particular size of the M.2 drive to be installed.
- Step 3. Adjust the M.2 retainer.
  - a. ① Press and hold both sides of the retainer.
  - b. ② Move the retainer forward until it is in the large opening of the keyhole.
  - c. ③ Take the retainer out of the keyhole.
  - d. ④ Insert the retainer into the correct keyhole.
  - e. ⑤ Press and hold both sides of the retainer.
  - f. ⑥ Slide the retainer toward the small opening of the keyhole until it is seated in place.

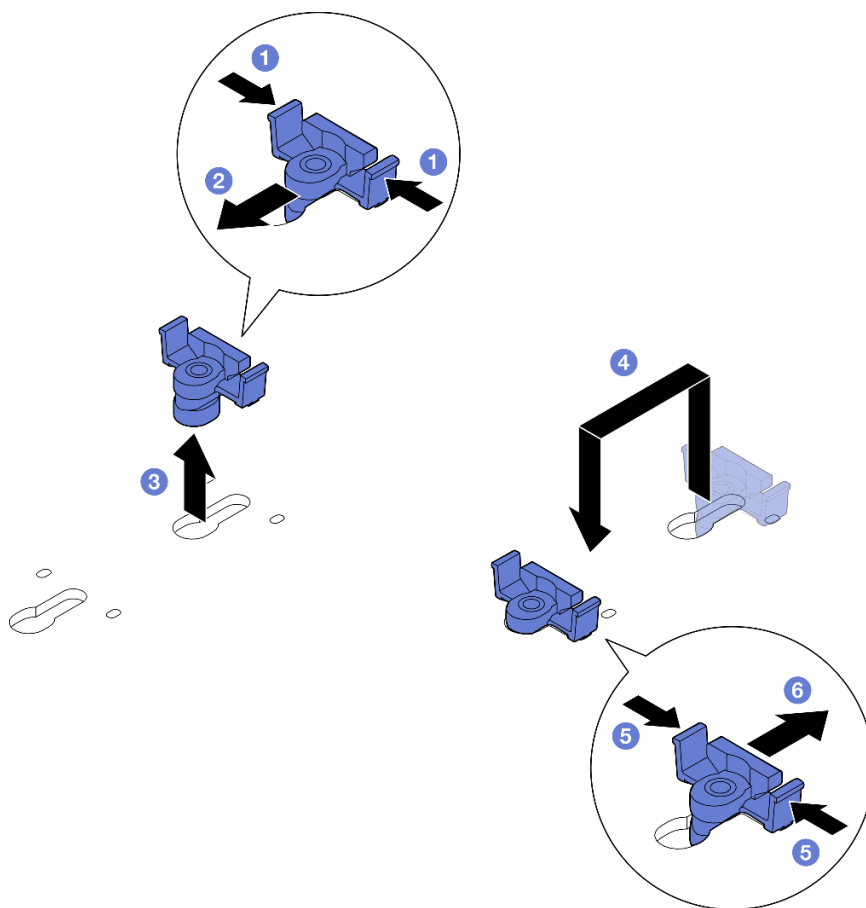


Figure 114. Adjusting the M.2 retainer

## Install the bottom M.2 cabled adapter and M.2 drives

Follow instructions in this section to install the bottom M.2 adapter and M.2 drives.

### About this task

#### S002



#### CAUTION:

The power-control button on the device and the power switch on the power supply do not turn off the electrical current supplied to the device. The device also might have more than one power cord. To remove all electrical current from the device, ensure that all power cords are disconnected from the power source.

#### Attention:

- Read [“Installation Guidelines” on page 1](#) and [“Safety inspection checklist” on page 2](#) to ensure that you work safely.
- Touch the static-protective package that contains the component to any unpainted metal surface on the server; then, remove it from the package and place it on a static-protective surface.

- Before you remove or make changes to drives, drive controllers (including controllers that are integrated on the system board), drive backplanes, or drive cables, make sure to back up all important data stored in drives.
- Before you remove any component of a RAID array (drive, RAID card, etc.), back up all RAID configuration information.

The following notes describe the type of drives that the server supports and other information that you must consider when you install a drive. For a list of supported drives, see <https://serverproven.lenovo.com>.

- Make sure to observe the installation rules and sequence order in “M.2 storage drive installation rules and order” on page 7.
- Locate the documentation that comes with the drive and follow those instructions in addition to the instructions in this chapter.
- For a complete list of supported optional devices for the server, see <https://serverproven.lenovo.com>.

**Firmware and driver download:** You might need to update the firmware or driver after replacing a component.

- Go to <https://datacentersupport.lenovo.com/products/servers/thinkedge/se360v2/7dam/downloads/driver-list/> to see the latest firmware and driver updates for your server.
- Go to “Update the firmware” in *User Guide* or *System Configuration Guide* for more information on firmware updating tools.

## Install the bottom M.2 cabled adapter

### Procedure

- Step 1. Align the bottom M.2 cabled adapter with the guide pins; then, lower the adapter down until it is firmly seated.
- Step 2. Secure the bottom M.2 cabled adapter with six screws.

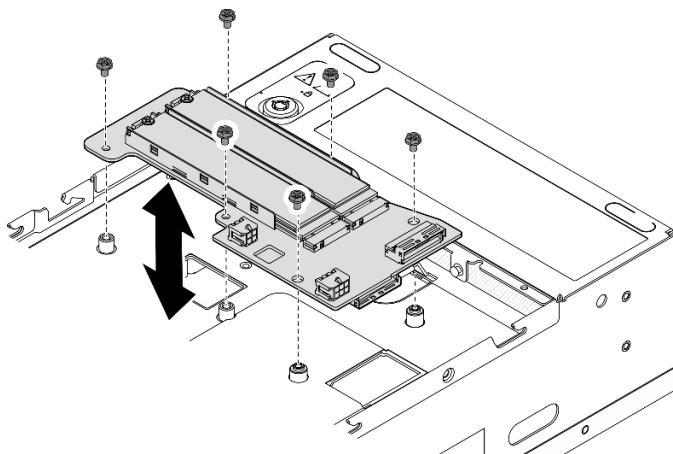


Figure 115. Installing the bottom M.2 cabled adapter

- Step 3. Connect the cables to the bottom M.2 cabled adapter. See “Riser assembly and bottom M.2 cabled adapter cable routing” on page 298.

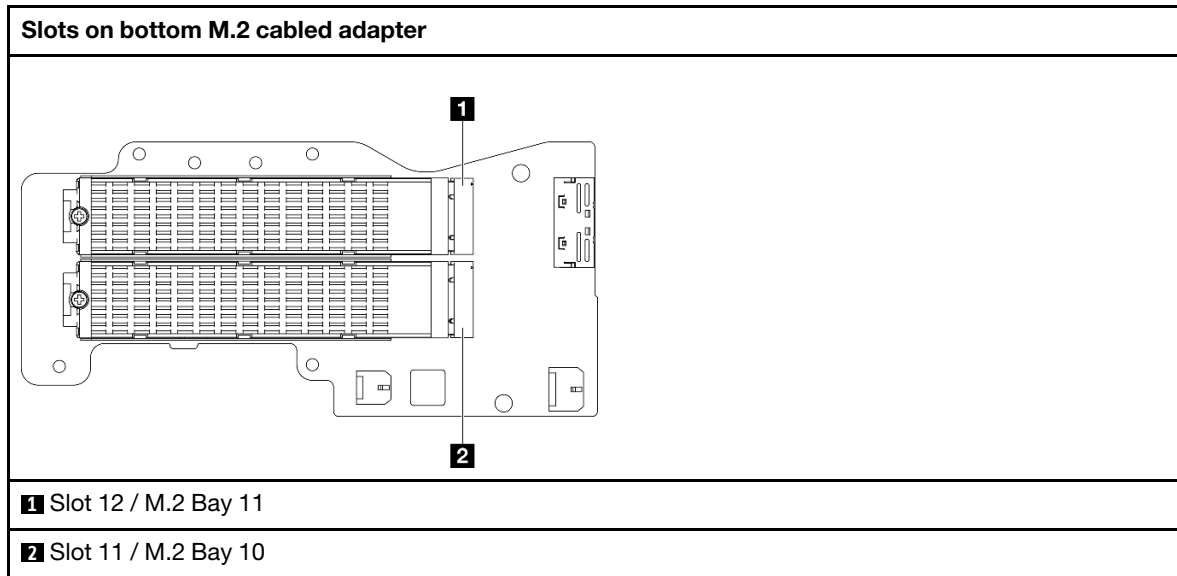
## Install an M.2 drive

If necessary, install an M.2 drive to the bottom M.2 cabled adapter.

### Procedure

Step 1. Locate the slot to install the M.2 drive.

**Note:** Slot 11 and Slot 12 on the bottom M.2 cabled adapter are available to install M.2 drives. Do not install M.2 drives to other slots.



Step 2. If necessary, install an M.2 heat sink to the M.2 drive to be installed. See [“Install an M.2 heat sink” on page 142](#).

Step 3. If necessary, adjust the retainer to accommodate the size of the M.2 drive to be installed. See [“Adjust the retainer on the M.2 adapter” on page 86](#).

Step 4. Install the M.2 drive.

- 1** Hold the M.2 drive at an angle, and insert the drive into the M.2 slot.
- 2** Lower the rear side of the M.2 drive down to the M.2 adapter.
- 3** Secure the M.2 drive with one screw.

**Note:** If necessary, repeat this procedure to the other M.2 drive to be installed.

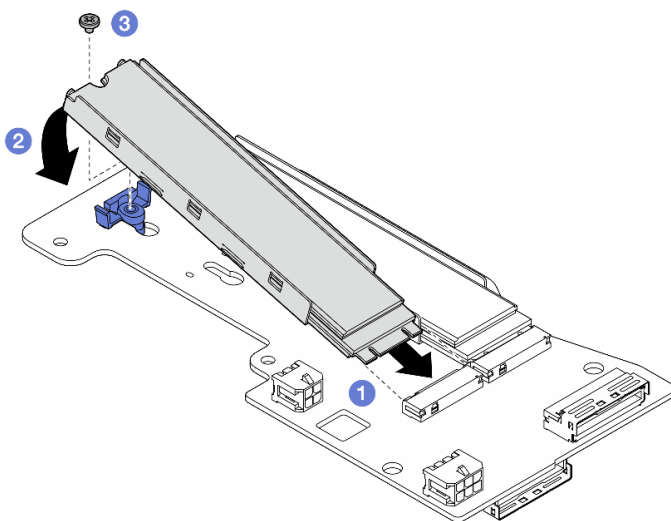


Figure 116. Installing an M.2 drive

## After this task is completed

Complete the parts replacement. See [“Complete the parts replacement” on page 281](#).

### Demo Video

[Watch the procedure on YouTube](#)

## CMOS battery (CR2032) replacement

Follow instructions in this section to remove and install a CMOS battery (CR2032).

### Remove a CMOS battery (CR2032)

Follow instructions in this section to remove a CMOS battery (CR2032).

### About this task

#### S002



#### CAUTION:

The power-control button on the device and the power switch on the power supply do not turn off the electrical current supplied to the device. The device also might have more than one power cord. To remove all electrical current from the device, ensure that all power cords are disconnected from the power source.

#### S004



#### CAUTION:

When replacing the lithium battery, use only Lenovo specified part number or an equivalent type of battery recommended by the manufacturer. If your system has a module containing a lithium battery, replace it only with the same module type made by the same manufacturer. The battery contains lithium and can explode if not properly used, handled, or disposed of.

*Do not:*

- Throw or immerse into water
- Heat to more than 100°C (212°F)
- Repair or disassemble

Dispose of the battery as required by local ordinances or regulations.

#### S005

**CAUTION:**

**The battery is a lithium ion battery. To avoid possible explosion, do not burn the battery. Exchange it only with the approved part. Recycle or discard the battery as instructed by local regulations.**

Consider the following when replacing the CMOS battery.

- Lenovo has designed this product with user safety in mind. The lithium battery must be handled properly to avoid potential danger. Make sure to follow instructions in this topic while replacing the battery.
- The CMOS battery must be replaced with another unit of the same type (CR2032).
- For high temperature operation environment, it is recommended to use CR2032HR instead.
- After replacement is completed, it is required to reconfigure the server and reset the system date and time.
- Dispose of the CMOS battery as required by local ordinances or regulations.

**Attention:**

- Read [“Installation Guidelines” on page 1](#) and [“Safety inspection checklist” on page 2](#) to ensure that you work safely.
- Power off the server and peripheral devices and disconnect the power cords and all external cables. See [“Power off the server” on page 8](#).
- If the node is installed in an enclosure or mounted, remove the node from the enclosure or mount. See [“Configuration guide” on page 9](#).

**Procedure**

Step 1. Make preparation for this task.

- a. If necessary, remove all the WLAN antennas. See [“Remove the WLAN antennas” on page 256](#).
- b. Remove the top cover. See [“Remove the top cover” on page 154](#).
- c. Remove the PMB air baffle. See [“Remove the PMB air baffle” on page 62](#).
- d. Lift the riser assembly from the node. See [“Remove the riser assembly from the node” on page 186](#).

Step 2. Proceed to the section corresponding to the CMOS battery to be removed:

- [“Remove the system battery” on page 92](#)
- [“Remove the security battery” on page 93](#)

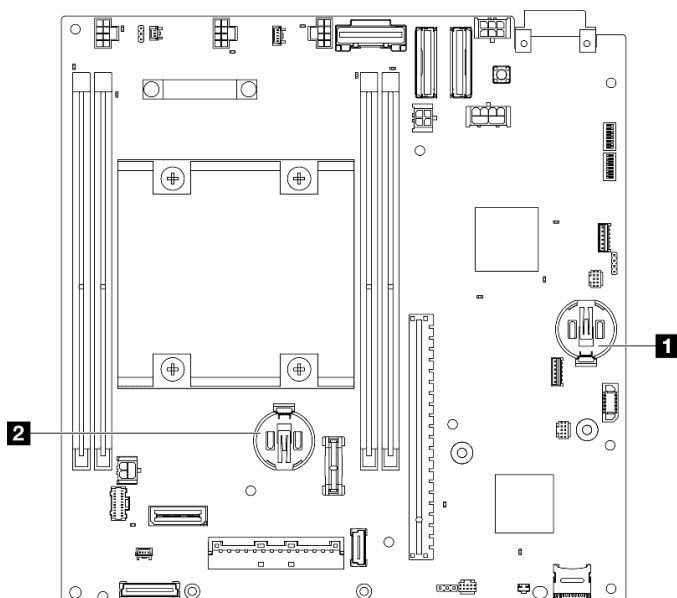


Figure 117. CMOS battery locations on the system board

<b>1</b> 3V system battery	<b>2</b> 3V security battery
----------------------------	------------------------------

**Note:** If 3V security battery is replaced, the system enters System Lockdown Mode and needs to be activated or unlocked. See *Activate or unlock the system* in *User Guide* or *System Configuration Guide*.

## Remove the system battery

### Procedure

- Step 1. Depending on the configuration, remove the power module board or internal power supply unit. See [“Remove the power module board \(PMB\)”](#) on page 172 or [“Remove the internal power supply unit \(AC PMB\)”](#) on page 108.
- Step 2. Remove the CMOS battery.
  - a. **1** Gently press on the nub on the side of the CMOS battery as illustrated.
  - b. **2** Pivot the battery away from the seat to remove it.

**Attention:** Avoid excessive force on the CMOS battery, as it might damage the socket on the system board and result in system board replacement.



Figure 118. Removing the CMOS battery

## After this task is completed

1. Dispose of the CMOS battery as required by local ordinances or regulations.



2. Install a replacement unit. See [“Install a CMOS battery \(CR2032\)” on page 93](#).

## Remove the security battery

### Procedure

Step 1. If applicable, remove the wireless adapter. See [“Remove the wireless adapter” on page 247](#).

Step 2. Remove the CMOS battery.

- a. ① Gently press on the nub on the side of the CMOS battery as illustrated.
- b. ② Pivot the battery away from the seat to remove it.

**Attention:** Avoid excessive force on the CMOS battery, as it might damage the socket on the system board and result in system board replacement.

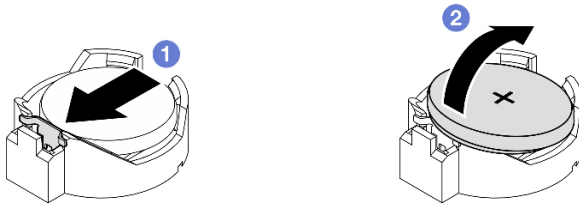


Figure 119. Removing the CMOS battery

### After this task is completed

1. Dispose of the CMOS battery as required by local ordinances or regulations.
2. Install a replacement unit. See [“Install a CMOS battery \(CR2032\)” on page 93](#).

### Demo Video

[Watch the procedure on YouTube](#)

## Install a CMOS battery (CR2032)

Follow instructions in this section to install a CMOS battery (CR2032).

### About this task

#### S002



#### **CAUTION:**

The power-control button on the device and the power switch on the power supply do not turn off the electrical current supplied to the device. The device also might have more than one power cord. To remove all electrical current from the device, ensure that all power cords are disconnected from the power source.

#### S004

**CAUTION:**

When replacing the lithium battery, use only Lenovo specified part number or an equivalent type of battery recommended by the manufacturer. If your system has a module containing a lithium battery, replace it only with the same module type made by the same manufacturer. The battery contains lithium and can explode if not properly used, handled, or disposed of.

*Do not:*

- Throw or immerse into water
- Heat to more than 100°C (212°F)
- Repair or disassemble

Dispose of the battery as required by local ordinances or regulations.

**S005****CAUTION:**

The battery is a lithium ion battery. To avoid possible explosion, do not burn the battery. Exchange it only with the approved part. Recycle or discard the battery as instructed by local regulations.

Consider the following when replacing the CMOS battery.

- Lenovo has designed this product with user safety in mind. The lithium battery must be handled properly to avoid potential danger. Make sure to follow instructions in this topic while replacing the battery.
- The CMOS battery must be replaced with another unit of the same type (CR2032).
- For high temperature operation environment, it is recommended to use CR2032HR instead.
- After replacement is completed, it is required to reconfigure the server and reset the system date and time.
- Dispose of the CMOS battery as required by local ordinances or regulations.

**Attention:**

- Read [“Installation Guidelines” on page 1](#) and [“Safety inspection checklist” on page 2](#) to ensure that you work safely.
- Touch the static-protective package that contains the component to any unpainted metal surface on the server; then, remove it from the package and place it on a static-protective surface.
- To avoid potential damage, **do not** let the CMOS battery contact any metal surface.
- Make sure that all the server power cords are disconnected from power source before performing this procedure.

**Procedure**

- Step 1. Follow any special handling and installation instructions that come with the CMOS battery.
- Step 2. Locate the CMOS battery socket on the system board.

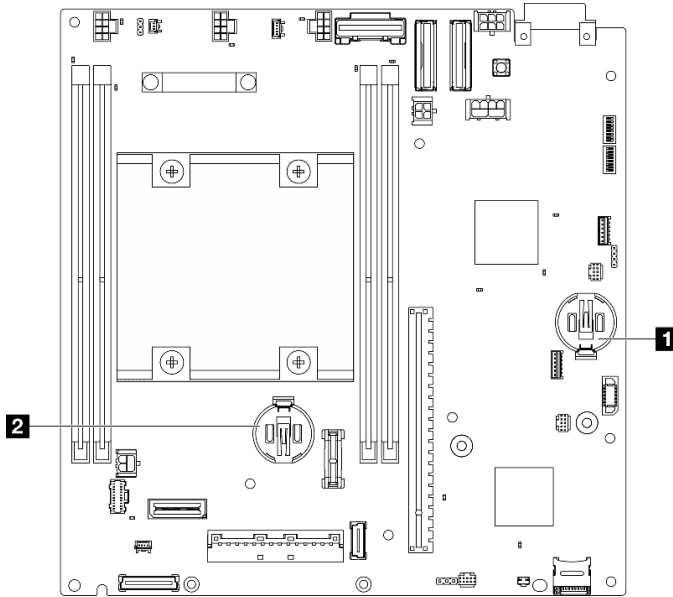


Figure 120. CMOS battery locations on the system board

<b>1</b> 3V system battery	<b>2</b> 3V security battery
----------------------------	------------------------------

**Note:** If 3V security battery is replaced, the system enters System Lockdown Mode and needs to be activated or unlocked. See *Activate or unlock the system* in *User Guide* or *System Configuration Guide*.

Step 3. Install the CMOS battery.

- a. **1** Place the CMOS battery on top of the socket with the positive (+) symbol facing up.
- b. **2** Press the battery into the seat until it clicks in place.

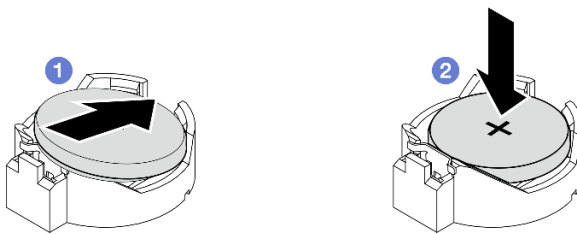


Figure 121. Installing the CMOS battery

### After this task is completed

1. Complete the parts replacement. See [“Complete the parts replacement” on page 281](#).
2. If 3V security battery is replaced, the system enters System Lockdown Mode and needs to be activated or unlocked. See *Activate or unlock the system* in *User Guide* or *System Configuration Guide*.
3. Power on the server; then, reset date, time, and all the passwords.

### Demo Video

[Watch the procedure on YouTube](#)

## Fan direction switch with cable replacement

Follow instructions in this section to remove and install the fan direction switch with cable.

### Remove the fan direction switch with cable

Follow instructions in this section to remove the fan direction switch with cable.

#### About this task

##### S002



#### CAUTION:

The power-control button on the device and the power switch on the power supply do not turn off the electrical current supplied to the device. The device also might have more than one power cord. To remove all electrical current from the device, ensure that all power cords are disconnected from the power source.

#### Attention:

- Read [“Installation Guidelines” on page 1](#) and [“Safety inspection checklist” on page 2](#) to ensure that you work safely.
- Power off the server and peripheral devices and disconnect the power cords and all external cables. See [“Power off the server” on page 8](#).
- If the node is installed in an enclosure or mounted, remove the node from the enclosure or mount. See [“Configuration guide” on page 9](#).

### Procedure

Step 1. Make preparation for this task.

- a. If necessary, remove all the WLAN antennas. See [“Remove the WLAN antennas” on page 256](#).
- b. Remove the top cover. See [“Remove the top cover” on page 154](#).
- c. Remove the PMB air baffle. See [“Remove the PMB air baffle” on page 62](#).
- d. Lift the riser assembly from the node. See [“Remove the riser assembly from the node” on page 186](#).
- e. Remove the processor air baffle. See [“Remove the processor air baffle and air flow sensor board” on page 65](#).
- f. Remove the top intrusion switch with cable. See [“Remove the top intrusion switch with cable” on page 116](#).
- g. Remove the memory modules from DIMM slot 1 and DIMM slot 2. See [“Remove a memory module” on page 144](#).
- h. Depending on the model, remove the processor side SMA assembly or the SMA filler. See [“Remove the SMA assemblies” on page 257](#).

**Notes:** To remove both the top intrusion switch with cable and the processor side SMA assembly or filler, the following procedure is recommended for easier operation:

1. Disconnect the intrusion switch cable from the system board.
2. Loosen the screw that secures the SMA assembly or filler.

3. Loosen the screw that secures the intrusion switch.
4. Pinch and slide the intrusion switch to remove it.
5. Lift the SMA assembly or filler from the chassis.

Step 2. Disconnect the fan direction switch cable from the system board.

Step 3. Loosen the screw that secures the fan direction switch.

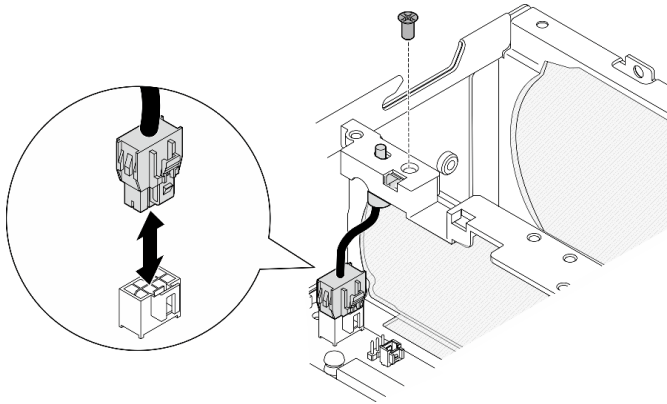


Figure 122. Removing the fan direction switch

Step 4. Remove the fan direction switch.

- a. ① Push the top of the switch with a pointed tool to disengage the switch from the slot.
- b. ② Rotate the switch as shown.
- c. ③ Remove the switch from the chassis.

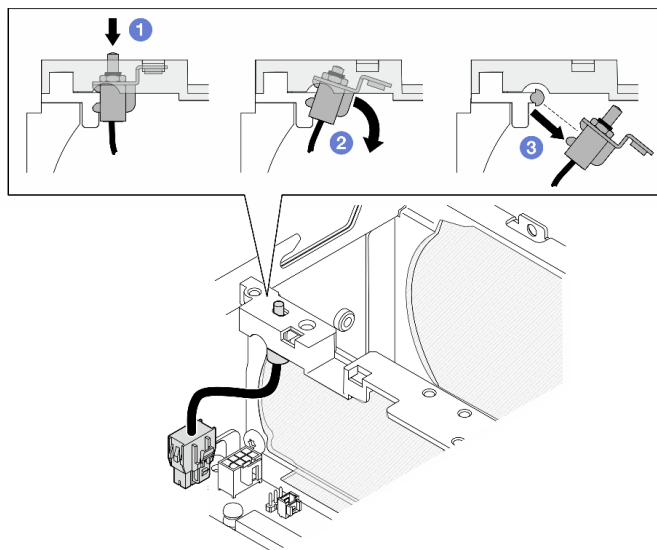


Figure 123. Removing the fan direction switch

## After this task is completed

- Install a replacement unit. See [“Install the fan direction switch with cable” on page 98](#).
- If you are instructed to return the component or optional device, follow all packaging instructions, and use any packaging materials for shipping that are supplied to you.

## Demo Video

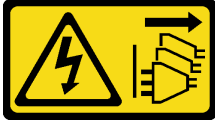
[Watch the procedure on YouTube](#)

## Install the fan direction switch with cable

Follow instructions in this section to install the fan direction switch with cable.

## About this task

### S002



### CAUTION:

The power-control button on the device and the power switch on the power supply do not turn off the electrical current supplied to the device. The device also might have more than one power cord. To remove all electrical current from the device, ensure that all power cords are disconnected from the power source.

### Attention:

- Read [“Installation Guidelines” on page 1](#) and [“Safety inspection checklist” on page 2](#) to ensure that you work safely.
- Touch the static-protective package that contains the component to any unpainted metal surface on the server; then, remove it from the package and place it on a static-protective surface.

## Procedure

Step 1. Install the fan direction switch.

- a. ① Align the opening of the bracket with the guide pin on the chassis; then, insert the fan direction switch at an angle until it stops.
- b. ② Rotate the fan direction switch as shown until the switch is firmly seated in the slot.

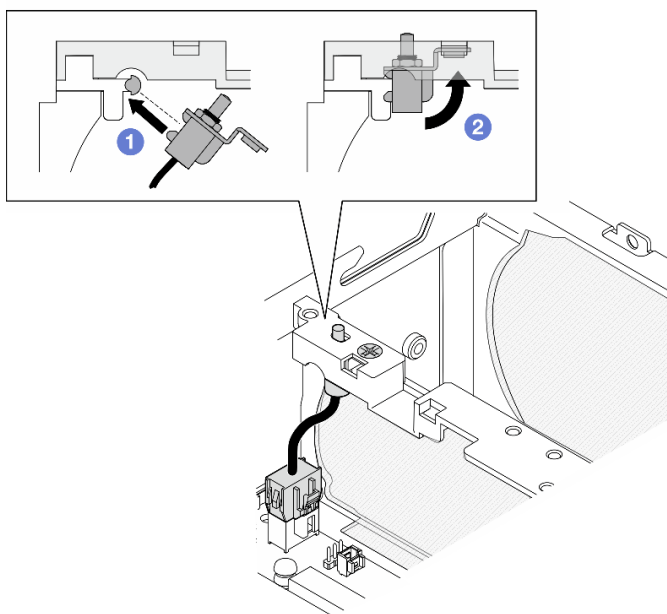


Figure 124. Installing intrusion switch with cable

- Step 2. Secure the fan direction switch with one screw.
- Step 3. Connect the fan direction switch cable to Air flow switch connector on the system board. See [“System-board connectors for cable routing” on page 283](#) to locate the connector.

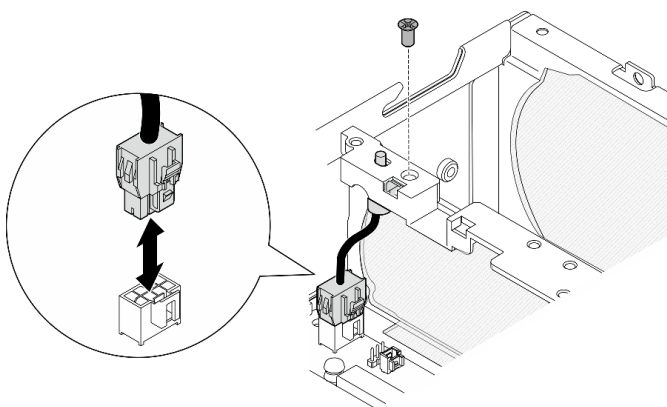


Figure 125. Installing the fan direction switch

## After this task is completed

Complete the parts replacement. See [“Complete the parts replacement” on page 281](#).

## Demo Video

[Watch the procedure on YouTube](#)

## Fan module replacement

Follow instructions in this section to remove and install a fan module.

## Remove a fan module

Follow instructions in this section to remove a fan module.

### About this task

#### S002



#### **CAUTION:**

The power-control button on the device and the power switch on the power supply do not turn off the electrical current supplied to the device. The device also might have more than one power cord. To remove all electrical current from the device, ensure that all power cords are disconnected from the power source.

#### S009



#### **CAUTION:**

To avoid personal injury, disconnect the fan cables before removing the fan from the device.

#### S017



#### **CAUTION:**

Hazardous moving fan blades nearby. Keep fingers and other body parts away.

#### S033



#### **CAUTION:**

Hazardous energy present. Voltages with hazardous energy might cause heating when shorted with metal, which might result in spattered metal, burns, or both.

#### **Attention:**

- Read [“Installation Guidelines” on page 1](#) and [“Safety inspection checklist” on page 2](#) to ensure that you work safely.
- Power off the server and peripheral devices and disconnect the power cords and all external cables. See [“Power off the server” on page 8](#).



- If the node is installed in an enclosure or mounted, remove the node from the enclosure or mount. See [“Configuration guide” on page 9](#).

## Procedure

Step 1. Make preparation for this task.

- If necessary, remove all the WLAN antennas. See [“Remove the WLAN antennas” on page 256](#).
- Remove the top cover. See [“Remove the top cover” on page 154](#).
- Remove the PMB air baffle. See [“Remove the PMB air baffle” on page 62](#).
- Lift the riser assembly from the node. See [“Remove the riser assembly from the node” on page 186](#).
- Remove the processor air baffle. See [“Remove the processor air baffle and air flow sensor board” on page 65](#).

Step 2. Disconnect the fan cable.

- ① Press and hold the fan cable latch.
- ② Disconnect the fan cable from the system board.

Step 3. Loosen the four captive screws that secure the fan module with a PH1 screwdriver.

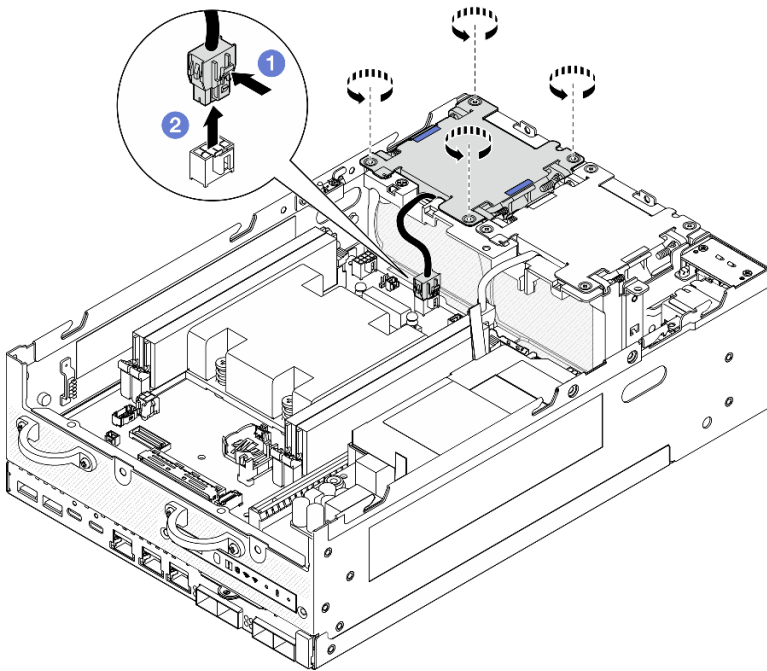


Figure 126. Removing the fan module

Step 4. Pinch the blue touch points; then, lift the fan module to remove it.

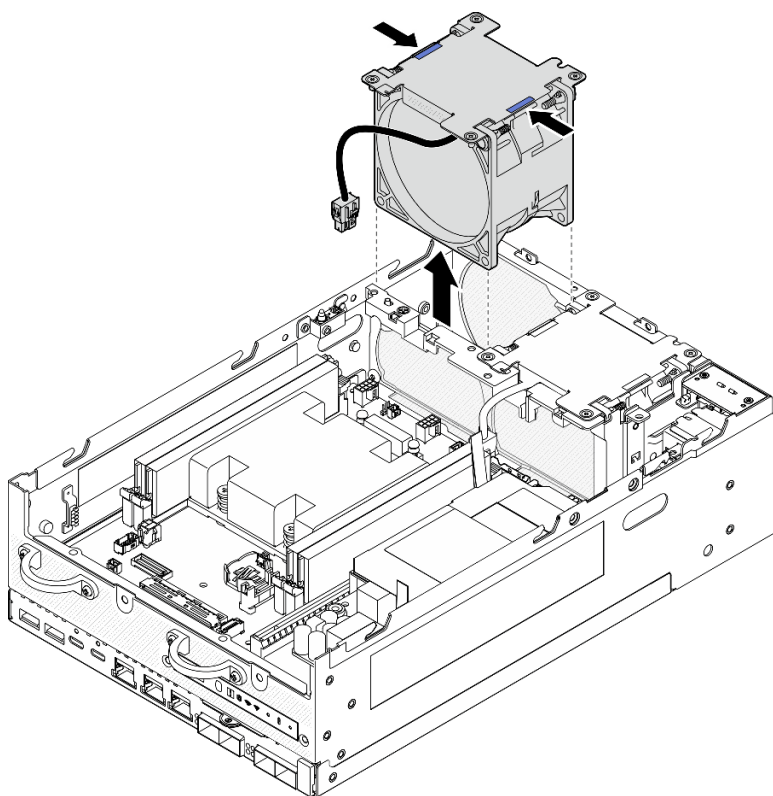
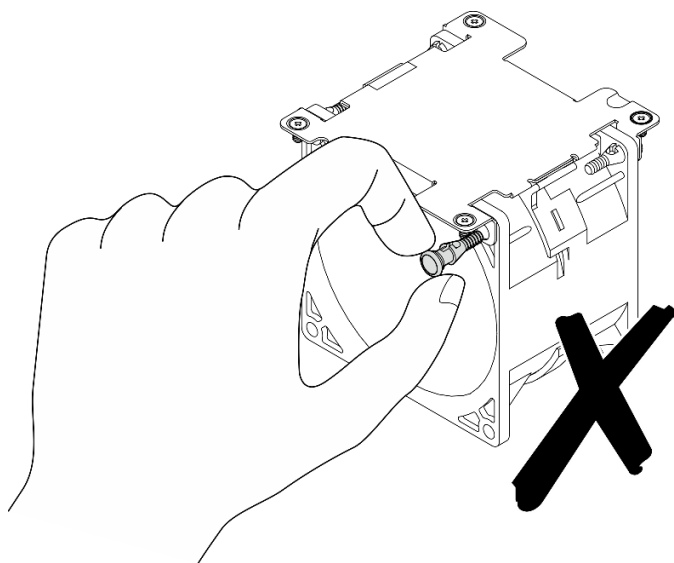


Figure 127. Removing the fan module

**Attention:**



**DO NOT** disassemble the fan module. Attempting to disassemble the fan module might cause damage to the components.

**After this task is completed**

- Install a replacement unit. See [“Install a fan module” on page 103](#).

- If you are instructed to return the component or optional device, follow all packaging instructions, and use any packaging materials for shipping that are supplied to you.

### Demo Video

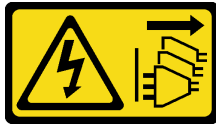
[Watch the procedure on YouTube](#)

## Install a fan module

Follow instructions in this section to install a fan module.

### About this task

#### S002



#### CAUTION:

The power-control button on the device and the power switch on the power supply do not turn off the electrical current supplied to the device. The device also might have more than one power cord. To remove all electrical current from the device, ensure that all power cords are disconnected from the power source.

#### S017



#### CAUTION:

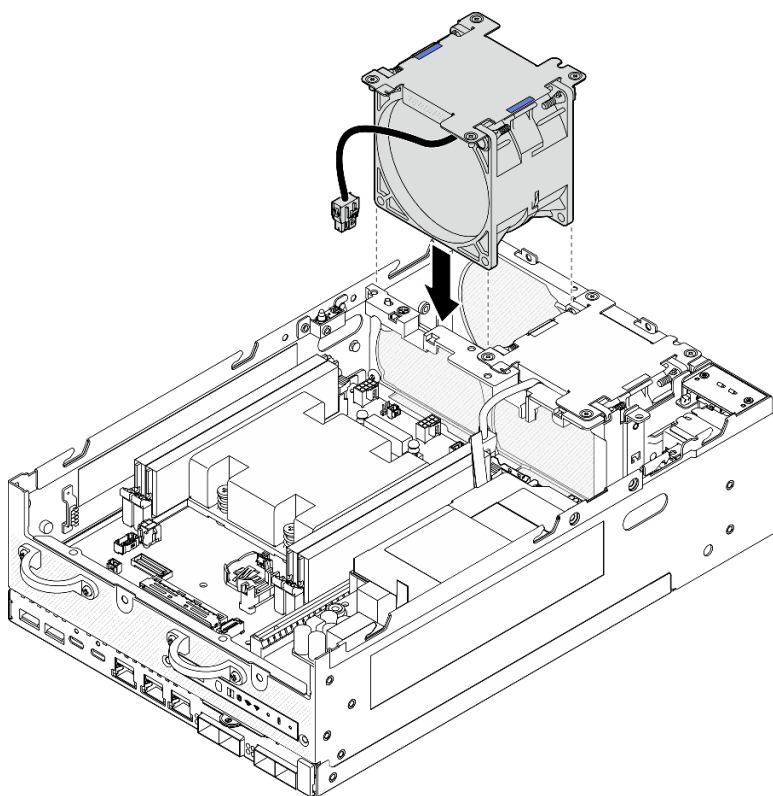
Hazardous moving fan blades nearby. Keep fingers and other body parts away.

#### Attention:

- Read [“Installation Guidelines” on page 1](#) and [“Safety inspection checklist” on page 2](#) to ensure that you work safely.
- Make sure to replace a defective fan with another unit of the exact same type.
- Touch the static-protective package that contains the component to any unpainted metal surface on the server; then, remove it from the package and place it on a static-protective surface.

## Procedure

Step 1. Align the fan module with the fan slot; then, lower the fan module into the fan slot.



*Figure 128. Installing the fan module*

- Step 2. Fasten the four captive screws to secure the fan module with a PH1 screwdriver.
- Step 3. Connect the fan cable to the system board. See [“Fan module cable routing” on page 290](#).

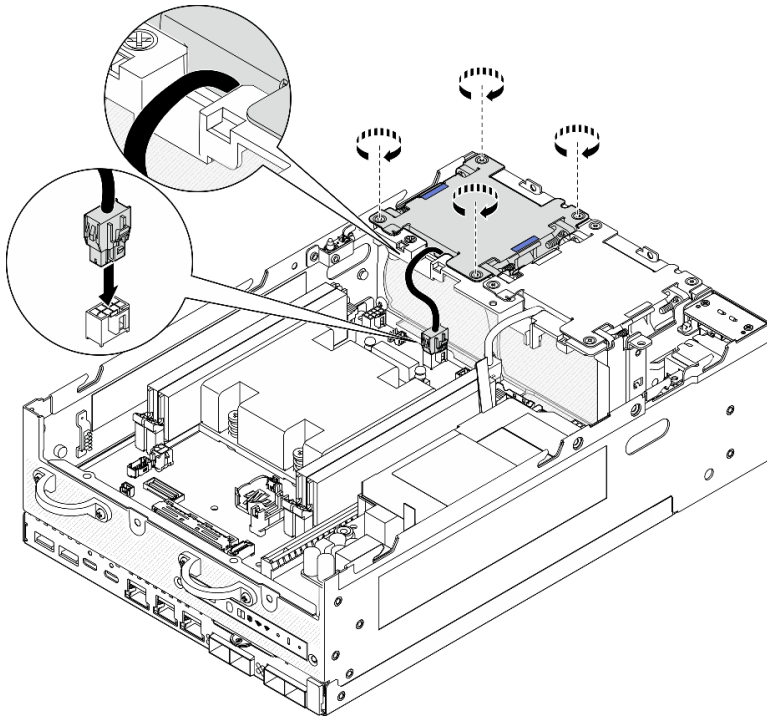


Figure 129. Installing the fan module

### After this task is completed

- Complete the parts replacement. See [“Complete the parts replacement” on page 281](#).

### Demo Video

[Watch the procedure on YouTube](#)

## Front operator panel replacement

Follow instructions in this section to remove and install the front operator panel.

### Remove the front operator panel

Follow instructions in this section to remove the front operator panel.

### About this task

#### S002



#### CAUTION:

The power-control button on the device and the power switch on the power supply do not turn off the electrical current supplied to the device. The device also might have more than one power cord. To remove all electrical current from the device, ensure that all power cords are disconnected from the power source.

**Attention:**

- Read [“Installation Guidelines” on page 1](#) and [“Safety inspection checklist” on page 2](#) to ensure that you work safely.
- Power off the server and peripheral devices and disconnect the power cords and all external cables. See [“Power off the server” on page 8](#).
- If the node is installed in an enclosure or mounted, remove the node from the enclosure or mount. See [“Configuration guide” on page 9](#).

**Procedure**

Step 1. Make preparation for this task.

- a. If necessary, remove all the WLAN antennas. See [“Remove the WLAN antennas” on page 256](#).
- b. Remove the top cover. See [“Remove the top cover” on page 154](#).
- c. Remove the PMB air baffle. See [“Remove the PMB air baffle” on page 62](#).
- d. Lift the riser assembly from the node. See [“Remove the riser assembly from the node” on page 186](#).

Step 2. Disconnect all the cables from the front operator panel.

Step 3. Remove the front operator panel.

- a. ① Loosen the two screws on the front.
- b. ② Remove the front operator panel from the slot.

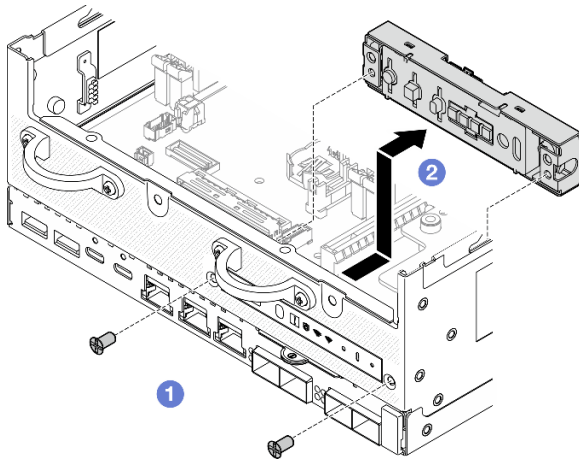


Figure 130. Removing the front operator panel

**After this task is completed**

- Install a replacement unit. See [“Install the front operator panel” on page 106](#).
- If you are instructed to return the component or optional device, follow all packaging instructions, and use any packaging materials for shipping that are supplied to you.

**Demo Video**

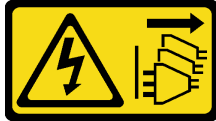
[Watch the procedure on YouTube](#)

**Install the front operator panel**

Follow instructions in this section to install the front operator panel.

## About this task

**S002**



### CAUTION:

The power-control button on the device and the power switch on the power supply do not turn off the electrical current supplied to the device. The device also might have more than one power cord. To remove all electrical current from the device, ensure that all power cords are disconnected from the power source.

### Attention:

- Read [“Installation Guidelines” on page 1](#) and [“Safety inspection checklist” on page 2](#) to ensure that you work safely.
- Touch the static-protective package that contains the component to any unpainted metal surface on the server; then, remove it from the package and place it on a static-protective surface.

## Procedure

Step 1. Install the front operator panel.

- 1 Insert the front operator panel into the slot.
- 2 Secure the front operator panel with two screws on the front.

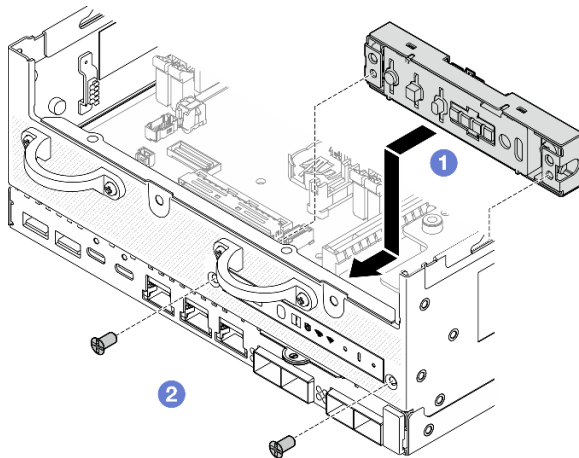


Figure 131. Installing the front operator panel

Step 2. Connect the cables to the front operator panel. See [“Operator panel cable routing” on page 293](#).

## After this task is completed

Complete the parts replacement. See [“Complete the parts replacement” on page 281](#).

### Demo Video

[Watch the procedure on YouTube](#)

## Internal power supply unit (AC PMB) replacement

Follow instructions in this section to remove and install the internal power supply unit (AC PMB).

**Note:** The internal power supply unit is also called AC power module board (AC PMB).

### Remove the internal power supply unit (AC PMB)

Follow instructions in this section to remove the internal power supply unit (AC PMB).

#### About this task

##### S001



Electrical current from power, telephone, and communication cables is hazardous.

To avoid a shock hazard:

- Connect all power cords to a properly wired and grounded electrical outlet/source.
- Connect any equipment that will be attached to this product to properly wired outlets/sources.
- When possible, use one hand only to connect or disconnect signal cables.
- Never turn on any equipment when there is evidence of fire, water, or structural damage.
- The device might have more than one power cord, to remove all electrical current from the device, ensure that all power cords are disconnected from the power source.

##### S002



#### CAUTION:

The power-control button on the device and the power switch on the power supply do not turn off the electrical current supplied to the device. The device also might have more than one power cord. To remove all electrical current from the device, ensure that all power cords are disconnected from the power source.

##### S033



#### CAUTION:

Hazardous energy present. Voltages with hazardous energy might cause heating when shorted with metal, which might result in spattered metal, burns, or both.



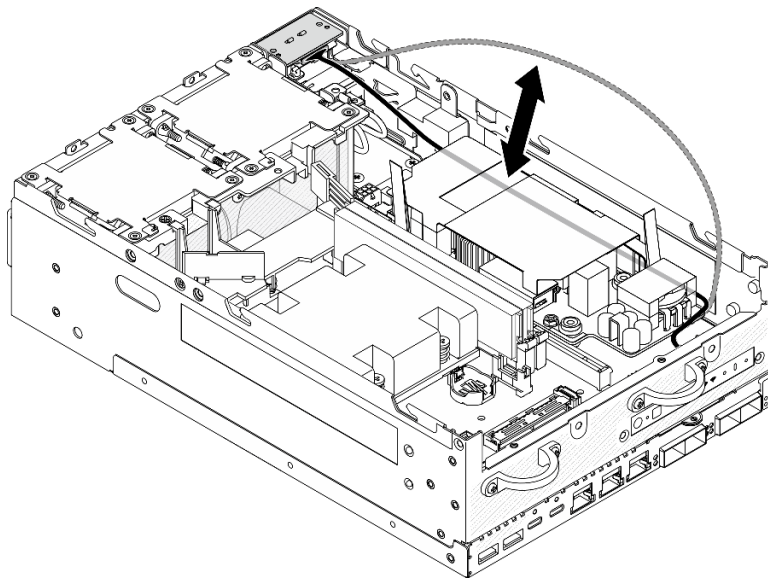
**Attention:**

- Read [“Installation Guidelines” on page 1](#) and [“Safety inspection checklist” on page 2](#) to ensure that you work safely.
- Power off the server and peripheral devices and disconnect the power cords and all external cables. See [“Power off the server” on page 8](#).
- If the node is installed in an enclosure or mounted, remove the node from the enclosure or mount. See [“Configuration guide” on page 9](#).

**Procedure**

Step 1. Make preparation for this task.

- a. If necessary, remove all the WLAN antennas. See [“Remove the WLAN antennas” on page 256](#).
- b. Remove the top cover. See [“Remove the top cover” on page 154](#).
- c. Remove the PMB air baffle. See [“Remove the PMB air baffle” on page 62](#).
- d. Lift the riser assembly from the node. See [“Remove the riser assembly from the node” on page 186](#).
- e. Depending on the model, remove the PMB side SMA assembly or SMA filler. See [“Remove the SMA assemblies” on page 257](#).
- f. To ensure sufficient space for this task, place the signal cable that connects the front operator panel and rear operator panel outside of the chassis.



*Figure 132. Placing the signal cable*

Step 2. Loosen the screws that secure the two grounding cables to disconnect the cables from **1** chassis and **2** internal power supply unit.

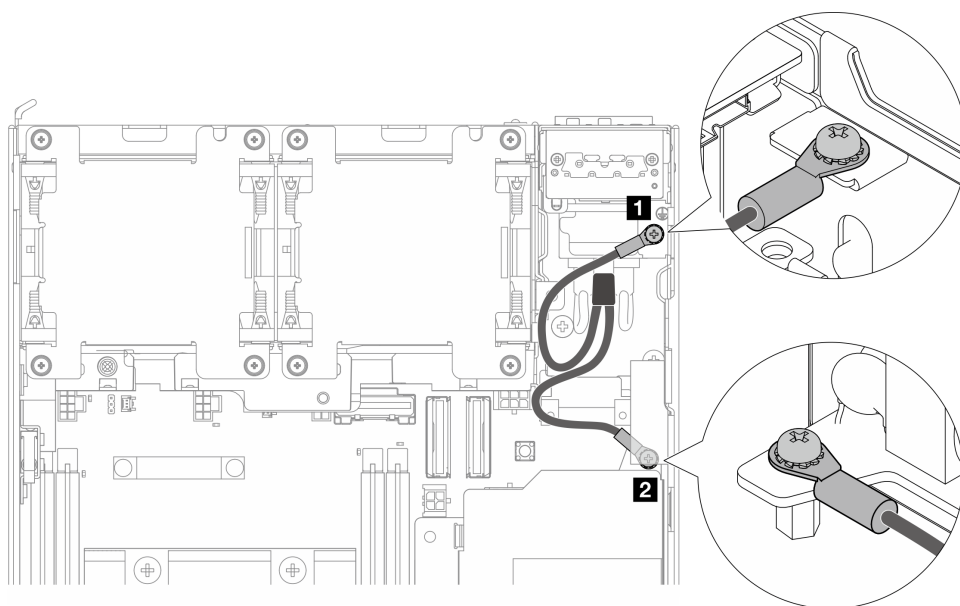


Figure 133. Disconnecting the grounding cables

- Step 3. Disconnect the power cable and PMB LED cable from the internal power supply unit.
- 1 Press and hold the power cable latch.
  - 2 Disconnect the power cable from the internal power supply unit.
  - 3 Disconnect the PMB LED cable from the internal power supply unit.

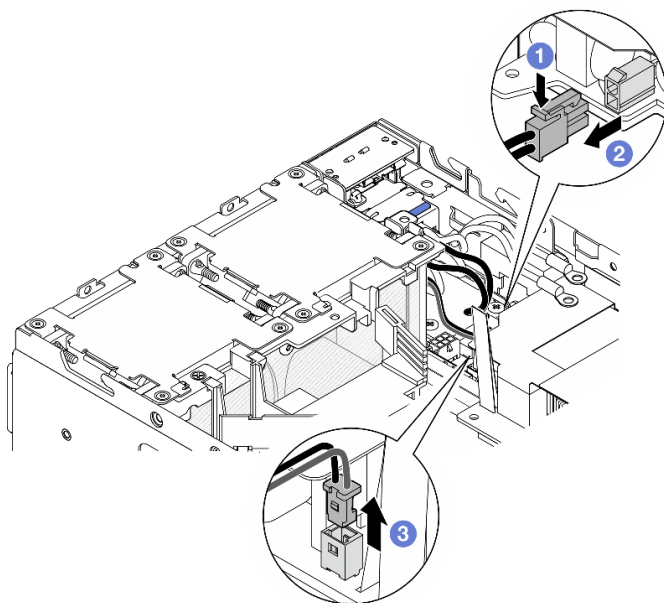


Figure 134. Disconnecting the cables

- Step 4. Loosen the two screws that secure the internal power supply unit.

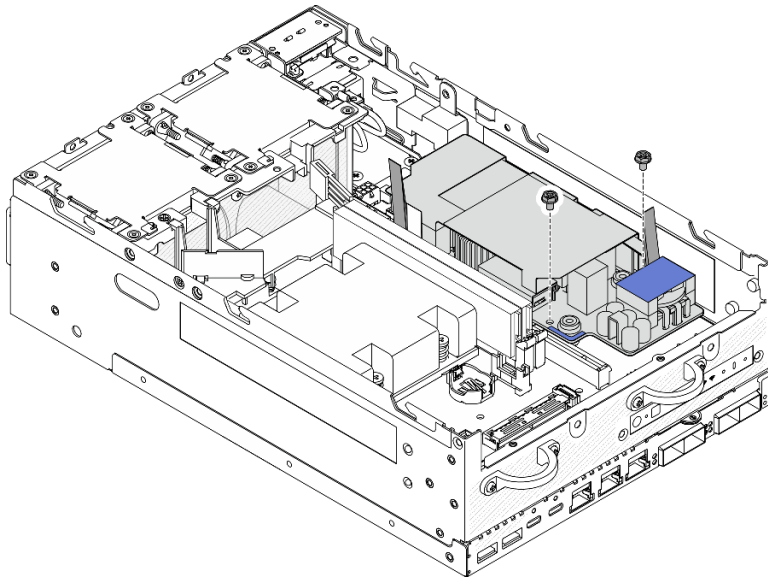


Figure 135. Loosening the screws

Step 5. Pinch the pull tapes to lift the internal power supply unit slightly up; then, pinch the edge of the internal power supply unit and lift it up to remove it from the chassis.

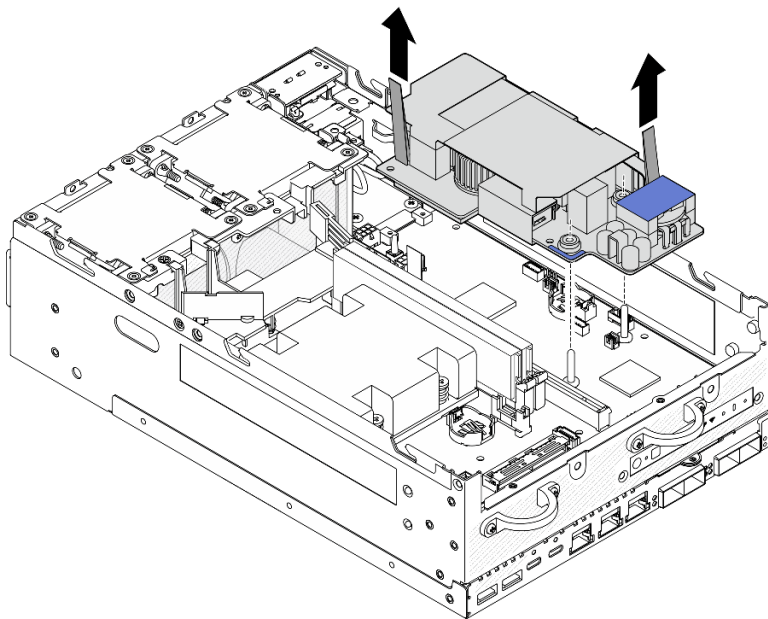


Figure 136. Removing the internal power supply unit

### After this task is completed

- Install a replacement unit. See [“Install the internal power supply unit \(AC PMB\)”](#) on page 112.
- If you are instructed to return the component or optional device, follow all packaging instructions, and use any packaging materials for shipping that are supplied to you.

### Demo Video

[Watch the procedure on YouTube](#)

## Install the internal power supply unit (AC PMB)

Follow instructions in this section to install the internal power supply unit (AC PMB).

### S001



**DANGER**

Electrical current from power, telephone, and communication cables is hazardous.  
To avoid a shock hazard:

- Connect all power cords to a properly wired and grounded electrical outlet/source.
- Connect any equipment that will be attached to this product to properly wired outlets/sources.
- When possible, use one hand only to connect or disconnect signal cables.
- Never turn on any equipment when there is evidence of fire, water, or structural damage.
- The device might have more than one power cord, to remove all electrical current from the device, ensure that all power cords are disconnected from the power source.

### S002



#### **CAUTION:**

The power-control button on the device and the power switch on the power supply do not turn off the electrical current supplied to the device. The device also might have more than one power cord. To remove all electrical current from the device, ensure that all power cords are disconnected from the power source.

### S033



#### **CAUTION:**

Hazardous energy present. Voltages with hazardous energy might cause heating when shorted with metal, which might result in spattered metal, burns, or both.

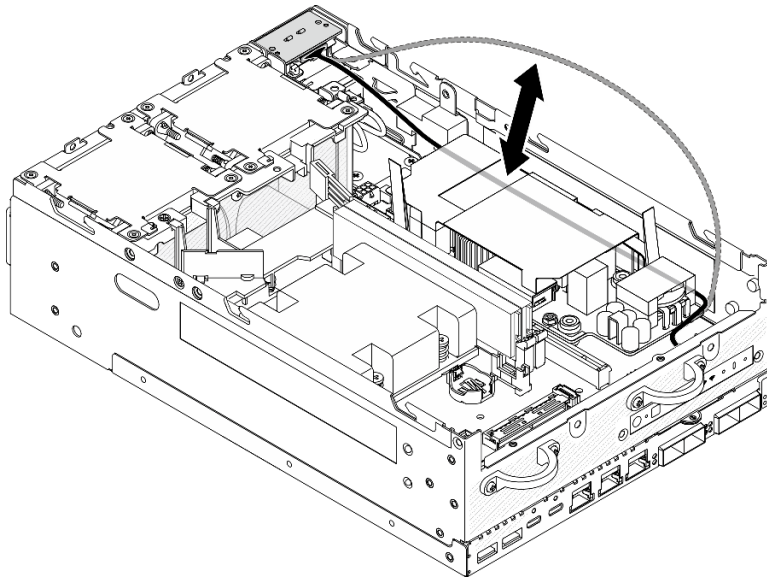
## About this task

**Attention:**

- Read “[Installation Guidelines](#)” on page 1 and “[Safety inspection checklist](#)” on page 2 to ensure that you work safely.
- Touch the static-protective package that contains the component to any unpainted metal surface on the server; then, remove it from the package and place it on a static-protective surface.

## Procedure

Step 1. Make sure the signal cable between the front operator panel and rear operator panel is placed outside the chassis.



*Figure 137. Placing the signal cable*

Step 2. Install the internal power supply unit.

- 1 Connect the PMB LED cable to the internal power supply unit.
- 2 Connect the power cable from the PIB module to the internal power supply unit.
- 3 Align the internal power supply unit with the busbars on the system board; then, lower the internal power supply unit down until it is firmly seated.

**Important:** Make sure that the busbars are seated in the holes of internal power supply unit as shown in the illustration. If necessary, press the blue touch points shown in the illustration.

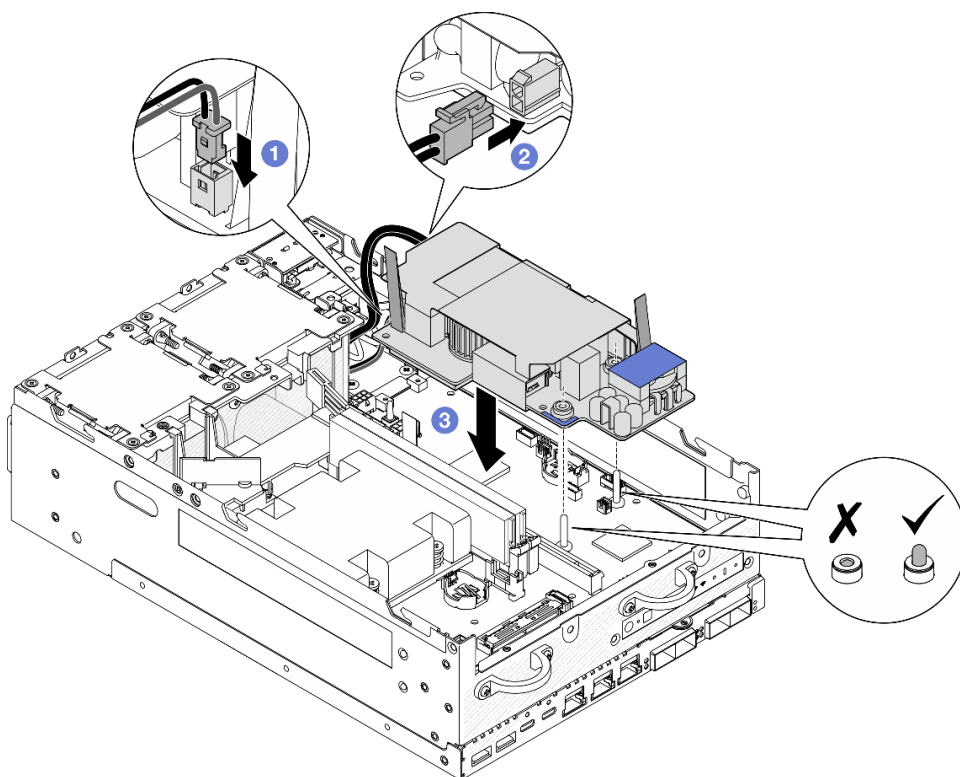


Figure 138. Installing the internal power supply unit

**Notes:**

- Do not let the pull tapes be bent or covered. Make sure the pull tapes are on the upper side of the internal power supply unit.

Step 3. Fasten the two screws on the front side of internal power supply unit.

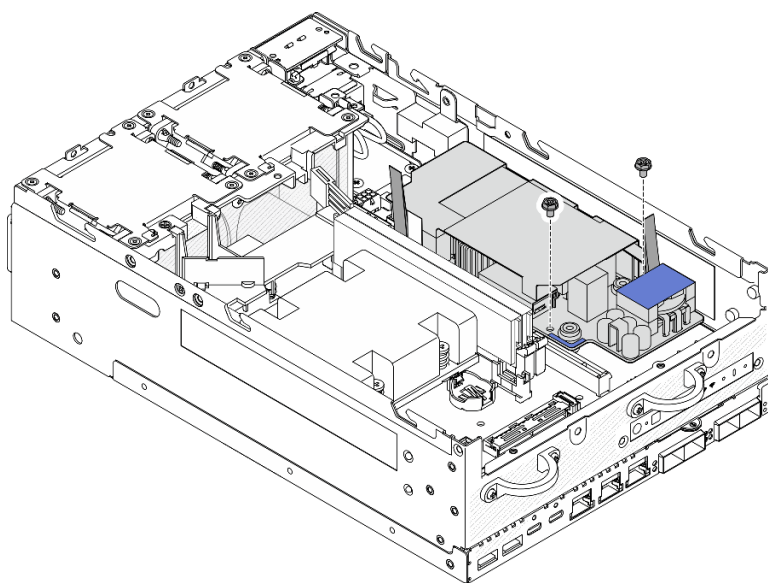


Figure 139. Fastening the screws

Step 4. Connect the grounding cables of PIB module.

- a. Secure grounding cable **1** to the chassis with one screw.

**Note:** When connecting the grounding cable to the chassis, make sure to place the grounding cable above the operator panel signal cable.

- b. Secure grounding cable **2** to the internal power supply with one screw.

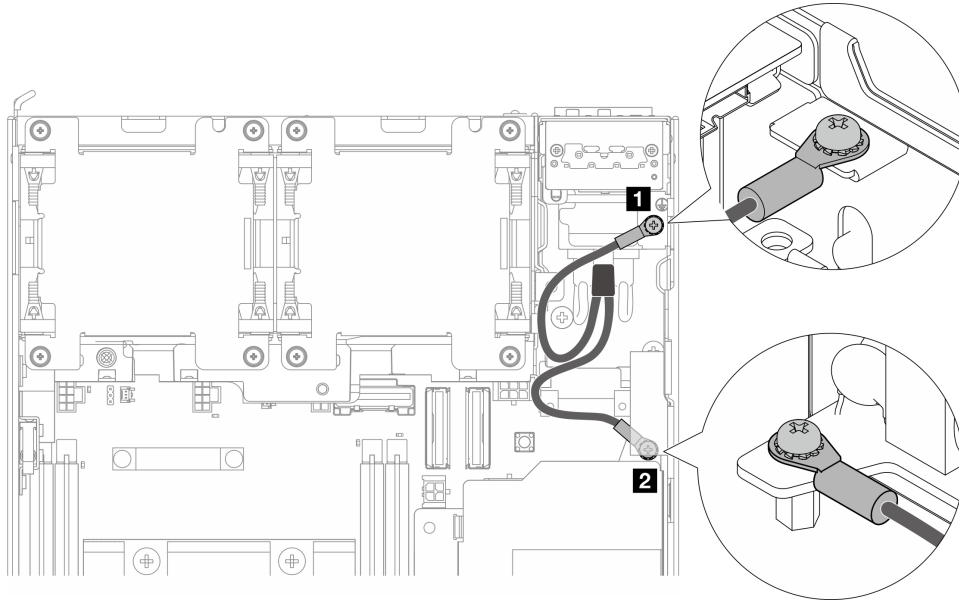


Figure 140. Connecting the grounding cable

### After this task is completed

1. Place the signal cable between the front operator panel and rear operator panel back into the chassis.

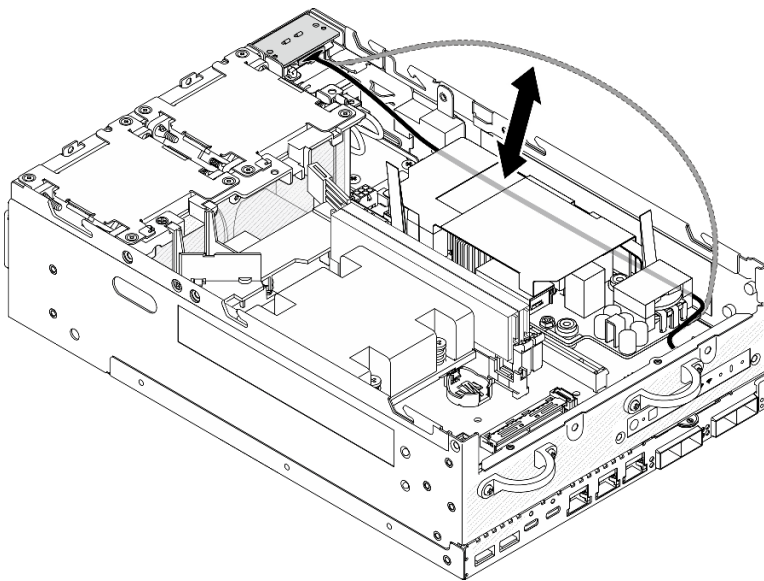


Figure 141. Placing the signal cable

2. Complete the parts replacement. See [“Complete the parts replacement” on page 281](#).



## Demo Video

[Watch the procedure on YouTube](#)

## Intrusion switch with cable replacement

Follow instructions in this section to remove and install the intrusion switch with cable.

### Remove the top intrusion switch with cable

Follow instructions in this section to remove the top intrusion switch with cable.

## About this task

### S002



#### CAUTION:

The power-control button on the device and the power switch on the power supply do not turn off the electrical current supplied to the device. The device also might have more than one power cord. To remove all electrical current from the device, ensure that all power cords are disconnected from the power source.

#### Attention:

- Read [“Installation Guidelines” on page 1](#) and [“Safety inspection checklist” on page 2](#) to ensure that you work safely.
- Power off the server and peripheral devices and disconnect the power cords and all external cables. See [“Power off the server” on page 8](#).
- If the node is installed in an enclosure or mounted, remove the node from the enclosure or mount. See [“Configuration guide” on page 9](#).

## Procedure

Step 1. Make preparation for this task.

- a. If necessary, remove all the WLAN antennas. See [“Remove the WLAN antennas” on page 256](#).
- b. Remove the top cover. See [“Remove the top cover” on page 154](#).
- c. Remove the PMB air baffle. See [“Remove the PMB air baffle” on page 62](#).
- d. Lift the riser assembly from the node. See [“Remove the riser assembly from the node” on page 186](#).
- e. Remove the processor air baffle. See [“Remove the processor air baffle and air flow sensor board” on page 65](#).

Step 2. Disconnect the intrusion switch cable from the system board.



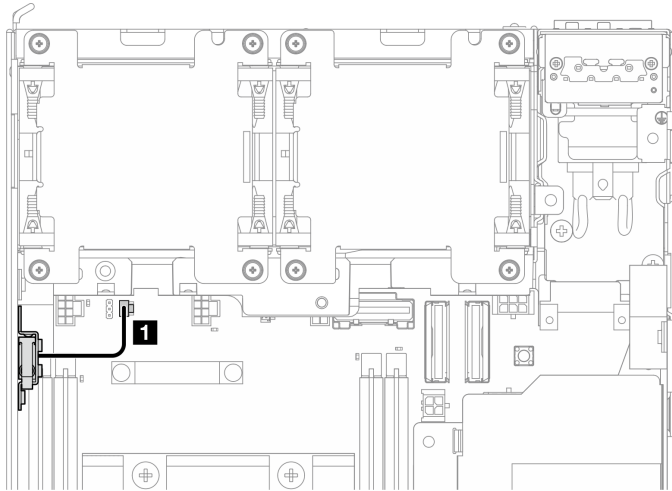


Figure 142. Top intrusion switch cable routing

**1** Intrusion switch connector on the system board

- Step 3. Remove the intrusion switch.
- a. **1** Loosen the screw that secures the intrusion switch.
  - b. **2** Pinch and slide the intrusion switch to remove it.

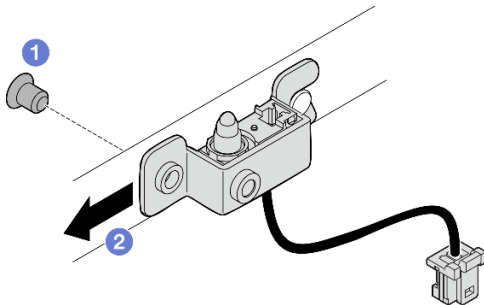


Figure 143. Removing intrusion switch with cable

- Step 4. Separate the bracket from the intrusion switch cable.

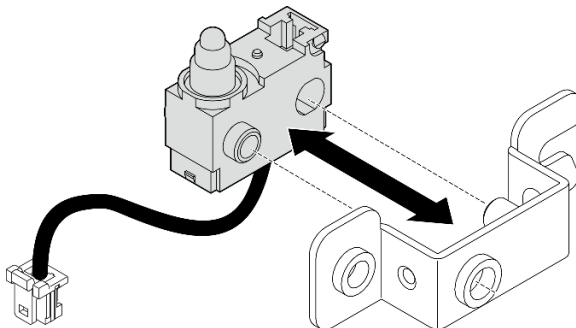


Figure 144. Separating the intrusion switch from the bracket

**After this task is completed**

- Install a replacement unit. See [“Install the top intrusion switch with cable” on page 118](#).
- If you are instructed to return the component or optional device, follow all packaging instructions, and use any packaging materials for shipping that are supplied to you.

## Demo Video

[Watch the procedure on YouTube](#)

## Install the top intrusion switch with cable

Follow instructions in this section to install the top intrusion switch with cable.

## About this task

### S002



#### **CAUTION:**

The power-control button on the device and the power switch on the power supply do not turn off the electrical current supplied to the device. The device also might have more than one power cord. To remove all electrical current from the device, ensure that all power cords are disconnected from the power source.

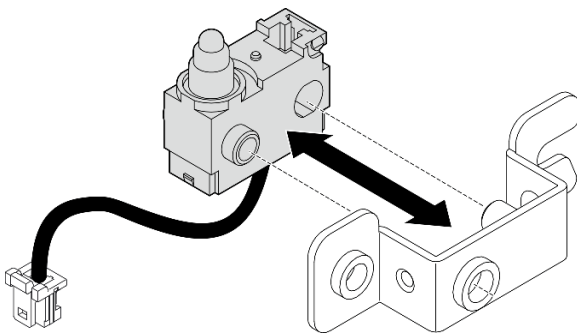
#### **Attention:**

- Read [“Installation Guidelines” on page 1](#) and [“Safety inspection checklist” on page 2](#) to ensure that you work safely.
- Touch the static-protective package that contains the component to any unpainted metal surface on the server; then, remove it from the package and place it on a static-protective surface.

**Note:** The intrusion switch with cable for replacement might come with different colors, but the function is the same.

## Procedure

- Step 1. Align the intrusion switch cable with the guide pin and hole on the bracket; then, insert the intrusion switch cable to the bracket.



*Figure 145. Inserting the intrusion switch to the bracket*

- Step 2. Install the intrusion switch.

- a. ① Push the intrusion switch toward the chassis and align the opening of the bracket with the guide pin; then, slide the intrusion switch toward the guide pin until it stops.
- b. ② Secure the intrusion switch with one screw.

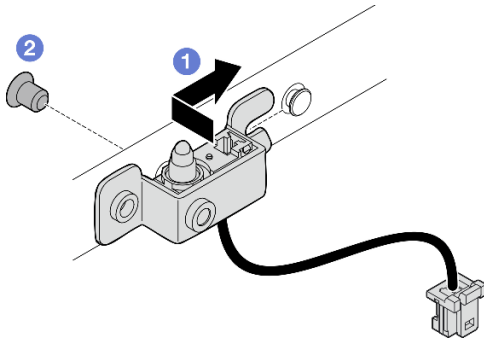


Figure 146. Installing intrusion switch with cable

Step 3. Connect the intrusion switch cable to the system board.

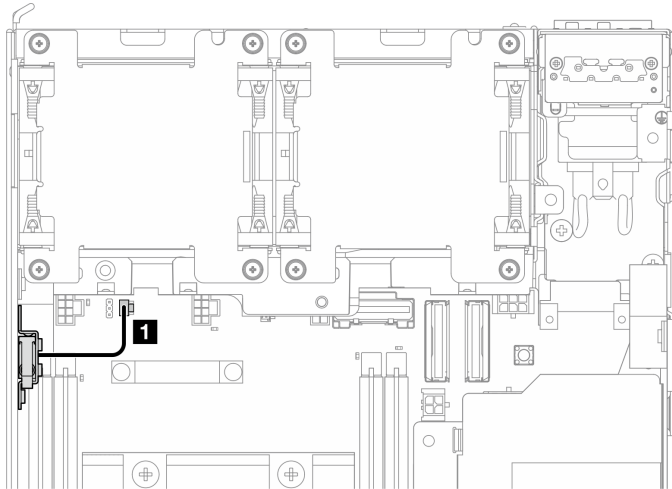


Figure 147. Top intrusion switch cable routing

① Intrusion switch connector on the system board

## After this task is completed

Complete the parts replacement. See [“Complete the parts replacement” on page 281](#).

## Demo Video

[Watch the procedure on YouTube](#)

## Remove the bottom intrusion switch with cable

Follow instructions in this section to remove the bottom intrusion switch with cable.

## About this task

## **S002**



### **CAUTION:**

The power-control button on the device and the power switch on the power supply do not turn off the electrical current supplied to the device. The device also might have more than one power cord. To remove all electrical current from the device, ensure that all power cords are disconnected from the power source.

### **Attention:**

- Read [“Installation Guidelines” on page 1](#) and [“Safety inspection checklist” on page 2](#) to ensure that you work safely.
- Power off the server and peripheral devices and disconnect the power cords and all external cables. See [“Power off the server” on page 8](#).
- If the node is installed in an enclosure or mounted, remove the node from the enclosure or mount. See [“Configuration guide” on page 9](#).

### **Procedure**

Step 1. Make preparation for this task.

- a. Remove the bottom cover. See [“Remove the bottom cover” on page 158](#).

Step 2. Disconnect the intrusion switch cable from the I/O module board.

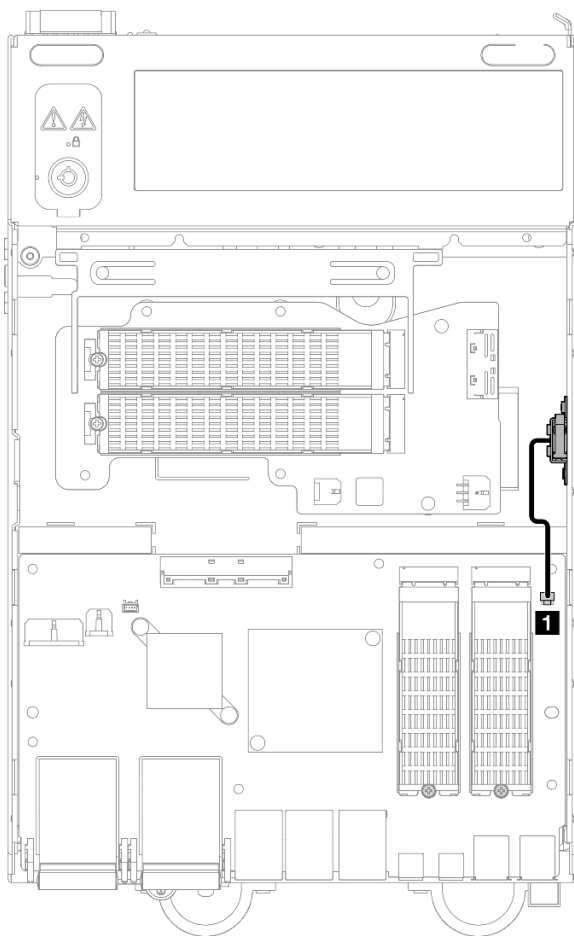


Figure 148. Bottom intrusion switch cable routing

**1** Intrusion switch connector on the I/O module board

Step 3. Remove the intrusion switch.

- a. **1** Loosen the screw that secures the intrusion switch.
- b. **2** Pinch and slide the intrusion switch to remove it.

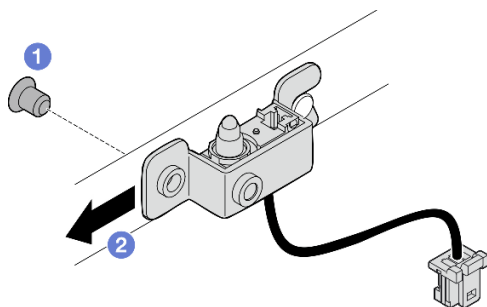


Figure 149. Removing intrusion switch with cable

Step 4. Separate the bracket from the intrusion switch cable.

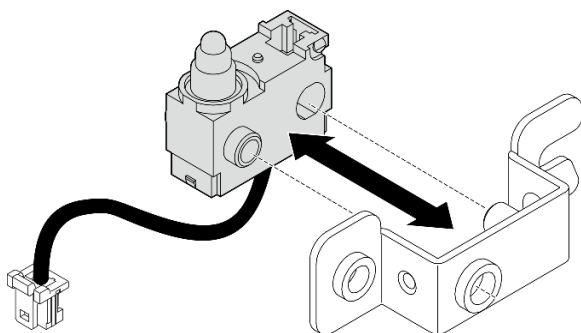


Figure 150. Separating the intrusion switch from the bracket

### After this task is completed

- Install a replacement unit. See [“Install the bottom intrusion switch with cable” on page 122](#).
- If you are instructed to return the component or optional device, follow all packaging instructions, and use any packaging materials for shipping that are supplied to you.

### Demo Video

[Watch the procedure on YouTube](#)

### Install the bottom intrusion switch with cable

Follow instructions in this section to install the bottom intrusion switch with cable.

### About this task

#### S002



#### CAUTION:

The power-control button on the device and the power switch on the power supply do not turn off the electrical current supplied to the device. The device also might have more than one power cord. To remove all electrical current from the device, ensure that all power cords are disconnected from the power source.

#### Attention:

- Read [“Installation Guidelines” on page 1](#) and [“Safety inspection checklist” on page 2](#) to ensure that you work safely.
- Touch the static-protective package that contains the component to any unpainted metal surface on the server; then, remove it from the package and place it on a static-protective surface.

**Note:** The intrusion switch with cable for replacement might come with different colors, but the function is the same.

### Procedure

- Step 1. Align the intrusion switch cable with the guide pin and hole on the bracket; then, insert the intrusion switch cable to the bracket.

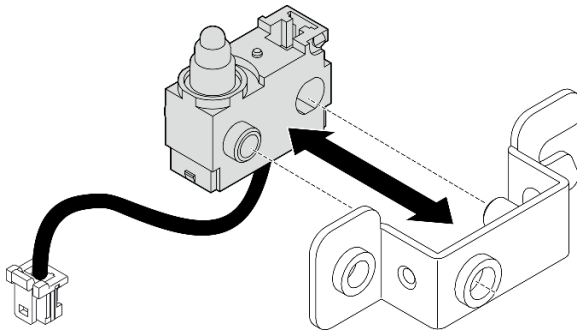


Figure 151. Inserting the intrusion switch to the bracket

Step 2. Install the intrusion switch.

- a. ① Push the intrusion switch toward the chassis and align the opening of the bracket with the guide pin; then, slide the intrusion switch toward the guide pin until it stops.
- b. ② Secure the intrusion switch with one screw.

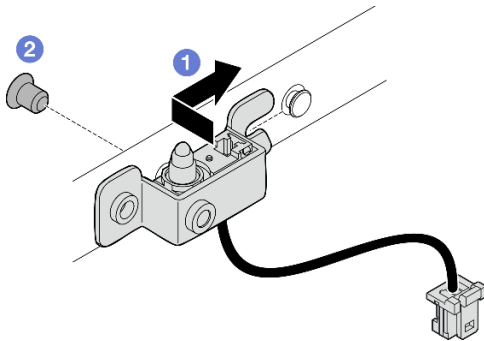


Figure 152. Installing intrusion switch with cable

Step 3. Connect the intrusion switch cable to the I/O module board.

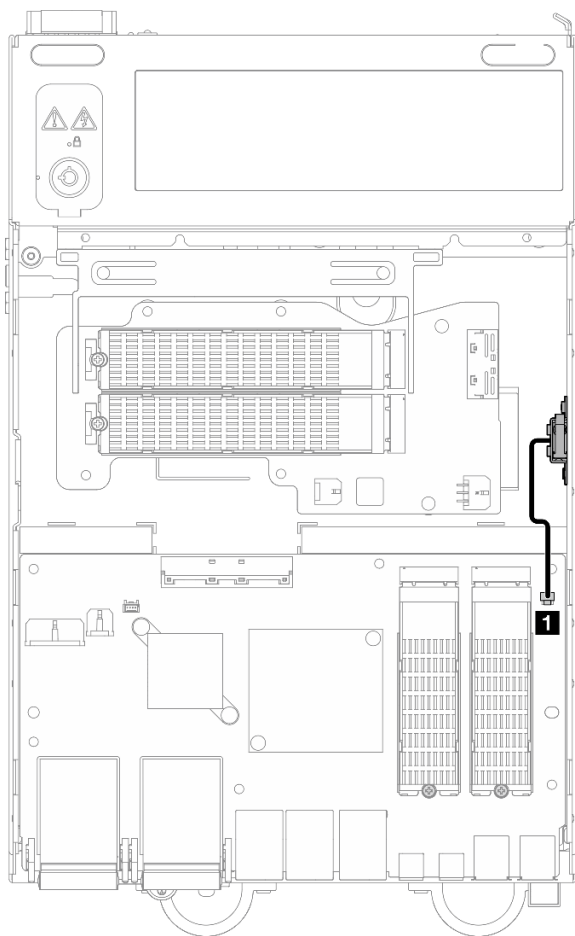


Figure 153. Bottom intrusion switch cable routing

**1** Intrusion switch connector on the I/O module board

## After this task is completed

Complete the parts replacement. See [“Complete the parts replacement” on page 281](#).

## Demo Video

[Watch the procedure on YouTube](#)

## I/O module board and M.2 boot drive replacement

Follow instructions in this section to remove and install the I/O module board and M.2 boot drives.

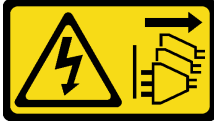
### Remove the I/O module board and M.2 boot drives

Follow instructions in this section to remove the I/O module board and M.2 boot drives.

## About this task

### S002



**CAUTION:**

The power-control button on the device and the power switch on the power supply do not turn off the electrical current supplied to the device. The device also might have more than one power cord. To remove all electrical current from the device, ensure that all power cords are disconnected from the power source.

**Attention:**

- Read [“Installation Guidelines” on page 1](#) and [“Safety inspection checklist” on page 2](#) to ensure that you work safely.
- Power off the server and peripheral devices and disconnect the power cords and all external cables. See [“Power off the server” on page 8](#).
- If the node is installed in an enclosure or mounted, remove the node from the enclosure or mount. See [“Configuration guide” on page 9](#).

**Procedure**

**Note:** Depending on the model, the I/O board might look slightly different from the illustrations in this section.

Step 1. Make preparation for this task.

- a. Remove the bottom cover. See [“Remove the bottom cover” on page 158](#).

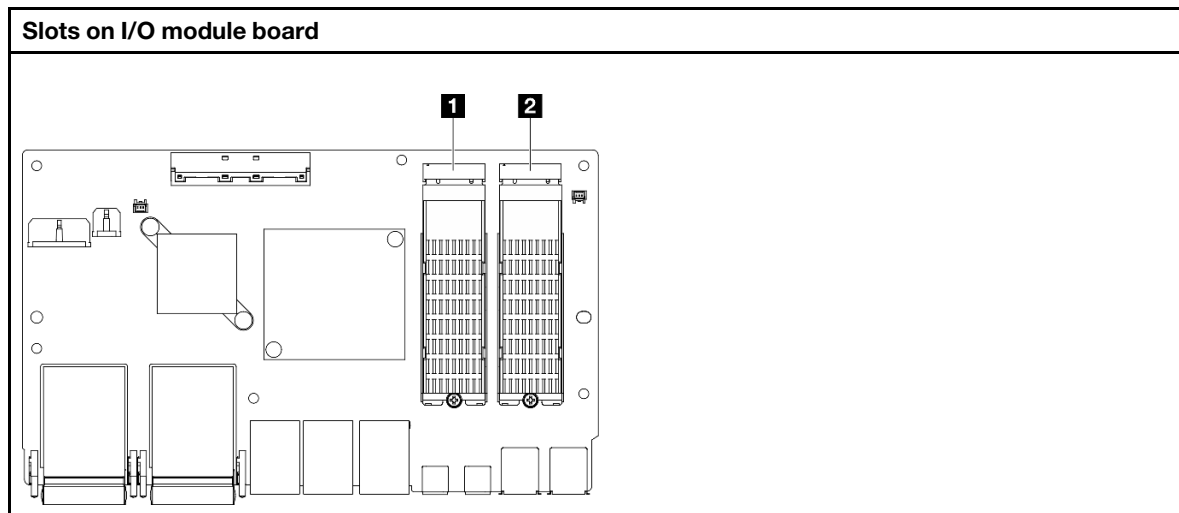
**Remove an M.2 drive**

If necessary, remove an M.2 drive from the I/O module board.

**Procedure**

Step 1. Locate the M.2 drive to be removed.

**Note:** The slots are numbered to indicate the installation order. If only one M.2 drive is to be installed to the I/O module board, install the M.2 drive in Slot 1.



<b>1</b> Slot 2 / M.2 Bay 1
<b>2</b> Slot 1 / M.2 Bay 0

Step 2. Remove the M.2 drive.

- a. ① Loosen the screw that secures the M.2 drive.
- b. ② Pivot the rear side of the M.2 drive away from the M.2 adapter.
- c. ③ Remove the M.2 drive from the slot.

**Note:** If necessary, repeat this procedure to the other M.2 drive to be removed.

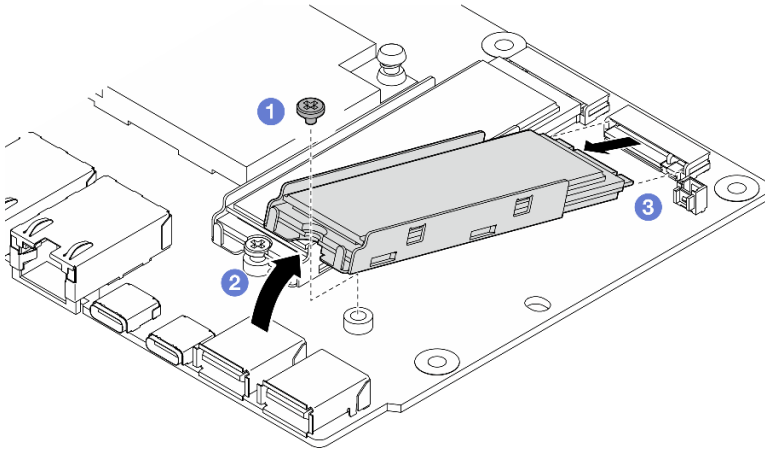
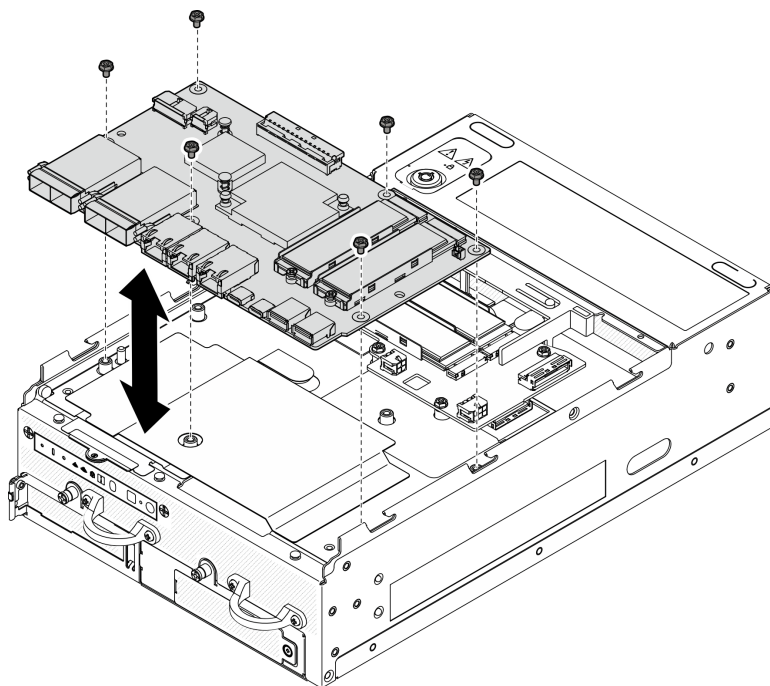


Figure 154. Removing an M.2 drive

## Remove the I/O module board

### Procedure

- Step 1. Disconnect all the cables from the I/O module board. While disconnecting the cables, make a list of each cable and record the connectors the cable is connected to, and use the record as a cabling checklist after installing the new I/O module board.
- Step 2. Loosen the six screws that secure the I/O module board.
- Step 3. Lift the I/O module board to remove it.



*Figure 155. Removing the I/O module board*

### **Remove the I/O-board power and signal cable**

If necessary, remove the I/O-board power and signal cable from the chassis.

### **Procedure**

- Step 1. Pull up the Mylar film.
- Step 2. Remove the I/O-board power cable and signal cable from the cable clips.
- Step 3. Stick the Mylar film back to the node.

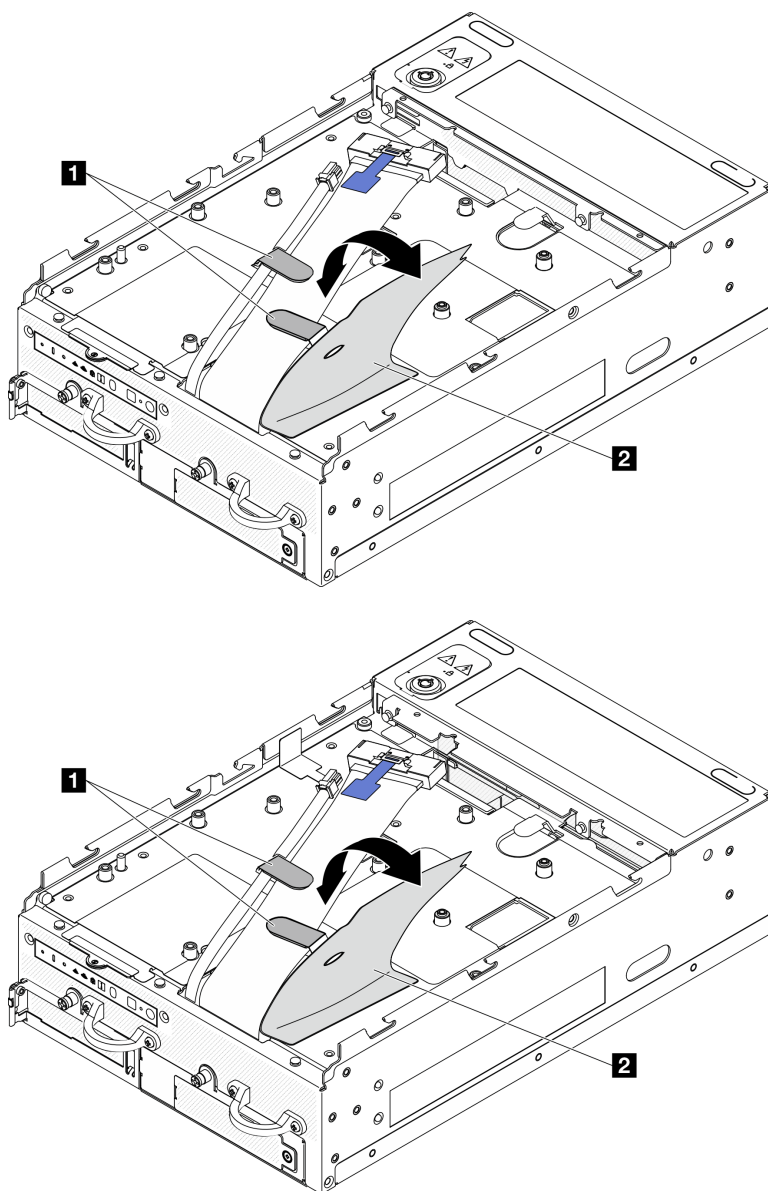


Figure 156. I/O-board cable routing

<b>1</b> Cable clips	<b>2</b> Mylar film
----------------------	---------------------

- Step 4. Remove the top cover. See [“Remove the top cover” on page 154](#).
- Step 5. Remove the riser assembly. (Before disconnecting the cables of riser assembly, remove the processor air baffle.) See [“Remove the riser assembly from the node” on page 186](#) and [“Remove the processor air baffle and air flow sensor board” on page 65](#).
- Step 6. Route the I/O-board power cable and signal cable through the chassis hole to the top side of the node.
- Step 7. Disconnect the I/O-board power cable and signal cable from the system board; then, remove the cables from the chassis.

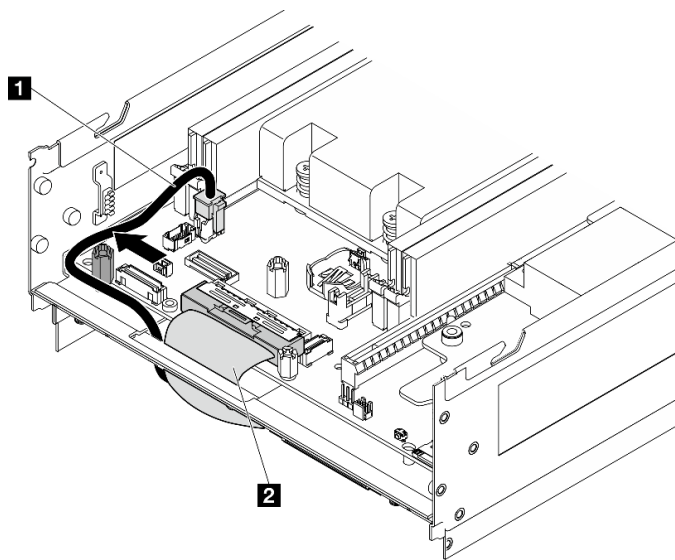


Figure 157. I/O-board cable routing

1 I/O-board power cable

2 I/O-board signal cable

## After this task is completed

- Install a replacement unit. See “Install the I/O module board and M.2 boot drives” on page 129.
- If you are instructed to return the component or optional device, follow all packaging instructions, and use any packaging materials for shipping that are supplied to you.

## Demo Video

[Watch the procedure on YouTube](#)

[Watch the procedure on YouTube](#)

## Install the I/O module board and M.2 boot drives

Follow instructions in this section to install the I/O board and M.2 boot drives.

## About this task

### S002



### CAUTION:

The power-control button on the device and the power switch on the power supply do not turn off the electrical current supplied to the device. The device also might have more than one power cord. To remove all electrical current from the device, ensure that all power cords are disconnected from the power source.

### Attention:

- Read “[Installation Guidelines](#)” on page 1 and “[Safety inspection checklist](#)” on page 2 to ensure that you work safely.
- Touch the static-protective package that contains the component to any unpainted metal surface on the server; then, remove it from the package and place it on a static-protective surface.

The following notes describe the type of drives that the server supports and other information that you must consider when you install a drive. For a list of supported drives, see <https://serverproven.lenovo.com>.

- Locate the documentation that comes with the drive and follow those instructions in addition to the instructions in this chapter.
- For a complete list of supported optional devices for the server, see <https://serverproven.lenovo.com>.
- SE360 V2 supports up to two 80mm (2280) NVMe M.2 boot drives.

### Install the I/O-board power and signal cable

If necessary, route the I/O-board power cable and signal cable.

### Procedure

- Step 1. If applicable, remove the top cover. See “[Remove the top cover](#)” on page 154. Let the top side of the node facing up.
- Step 2. If applicable, remove the riser assembly. See “[Remove the riser assembly from the node](#)” on page 186.
- Step 3. Connect the I/O-board power cable and signal cable to the system board; then, route the cables through the chassis hole to the bottom side of the node.

**Note:** Make sure to route the I/O-board power cable between the standoff and the chassis as shown.

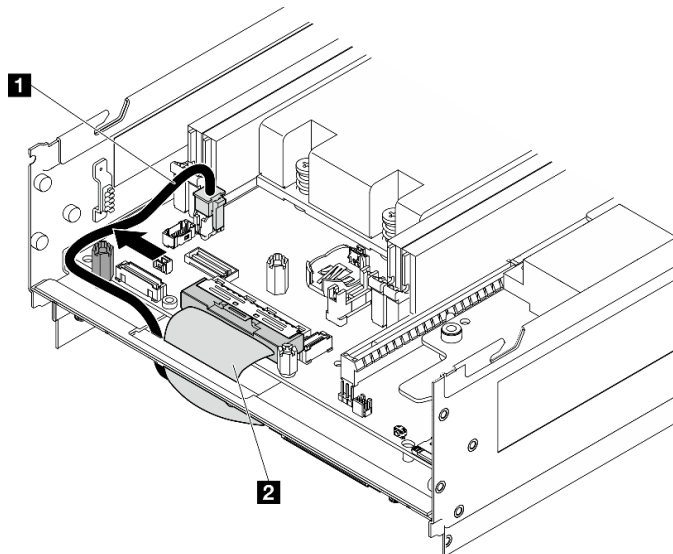


Figure 158. I/O-board cable routing

<b>1</b> I/O-board power cable	<b>2</b> I/O-board signal cable
--------------------------------	---------------------------------

- Step 4. Reinstall the riser assembly to the node. See “[Install the riser assembly to the node](#)” on page 217.
- Step 5. Let the bottom side of the node facing up.
- Step 6. Pull up the Mylar film.

Step 7. Route the two cables into the cable clips.

Step 8. Stick the Mylar film back to the node.

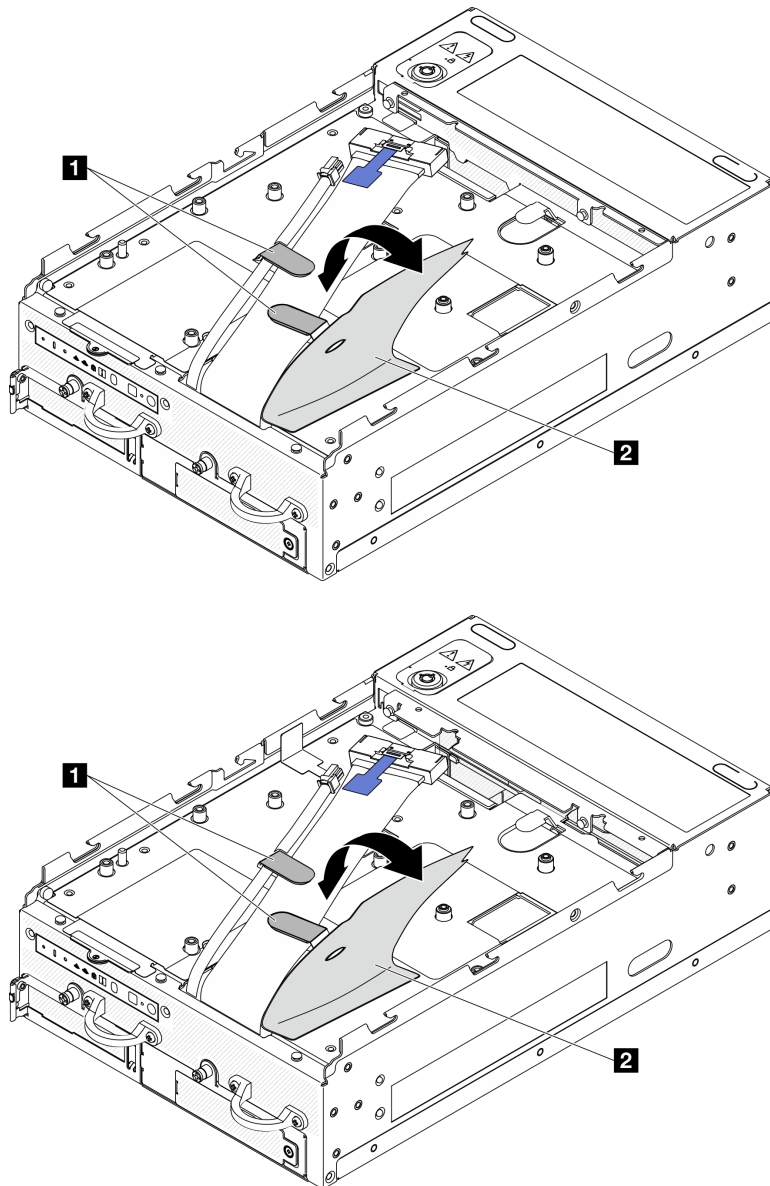


Figure 159. I/O-board cable routing

1 Cable clips

2 Mylar film

## Install the I/O module board

### Procedure

**Note:** Depending on the model, the I/O board might look slightly different from the illustrations in this section.

Step 1. Install the I/O module board.

- a. Align the I/O module board with the guide pins on the chassis.

- b. Lower the I/O module board down until it is firmly seated.
- c. Secure the I/O module board with six screws.

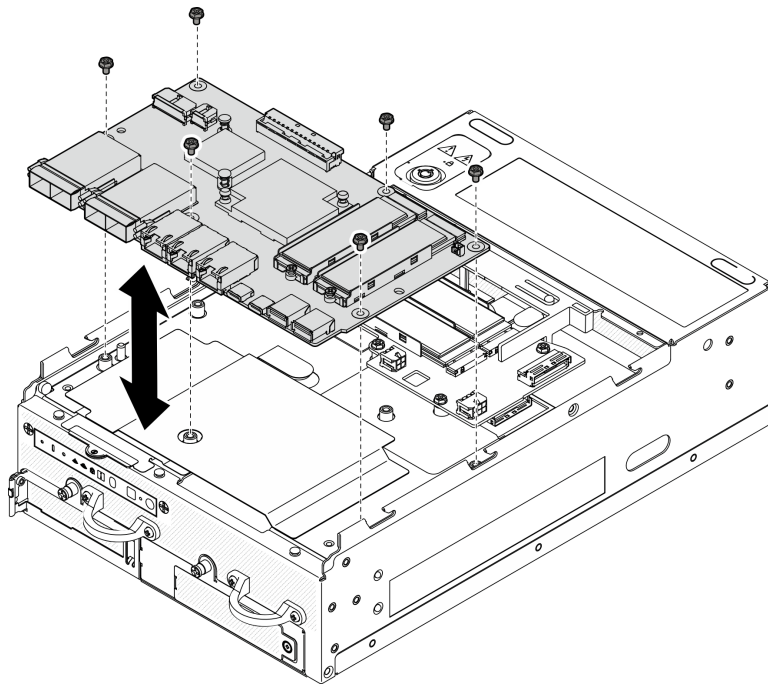


Figure 160. Installing the I/O module board

Step 2. Connect the cables to the I/O module board.

- a. Twist the I/O-board signal cable as shown; then, connect the signal cable and the power cable to the I/O module board.

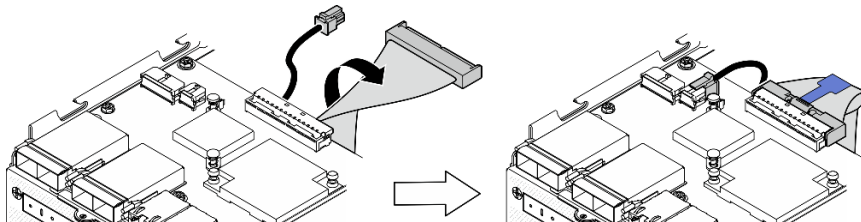


Figure 161. Connecting the I/O-board cables

- b. Reconnect all the required cables to the same connectors on the I/O module board as the defective I/O module board.

### Install an M.2 drive

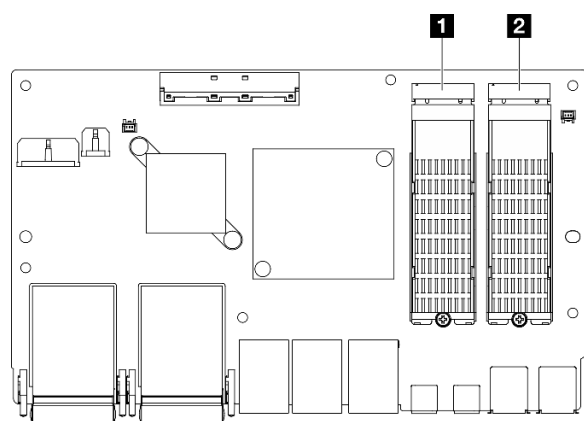
If necessary, install an M.2 drive to the I/O module board.

Step 1. Locate the slot to install the M.2 drive.

**Note:** The slots are numbered to indicate the installation order. If only one M.2 drive is to be installed to the I/O module board, install the M.2 drive in Slot 1.



### Slots on I/O module board



**1** Slot 2 / M.2 Bay 1

**2** Slot 1 / M.2 Bay 0

Step 2. If necessary, install an M.2 heat sink to the M.2 drive to be installed. See [“Install an M.2 heat sink” on page 142](#).

Step 3. Install the M.2 drive.

- 1** Hold the M.2 drive at an angle, and insert the drive into the M.2 slot.
- 2** Lower the rear side of the M.2 drive down to the M.2 adapter.
- 3** Secure the M.2 drive with one screw.

**Note:** If necessary, repeat this procedure to the other M.2 drive to be installed.

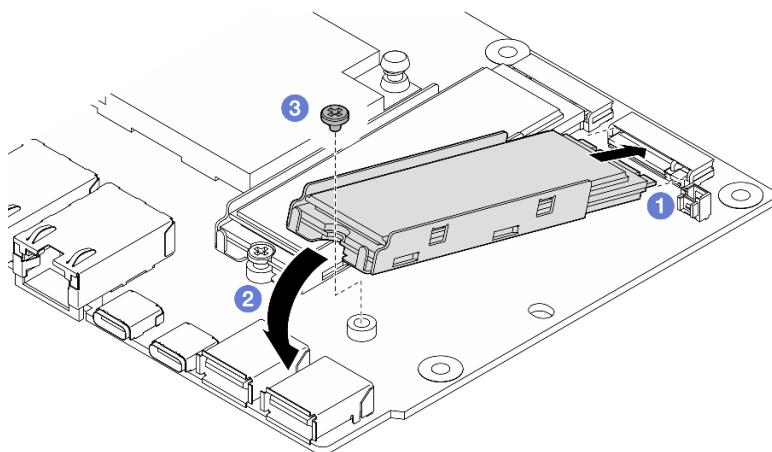


Figure 162. Installing an M.2 drive

### After this task is completed

Complete the parts replacement. See [“Complete the parts replacement” on page 281](#).

### Demo Video

[Watch the procedure on YouTube](#)

[Watch the procedure on YouTube](#)

## Kensington lock replacement

Follow instructions in this section to remove and install the Kensington lock.

### Remove the Kensington lock

Follow instructions in this section to remove the Kensington lock.

#### About this task

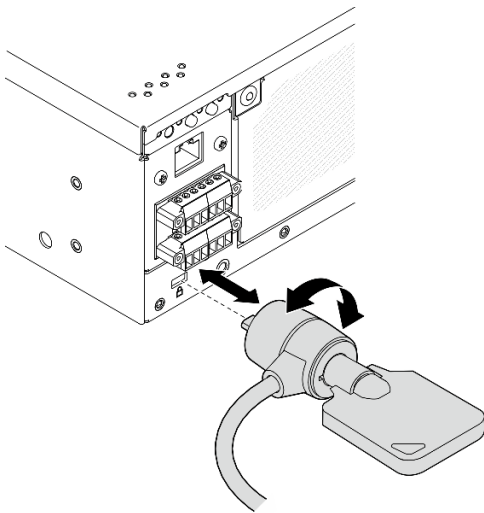
##### Attention:

- Read [“Installation Guidelines” on page 1](#) and [“Safety inspection checklist” on page 2](#) to ensure that you work safely.

#### Procedure

**Note:** The Kensington lock might look slightly different from the illustrations in this section.

- Step 1. If applicable, disengage the cable of the Kensington lock from the attachment point.
- Step 2. Turn the Kensington lock to the unlock position with the key.
- Step 3. Remove the Kensington lock from the lock hole.



*Figure 163. Removing the Kensington lock*

#### After this task is completed

If you are instructed to return the component or optional device, follow all packaging instructions, and use any packaging materials for shipping that are supplied to you.

### Install the Kensington lock

Follow instructions in this section to install the Kensington lock.

#### About this task

##### Attention:

- Read [“Installation Guidelines” on page 1](#) and [“Safety inspection checklist” on page 2](#) to ensure that you work safely.

## Procedure

**Note:** The Kensington lock might look slightly different from the illustrations in this section.

Step 1. Insert the Kensington lock into the lock hole.

Step 2. Turn the Kensington lock to the lock position, and store the key for future use.

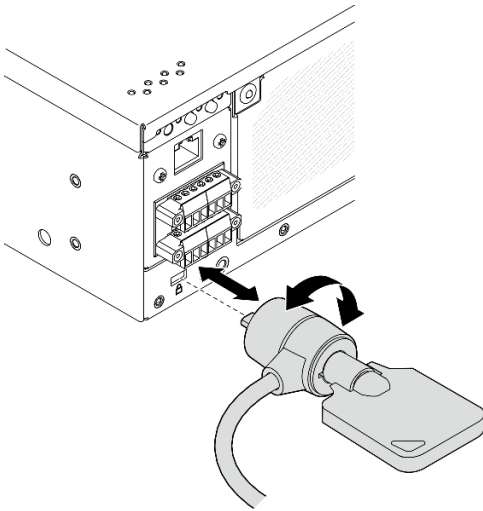


Figure 164. Installing the Kensington lock

Step 3. If applicable, secure the cable of the Kensington lock to a desk, table, or other attachment point to secure the node.

## After this task is completed

Complete the parts replacement. See [“Complete the parts replacement” on page 281](#).

## Lock position switch with cable replacement

Follow instructions in this section to remove and install the lock position switch with cable.

### Remove the lock position switch with cable

Follow instructions in this section to remove the lock position switch with cable.

## About this task

### S002



### **CAUTION:**

The power-control button on the device and the power switch on the power supply do not turn off the electrical current supplied to the device. The device also might have more than one power cord. To

remove all electrical current from the device, ensure that all power cords are disconnected from the power source.

**Attention:**

- Read [“Installation Guidelines” on page 1](#) and [“Safety inspection checklist” on page 2](#) to ensure that you work safely.
- Power off the server and peripheral devices and disconnect the power cords and all external cables. See [“Power off the server” on page 8](#).
- If the node is installed in an enclosure or mounted, remove the node from the enclosure or mount. See [“Configuration guide” on page 9](#).

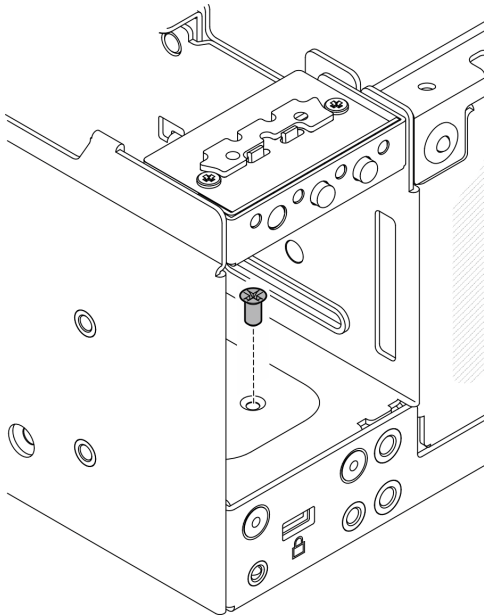
**Procedure**

Step 1. Make preparation for this task.

- a. If necessary, remove all the WLAN antennas. See [“Remove the WLAN antennas” on page 256](#).
- b. Remove the top cover. See [“Remove the top cover” on page 154](#).
- c. Remove the PMB air baffle. See [“Remove the PMB air baffle” on page 62](#).
- d. Remove the riser assembly. (Before disconnecting the cables of riser assembly, remove the processor air baffle.) See [“Remove the riser assembly from the node” on page 186](#) and [“Remove the processor air baffle and air flow sensor board” on page 65](#).
- e. Depending on the configuration, remove the power module board or internal power supply unit. See [“Remove the power module board \(PMB\)” on page 172](#) or [“Remove the internal power supply unit \(AC PMB\)” on page 108](#).
- f. Remove the power input board (PIB) module. See [“Remove the PIB module” on page 168](#).

Step 2. Loosen the screw that secures the system security keylock.

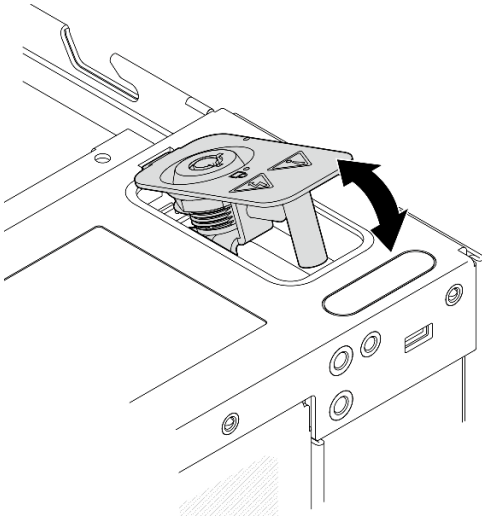
**Note:** If necessary, disconnect the cable from the rear operator panel for easier operation.



*Figure 165. Loosening the screw*

Step 3. Let the bottom side of the node facing up.

- Step 4. Remove the bottom cover. See [“Remove the bottom cover” on page 158](#).
- Step 5. Pinch the edge of the keylock bracket; then, lift the bracket and remove the system security keylock from the chassis.



*Figure 166. Removing the system security keylock*

- Step 6. Disconnect the lock position switch cable from the I/O module board.

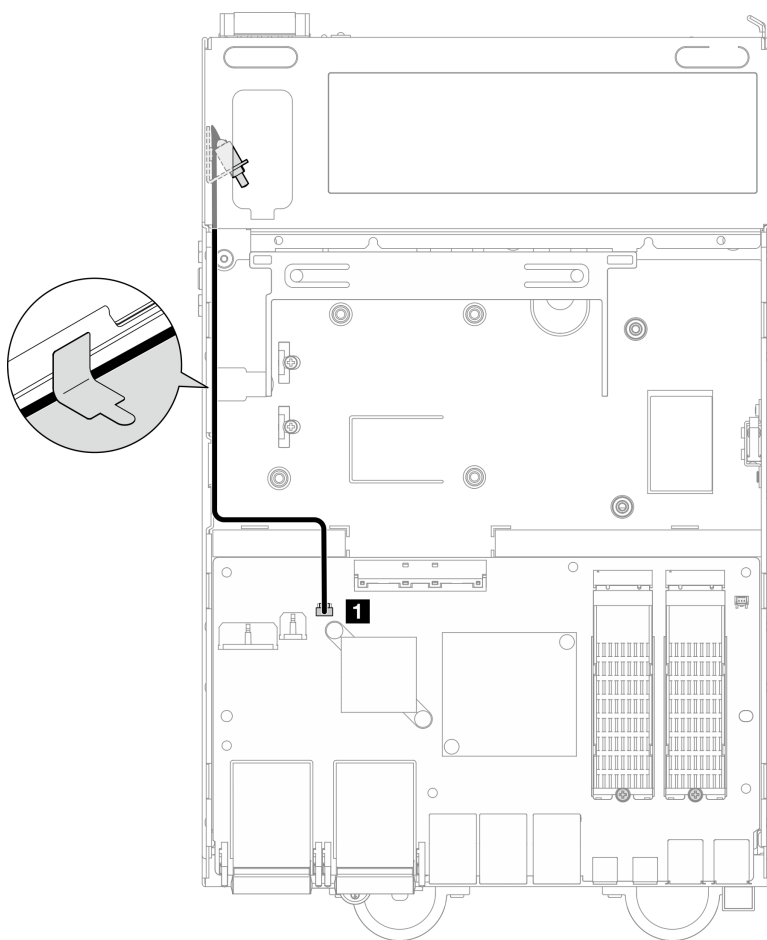


Figure 167. Lock position switch cable routing

**1** Lock position switch connector on the I/O module board

Step 7. Loosen the screw that secures the lock position switch; then, remove the switch from the chassis.

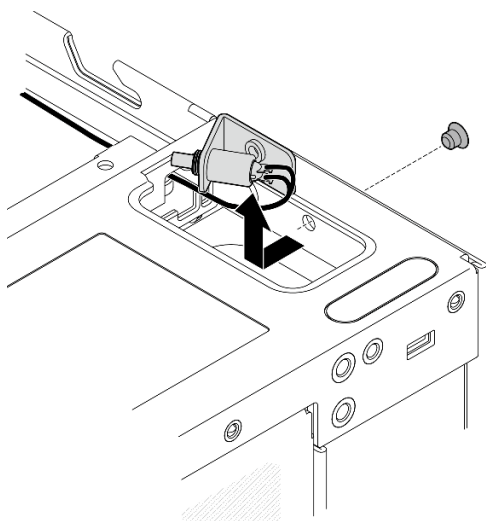


Figure 168. Removing the lock position switch with cable

## After this task is completed

- Install a replacement unit. See [“Install the lock position switch with cable” on page 139](#).
- If you are instructed to return the component or optional device, follow all packaging instructions, and use any packaging materials for shipping that are supplied to you.

### Demo Video

[Watch the procedure on YouTube](#)

## Install the lock position switch with cable

Follow instructions in this section to install the lock position switch with cable.

### About this task

#### S002



#### **CAUTION:**

The power-control button on the device and the power switch on the power supply do not turn off the electrical current supplied to the device. The device also might have more than one power cord. To remove all electrical current from the device, ensure that all power cords are disconnected from the power source.

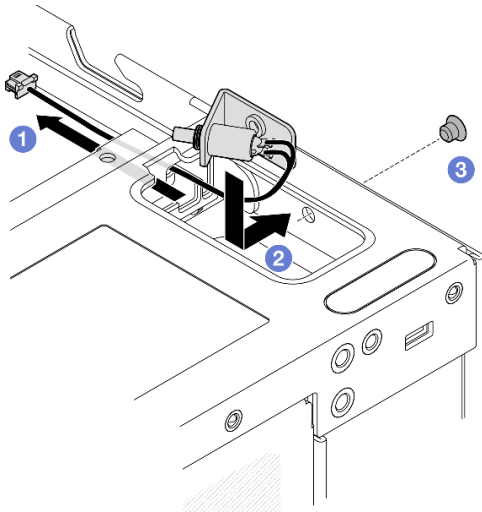
#### **Attention:**

- Read [“Installation Guidelines” on page 1](#) and [“Safety inspection checklist” on page 2](#) to ensure that you work safely.

## Procedure

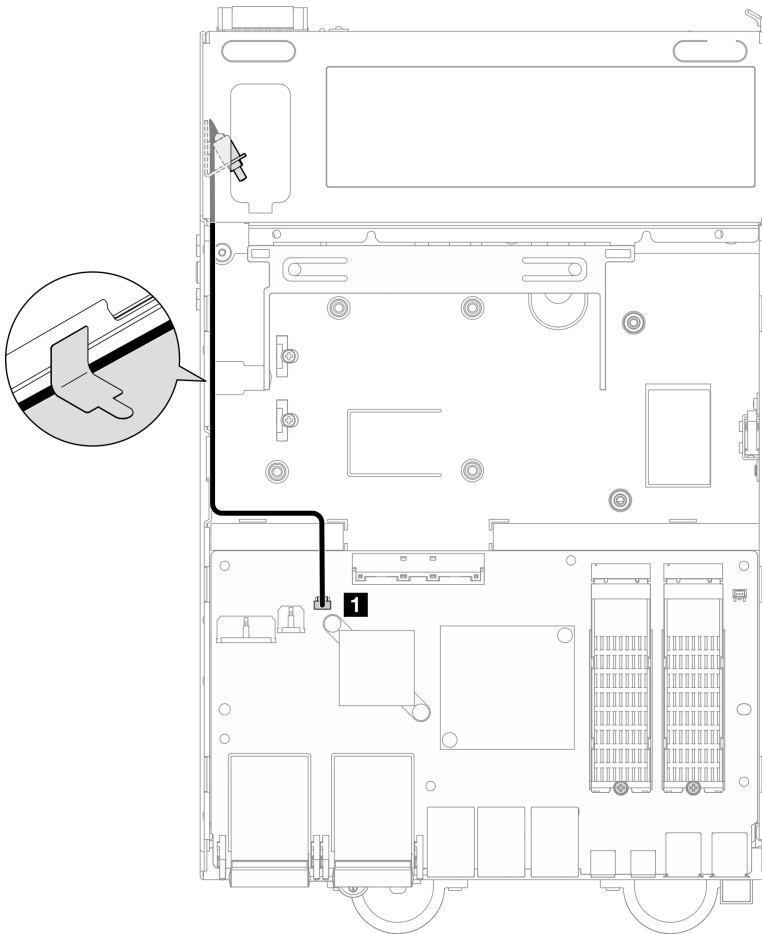
Step 1. Install the lock position switch with cable.

- a. ① Route the cable through the hole on the chassis.
- b. ② Fold the cable as shown; then, lower the lock position switch into the chassis, and push the switch toward the chassis wall. Make sure that the screw hole on the bracket aligns with the screw hole on the chassis.
- c. ③ Secure the lock position switch with one screw.



*Figure 169. Installing the lock position switch with cable*

- Step 2. Pull up the Mylar film, and connect the lock position switch cable to the I/O module board; then, stick the Mylar film back to the node, and make sure that the lock position switch cable is routed between the Mylar film and the chassis as shown.



*Figure 170. Lock position switch cable routing*



**1** Lock position switch connector on the I/O module board

Step 3. Insert the tab of the keylock bracket into the slot on the chassis; then, lower the keylock bracket down until it is seated in place.

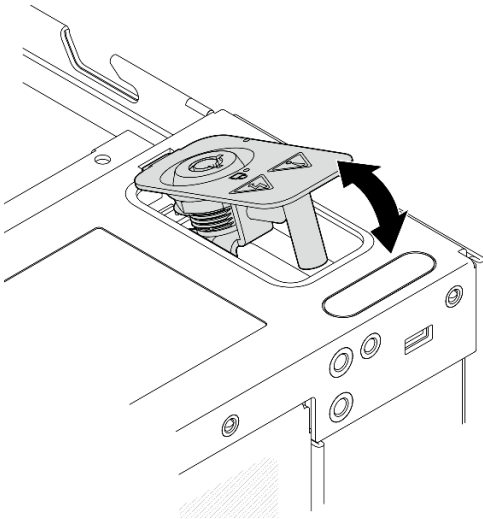


Figure 171. Installing the system security keylock

Step 4. Let the top side of the node facing up.

Step 5. Secure the system security keylock with one screw

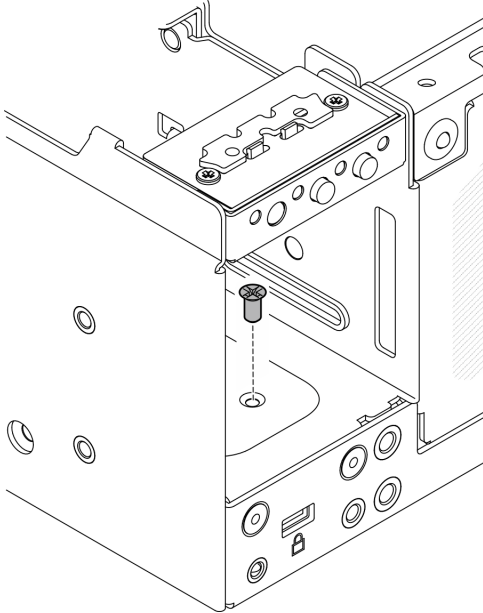


Figure 172. Fastening the screw

**After this task is completed**

1. Complete the parts replacement. See [“Complete the parts replacement” on page 281](#).

**Demo Video**

[Watch the procedure on YouTube](#)

## M.2 heat sink replacement

Follow instructions in this section to remove and install an M.2 heat sink.

### Remove an M.2 heat sink

Follow instructions in this section to remove an M.2 heat sink.

### About this task

#### Attention:

- Read [“Installation Guidelines” on page 1](#) and [“Safety inspection checklist” on page 2](#) to ensure that you work safely.

### Procedure

Step 1. ① Push the tabs on the heat-sink tray to disengage the M.2 heat sink.

**Note:** If necessary, push the tabs with a flat-head screwdriver.

Step 2. ② Lift the M.2 heat sink from the tray.

Step 3. ③ Slide the M.2 drive outward to remove it from the tray.

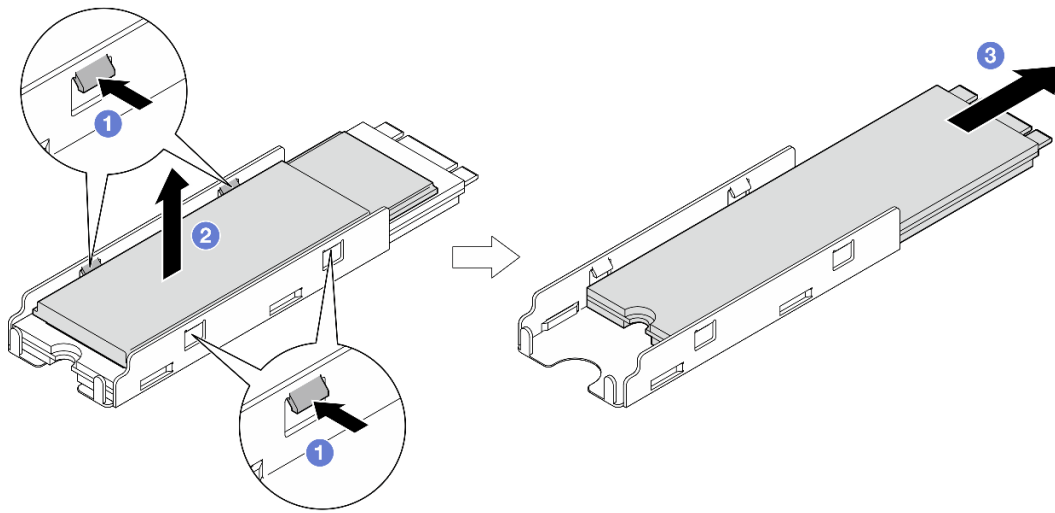


Figure 173. Removing the M.2 heat sink

### After this task is completed

- Install a replacement unit. See [“Install an M.2 heat sink” on page 142](#).
- If you are instructed to return the component or optional device, follow all packaging instructions, and use any packaging materials for shipping that are supplied to you.

### Install an M.2 heat sink

Follow instructions in this section to install an M.2 heat sink.

### About this task

#### Attention:

- Read [“Installation Guidelines” on page 1](#) and [“Safety inspection checklist” on page 2](#) to ensure that you work safely.

## Procedure

Step 1. Install the M.2 drive into the heat-sink tray.

- 1 Peel off the film from the heat-sink tray.
- 2 Align the notch of the M.2 drive with the notch of the tray, the side with label of the M.2 drive facing up; then, slide the M.2 drive all the way into the tray.

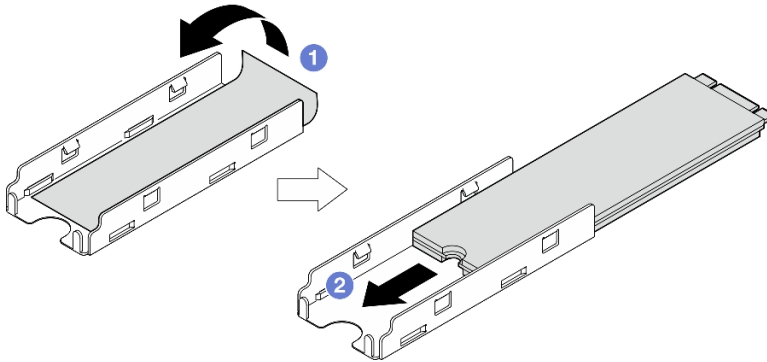


Figure 174. Installing the M.2 drive

Step 2. Install the M.2 heat sink into the heat-sink tray.

- 1 Peel off the film from the M.2 heat sink.
- 2 Align the notches on the edge of the M.2 heat sink with the tabs of the tray; then, press the M.2 heat sink down to the tray until it clicks into place.

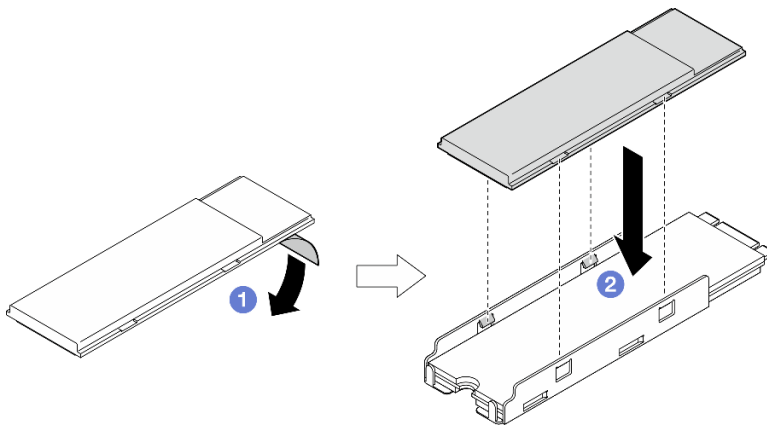


Figure 175. Installing the M.2 heat sink

## After this task is completed

Complete the parts replacement. See [“Complete the parts replacement” on page 281](#).

## Memory module replacement

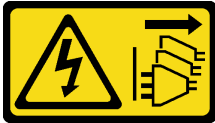
Follow instructions in this section to remove and install a memory module.

## Remove a memory module

Follow instructions in this section to remove a memory module.

### About this task

#### S002



#### **CAUTION:**

The power-control button on the device and the power switch on the power supply do not turn off the electrical current supplied to the device. The device also might have more than one power cord. To remove all electrical current from the device, ensure that all power cords are disconnected from the power source.

#### **Attention:**

- Read [“Installation Guidelines” on page 1](#) and [“Safety inspection checklist” on page 2](#) to ensure that you work safely.
- Power off the server and peripheral devices and disconnect the power cords and all external cables. See [“Power off the server” on page 8](#).
- If the node is installed in an enclosure or mounted, remove the node from the enclosure or mount. See [“Configuration guide” on page 9](#).
- Memory modules are sensitive to static discharge and require special handling. Refer to the standard guidelines for [“Handling static-sensitive devices” on page 4](#).
  - Always wear an electrostatic-discharge strap when removing or installing memory modules. Electrostatic-discharge gloves can also be used.
  - Never hold two or more memory modules together so that they do not touch each other. Do not stack memory modules directly on top of each other during storage.
  - Never touch the gold memory module connector contacts or allow these contacts to touch the outside of the memory module connector housing.
  - Handle memory modules with care: never bend, twist, or drop a memory module.
  - Do not use any metal tools (such as jigs or clamps) to handle the memory modules, because the rigid metals may damage the memory modules.
  - Do not insert memory modules while holding packages or passive components, which can cause package cracks or detachment of passive components by the high insertion force.

## Procedure

Step 1. Make preparation for this task.

- a. If necessary, remove all the WLAN antennas. See [“Remove the WLAN antennas” on page 256](#).
- b. Remove the top cover. See [“Remove the top cover” on page 154](#).
- c. Remove the PMB air baffle. See [“Remove the PMB air baffle” on page 62](#).
- d. Lift the riser assembly from the node. See [“Remove the riser assembly from the node” on page 186](#).
- e. Remove the processor air baffle. See [“Remove the processor air baffle and air flow sensor board” on page 65](#).

Step 2. Locate the memory module to be removed on the system board.

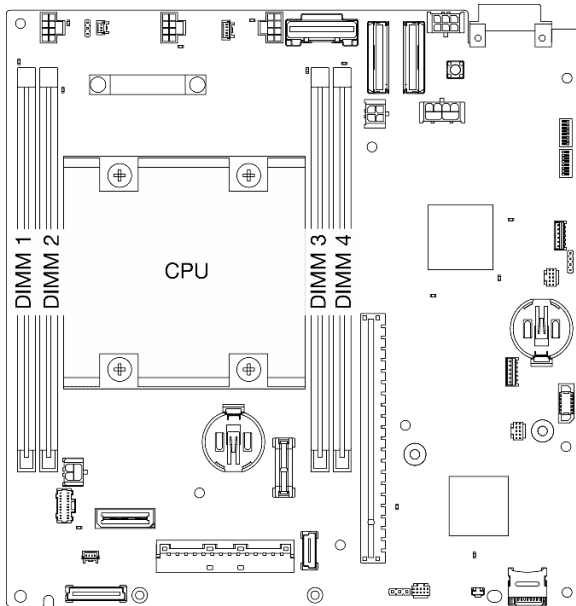


Figure 176. Memory modules and processor layout

**Important:** Before removing DIMM 1, remove DIMM 2 first.

Step 3. Open the retaining clip with a memory module tool.

**Attention:**

- Due to space constraints, use a memory module tool to open the retaining clips. Do not use pencils or other fragile tools. When you received your server, the memory module tool is in the material box.
- To avoid breaking the retaining clips or damaging the memory module slots, handle the clips gently.
  - a. ① Place the tip of the tool in the recess on the top of the retaining clip.
  - b. ② Carefully rotate the retaining clip away from the DIMM slot to disengage the memory module. One end of the module will be slightly higher than the other.

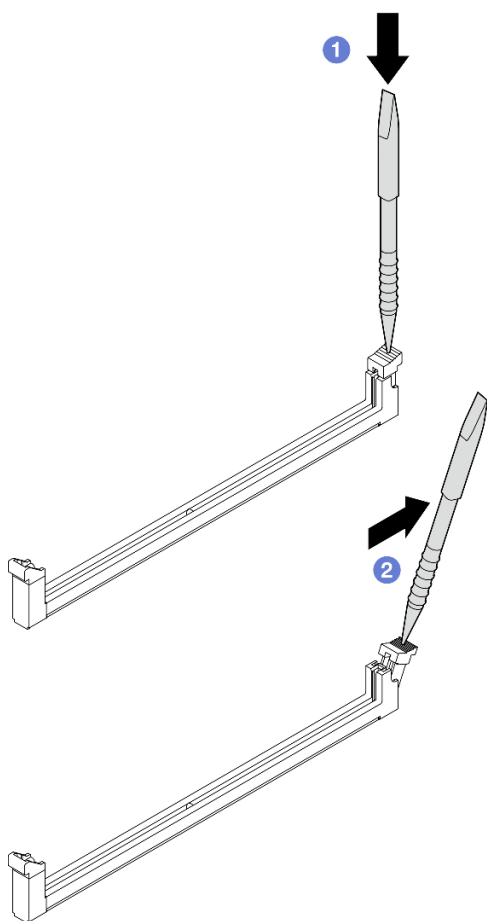


Figure 177. Opening retaining clip

Step 4. Remove the memory module.

- a. ① Lift the higher side of the memory module up with the tool, and hold the memory module.
- b. ② Carefully lift the memory module out of the slot.

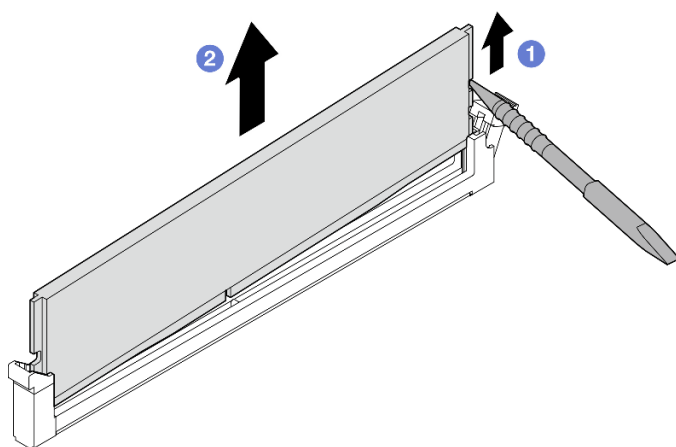
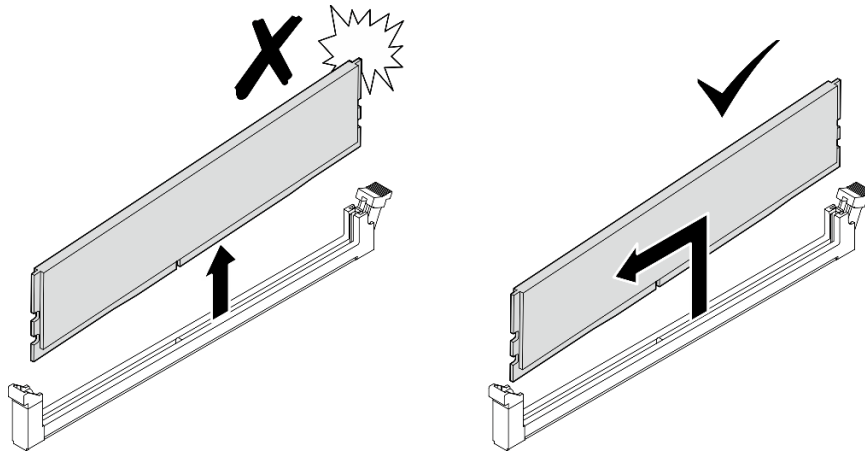


Figure 178. Removing memory module

**Attention:** When removing a memory module from **DIMM slot 1**, to avoid the memory module touching nearby components, **DO NOT** lift the memory module straight up. Touching nearby components might cause damage to the memory module.



### After this task is completed

- Store the memory module tool for future use.
- Install a replacement unit. See [“Install a memory module” on page 147](#).
- If you are instructed to return the component or optional device, follow all packaging instructions, and use any packaging materials for shipping that are supplied to you.

### Demo Video

[Watch the procedure on YouTube](#)

### Install a memory module

Follow instructions in this section to install a memory module.

### About this task

#### S002



#### **CAUTION:**

The power-control button on the device and the power switch on the power supply do not turn off the electrical current supplied to the device. The device also might have more than one power cord. To remove all electrical current from the device, ensure that all power cords are disconnected from the power source.

See for detailed information about memory configuration and setup.

#### **Attention:**

- Read [“Installation Guidelines” on page 1](#) and [“Safety inspection checklist” on page 2](#) to ensure that you work safely.

- Power off the server and peripheral devices and disconnect the power cords and all external cables. See [“Power off the server” on page 8](#).
- If the node is installed in an enclosure or mounted, remove the node from the enclosure or mount. See [“Configuration guide” on page 9](#).
- Make sure to adopt one of the supported configurations listed in [“Memory module installation rules and order” on page 5](#).
- Memory modules are sensitive to static discharge and require special handling. Refer to the standard guidelines at [“Handling static-sensitive devices” on page 4](#):
  - Always wear an electrostatic-discharge strap when removing or installing memory modules. Electrostatic-discharge gloves can also be used.
  - Never hold two or more memory modules together so that they do not touch each other. Do not stack memory modules directly on top of each other during storage.
  - Never touch the gold memory module connector contacts or allow these contacts to touch the outside of the memory module connector housing.
  - Handle memory modules with care: never bend, twist, or drop a memory module.
  - Do not use any metal tools (such as jigs or clamps) to handle the memory modules, because the rigid metals may damage the memory modules.
  - Do not insert memory modules while holding packages or passive components, which can cause package cracks or detachment of passive components by the high insertion force.

## Procedure

Step 1. Make preparation for this task.

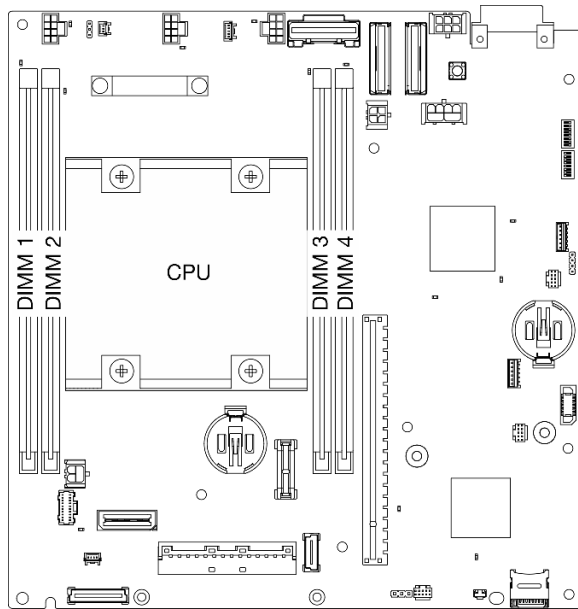
- Remove the top cover. See [“Remove the top cover” on page 154](#).
- Remove the PMB air baffle. See [“Remove the PMB air baffle” on page 62](#).
- Lift the riser assembly from the node. See [“Remove the riser assembly from the node” on page 186](#).
- Remove the processor air baffle. See [“Remove the processor air baffle and air flow sensor board” on page 65](#).

Step 2. Touch the static-protective package that contains the memory module to any unpainted surface on the outside of the server. Then, take the memory module out of the package and place it on a static-protective surface.

Step 3. Locate the required memory module slot on the system board.

**Note:** Ensure that you observe the installation rules and sequence order in [“Memory module installation rules and order” on page 5](#).



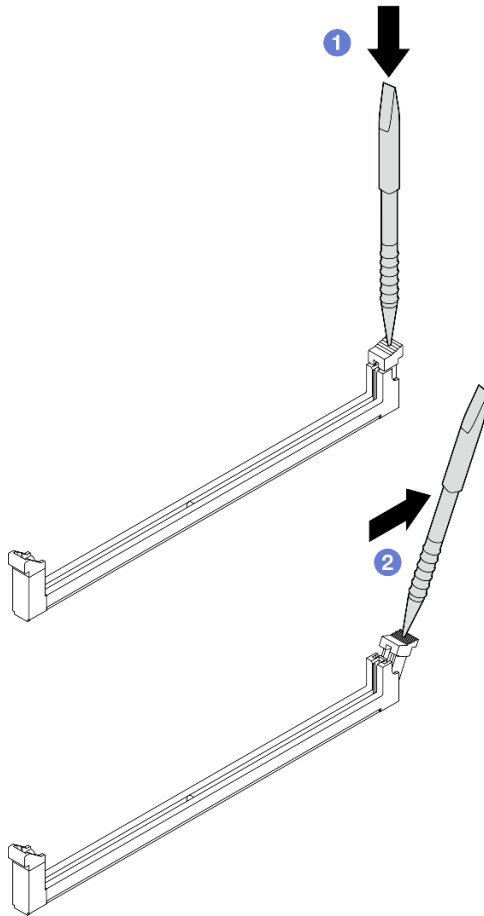


*Figure 179. Memory modules and processor layout*

Step 4. Open the retaining clip with a memory module tool.

**Attention:**

- Due to space constraints, use a memory module tool to open the retaining clips. Do not use pencils or other fragile tools. When you received your server, the memory module tool is in the material box.
  - To avoid breaking the retaining clips or damaging the memory module slots, handle the clips gently.
- a. ① Place the tip of the tool in the recess on the top of the retaining clip.
  - b. ② Carefully rotate the retaining clip away from the memory module slot.



*Figure 180. Opening retaining clip*

Step 5. Install the memory module.

- a. ① Align the memory module with the slot.
- b. ② Firmly press both ends of the memory module straight down until the retaining clip snaps into the locked position.

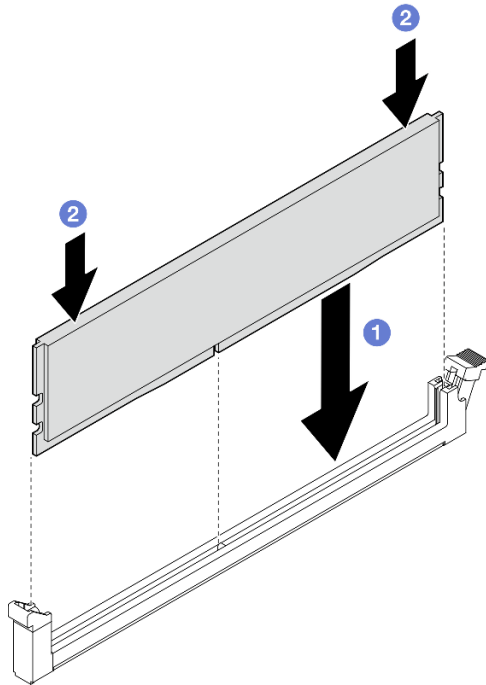


Figure 181. Installing a memory module

**Attention:** Be careful when installing a memory module to **DIMM slot 1**. **DO NOT** let the memory module touch nearby components. Touching nearby components might cause damage to the memory module.

**Note:** If there is a gap between the memory module and the retaining clip, the memory module has not been correctly inserted. In this case, open the retaining clip, remove the memory module, and then reinsert it.

### After this task is completed

- Store the memory module tool for future use.
- Complete the parts replacement. See [“Complete the parts replacement” on page 281](#).

### Demo Video

[Watch the procedure on YouTube](#)

## MicroSD card replacement

Follow instructions in this section to remove and install the MicroSD card.

### Remove the MicroSD card

Follow instructions in this section to remove the MicroSD card.

### About this task

**S002**

**CAUTION:**

The power-control button on the device and the power switch on the power supply do not turn off the electrical current supplied to the device. The device also might have more than one power cord. To remove all electrical current from the device, ensure that all power cords are disconnected from the power source.

**Attention:**

- Read [“Installation Guidelines” on page 1](#) and [“Safety inspection checklist” on page 2](#) to ensure that you work safely.
- Power off the server and peripheral devices and disconnect the power cords and all external cables. See [“Power off the server” on page 8](#).
- If the node is installed in an enclosure or mounted, remove the node from the enclosure or mount. See [“Configuration guide” on page 9](#).

**Procedure**

Step 1. Make preparation for this task.

- a. If necessary, remove all the WLAN antennas. See [“Remove the WLAN antennas” on page 256](#).
- b. Remove the top cover. See [“Remove the top cover” on page 154](#).
- c. Remove the PMB air baffle. See [“Remove the PMB air baffle” on page 62](#).
- d. Lift the riser assembly from the node. See [“Remove the riser assembly from the node” on page 186](#).

Step 2. Locate the MicroSD socket on the system board. See [“System-board connectors” on page 318](#).

Step 3. Remove the MicroSD card.

- a. ① Slide the socket lid to the open position.
- b. ② Lift open the socket lid.
- c. ③ Remove the MicroSD card from the socket.

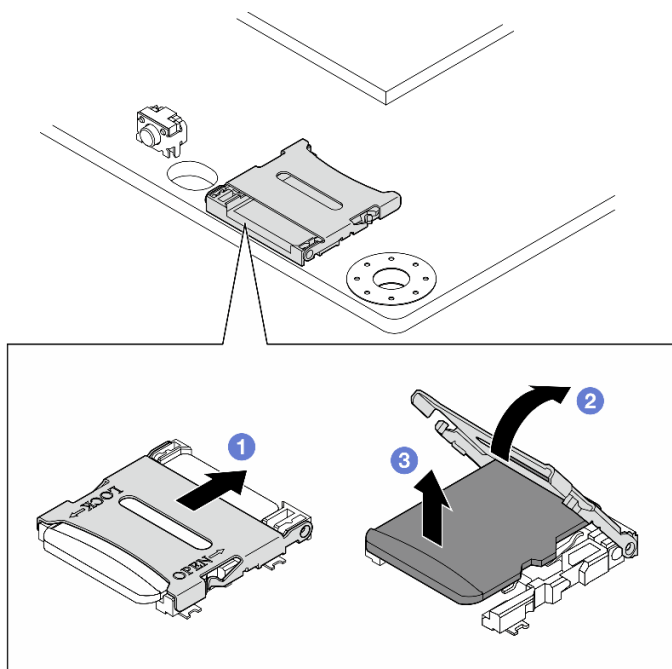


Figure 182. Removing the MicroSD card

### After this task is completed

- Install a replacement unit. See [“Install the MicroSD card” on page 153](#).
- If you are instructed to return the component or optional device, follow all packaging instructions, and use any packaging materials for shipping that are supplied to you.

### Demo Video

[Watch the procedure on YouTube](#)

### Install the MicroSD card

Follow instructions in this section to install the MicroSD card.

### About this task

#### S002



#### **CAUTION:**

The power-control button on the device and the power switch on the power supply do not turn off the electrical current supplied to the device. The device also might have more than one power cord. To remove all electrical current from the device, ensure that all power cords are disconnected from the power source.

#### **Attention:**

- Read [“Installation Guidelines” on page 1](#) and [“Safety inspection checklist” on page 2](#) to ensure that you work safely.
- Touch the static-protective package that contains the component to any unpainted metal surface on the server; then, remove it from the package and place it on a static-protective surface.

## Procedure

Step 1. Locate the MicroSD socket on the system board. See [“System-board connectors” on page 318](#).

Step 2. Install the MicroSD card.

- a. ① Place the MicroSD card into the socket.
- b. ② Close the socket lid.
- c. ③ Slide the socket lid to the lock position.

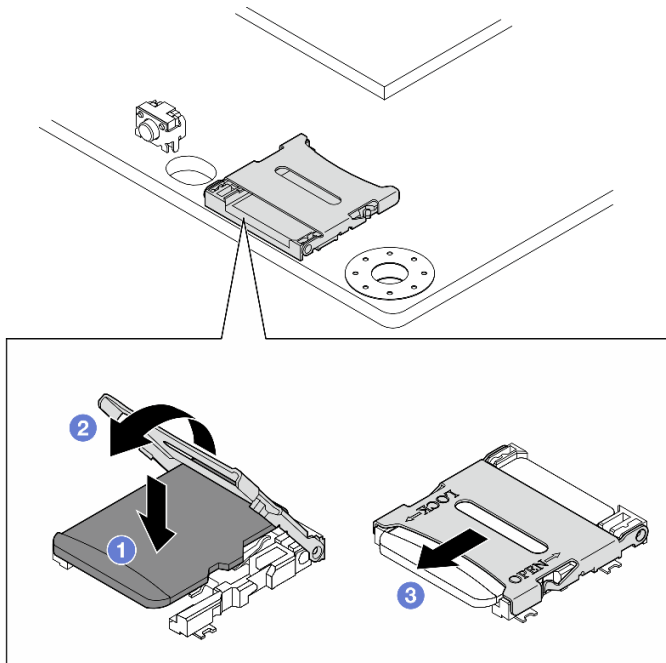


Figure 183. Installing the MicroSD card

## After this task is completed

Complete the parts replacement. See [“Complete the parts replacement” on page 281](#).

## Demo Video

[Watch the procedure on YouTube](#)

## Node cover replacement

Follow instructions in this section to remove and install the node covers.

### Remove the top cover

Follow instructions in this section to remove the top cover.

## S014



**CAUTION:**

Hazardous voltage, current, and energy levels might be present. Only a qualified service technician is authorized to remove the covers where the label is attached.

S033



**CAUTION:**

Hazardous energy present. Voltages with hazardous energy might cause heating when shorted with metal, which might result in spattered metal, burns, or both.

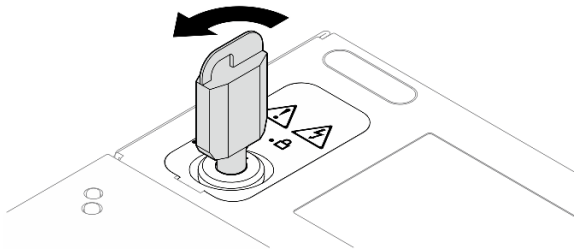
## About this task

**Attention:**

- Read [“Installation Guidelines” on page 1](#) and [“Safety inspection checklist” on page 2](#) to ensure that you work safely.
- Power off the server and peripheral devices and disconnect the power cords and all external cables. See [“Power off the server” on page 8](#).
- If the node is installed in an enclosure or mounted, remove the node from the enclosure or mount. See [“Configuration guide” on page 9](#).

## Procedure

- Step 1. If necessary, remove all the WLAN antennas. See [“Remove the WLAN antennas” on page 256](#).
- Step 2. Turn the keylock to the unlock position with the key; then, take the key out of the keylock, and reverse the node to let the top side facing up.



*Figure 184. Unlocking the keylock*

- Step 3. Remove the top cover.
- 1 Press and hold the button to disengage the cover.
  - 2 Slide and lift the cover to remove it from the chassis; then, place it on a flat clean surface.

**Attention:**

- To make sure that there is adequate system cooling, install both top cover and bottom cover before powering on the server. Operating the server with the covers removed might damage server components.
- Service label is located on the inside of the top cover.

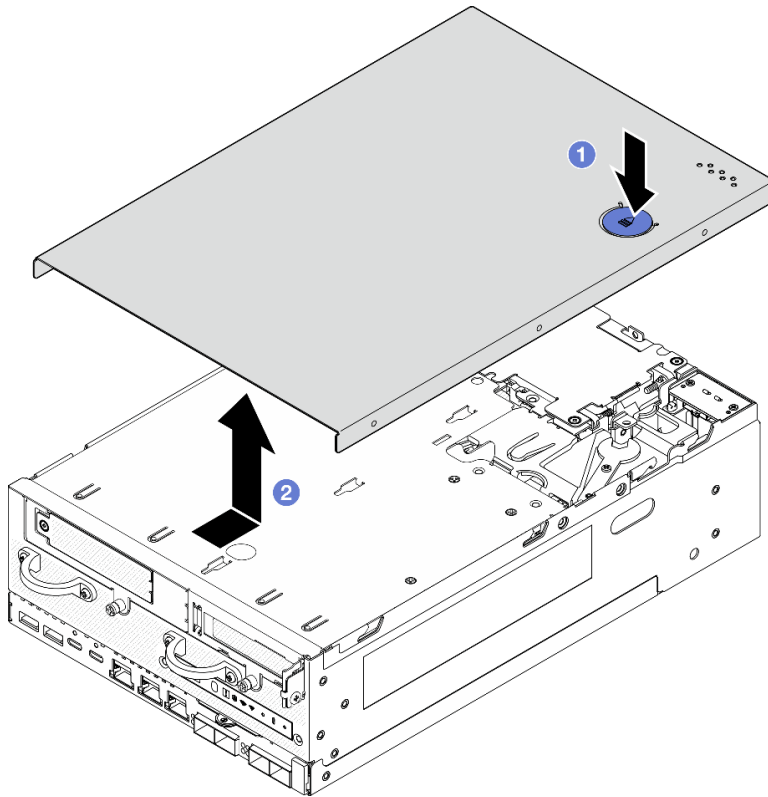


Figure 185. Removing the top cover

- Step 4. Let the bottom side of the node facing up. Turn the keylock to the lock position with the key, and store the key for future use.

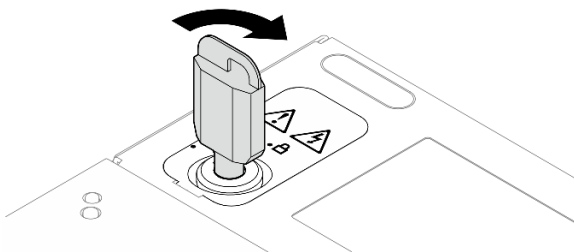


Figure 186. Locking the keylock

## After this task is completed

If you are instructed to return the component or optional device, follow all packaging instructions, and use any packaging materials for shipping that are supplied to you.

## Demo Video



[Watch the procedure on YouTube](#)

## Install the top cover

Follow instructions in this section to install the top cover.

### S014



#### **CAUTION:**

**Hazardous voltage, current, and energy levels might be present. Only a qualified service technician is authorized to remove the covers where the label is attached.**

### S033



#### **CAUTION:**

**Hazardous energy present. Voltages with hazardous energy might cause heating when shorted with metal, which might result in spattered metal, burns, or both.**

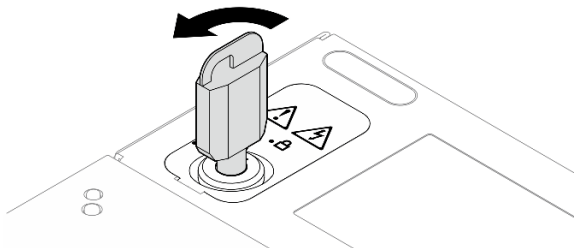
## About this task

### **Attention:**

- Read [“Installation Guidelines” on page 1](#) and [“Safety inspection checklist” on page 2](#) to ensure that you work safely.
- Make sure that all components have been reassembled correctly and that no tools or loose screws are left inside your server.
- Make sure that all internal cables are correctly routed. See [Chapter 2 “Internal cable routing” on page 283](#).

## Procedure

Step 1. Turn the keylock to the unlock position with the key; then, take the key out of the keylock, and reverse the node to let the top side facing up.



*Figure 187. Unlocking the keylock*

Step 2. Align the top cover with the guiding slots on both sides of the chassis; then, slide it forward until it is firmly seated.

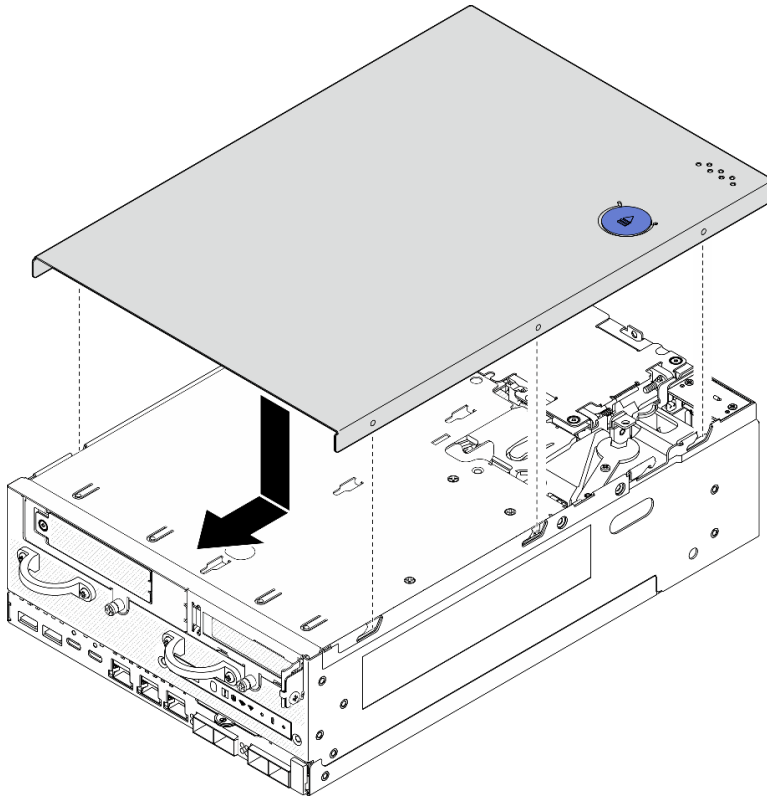


Figure 188. Installing the top cover

- Step 3. Let the bottom side of the node facing up. Turn the keylock to the lock position with the key, and store the key for future use.

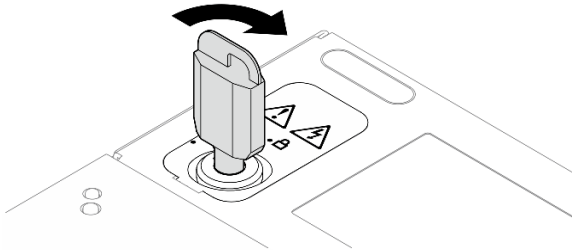


Figure 189. Locking the keylock

### After this task is completed

Complete the parts replacement. See [“Complete the parts replacement” on page 281](#).

### Demo Video

[Watch the procedure on YouTube](#)

### Remove the bottom cover

Follow instructions in this section to remove the bottom cover.

### S014



**CAUTION:**

Hazardous voltage, current, and energy levels might be present. Only a qualified service technician is authorized to remove the covers where the label is attached.

**S033**



**CAUTION:**

Hazardous energy present. Voltages with hazardous energy might cause heating when shorted with metal, which might result in spattered metal, burns, or both.

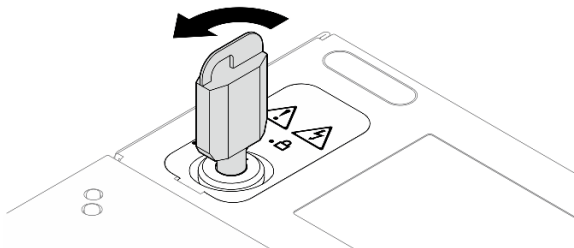
## About this task

**Attention:**

- Read [“Installation Guidelines” on page 1](#) and [“Safety inspection checklist” on page 2](#) to ensure that you work safely.
- Power off the server and peripheral devices and disconnect the power cords and all external cables. See [“Power off the server” on page 8](#).
- If the node is installed in an enclosure or mounted, remove the node from the enclosure or mount. See [“Configuration guide” on page 9](#).

## Procedure

Step 1. Turn the keylock to the unlock position with the key.



*Figure 190. Unlocking the keylock*

Step 2. Remove the bottom cover.

- 1 Press and hold the button to disengage the cover.
- 2 Slide and lift the cover to remove it from the chassis; then, place it on a flat clean surface.

**Attention:** To make sure that there is adequate system cooling, install both top cover and bottom cover before powering on the server. Operating the server with the covers removed might damage server components.

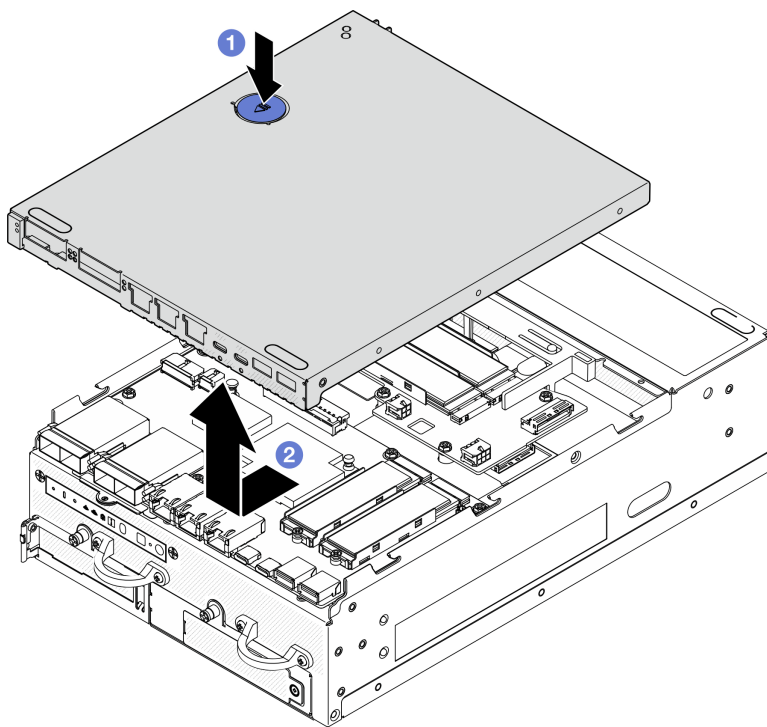


Figure 191. Removing bottom cover

Step 3. Turn the keylock to the lock position with the key, and store the key for future use.

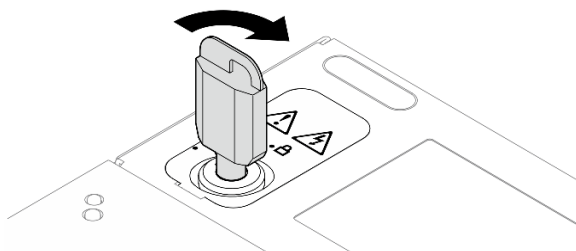


Figure 192. Locking the keylock

## After this task is completed

If you are instructed to return the component or optional device, follow all packaging instructions, and use any packaging materials for shipping that are supplied to you.

## Demo Video

[Watch the procedure on YouTube](#)

## Install the bottom cover

Follow instructions in this section to install the bottom cover.

## S014



**CAUTION:**

Hazardous voltage, current, and energy levels might be present. Only a qualified service technician is authorized to remove the covers where the label is attached.

**S033**



**CAUTION:**

Hazardous energy present. Voltages with hazardous energy might cause heating when shorted with metal, which might result in spattered metal, burns, or both.

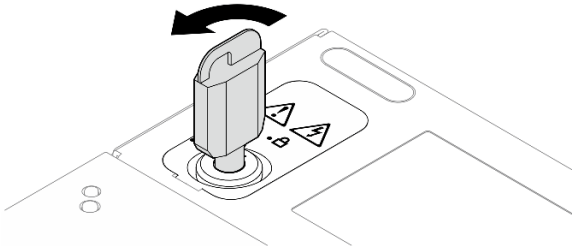
## About this task

**Attention:**

- Read [“Installation Guidelines” on page 1](#) and [“Safety inspection checklist” on page 2](#) to ensure that you work safely.
- Make sure that all components have been reassembled correctly and that no tools or loose screws are left inside your server.
- Make sure that all internal cables are correctly routed. See [Chapter 2 “Internal cable routing” on page 283](#).

## Procedure

Step 1. Turn the keylock to the unlock position with the key.



*Figure 193. Unlocking the keylock*

Step 2. Align the bottom cover with the guiding slots on both sides of the chassis; then, hold both sides of the cover and slide it forward until it is firmly seated.

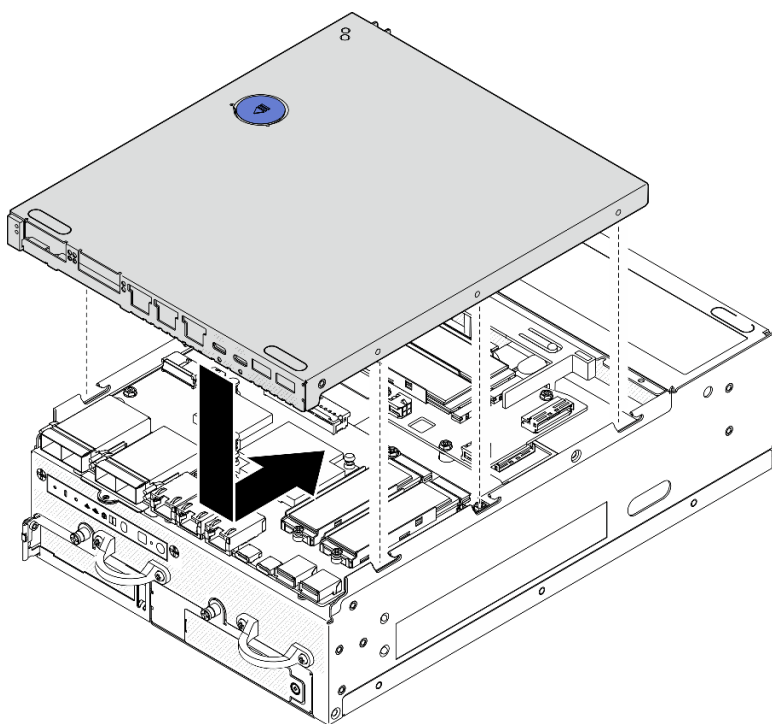


Figure 194. Installing the bottom cover

Step 3. Turn the keylock to the lock position with the key, and store the key for future use.

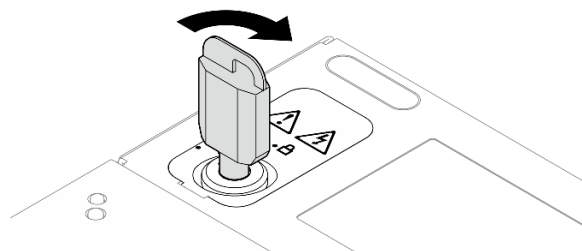


Figure 195. Locking the keylock

### After this task is completed

Complete the parts replacement. See [“Complete the parts replacement” on page 281](#).

### Demo Video

[Watch the procedure on YouTube](#)

## PMB status LED cable replacement

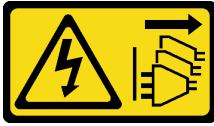
Follow instructions in this section to remove and install the PMB status LED cable.

### Remove the PMB status LED cable

Follow instructions in this section to remove the PMB status LED cable.

### About this task

## S002



### CAUTION:

The power-control button on the device and the power switch on the power supply do not turn off the electrical current supplied to the device. The device also might have more than one power cord. To remove all electrical current from the device, ensure that all power cords are disconnected from the power source.

### Attention:

- Read [“Installation Guidelines” on page 1](#) and [“Safety inspection checklist” on page 2](#) to ensure that you work safely.
- Power off the server and peripheral devices and disconnect the power cords and all external cables. See [“Power off the server” on page 8](#).
- If the node is installed in an enclosure or mounted, remove the node from the enclosure or mount. See [“Configuration guide” on page 9](#).

### Procedure

Step 1. Make preparation for this task.

- a. If necessary, remove all the WLAN antennas. See [“Remove the WLAN antennas” on page 256](#).
- b. Remove the top cover. See [“Remove the top cover” on page 154](#).
- c. Remove the PMB air baffle. See [“Remove the PMB air baffle” on page 62](#).
- d. Lift the riser assembly from the node. See [“Remove the riser assembly from the node” on page 186](#).
- e. Remove the processor air baffle. See [“Remove the processor air baffle and air flow sensor board” on page 65](#).
- f. Remove Fan 2. See [“Remove a fan module” on page 100](#).
- g. Remove the rear dust filter. See [“Remove the rear dust filter” on page 52](#).

**Note:** If necessary, remove the rear operator panel for easier operation. See [“Remove the rear operator panel” on page 183](#).

Step 2. Disconnect the PMB status LED cable from the power module board; then, carefully remove the cable from the cable clip.

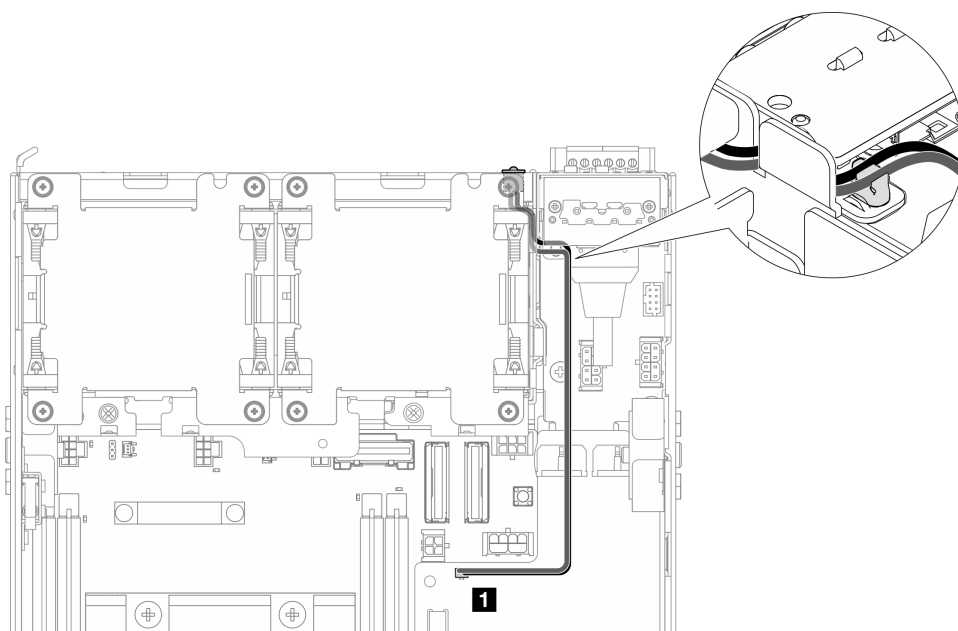


Figure 196. PMB status LED cable connecting to the DC power module board (DC PMB)

**1** PMB status LED connector on the DC power module board (DC PMB)

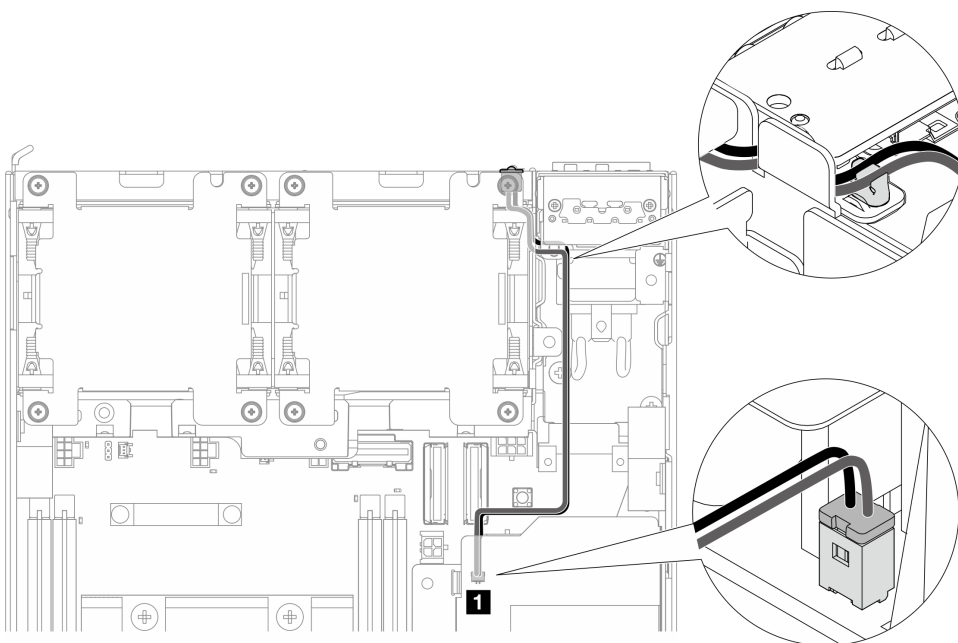


Figure 197. PMB status LED cable connecting to the internal power supply unit (AC PMB)

**1** PMB status LED connector on the internal power supply unit (AC PMB)

- Step 3. Stab the sleeve of the PMB status LED cable with a pointed tool to detach the cable from the chassis; meanwhile, pinch the front end of the PMB status LED cable, and pull it outward to remove it.



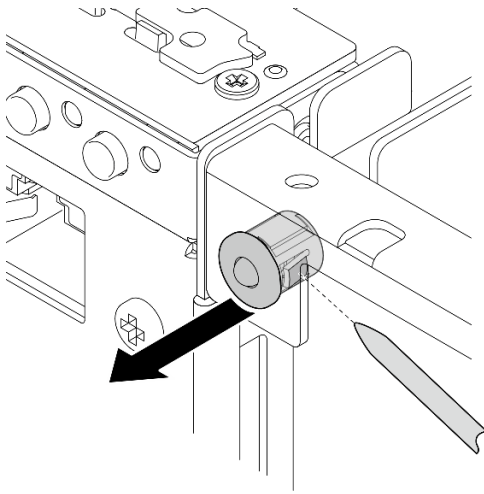


Figure 198. Removing the PMB status LED cable

### After this task is completed

- Install a replacement unit. See [“Install the PMB status LED cable” on page 165](#).
- If you are instructed to return the component or optional device, follow all packaging instructions, and use any packaging materials for shipping that are supplied to you.

### Demo Video

[Watch the procedure on YouTube](#)

### Install the PMB status LED cable

Follow instructions in this section to install the PMB status LED cable.

### About this task

#### S002



#### **CAUTION:**

The power-control button on the device and the power switch on the power supply do not turn off the electrical current supplied to the device. The device also might have more than one power cord. To remove all electrical current from the device, ensure that all power cords are disconnected from the power source.

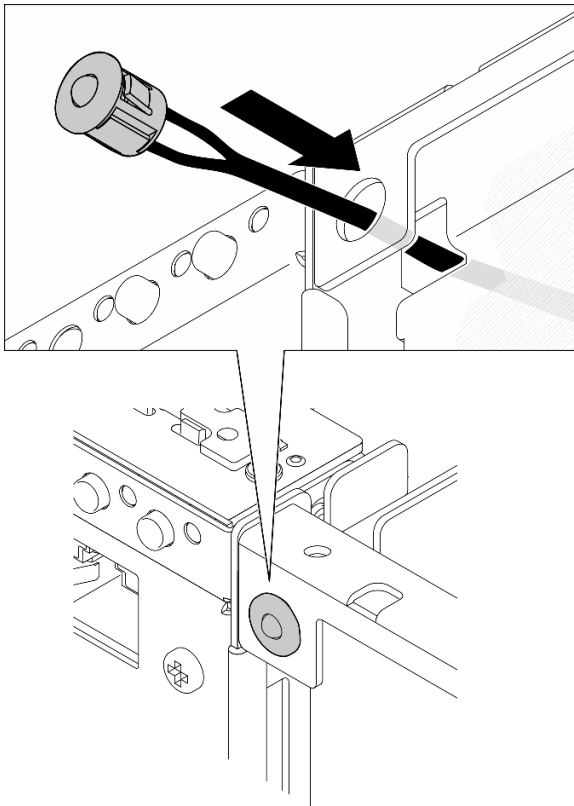
#### **Attention:**

- Read [“Installation Guidelines” on page 1](#) and [“Safety inspection checklist” on page 2](#) to ensure that you work safely.
- Touch the static-protective package that contains the component to any unpainted metal surface on the server; then, remove it from the package and place it on a static-protective surface.

### Procedure

Step 1. Install the PMB status LED cable.

- a. Route the PMB status LED cable through the hole on the chassis; then, insert the front end of the PMB status LED cable into the slot until it is firmly seated.



*Figure 199. Installing the PMB status LED cable*

Step 2. Route the PMB status LED cable into the cable clip; then, connect the cable to the power module board.

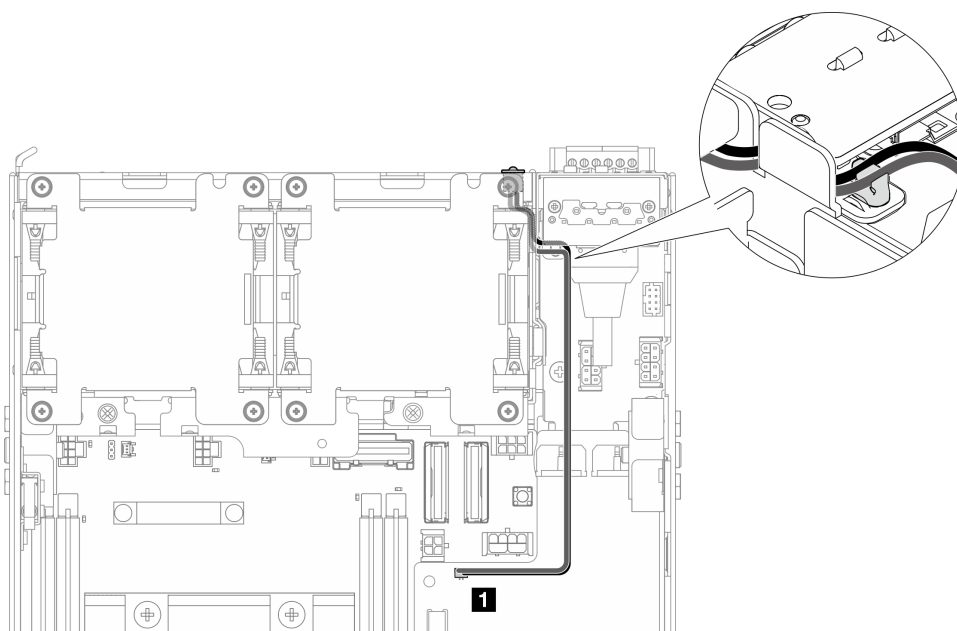


Figure 200. PMB status LED cable connecting to the DC power module board (DC PMB)

**1** PMB status LED connector on the DC power module board (DC PMB)

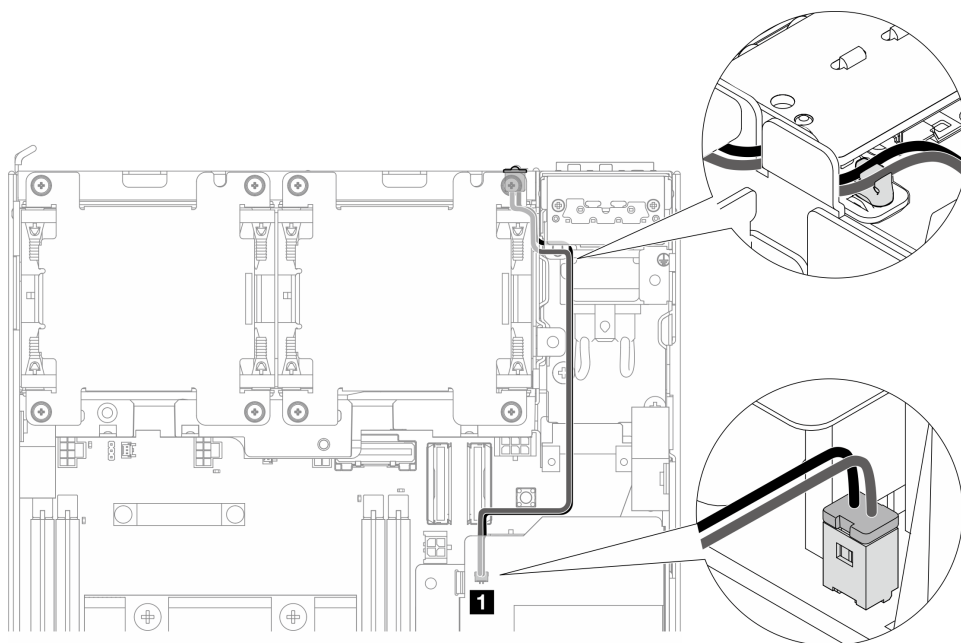


Figure 201. PMB status LED cable connecting to the internal power supply unit (AC PMB)

**1** PMB status LED connector on the internal power supply unit (AC PMB)

## After this task is completed

Complete the parts replacement. See [“Complete the parts replacement” on page 281](#).

## Demo Video

[Watch the procedure on YouTube](#)

## Power input board (PIB) module replacement

Follow instructions in this section to remove and install the power input board (PIB) module.

### Remove the PIB module

Follow instructions in this section to remove the power input board (PIB) module.

### About this task

#### S002



#### **CAUTION:**

The power-control button on the device and the power switch on the power supply do not turn off the electrical current supplied to the device. The device also might have more than one power cord. To remove all electrical current from the device, ensure that all power cords are disconnected from the power source.

#### **Attention:**

- Read [“Installation Guidelines” on page 1](#) and [“Safety inspection checklist” on page 2](#) to ensure that you work safely.
- Power off the server and peripheral devices and disconnect the power cords and all external cables. See [“Power off the server” on page 8](#).
- If the node is installed in an enclosure or mounted, remove the node from the enclosure or mount. See [“Configuration guide” on page 9](#).

## Procedure

Step 1. Make preparation for this task.

- a. If necessary, remove all the WLAN antennas. See [“Remove the WLAN antennas” on page 256](#).
- b. Remove the top cover. See [“Remove the top cover” on page 154](#).
- c. Remove the PMB air baffle. See [“Remove the PMB air baffle” on page 62](#).
- d. Lift the riser assembly from the node. See [“Remove the riser assembly from the node” on page 186](#).
- e. Depending on the configuration, remove the power module board or internal power supply unit. See [“Remove the power module board \(PMB\)” on page 172](#) or [“Remove the internal power supply unit \(AC PMB\)” on page 108](#).

Step 2. Proceed to the section corresponding to the PIB module to be removed.

- [“Remove the DC PIB module” on page 168](#)
- [“Remove the AC PIB module” on page 169](#)

### Remove the DC PIB module

## Procedure

- Step 1. Loosen the screw that secures the PIB module.
- Step 2. Carefully pinch and hold the connector of the RJ-45 UART cable; then, push the PIB module outwards to remove it from the chassis.

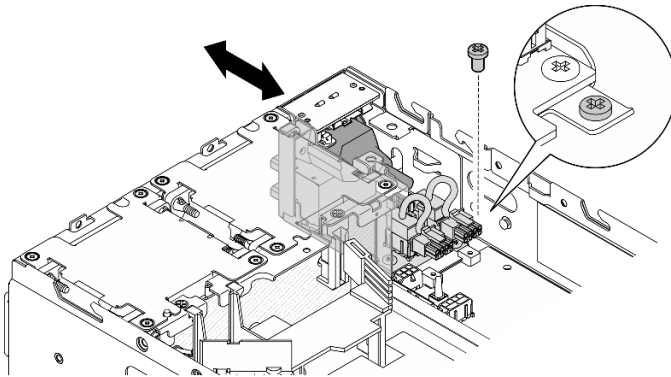


Figure 202. Removing the DC PIB module

### After this task is completed

- Install a replacement unit. See [“Install the PIB module” on page 170](#).
- If you are instructed to return the component or optional device, follow all packaging instructions, and use any packaging materials for shipping that are supplied to you.

### Demo Video

[Watch the procedure on YouTube](#)

### Remove the AC PIB module

#### Procedure

- Step 1. Loosen the screw that secures the PIB module.
- Step 2. Carefully pinch and hold the power connector; then, push the PIB module outwards to remove it from the chassis.

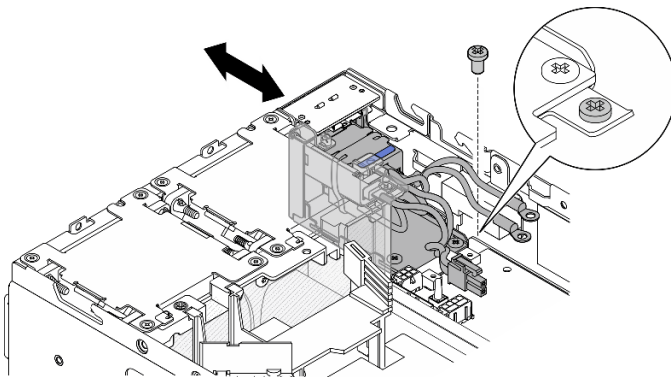


Figure 203. Removing the AC PIB module

### After this task is completed

- Install a replacement unit. See [“Install the PIB module” on page 170](#).

- If you are instructed to return the component or optional device, follow all packaging instructions, and use any packaging materials for shipping that are supplied to you.

## Demo Video

[Watch the procedure on YouTube](#)

## Install the PIB module

Follow instructions in this section to install the power input board (PIB) module.

## About this task

### S002



#### **CAUTION:**

The power-control button on the device and the power switch on the power supply do not turn off the electrical current supplied to the device. The device also might have more than one power cord. To remove all electrical current from the device, ensure that all power cords are disconnected from the power source.

#### **Attention:**

- Read [“Installation Guidelines” on page 1](#) and [“Safety inspection checklist” on page 2](#) to ensure that you work safely.
- Touch the static-protective package that contains the component to any unpainted metal surface on the server; then, remove it from the package and place it on a static-protective surface.

Proceed to the section corresponding to the PIB module to be installed.

- [“Install the DC PIB module” on page 170](#)
- [“Install the AC PIB module” on page 172](#)

## Install the DC PIB module

### Procedure

- Step 1. Insert the PIB module into the slot until it is firmly seated
- Step 2. Secure the PIB module with one screw.

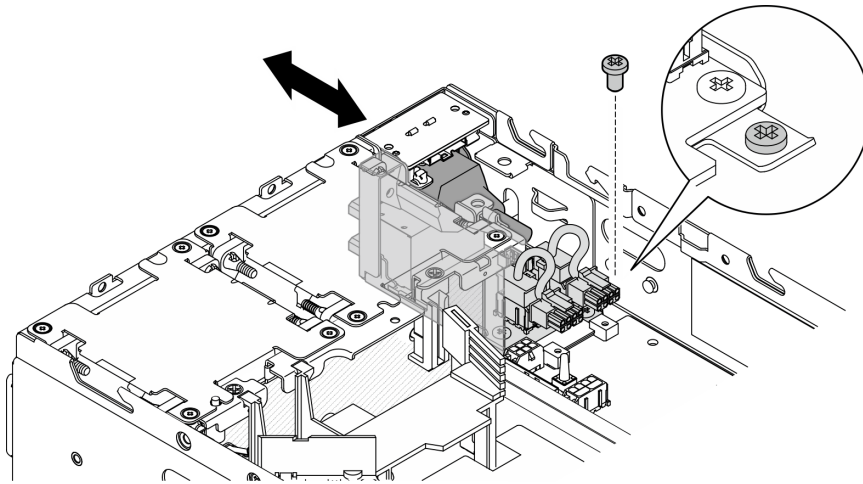


Figure 204. Installing the PIB module

### After this task is completed

1. Reinstall the power module board. See [“Install the power module board \(PMB\)” on page 175](#).
2. Complete the parts replacement. See [“Complete the parts replacement” on page 281](#).
3. If applicable, before connecting DC power source to the server, remove the header from the corresponding power connector.
  - a. Loosen the two captive screws that secure the header; then, remove the header from the power connector.

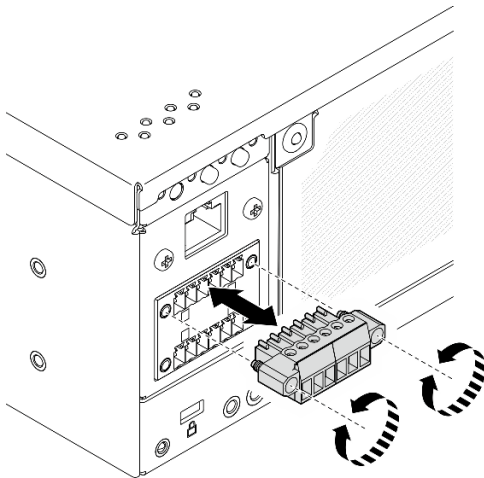


Figure 205. Removing the header

- b. Store the header for future use.

**Note:** Install the header when the power connector is not used. The connector could be damaged without proper protection.

### Demo Video

[Watch the procedure on YouTube](#)

## Install the AC PIB module

### Procedure

- Step 1. Insert the PIB module into the slot until it is firmly seated
- Step 2. Secure the PIB module with one screw.

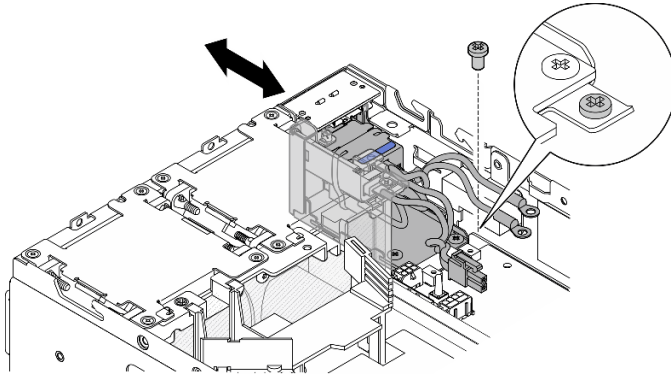


Figure 206. Installing the PIB module

### After this task is completed

1. Reinstall the internal power supply unit. See [“Install the internal power supply unit \(AC PMB\)”](#) on page 112.
2. Complete the parts replacement. See [“Complete the parts replacement”](#) on page 281.

### Demo Video

[Watch the procedure on YouTube](#)

## Power module board (PMB) replacement

Follow instructions in this section to remove and install the power module board (PMB).

### Remove the power module board (PMB)

Follow instructions in this section to remove the power module board (PMB).

### About this task

#### S002



#### CAUTION:

The power-control button on the device and the power switch on the power supply do not turn off the electrical current supplied to the device. The device also might have more than one power cord. To remove all electrical current from the device, ensure that all power cords are disconnected from the power source.

#### Attention:



- Read [“Installation Guidelines” on page 1](#) and [“Safety inspection checklist” on page 2](#) to ensure that you work safely.
- Power off the server and peripheral devices and disconnect the power cords and all external cables. See [“Power off the server” on page 8](#).
- If the node is installed in an enclosure or mounted, remove the node from the enclosure or mount. See [“Configuration guide” on page 9](#).

## Procedure

Step 1. Make preparation for this task.

- a. If necessary, remove all the WLAN antennas. See [“Remove the WLAN antennas” on page 256](#).
- b. Remove the top cover. See [“Remove the top cover” on page 154](#).
- c. Remove the PMB air baffle. See [“Remove the PMB air baffle” on page 62](#).
- d. Lift the riser assembly from the node. See [“Remove the riser assembly from the node” on page 186](#).
- e. Depending on the model, remove the PMB side SMA assembly or SMA filler. See [“Remove the SMA assemblies” on page 257](#).
- f. To ensure sufficient space for this task, place the signal cable that connects the front operator panel and rear operator panel outside of the chassis.

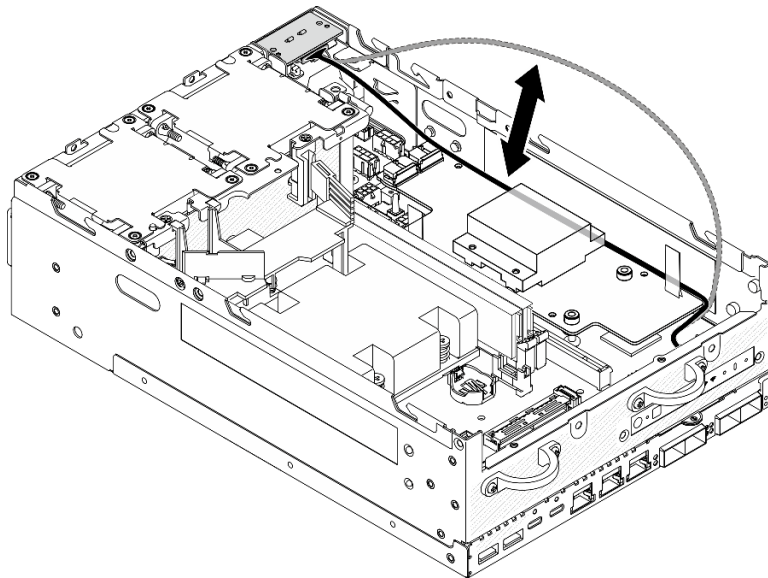


Figure 207. Placing the signal cable

Step 2. Disconnect the PMB LED cable from the power module board.

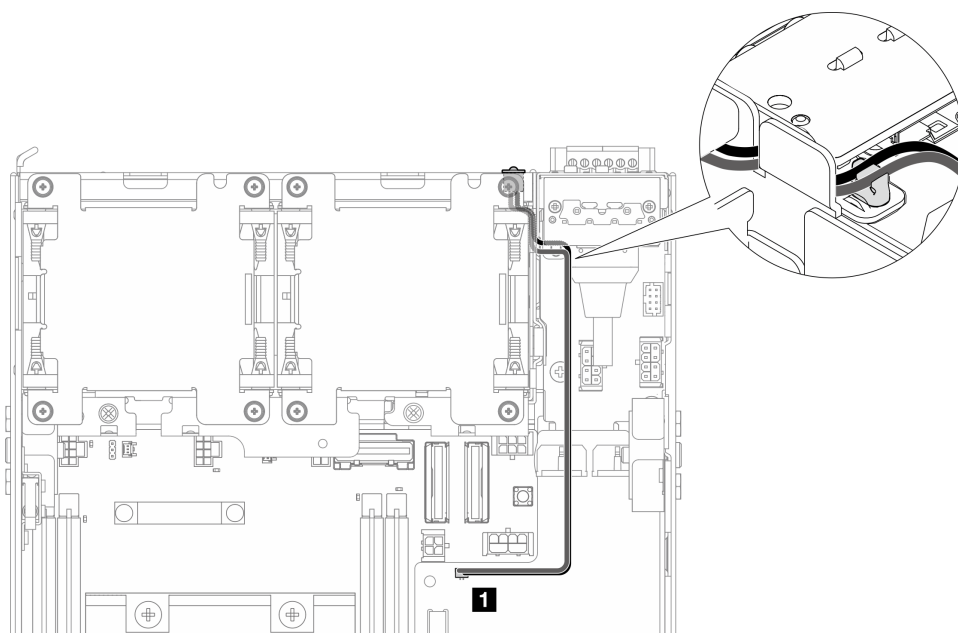


Figure 208. PMB LED cable

**1** PMB status LED connector on the power module board

Step 3. Loosen the three screws that secure the power module board.

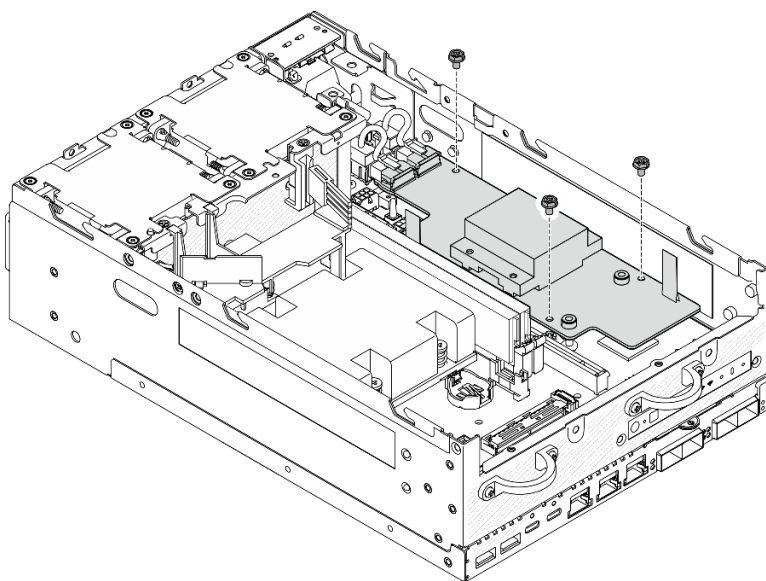


Figure 209. Loosening the screws

Step 4. Remove the power module board.

- a. **1** Pinch the pull tapes to lift the power module board slightly up; then, pinch the edge of the power module board and lift it up to disengage it from the chassis.
- b. **2** Disconnect all the cables from the power module board, and remove the power module board from the chassis.

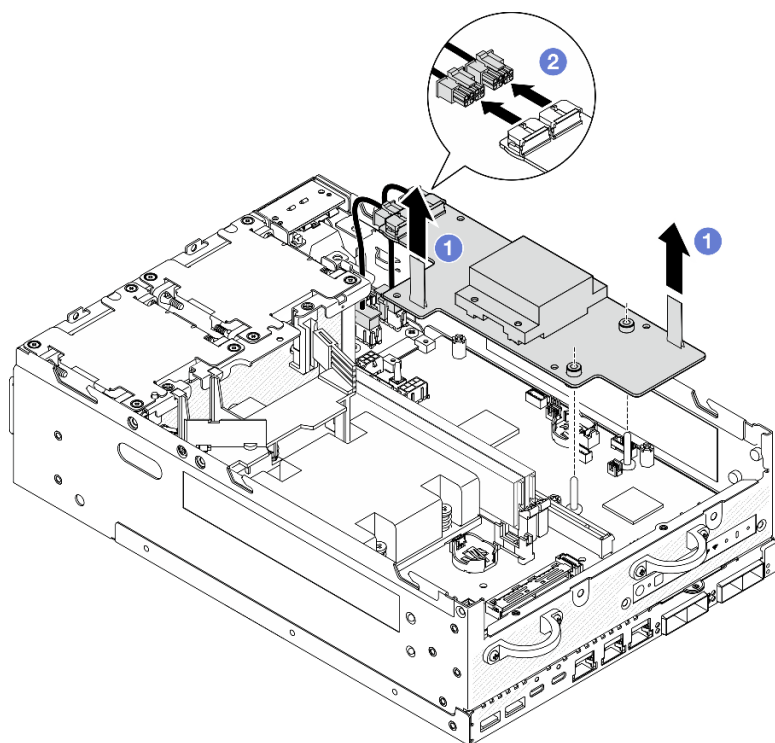


Figure 210. Removing the power module board

### After this task is completed

- Install a replacement unit. See [“Install the power module board \(PMB\)” on page 175](#).
- If you are instructed to return the component or optional device, follow all packaging instructions, and use any packaging materials for shipping that are supplied to you.

### Demo Video

[Watch the procedure on YouTube](#)

### Install the power module board (PMB)

Follow instructions in this section to install the power module board (PMB).

#### S002



#### **CAUTION:**

The power-control button on the device and the power switch on the power supply do not turn off the electrical current supplied to the device. The device also might have more than one power cord. To remove all electrical current from the device, ensure that all power cords are disconnected from the power source.

### About this task

#### **Attention:**

- Read “[Installation Guidelines](#)” on page 1 and “[Safety inspection checklist](#)” on page 2 to ensure that you work safely.
- Touch the static-protective package that contains the component to any unpainted metal surface on the server; then, remove it from the package and place it on a static-protective surface.

## Procedure

Step 1. Make sure the signal cable between the front operator panel and rear operator panel is placed outside the chassis.

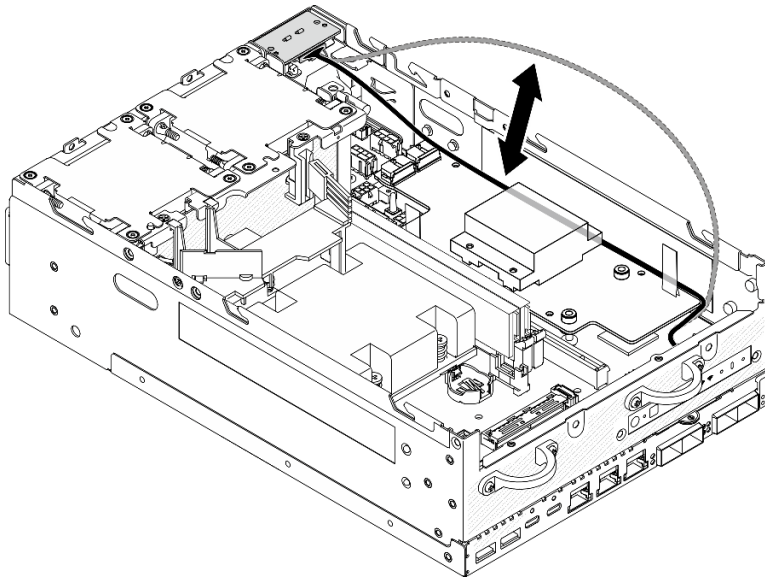


Figure 211. Placing the signal cable

- Step 2. Install the power module board.
- 1 Connect the power cables from the PIB module to the power module board.
  - 2 Align the power module board with the busbars on the system board; then, lower the power module board down until it is firmly seated.

**Important:** Make sure that the busbars are seated in the holes of power module board as shown in the illustration.

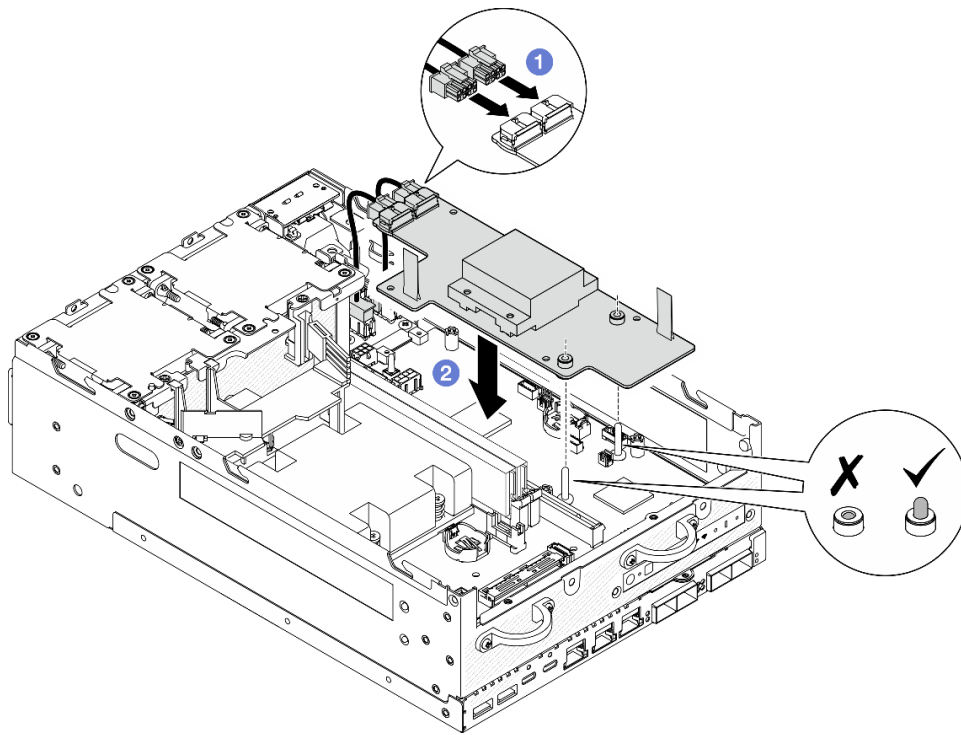


Figure 212. Installing the power module board

**Notes:**

- Do not let the pull tapes be bent or covered. Make sure the pull tapes are on the upper side of the power module board.
- Make sure that the slots for PMB air baffle are not interfered by the cables between the power module board and the PIB module.

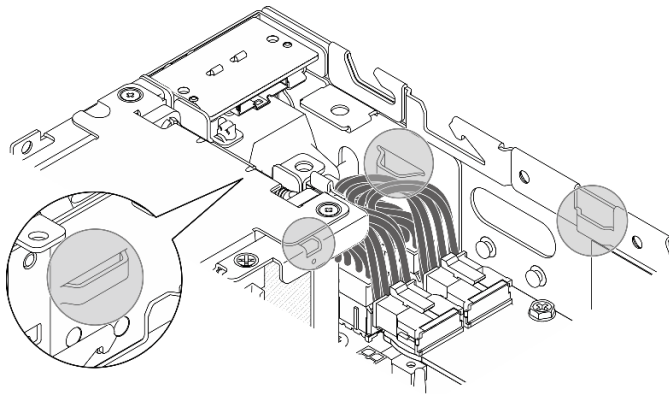


Figure 213. The slots for PMB air baffle

Step 3. Secure the power module board with three screws.

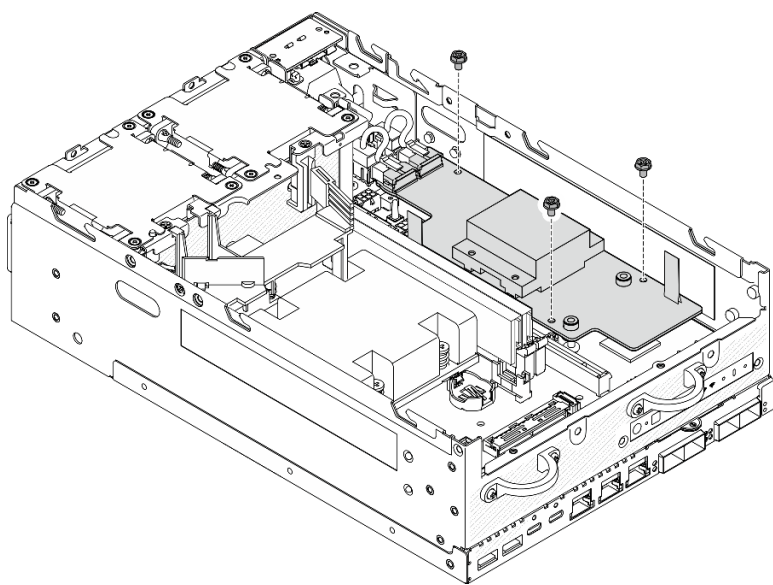


Figure 214. Securing the power module board

Step 4. Connect the PMB LED cable to the power module board.

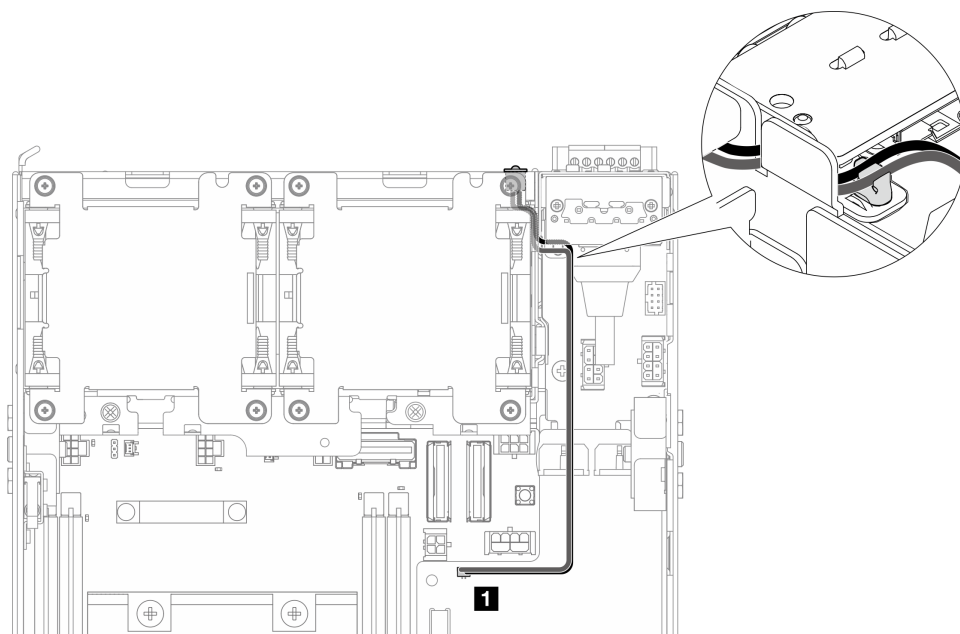


Figure 215. PMB LED cable

**1** PMB status LED connector on the power module board

### After this task is completed

1. Place the signal cable between the front operator panel and rear operator panel back into the chassis.

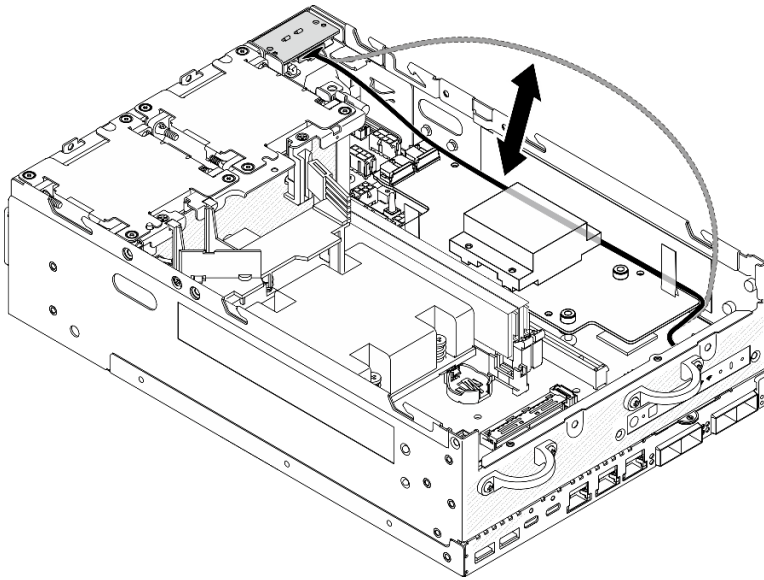


Figure 216. Placing the signal cable

2. Complete the parts replacement. See [“Complete the parts replacement” on page 281](#).

### Demo Video

[Watch the procedure on YouTube](#)

## Processor heat sink replacement

Follow instructions in this section to remove and install the processor heat sink.

**Attention:** Before reusing a processor or heat sink, make sure you use Lenovo proven alcohol cleaning pad and thermal grease.

**Important:** The processor in your server can throttle in response to thermal conditions, temporarily lowering its speed to reduce heat output. In instances where a few processor cores are throttled for an extremely short time period (100 ms or less), the only indication might be an entry in the operating system event log with no corresponding entry in the system XCC event log. If this situation occurs, the event can be ignored and processor replacement is not required.

### Remove the processor heat sink

Follow instructions in this section to remove the processor heat sink. This procedure must be executed by a trained technician.

#### S002



#### CAUTION:

The power-control button on the device and the power switch on the power supply do not turn off the electrical current supplied to the device. The device also might have more than one power cord. To

remove all electrical current from the device, ensure that all power cords are disconnected from the power source.

## **S012**



**CAUTION:**  
Hot surface nearby.

### **About this task**

#### **Attention:**

- Read [“Installation Guidelines” on page 1](#) and [“Safety inspection checklist” on page 2](#) to ensure that you work safely.
- Power off the server and peripheral devices and disconnect the power cords and all external cables. See [“Power off the server” on page 8](#).
- Prevent exposure to static electricity, which might lead to system halt and loss of data, by keeping static-sensitive components in their static-protective packages until installation, and handling these devices with an electrostatic-discharge wrist strap or other grounding system.
- Do not allow the thermal grease on the processor or heat sink to come in contact with anything. Contact with any surface can compromise the thermal grease, rendering it ineffective. Thermal grease can damage components, such as the electrical connectors in the processor socket.
- If the node is installed in an enclosure or mounted, remove the node from the enclosure or mount. See [“Configuration guide” on page 9](#).

### **Procedure**

Step 1. Make preparation for this task.

- a. If necessary, remove all the WLAN antennas. See [“Remove the WLAN antennas” on page 256](#).
- b. Remove the top cover. See [“Remove the top cover” on page 154](#).
- c. Remove the PMB air baffle. See [“Remove the PMB air baffle” on page 62](#).
- d. Lift the riser assembly from the node. See [“Remove the riser assembly from the node” on page 186](#).
- e. Remove the processor air baffle. See [“Remove the processor air baffle and air flow sensor board” on page 65](#).
- f. Remove all the memory modules. See [“Remove a memory module” on page 144](#).

Step 2. Remove the processor heat sink.

- a. ① Fully loosen the four captive screws on the heat sink *in the removal sequence shown* on the heat-sink label.
- b. ② Lift the heat sink evenly to remove it from the server.



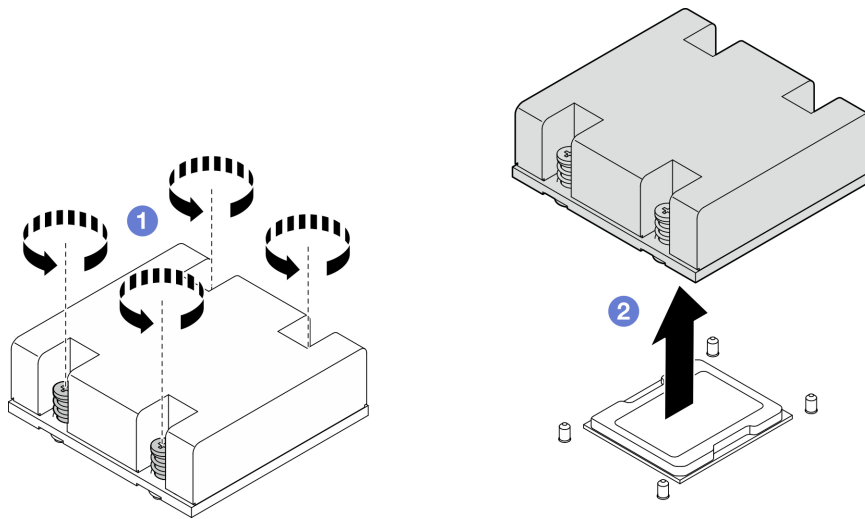


Figure 217. Removing the processor heat sink

### After this task is completed

- Install a replacement unit. See “Install the processor heat sink” on page 181.
- If you are instructed to return the component or optional device, follow all packaging instructions, and use any packaging materials for shipping that are supplied to you.

### Demo Video

[Watch the procedure on YouTube](#)

### Install the processor heat sink

Follow instructions in this section to install the processor heat sink. This procedure must be executed by a trained technician.

#### S002



#### CAUTION:

The power-control button on the device and the power switch on the power supply do not turn off the electrical current supplied to the device. The device also might have more than one power cord. To remove all electrical current from the device, ensure that all power cords are disconnected from the power source.

#### S012



#### CAUTION:

Hot surface nearby.

## About this task

### Attention:

- Read “[Installation Guidelines](#)” on page 1 and “[Safety inspection checklist](#)” on page 2 to ensure that you work safely.
- Power off the server and peripheral devices and disconnect the power cords and all external cables. See “[Power off the server](#)” on page 8.
- Prevent exposure to static electricity, which might lead to system halt and loss of data, by keeping static-sensitive components in their static-protective packages until installation, and handling these devices with an electrostatic-discharge wrist strap or other grounding system.
- Do not allow the thermal grease on the processor or heat sink to come in contact with anything. Contact with any surface can compromise the thermal grease, rendering it ineffective. Thermal grease can damage components, such as the electrical connectors in the processor socket.

## Procedure

Step 1. Make preparation for this task.

- a. If there is any old thermal grease on the processor, gently clean the top of the processor using an alcohol cleaning pad. Dispose of the cleaning pad after all of the thermal grease is removed.

**Note:** Make sure the alcohol has fully evaporated before applying new thermal grease.

- b. To ensure the best performance, check the manufacturing date on the new heat sink and make sure it does not exceed 2 years. Otherwise, wipe off the existing thermal grease from the new heat sink, and apply new grease on the top of the processor for optimal thermal performance.
- c. Apply the thermal grease on the top of the processor with syringe by forming four uniformly spaced dots, while each dot consists of about 0.1 ml of thermal grease.

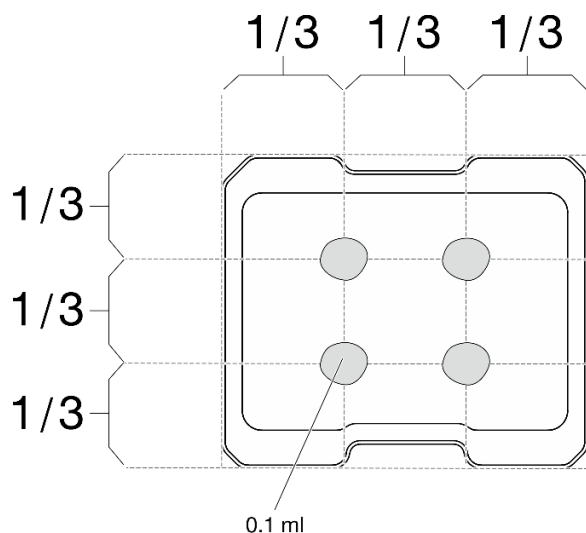


Figure 218. Proper shape of the thermal grease

Step 2. Install the processor heat sink.

- a. ① Align the heat sink with the guide pins on the system board; then, lower the heat sink down until it is firmly seated.
- b. ② Fully tighten the four captive screws *in the installation sequence shown* on the heat-sink label. Tighten the screws until they stop; then, visually inspect to make sure that there is no gap between the screw shoulder beneath the heat sink and the system board. (For reference,

the torque required for the captive screws to fully tighten is 1.4-1.6 newton-meters, 12-14 inch-pounds.)

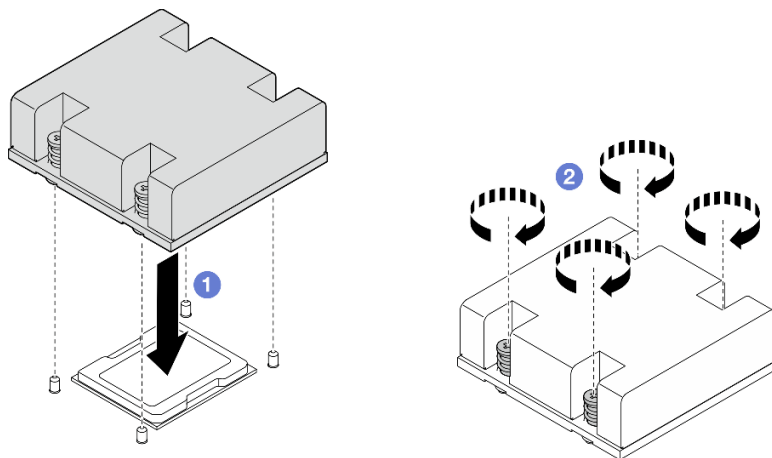


Figure 219. Installing the processor heat sink

### After this task is completed

Complete the parts replacement. See [“Complete the parts replacement” on page 281](#).

### Demo Video

[Watch the procedure on YouTube](#)

## Rear operator panel replacement

Follow instructions in this section to remove and install the rear operator panel.

### Remove the rear operator panel

Follow instructions in this section to remove the rear operator panel.

### About this task

#### S002



#### CAUTION:

The power-control button on the device and the power switch on the power supply do not turn off the electrical current supplied to the device. The device also might have more than one power cord. To remove all electrical current from the device, ensure that all power cords are disconnected from the power source.

#### Attention:

- Read [“Installation Guidelines” on page 1](#) and [“Safety inspection checklist” on page 2](#) to ensure that you work safely.

- Power off the server and peripheral devices and disconnect the power cords and all external cables. See [“Power off the server” on page 8](#).
- If the node is installed in an enclosure or mounted, remove the node from the enclosure or mount. See [“Configuration guide” on page 9](#).

## Procedure

Step 1. Make preparation for this task.

- If necessary, remove all the WLAN antennas. See [“Remove the WLAN antennas” on page 256](#).
- Remove the top cover. See [“Remove the top cover” on page 154](#).
- Remove the PMB air baffle. See [“Remove the PMB air baffle” on page 62](#).

Step 2. Loosen the two screws that secure the rear operator panel; then, remove the rear operator panel from the chassis.

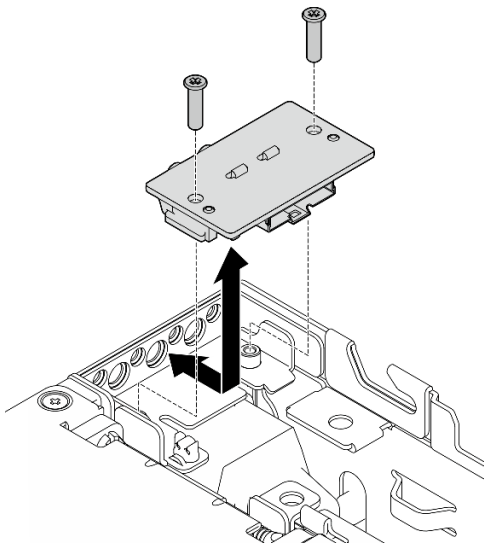


Figure 220. Removing the rear operator panel

Step 3. Disconnect the cable from the rear operator panel.

## After this task is completed

- Install a replacement unit. See [“Install the rear operator panel” on page 184](#).
- If you are instructed to return the component or optional device, follow all packaging instructions, and use any packaging materials for shipping that are supplied to you.

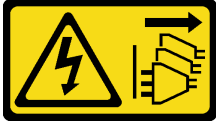
## Demo Video

[Watch the procedure on YouTube](#)

## Install the rear operator panel

Follow instructions in this section to install the rear operator panel.

## S002

**CAUTION:**

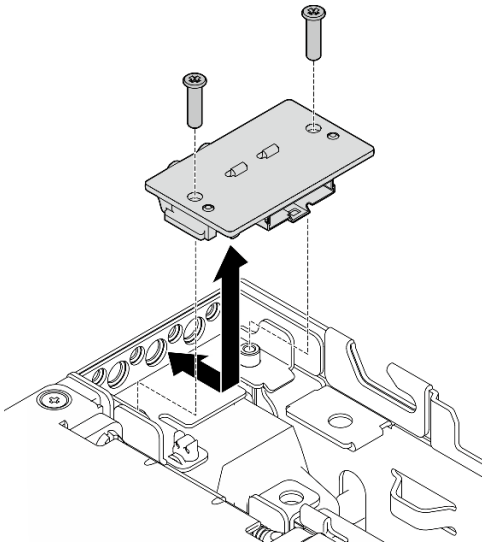
The power-control button on the device and the power switch on the power supply do not turn off the electrical current supplied to the device. The device also might have more than one power cord. To remove all electrical current from the device, ensure that all power cords are disconnected from the power source.

**About this task****Attention:**

- Read [“Installation Guidelines” on page 1](#) and [“Safety inspection checklist” on page 2](#) to ensure that you work safely.
- Touch the static-protective package that contains the component to any unpainted metal surface on the server; then, remove it from the package and place it on a static-protective surface.

**Procedure**

- Step 1. Connect the cable from the front operator panel to the rear operator panel.
- Step 2. Insert the rear operator panel to the chassis.
- Step 3. Secure the rear operator panel with two screws.



*Figure 221. Installing the rear operator panel*

**After this task is completed**

Complete the parts replacement. See [“Complete the parts replacement” on page 281](#).

**Demo Video**

[Watch the procedure on YouTube](#)

## Riser assembly replacement

Follow instructions in this section to remove and install the riser assembly.

### Remove the riser assembly from the node

Follow instructions in this section to remove the riser assembly from the node.

#### About this task

##### S002



##### **CAUTION:**

The power-control button on the device and the power switch on the power supply do not turn off the electrical current supplied to the device. The device also might have more than one power cord. To remove all electrical current from the device, ensure that all power cords are disconnected from the power source.

##### **Attention:**

- Read [“Installation Guidelines” on page 1](#) and [“Safety inspection checklist” on page 2](#) to ensure that you work safely.
- Power off the server and peripheral devices and disconnect the power cords and all external cables. See [“Power off the server” on page 8](#).
- If the node is installed in an enclosure or mounted, remove the node from the enclosure or mount. See [“Configuration guide” on page 9](#).

### Procedure

Step 1. Make preparation for this task.

- a. If applicable, remove all the 7mm drives. See [“Remove a 7mm hot-swap drive” on page 55](#).
- b. If necessary, remove all the WLAN antennas. See [“Remove the WLAN antennas” on page 256](#).
- c. Remove the top cover. See [“Remove the top cover” on page 154](#).
- d. Remove the PMB air baffle. See [“Remove the PMB air baffle” on page 62](#).

Step 2. Disengage the riser assembly from the node.

- a. ① Loosen the two thumbscrews in the front of the riser assembly.
- b. ② Loosen the three screws on both sides of the node.
- c. ③ Loosen the three captive screws on the top of the riser assembly.

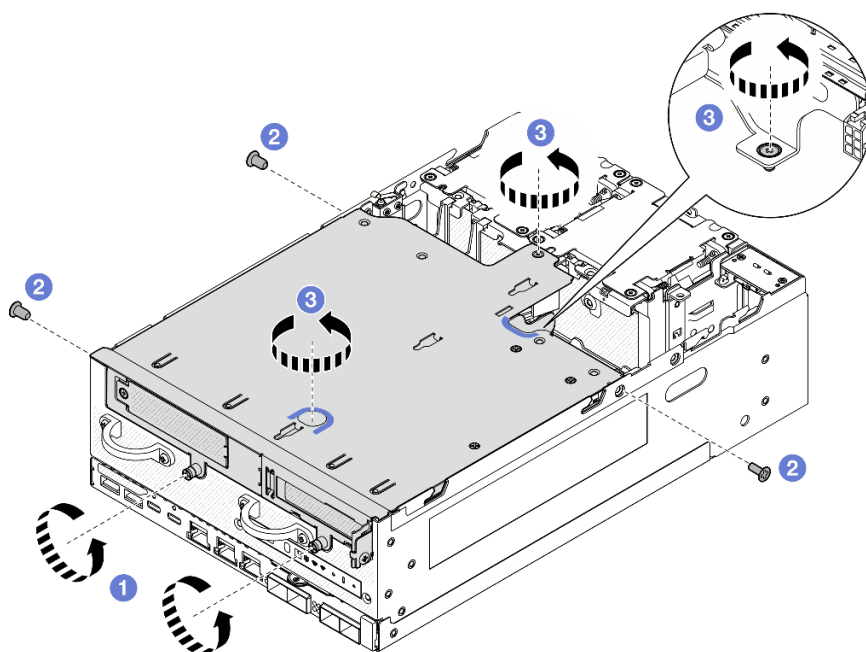


Figure 222. Disengaging the riser assembly

Step 3. Lift the riser assembly from the node.

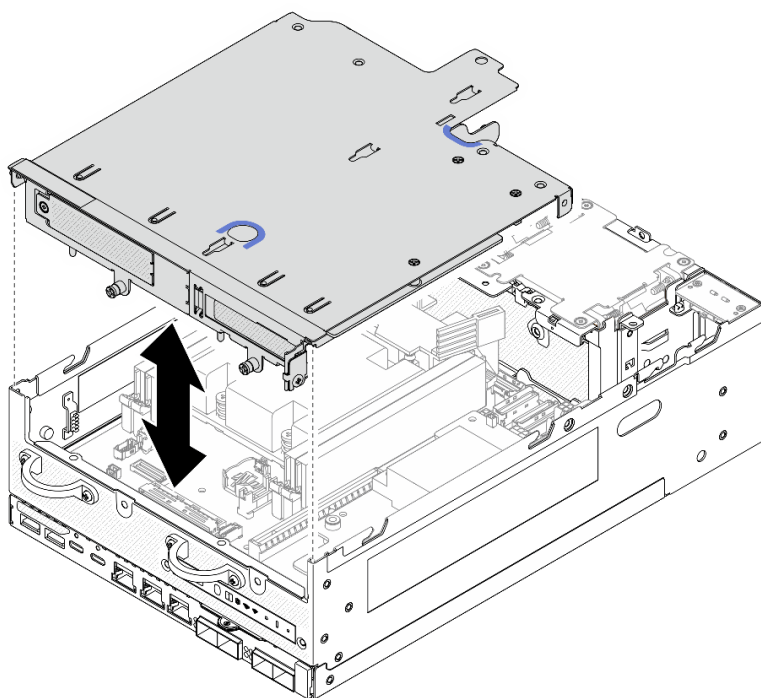


Figure 223. Lifting the riser assembly

**Note:** If necessary, after lifting the riser assembly, place the assembly on the top of the fan modules for easier operation.

Step 4. Remove the processor air baffle. See [“Remove the processor air baffle and air flow sensor board” on page 65.](#)

- Step 5. If necessary, disconnect the riser assembly cables to remove the riser assembly from the node.
- For the configuration with drive backplanes installed, disconnect the power cable from Backplane 1.
  - Disconnect the cables from the system board; then, remove the riser assembly from the node.

## After this task is completed

- To remove the components of the riser assembly, proceed to the section corresponding to the component to be removed:

<a href="#">“Left wing of riser assembly” on page 188</a>	<a href="#">“Right wing of riser assembly” on page 196</a>
<ul style="list-style-type: none"> <li>– <a href="#">“M.2 assembly” on page 189</a></li> <li>– <a href="#">“PCIe assembly” on page 192</a></li> <li>– <a href="#">“Drive backplanes” on page 193</a></li> <li>– <a href="#">“PCIe assembly + geotracking module” on page 194</a></li> </ul>	<ul style="list-style-type: none"> <li>– <a href="#">“M.2 assembly” on page 197</a></li> <li>– <a href="#">“PCIe assembly” on page 200</a></li> </ul>

- To reinstall the riser assembly to the node, see [“Install the riser assembly to the node” on page 217](#).
- If you are instructed to return the component or optional device, follow all packaging instructions, and use any packaging materials for shipping that are supplied to you.

## Demo Video

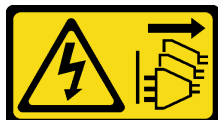
[Watch the procedure on YouTube](#)

## Remove components from the left wing of riser assembly

Follow instructions in this section to remove components from the left wing of riser assembly.

## About this task

### S002



### CAUTION:

The power-control button on the device and the power switch on the power supply do not turn off the electrical current supplied to the device. The device also might have more than one power cord. To remove all electrical current from the device, ensure that all power cords are disconnected from the power source.

### Attention:

- Read [“Installation Guidelines” on page 1](#) and [“Safety inspection checklist” on page 2](#) to ensure that you work safely.
- Power off the server and peripheral devices and disconnect the power cords and all external cables. See [“Power off the server” on page 8](#).
- If the node is installed in an enclosure or mounted, remove the node from the enclosure or mount. See [“Configuration guide” on page 9](#).

## Procedure



Step 1. Make preparation for this task.

- a. If applicable, remove all the 7mm drives. See [“Remove a 7mm hot-swap drive” on page 55](#).
- b. If necessary, remove all the WLAN antennas. See [“Remove the WLAN antennas” on page 256](#).
- c. Remove the top cover. See [“Remove the top cover” on page 154](#).
- d. Remove the PMB air baffle. See [“Remove the PMB air baffle” on page 62](#).
- e. Remove the riser assembly. (Before disconnecting the cables of riser assembly, remove the processor air baffle.) See [“Remove the riser assembly from the node” on page 186](#) and [“Remove the processor air baffle and air flow sensor board” on page 65](#).

Step 2. Proceed to the section corresponding to the component to be removed:

- [“M.2 assembly” on page 189](#)
- [“PCIe assembly” on page 192](#)
- [“Drive backplanes” on page 193](#)
- [“PCIe assembly + geotracking module” on page 194](#)

## Remove M.2 assembly

### Procedure

Step 1. Remove the M.2 cabled adapter from the riser cage.

- a. Disconnect the signal cable from the M.2 cabled adapter. Disconnect **2** MCIO 2 connector; then, disconnect **1** MCIO 1 connector

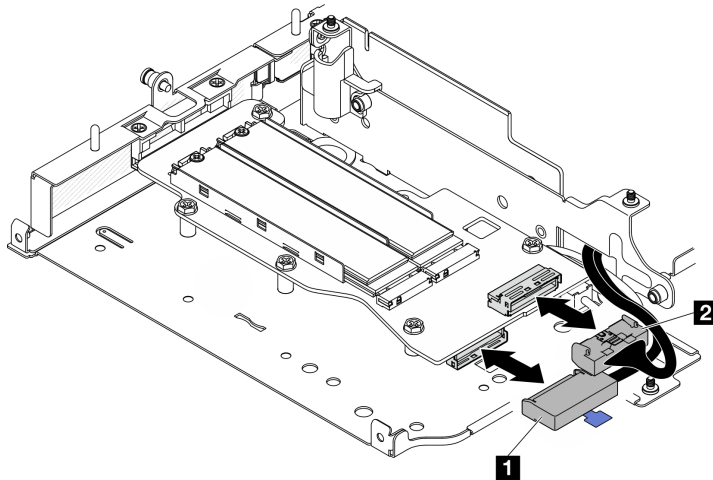


Figure 224. Disconnecting the signal cable

<b>1</b> MCIO 1 connector	<b>2</b> MCIO 2 connector
---------------------------	---------------------------

- b. Loosen the six screws that secure the M.2 cabled adapter; then, slide the adapter outward to remove it from the riser cage.

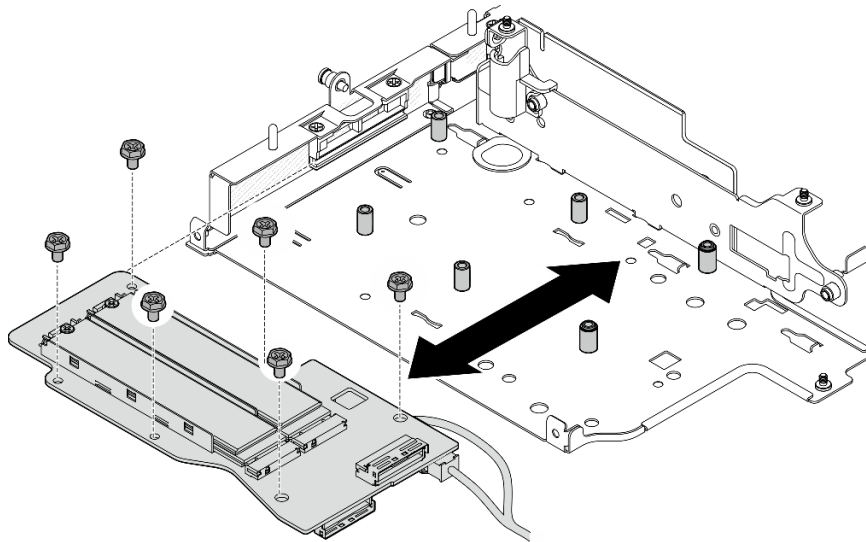
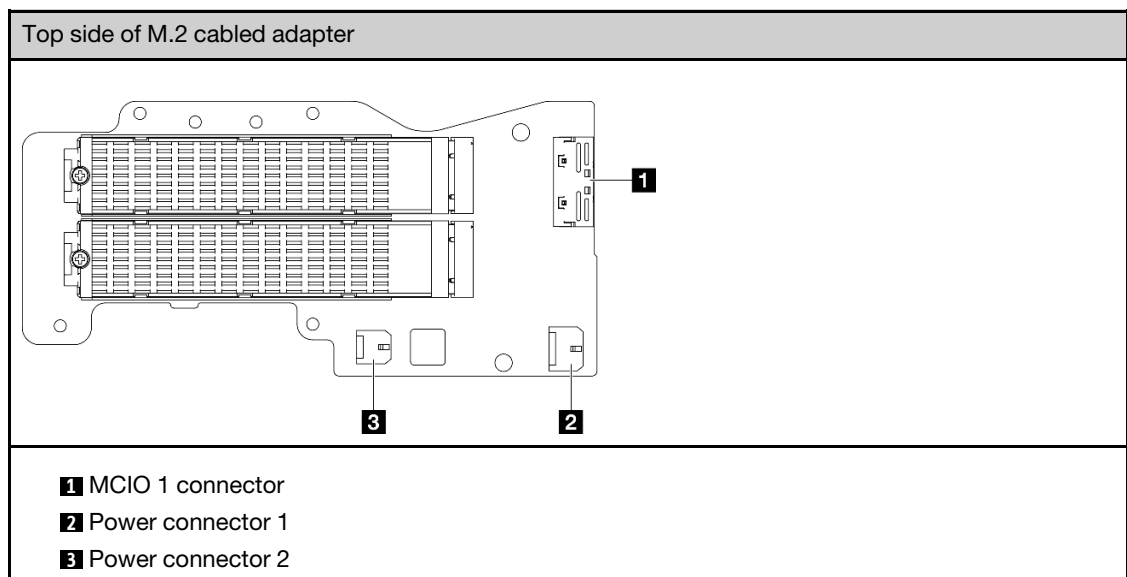


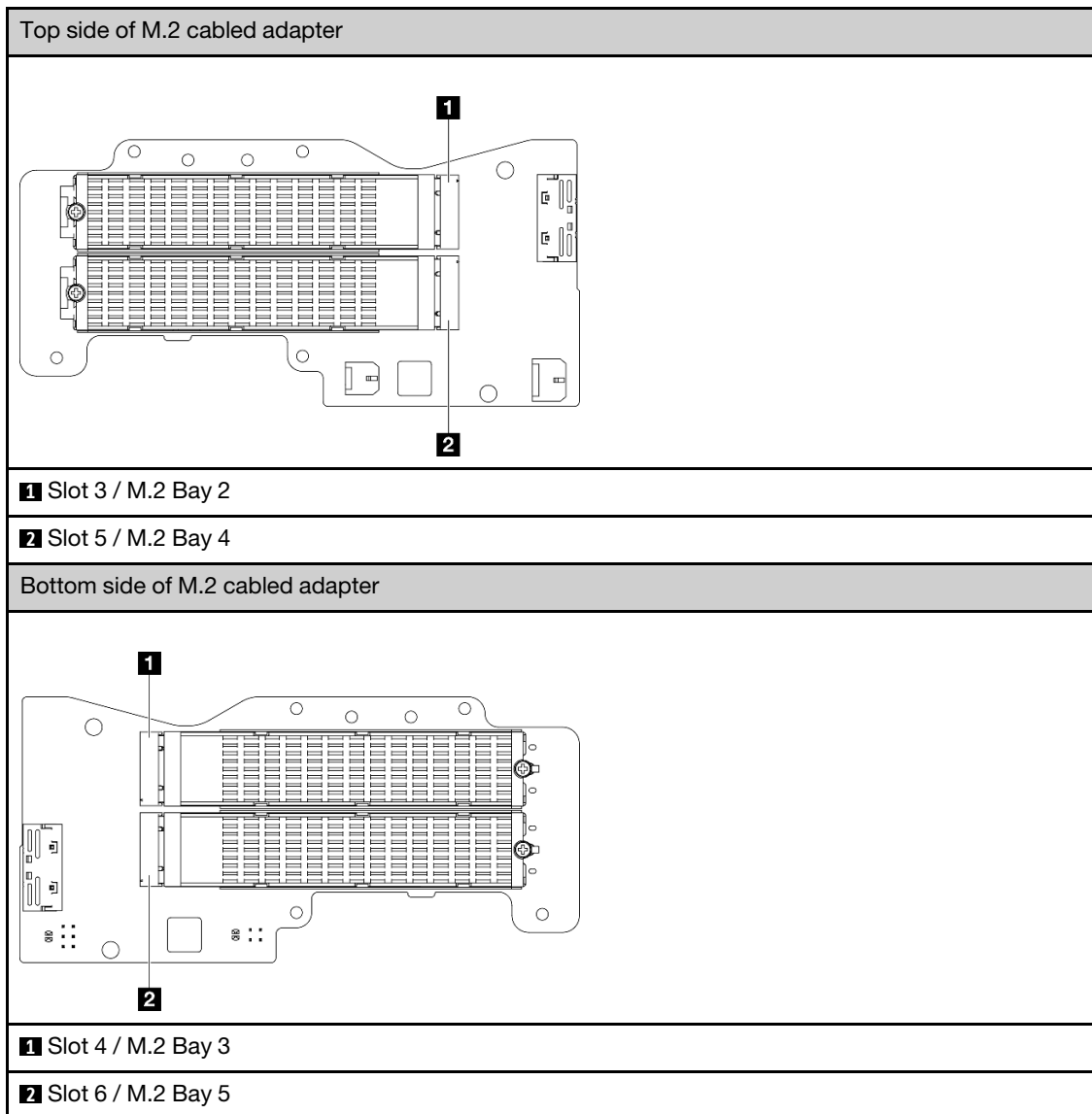
Figure 225. Removing the M.2 cabled adapter

- c. Disconnect the power cable from **2** Power connector 1 and **3** Power connector 2 on the M.2 cabled adapter.



Step 2. Remove an M.2 drive from the M.2 cabled adapter.

- a. Locate the M.2 drive to be removed.



- b. ① Loosen the screw that secures the M.2 drive.
- c. ② Pivot the rear side of the M.2 drive away from the M.2 adapter.
- d. ③ Remove the M.2 drive from the slot.

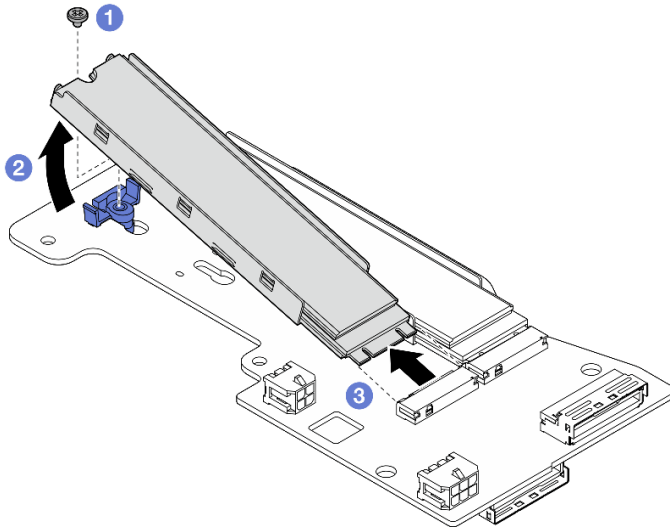


Figure 226. Removing an M.2 drive

**Note:** If necessary, repeat this procedure to other M.2 drives to be removed.

### After this task is completed

- Install a replacement unit. See [“Install components to the left wing of riser assembly” on page 205](#).
- If you are instructed to return the component or optional device, follow all packaging instructions, and use any packaging materials for shipping that are supplied to you.

### Remove PCIe assembly

#### Procedure

- Step 1. Remove the PCIe adapter from the riser cage.
- a. ① Loosen the screw that secures the holder, and remove the holder.
  - b. ② Loosen the screw that secures the PCIe adapter.
  - c. ③ Slide the PCIe adapter outward to remove it.

#### Notes:

- If no PCIe adapter is to be installed to this slot, insert the PCIe filler and secure it with one screw.
- If no PCIe adapter is to be installed to this slot, to save the holder for future use, insert the holder to the slot on riser cage, and secure the holder with one screw.

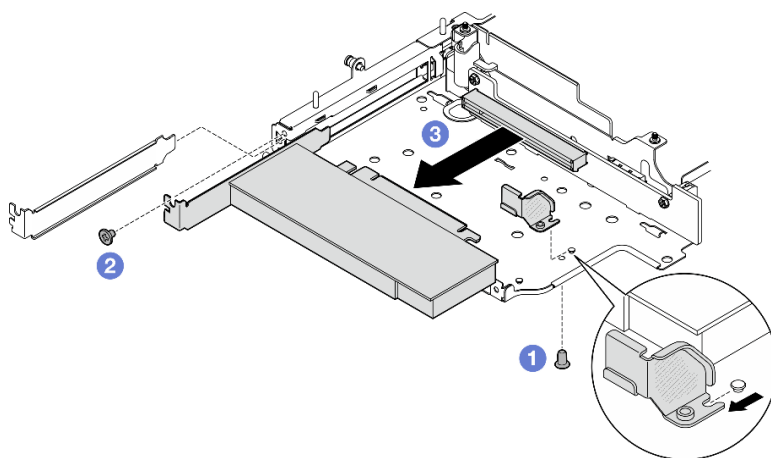


Figure 227. Removing the PCIe adapter

- Step 2. Disconnect all the cables from the PCIe cabled riser card.
- Step 3. Remove the PCIe cabled riser card from the riser cage.
- Loosen the two screws that secure the riser card.
  - Remove the riser card.

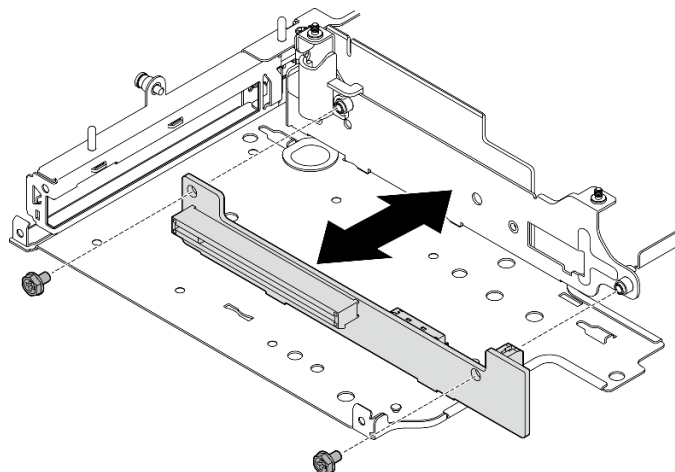


Figure 228. Removing the riser card

### After this task is completed

- Install a replacement unit. See [“Install components to the left wing of riser assembly” on page 205](#).
- If you are instructed to return the component or optional device, follow all packaging instructions, and use any packaging materials for shipping that are supplied to you.

### Remove drive backplanes

#### Procedure

- Step 1. Disconnect all the cables from the backplanes.
- Step 2. Loosen the four screws that secure Backplane 2; then, lift Backplane 2 to remove it.

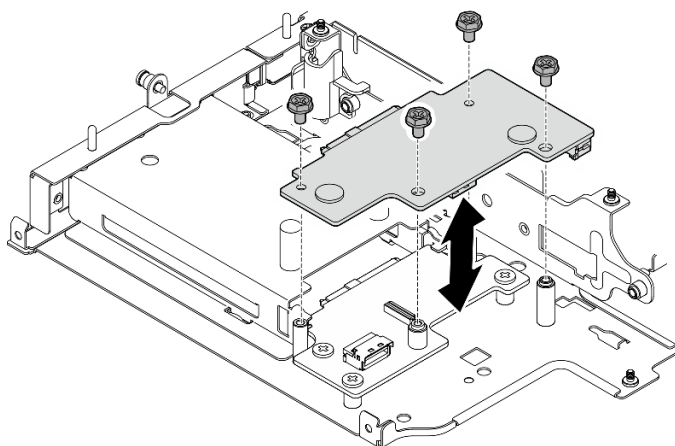


Figure 229. Removing Backplane 2

Step 3. Loosen the three screws that secure Backplane 1; then, lift Backplane 1 to remove it.

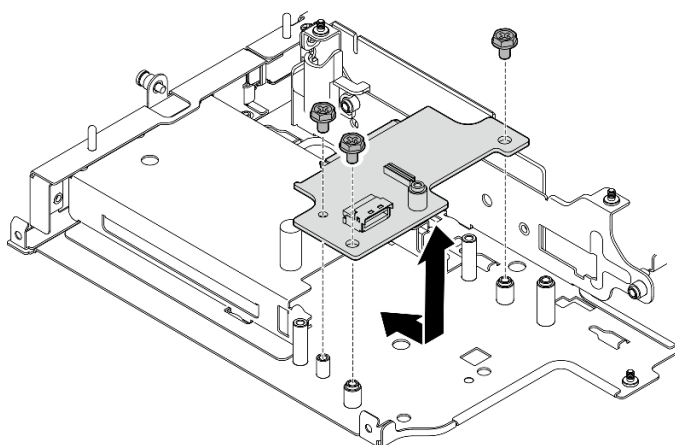


Figure 230. Removing Backplane 1

### After this task is completed

- Install a replacement unit. See [“Install components to the left wing of riser assembly” on page 205](#).
- If you are instructed to return the component or optional device, follow all packaging instructions, and use any packaging materials for shipping that are supplied to you.

### Remove PCIe assembly + geotracking module

**Important:** Geotracking module is a Third Party device. As such, third party options are excluded from Lenovo Statement of Limited Warranty. Engage third party for support. See *ThinkEdge SE360 V2 Product Guide* on <https://lenovopress.lenovo.com/> for more information.

### Procedure

Step 1. Remove the geotracking module.

- 1 Push the latch to disengage the geotracking module.
- 2 Lift the geotracking module from the cage.

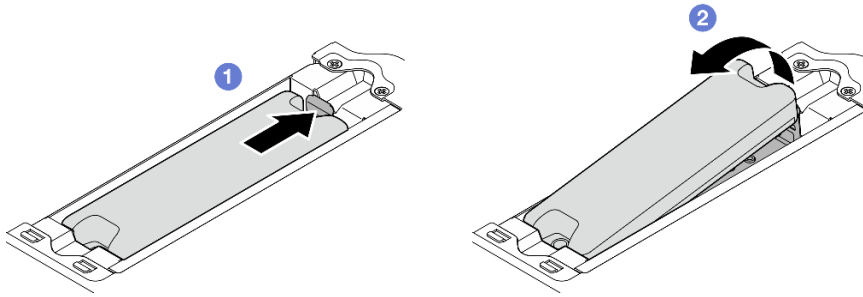


Figure 231. Removing the geotracking module

Step 2. Remove the geotracking module cage.

- a. Loosen the two screws that secure the geotracking module cage.

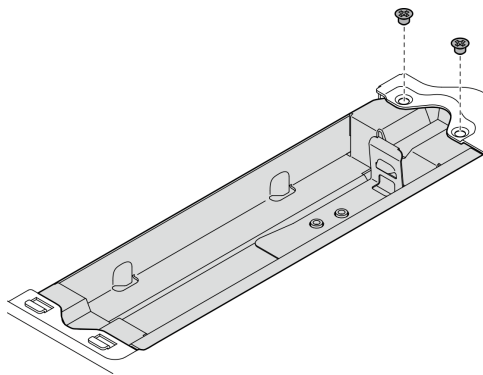


Figure 232. Removing the geotracking module cage

- b. ① Push the geotracking module cage as shown to disengage the tabs from the slots.
- c. ② Slide the geotracking module cage outward to remove it from the riser cage.

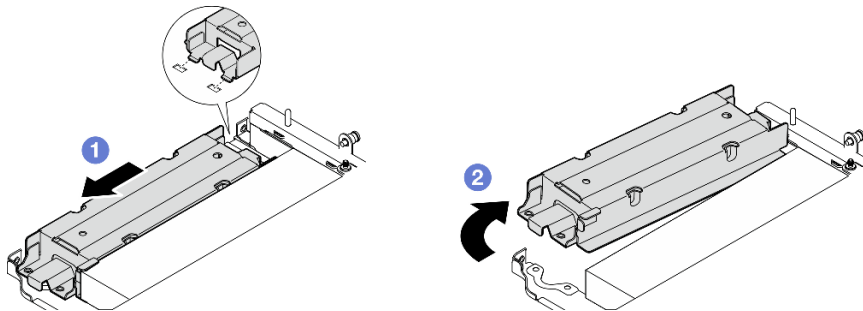


Figure 233. Removing the geotracking module cage

Step 3. Remove the PCIe adapter from the riser cage.

- a. Loosen the screw that secures the PCIe adapter.
- b. Slide the PCIe adapter outward to remove it.

**Note:** If no PCIe adapter is to be installed to this slot, insert the PCIe filler and secure it with one screw.

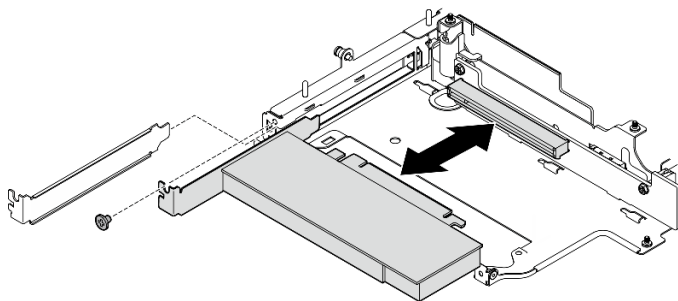


Figure 234. Removing the PCIe adapter

- Step 4. Disconnect all the cables from the PCIe cabled riser card.
- Step 5. Remove the PCIe cabled riser card from the riser cage.
- a. Loosen the two screws that secure the riser card.
  - b. Remove the riser card.

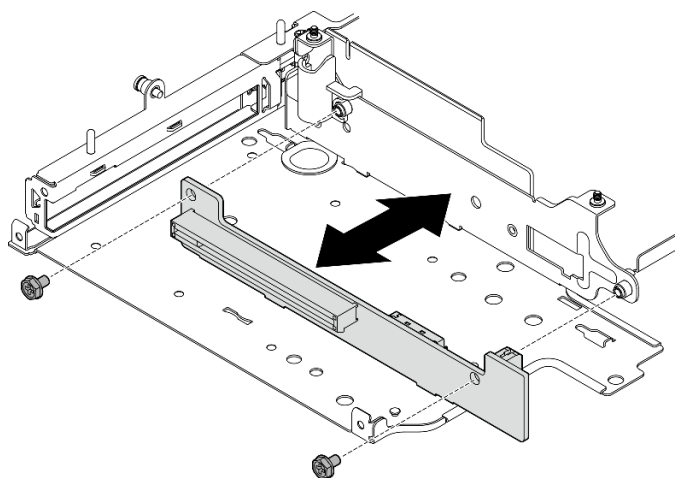


Figure 235. Removing the riser card

### After this task is completed

- Install a replacement unit. See [“Install components to the left wing of riser assembly” on page 205](#).
- If you are instructed to return the component or optional device, follow all packaging instructions, and use any packaging materials for shipping that are supplied to you.

### Demo Video

[Watch the procedure on YouTube](#)

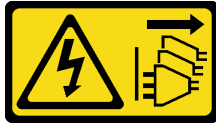
### Remove components from the right wing of riser assembly

Follow instructions in this section to remove components from the right wing of riser assembly.

### About this task

#### S002



**CAUTION:**

The power-control button on the device and the power switch on the power supply do not turn off the electrical current supplied to the device. The device also might have more than one power cord. To remove all electrical current from the device, ensure that all power cords are disconnected from the power source.

**Attention:**

- Read [“Installation Guidelines” on page 1](#) and [“Safety inspection checklist” on page 2](#) to ensure that you work safely.
- Power off the server and peripheral devices and disconnect the power cords and all external cables. See [“Power off the server” on page 8](#).
- If the node is installed in an enclosure or mounted, remove the node from the enclosure or mount. See [“Configuration guide” on page 9](#).

**Procedure**

Step 1. Make preparation for this task.

- a. If applicable, remove all the 7mm drives. See [“Remove a 7mm hot-swap drive” on page 55](#).
- b. If necessary, remove all the WLAN antennas. See [“Remove the WLAN antennas” on page 256](#).
- c. Remove the top cover. See [“Remove the top cover” on page 154](#).
- d. Remove the PMB air baffle. See [“Remove the PMB air baffle” on page 62](#).
- e. Remove the riser assembly. (Before disconnecting the cables of riser assembly, remove the processor air baffle.) See [“Remove the riser assembly from the node” on page 186](#) and [“Remove the processor air baffle and air flow sensor board” on page 65](#).

Step 2. Proceed to the section corresponding to the component to be removed:

- [“M.2 assembly” on page 197](#)
- [“PCIe assembly” on page 200](#)

**Remove the M.2 assembly****Procedure**

Step 1. Remove the M.2 adapter from the riser cage.

- a. ① Loosen the screw on the bottom side of the M.2 adapter.
- b. ② Loosen the two screws on the top side of the M.2 adapter.
- c. ③ Slide the M.2 adapter outward to remove it.

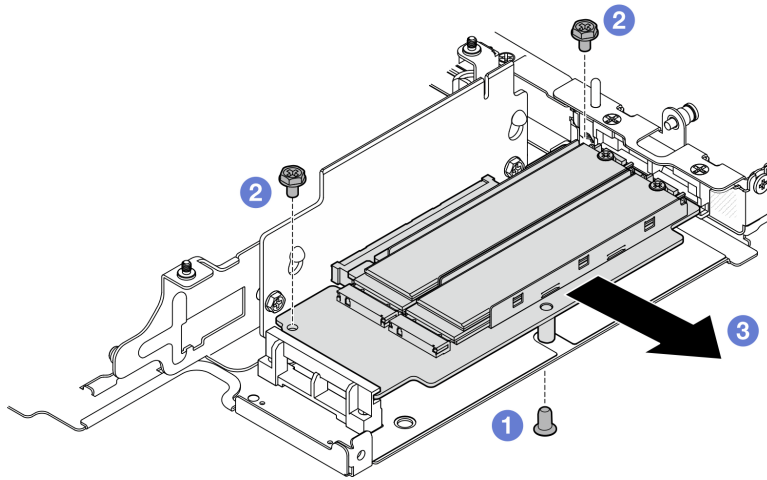


Figure 236. Removing the M.2 adapter

Step 2. Remove the M.2 riser card from the riser cage.

- a. Loosen the two screws that secure the riser card.
- b. Slide the riser card upward until the guide pins are seated in the large opening of the keyholes; then, remove the riser card from the riser cage.

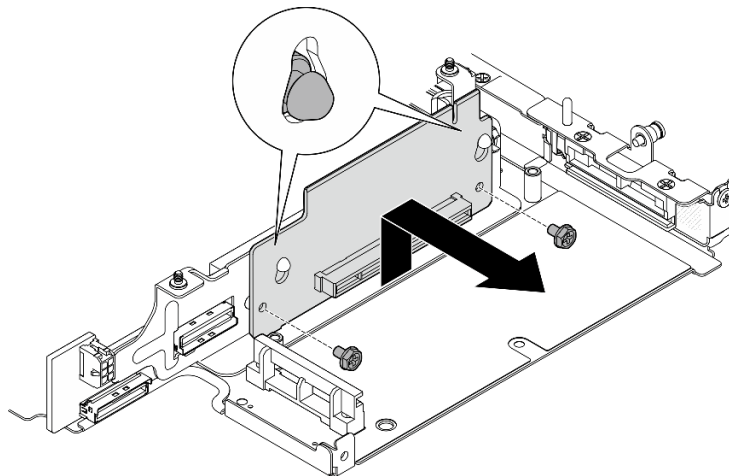
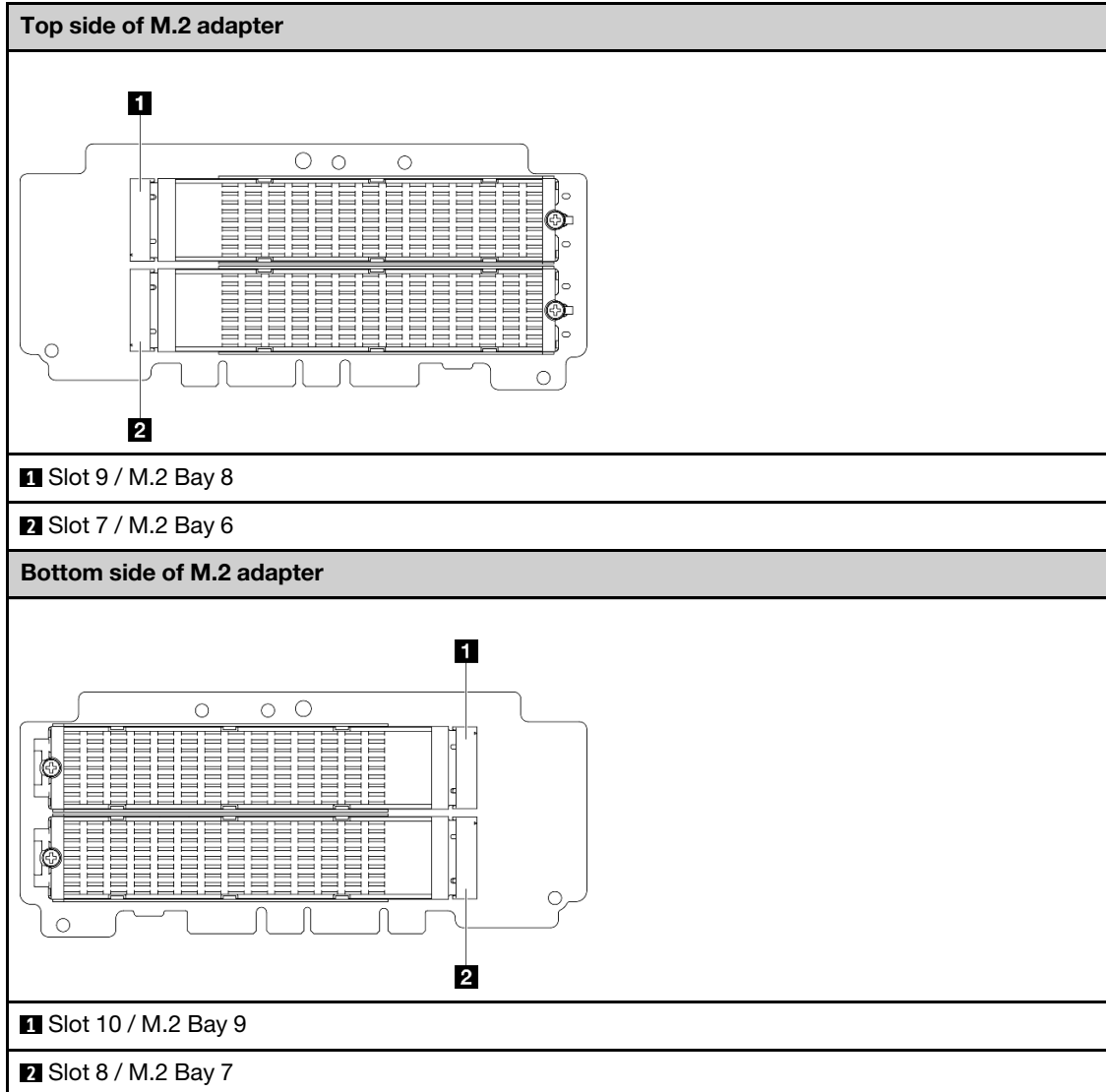


Figure 237. Removing the riser card

Step 3. Remove an M.2 drive from the M.2 adapter.

- a. Locate the M.2 drive to be removed.



- b. **1** Loosen the screw that secures the M.2 drive.
- c. **2** Pivot the rear side of the M.2 drive away from the M.2 adapter.
- d. **3** Remove the M.2 drive from the slot.

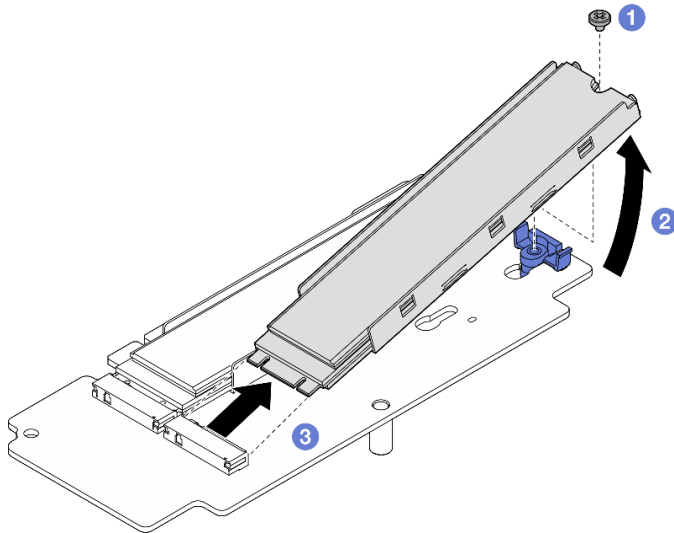


Figure 238. Removing an M.2 drive

**Note:** If necessary, repeat this procedure to other M.2 drives to be removed.

### After this task is completed

- Install a replacement unit. See [“Install components to the right wing of riser assembly” on page 201](#).
- If you are instructed to return the component or optional device, follow all packaging instructions, and use any packaging materials for shipping that are supplied to you.

### Remove the PCIe assembly

#### Procedure

Step 1. Remove the PCIe adapter from the riser cage.

- 1 Loosen the screw that secures the PCIe adapter.
- 2 Slide the PCIe adapter outward to remove it.

**Note:** If no PCIe adapter is to be installed to this slot, insert the PCIe filler and secure it with one screw.

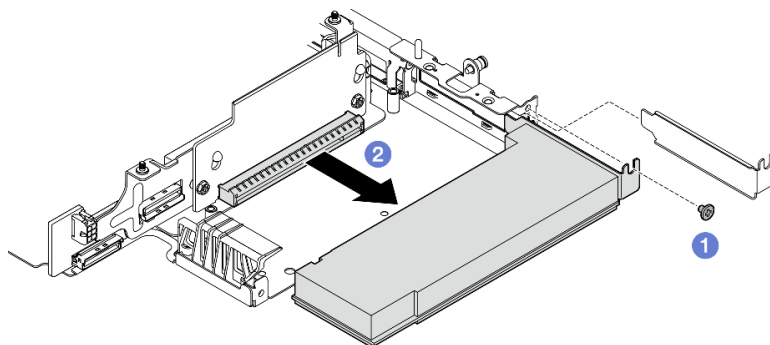


Figure 239. Removing the PCIe adapter

Step 2. Remove the PCIe riser card from the riser cage.

- a. Loosen the two screws that secure the riser card.

- b. Slide the riser card upward until the guide pins are seated in the large opening of the keyholes; then, remove the riser card from the riser cage.

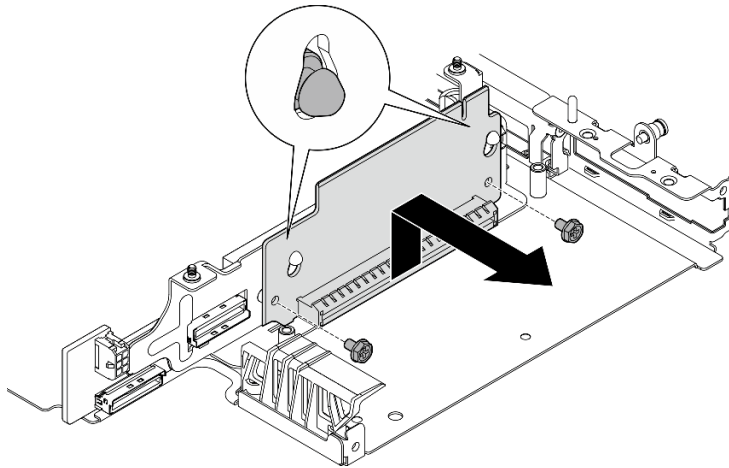


Figure 240. Removing the riser card

### After this task is completed

- Install a replacement unit. See [“Install components to the right wing of riser assembly” on page 201](#).
- If you are instructed to return the component or optional device, follow all packaging instructions, and use any packaging materials for shipping that are supplied to you.

### Demo Video

[Watch the procedure on YouTube](#)

### Install components to the right wing of riser assembly

Follow instructions in this section to install components to the right wing of riser assembly.

### About this task

#### S002



#### **CAUTION:**

The power-control button on the device and the power switch on the power supply do not turn off the electrical current supplied to the device. The device also might have more than one power cord. To remove all electrical current from the device, ensure that all power cords are disconnected from the power source.

#### **Attention:**

- Read [“Installation Guidelines” on page 1](#) and [“Safety inspection checklist” on page 2](#) to ensure that you work safely.
- Power off the server and peripheral devices and disconnect the power cords and all external cables. See [“Power off the server” on page 8](#).

- Touch the static-protective package that contains the component to any unpainted metal surface on the server; then, remove it from the package and place it on a static-protective surface.

Proceed to the section corresponding to the component to be installed:

- [“M.2 assembly” on page 202](#)
- [“PCIe assembly” on page 204](#)

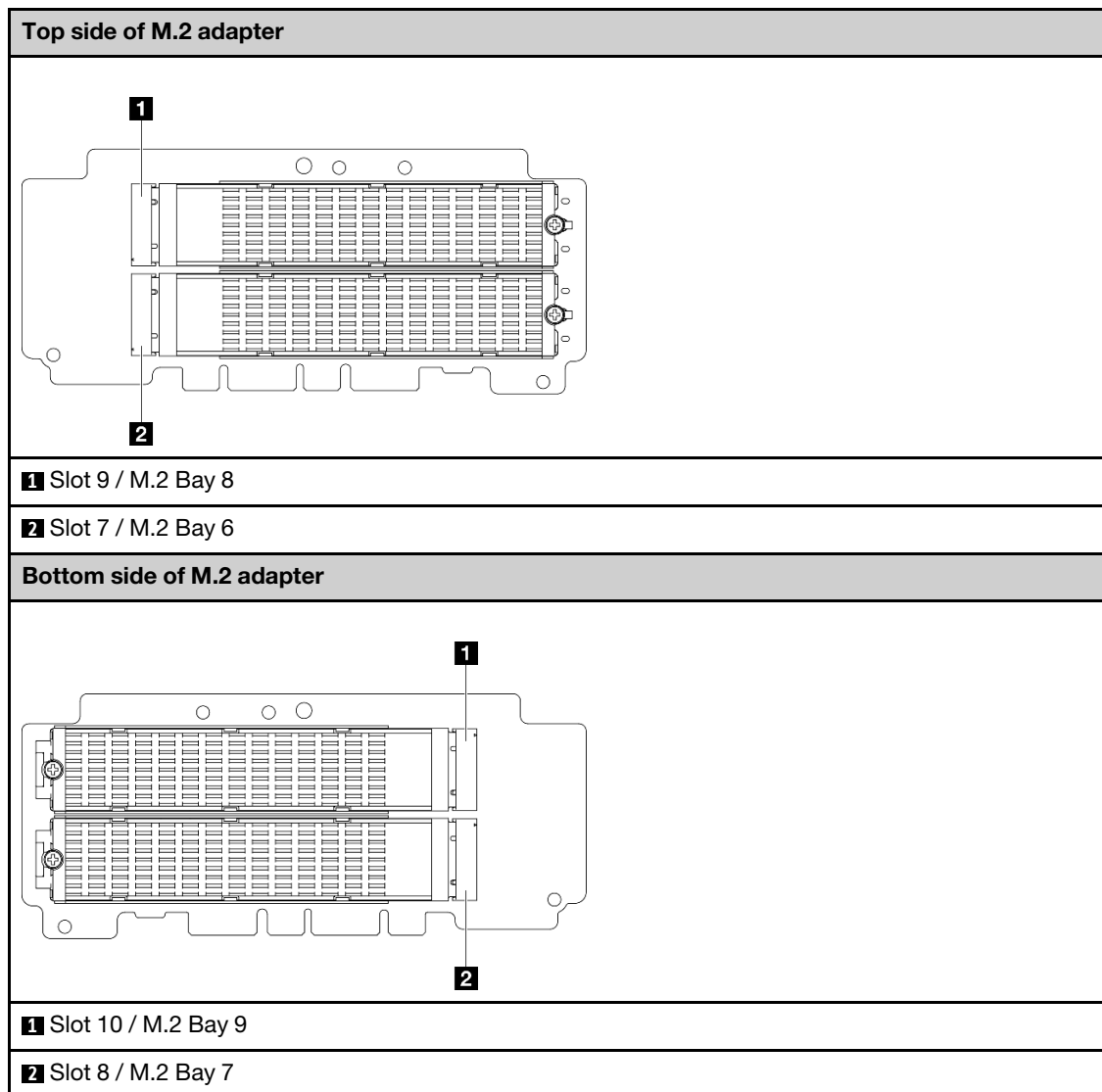
### Install the M.2 assembly

**Note:** Make sure to observe the installation rules and sequence order in [“M.2 storage drive installation rules and order” on page 7](#).

### Procedure

Step 1. Install an M.2 drive to the M.2 adapter.

- Locate the slot to install the M.2 drive.



- If necessary, install an M.2 heat sink to the M.2 drive to be installed. See [“Install an M.2 heat sink” on page 142](#).

- c. If necessary, adjust the retainer to accommodate the size of the M.2 drive to be installed. See [“Adjust the retainer on the M.2 adapter” on page 86.](#)
- d. ① Hold the M.2 drive at an angle, and insert the drive into the M.2 slot.
- e. ② Lower the rear side of the M.2 drive down to the M.2 adapter.
- f. ③ Secure the M.2 drive with one screw.

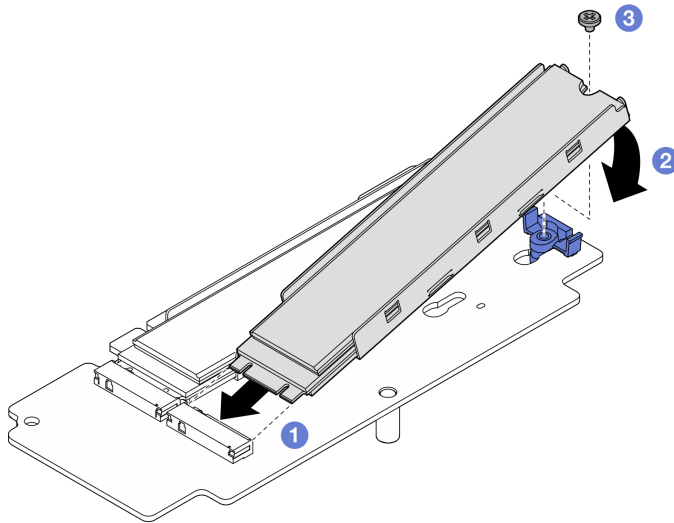


Figure 241. Installing an M.2 drive

**Note:** If necessary, repeat this procedure to other M.2 drives to be installed.

Step 2. Install the M.2 riser card to the riser cage.

- a. Align the riser card with the guide pins on the riser cage; then, insert and slide the riser card downward until the guide pins are seated in the small opening of the keyholes.
- b. Secure the riser card with two screws.

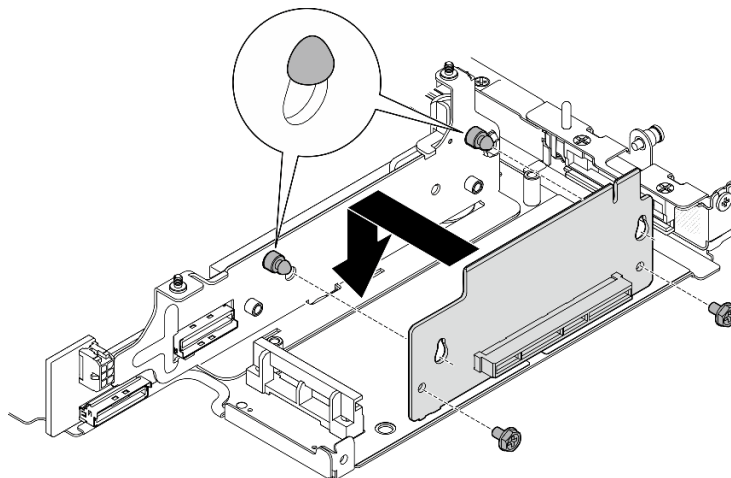


Figure 242. Installing the riser card

Step 3. Install the M.2 adapter to the riser cage.

- a. ① Align the M.2 adapter with the slot; then, slide the adapter into the slot until it is firmly seated.

- b. ② Tighten two screws to the top side of the M.2 adapter.
- c. ③ Tighten one screw to the bottom side of the M.2 adapter.

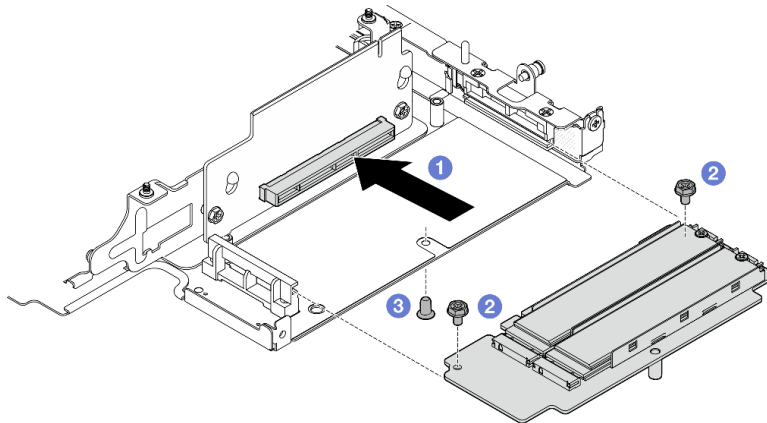


Figure 243. Installing the M.2 adapter

### After this task is completed

- Reinstall the riser assembly to the node. See [“Install the riser assembly to the node” on page 217](#).
- If you are instructed to return the component or optional device, follow all packaging instructions, and use any packaging materials for shipping that are supplied to you.

### Demo Video

[Watch the procedure on YouTube](#)

### Install the PCIe assembly

#### Procedure

Step 1. Install the PCIe riser card to the riser cage.

- a. Align the riser card with the guide pins on the riser cage; then, insert and slide the riser card downward until the guide pins are seated in the small opening of the keyholes.
- b. Secure the riser card with two screws.

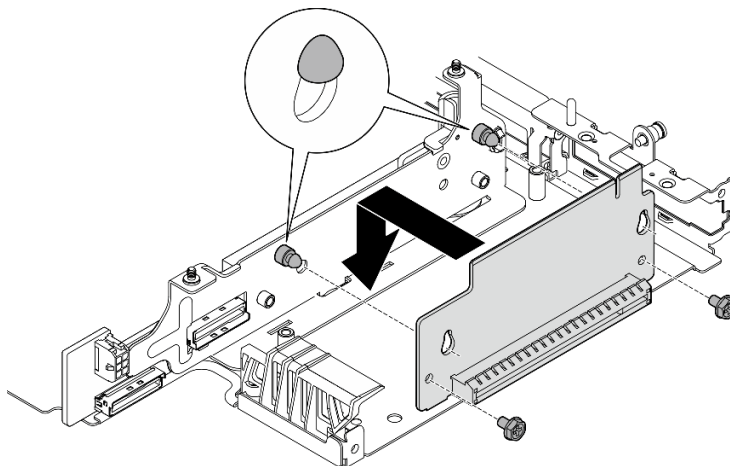


Figure 244. Installing the riser card



Step 2. Install the PCIe adapter to the riser cage.

- a. (Optional) If a PCIe filler is installed in the slot, loosen the screw that secures the filler; then, remove the filler. Save the filler for future use.
- b. ① Align the PCIe adapter with the slot; then, carefully slide the adapter into the slot until it is firmly seated.
- c. ② Secure the PCIe adapter with one screw.

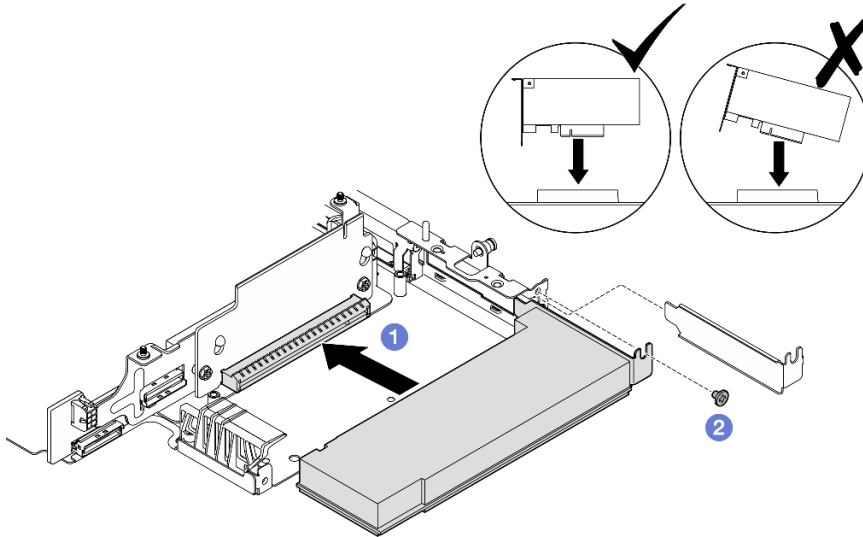


Figure 245. Installing the PCIe adapter

### After this task is completed

- Reinstall the riser assembly to the node. See [“Install the riser assembly to the node” on page 217](#).
- If you are instructed to return the component or optional device, follow all packaging instructions, and use any packaging materials for shipping that are supplied to you.

### Demo Video

[Watch the procedure on YouTube](#)

### Install components to the left wing of riser assembly

Follow instructions in this section to install components to the left wing of riser assembly.

### About this task

#### S002



#### **CAUTION:**

The power-control button on the device and the power switch on the power supply do not turn off the electrical current supplied to the device. The device also might have more than one power cord. To remove all electrical current from the device, ensure that all power cords are disconnected from the power source.

**Attention:**

- Read [“Installation Guidelines” on page 1](#) and [“Safety inspection checklist” on page 2](#) to ensure that you work safely.
- Power off the server and peripheral devices and disconnect the power cords and all external cables. See [“Power off the server” on page 8](#).
- Touch the static-protective package that contains the component to any unpainted metal surface on the server; then, remove it from the package and place it on a static-protective surface.

Proceed to the section corresponding to the component to be installed:

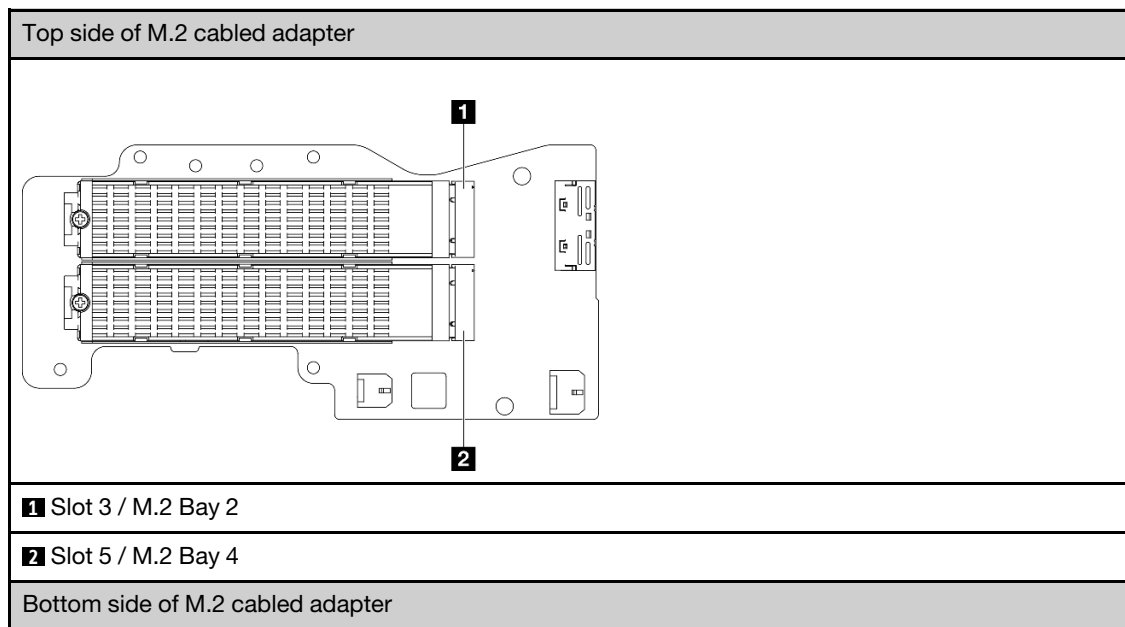
- [“M.2 assembly” on page 206](#)
- [“PCIe assembly” on page 210](#)
- [“Drive backplanes” on page 211](#)
- [“PCIe assembly + geotracking module” on page 213](#)

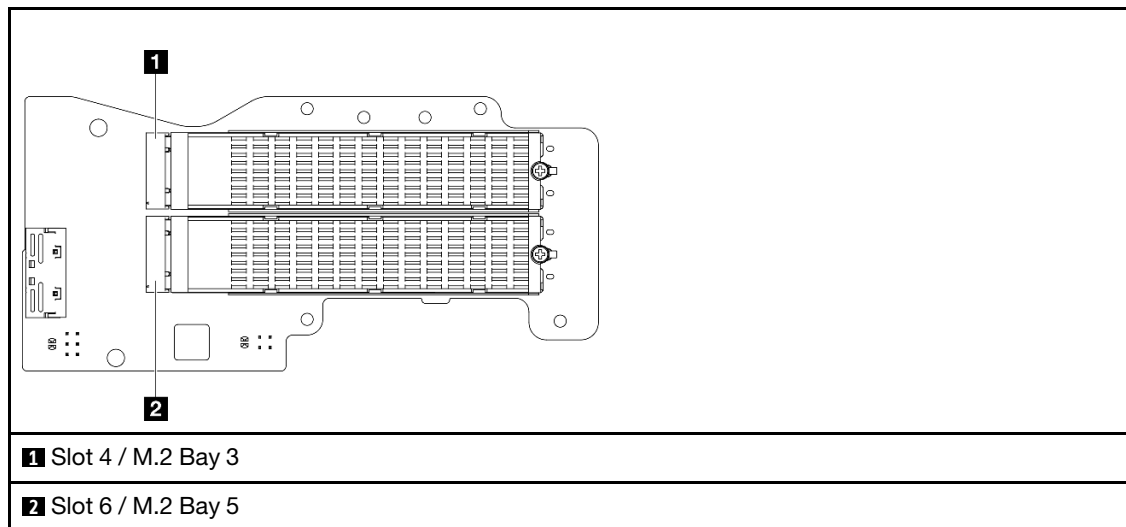
**Install M.2 assembly**

**Note:** Make sure to observe the installation rules and sequence order in [“M.2 storage drive installation rules and order” on page 7](#).

**Procedure**

- Step 1. Install an M.2 drive to the M.2 cabled adapter.
- a. Locate the slot to install the M.2 drive.





- b. If necessary, install an M.2 heat sink to the M.2 drive to be installed. See [“Install an M.2 heat sink” on page 142.](#)
- c. If necessary, adjust the retainer to accommodate the size of the M.2 drive to be installed. See [“Adjust the retainer on the M.2 adapter” on page 86.](#)
- d. ① Hold the M.2 drive at an angle, and insert the drive into the M.2 slot.
- e. ② Lower the rear side of the M.2 drive down to the M.2 adapter.
- f. ③ Secure the M.2 drive with one screw.

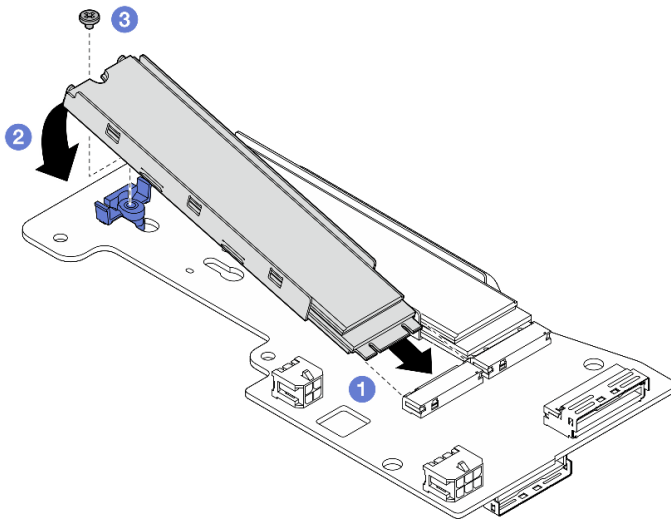


Figure 246. Installing an M.2 drive

**Note:** If necessary, repeat this procedure to other M.2 drives to be installed.

Step 2. Install the M.2 cabled adapter to the riser cage.

- a. Route the M.2 cabled adapter signal cable through the hole in the middle of riser cage.

**Note:** For easier operation, route the branch of MCIO 1 connector first; then, route the branch of MCIO 2 connector.

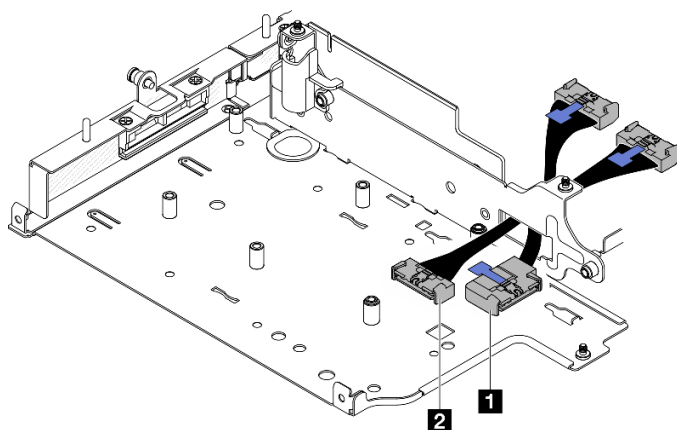
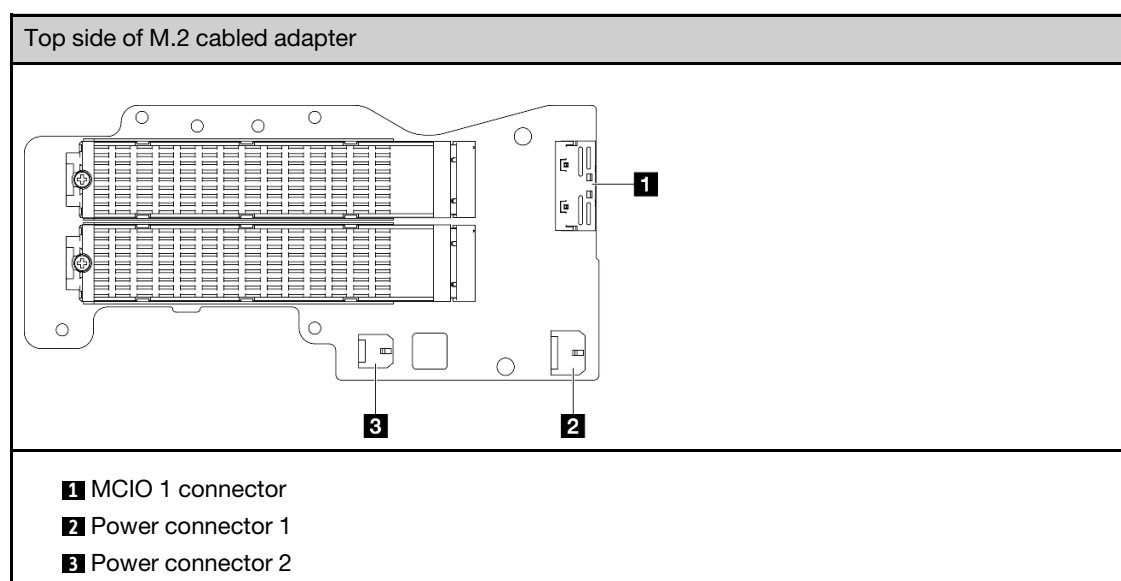


Figure 247. M.2 cabled adapter signal cable

<b>1</b> MCIO 1 connector	<b>2</b> MCIO 2 connector
---------------------------	---------------------------

- b. Connect the power cable to **2** Power connector 1 and **3** Power connector 2 on the M.2 cabled adapter.



- c. Align the M.2 cabled adapter with the slot on the riser cage; then, slide the adapter into the slot until it is firmly seated.
- d. Secure the M.2 cabled adapter with six screws.

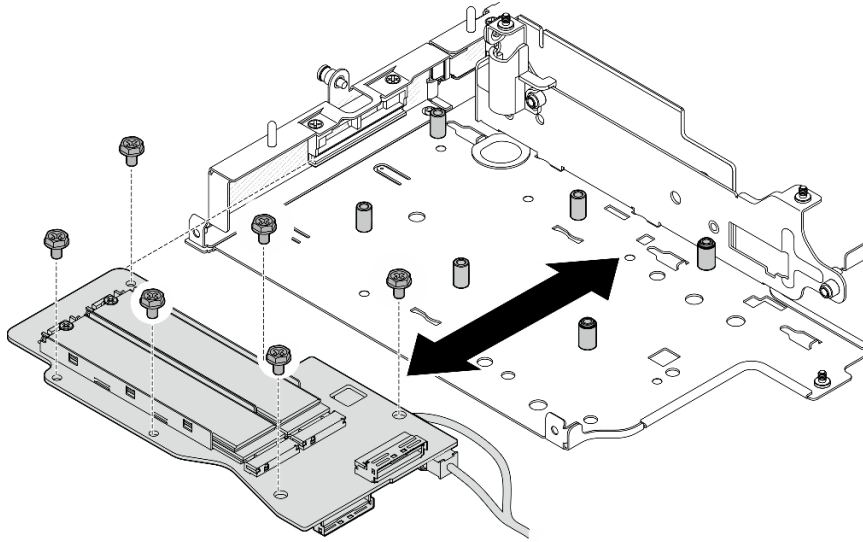


Figure 248. Installing the M.2 adapter

- e. Connect the signal cable to the M.2 cabled adapter. Connect **1** MCIO 1 connector; then, connect **2** MCIO 2 connector.

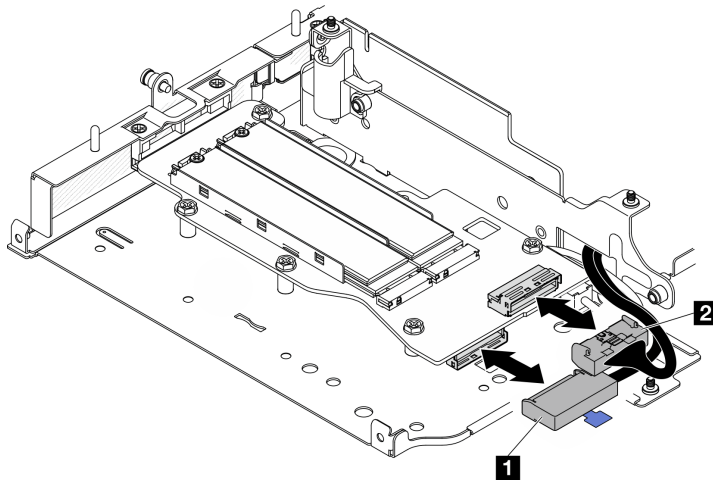


Figure 249. Disconnecting the signal cable

<b>1</b> MCIO 1 connector	<b>2</b> MCIO 2 connector
---------------------------	---------------------------

### After this task is completed

- Reinstall the riser assembly to the node. See [“Install the riser assembly to the node” on page 217](#).
- If you are instructed to return the component or optional device, follow all packaging instructions, and use any packaging materials for shipping that are supplied to you.

### Demo Video

[Watch the procedure on YouTube](#)

## Install PCIe assembly

### Procedure

Step 1. Install the PCIe cabled riser card to the riser cage.

- a. Align the riser card with the guide pins on the riser cage; then, push the riser card towards the riser cage until it is firmly seated.
- b. Secure the riser card with two screws.

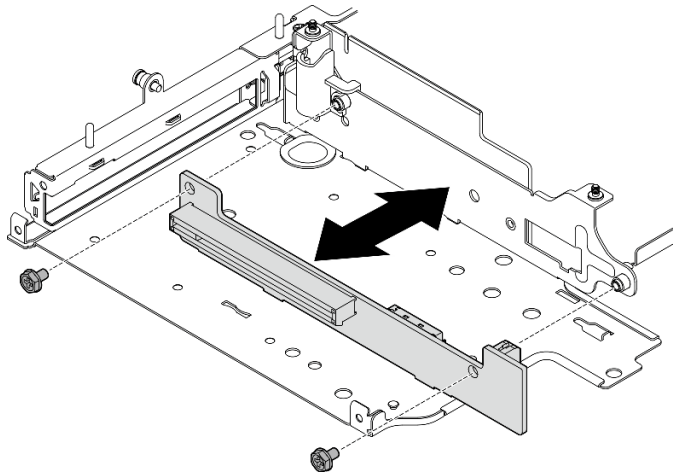


Figure 250. Installing the riser card

Step 2. Install the PCIe adapter to the riser cage.

- a. (Optional) If a PCIe filler is installed in the slot, loosen the screw that secures the filler; then, remove the filler. Save the filler for future use.
- b. (Optional) If the holder is secured on the riser cage, loosen the screw that secures the holder; then, remove and save the holder for later use.
- c. ① Align the PCIe adapter with the slot; then, carefully slide the adapter into the slot until it is firmly seated.

**Note:** Make sure **not to** let the adapter touch the edge of the riser cage.

- d. ② Secure the PCIe adapter with one screw.
- e. ③ Insert the holder into the corresponding slot to cover the corner of the PCIe adapter; then, secure the holder with one screw.

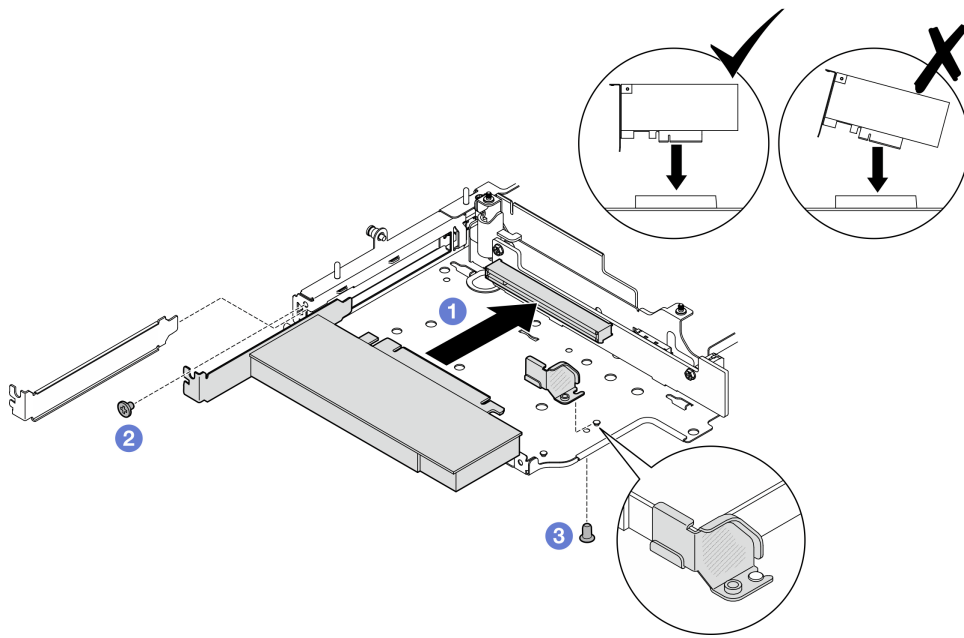
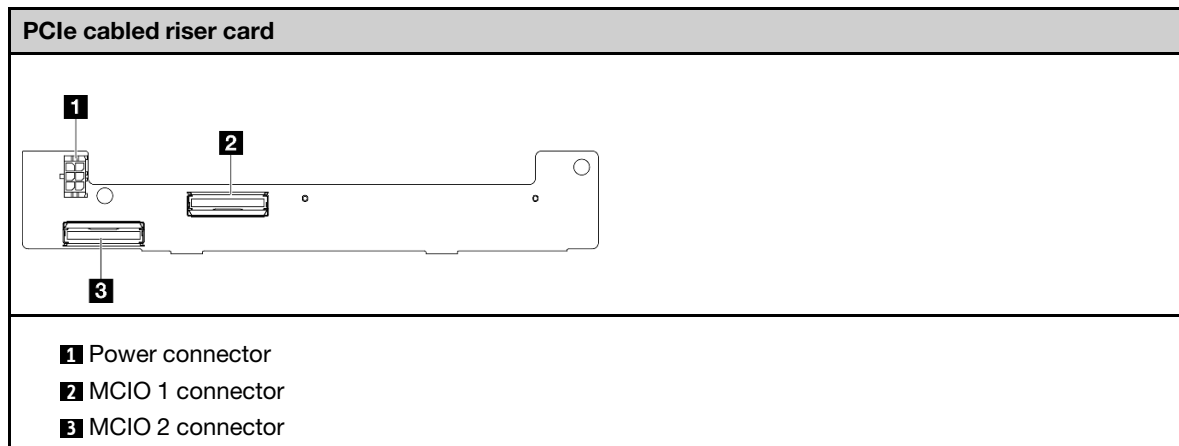


Figure 251. Installing the PCIe adapter

Step 3. Connect the cables to the PCIe cabled riser card.



### After this task is completed

- Reinstall the riser assembly to the node. See [“Install the riser assembly to the node” on page 217](#).
- If you are instructed to return the component or optional device, follow all packaging instructions, and use any packaging materials for shipping that are supplied to you.

### Demo Video

[Watch the procedure on YouTube](#)

### Install drive backplanes

#### Procedure

Step 1. Install Backplane 1.

- a. Align Backplane 1 with the guide pins on the riser cage; then, lower Backplane 1 toward the riser cage until it is firmly seated.
- b. Secure Backplane 1 with three screws.

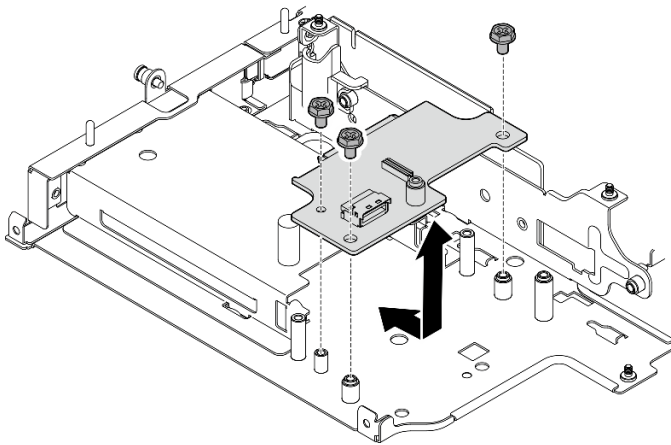
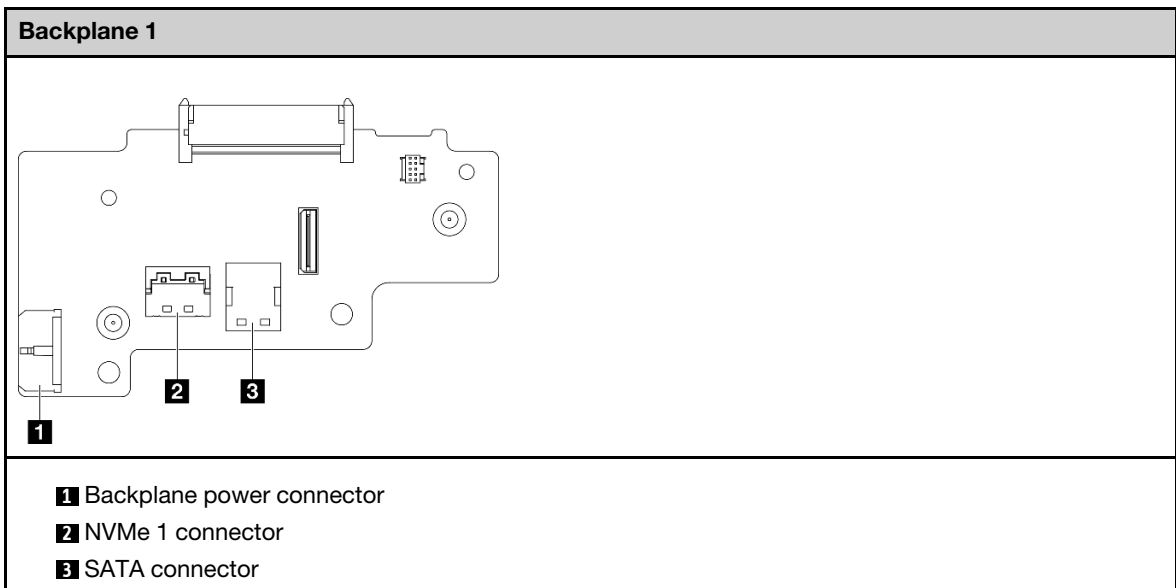
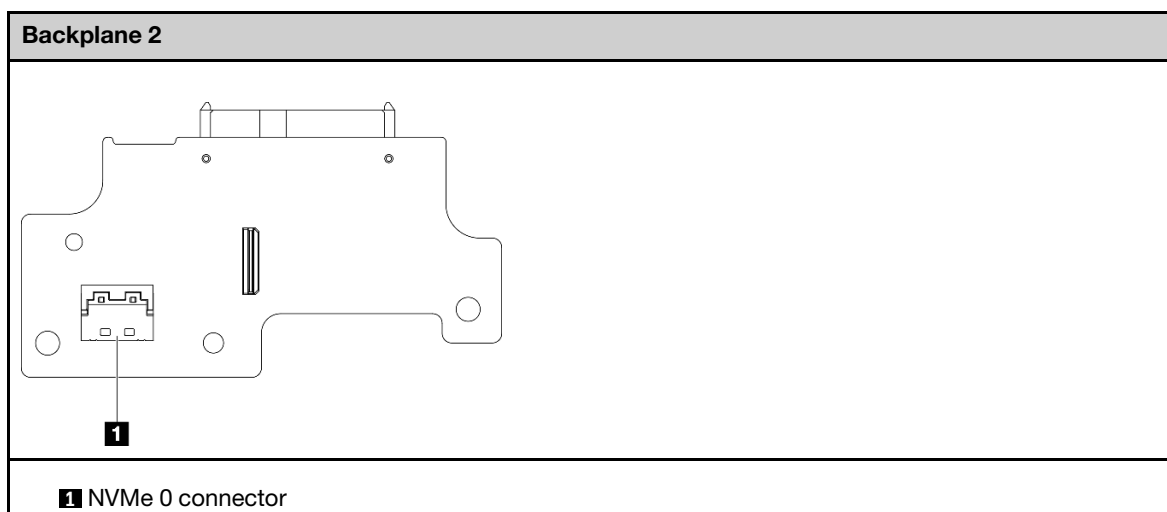


Figure 252. Installing Backplane 1

Step 2. Connect the signal cables to the backplanes.







Step 3. Install Backplane 2.

- a. Align Backplane 2 with the guide pins; then, lower Backplane 2 toward the riser cage until it is firmly seated.
- b. Secure Backplane 2 with four screws.

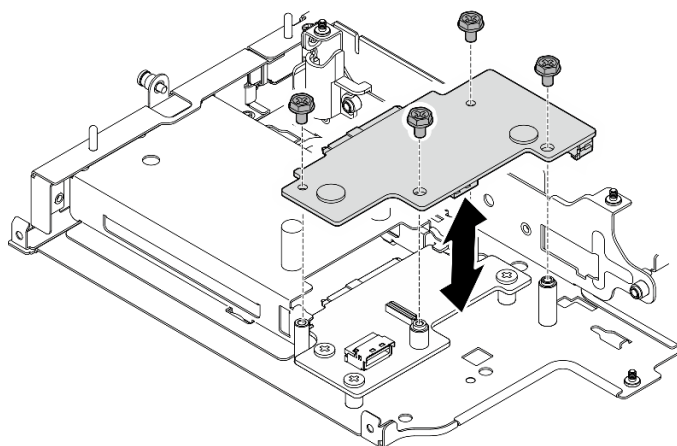


Figure 253. Installing Backplane 2

### After this task is completed

- Reinstall the riser assembly to the node. See [“Install the riser assembly to the node” on page 217](#).
- If you are instructed to return the component or optional device, follow all packaging instructions, and use any packaging materials for shipping that are supplied to you.

### Demo Video

[Watch the procedure on YouTube](#)

### Install PCIe assembly + geotracking module

**Important:** Geotracking module is a Third Party device. As such, third party options are excluded from Lenovo Statement of Limited Warranty. Engage third party for support. See *ThinkEdge SE360 V2 Product Guide* on <https://lenovopress.lenovo.com/> for more information.

## Procedure

Step 1. Install the PCIe cabled riser card to the riser cage.

- a. Align the riser card with the guide pins on the riser cage; then, push the riser card towards the riser cage until it is firmly seated.
- b. Secure the riser card with two screws.

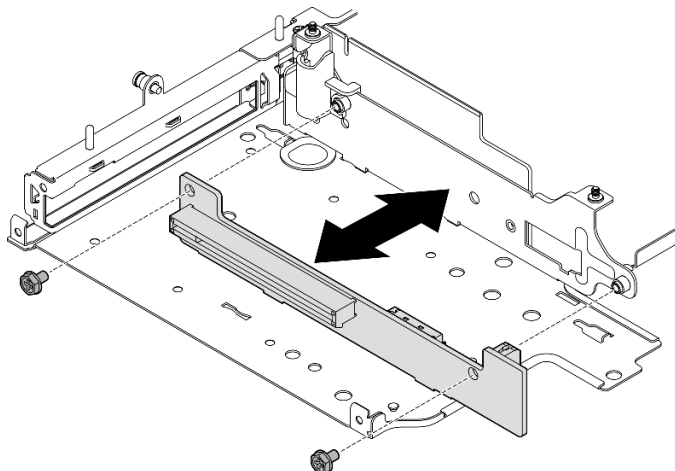


Figure 254. Installing the riser card

Step 2. Install the PCIe adapter to the riser cage.

- a. (Optional) If a PCIe filler is installed in the slot, loosen the screw that secures the filler; then, remove the filler. Save the filler for future use.
- b. ① Align the PCIe adapter with the slot; then, carefully slide the adapter into the slot until it is firmly seated.

**Note:** Make sure **not to** let the adapter touch the edge of the riser cage.

- c. ② Secure the PCIe adapter with one screw.

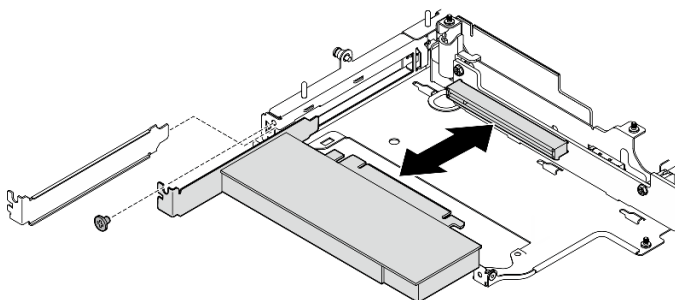
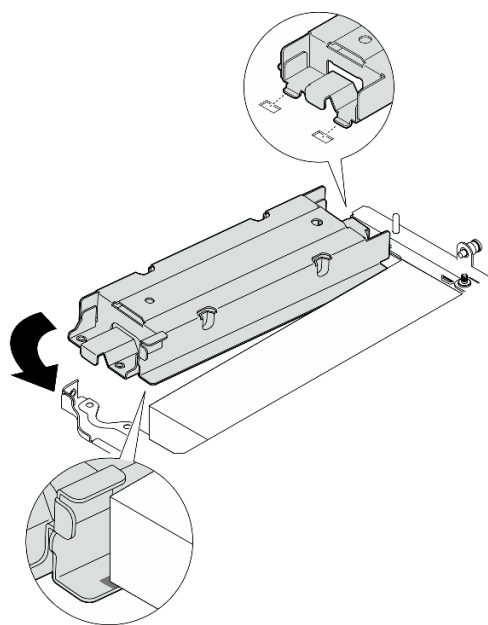


Figure 255. Installing the PCIe adapter

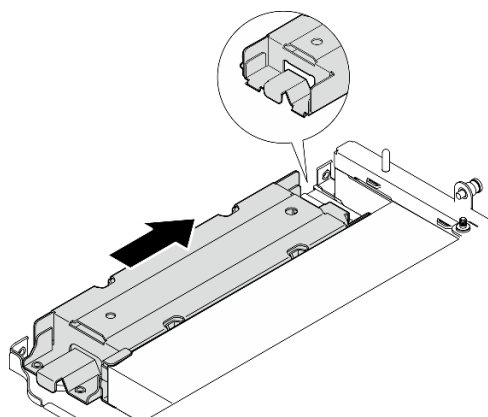
Step 3. Install the geotracking module cage.

- a. Align the two tabs of geotracking module cage with the slots on riser cage; then, push the geotracking module cage toward the riser cage until it is seated in place. The edge of geotracking module cage should be inserted between the PCIe adapter and the riser cage.



*Figure 256. Installing the geotracking module cage*

- b. Push the geotracking module cage as shown until the two tabs are firmly seated in the slots.



*Figure 257. Installing the geotracking module cage*

- c. Secure the geotracking module cage with two screws.

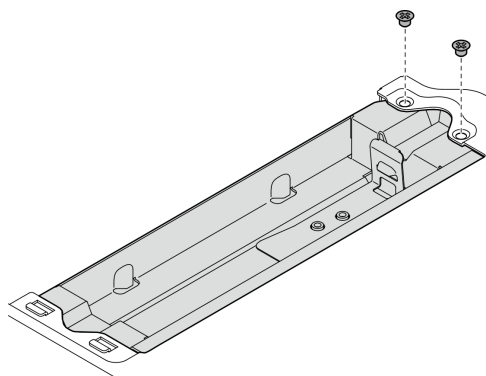


Figure 258. Installing the geotracking module cage

Step 4. Install the geotracking module.

- a. 1 Place one end of the geotracking module into the geotracking module cage.
- b. 2 Lower the other end of the geotracking module into the geotracking module cage until it clicks into place.

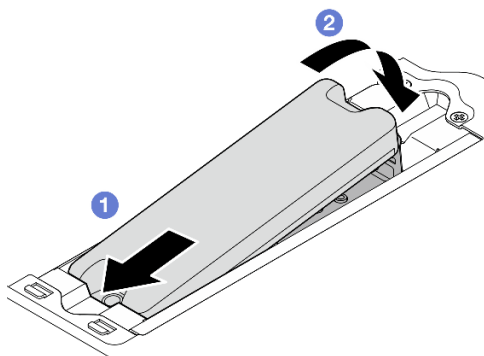
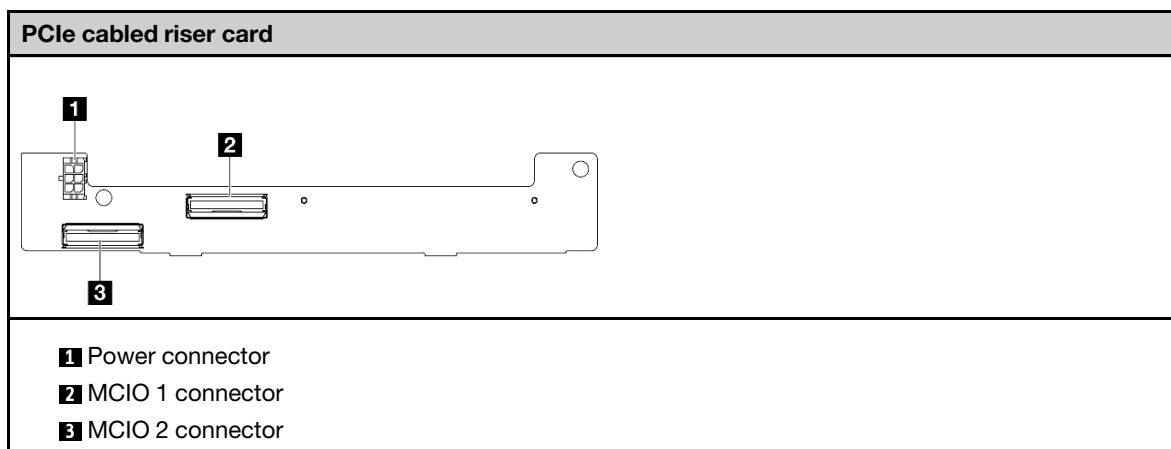


Figure 259. Installing the geotracking module

Step 5. Connect the cables to the PCIe cabled riser card.



### After this task is completed

- Reinstall the riser assembly to the node. See [“Install the riser assembly to the node” on page 217](#).

- If you are instructed to return the component or optional device, follow all packaging instructions, and use any packaging materials for shipping that are supplied to you.

## Demo Video

[Watch the procedure on YouTube](#)

## Install the riser assembly to the node

Follow instructions in this section to install the riser assembly to the node.

## About this task

### S002



#### CAUTION:

The power-control button on the device and the power switch on the power supply do not turn off the electrical current supplied to the device. The device also might have more than one power cord. To remove all electrical current from the device, ensure that all power cords are disconnected from the power source.

#### Attention:

- Read [“Installation Guidelines” on page 1](#) and [“Safety inspection checklist” on page 2](#) to ensure that you work safely.
- Power off the server and peripheral devices and disconnect the power cords and all external cables. See [“Power off the server” on page 8](#).
- Touch the static-protective package that contains the component to any unpainted metal surface on the server; then, remove it from the package and place it on a static-protective surface.

Proceed to the section corresponding to the selected configuration on the **left wing** of riser assembly:

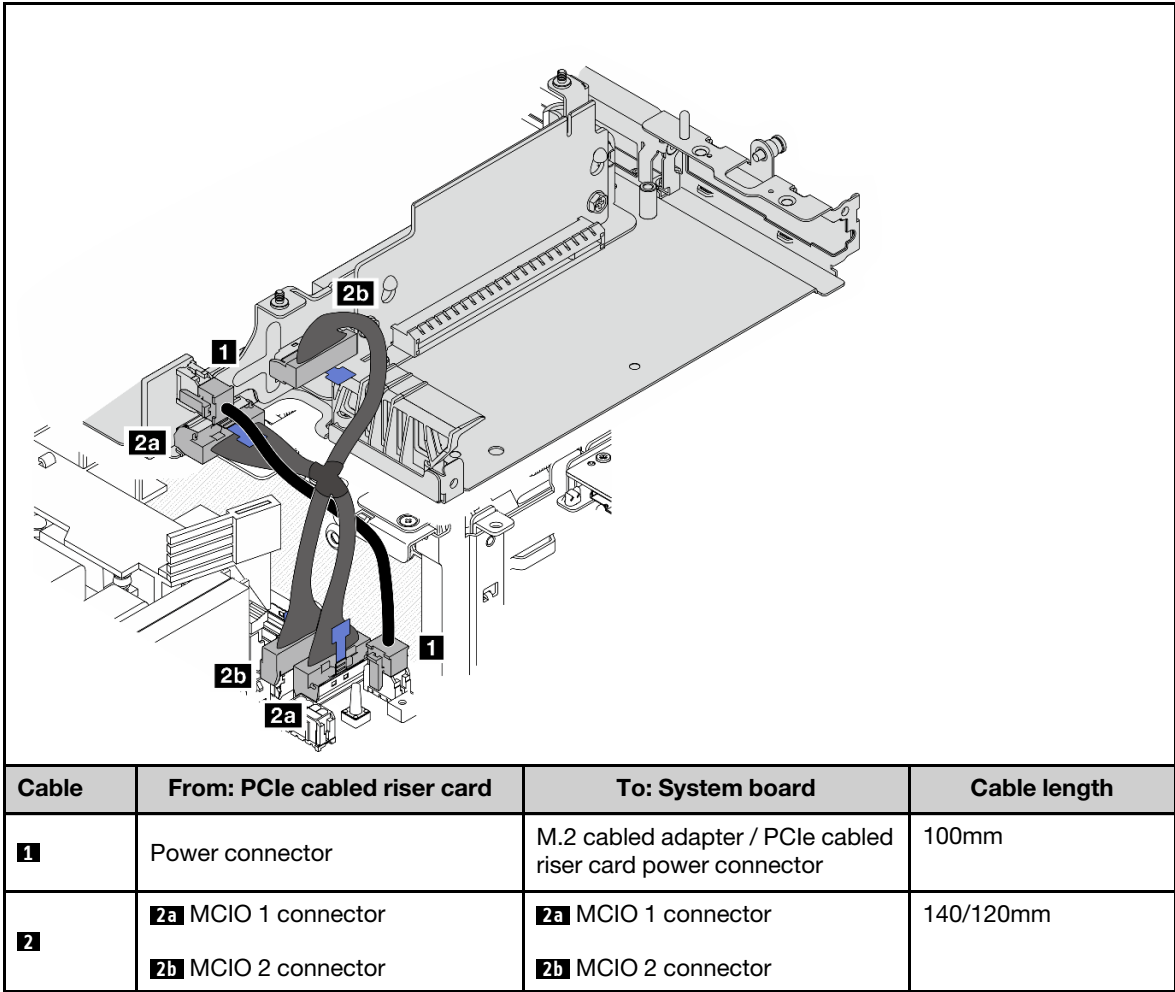
- [“PCIe assembly configuration” on page 217](#)
- [“7mm drive backplane configuration” on page 221](#)
- [“M.2 assembly configuration” on page 224](#)

## PCIe assembly configuration

### Procedure

- Step 1. If bottom M.2 cabled adapter is installed, make sure the cables of bottom M.2 cabled adapter are connected to the system board properly. See [Cable routing for bottom M.2 cabled adapter](#).
- Step 2. Connect the riser assembly cables.

**Note:** If necessary, remove the memory modules from DIMM slot 3 and 4 for easier operation. See [“Remove a memory module” on page 144](#).

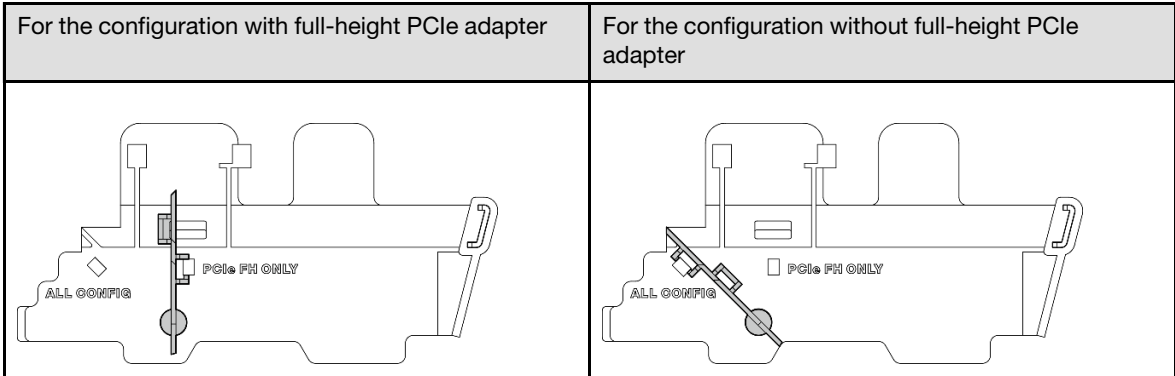


**Note:** Make sure to route the cables as shown in the illustration.

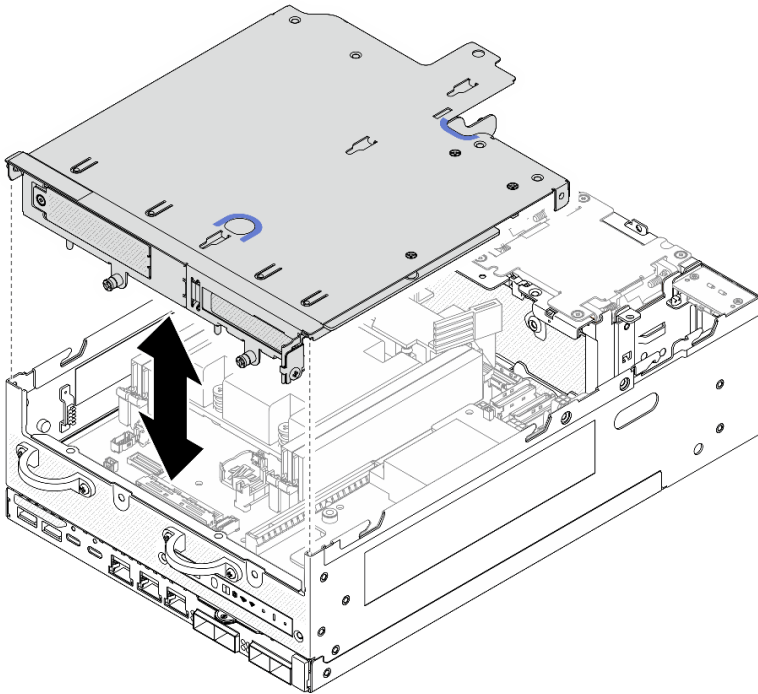
- a. Connect **1** the power cable to the system board.
- b. Connect **2a** the MCIO2 branch of riser card signal cable to the system board.
- c. Connect **2b** the MCIO1 branch of riser card signal cable to the system board.

Step 3. Reinstall the processor air baffle. See [“Install the processor air baffle and air flow sensor board” on page 69.](#)

**Note:** Make sure to adjust the processor air baffle according to the configuration.



Step 4. Align the front of the riser assembly with the edge of the chassis; then, lower the riser assembly to the node.



*Figure 260. Lowering the riser assembly*

Step 5. Secure the riser assembly to the node.

- a. ① Tighten the three captive screws on the top of the riser assembly.
- b. ② Tighten the three screws on both sides of the node.
- c. ③ Tighten the two thumbscrews in the front of the riser assembly.

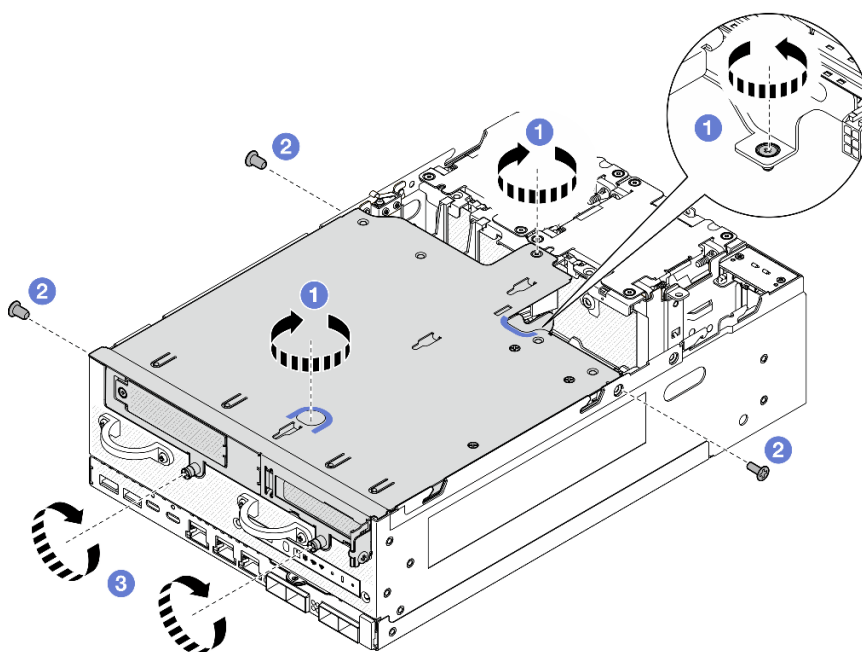


Figure 261. Securing the riser assembly

Step 6. Bundle the riser assembly cables together with a velcro strap; then, push the bundled cables toward the riser card.

**Note:** To make sure adequate system cooling, the cables should be routed away from the space for PMB air baffle.

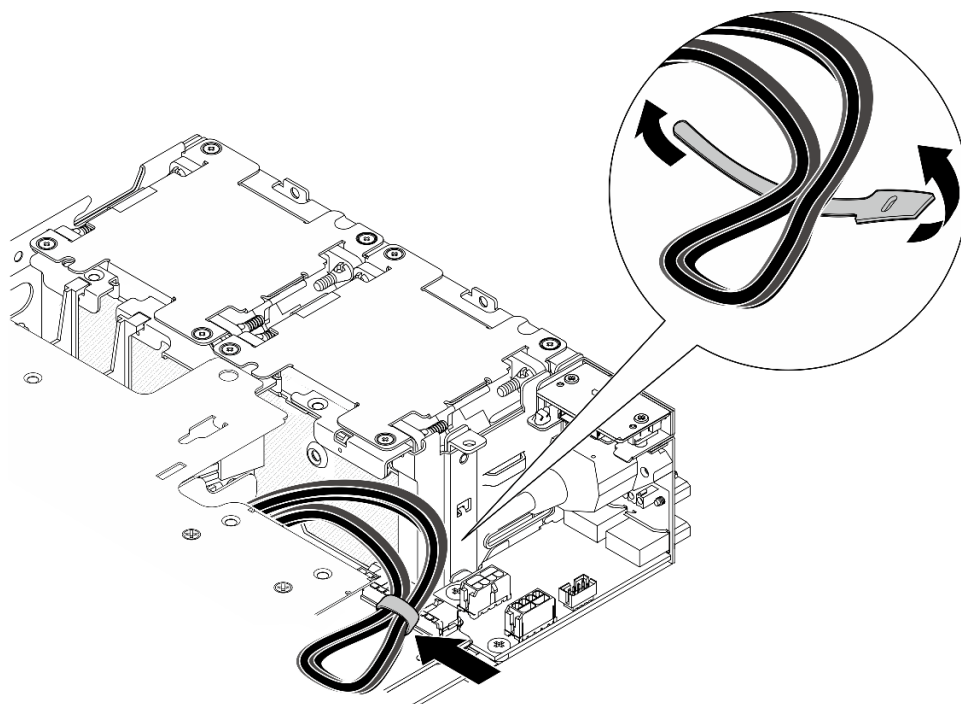


Figure 262. Cable routing for riser assembly

**After this task is completed**



Complete the parts replacement. See [“Complete the parts replacement” on page 281](#).

## Demo Video

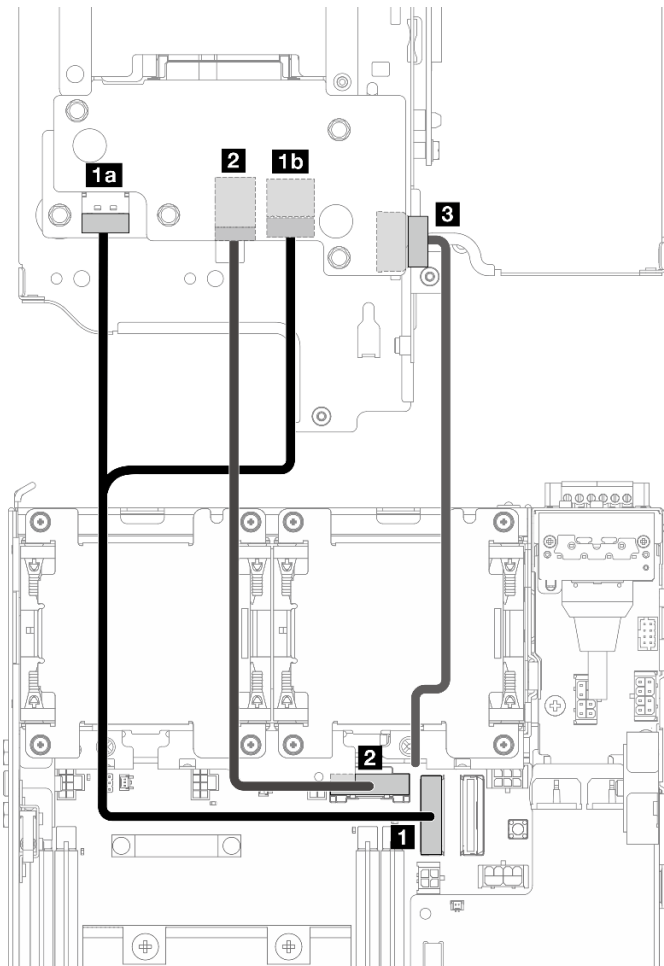
[Watch the procedure on YouTube](#)

## 7mm drive backplane configuration

### Procedure

Step 1. Connect the riser assembly cables.

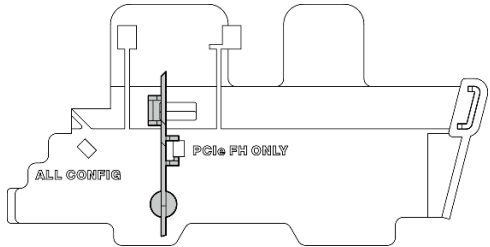
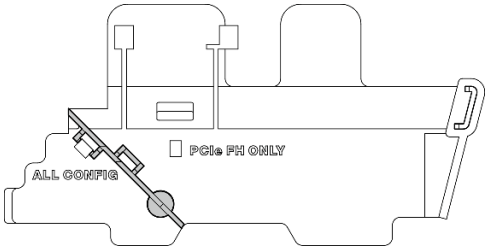
**Note:** If necessary, remove the memory modules from DIMM slot 3 and 4 for easier operation. See [“Remove a memory module” on page 144](#).



- Connect the NVMe signal cable to **1** PCIe Gen 4 MCIO 1 connector on the system board.
- Connect the SATA signal cable to **2** PCIe Gen 3 / SATA connector on the system board.
- Connect the power cable to **3** Backplane power connector on Backplane 1.

Step 2. Reinstall the processor air baffle. See [“Install the processor air baffle and air flow sensor board” on page 69](#).

**Note:** Make sure to adjust the processor air baffle according to the configuration.

For the configuration with full-height PCIe adapter	For the configuration without full-height PCIe adapter
	

Step 3. Align the front of the riser assembly with the edge of the chassis; then, lower the riser assembly to the node.

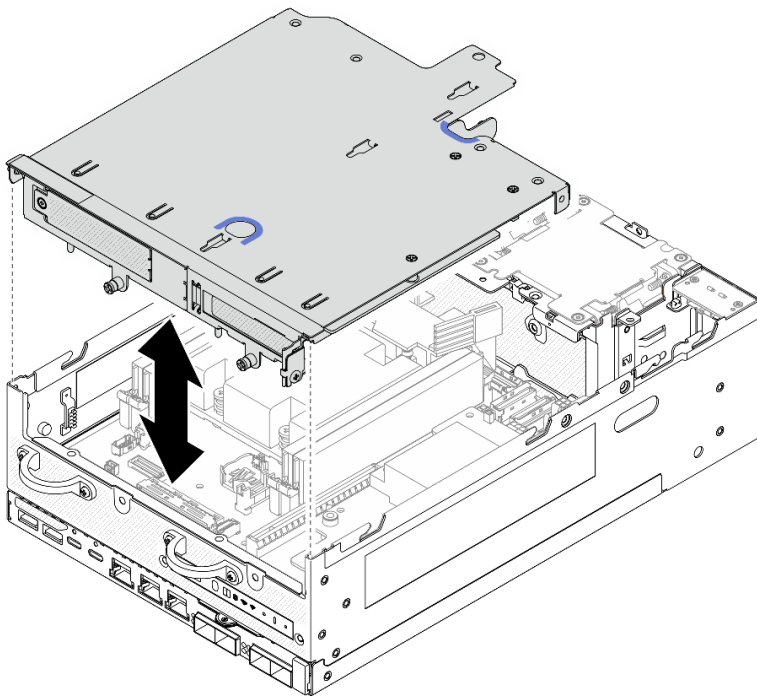


Figure 263. Lowering the riser assembly

- Step 4. Route the cables between the riser cage and the processor air baffle.
- Push the cables toward the riser cage until the cables are seated in the notch of riser cage.
  - Push the rubber part of processor air baffle to bend it until it is against the cables.

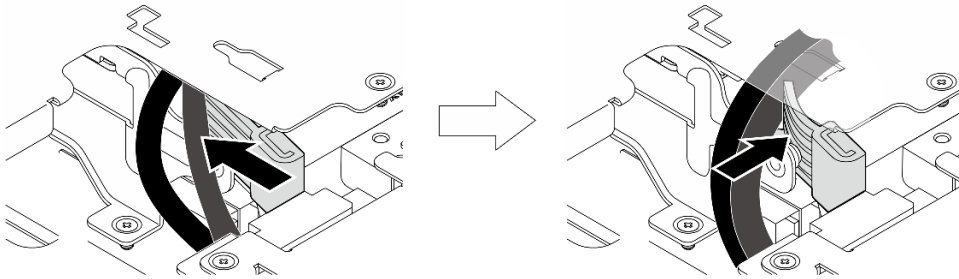


Figure 264. Routing the cables

Step 5. Secure the riser assembly to the node.

- a. ① Tighten the three captive screws on the top of the riser assembly.
- b. ② Tighten the three screws on both sides of the node.
- c. ③ Tighten the two thumbscrews in the front of the riser assembly.

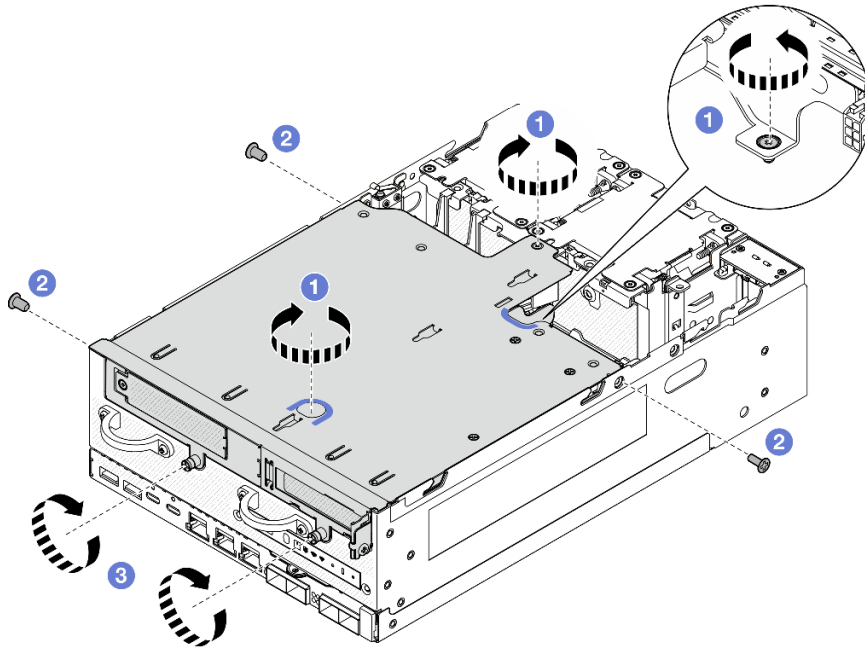


Figure 265. Securing the riser assembly

Step 6. Push the Backplane 1 power cable toward the power module board.

**Note:** To make sure adequate system cooling, the cables should be routed away from the space for PMB air baffle.

## After this task is completed

Complete the parts replacement. See [“Complete the parts replacement” on page 281](#).

## Demo Video

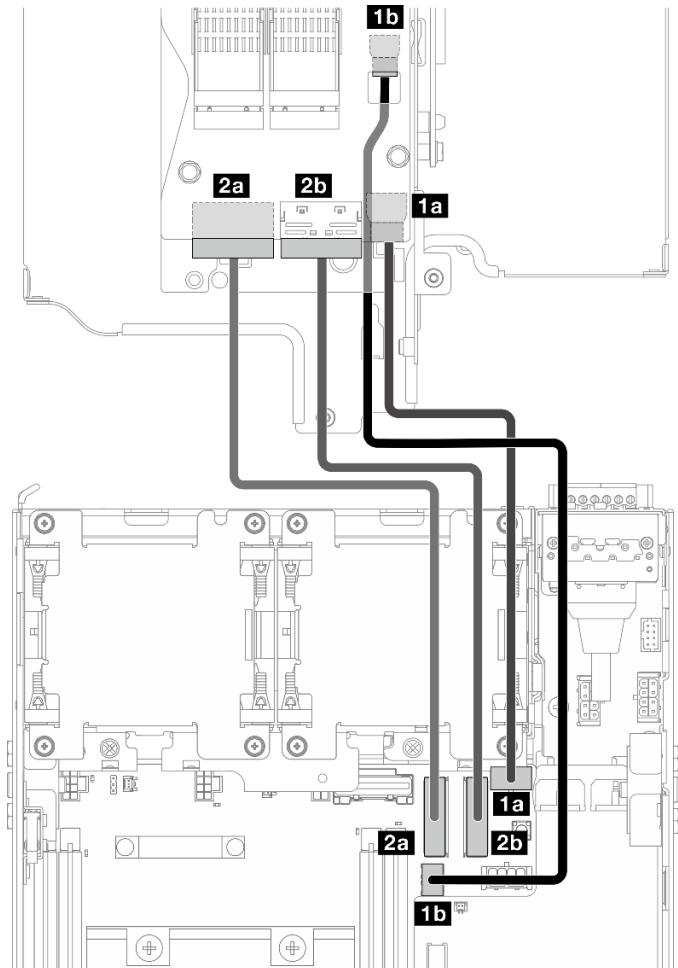
[Watch the procedure on YouTube](#)

## M.2 assembly configuration

### Procedure

Step 1. Connect the riser assembly cables.

**Note:** If necessary, remove the memory modules from DIMM slot 3 and 4 for easier operation. See [“Remove a memory module” on page 144](#).



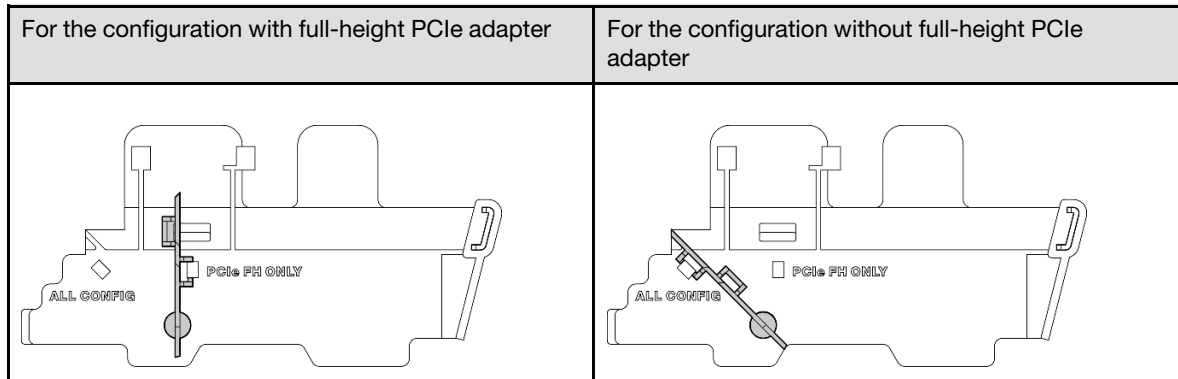
Cable	From: M.2 cabled adapter	To: System board	Cable length
<b>1</b>	<b>1a</b> Power connector 1 <b>1b</b> Power connector 2	<b>1a</b> M.2 cabled adapter / PCIe cabled riser card power connector <b>1b</b> M.2 cabled adapter power connector	170/200mm
<b>2</b>	<b>2a</b> MCIO 1 connector <b>2b</b> MCIO 2 connector	<b>2a</b> PCIe Gen 4 MCIO 1 connector <b>2b</b> PCIe Gen 4 MCIO 2 connector	150mm

- a. Connect the power cable to **1a** M.2 cabled adapter / PCIe cabled riser card power connector and **1b** M.2 cabled adapter power connector on the system board.

- b. Connect the signal cable to **2a** PCIe Gen 4 MCIO 1 connector on the system board.
- c. Connect the signal cable to **2b** PCIe Gen 4 MCIO 2 connector on the system board.

Step 2. Reinstall the processor air baffle. See [“Install the processor air baffle and air flow sensor board” on page 69.](#)

**Note:** Make sure to adjust the processor air baffle according to the configuration.



Step 3. Align the front of the riser assembly with the edge of the chassis; then, lower the riser assembly to the node.

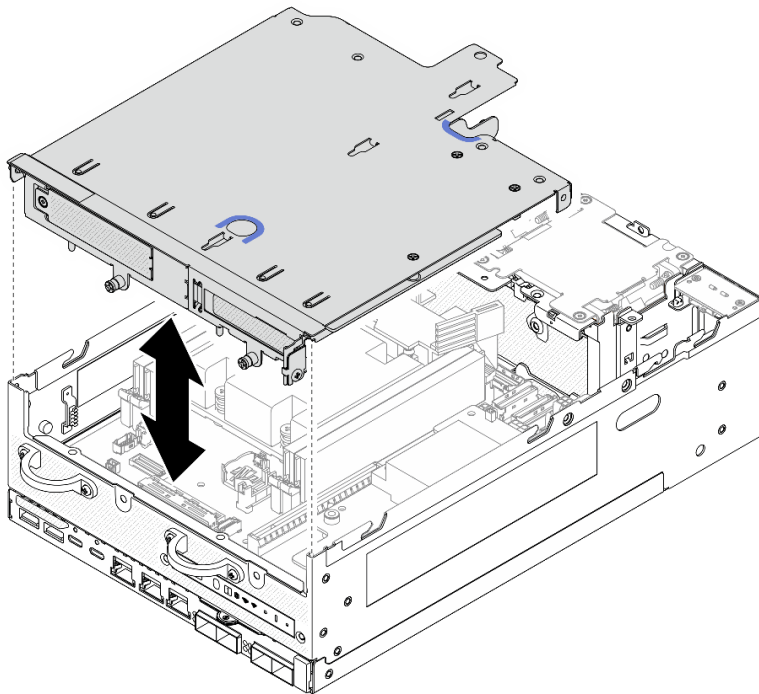


Figure 266. Lowering the riser assembly

- Step 4. Route the cables between the riser cage and the processor air baffle.
- a. Push the cables toward the riser cage until the cables are seated in the notch of riser cage.
  - b. Push the rubber part of processor air baffle to bend it until it is against the cables.

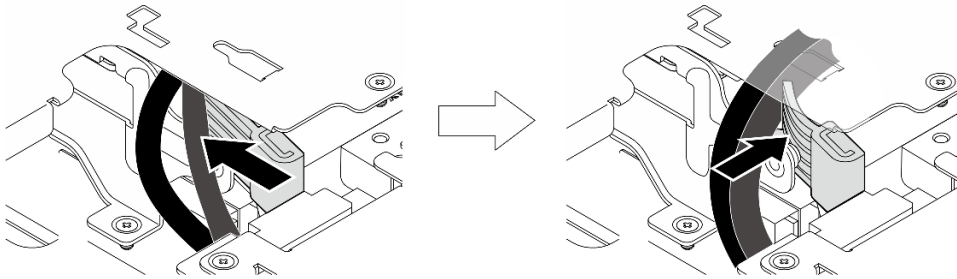


Figure 267. Routing the cables

- Step 5. Secure the riser assembly to the node.
- 1 Tighten the three captive screws on the top of the riser assembly.
  - 2 Tighten the three screws on both sides of the node.
  - 3 Tighten the two thumbscrews in the front of the riser assembly.

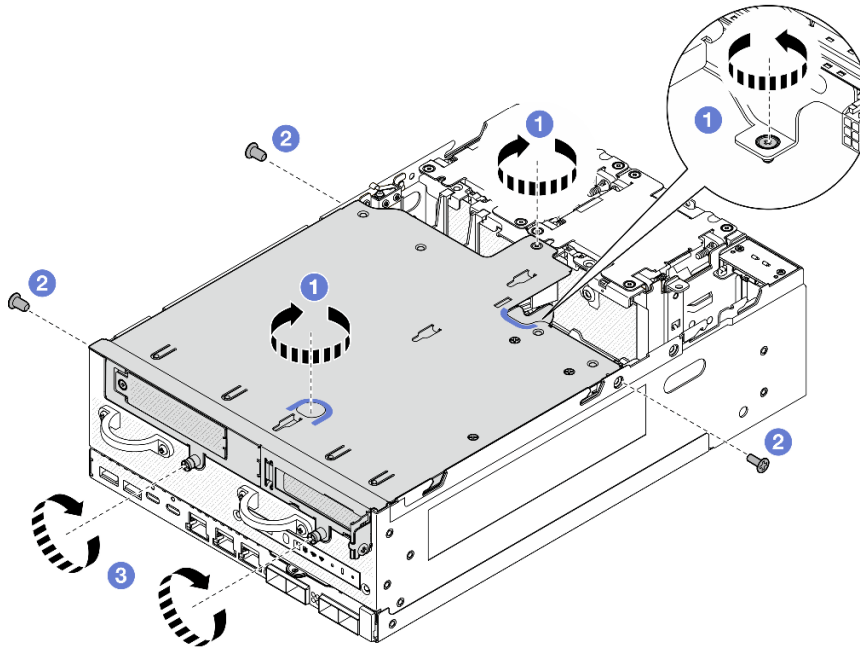


Figure 268. Securing the riser assembly

- Step 6. Bundle the riser assembly cables together with a velcro strap; then, push the bundled cables toward the riser card.

**Note:** To make sure adequate system cooling, the cables should be routed away from the space for PMB air baffle.

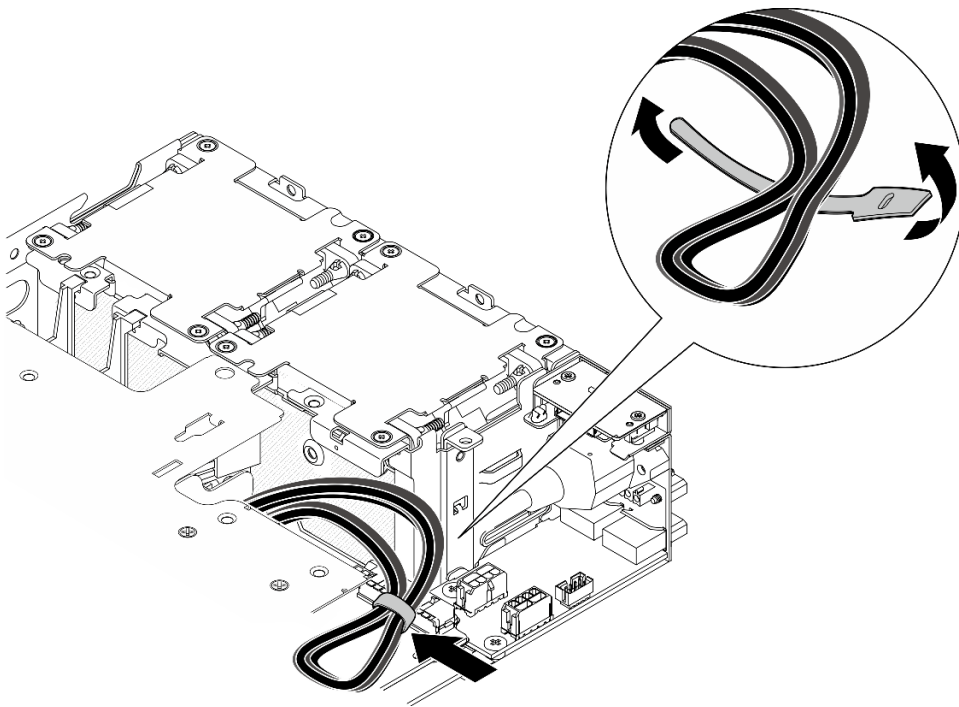


Figure 269. Cable routing for riser assembly

### After this task is completed

Complete the parts replacement. See [“Complete the parts replacement” on page 281](#).

### Demo Video

[Watch the procedure on YouTube](#)

## Rubber feet replacement

Follow instructions in this section to remove and install the rubber feet.

### Remove the rubber feet

Follow instructions in this section to remove the rubber feet.

### About this task

#### Attention:

- Read [“Installation Guidelines” on page 1](#) and [“Safety inspection checklist” on page 2](#) to ensure that you work safely.

### Procedure

- Step 1. Let the bottom side of the node facing up.
- Step 2. Pull the rubber feet to remove it.

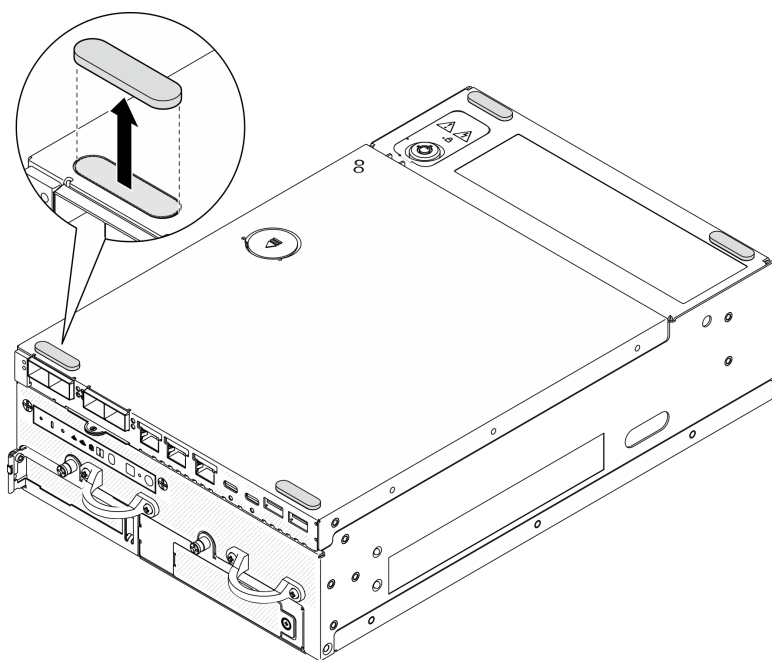


Figure 270. Removing the rubber feet

### After this task is completed

- Install a replacement unit. See [“Install the rubber feet” on page 228](#).
- If you are instructed to return the component or optional device, follow all packaging instructions, and use any packaging materials for shipping that are supplied to you.

### Demo Video

[Watch the procedure on YouTube](#)

### Install the rubber feet

Follow instructions in this section to install the rubber feet.

### About this task

#### Attention:

- Read [“Installation Guidelines” on page 1](#) and [“Safety inspection checklist” on page 2](#) to ensure that you work safely.

### Procedure

- Step 1. Let the bottom side of the node facing up.
- Step 2. Remove the film on the rubber feet.
- Step 3. Stick the rubber feet to the node as shown.



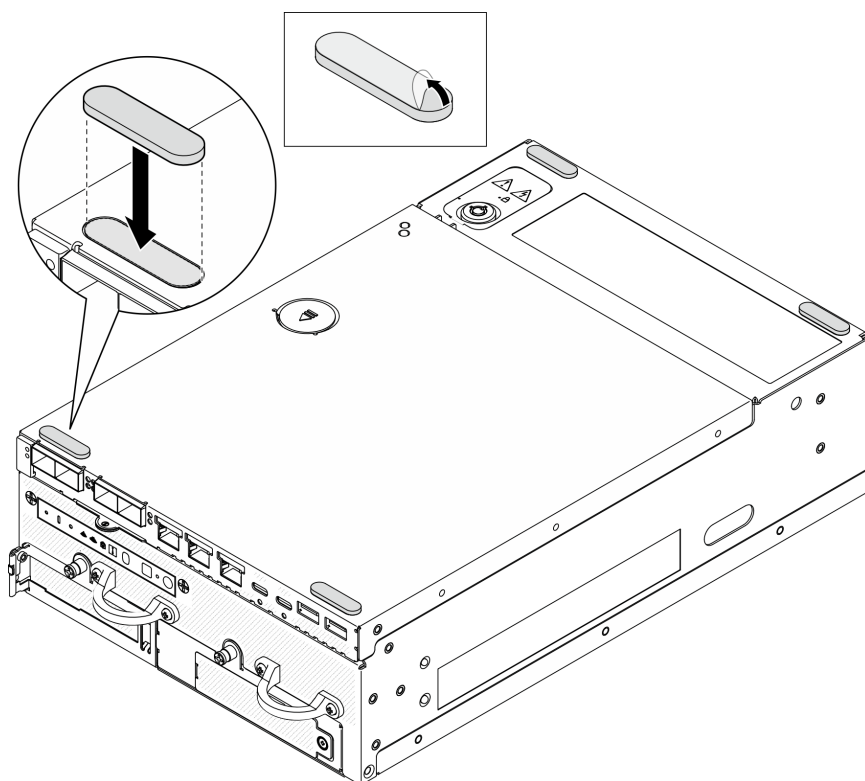


Figure 271. Installing the rubber feet

## After this task is completed

Complete the parts replacement. See [“Complete the parts replacement” on page 281](#).

## Demo Video

[Watch the procedure on YouTube](#)

## System board replacement (trained technician only)

Follow instructions in this section to remove and install the system board.

**Important:** This task must be operated by trained technicians.

### CAUTION:

**Hazardous moving parts. Keep fingers and other body parts away.**



### CAUTION:



The heat sinks and processors might be very hot. Turn off the server and wait several minutes to let the server cool before removing the server cover.

## Manage the Self Encryption Drive Authentication Key (SED AK)

For ThinkEdge SE360 V2 with SED installed, the SED AK can be managed in Lenovo XClarity Controller. After setting up the server or making changes to the configuration, backing up the SED AK is a must operation to prevent data loss in the hardware failure case.

### SED Authentication Key (AK) Manager

Log in to Lenovo XClarity Controller web interface, and go to **BMC Configuration → Security → SED Authentication Key (AK) Manager** to manage the SED AK.

**Notes:** The operation of SED AK Manager is not allowed in the following conditions:

- System Lockdown Mode is in **Active** state. SED AK is locked until the system is activated or unlocked. See “Activate or unlock the system” in *User Guide* or *System Configuration Guide* to activate or unlock the system.
- Current user does not have the authority to manage SED AK.
  - To generate, backup, and recover the SED AK with passphrase or backup file, the role of XCC user should be **Administrator**.
  - To recover the SED AK from automatic backup, the role of XCC user should be **Administrator+**.

### SED encryption

The status of SED encryption can be changed from Disabled to Enabled. Complete the following process to enable SED encryption.

1. Press **Enabled** button.
2. Select the SED AK generation method:
  - **Generate key using Passphrase:** Set the password and re-enter it for the confirmation.
  - **Generate key randomly:** A Random SED AK will be generated.
3. Press **Apply** button.

### Attention:

- Once SED encryption is Enabled, it cannot be changed back to Disabled.
- When SED encryption is enabled, rebooting the system is required after installing a drive; without rebooting, the drive will not be recognized by the host OS.

### Change the SED AK

- **Generate key using Passphrase:** Set the password and re-enter it for the confirmation. Click **Re-generate** to get the new SED AK.
- **Generate key randomly:** Click **Re-generate** to get a Random SED AK.

### Backup the SED AK

Set the password and re-enter it for the confirmation. Click **Start Backup** to backup the SED AK; then, download the SED AK file and store it safely for future use.

**Note:** If you use the backup SED AK file to restore a configuration, the system will ask for the password that you set here.

## Recover the SED AK

- **Recover SED AK using Passphrase:** Use the password that was set in **Generate key using Passphrase** to recover the SED AK.
- **Recover SED AK from Backup file:** Upload the backup file generated in **Backup the SED AK** mode and enter the corresponding backup file password to recover the SED AK.
- **Recover SED AK from Automatic backup:** After system board replacement, use automatic backup to recover the SED AK for the installed SED.

**Note:** To recover the SED AK from automatic backup, the role of XCC user should be **Administrator+**.

## Remove the system board

Follow instructions in this section to remove the system board.

### About this task

#### Important:

- Removing and installing this component requires trained technicians. **Do not** attempt to remove or install the part without proper training.
- When replacing the system board, always update the server with the latest firmware or restore the pre-existing firmware. Make sure that you have the latest firmware or a copy of the pre-existing firmware before you proceed.
- When removing the memory modules, label the slot number on each memory module, remove all the memory modules from the system board, and set them aside on a static-protective surface for reinstallation.
- **When disconnecting cables, make a list of each cable and record the connectors the cable is connected to, and use the record as a cabling checklist after installing the new system board.**

#### Attention:

- Read [“Installation Guidelines” on page 1](#) and [“Safety inspection checklist” on page 2](#) to ensure that you work safely.
- Power off the server and peripheral devices and disconnect the power cords and all external cables. See [“Power off the server” on page 8](#).
- If the node is installed in an enclosure or mounted, remove the node from the enclosure or mount. See [“Configuration guide” on page 9](#).

## Procedure

Step 1. Make preparation for this task.

- a. Record all system configuration information, such as Lenovo XClarity Controller IP addresses, vital product data, and the machine type, model number, serial number, Universally Unique Identifier, and asset tag of the server.
- b. If SED encryption is enabled, maintain a backup of SED AK. See [“Manage the Self Encryption Drive Authentication Key \(SED AK\)” on page 230](#).
- c. If applicable, export Lenovo Features on Demand activation key. See the “License Management” section in the XCC documentation compatible with the server at <https://pubs.lenovo.com/lxcc-overview/>.
- d. Save the system configuration to an external device with Lenovo XClarity Essentials.
- e. Save the system event log to external media.

- f. Power off the server and peripheral devices and disconnect the power cords and all external cables. See [“Power off the server” on page 8](#).

Step 2. Remove the following components in the sequence below.

- a. If applicable, remove the WLAN antennas. See [“Remove the WLAN antennas” on page 256](#).
- b. Remove the top cover. See [“Remove the top cover” on page 154](#).
- c. Remove the PMB air baffle. See [“Remove the PMB air baffle” on page 62](#).
- d. Remove the riser assembly. (Before disconnecting the cables of riser assembly, remove the processor air baffle.) See [“Remove the riser assembly from the node” on page 186](#) and [“Remove the processor air baffle and air flow sensor board” on page 65](#).
- e. Depending on the model, remove the SMA assemblies or SMA fillers. See [“Remove the SMA assemblies” on page 257](#).
- f. Depending on the configuration, remove the power module board or internal power supply unit. See [“Remove the power module board \(PMB\)” on page 172](#) or [“Remove the internal power supply unit \(AC PMB\)” on page 108](#).
- g. Remove the power input board (PIB) module. See [“Remove the PIB module” on page 168](#).
- h. Remove the top intrusion switch with cable. See [“Remove the top intrusion switch with cable” on page 116](#).
- i. Remove all the memory modules. See [“Remove a memory module” on page 144](#).
- j. If applicable, remove the wireless adapter. See [“Remove the wireless adapter” on page 247](#).
- k. If applicable, remove the MicroSD card from the system board to install it onto the new system board. See [“Remove the MicroSD card” on page 151](#).

Step 3. Disconnect all the cables from the system board. While disconnecting the cables, make a list of each cable and record the connectors the cable is connected to, and use the record as a cabling checklist after installing the new system board.

Step 4. Loosen the seven standoffs and two screws that secure the system board.

**Note:** Loosen the standoffs with a Phillips screwdriver or a flat-head screwdriver.

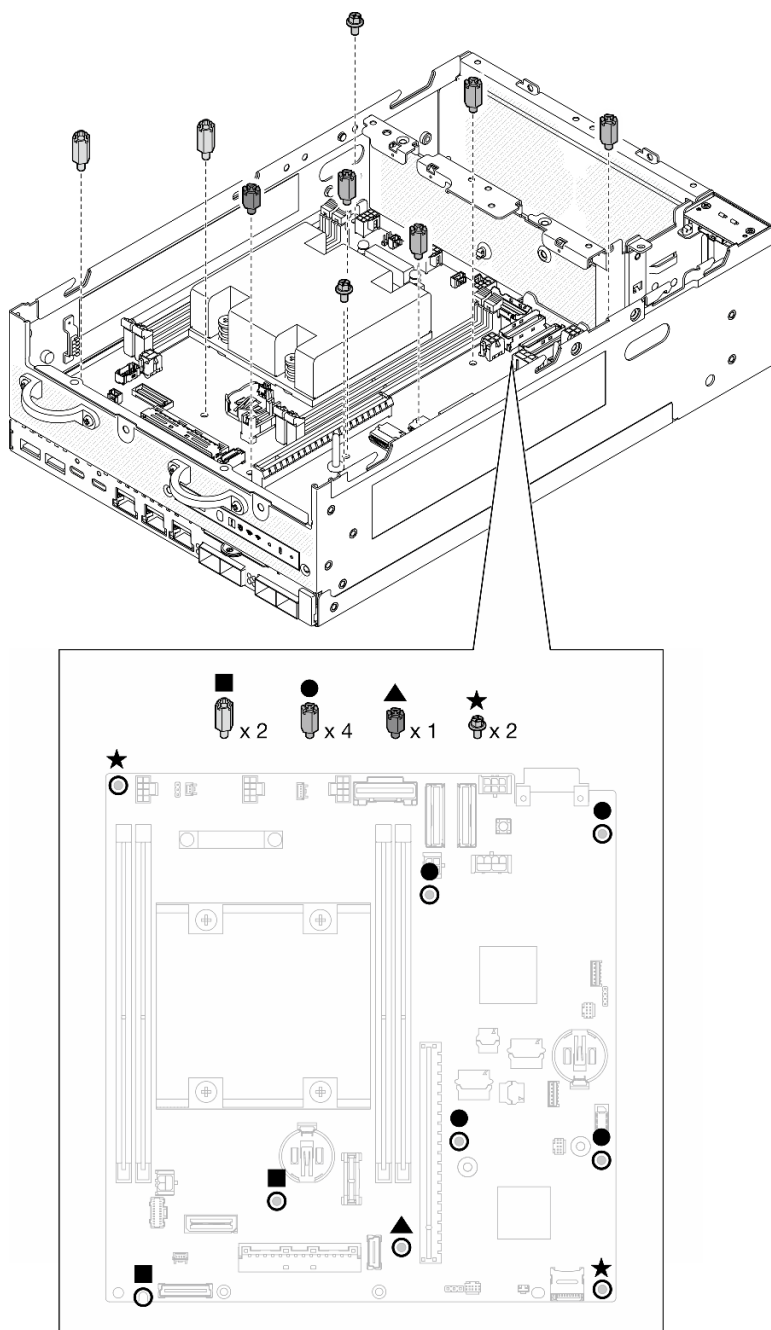


Figure 272. The screws and standoffs on the system board

Step 5. Lift the right end of the system board up; then, remove the system board from the chassis.

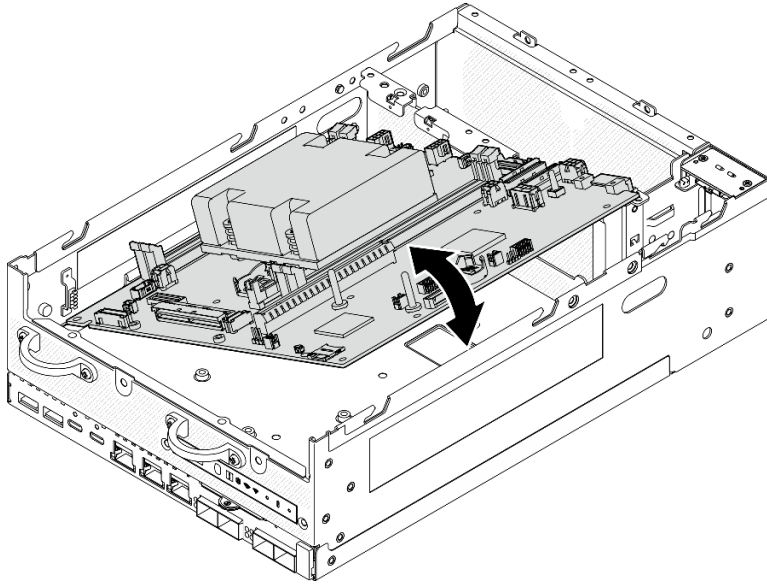


Figure 273. Removing the system board

### After this task is completed

- Install a replacement unit. See [“Install the system board” on page 234](#).
- If you are instructed to return the component or optional device, follow all packaging instructions, and use any packaging materials for shipping that are supplied to you.

### Demo Video

[Watch the procedure on YouTube](#)

### Install the system board

Follow instructions in this section to install the system board.

### About this task

**Important:** Removing and installing this component requires trained technicians. **Do not** attempt to remove or install the part without proper training.

#### Attention:

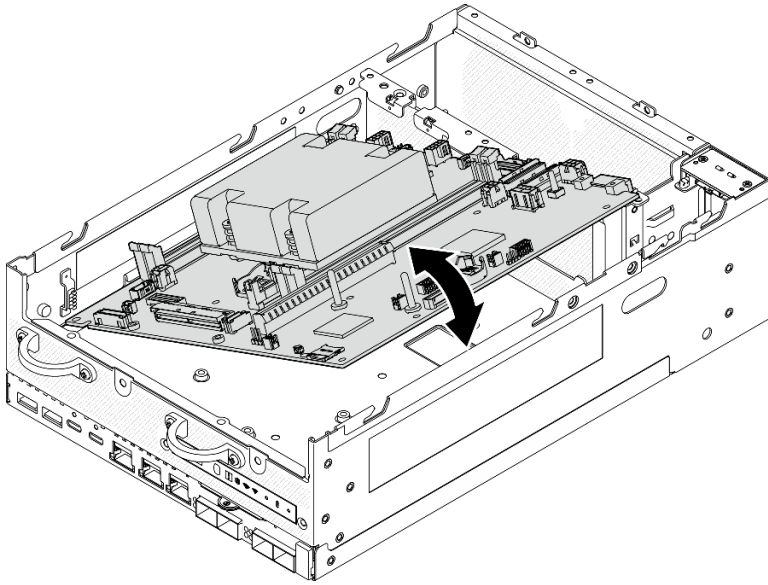
- Read [“Installation Guidelines” on page 1](#) and [“Safety inspection checklist” on page 2](#) to ensure that you work safely.
- Touch the static-protective package that contains the drive to any unpainted metal surface on the server; then, remove the drive from the package and place it on a static-protective surface.

**Firmware and driver download:** You might need to update the firmware or driver after replacing a component.

- Go to <https://datacentersupport.lenovo.com/products/servers/thinkedge/se360v2/7dam/downloads/driver-list/> to see the latest firmware and driver updates for your server.
- Go to “Update the firmware” in *User Guide* or *System Configuration Guide* for more information on firmware updating tools.

### Procedure

Step 1. Place the left end of the system board into the chassis; then, lower the right end into the chassis.



*Figure 274. Installing the system board*

Step 2. Secure the system board with two screws and seven standoffs.

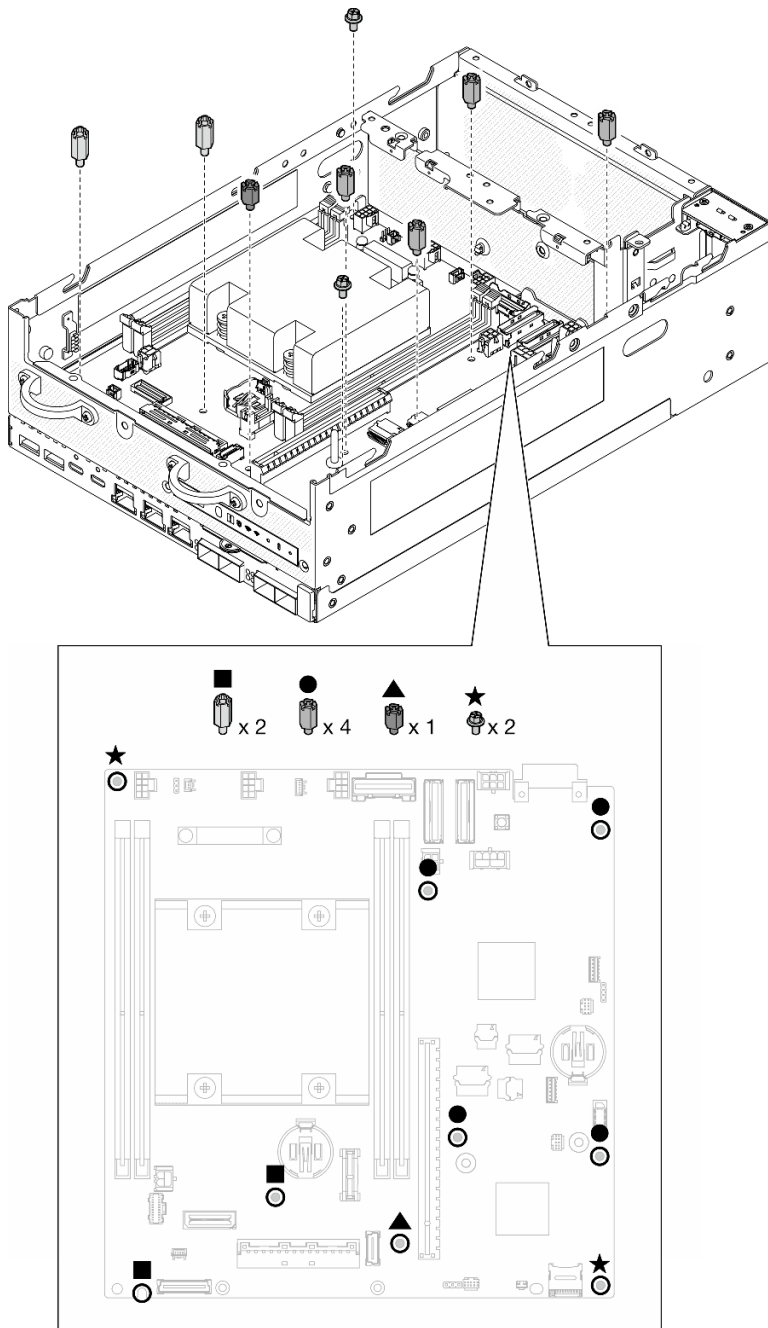


Figure 275. The screws and standoffs on the system board

**Notes:**

- The standoffs are listed in order of length in the illustration. (The left one is the longest.)
- Fasten the standoffs with a Phillips screwdriver or a flat-head screwdriver.

Step 3. Connect the I/O-board power cable and signal cable to the system board.

**Note:** Make sure to route the I/O-board power cable between the standoff and the chassis as shown.



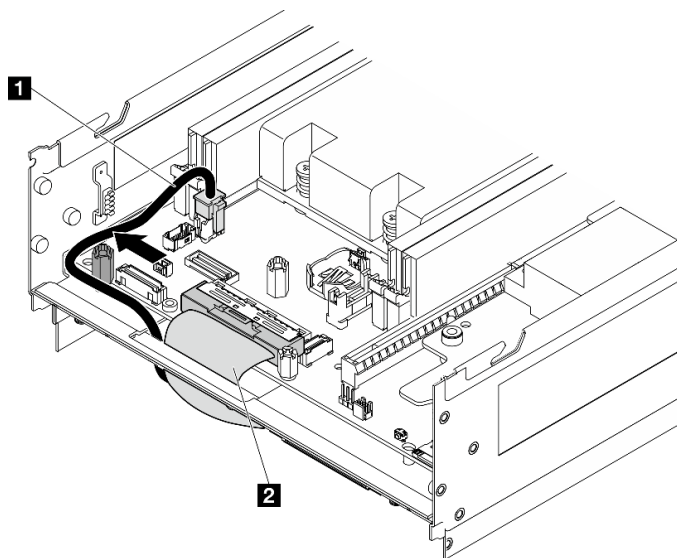


Figure 276. I/O-board cable routing

<b>1</b> I/O-board power cable	<b>2</b> I/O-board signal cable
--------------------------------	---------------------------------

- Step 4. Peel away the XClarity Controller network access label on the processor heat sink and attach it to the network access tag on the front of the server.

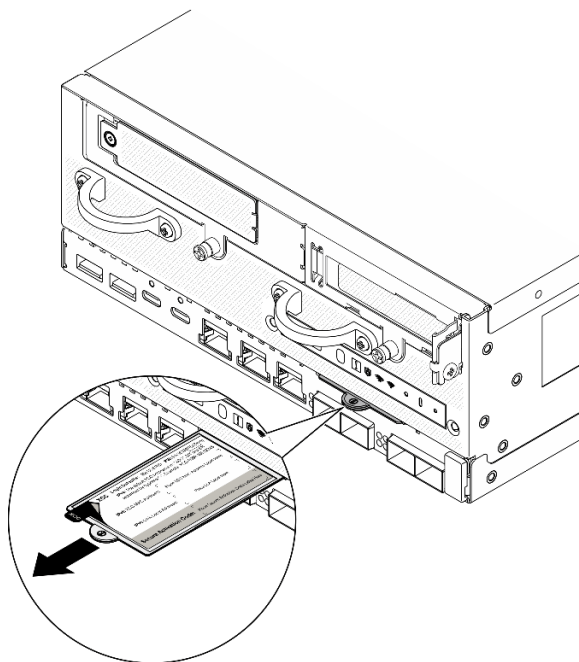


Figure 277. Lenovo XClarity Controller network access label on the pull-out information tab

### After this task is completed

1. The I/O-board power cable and signal cable should be routed to the bottom side of the node to connect to the I/O module board. See [“Install the I/O module board and M.2 boot drives” on page 129](#).
2. Reconnect all the required cables to the same connectors on the system board as the defective system board.

3. If applicable, install the MicroSD card that was removed from the old system board onto the new system board. See [“Install the MicroSD card” on page 153](#).
4. Reinstall all the memory modules. See [“Install a memory module” on page 147](#).
5. Make sure that all components have been reassembled correctly and that no tools or loose screws are left inside your server.
6. Reinstall the node covers. See [“Node cover replacement” on page 154](#).
7. If necessary, reinstall the node to the enclosure or mount. See [“Configuration guide” on page 9](#).
8. Reconnect the power cords and any cables that you removed.
9. Reset the system date and time.
10. Update the machine type and serial number with new vital product data (VPD). Use the Lenovo XClarity Provisioning Manager to update the machine type and serial number. See [“Update the Vital Product Data \(VPD\)” on page 238](#).

**Note:** If the node is installed in a ThinkEdge SE360 V2 2U2N Enclosure, change the machine type for proper operation. See [“Change the machine type for operating in an enclosure \(trained technician only\)” on page 240](#).

11. Update the UEFI, XCC and LXPM firmware to the specific version supported by the server. See “Update the firmware” in *User Guide* or *System Configuration Guide*.
12. If applicable, install Lenovo Features on Demand activation key. See the “License Management” section in the XCC documentation compatible with the server at <https://pubs.lenovo.com/lxcc-overview/>.
13. Update the public key. See the “Update Device Key” section of [https://download.lenovo.com/servers\\_pdf/thinkshield-web-application-user-guide-v2.pdf](https://download.lenovo.com/servers_pdf/thinkshield-web-application-user-guide-v2.pdf) for more details.

#### Notes:

- The role of Lenovo ID should be **Maintenance User** to update the public key in ThinkShield Key Vault Portal web interface or ThinkShield mobile app.
  - (Lenovo service technician only) See [https://glosse4lenovo.lenovo.com/wiki/glosse4lenovo/view/How%20To/System%20related/ThinkEdge/HowTo\\_update\\_PublicKey\\_after\\_board\\_replacement/](https://glosse4lenovo.lenovo.com/wiki/glosse4lenovo/view/How%20To/System%20related/ThinkEdge/HowTo_update_PublicKey_after_board_replacement/) for the details.
14. Set the TPM policy. See [“Set the TPM policy” on page 241](#).
  15. Optionally, enable UEFI Secure Boot. See [“Enable UEFI Secure Boot” on page 242](#).
  16. Reconfigure the following ThinkEdge security features if necessary.
    - a. Change System Lockdown Mode Control status to ThinkShield Portal. See “Activate or unlock the system” in *User Guide* or *System Configuration Guide*.
    - b. Enable SED encryption. See [“Manage the Self Encryption Drive Authentication Key \(SED AK\)” on page 230](#).
    - c. Recover SED AK. See [“Manage the Self Encryption Drive Authentication Key \(SED AK\)” on page 230](#).
    - d. Enable security features. See “System Lockdown Mode” in *User Guide* or *System Configuration Guide*.

#### Demo Video

[Watch the procedure on YouTube](#)

### Update the Vital Product Data (VPD)

Use this topic to update the Vital Product Data (VPD).


- **(Required)** Machine type
- **(Required)** Serial number
- **(Required)** System model
- (Optional) Asset tag
- (Optional) UUID

#### Recommended tools:

- Lenovo XClarity Provisioning Manager
- Lenovo XClarity Essentials OneCLI commands

#### Using Lenovo XClarity Provisioning Manager

##### Steps:

1. Start the server and press the key according to the on-screen instructions. The Lenovo XClarity Provisioning Manager interface is displayed by default.
2. Click  on the top right corner of the Lenovo XClarity Provisioning Manager main interface.
3. Click **Update VPD**; then, follow on-screen instructions to update the VPD.

#### Using Lenovo XClarity Essentials OneCLI commands

- Updating **machine type**  
onecli config set SYSTEM\_PROD\_DATA.SysInfoProdName <m/t\_model> [access\_method]
- Updating **serial number**  
onecli config set SYSTEM\_PROD\_DATA.SysInfoSerialNum <s/n> [access\_method]
- Updating **system model**  
onecli config set SYSTEM\_PROD\_DATA.SysInfoProdIdentifier <system model> [access\_method]  
onecli config set SYSTEM\_PROD\_DATA.SysInfoProdIdentifierEx <system model> --override [access\_method]
- Updating **asset tag**  
onecli config set SYSTEM\_PROD\_DATA.SysEncloseAssetTag <asset\_tag> [access\_method]
- Updating **UUID**  
onecli config createuuid SYSTEM\_PROD\_DATA.SysInfoUUID [access\_method]

Variable	Description
<m/t_model>	The server machine type and model number. Type xxxxyyy, where xxxx is the machine type and yyy is the server model number.
<s/n>	The serial number on the server. Type zzzzzzz, where zzzzzzz is the serial number.
<system model>	The system model on the server. Type system yyyyyyyyy, where yyyyyyyy is the product identifier.

<code>&lt;asset_tag&gt;</code>	<p>The server asset tag number.</p> <p>Type aaaaaaaaaaaaaaaaaaaaaaaaaaaaaa, where aaaaaaaaaaaaaaaaaaaaaaaaaaaaaa is the asset tag number.</p>
<code>[access_method]</code>	<p>The access method that you select to access the target server.</p> <ul style="list-style-type: none"> <li>Online KCS (unauthenticated and user restricted): You can directly delete <code>[access_method]</code> from the command.</li> <li>Online authenticated LAN: In this case, specify below LAN account information at the end of the OneCLI command: <code>--bmc-username &lt;user_id&gt; --bmc-password &lt;password&gt;</code></li> <li>Remote WAN/LAN: In this case, specify below XCC account information and IP address at the end of the OneCLI command: <code>--bmc &lt;bmc_user_id&gt;:&lt;bmc_password&gt;@&lt;bmc_external_IP&gt;</code></li> </ul> <p><b>Notes:</b></p> <ul style="list-style-type: none"> <li><code>&lt;bmc_user_id&gt;</code> The BMC account name (1 of 12 accounts). The default value is USERID.</li> <li><code>&lt;bmc_password&gt;</code> The BMC account password (1 of 12 accounts).</li> </ul>

## Change the machine type for operating in an enclosure (trained technician only)

Use the following information to change the machine type for operating in an enclosure.

- [“For a node to be installed into an enclosure” on page 240](#)
- [“For a node not to be reinstalled into an enclosure” on page 240](#)

**Important:** This task must be operated by trained technicians.

### Node to be installed into an enclosure

If the node is to be installed into a 2U2N Enclosure, change the machine type for proper operation.

To change the machine type for operating in a 2U2N Enclosure configuration, complete the following steps:

1. Enable IPMI on Lenovo XClarity Controller web interface or Lenovo XClarity Essentials OneCLI.
2. Implement the following IPMI commands:  

```
ipmitool raw 0x3a 0x0c 0xE9 0x01 0x10 0x37 0x44 0x42 0x4E 0x43 0x54 0x4F 0x31 0x57 0x57
```
3. For data security purpose, make sure to disable IPMI again on Lenovo XClarity Controller web interface or Lenovo XClarity Essentials OneCLI.

### Node not to be reinstalled into an enclosure

If the node is removed from a 2U2N Enclosure and is not to be reinstalled to the 2U2N Enclosure, change the machine type to the default mode for proper operation.

To change the machine type to the default mode, complete the following steps:

1. Enable IPMI on Lenovo XClarity Controller web interface or Lenovo XClarity Essentials OneCLI.
2. Implement the following IPMI commands:

```
ipmitool raw 0x3a 0x0c 0xE9 0x01 0x10 0x37 0x44 0x41 0x4D 0x43 0x54 0x4F 0x31 0x57 0x57
```

3. For data security purpose, make sure to disable IPMI again on Lenovo XClarity Controller web interface or Lenovo XClarity Essentials OneCLI.


## Set the TPM policy

By default, a replacement system board is shipped with the TPM policy set to **undefined**. You must modify this setting to match the setting that was in place for the system board that is being replaced.

There are two methods available to set the TPM policy:

- From Lenovo XClarity Provisioning Manager

To set the TPM policy from Lenovo XClarity Provisioning Manager:

1. Start the server and press the key specified in the on-screen instructions to display the Lenovo XClarity Provisioning Manager interface. (For more information, see the “Startup” section in the LXPM documentation compatible with your server at <https://pubs.lenovo.com/lxpm-overview/>.)
2. If the power-on Administrator password is required, enter the password.
3. Click  on the top right corner of the LXPM main interface; then click **Update VPD**.
4. Set the policy to one of the following settings.
  - **NationZ TPM 2.0 enabled - China only**. Customers in the Chinese Mainland should choose this setting if a NationZ TPM 2.0 adapter is installed.
  - **TPM enabled - ROW**. Customers outside of the Chinese Mainland should choose this setting.
  - **Permanently disabled**. Customers in the Chinese Mainland should use this setting if no TPM adapter is installed.

**Note:** Although the setting **undefined** is available as a policy setting, it should not be used.

- From Lenovo XClarity Essentials OneCLI

**Note:** Please note that a Local IPMI user and password must be setup in Lenovo XClarity Controller for remote accessing to the target system.

To set the TPM policy from Lenovo XClarity Essentials OneCLI:

1. Read TpmTcmPolicyLock to check whether the TPM\_TCM\_POLICY has been locked:  
`OneCli.exe config show imm.TpmTcmPolicyLock --override --imm <userid>:<password>@<ip_address>`

**Note:** The imm.TpmTcmPolicyLock value must be 'Disabled', which means TPM\_TCM\_POLICY is NOT locked and changes to the TPM\_TCM\_POLICY are permitted. If the return code is 'Enabled' then no changes to the policy are permitted. The planar may still be used if the desired setting is correct for the system being replaced.

2. Configure the TPM\_TCM\_POLICY into XCC:

- For customers in Chinese Mainland with no TPM, or customers that require to disable TPM:  
`OneCli.exe config set imm.TpmTcmPolicy "NeitherTpmNorTcm" --override --imm <userid>:<password>@<ip_address>`
- For customers in Chinese Mainland that require to enable TPM:  
`OneCli.exe config set imm.TpmTcmPolicy "NationZTPM200Only" --override --imm <userid>:<password>@<ip_address>`
- For customers outside Chinese Mainland that require to enable TPM:  
`OneCli.exe config set imm.TpmTcmPolicy "TpmOnly" --override --imm <userid>:<password>@<ip_address>`

3. Issue reset command to reset system:

`OneCli.exe misc ospower reboot --imm <userid>:<password>@<ip_address>`

4. Read back the value to check whether the change has been accepted:

`OneCli.exe config show imm.TpmTcmPolicy --override --imm <userid>:<password>@<ip_address>`

### Notes:

- If the read back value is matched it means the TPM\_TCM\_POLICY has been set correctly.

imm.TpmTcmPolicy is defined as below:

- Value 0 use string “Undefined”, which means UNDEFINED policy.
- Value 1 use string “NeitherTpmNorTcm”, which means TPM\_PERM\_DISABLED.
- Value 2 use string “TpmOnly”, which means TPM\_ALLOWED.
- Value 4 use string “NationZTPM20Only”, which means NationZ\_TPM20\_ALLOWED.
- Below 4 steps must also be used to ‘lock’ the TPM\_TCM\_POLICY when using OneCli/ASU commands:

5. Read TpmTcmPolicyLock to check whether the TPM\_TCM\_POLICY has been locked , command as below:

```
OneCli.exe config show imm.TpmTcmPolicyLock --override --imm <userid>:<password>@<ip_address>
```

The value must be 'Disabled', it means TPM\_TCM\_POLICY is NOT locked and must be set.

6. Lock the TPM\_TCM\_POLICY:

```
OneCli.exe config set imm.TpmTcmPolicyLock "Enabled" --override --imm <userid>:<password>@<ip_address>
```

7. Issue reset command to reset system, command as below:

```
OneCli.exe misc ospower reboot --imm <userid>:<password>@<ip_address>
```

During the reset, UEFI will read the value from imm.TpmTcmPolicyLock, if the value is 'Enabled' and the imm.TpmTcmPolicy value is valid, UEFI will lock the TPM\_TCM\_POLICY setting.

**Note:** The valid values for imm.TpmTcmPolicy include 'NeitherTpmNorTcm', 'TpmOnly', and 'NationZTPM20Only'.

If the imm.TpmTcmPolicyLock is set as 'Enabled' but imm.TpmTcmPolicy value is invalid, UEFI will reject the 'lock' request and change imm.TpmTcmPolicyLock back to 'Disabled'.

8. Read back the value to check whether the ‘Lock’ is accepted or rejected. Command as below:

```
OneCli.exe config show imm.TpmTcmPolicy --override --imm <userid>:<password>@<ip_address>
```

**Note:** If the read back value is changed from 'Disabled' to 'Enabled' that means the TPM\_TCM\_POLICY has been locked successfully. There is no method to unlock a policy once it has been set other than replacing system board.

imm.TpmTcmPolicyLock is defined as below:

Value 1 uses string “Enabled” , which means lock the policy. Other values are not accepted.

## Enable UEFI Secure Boot

Optionally, you can enable UEFI Secure Boot.

There are two methods available to enable UEFI Secure Boot:

- From Lenovo XClarity Provisioning Manager

To enable UEFI Secure Boot from Lenovo XClarity Provisioning Manager:

1. Start the server and press the key specified in the on-screen instructions to display the Lenovo XClarity Provisioning Manager interface. (For more information, see the “Startup” section in the LXPM documentation compatible with your server at <https://pubs.lenovo.com/lxpm-overview/>.)
2. If the power-on Administrator password is required, enter the password.
3. From the UEFI Setup page, click **System Settings** → **Security** → **Secure Boot**.
4. Enable Secure Boot and save the settings.

**Note:** If disabling UEFI secure boot is needed, select Disable in step 4.

- From Lenovo XClarity Essentials OneCLI

To enable UEFI Secure Boot from Lenovo XClarity Essentials OneCLI:

1. Download and install Lenovo XClarity Essentials OneCLI.

To download Lenovo XClarity Essentials OneCLI, go to the following site:

<https://datacentersupport.lenovo.com/solutions/HT116433>

2. Run the following command to enable Secure Boot:

```
OneCli.exe config set SecureBootConfiguration.SecureBootSetting Enabled --bmc <userid>:<password>@<ip_
address>
```

where:

- <userid>:<password> are the credentials used to access the BMC (Lenovo XClarity Controller interface) of your server. The default user ID is USERID, and the default password is PASSWORD (zero, not an uppercase o)
- <ip\_address> is the IP address of the BMC.

For more information about the Lenovo XClarity Essentials OneCLI `set` command, see:

[https://pubs.lenovo.com/lxce-onecli/onecli\\_r\\_set\\_command](https://pubs.lenovo.com/lxce-onecli/onecli_r_set_command)

**Note:** If disabling UEFI secure boot is needed, run the following command:

```
OneCli.exe config set SecureBootConfiguration.SecureBootSetting Disabled --bmc <userid>:<password>@<ip_
address>
```

## Wireless adapter and WLAN/Bluetooth module replacement

Follow instructions in this section to remove and install the wireless adapter and WLAN/Bluetooth modules.

### Remove the WLAN/Bluetooth modules

Follow instructions in this section to remove the WLAN/Bluetooth modules.

#### S002



#### **CAUTION:**

The power-control button on the device and the power switch on the power supply do not turn off the electrical current supplied to the device. The device also might have more than one power cord. To remove all electrical current from the device, ensure that all power cords are disconnected from the power source.

### About this task

#### **Attention:**

- Read “Installation Guidelines” on page 1 and “Safety inspection checklist” on page 2 to ensure that you work safely.
- Power off the server and peripheral devices and disconnect the power cords and all external cables. See “Power off the server” on page 8.

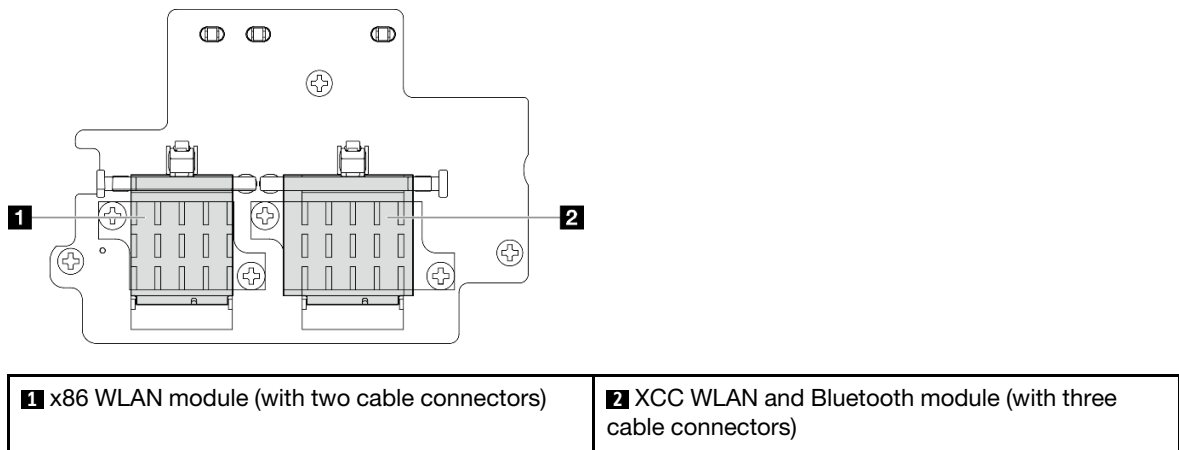
- If the node is installed in an enclosure or mounted, remove the node from the enclosure or mount. See [“Configuration guide” on page 9](#).

## Procedure

Step 1. Make preparation for this task.

- If applicable, remove the WLAN antennas. See [“Remove the WLAN antennas” on page 256](#).
- Remove the top cover. See [“Remove the top cover” on page 154](#).
- Remove the PMB air baffle. See [“Remove the PMB air baffle” on page 62](#).
- Lift the riser assembly from the node. See [“Remove the riser assembly from the node” on page 186](#).

Step 2. Locate the WLAN/Bluetooth module to be removed.



Step 3. Disconnect the cables from the WLAN/Bluetooth module.

- Pinch and press the side of the cable holder; then, lift up one end of the cable holder from the wireless adapter.

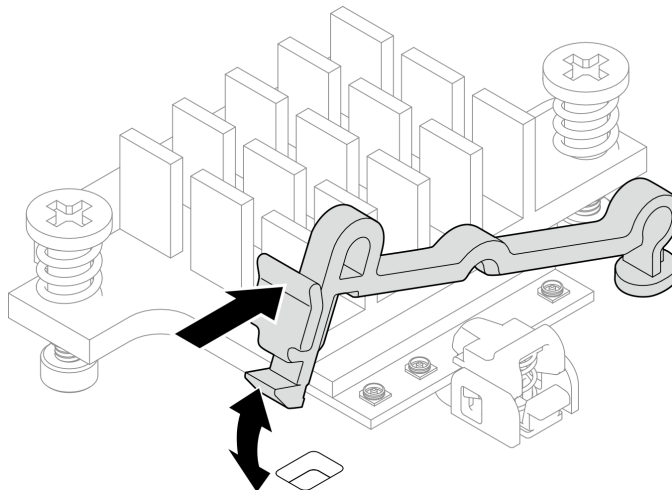


Figure 278. Lifting the cable holder

- Pivot the cable holder to **2** unlock position.



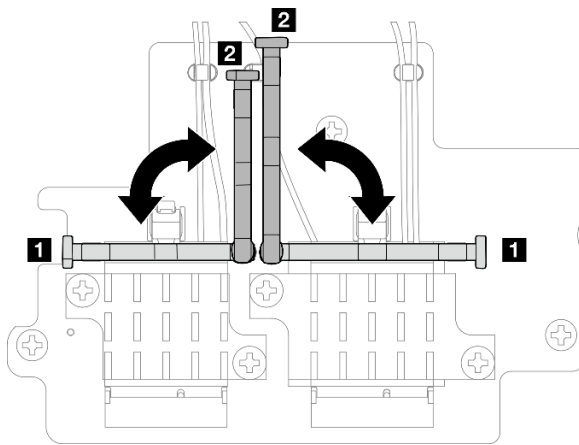


Figure 279. Pivoting the cable holder

- c. Hook the cable with the wrench as shown; then, gently remove the cable from the connector and the cable clip.

**Note:** Repeat this step until all the cables are removed from the WLAN/Bluetooth module.

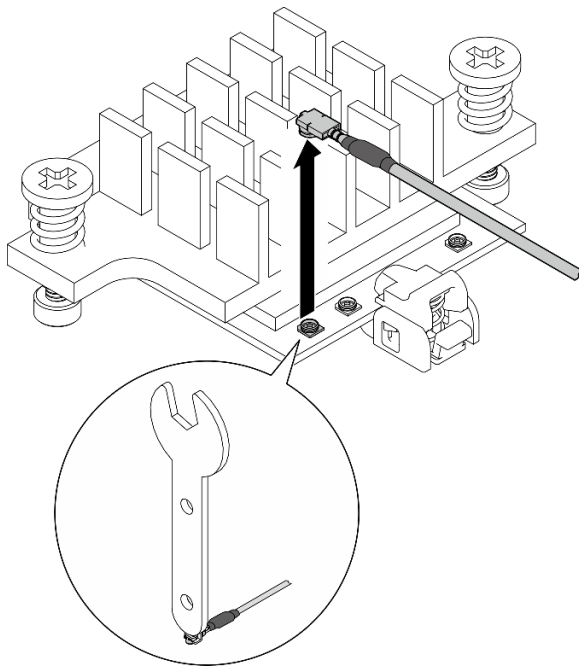


Figure 280. Disconnecting the cable

- Step 4. Remove the WLAN/Bluetooth module heat sink.
- a. Loosen the two captive screws that secure the heat sink.
  - b. Lift the heat sink to remove it.

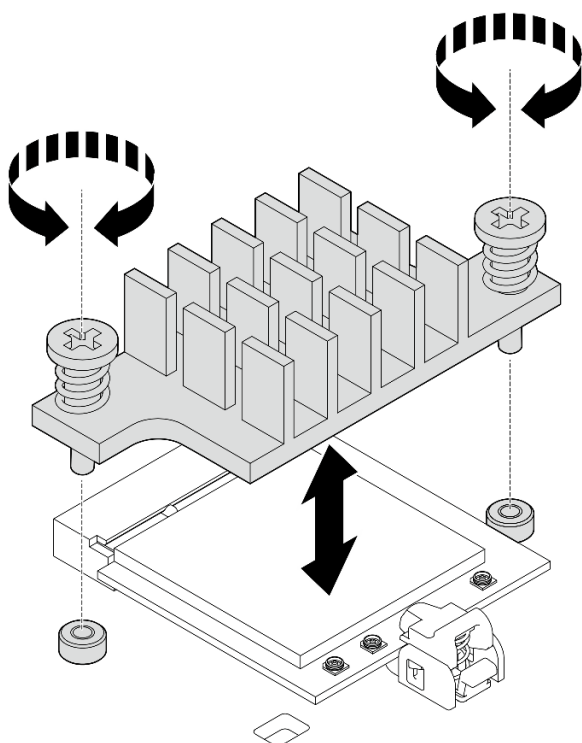


Figure 281. Removing the WLAN/Bluetooth module heat sink

Step 5. Remove the WLAN/Bluetooth module.

- a. ① Press the retainer to disengage the WLAN/Bluetooth module.
- b. ② Lift up the front end of the WLAN/Bluetooth module at an angle.
- c. ③ Remove the WLAN/Bluetooth module from the slot.

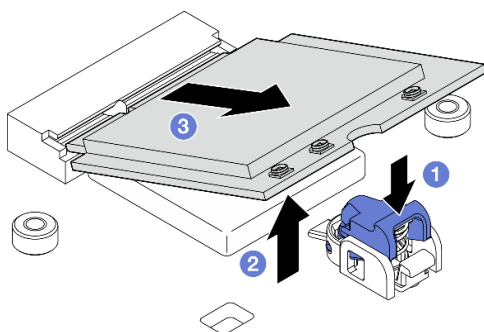


Figure 282. Removing the WLAN/Bluetooth module

### After this task is completed

- Install a replacement unit. See [“Install the WLAN/Bluetooth modules” on page 249](#).
- If you are instructed to return the component or optional device, follow all packaging instructions, and use any packaging materials for shipping that are supplied to you.

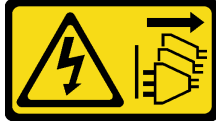
### Demo Video

[Watch the procedure on YouTube](#)

## Remove the wireless adapter

Follow instructions in this section to remove the wireless adapter.

### S002



#### **CAUTION:**

The power-control button on the device and the power switch on the power supply do not turn off the electrical current supplied to the device. The device also might have more than one power cord. To remove all electrical current from the device, ensure that all power cords are disconnected from the power source.

## About this task

#### **Attention:**

- Read [“Installation Guidelines” on page 1](#) and [“Safety inspection checklist” on page 2](#) to ensure that you work safely.
- Power off the server and peripheral devices and disconnect the power cords and all external cables. See [“Power off the server” on page 8](#).
- If the node is installed in an enclosure or mounted, remove the node from the enclosure or mount. See [“Configuration guide” on page 9](#).

## Procedure

Step 1. Make preparation for this task.

- a. If applicable, remove the WLAN antennas. See [“Remove the WLAN antennas” on page 256](#).
- b. Remove the top cover. See [“Remove the top cover” on page 154](#).
- c. Remove the PMB air baffle. See [“Remove the PMB air baffle” on page 62](#).
- d. Lift the riser assembly from the node. See [“Remove the riser assembly from the node” on page 186](#).
- e. Remove the WLAN/Bluetooth modules. See [“Remove the WLAN/Bluetooth modules” on page 243](#).

Step 2. Remove the wireless adapter.

- a. Loosen the three screws that secure the wireless adapter.
- b. Lift the wireless adapter to remove it.

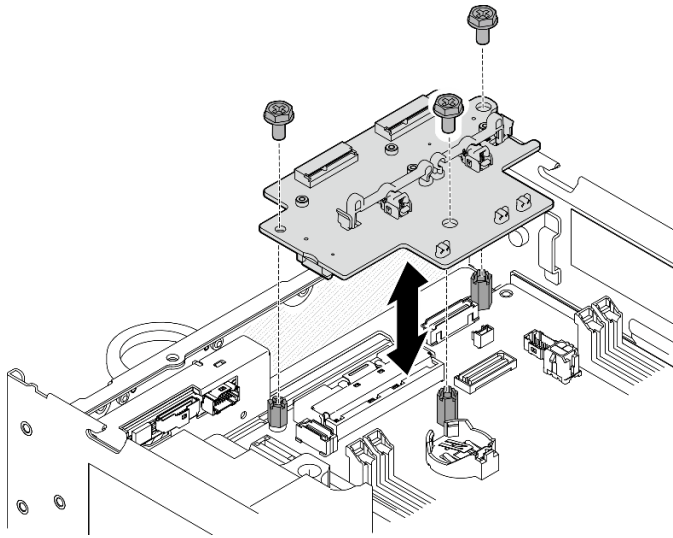


Figure 283. Removing the wireless adapter

### After this task is completed

- Install a replacement unit. See [“Install the wireless adapter” on page 248](#).
- If you are instructed to return the component or optional device, follow all packaging instructions, and use any packaging materials for shipping that are supplied to you.

### Demo Video

[Watch the procedure on YouTube](#)

### Install the wireless adapter

Follow instructions in this section to install the wireless adapter.

#### S002



#### **CAUTION:**

The power-control button on the device and the power switch on the power supply do not turn off the electrical current supplied to the device. The device also might have more than one power cord. To remove all electrical current from the device, ensure that all power cords are disconnected from the power source.

### About this task

#### **Attention:**

- Read [“Installation Guidelines” on page 1](#) and [“Safety inspection checklist” on page 2](#) to ensure that you work safely.
- Touch the static-protective package that contains the component to any unpainted metal surface on the server; then, remove it from the package and place it on a static-protective surface.

## Procedure

Step 1. Install the wireless adapter.

- a. Align the wireless adapter with the standoffs on the system board; then, lower the wireless adapter until it is firmly seated.
- b. Secure the wireless adapter with three screws.

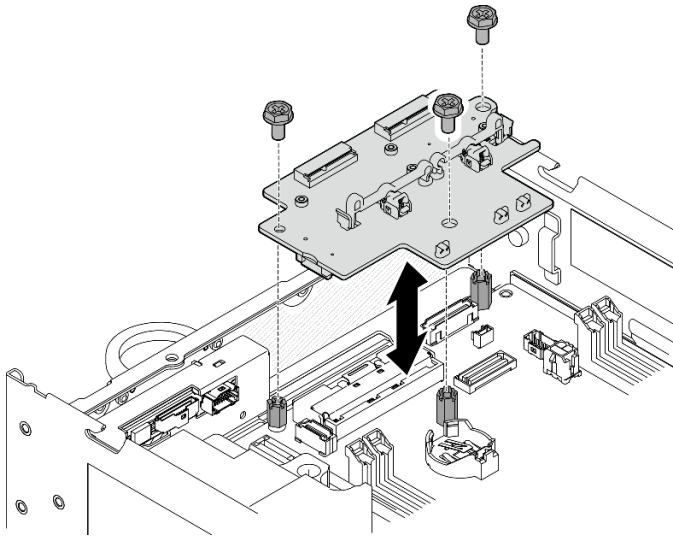


Figure 284. Installing the wireless adapter

## After this task is completed

1. Proceed to install the WLAN/Bluetooth modules. See [“Install the WLAN/Bluetooth modules” on page 249](#).
2. Complete the parts replacement. See [“Complete the parts replacement” on page 281](#).
3. The firmware information can be found in Lenovo XClarity Controller. Go to “Update the firmware” in *User Guide* or *System Configuration Guide* for more information on firmware updating tools.

## Demo Video

[Watch the procedure on YouTube](#)

## Install the WLAN/Bluetooth modules

Follow instructions in this section to install the WLAN/Bluetooth modules.

### S002



#### **CAUTION:**

The power-control button on the device and the power switch on the power supply do not turn off the electrical current supplied to the device. The device also might have more than one power cord. To remove all electrical current from the device, ensure that all power cords are disconnected from the power source.

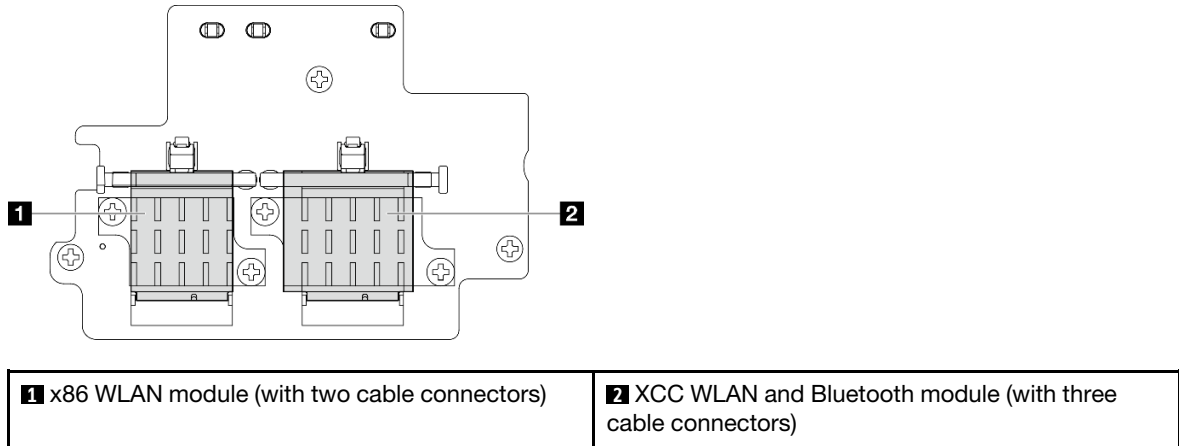
## About this task

### Attention:

- Read [“Installation Guidelines” on page 1](#) and [“Safety inspection checklist” on page 2](#) to ensure that you work safely.
- Touch the static-protective package that contains the component to any unpainted metal surface on the server; then, remove it from the package and place it on a static-protective surface.

### Procedure

Step 1. Locate the slot on the wireless adapter to install the WLAN/Bluetooth module.



Step 2. If applicable, remove the dummy cover from the WLAN/Bluetooth module slot.

- 1** Press the retainer to disengage the cover.
- 2** Lift up the front end of the cover at an angle.
- 3** Remove the cover from the slot.

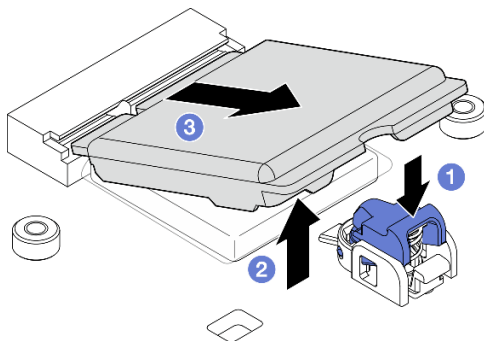


Figure 285. Removing the dummy cover

Step 3. If applicable, remove the film from the thermal pad on the wireless adapter.

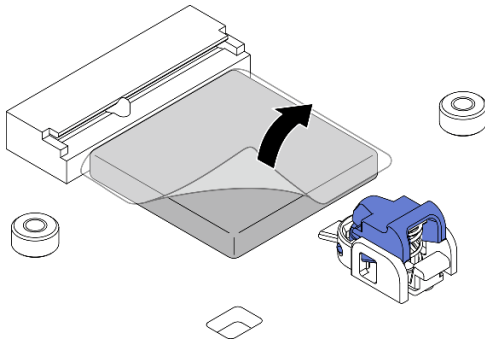


Figure 286. Removing the film from thermal pad

Step 4. Install the WLAN/Bluetooth module.

- a. ① Insert the WLAN/Bluetooth module into the slot at an angle.
- b. ② Press the WLAN/Bluetooth module down until it clicks into place.

**Note:** Make sure that the WLAN/Bluetooth module is firmly secured by the retainer. If the retainer does not engage with the module, press the retainer and adjust the module until the module is firmly secured.

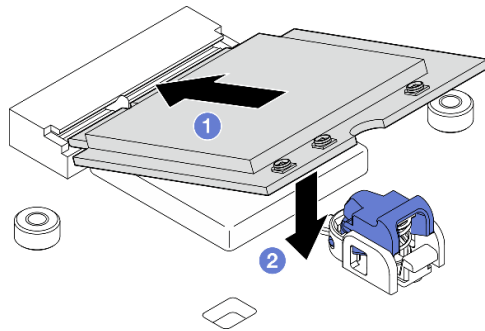


Figure 287. Installing the WLAN/Bluetooth module

Step 5. Install the WLAN/Bluetooth module heat sink.

- a. Remove the film from the thermal pad on the heat sink.

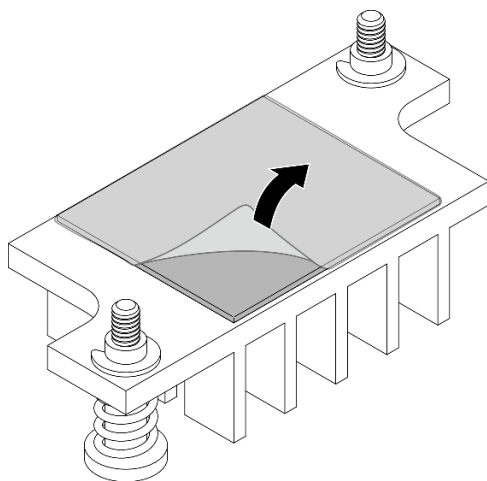


Figure 288. Removing the film from thermal pad

- b. Align the heat sink with the slots on the wireless adapter; then, lower the heat sink until it is firmly seated.
- c. Tighten the two captive screws to secure the heat sink.

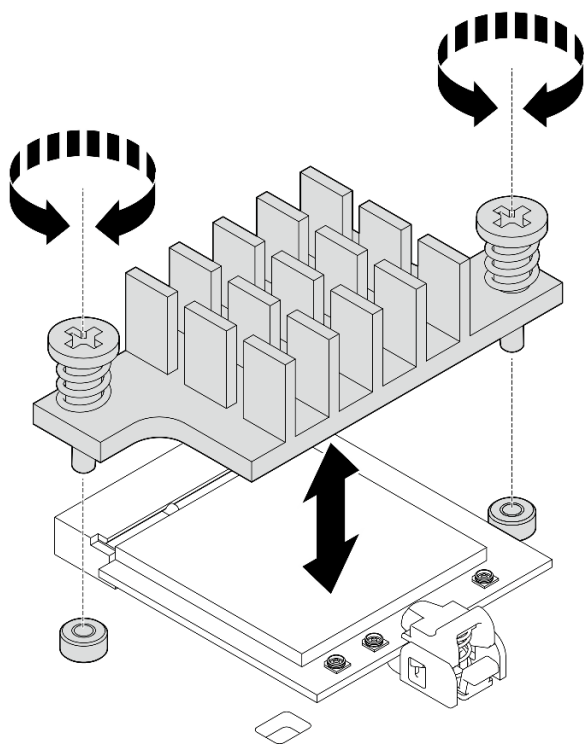


Figure 289. Installing the WLAN/Bluetooth module heat sink

- Step 6. Connect the WLAN cables and the Bluetooth antenna cable to the WLAN/Bluetooth modules..
- a. Locate the corresponding connector.



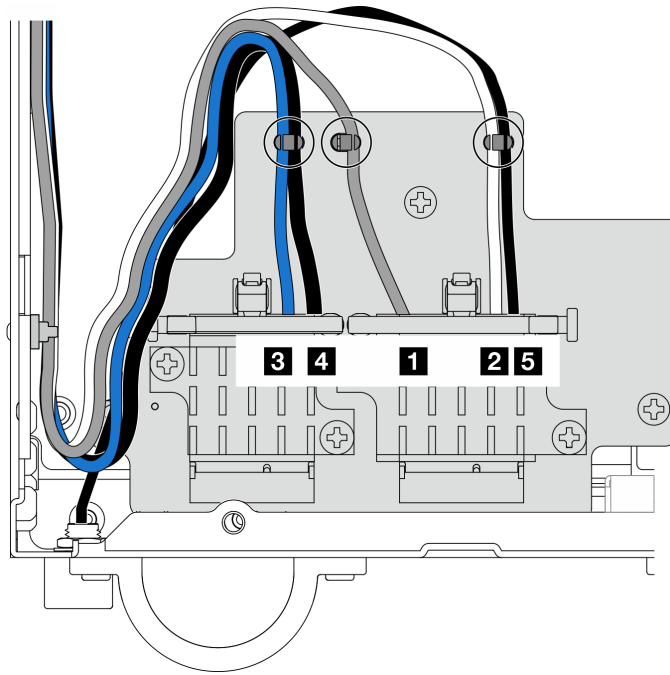


Figure 290. Cable routing for wireless adapter

**Note:** The orientation of the following table aligns with the above illustration.

Cable	<b>3</b> x86 WLAN #3	<b>4</b> x86 WLAN #4	<b>1</b> XCC WLAN #1	<b>2</b> XCC WLAN #2	<b>5</b> Bluetooth #5
Color	Blue	Black	Gray	White	Black
From	SMA connector 3	SMA connector 4	SMA connector 1	SMA connector 2	Bluetooth antenna
To	Connector 1 of x86 WLAN module	Connector 2 of x86 WLAN module	The left connector of XCC WLAN and Bluetooth module	The center connector of XCC WLAN and Bluetooth module	The right connector of XCC WLAN and Bluetooth module

- b. If applicable, remove the protection cover from the cable.
- c. Gently press the cable connector down until it clicks in the connector on the WLAN module.

**Note:** Repeat this step to connect all the necessary cables to the WLAN/Bluetooth modules.

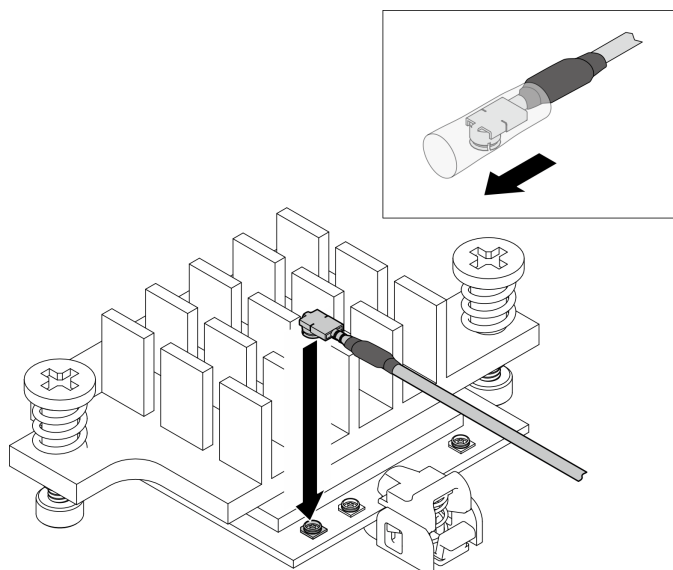


Figure 291. Connecting the cable

- d. Pivot the cable holder to **1** lock position.

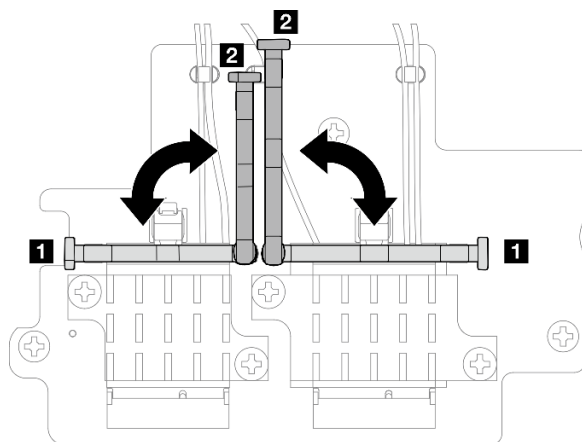


Figure 292. Pivoting the cable holder

- e. Press the side of the cable holder; then, insert the cable holder to the slot on the wireless adapter. Make sure the cables are secured by the cable holder.

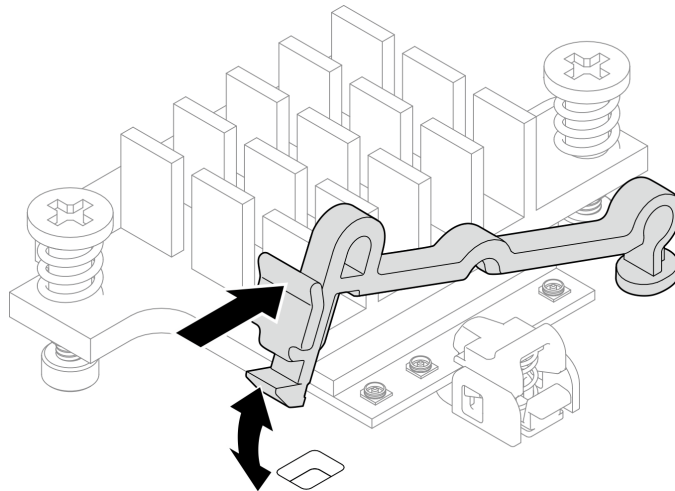


Figure 293. Inserting the cable holder

- f. Secure the cables into the cable clips on the wireless adapter; then, route the cables to the corner of the chassis.

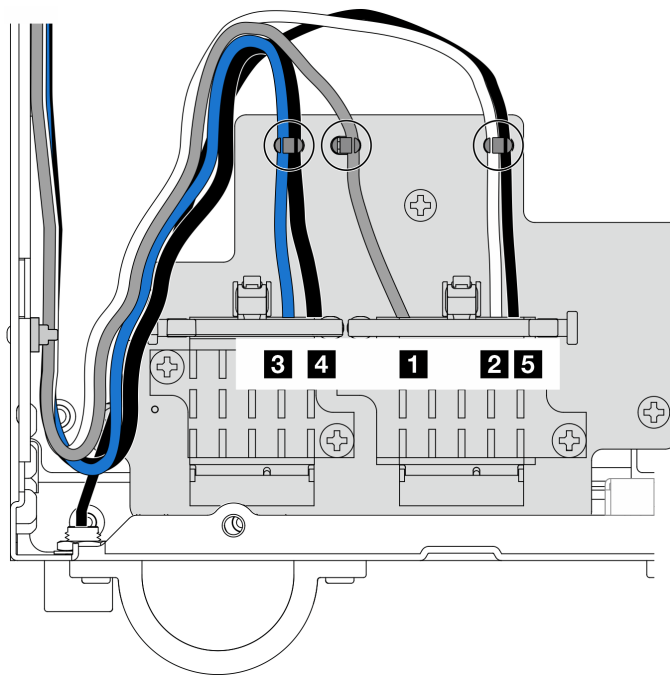


Figure 294. Cable routing for wireless adapter

### After this task is completed

Complete the parts replacement. See [“Complete the parts replacement” on page 281](#).

### Demo Video

[Watch the procedure on YouTube](#)

## WLAN antenna and SMA assembly replacement

Follow instructions in this section to remove and install the WLAN antennas and SMA assemblies.

### Remove the WLAN antennas

Follow instructions in this section to remove the WLAN antennas.

#### About this task

##### Attention:

- Read [“Installation Guidelines” on page 1](#) and [“Safety inspection checklist” on page 2](#) to ensure that you work safely.

#### Procedure

Step 1. Locate the WLAN antenna to be removed.

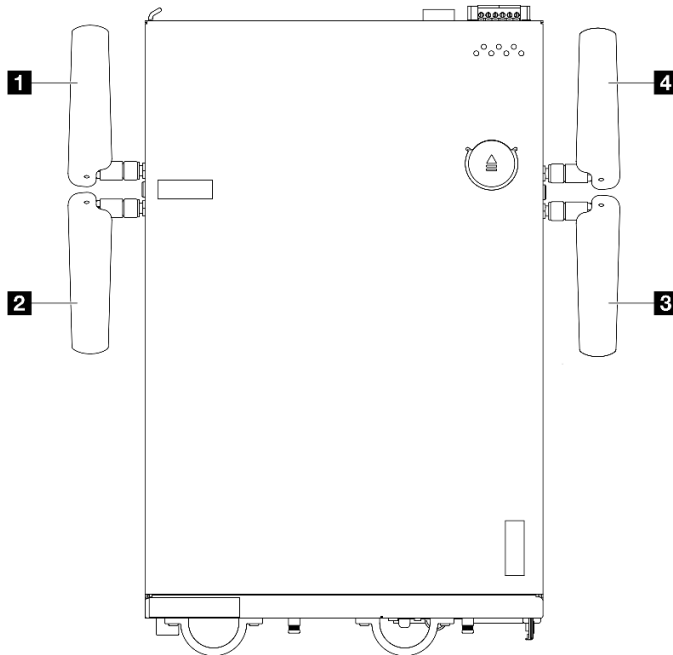


Figure 295. Locations of WLAN antennas

**Note:** The orientation of the following table aligns with the above illustration.

<b>1</b> Antenna 1 (XCC WLAN)	<b>4</b> Antenna 4 (x86 WLAN)
<b>2</b> Antenna 2 (XCC WLAN)	<b>3</b> Antenna 3 (x86 WLAN)

Step 2. Rotate the antenna counterclockwise; then, remove it from the node.

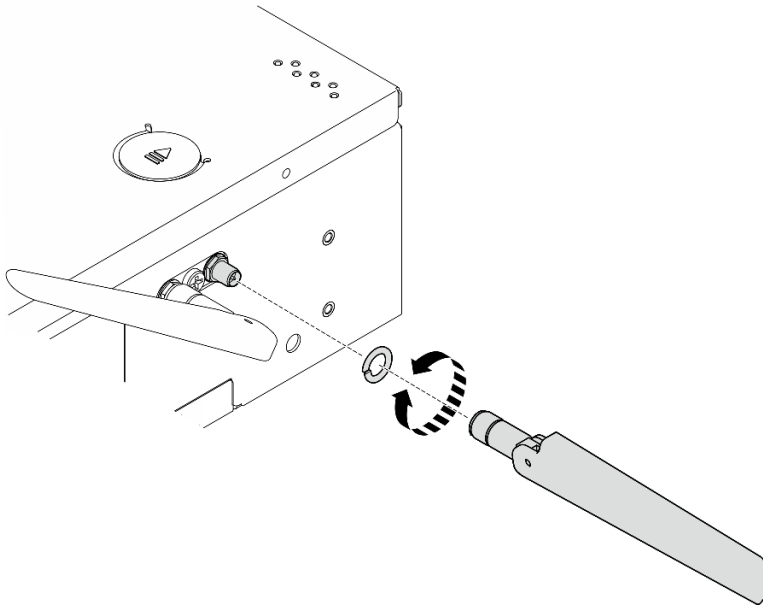


Figure 296. Removing a WLAN antenna

### After this task is completed

- Install a replacement unit. See [“Install the WLAN antennas” on page 278](#).
- If you are instructed to return the component or optional device, follow all packaging instructions, and use any packaging materials for shipping that are supplied to you.

### Demo Video

[Watch the procedure on YouTube](#)

### Remove the SMA assemblies

Follow instructions in this section to remove the SMA assemblies or SMA fillers.

#### S002



#### **CAUTION:**

The power-control button on the device and the power switch on the power supply do not turn off the electrical current supplied to the device. The device also might have more than one power cord. To remove all electrical current from the device, ensure that all power cords are disconnected from the power source.

### About this task

#### **Attention:**

- Read [“Installation Guidelines” on page 1](#) and [“Safety inspection checklist” on page 2](#) to ensure that you work safely.

- Power off the server and peripheral devices and disconnect the power cords and all external cables. See [“Power off the server” on page 8](#).
- If the node is installed in an enclosure or mounted, remove the node from the enclosure or mount. See [“Configuration guide” on page 9](#).

See the section corresponding to the SMA assembly or the SMA filler to be removed:

- [“Remove the PMB side SMA assembly or SMA filler” on page 259](#)
- [“Remove the processor side SMA assembly or SMA filler” on page 264](#)

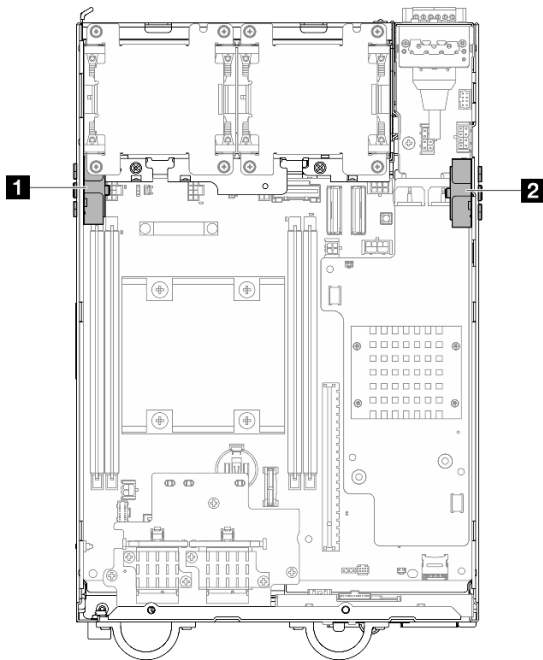


Figure 297. SMA assembly locations

<b>1</b> Processor side SMA assembly (SMA connector 1, 2)	<b>2</b> PMB side SMA assembly (SMA connector 3, 4)
---	---

**Note:** This task requires a wrench. If necessary, use the wrench that comes in the PMB air baffle. Loosen the screw that secures the wrench to disengage the wrench from the air baffle.

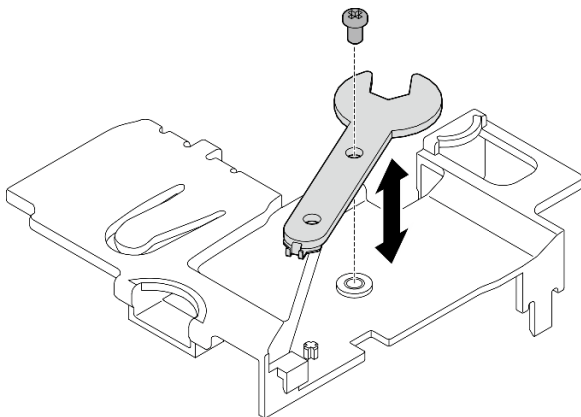


Figure 298. Disengaging the wrench

## Remove the PMB side SMA assembly or SMA filler

### Procedure

Step 1. Make preparation for this task.

- a. If applicable, remove the WLAN antennas. See [“Remove the WLAN antennas” on page 256](#).
- b. If applicable, turn the screw between the two SMA connectors clockwise to shorten the connectors into the chassis.

**Note:** Make sure that the SMA connectors are shortened into the chassis; if the SMA connectors are extended and out of the chassis, the SMA assembly can not be removed successfully.

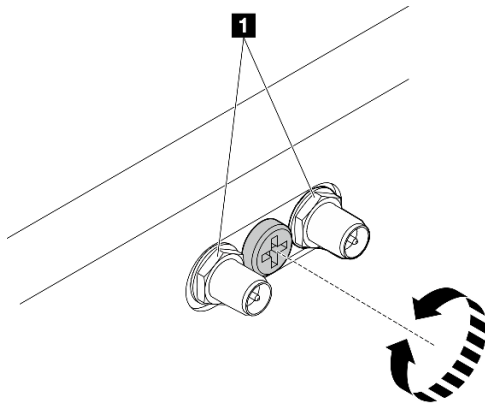


Figure 299. Shortening the SMA connectors

**1** SMA connectors

- c. Remove the top cover. See [“Remove the top cover” on page 154](#).
- d. Remove the PMB air baffle. See [“Remove the PMB air baffle” on page 62](#).
- e. Lift the riser assembly from the node. See [“Remove the riser assembly from the node” on page 186](#).

Step 2. Depending on the model, remove the SMA assembly or the SMA filler.

- a. For the model without wireless module, remove the SMA filler.
  1. **1** Loosen the screw that secures the SMA filler.
  2. **2** Lift the SMA filler to remove it.

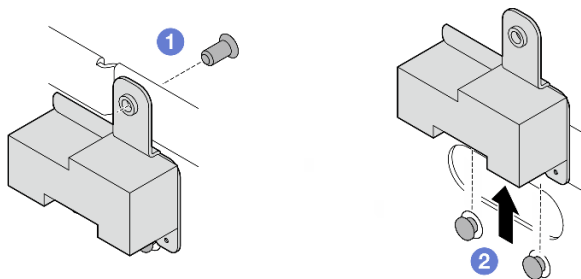


Figure 300. Removing the SMA filler

- b. For the model with wireless module, go to [Step 3 on page 260](#) to remove the SMA assembly.

- Step 3. Locate the cables of PMB side SMA assembly on the wireless adapter.
- Step 4. Disconnect the cables from the WLAN/Bluetooth module.
- Pinch and press the side of the cable holder; then, lift up one end of the cable holder from the wireless adapter.

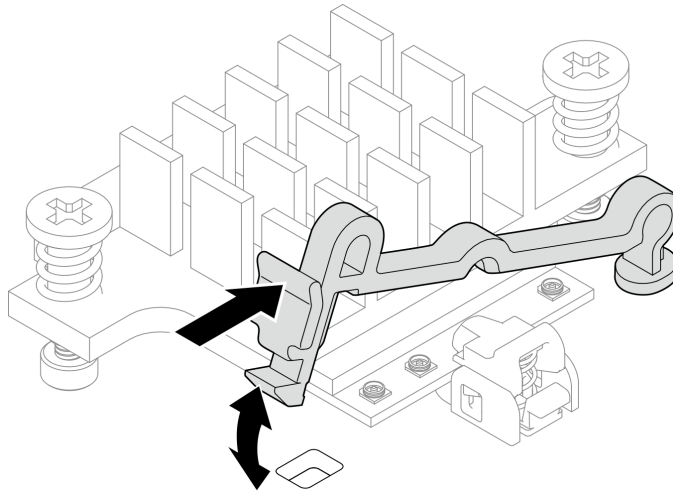


Figure 301. Lifting the cable holder

- Pivot the cable holder to **2** unlock position.

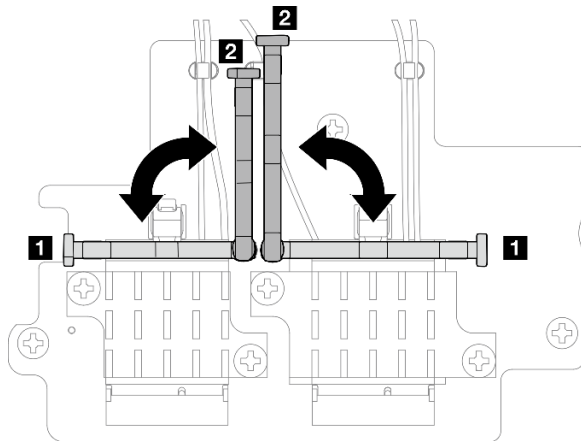


Figure 302. Pivoting the cable holder

- Hook the cable with the wrench as shown; then, gently remove the cable from the connector and the cable clip.

**Note:** Repeat this step to remove the other cable of PMB side SMA assembly from the wireless adapter.



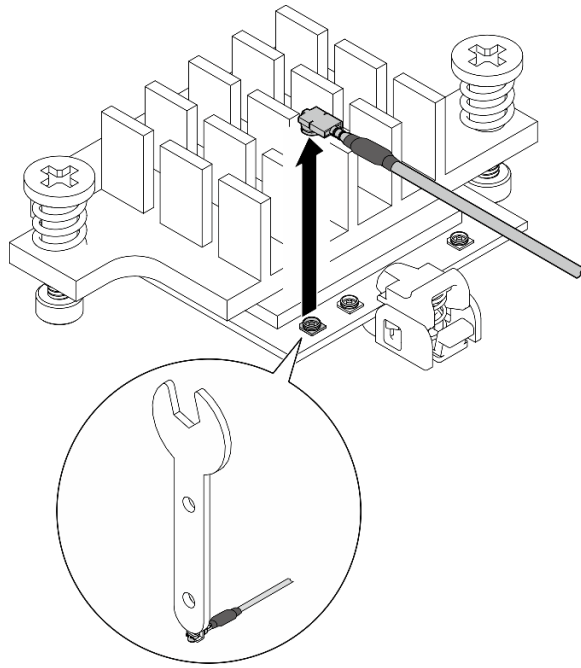


Figure 303. Disconnecting the cable

- d. Pivot the cable holder to **1** lock position.

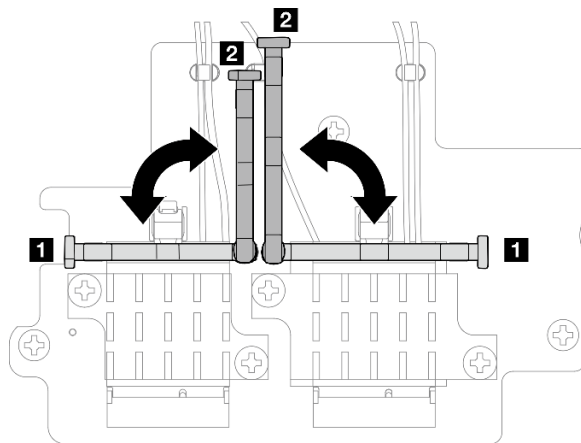


Figure 304. Pivoting the cable holder

- e. Press the side of the cable holder; then, insert the cable holder to the slot on the wireless adapter.

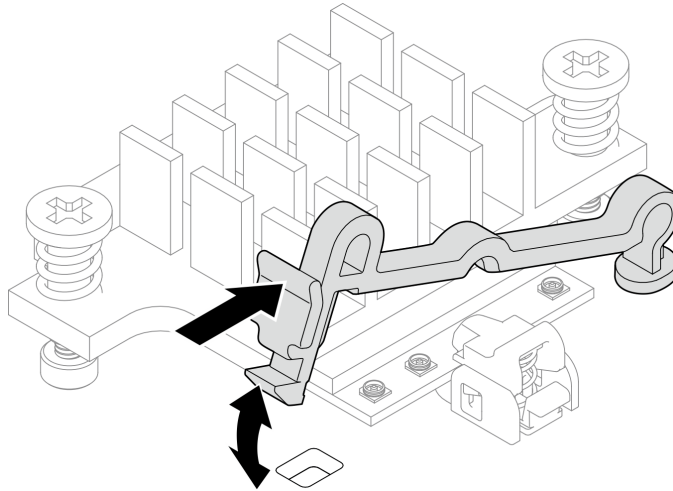


Figure 305. Inserting the cable holder

Step 5. Gently remove the cables from the cable guide and the cable clip on the chassis.

**Notes:** If necessary, disconnect the following cables from the system board for easier operation.

- Fan cables
- Fan direction switch cable
- Intrusion switch cable

Step 6. Remove the SMA assembly from the node.

- a. ① Loosen the screw that secures the SMA assembly.
- b. ② Lift the SMA assembly to remove it.

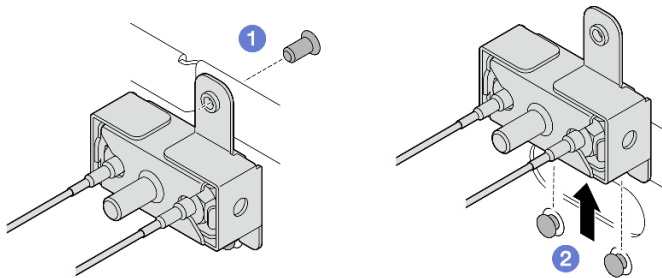


Figure 306. Removing the SMA assembly

Step 7. Loosen the screw that secures the bracket; then, separate the bracket from the SMA assembly.

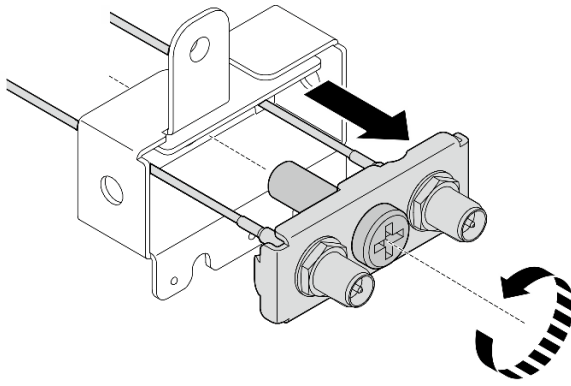


Figure 307. Removing the bracket

Step 8. Loosen the cables with the wrench; then, remove the cables from the bracket.

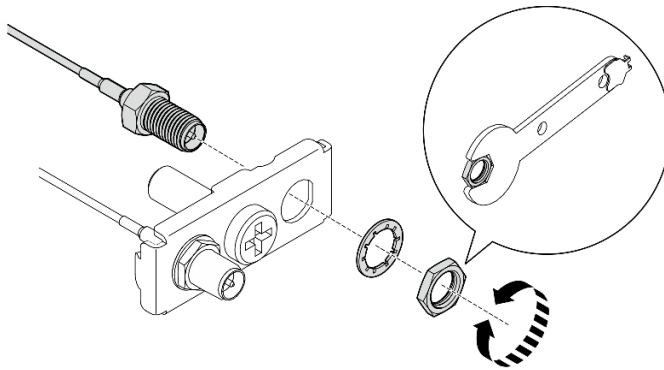


Figure 308. Loosening the cables from the bracket

### After this task is completed

- Install a replacement unit. See [“Install the SMA assemblies” on page 269](#).
- After completing the task with the wrench that comes in the PMB air baffle, store the wrench back to the PMB air baffle for future use, and secure the wrench with one screw.

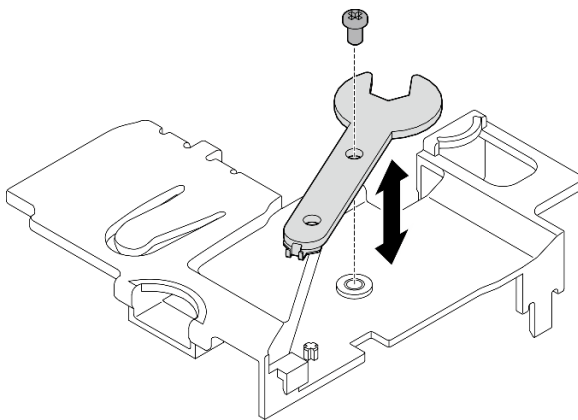


Figure 309. Storing the wrench

- If you are instructed to return the component or optional device, follow all packaging instructions, and use any packaging materials for shipping that are supplied to you.

## Demo Video

[Watch the procedure on YouTube](#)

## Remove the processor side SMA assembly or SMA filler

### Procedure

Step 1. Make preparation for this task.

- a. If applicable, remove the WLAN antennas. See [“Remove the WLAN antennas” on page 256](#).
- b. If applicable, turn the screw between the two SMA connectors clockwise to shorten the connectors into the chassis.

**Note:** Make sure that the SMA connectors are shortened into the chassis; if the SMA connectors are extended and out of the chassis, the SMA assembly can not be removed successfully.

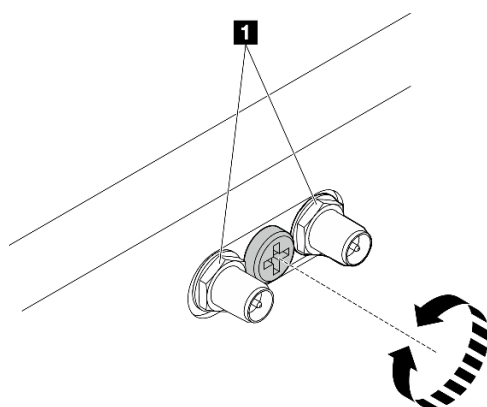


Figure 310. Shortening the SMA connectors

1 SMA connectors

- c. Remove the top cover. See [“Remove the top cover” on page 154](#).
- d. Remove the PMB air baffle. See [“Remove the PMB air baffle” on page 62](#).
- e. Lift the riser assembly from the node. See [“Remove the riser assembly from the node” on page 186](#).
- f. Remove the processor air baffle. See [“Remove the processor air baffle and air flow sensor board” on page 65](#).
- g. Remove the top intrusion switch with cable. See [“Remove the top intrusion switch with cable” on page 116](#).
- h. Remove the memory modules from DIMM slot 1 and DIMM slot 2. See [“Remove a memory module” on page 144](#).

Step 2. Depending on the model, remove the SMA assembly or the SMA filler.

- a. For the model without wireless module, remove the SMA filler.
  1. ① Loosen the screw that secures the SMA filler.
  2. ② Lift the SMA filler to remove it.

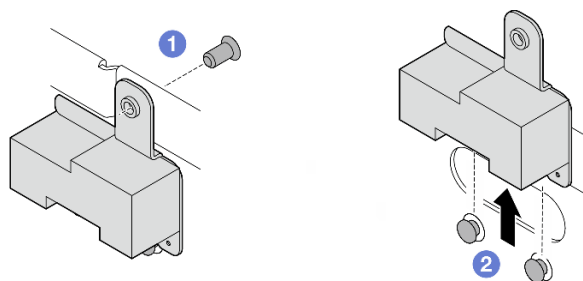


Figure 311. Removing the SMA filler

- b. For the model with wireless module, go to [Step 3 on page 265](#) to remove the SMA assembly.

Step 3. Locate the cables of processor side SMA assembly on the wireless adapter.

Step 4. Disconnect the cables from the WLAN/Bluetooth module.

- a. Pinch and press the side of the cable holder; then, lift up one end of the cable holder from the wireless adapter.

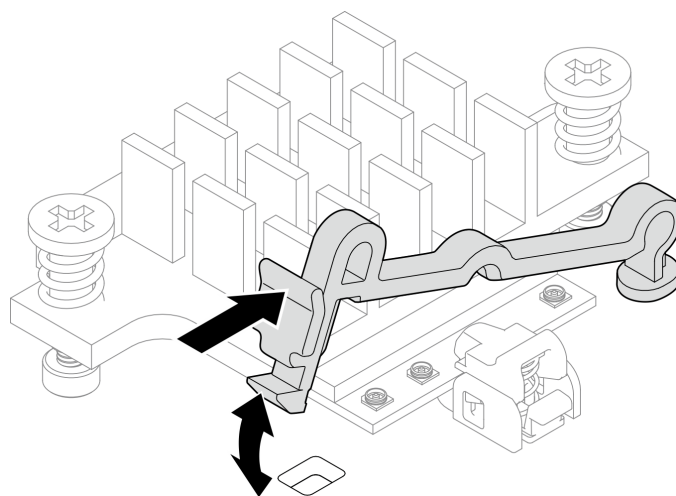


Figure 312. Lifting the cable holder

- b. Pivot the cable holder to **2** unlock position.

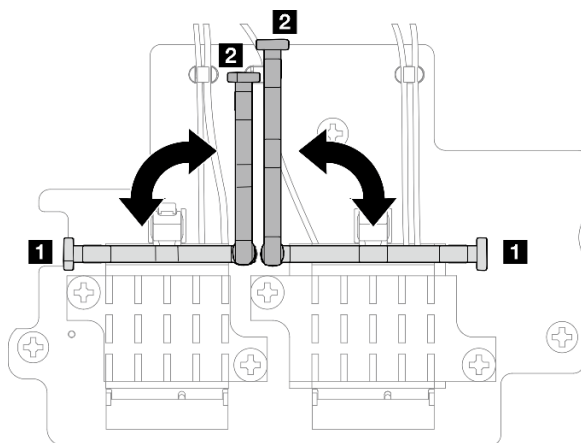


Figure 313. Pivoting the cable holder

- c. Hook the cable with the wrench as shown; then, gently remove the cable from the connector and the cable clip.

**Note:** Repeat this step to remove the other cable of processor side SMA assembly from the wireless adapter.

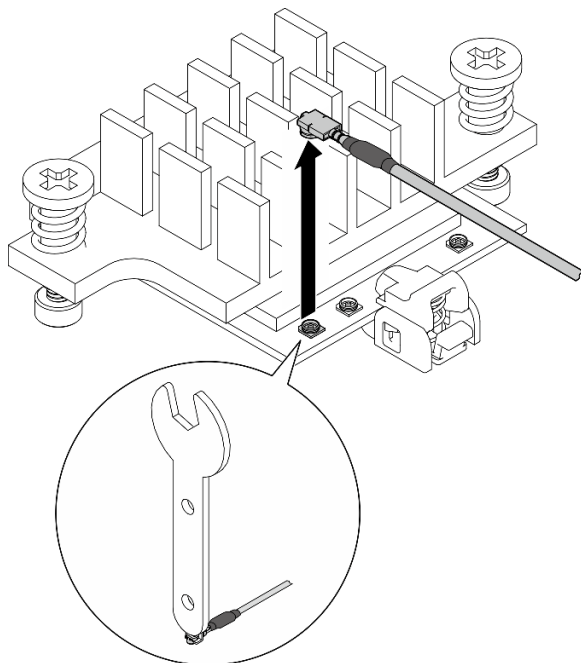


Figure 314. Disconnecting the cable

- d. Pivot the cable holder to **1** lock position.

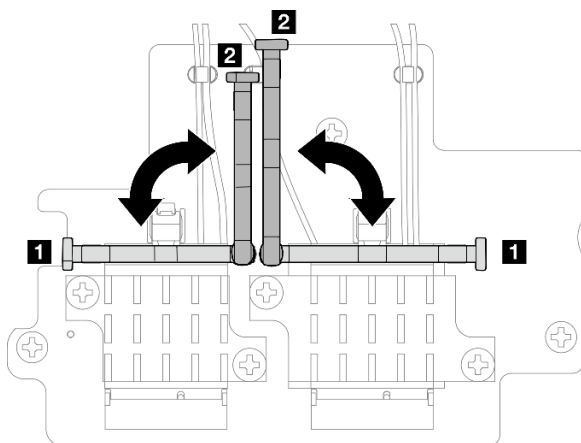


Figure 315. Pivoting the cable holder

- e. Press the side of the cable holder; then, insert the cable holder to the slot on the wireless adapter.

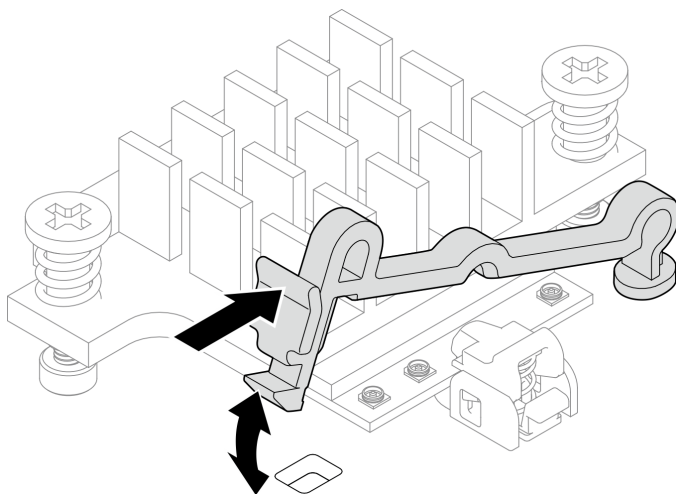


Figure 316. Inserting the cable holder

Step 5. Gently remove the cables from the cable guide and the cable clip on the chassis.

Step 6. Remove the SMA assembly from the node.

- a. ① Loosen the screw that secures the SMA assembly.
- b. ② Lift the SMA assembly to remove it.

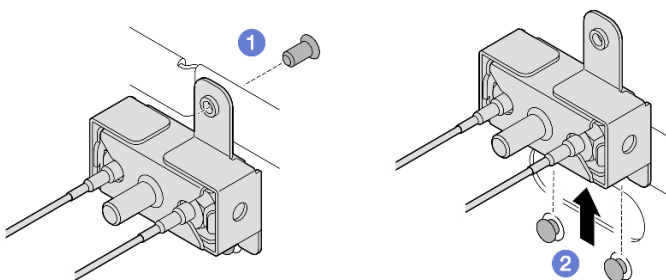


Figure 317. Removing the SMA assembly

Step 7. Loosen the screw that secures the bracket; then, separate the bracket from the SMA assembly.

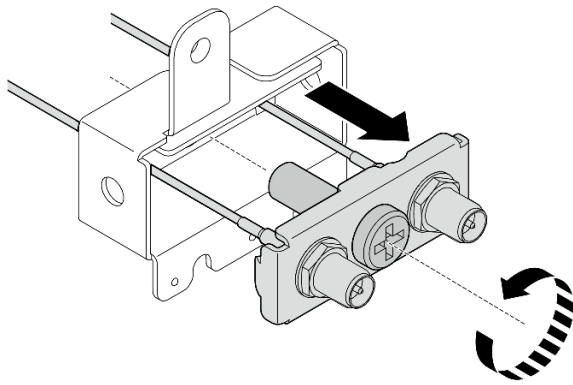


Figure 318. Removing the bracket

Step 8. Loosen the cables with the wrench; then, remove the cables from the bracket.

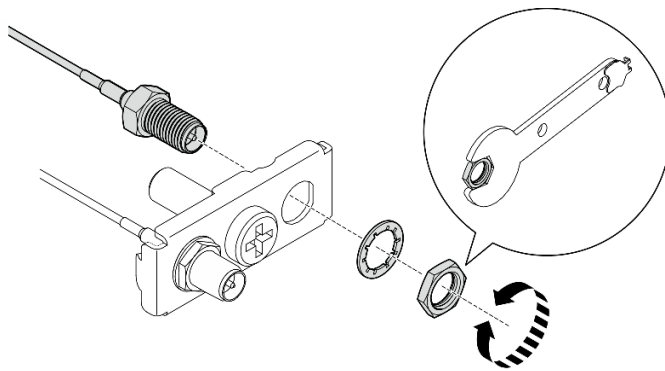


Figure 319. Loosening the cables from the bracket

### After this task is completed

- Install a replacement unit. See [“Install the SMA assemblies” on page 269](#).
- After completing the task with the wrench that comes in the PMB air baffle, store the wrench back to the PMB air baffle for future use, and secure the wrench with one screw.

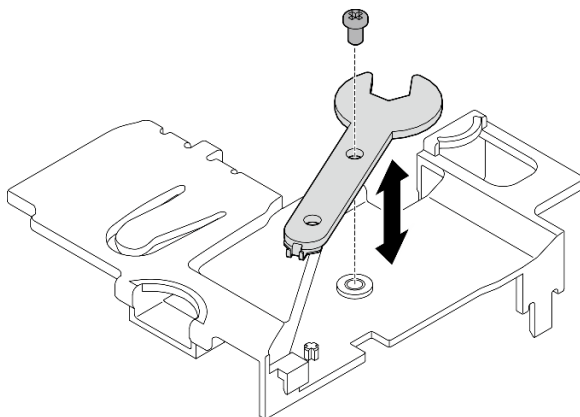


Figure 320. Storing the wrench



- If you are instructed to return the component or optional device, follow all packaging instructions, and use any packaging materials for shipping that are supplied to you.

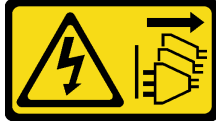
## Demo Video

[Watch the procedure on YouTube](#)

## Install the SMA assemblies

Follow instructions in this section to install the SMA assemblies or SMA fillers.

### S002



#### CAUTION:

The power-control button on the device and the power switch on the power supply do not turn off the electrical current supplied to the device. The device also might have more than one power cord. To remove all electrical current from the device, ensure that all power cords are disconnected from the power source.

## About this task

#### Attention:

- Read “[Installation Guidelines](#)” on page 1 and “[Safety inspection checklist](#)” on page 2 to ensure that you work safely.
- Touch the static-protective package that contains the component to any unpainted metal surface on the server; then, remove it from the package and place it on a static-protective surface.

## Procedure

Step 1. Depending on the model, install the SMA assemblies or SMA fillers.

- For models without wireless module, install the SMA fillers.
  - 1 Align the notches of the SMA filler with the guide pins on the chassis; then, carefully lower the SMA filler until it is firmly seated.
  - 2 Secure the SMA filler with one screw.

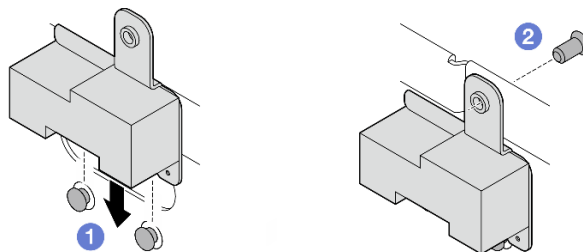


Figure 321. Installing the SMA filler

- For models with wireless module, complete the following steps to install SMA assemblies..

**Note:** This task requires a wrench. If necessary, use the wrench that comes in the PMB air baffle. Loosen the screw that secures the wrench to disengage the wrench from the air baffle.

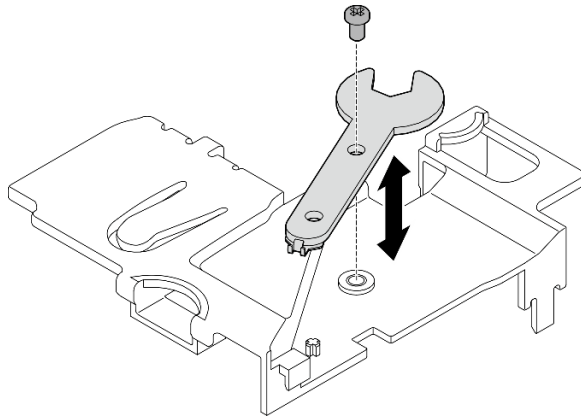


Figure 322. Disengaging the wrench

Step 2. Locate the SMA assembly to be installed:

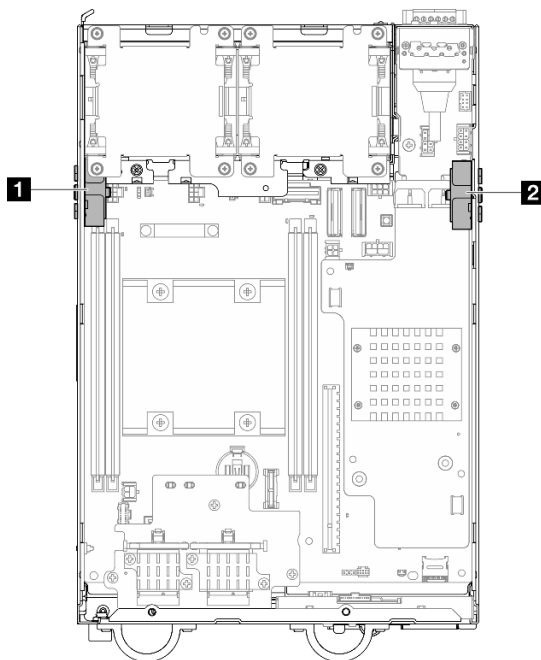


Figure 323. SMA assembly locations

<b>1</b> Processor side SMA assembly (SMA connector 1, 2)	<b>2</b> PMB side SMA assembly (SMA connector 3, 4)
---	---

Step 3. If the bracket is secured to the SMA assembly, loosen the screw that secure the bracket; then, separate the bracket from the SMA assembly.

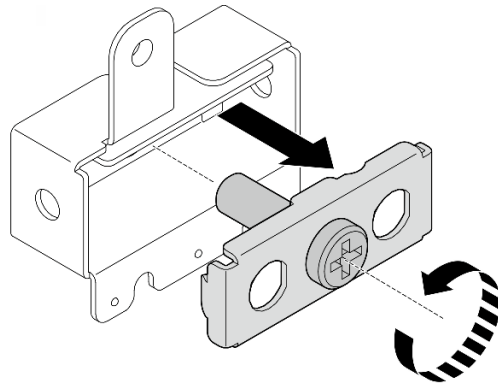


Figure 324. Removing the bracket

Step 4. Fasten the cables to the bracket with the wrench.

- For the processor side SMA assembly: Fasten the gray cable (XCC WLAN #1) and the white cable (XCC WLAN #2).
- For PMB side SMA assembly: Fasten the blue cable (x86 WLAN #3) and the black cable (x86 WLAN #4).

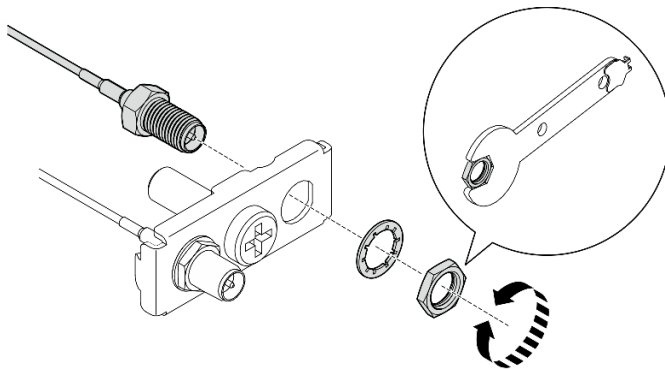
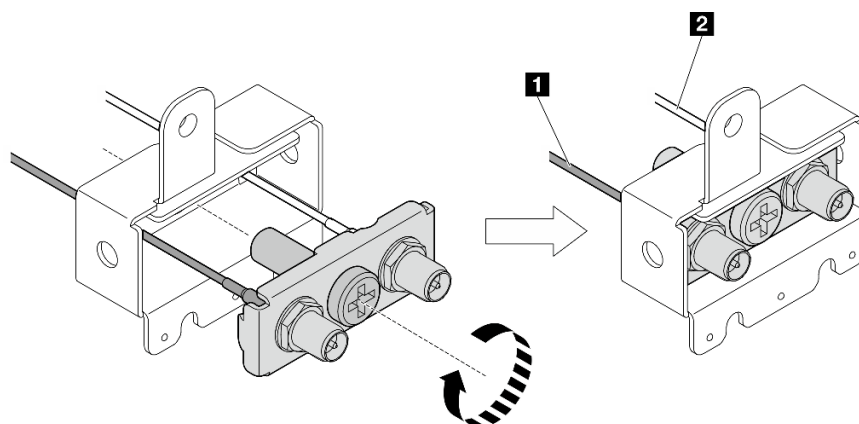


Figure 325. Fastening the cables to the bracket

Step 5. Insert the bracket into the SMA assembly until it is firmly seated; then, secure the bracket with one screw.

**Important:**

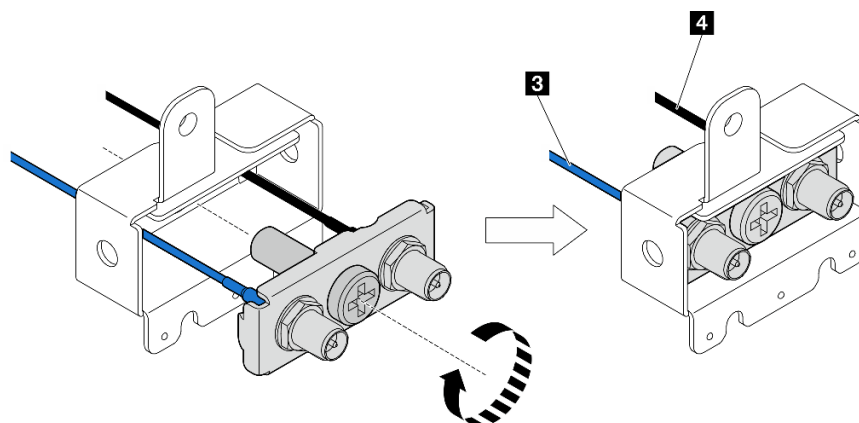
- Fully fasten the screw until the SMA connectors are inside the SMA assembly. If the SMA connectors are out of the SMA assembly, the SMA assembly can not be installed successfully.
- Make sure the order of the cables is as shown in the following illustrations.
  - For the processor side SMA assembly:



**1 The gray cable (XCC WLAN #1)**

**2 The white cable (XCC WLAN #2)**

- For the PMB side SMA assembly:



**3 The blue cable (x86 WLAN #3)**

**4 The black cable (x86 WLAN #4)**

Step 6. Install the SMA assembly.

- 1 Align the notches of the SMA assembly with the guide pins on the chassis; then, carefully lower the SMA assembly until it is firmly seated.
- 2 Secure the SMA assembly with one screw.

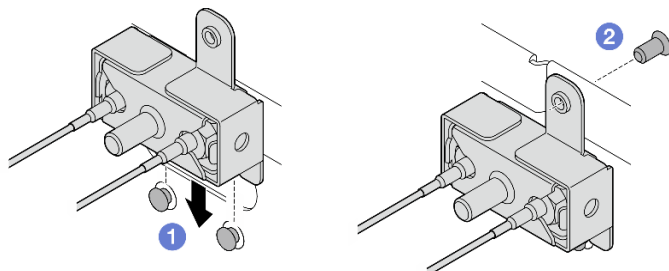


Figure 326. Installing the SMA assembly

Step 7. Route the cables.

- a. For the cables of PMB side SMA assembly, secure the cables into the cable clip on the chassis; then, route the cables into the cable guide on the side of the chassis.
- Notes:** If necessary, disconnect the following cables from the system board for easier operation.
- Fan cables
  - Fan direction switch cable
  - Intrusion switch cable
- b. For the cables of processor side SMA assembly, route the cables into the cable guide on the side of the chassis.
  - c. Secure the cables into the cable clip near to the wireless adapter.

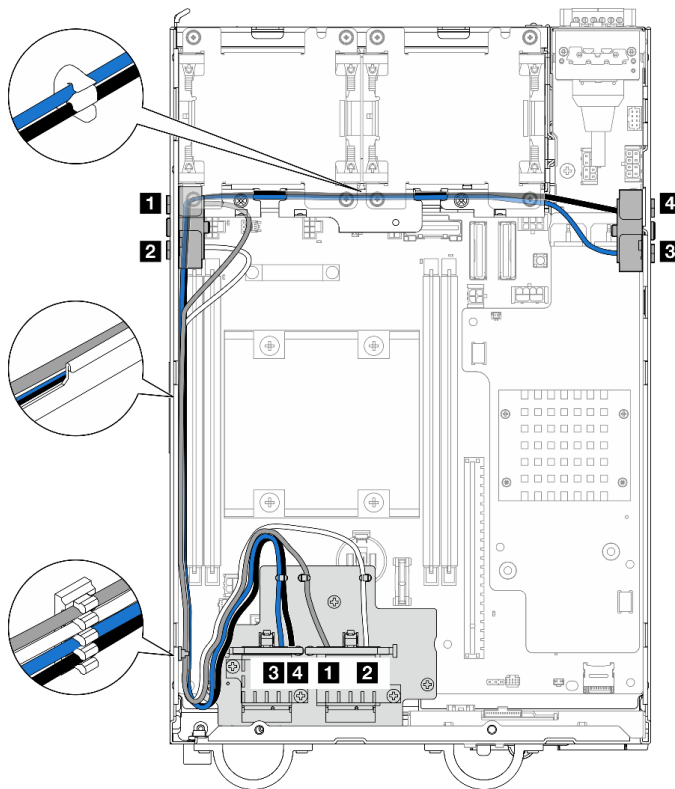


Figure 327. Cable routing for the SMA assemblies

**Note:** The orientation of the following table aligns with the above illustration.

Cable	3 x86 WLAN #3	4 x86 WLAN #4	1 XCC WLAN #1	2 XCC WLAN #2
Color	Blue	Black	Gray	White
From	SMA connector 3	SMA connector 4	SMA connector 1	SMA connector 2
To	Connector 1 of x86 WLAN module	Connector 2 of x86 WLAN module	The left connector of XCC WLAN and Bluetooth module	The center connector of XCC WLAN and Bluetooth module

Step 8. Connect the cables to the wireless adapter.

- a. Pinch and press the side of the cable holder; then, lift up one end of the cable holder from the wireless adapter.

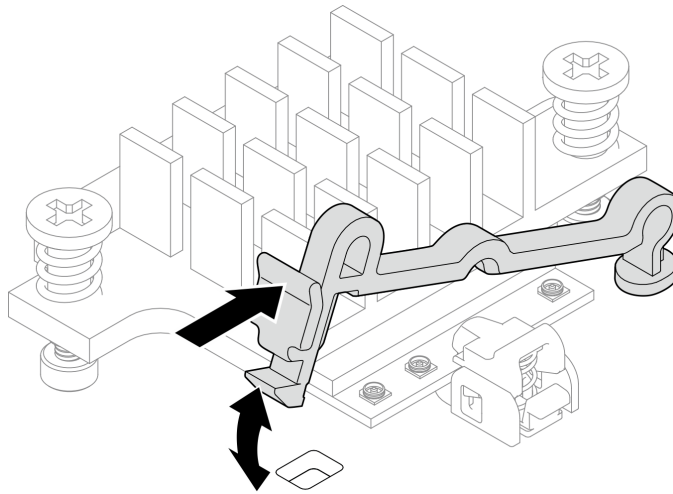


Figure 328. Lifting the cable holder

- b. Pivot the cable holder to **2** unlock position.

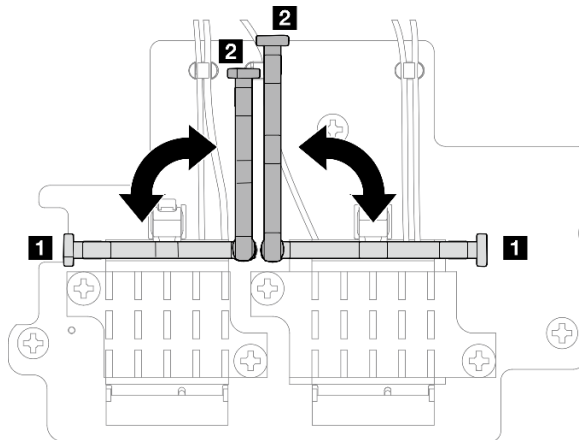


Figure 329. Pivoting the cable holder

- c. Locate the corresponding connector.

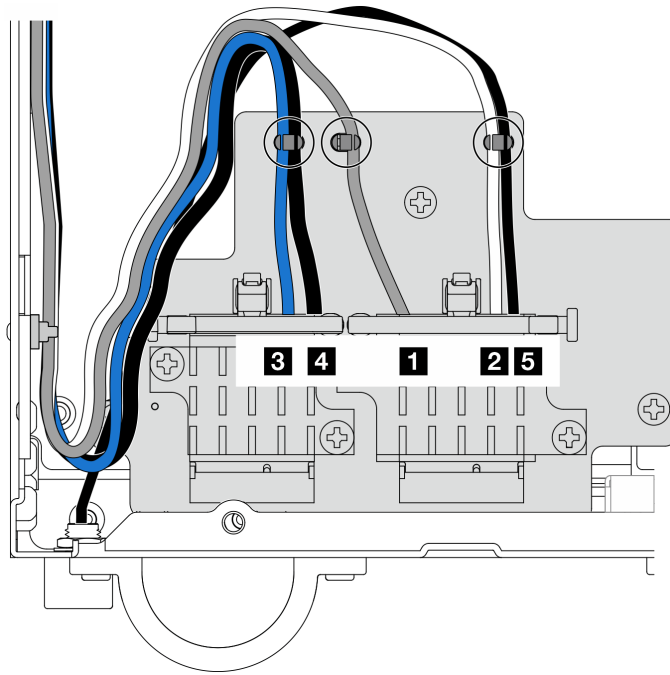


Figure 330. Cable routing for wireless adapter

**Note:** The orientation of the following table aligns with the above illustration.

Cable	<b>3</b> x86 WLAN #3	<b>4</b> x86 WLAN #4	<b>1</b> XCC WLAN #1	<b>2</b> XCC WLAN #2	<b>5</b> Bluetooth #5
Color	Blue	Black	Gray	White	Black
From	SMA connector 3	SMA connector 4	SMA connector 1	SMA connector 2	Bluetooth antenna
To	Connector 1 of x86 WLAN module	Connector 2 of x86 WLAN module	The left connector of XCC WLAN and Bluetooth module	The center connector of XCC WLAN and Bluetooth module	The right connector of XCC WLAN and Bluetooth module

- d. If applicable, remove the protection cover from the cable.
- e. Gently press the cable connector down until it clicks in the connector on the WLAN module.

**Note:** Repeat this step to connect all the necessary cables to the WLAN/Bluetooth modules.

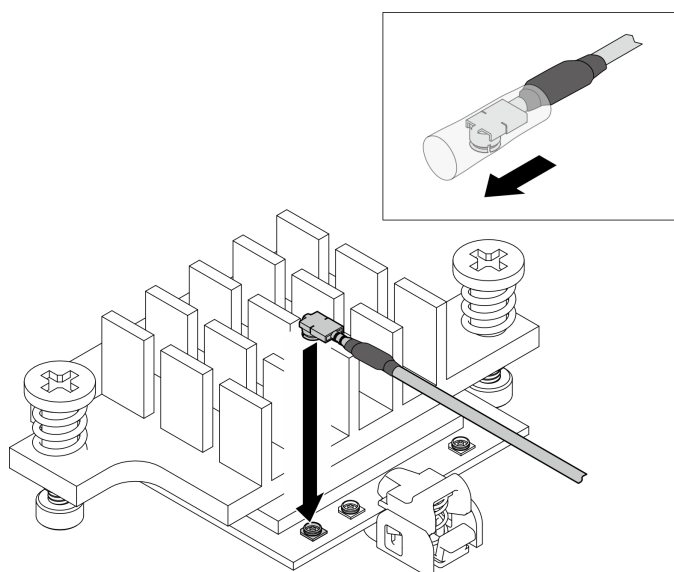


Figure 331. Connecting the cable

- f. Pivot the cable holder to **1** lock position.

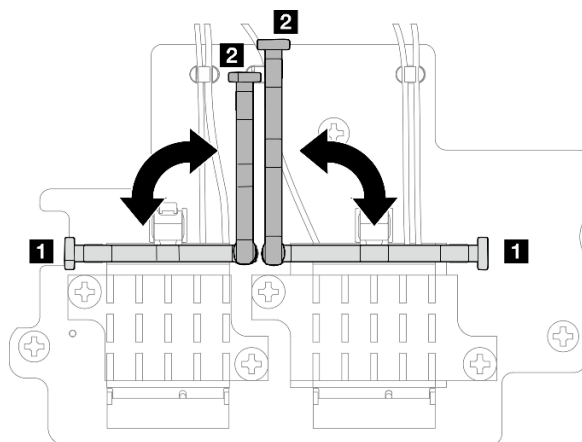


Figure 332. Pivoting the cable holder

- g. Press the side of the cable holder; then, insert the cable holder to the slot on the wireless adapter. Make sure the cables are secured by the cable holder.



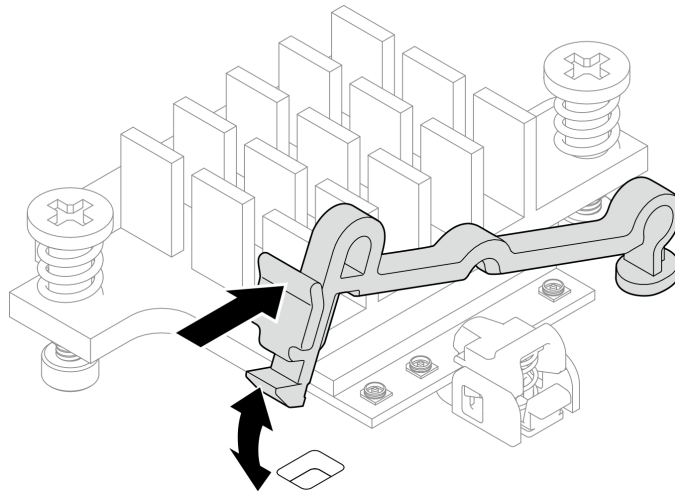


Figure 333. Inserting the cable holder

- h. Secure the cables into the cable clips on the wireless adapter; then, route the cables to the corner of the chassis.

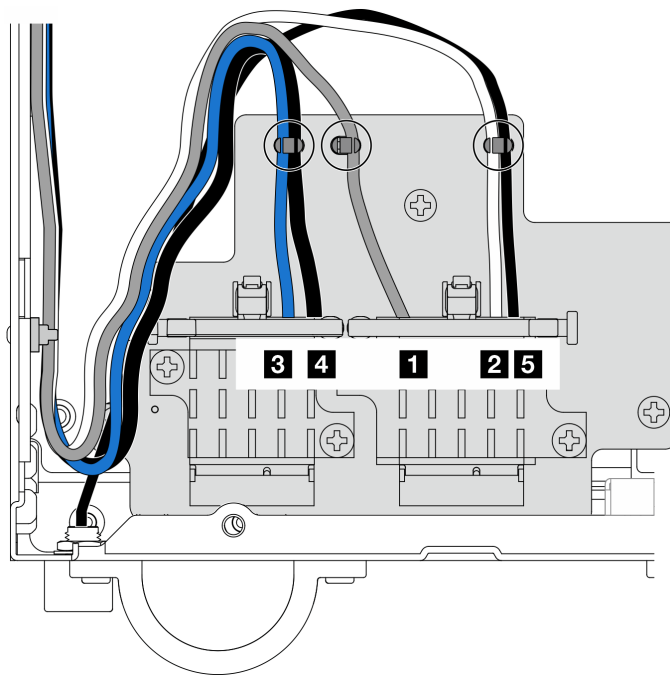


Figure 334. Cable routing for wireless adapter

### After this task is completed

- After completing the task with the wrench that comes in the PMB air baffle, store the wrench back to the PMB air baffle for future use, and secure the wrench with one screw.

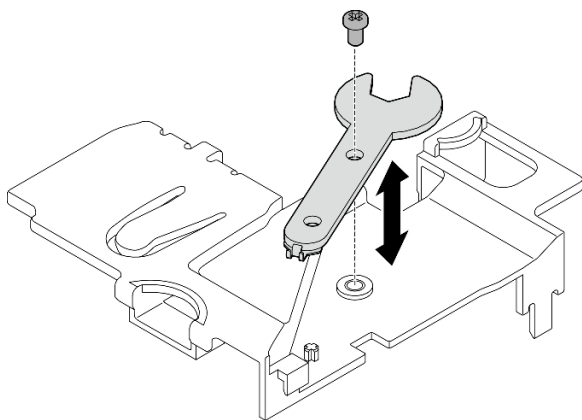


Figure 335. Storing the wrench

- If applicable, reconnect the following cables.
  - Fan cables
  - Fan direction switch cable
  - Intrusion switch cable
- Complete the parts replacement. See [“Complete the parts replacement” on page 281](#).

## Demo Video

[Watch the procedure on YouTube](#)

## Install the WLAN antennas

Follow instructions in this section to install the WLAN antennas.

### About this task

#### Attention:

- Read [“Installation Guidelines” on page 1](#) and [“Safety inspection checklist” on page 2](#) to ensure that you work safely.
- Touch the static-protective package that contains the component to any unpainted metal surface on the server; then, remove it from the package and place it on a static-protective surface.

## Procedure

Step 1. Locate the corresponding connector to install the WLAN antenna.

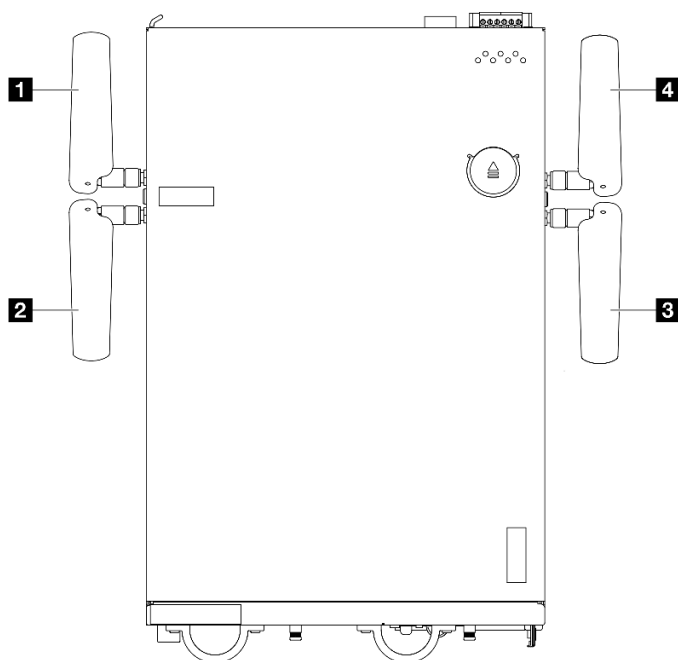


Figure 336. Locations of WLAN antennas

**Note:** The orientation of the following table aligns with the above illustration.

<b>1</b> Antenna 1 (XCC WLAN)	<b>4</b> Antenna 4 (x86 WLAN)
<b>2</b> Antenna 2 (XCC WLAN)	<b>3</b> Antenna 3 (x86 WLAN)

Step 2. Make sure the corresponding SMA assembly is installed properly. See [“Install the SMA assemblies” on page 269](#).

Step 3. Make sure the SMA connectors are fully extended. If necessary, turn the screw between the two SMA connectors counterclockwise to extend the SMA connectors.

**Important:** When the SMA connectors are fully extended as shown in the following illustration, **STOP** turning the screw counterclockwise. Turning the screw excessively might cause damage to the components.

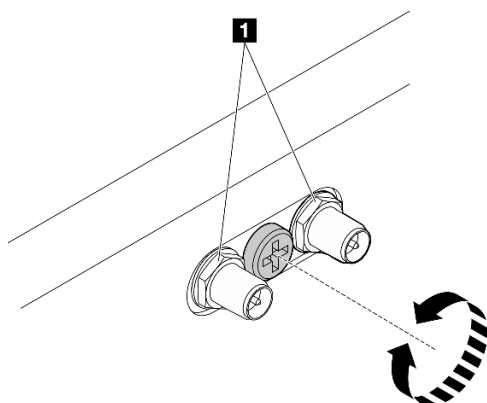
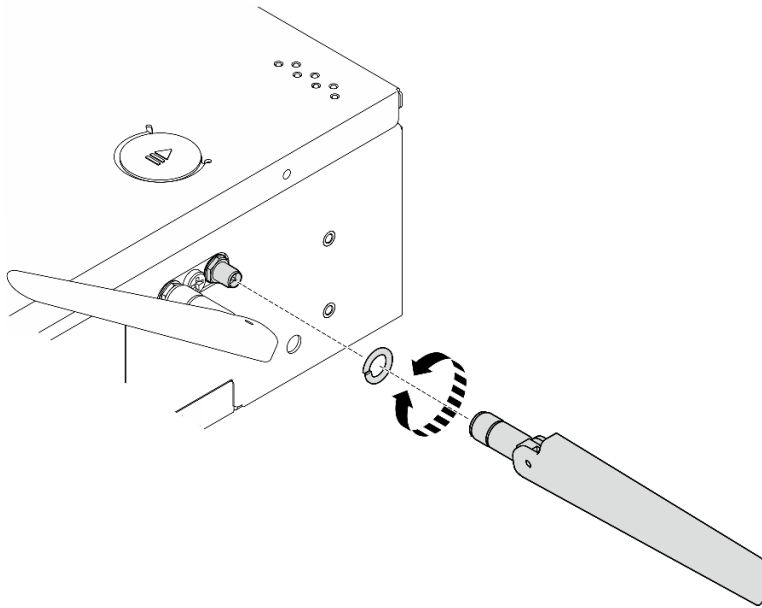


Figure 337. Extending the SMA connectors

- Step 4. Place a washer between the antenna and the server if necessary; then, rotate the antenna clockwise until it is firmly secured to the chassis.

**Note:** The suggested fastening torque is 3.5 Kgf-cm.

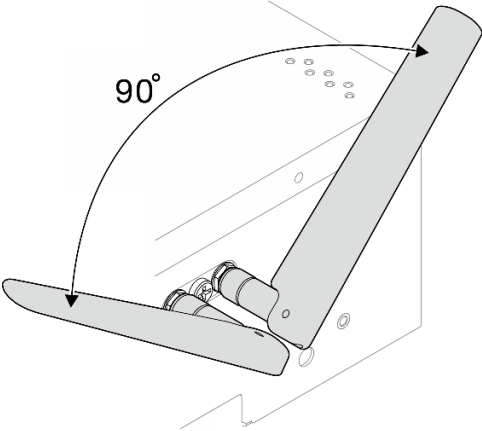
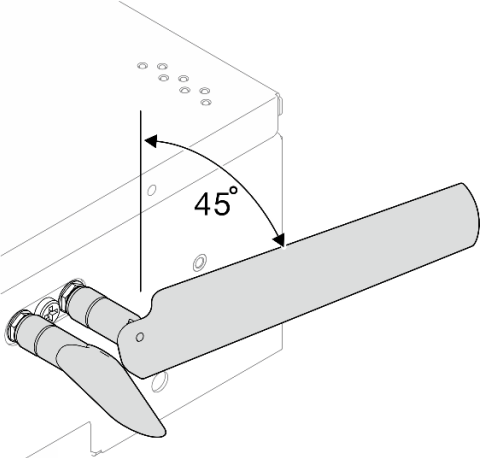


*Figure 338. Installing a WLAN antenna*

**Note:** The optional kit of antenna comes with a washer. However, the washer is an optional part that enhances friction, and is not required in general scenarios. Consider applying it when necessary.

### **After this task is completed**

- Adjust the angle of the antennas according to the operating environment for better performance.

Minimal requirement	Recommended angle
 <p>Keep two WLAN antennas away from each other at an angle not less than 90° to avoid signal interference.</p>	 <p>For better performance, adjust the antennas away from the chassis at a 45° angle.</p>

- Complete the parts replacement. See [“Complete the parts replacement” on page 281](#).

## Demo Video

[Watch the procedure on YouTube](#)

## Complete the parts replacement

Go through the checklist to complete parts replacement

To complete the parts replacement, do the following:

1. Make sure that all components have been reassembled correctly and that no tools or loose screws are left inside your server.
2. Properly route and secure the cables in the server. Refer to the cable connecting and routing information for each component.
3. Reinstall the air baffles. See [“Air baffle and air flow sensor board replacement” on page 60](#).

**Note:** For proper cooling and airflow, reinstall the air baffle before powering on the server. Operating the server with the air baffle removed might damage server components.

4. Reinstall the top cover. See [“Install the top cover” on page 157](#).
5. Reinstall the bottom cover. See [“Install the bottom cover” on page 160](#).
6. If necessary, reinstall the node to the enclosure or mount. See [“Configuration guide” on page 9](#).
7. Reconnect the power cords and any cables that you removed.
8. Install the I/O fillers when the connectors are not used. The connectors could be damaged without proper protection of the fillers. See “Front I/O fillers” and “Rear I/O filler” in *User Guide* or *System Configuration Guide*.
9. If applicable, install the header when the power connector is not used. The connector could be damaged without proper protection.
  - a. Locate the power connector. See “Rear view” in *User Guide* or *System Configuration Guide*.

- b. Insert the header to the power connector which is not used.
- c. Fasten two captive screws to secure the header.

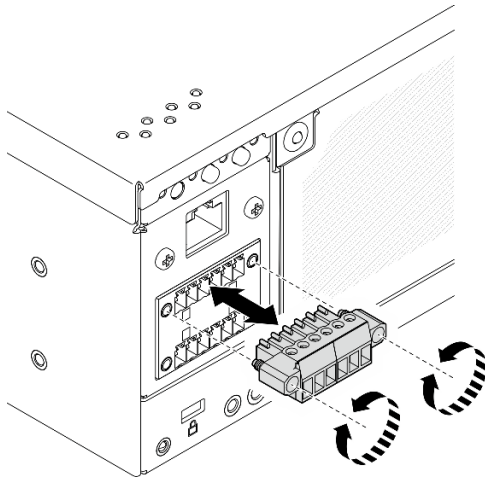


Figure 339. Installing the header

10. If the security LED of the server is blinking, activate or unlock the system. See *Activate or unlock the system* in *User Guide* or *System Configuration Guide*.
11. Power on the server and any peripheral devices. See [“Power on the server” on page 8](#).
12. Update the server configuration.
  - Download and install the latest device drivers: <http://datacentersupport.lenovo.com>.
  - Update the system firmware. See “Update the firmware” in *User Guide* or *System Configuration Guide*.
  - Update the UEFI configuration. See <https://pubs.lenovo.com/uefi-overview/>.
  - Reconfigure the disk arrays if you have installed or removed a hot-swap drive or a RAID adapter. See <https://pubs.lenovo.com/lxpm-overview/> for the LXPM documentation compatible with your server.

## Chapter 2. Internal cable routing

See this section to do cable routing for specific components.

**Note:** Disengage all latches, release tabs, or locks on cable connectors when you disconnect cables from the system board. Failing to release them before removing the cables will damage the cable sockets on the system board, which are fragile. Any damage to the cable sockets might require replacing the system board.

### Identifying connectors

See this section to locate and identify the connectors on the electric boards.

### System-board connectors for cable routing

The following illustrations show the internal connectors on the system board that are used for internal cable routing.

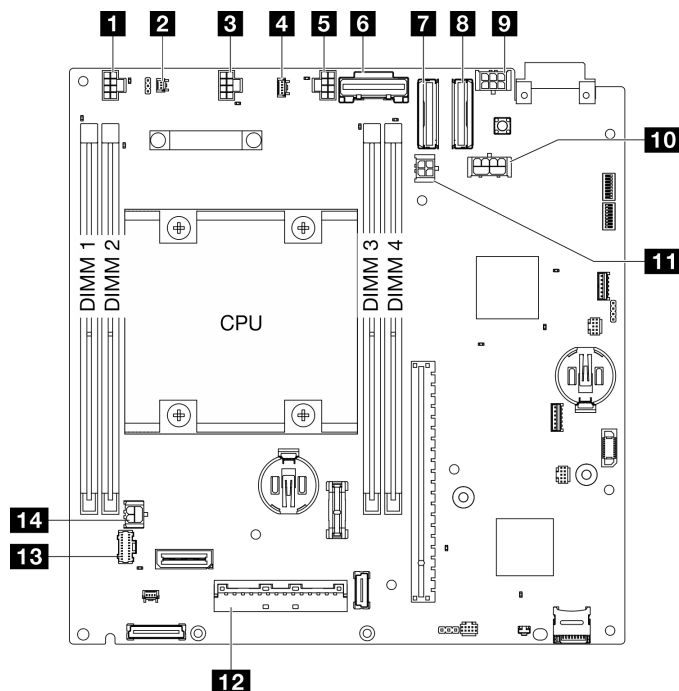


Figure 340. System-board connectors

Table 6. System-board connectors

<b>1</b> Air flow switch connector	<b>8</b> PCIe Gen 4 MCIO 2 connector
<b>2</b> Intrusion switch connector	<b>9</b> M.2 cabled adapter / PCIe cabled riser card power connector
<b>3</b> Fan 1 connector	<b>10</b> GPU power connector
<b>4</b> Air flow sensor board connector	<b>11</b> M.2 cabled adapter power connector
<b>5</b> Fan 2 connector	<b>12</b> I/O module board signal connector

Table 6. System-board connectors (continued)

<b>6</b> PCIe Gen 3 / SATA connector	<b>13</b> Operator panel connector
<b>7</b> PCIe Gen 4 MCIO 1 connector	<b>14</b> I/O module board power connector

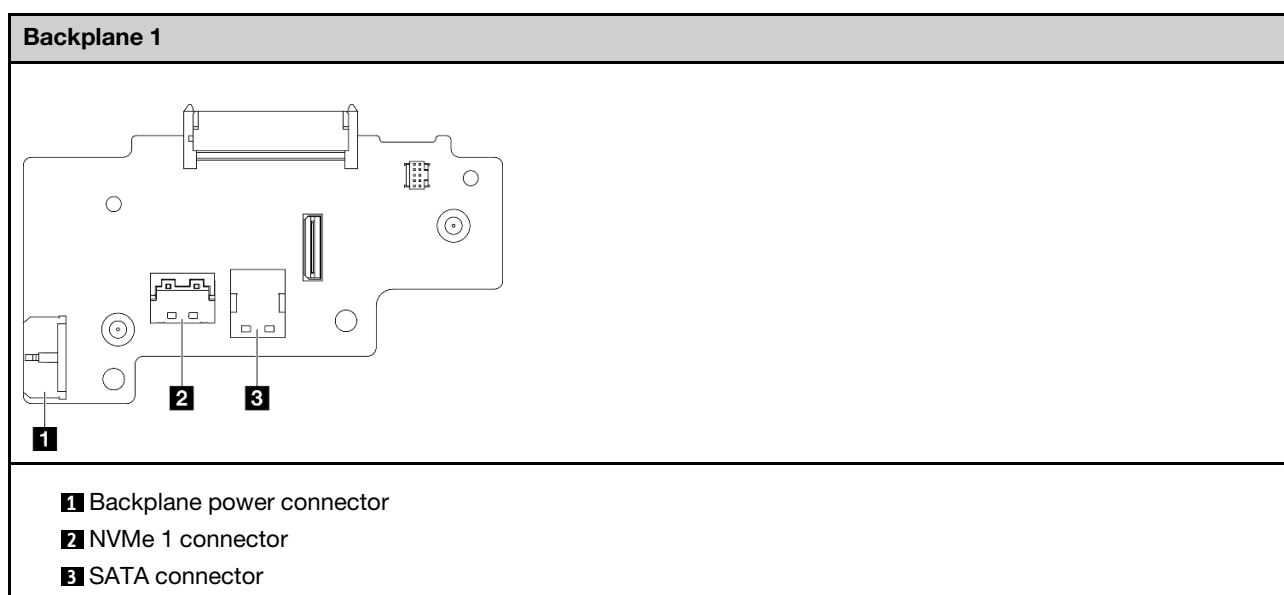
## Drive backplane connectors

See this section to locate the connectors in the drive backplanes.

- [“Backplane 1” on page 284](#)
- [“Backplane 2” on page 284](#)

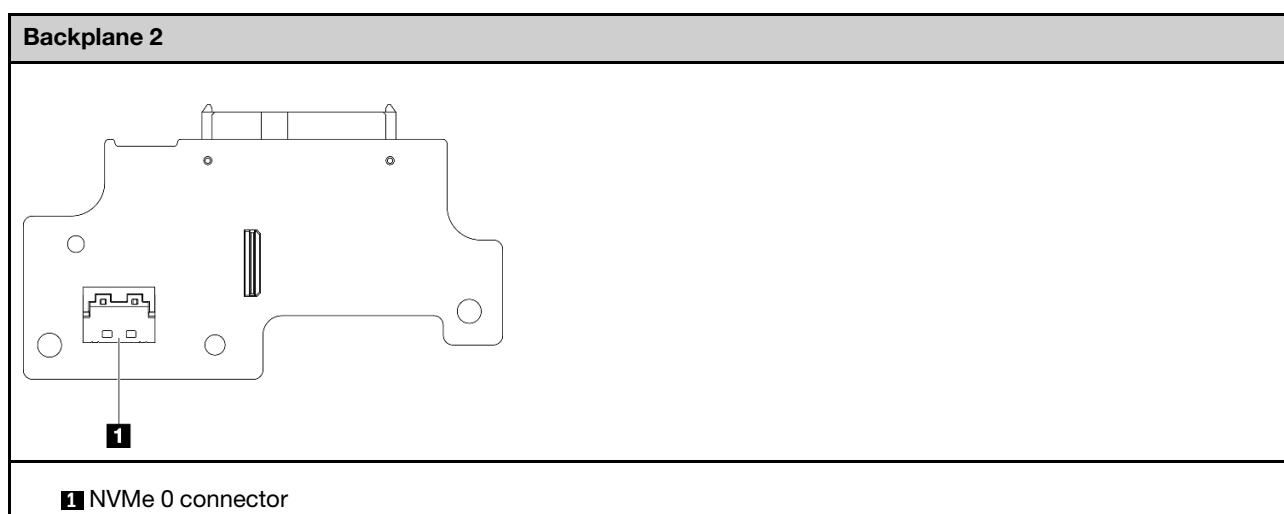
### Backplane 1

See this section to locate the connectors on Backplane 1.



### Backplane 2

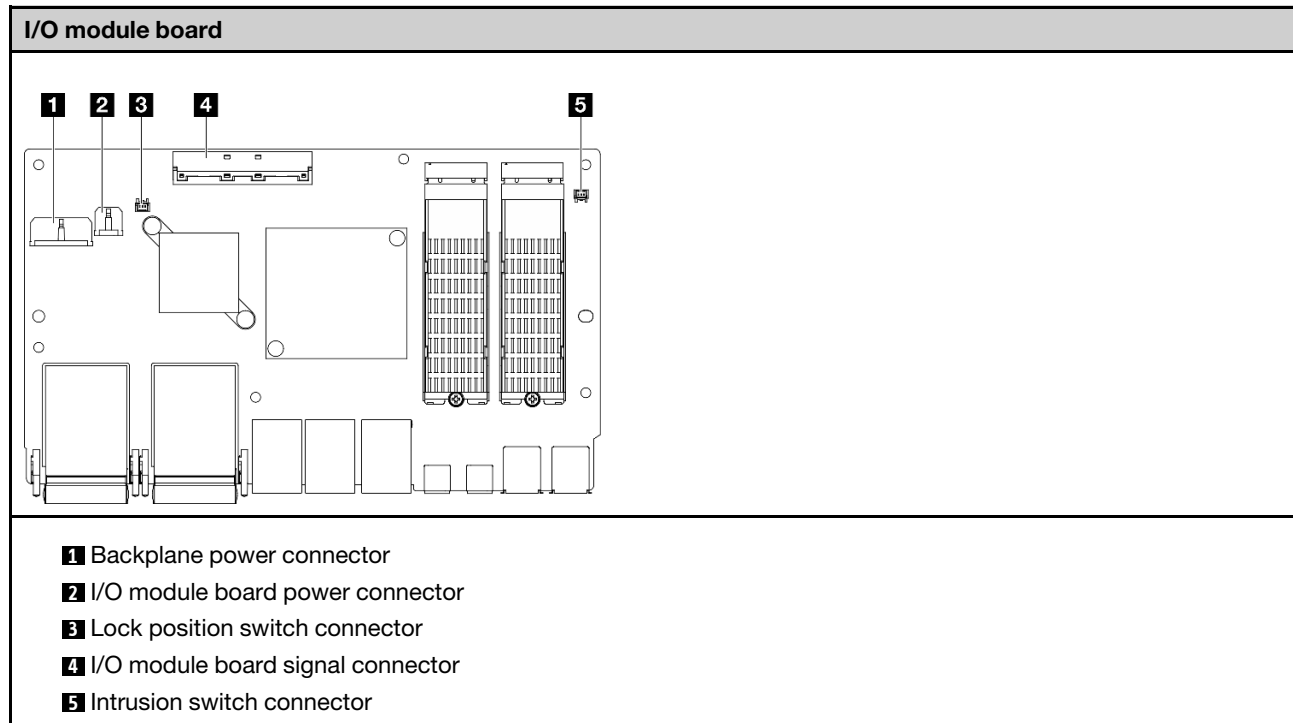
See this section to locate the connector on Backplane 2.





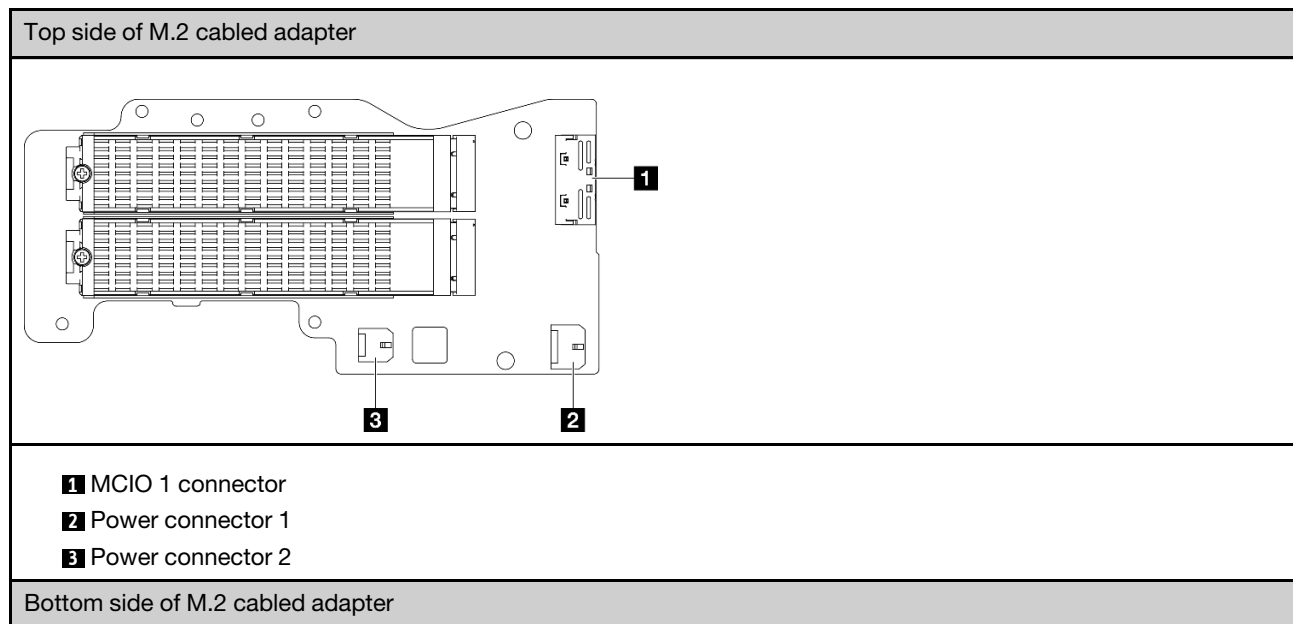
## I/O module board connectors

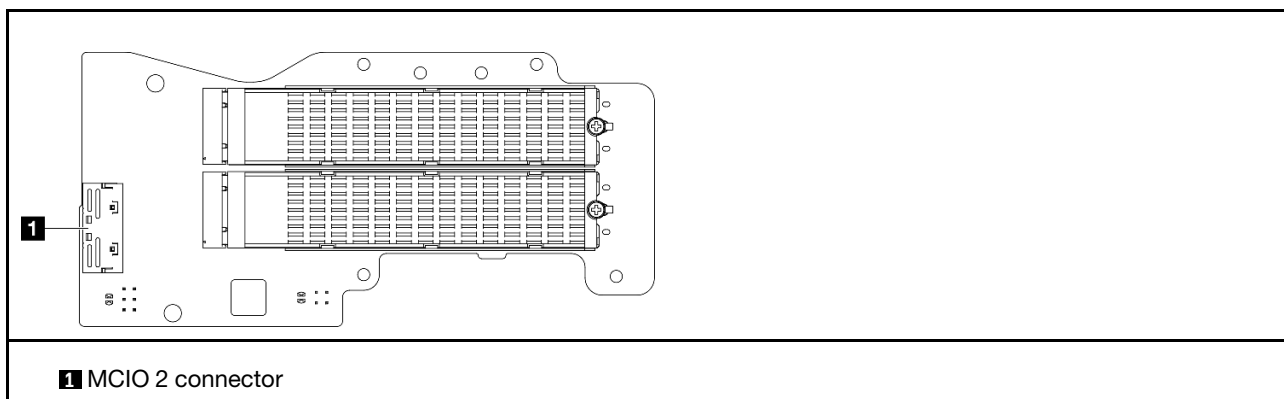
See this section to locate the connectors in the I/O module board.



## M.2 cabled adapter connectors

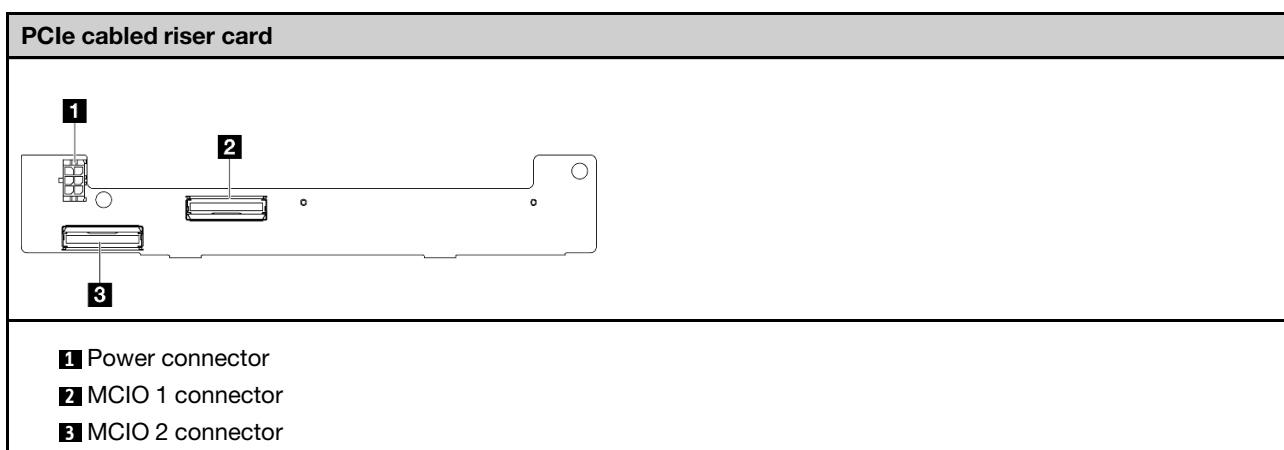
See this section to locate the connectors in the M.2 cabled adapter.





## PCIe cabled riser card connectors

See this section to locate the connectors in the PCIe cabled riser card.

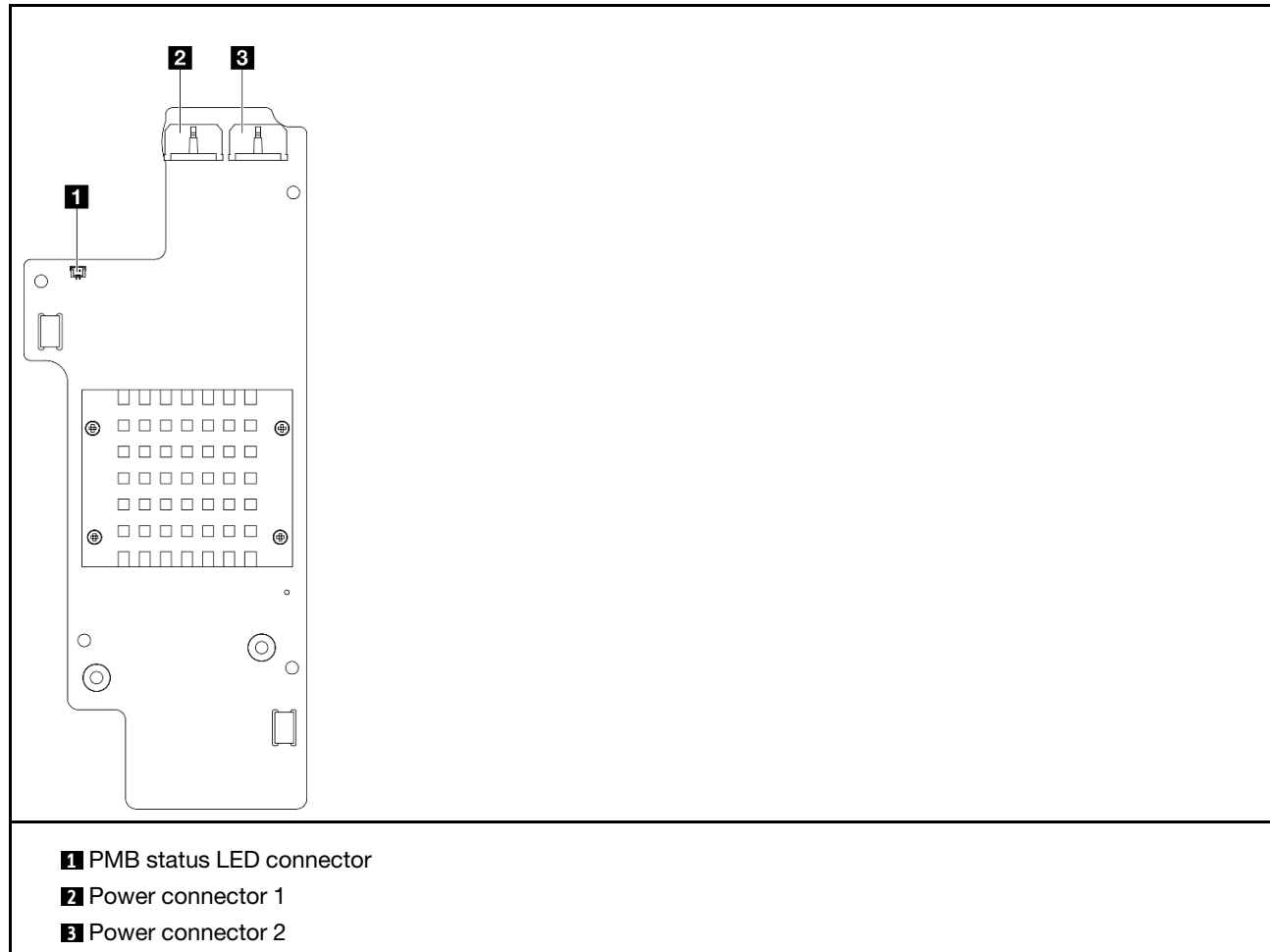


## Power module board (PMB) connectors

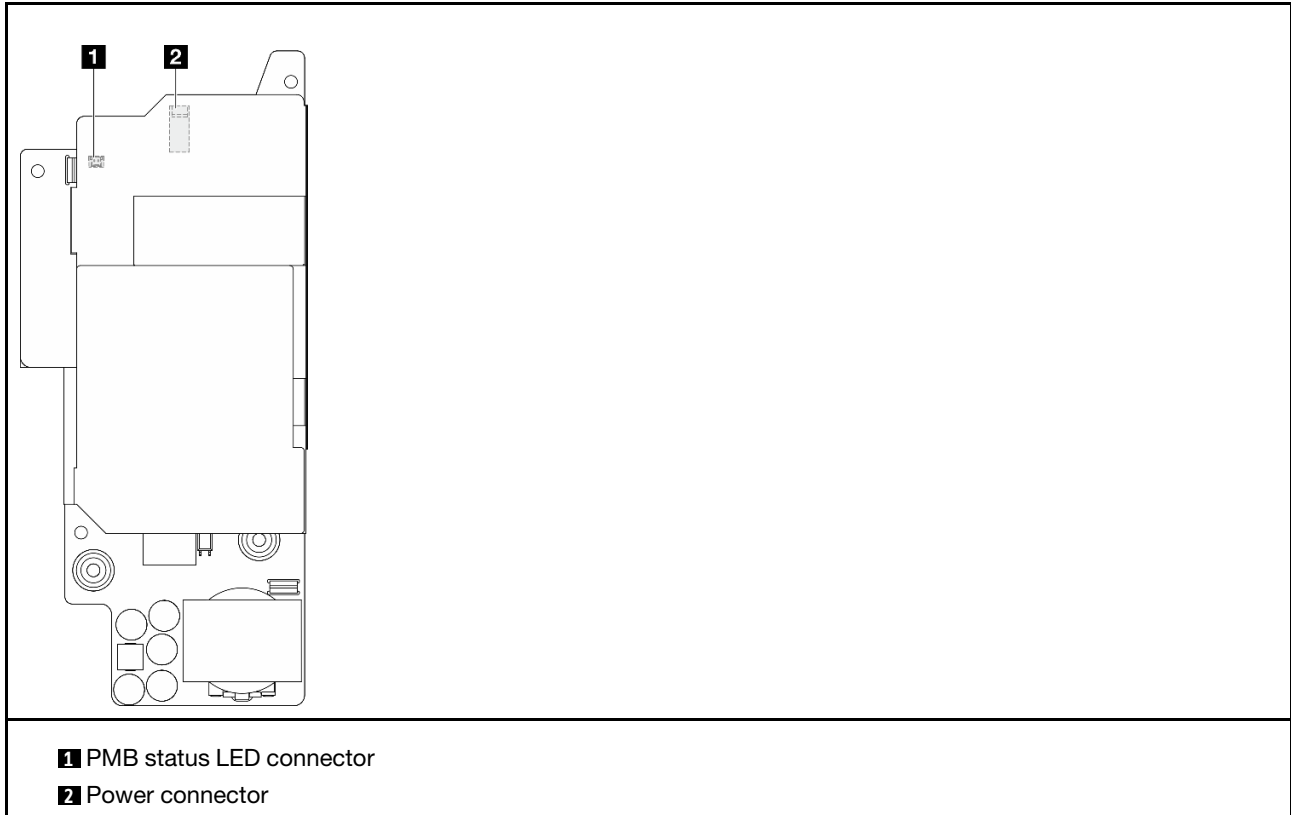
See this section to locate the connectors in the power module board.

- [“DC power module board \(DC PMB\)” on page 287](#)
- [“Internal power supply \(AC PMB\)” on page 288](#)

## DC power module board (DC PMB)



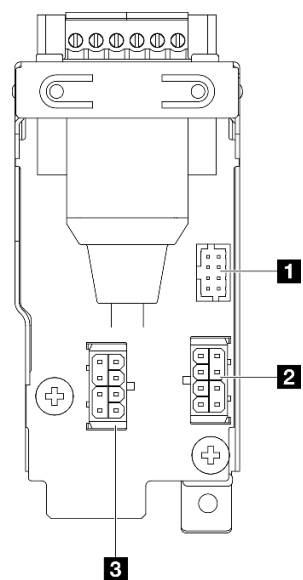
## Internal power supply unit (AC PMB)



## DC Power input board (PIB) module connectors

See this section to locate the connectors in the DC PIB module.

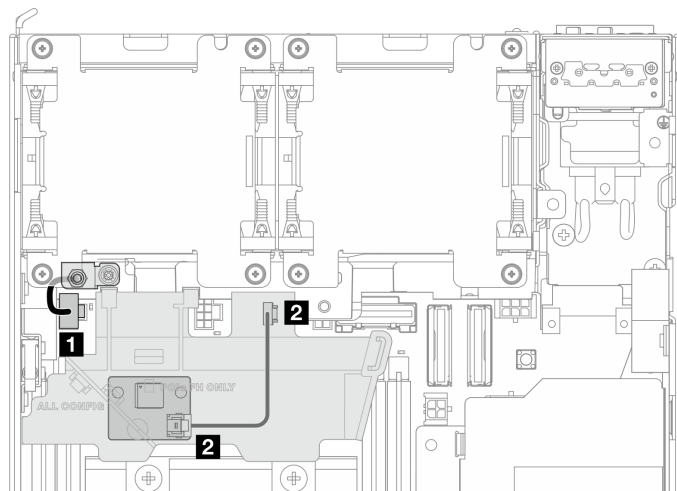
## DC PIB module



- 1** RJ-45 UART connector
- 2** Power connector 2
- 3** Power connector 1

## Air flow sensor board and fan direction switch cable routing

See this section to learn how to do cable routing for air flow sensor board and fan direction switch.

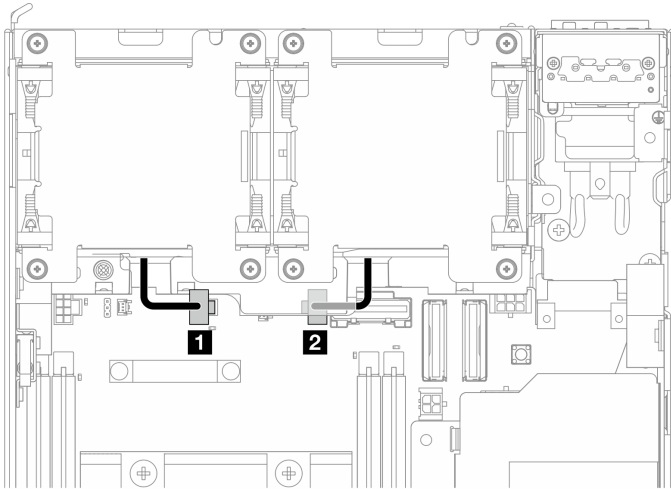


Cable	From	To: System board	Cable length
<b>1</b> Fan direction switch cable	Chassis	Air flow switch connector	32mm
<b>2</b> Air flow sensor board cable	Air flow sensor board	Air flow sensor board connector	150mm

---

## Fan module cable routing

See this section to learn how to do cable routing for fan modules.



Cable	From	To: System board
<b>1</b>	Fan module 1	Fan 1 connector
<b>2</b>	Fan module 2	Fan 2 connector

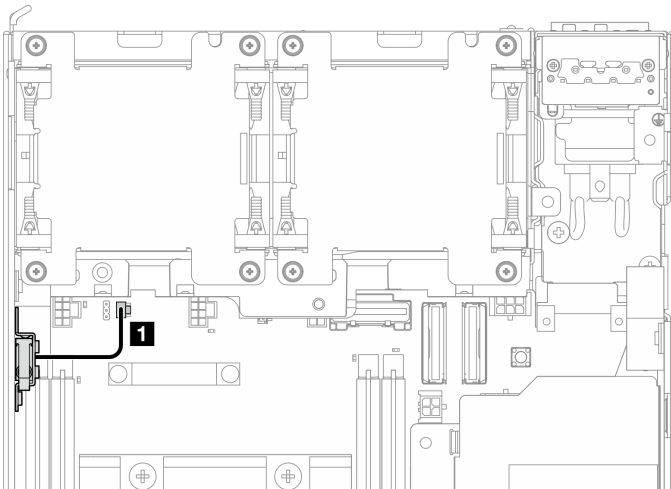
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## Intrusion switch cable routing

See this section to learn how to do cable routing for intrusion switches.

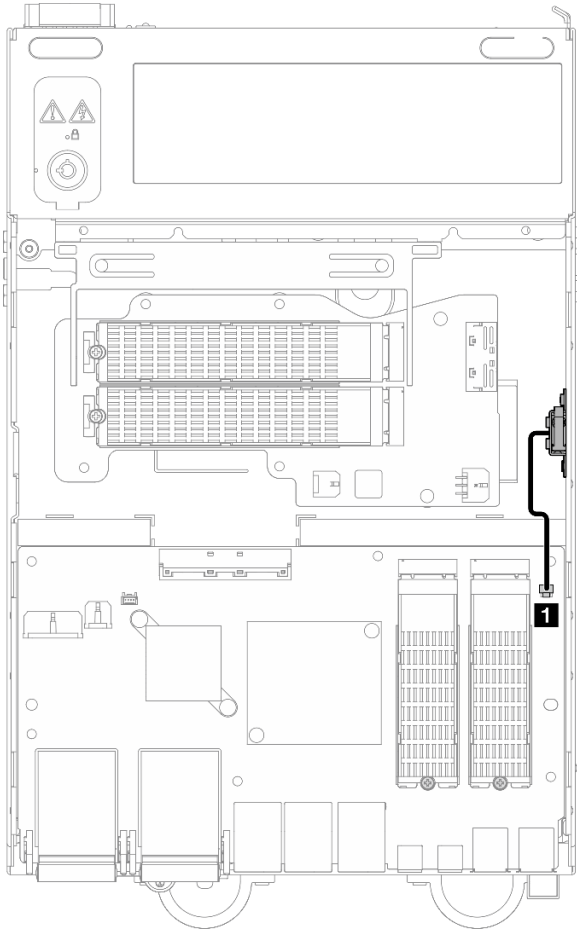
- [“Top intrusion switch” on page 290](#)
- [“Bottom intrusion switch” on page 291](#)

### Top intrusion switch



Cable	From	To
<b>1</b>	Top intrusion switch	System board: Intrusion switch connector

**Bottom intrusion switch**

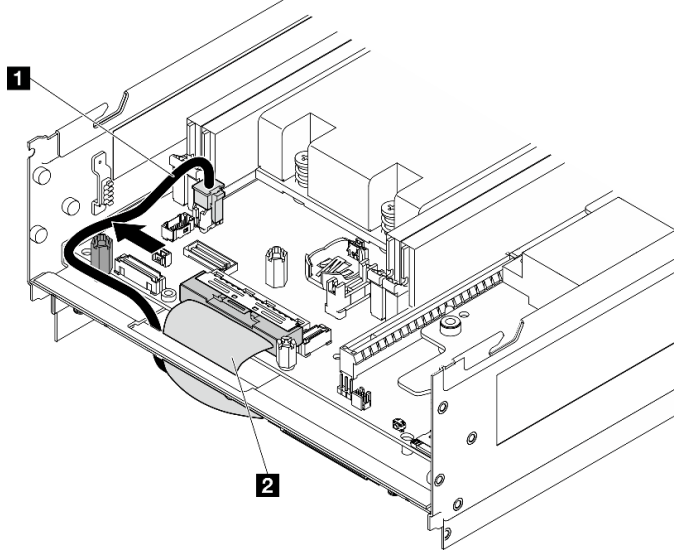


Cable	From	To
<b>1</b>	Bottom intrusion switch	I/O module board: Intrusion switch connector

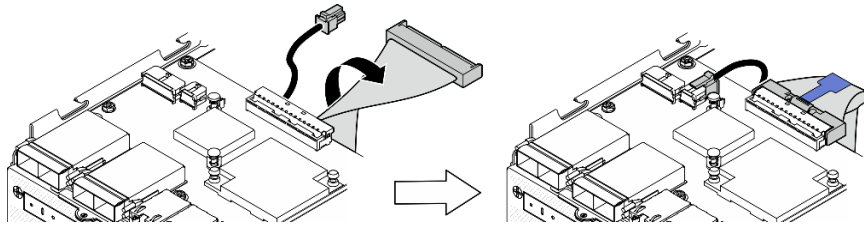
**I/O module board cable routing**

See this section to learn how to do cable routing for I/O board

### Top side of the node



### Bottom side of the node



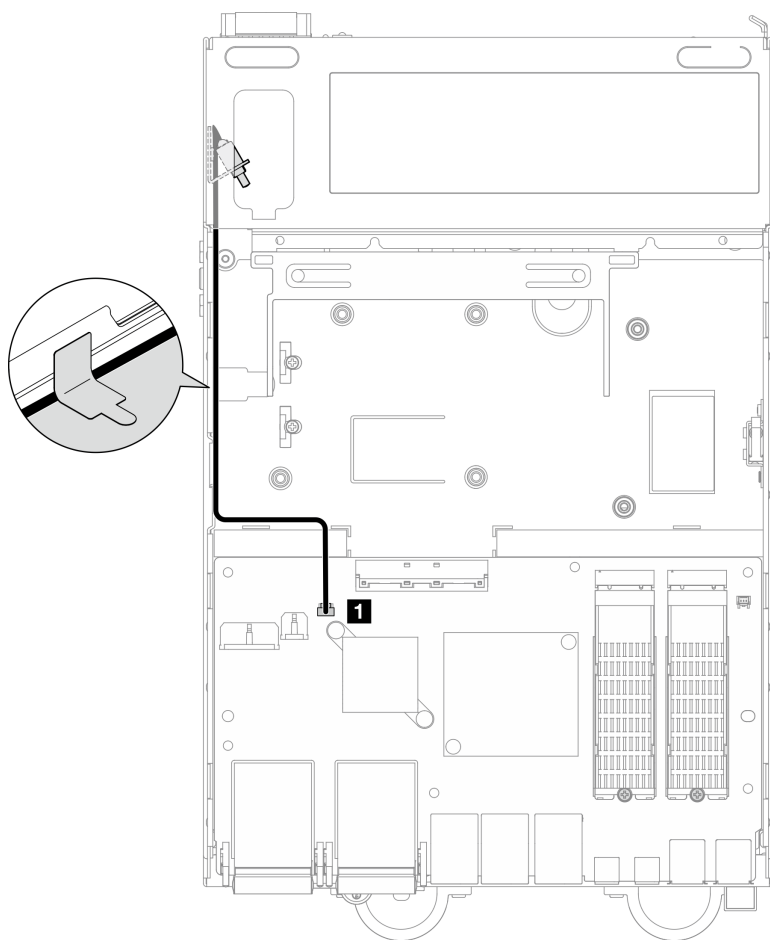
Cable	From: System board	To: I/O module board
<b>1</b> I/O-board power cable	I/O module board power connector	I/O module board power connector
<b>2</b> I/O-board signal cable	I/O module board signal connector	I/O module board signal connector

**Note:** See [“Install the I/O module board and M.2 boot drives” on page 129](#) for the complete procedure of I/O module board cable routing.

## Lock position switch cable routing

See this section to learn how to do cable routing for lock position switch cable.

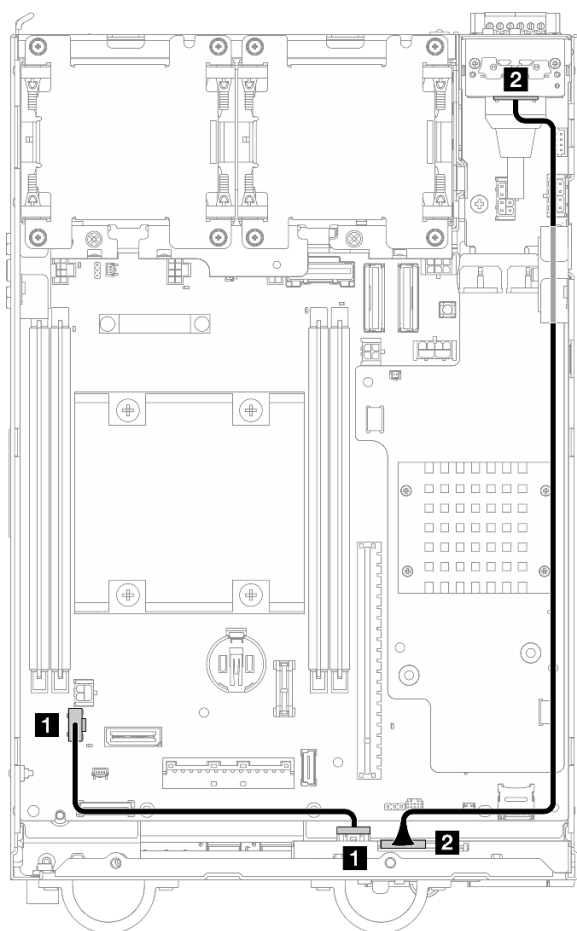




Cable	From	To
<b>1</b> Lock position switch cable	Chassis	I/O module board: Lock position switch connector

## Operator panel cable routing

See this section to learn how to do cable routing for front operator panel and rear operator panel.



Cable	From	To	Cable length
<b>1</b>	Front operator panel	System board: Operator panel connector	200mm
<b>2</b>	Front operator panel	Rear operator panel	370mm

**Note:** Press cable **1** into the space between the standoff and the chassis, and route the cable along the chassis as shown.

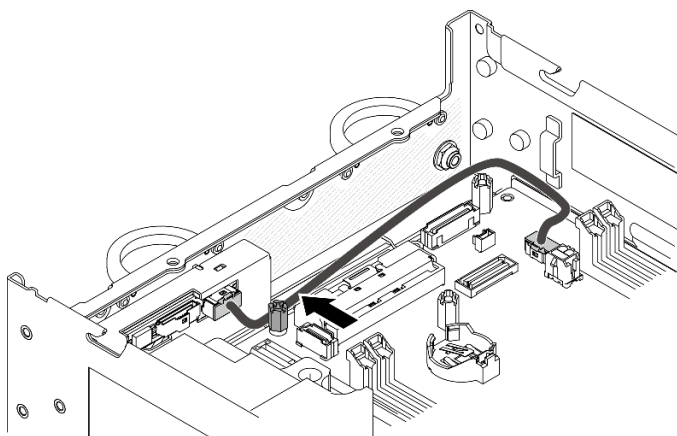


Figure 341. Front operator panel cable routing

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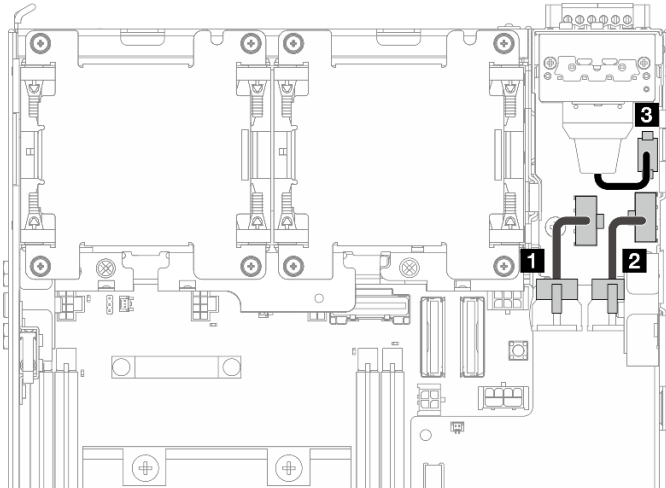
## Power module board and power input board module cable routing

See this section to learn how to do cable routing for power module board (PMB) and power input board (PIB) module.

### DC PIB module and DC power module board (DC PMB)

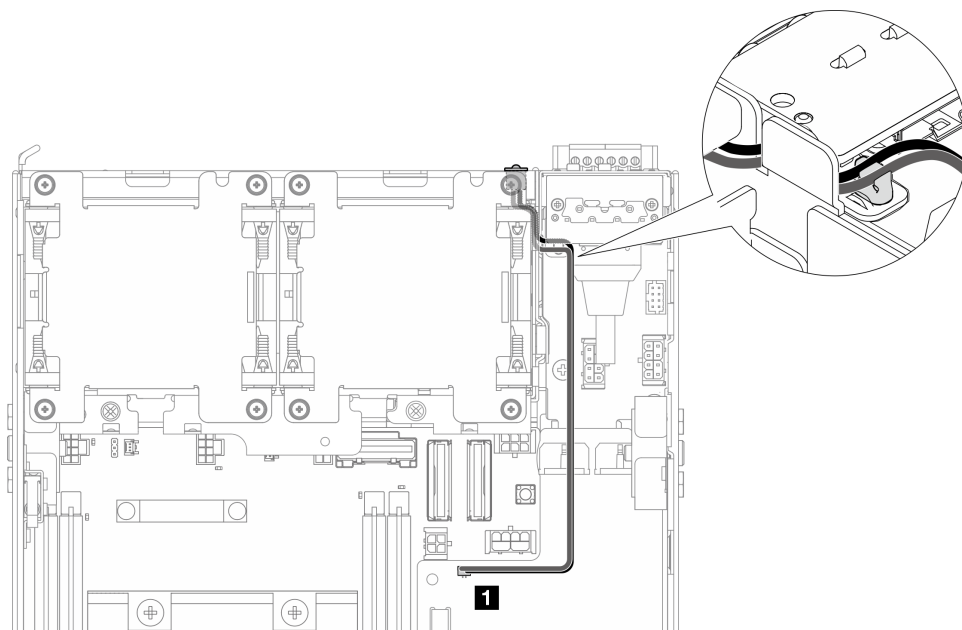
- [“PIB module cables” on page 295](#)
- [“PMB status LED cable” on page 296](#)

#### PIB module cables



Cable	From	To
<b>1</b> PIB to PMB power cable	PIB module: Power connector 1	Power module board: Power connector 1
<b>2</b> PIB to PMB power cable	PIB module: Power connector 2	Power module board: Power connector 2
<b>3</b> RJ-45 UART cable	PIB module	PIB module: RJ-45 UART connector

## PMB status LED cable

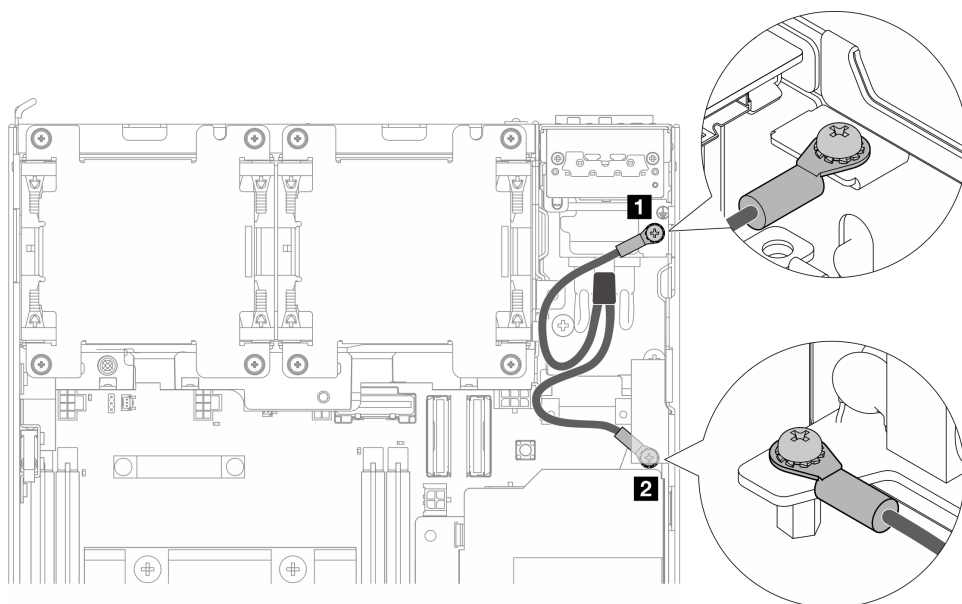


Cable	From	To	Cable length
<b>1</b> PMB status LED cable	Chassis	Power module board: PMB status LED connector	180mm

## AC PIB module and internal power supply unit (AC PMB)

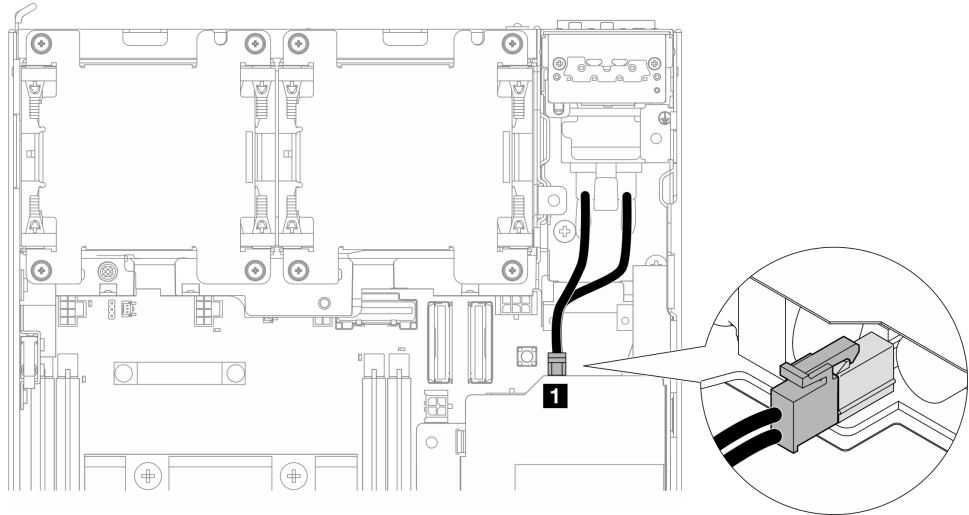
- [“Grounding cable of AC PIB module” on page 296](#)
- [“Power cable” on page 297](#)
- [“PMB status LED cable” on page 297](#)

### Grounding cable of AC PIB module



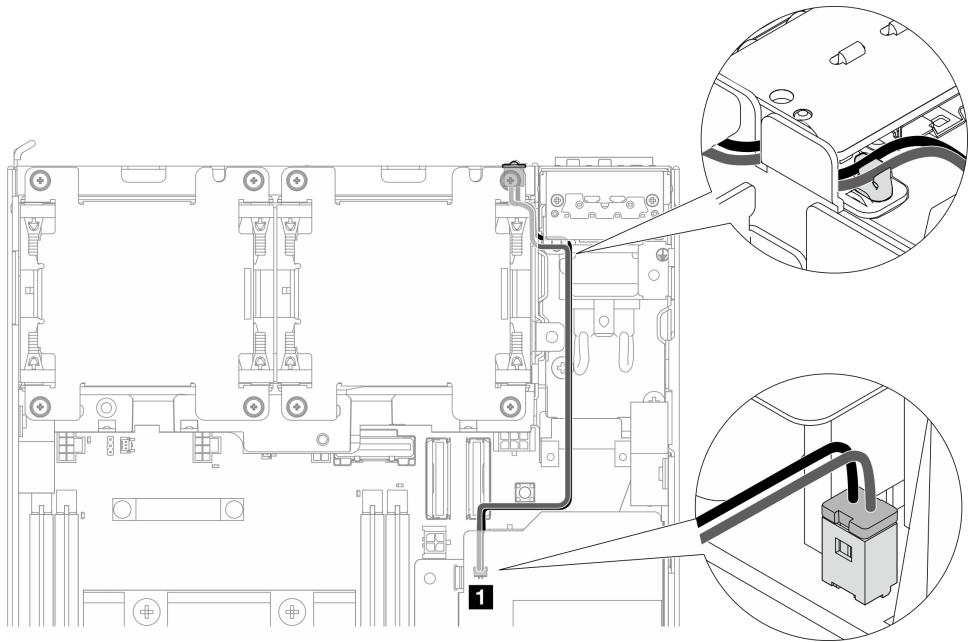
From	To
AC PIB module	<b>1</b> Chassis
	<b>2</b> Grounding connector on internal power supply unit (AC PMB)

### Power cable



From	To
AC PIB module	<b>1</b> Power connector on internal power supply unit (AC PMB)

### PMB status LED cable



Cable	From	To	Cable length
<b>1</b> PMB status LED cable	Chassis	Internal power supply unit (AC PMB): PMB status LED connector	180mm

## Riser assembly and bottom M.2 cabled adapter cable routing

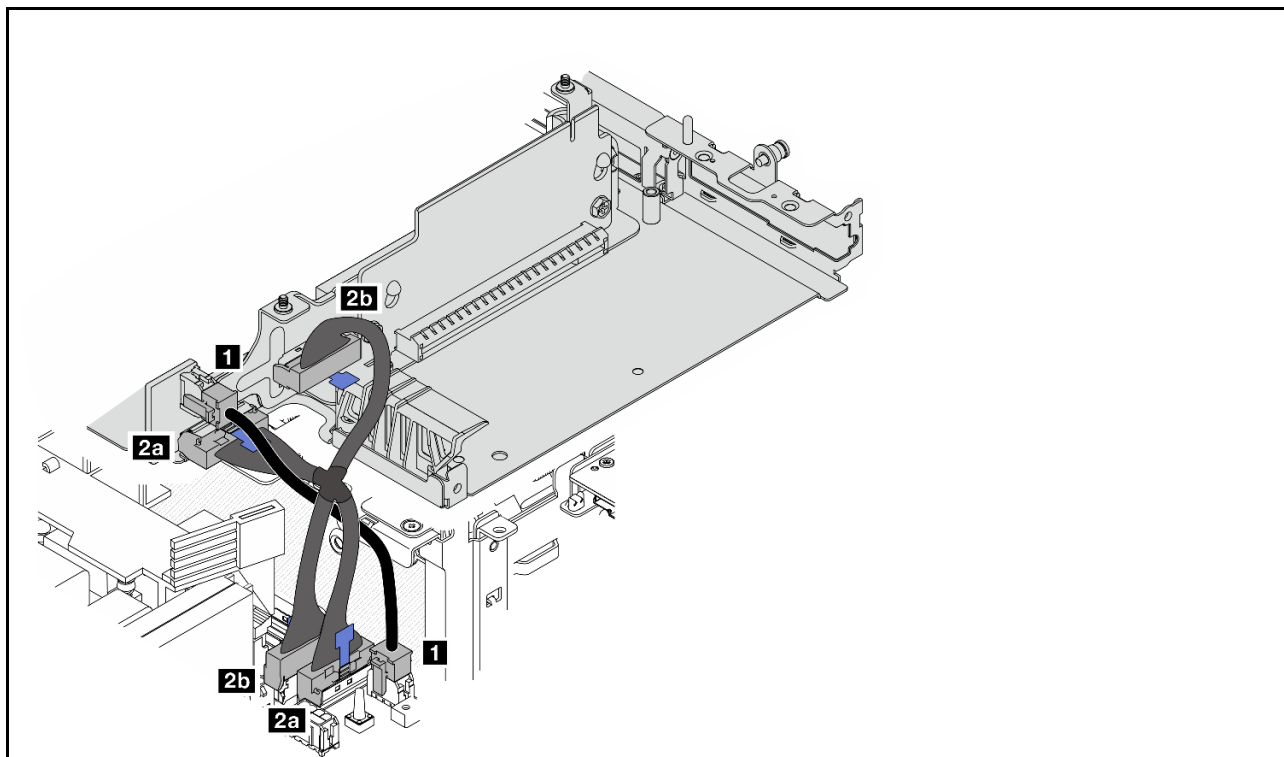
See this section to learn how to do cable routing for riser assembly and bottom M.2 cabled adapter.

Proceed to the section corresponding to the selected configuration on the **left wing** of riser assembly:

- [“PCIe assembly configuration” on page 298](#)
- [“7mm drive backplane configuration” on page 300](#)
- [“M.2 assembly configuration” on page 302](#)

### PCIe assembly configuration

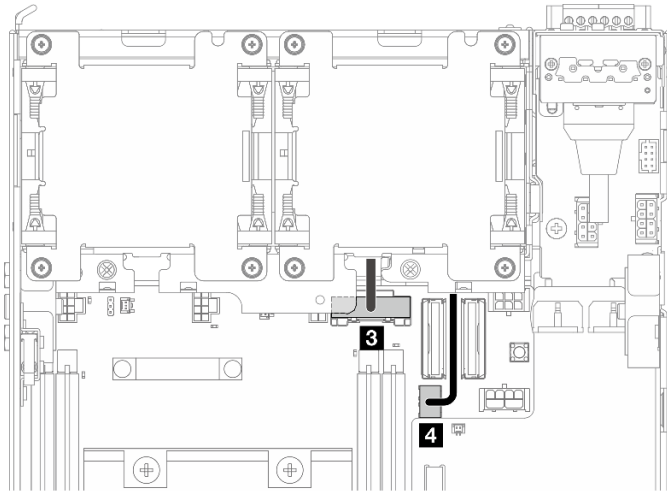
#### Riser assembly to system board



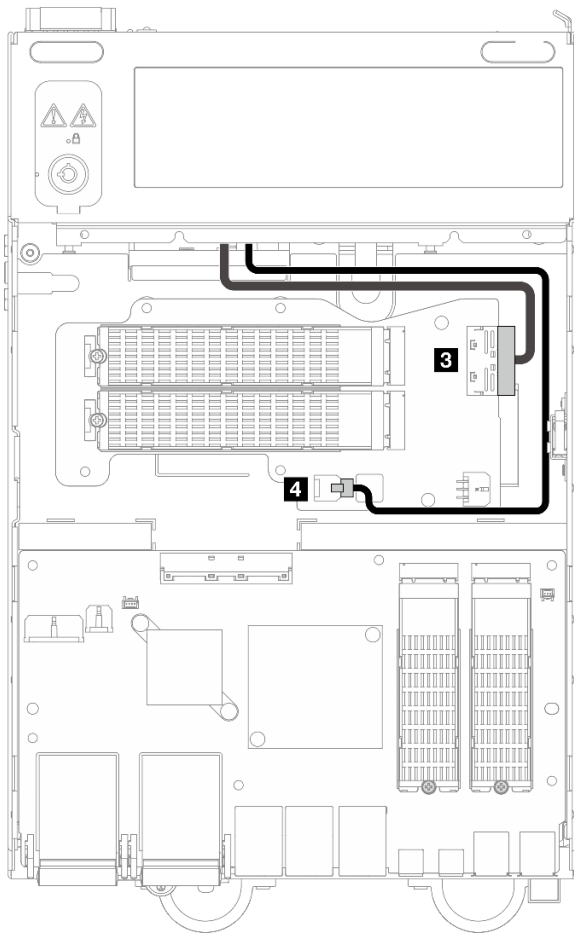
Cable	From: PCIe cabled riser card	To: System board	Cable length
<b>1</b>	Power connector	M.2 cabled adapter / PCIe cabled riser card power connector	100mm
<b>2</b>	<b>2a</b> MCIO 1 connector	<b>2a</b> MCIO 1 connector	140/120mm
	<b>2b</b> MCIO 2 connector	<b>2b</b> MCIO 2 connector	

#### System board to bottom M.2 cabled adapter

### Top side of the node



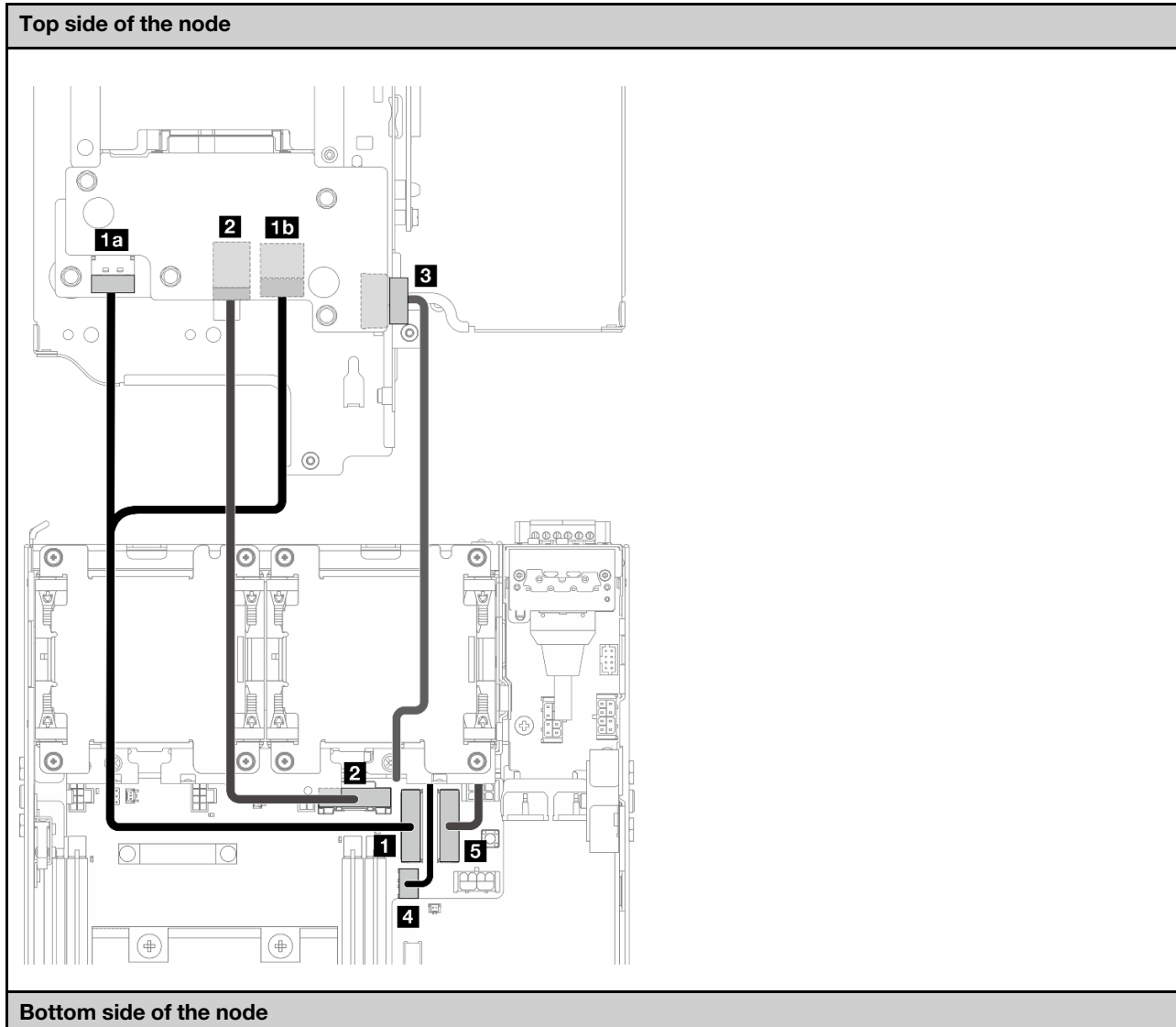
### Bottom side of the node



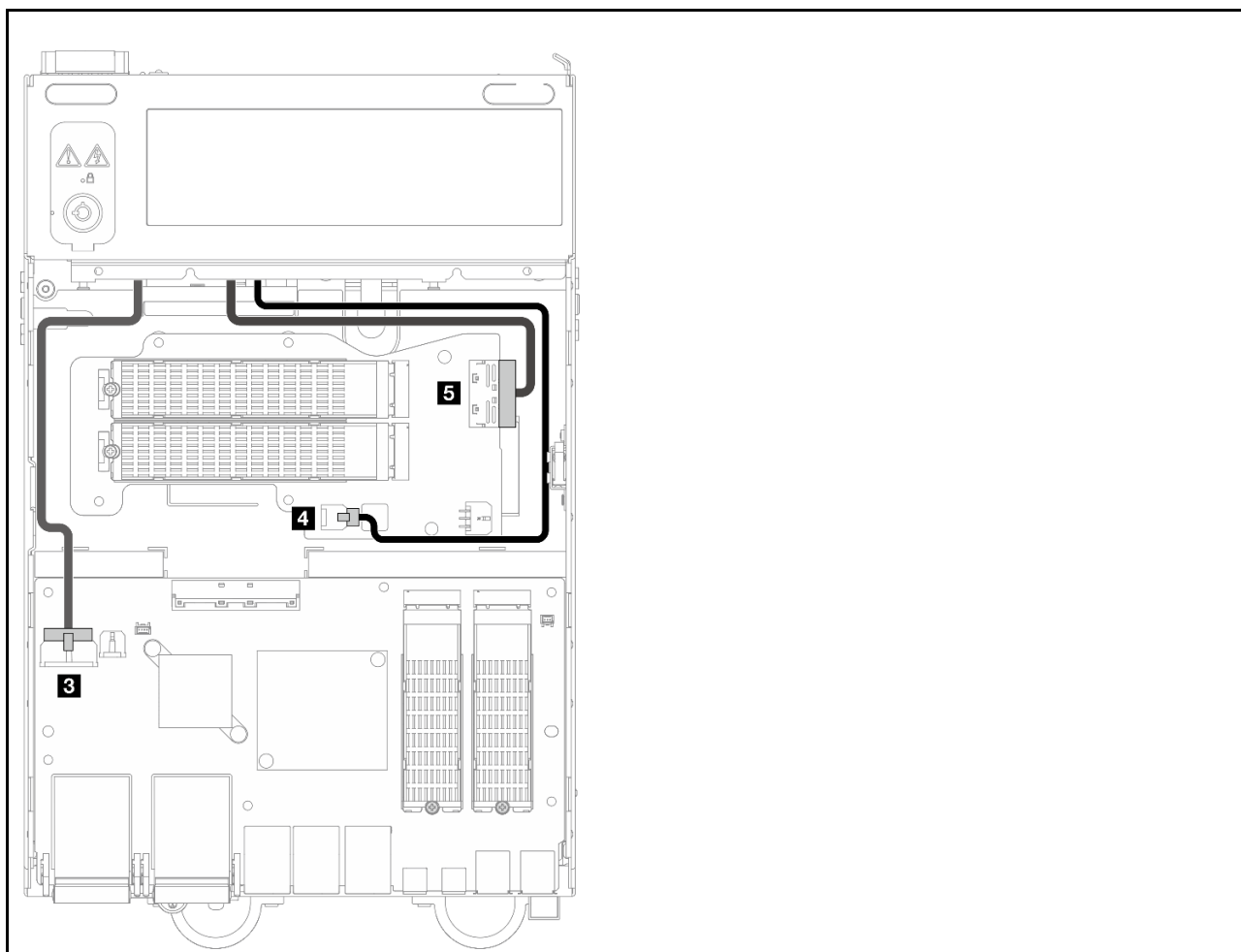
Cable	From: System board	To: Bottom M.2 cabled adapter	Cable length
-------	--------------------	-------------------------------	--------------

<b>3</b>	PCIe Gen 3 / SATA connector	MCIO 1 connector	200mm
<b>4</b>	M.2 cabled adapter power connector	Power connector 1	350mm

### 7mm drive backplane configuration

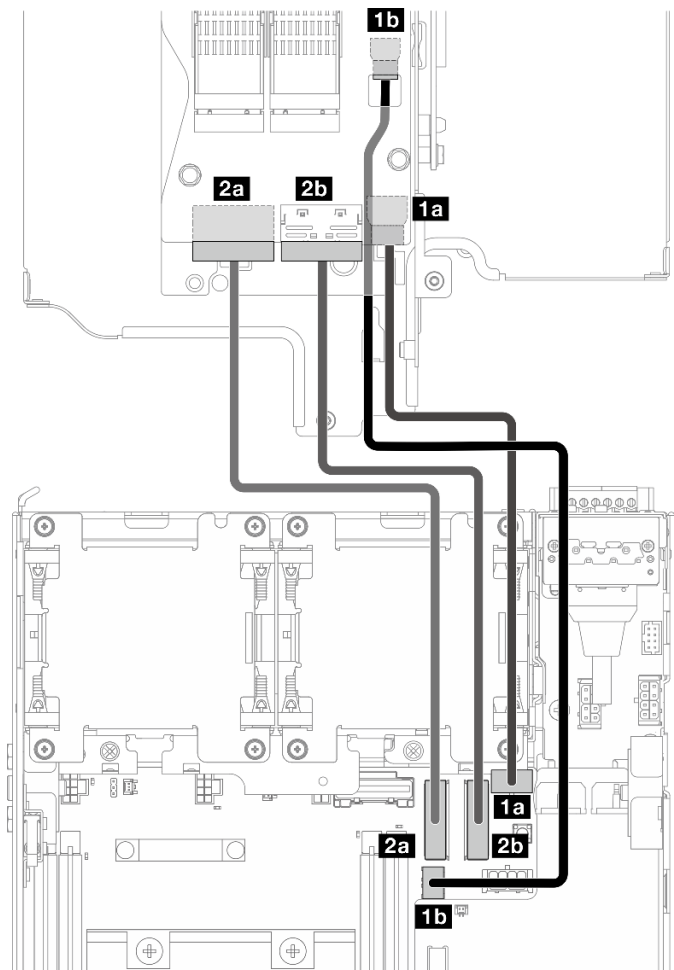






Cable	From	To	Cable length
<b>1</b>	<b>1a</b> Backpalne 1: NVMe 1 connector <b>1b</b> Backplane 2: NVMe 0 connector	<b>1</b> System board: PCIe Gen 4 MCIO 1 connector	130/175mm
<b>2</b>	Backpalne 1: SATA connector	System board: PCIe Gen 3 / SATA connector	150mm
<b>3</b>	Backpalne 1: Backplane power connector	I/O module board: Backplane power connector	300mm
<b>4</b>	System board: M.2 cabled adapter power connector	Bottom M.2 cabled adapter: Power connector 1	350mm
<b>5</b>	System board: PCIe Gen 4 MCIO 2 connector	Bottom M.2 cabled adapter: MCIO 1 connector	220mm

## M.2 assembly configuration



**Note:** When connecting cable **2** to the M.2 cabled adapter, complete the procedure in [“Install M.2 assembly” on page 206](#) to route the cable properly.

Cable	From: M.2 cabled adapter	To: System board	Cable length
<b>1</b>	<b>1a</b> Power connector 1	<b>1a</b> M.2 cabled adapter / PCIe cabled riser card power connector	170/200mm
	<b>1b</b> Power connector 2	<b>1b</b> M.2 cabled adapter power connector	
<b>2</b>	<b>2a</b> MCIO 1 connector	<b>2a</b> PCIe Gen 4 MCIO 1 connector	150mm
	<b>2b</b> MCIO 2 connector	<b>2b</b> PCIe Gen 4 MCIO 2 connector	

## WLAN antenna and Bluetooth antenna cable routing

See this section to learn how to do cable routing for WLAN antenna and Bluetooth antenna.

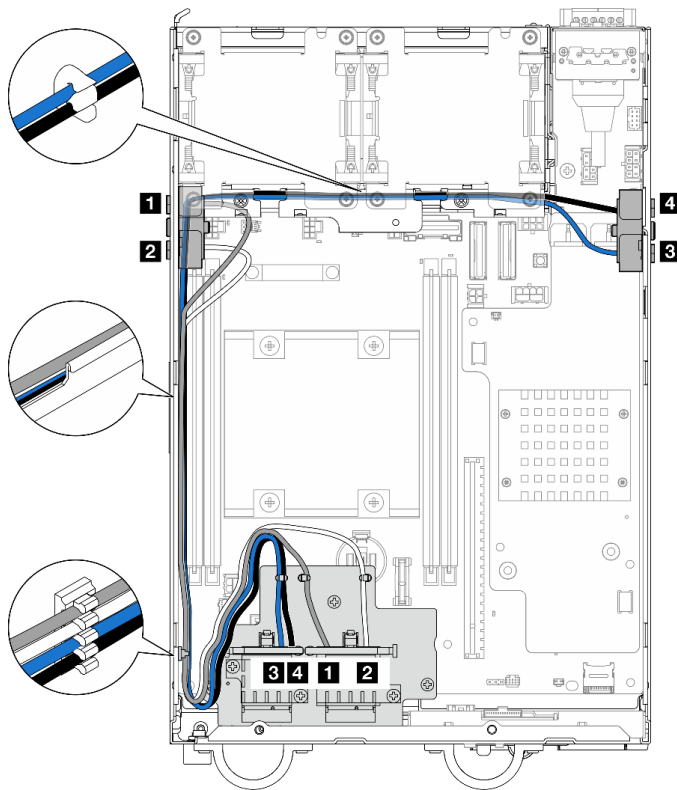


Figure 342. WLAN antenna cable routing

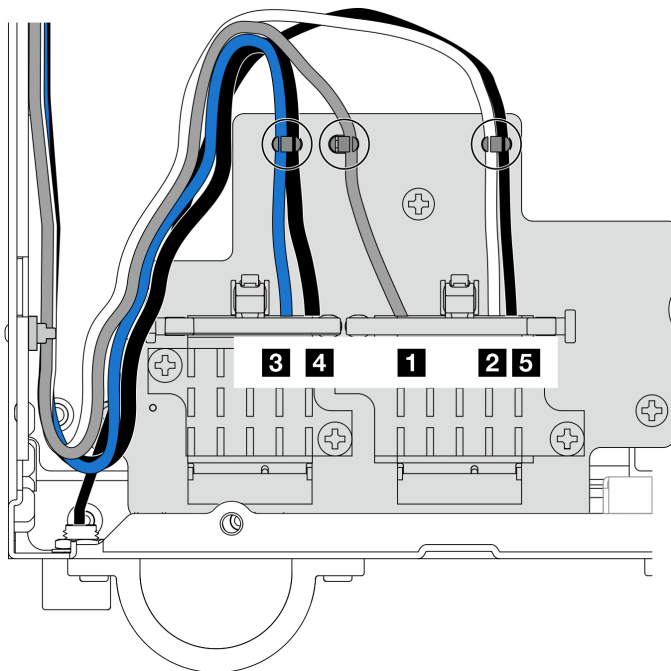


Figure 343. WLAN antenna and Bluetooth antenna cable routing

**Note:** The orientation of the following table aligns with the above illustration.

<b>Cable</b>	<b>3</b> x86 WLAN #3	<b>4</b> x86 WLAN #4	<b>1</b> XCC WLAN #1	<b>2</b> XCC WLAN #2	<b>5</b> Bluetooth #5
<b>Color</b>	Blue	Black	Gray	White	Black
<b>From</b>	SMA connector 3	SMA connector 4	SMA connector 1	SMA connector 2	Bluetooth antenna
<b>To</b>	Connector 1 of x86 WLAN module	Connector 2 of x86 WLAN module	The left connector of XCC WLAN and Bluetooth module	The center connector of XCC WLAN and Bluetooth module	The right connector of XCC WLAN and Bluetooth module

---

## Chapter 3. Problem determination

Use the information in this section to isolate and resolve issues that you might encounter while using your server.

Lenovo servers can be configured to automatically notify Lenovo Support if certain events are generated. You can configure automatic notification, also known as Call Home, from management applications, such as the Lenovo XClarity Administrator. If you configure automatic problem notification, Lenovo Support is automatically alerted whenever a server encounters a potentially significant event.

To isolate a problem, you should typically begin with the event log of the application that is managing the server:

- If you are managing the server from the Lenovo XClarity Administrator, begin with the Lenovo XClarity Administrator event log.
- If you are using some other management application, begin with the Lenovo XClarity Controller event log.

### Web resources

- **Tech tips**

Lenovo continually updates the support website with the latest tips and techniques that you can use to solve issues that your server might encounter. These Tech Tips (also called retain tips or service bulletins) provide procedures to work around issues or solve problems related to the operation of your server.

To find the Tech Tips available for your server:

1. Go to <http://datacentersupport.lenovo.com> and navigate to the support page for your server.
2. Click on **How To's** from the navigation pane.
3. Click **Article Type** → **Solution** from the drop-down menu.

Follow the on-screen instructions to choose the category for the problem that you are having.

- **Lenovo Data Center Forum**

- Check [https://forums.lenovo.com/t5/Datacenter-Systems/ct-p/sv\\_eg](https://forums.lenovo.com/t5/Datacenter-Systems/ct-p/sv_eg) to see if someone else has encountered a similar problem.

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## Event logs

An *alert* is a message or other indication that signals an event or an impending event. Alerts are generated by the Lenovo XClarity Controller or by UEFI in the servers. These alerts are stored in the Lenovo XClarity Controller Event Log. If the server is managed by the Chassis Management Module 2 or by the Lenovo XClarity Administrator, alerts are automatically forwarded to those management applications.

**Note:** For a listing of events, including user actions that might need to be performed to recover from an event, see the *Messages and Codes Reference*, which is available at [https://pubs.lenovo.com/se360-v2/pdf\\_files](https://pubs.lenovo.com/se360-v2/pdf_files).

### Lenovo XClarity Administrator event log

If you are using Lenovo XClarity Administrator to manage server, network, and storage hardware, you can view the events from all managed devices through the XClarity Administrator.

## Logs

The Event log provides a history of hardware and management conditions that have been detected.

Show:

All Event Sources

All Dates

Severity	Serviceability	Date and Time	System	Event	System Type	Source ID
Warning	Support	Jan 30, 2017, 7:48:07 AM	Chassis114:...	Node Node 08 device	Chassis	Jan 30, 20
Warning	Support	Jan 30, 2017, 7:48:07 AM	Chassis114:...	Node Node 02 device	Chassis	Jan 30, 20
Warning	User	Jan 30, 2017, 7:48:07 AM	Chassis114:...	I/O module IO Module	Chassis	Jan 30, 20
Warning	User	Jan 30, 2017, 7:48:07 AM	Chassis114:...	Node Node 08 incom	Chassis	Jan 30, 20

Figure 344. Lenovo XClarity Administrator event log

For more information about working with events from XClarity Administrator, see:

[https://pubs.lenovo.com/lxca/events\\_vieweventlog](https://pubs.lenovo.com/lxca/events_vieweventlog)

## Lenovo XClarity Controller event log

The Lenovo XClarity Controller monitors the physical state of the server and its components using sensors that measure internal physical variables such as temperature, power-supply voltages, fan speeds, and component status. The Lenovo XClarity Controller provides various interfaces to systems management software and to system administrators and users to enable remote management and control of a server.

The Lenovo XClarity Controller monitors all components of the server and posts events in the Lenovo XClarity Controller event log.

ThinkSystem System name: XCC0023579PK

Event Log Audit Log Maintenance History

Customize Table Clear Logs Refresh

Type: All Source All Date

Severity	Source	Event ID	Message	Date
Error	System	0X4000000E00000000	Remote login successful. Login ID: userid from webguis at IP address: 10.104.194.180.	27 Jul 2015, 08:11:04 AM
Warning	System	0X4000000E00000000	Remote login successful. Login ID: userid from webguis at IP address: 10.104.194.180.	27 Jul 2015, 08:11:04 AM
Info	System	0X4000000E00000000	Remote login successful. Login ID: userid from webguis at IP address: 10.104.194.180.	27 Jul 2015, 08:11:04 AM
Info	System	0X4000000E00000000	Remote login successful. Login ID: userid from webguis at IP address: 10.104.194.180.	27 Jul 2015, 08:11:04 AM

Figure 345. Lenovo XClarity Controller event log

For more information about accessing the Lenovo XClarity Controller event log, see:

“Viewing Event Logs” section in the XCC documentation compatible with your server at <https://pubs.lenovo.com/lxcc-overview/>

## Specifications

Summary of the features and specifications of the server. Depending on the model, some features might not be available, or some specifications might not apply.

Refer to the below table for specifications categories and the content of each category.

Specification category	<a href="#">“Technical specifications” on page 307</a>	<a href="#">“Mechanical specifications” on page 313</a>	<a href="#">“Environmental specifications” on page 314</a>
Content	<ul style="list-style-type: none"><li>• Processor</li><li>• Memory</li><li>• M.2 Drive</li><li>• Storage expansion</li><li>• Expansion slots</li><li>• Graphics processing unit (GPU)</li><li>• Integrated functions and I/O connectors</li><li>• Network</li><li>• Storage controller</li><li>• System fan</li><li>• Electrical input</li><li>• Minimal configuration for debugging</li><li>• Operating systems</li></ul>	<ul style="list-style-type: none"><li>• Dimension</li><li>• Weight</li></ul>	<ul style="list-style-type: none"><li>• Acoustical noise emissions</li><li>• Ambient temperature management</li><li>• Environment</li></ul>

## Technical specifications

Summary of the technical specifications of server. Depending on the model, some features might not be available, or some specifications might not apply.

Processor
One multi-core Intel Xeon D-2700 processor in Ball-Grid Array (BGA) package: <ul style="list-style-type: none"><li>• Scalable up to 16 cores</li><li>• Supports TDP up to 100W</li></ul> For a list of supported processors, see: <a href="http://datacentersupport.lenovo.com">http://datacentersupport.lenovo.com</a> .

## Memory

See for detailed information about memory configuration and setup.

- Slots: 4 dual inline memory module (DIMM) connectors
- Memory module types:
  - Double-data-rate 4 (TruDDR4) error correcting code (ECC) 3200 MHz registered DIMM (RDIMM)

**Note:** Memory operates at up to 2933 MHz, depending on the processor selected.

- Capacity:
  - 16 GB (2Rx8)
  - 32 GB (2Rx4, 2Rx8)
  - 64 GB (2Rx4)
- Total capacity
  - Minimum: 16 GB
  - Maximum: 256 GB

For a list of supported memory modules, see: <https://serverproven.lenovo.com>.

## M.2 Drive

M.2 boot drives

- Up to two 80 mm (2280) NVMe M.2 boot drives

M.2 storage drives

- Up to eight NVMe M.2 storage drives of the following drive form factors:
  - 80 mm (2280)
  - 110 mm (22110)

For a list of supported M.2 drives, see: <https://serverproven.lenovo.com>.

## Storage expansion

Supported storage expansion varies by model.

- M.2 storage drives
  - Up to eight NVMe M.2 storage drives of the following drive form factors:
    - 80 mm (2280)
    - 110 mm (22110)
- Hot-swap drives
  - Up to two 7mm SATA/NVMe hot-swap drives



## Expansion slots

Supported expansion slots vary by model.

- **Slot 1 to 2 (I/O module board):** NVMe Gen3 x1 M.2 boot drives
- **Slot 3 (Left wing of riser assembly)** supports one of the following:
  - One PCIe Gen4 x16 FH/HL adapter
  - One PCIe Gen4 x16 HH/HL adapter
  - One NVMe Gen4 x4 M.2 storage drive
- **Slot 4 to 6 (Left wing of riser assembly):** NVMe Gen4 x4 M.2 storage drives
- **Slot 7 (Right wing of riser assembly)** supports one of the following:
  - One PCIe Gen4 x16 HH/HL adapter
  - One NVMe Gen4 x4 M.2 storage drive
- **Slot 8 to 10 (Right wing of riser assembly):** NVMe Gen4 x4 M.2 storage drives
- **Slot 11 to 12 (Bottom M.2 cabled adapter):** NVMe Gen3 x4 M.2 storage drives

**Note:** When Slot 3 to 6 support M.2 storage drives, Slot 11 to 12 are disabled.

## Graphics processing unit (GPU)

Supports up to two low-profile PCIe GPU adapters

## Integrated functions and I/O connectors

- Lenovo XClarity Controller (XCC), which provides service processor control and monitoring functions, video controller, and remote keyboard, video, mouse, and remote drive capabilities.
  - The server supports Lenovo XClarity Controller 2 (XCC2). For additional information about Lenovo XClarity Controller 2 (XCC2), refer to <https://pubs.lenovo.com/xcc-overview/>.

- **Front I/O connectors**

**Note:** The slot for Bluetooth antenna is on the front of the server. For the models without wireless module, install the Bluetooth antenna filler to the corresponding slot for proper operation. The Bluetooth antenna filler is in the material box. See “Front view” in *User Guide* or *System Configuration Guide* to locate the Bluetooth antenna filler.

- One XCC system management port on the front to connect to a systems-management network. This RJ-45 connector is dedicated to the Lenovo XClarity Controller functions and runs at 1 GB speed.
- Two USB 3.2 Gen 1 (5 Gbps) Type-A connectors
- One USB 3.2 Gen 1 (5 Gbps) Type-C connector with display support
- One USB 2.0 Type-C connector with Lenovo XClarity Controller management
- Two 2.5GbE RJ-45 connectors
- Depending on the model, one of the following groups of Ethernet connectors:
  - With 10/25GbE I/O module board installed: four 10/25GbE SFP28 connectors

**Note:** The transmission speed of SFP28 connectors could be 10 Gbps or 25 Gbps, depending on the processor selected. Processors with at least 16 cores support transmission speed of 25 Gbps.

- With 1GbE I/O module board installed: four 1GbE RJ-45 connectors

- **Rear I/O connector**

- One RJ-45 RS-232 serial console connector

## Network

### Ethernet connectors

- Two 2.5GbE RJ-45 connectors
- Depending on the model, one of the following groups of Ethernet connectors:
  - With 10/25GbE I/O module board installed: four 10/25GbE SFP28 connectors

**Note:** The transmission speed of SFP28 connectors could be 10 Gbps or 25 Gbps, depending on the processor selected. Processors with at least 16 cores support transmission speed of 25 Gbps.

- With 1GbE I/O module board installed: four 1GbE RJ-45 connectors

### Ethernet adapters

- Up to two low-profile PCIe Ethernet adapters

### Wireless module

The models with wireless module support the following:

- One x86 WLAN module (Intel AX210)
  - With the x86 WLAN feature, SE360 V2 is able to connect to wireless network. The WLAN connection established by x86 WLAN can serve as the main or backup network connection of the system. The x86 WLAN connection and the wired network connection can be failover to each other.

#### Notes:

- The x86 WLAN module (Intel AX210) officially supports Microsoft Windows Server operating system.
  - Some non-Windows operating systems with corresponding inbox driver might be able to support the x86 WLAN module (Intel AX210). For a list of operating systems supporting Intel AX210, see *ThinkEdge SE360 V2 Product Guide* on <https://lenovopress.lenovo.com/>.
- One XCC WLAN and Bluetooth module
  - With XCC WLAN feature, SE360 V2 supports remote management with WLAN connection. Before connecting XCC to WLAN, set the network connection for XCC to access and enable XCC WLAN feature. See “XCC WLAN configuration” in *User Guide* or *System Configuration Guide* for more information.
  - Supporting Bluetooth 5.3
  - Bluetooth connection to the system can be established with ThinkShield Edge Mobile Management App, and be used to complete Mobile App activation procedure. See “Activate or unlock the system” in *User Guide* or *System Configuration Guide* for more information.

## Storage controller

### Software RAID

- Intel VROC SATA RAID: supports RAID level 0, 1
- Intel VROC NVMe RAID
  - VROC Standard: supports RAID level 0, 1, 10 and requires an activation key.
  - VROC Premium: supports RAID level 0, 1, 5, 10 and requires an activation key.
- With Intel VROC, SE360 V2 supports the following RAID configurations:
  - M.2 boot drives: NVMe RAID (RAID level 0, 1)
  - Storage drives:
    - SATA RAID (RAID level 0, 1) for 7mm SATA storage drives
    - NVMe RAID (RAID level 0, 1, 5, 10) for 7mm NVMe storage drives and M.2 NVMe storage drives

### Notes:

- Mixing storage drives and boot drives in one RAID array is not supported.
- The storage drives in the following groups are supported to configure in one RAID array with drives of the same group. Drives in different groups cannot be in the same RAID array.
  - M.2 storage drives on the left wing of riser assembly (Slot 3 to 6)
  - M.2 storage drives on the right wing of riser assembly (Slot 7 to 10)
  - 7mm storage drives (Bay 0, 1) and M.2 storage drives on the bottom M.2 cabled adapter (Slot 11, 12)
- For more information about RAID configuration, see “RAID configuration” in *User Guide* or *System Configuration Guide*.
- For more information about acquiring and installing the activation key, see <https://fod.lenovo.com/lkms>.

## System fan

- Two 80 mm x 80 mm x 56 mm dual-rotor fans, supporting one of the following air flow directions:
  - Front-to-rear air flow direction
  - Rear-to-front air flow direction (supporting dust filter measurement feature)

### Notes:

- With air flow sensor board installed, SE360 V2 BMC supports dust filter measurement feature to check the status of the rear dust filter. See “Set dust filter measurement” in *User Guide* or *System Configuration Guide* for more information.
- Specific mounting options of SE360 V2 require specific fan air flow direction. See “[Configuration guide](#)” on [page 9](#) for more information.

## Electrical input

The models with DC/DC power module board (Output 12V): one of the following

**Note:** If applicable, before connecting DC power source to the server, remove the header from the corresponding power connector. See “Rear view” in *User Guide* or *System Configuration Guide* to locate the power connector and remove the header.

- Dual 12-48V variable DC power source input
- Up to two 300W (230V/115V) external power adapters

**Notes:** When one or two 300W external power adapters are installed, keep ambient temperature lower than 40°C, and the following configuration is required:

- 8 core processor
- Four memory modules
- Up to one ThinkSystem NVIDIA A2 16GB PCIe Gen4 Passive GPU
- Up to two 7mm SATA drives
- Up to two M.2 NVMe boot drives installed on 1GbE I/O module board
- Desktop mount is supported

The models with internal power supply (AC power module board):

- Single 500W (230V/115V) AC power source input

### Supported external power adapters:

As required by COMMISSION REGULATION (EU) 2019/1782 of 1 October 2019 laying down ecodesign requirements for external power supplies pursuant to Directive 2009/125/EC of the European Parliament and of the Council and repealing Commission Regulation (EC) No 278/2009 (ErP Lot7) for the external power supply of the product.

### ThinkEdge 300W 230V/115V External Power Supply

Information published	Value and precision	Unit
Manufacturer's name	Lenovo	-
Model identifier	ADL300SDC3A	-
Input voltage	100-240	V
Input AC frequency	50-60	Hz
Output voltage	20.0	V
Output current	15.0	A
Output power	300.0	W
Average active efficiency	90.00	%
Efficiency at low load (10 %)	88.07	%
No-load power consumption	0.15	W

### Minimal configuration for debugging

- One DRAM memory module in DIMM slot 1
- Depending on the model, one of the following power source:
  - One 300W external power adapter
  - AC power source input
  - DC power source input
- One 2280 NVMe M.2 drive in Slot 1 on the I/O module board
- Two system fans

Operating systems
<p>Supported and certified operating systems:</p> <ul style="list-style-type: none"> <li>• Microsoft Windows Server</li> <li>• VMware ESXi</li> <li>• Red Hat Enterprise Linux</li> <li>• SUSE Linux Enterprise Server</li> </ul> <p><b>Notes:</b></p> <ul style="list-style-type: none"> <li>• The x86 WLAN module (Intel AX210) officially supports Microsoft Windows Server operating system.</li> <li>• Some non-Windows operating systems with corresponding inbox driver might be able to support the x86 WLAN module (Intel AX210). For a list of operating systems supporting Intel AX210, see <i>ThinkEdge SE360 V2 Product Guide</i> on <a href="https://lenovopress.lenovo.com/">https://lenovopress.lenovo.com/</a>.</li> </ul> <p>References:</p> <ul style="list-style-type: none"> <li>• Complete list of available operating systems: <a href="https://lenovopress.lenovo.com/osig">https://lenovopress.lenovo.com/osig</a>.</li> <li>• OS deployment instructions, see “Deploy the operating system” in <i>User Guide</i> or <i>System Configuration Guide</i>.</li> </ul>

## Mechanical specifications

Summary of the mechanical specifications of server. Depending on the model, some features might not be available, or some specifications might not apply.

Dimension
<p>Node</p> <ul style="list-style-type: none"> <li>• Height: 84.5 mm (3.33 inches)</li> <li>• Width: 212 mm (8.35 inches)</li> <li>• Depth: 317.5 mm (12.5 inches)</li> </ul> <p>Node with node sleeve</p> <ul style="list-style-type: none"> <li>• Height: 95.95 mm (3.78 inches)</li> <li>• Width: 295 mm (11.61 inches)</li> <li>• Depth: 345.7 mm (13.61 inches)</li> </ul> <p>Enclosure</p> <ul style="list-style-type: none"> <li>• Height: 87 mm (3.43 inches)</li> <li>• Width: 482.1 mm (18.98 inches)</li> <li>• Depth: 466 mm (18.35 inches)</li> </ul>

Weight
<p>Node</p> <ul style="list-style-type: none"> <li>• Maximum: 6.5 kg (14.33 lbs)</li> </ul> <p>Node with node sleeve</p> <ul style="list-style-type: none"> <li>• Maximum: 9.54 kg (21.03 lbs)</li> </ul> <p>Enclosure</p> <ul style="list-style-type: none"> <li>• Maximum (with two nodes installed): 16.66 kg (36.73 lbs)</li> </ul>

## Environmental specifications

Summary of the environmental specifications of server. Depending on the model, some features might not be available, or some specifications might not apply.

Acoustical noise emissions
<p>The server has the following acoustic noise emissions declaration:</p> <ul style="list-style-type: none"><li>• Sound power level (<math>L_{WAd}</math>)<ul style="list-style-type: none"><li>– Idling:<ul style="list-style-type: none"><li>– Min: 5.4 Bel</li><li>– Typical: 5.4 Bel</li><li>– Max: 5.5 Bel</li></ul></li><li>– Operating:<ul style="list-style-type: none"><li>– Min: 5.7 Bel</li><li>– Typical: 6.1 Bel</li><li>– Max: 7.2 Bel</li></ul></li></ul></li><li>• Sound pressure level (<math>L_{pAm}</math>):<ul style="list-style-type: none"><li>– Idling:<ul style="list-style-type: none"><li>– Min: 43.6 dBA</li><li>– Typical: 43.5 dBA</li><li>– Max: 44.5 dBA</li></ul></li><li>– Operating:<ul style="list-style-type: none"><li>– Min: 45.8 dBA</li><li>– Typical: 50.0 dBA</li><li>– Max: 61.1 dBA</li></ul></li></ul></li></ul> <p><b>Notes:</b></p> <ul style="list-style-type: none"><li>• These sound levels were measured in controlled acoustical environments according to procedures specified by ISO7779 and are reported in accordance with ISO 9296. The operating profile is represented by 80% CPU TDP or 70%/30% storage read/write or 100% GPU workload.</li><li>• The declared acoustic sound levels are based on the specified configurations, which may change depending on configuration/conditions.<ul style="list-style-type: none"><li>– Min: 1x 80W CPU, 2x 16GB RDIMMs, 1GbE I/O module board, 1 x NVMe M.2 boot drive , 2x SATA SSDs, 2x NVMe M.2 data drives, DC power module board (PMB), no dust filter, rear-to-front fan direction</li><li>– Typical: 1x 80W CPU, 4x 16GB RDIMMs, 10/25GbE I/O module board, 1 x NVMe M.2 boot drive, 1x NVIDIA A2 GPU, 4x NVMe M.2 data drives, no dust filter, DC power module board (PMB), rear-to-front fan direction</li><li>– Max: 1x 100W CPU, 4x 64GB RDIMMs, 10/25GbE I/O module board, 2 x NVMe M.2 boot drives, 2x NVIDIA A2 GPU, 2x NVMe M.2 data drives, DC power module board (PMB), no dust filter, rear-to-front fan direction</li></ul></li><li>• Government regulations (such as those prescribed by OSHA or European Community Directives) may govern noise level exposure in the workplace and may apply to you and your server installation. The actual sound pressure levels in your installation depend upon a variety of factors, including the number of racks in the installation; the size, materials, and configuration of the room; the noise levels from other equipment; the room ambient temperature, and employee's location in relation to the equipment. Further, compliance with such government regulations depends on a variety of additional factors, including the duration of employees' exposure and whether employees wear hearing protection. Lenovo recommends that you consult with qualified experts in this field to determine whether you are in compliance with the applicable regulations.</li></ul>

## Acoustic modes

ThinkEdge SE360 V2 supports three acoustic modes with different acoustic performance.

- **Disabled:** The server operates at default fan speeds.
- **Mode 1:** The operation of system fans is optimized to lower the overall noise level of the server.
  - Mode 1 supports ambient temperature lower than 35°C.
  - In Mode 1, the server operates with sound pressure level of 50 dBA at 25°C.
  - Performance degradation may occur at heavy workloads.
- **Mode 2:** The operation of system fans is optimized to lower the overall noise level of the server further than Mode 1.
  - Mode 2 supports configurations with 4-core or 8-core processor at ambient temperature lower than 35°C.
  - In Mode 2, the server operates with sound pressure level of 45 dBA at 25°C.
  - Performance degradation may occur at heavy workloads.

To change the acoustic mode, enter the Setup Utility and go to **System settings → Operating Modes → Acoustic mode**.

## Ambient temperature management

- Most of the configurations of SE360 V2 support operating at temperature of 55°C or lower. Specific configuration supports operating at -20°C to 65°C. See [“Environment” on page](#) for the details of configuration supporting extended operation temperature.
- The following components can operate at temperature of 55°C or lower and require proper ambient temperature to prevent performance degradation:
  - When one of the following components is installed, keep ambient temperature lower than 45°C for proper operation. If the ambient temperature is over 45°C, performance degradation or throttled event might occur.
    - 16 core processor
    - NVMe M.2 drives
    - NVMe U.3 drives
  - When one of the following drives is installed in Slot 7 to 10 (M.2 Bay 6 to 9) with heavy workload, keep ambient temperature lower than 40°C for proper operation. If the ambient temperature is over 40°C, performance degradation or throttled event might occur.
    - NVMe M.2 drives
    - NVMe U.3 drives
  - When a 300W external power adapter is installed, keep ambient temperature lower than 40°C to prevent performance degradation. If the ambient temperature is over 40°C, performance degradation or throttled event might occur.
- The following components can operate at temperature of 50°C or lower. Keep ambient temperature lower than 45°C to prevent performance degradation:
  - ThinkSystem NVIDIA A2 16GB PCIe Gen4 Passive GPU
  - ThinkSystem NVIDIA L4 PCIe Gen4 Passive GPU
- ThinkSystem Qualcomm Cloud AI 100 can operate at temperature of 45°C or lower.

## Environment

ThinkEdge SE360 V2 complies with ASHRAE Class A4 specifications. System performance may be impacted when operating temperature is outside ASHRAE A4 specification or fan failed condition with ambient temperature over 25°C. ThinkEdge SE360 V2 is supported in the following environment:

- Air temperature:
  - Operating
    - ASHRAE Class H1: 5°C to 25°C (41°F to 77°F); the maximum ambient temperature decreases by 1°C for every 500 m (1640 ft) increase in altitude above 900 m (2,953 ft).
    - ASHRAE Class A2: 10°C to 35°C (50°F to 95°F); the maximum ambient temperature decreases by 1°C for every 300 m (984 ft) increase in altitude above 900 m (2,953 ft).
    - ASHRAE Class A3: 5°C to 40°C (41°F to 104°F); the maximum ambient temperature decreases by 1°C for every 175m (574 ft) increase in altitude above 900 m (2,953 ft).
    - ASHRAE Class A4: 5°C to 45°C (41°F to 113°F); the maximum ambient temperature decreases by 1°C for every 125m (410 ft) increase in altitude above 900 m (2,953 ft).
  - Server off: 5°C to 45°C (41°F to 113°F)
  - Extended operation temperature (with limited configuration):
    - Server on: -20°C to 65°C (-4°F to 149°F), to 70°C for 16 hours(158°F)
    - Server off: -20°C to 65°C (-4°F to 149°F)

**Notes:** The configurations support extended operation temperature require:

- 12 core processor
- Fans with rear-to-front air flow direction
- One of the following electrical input:
  - Dual 12-48V variable DC power source input
  - Single 500W (230V/115V) AC power source input
- All installed DIMMs are RDIMM Extended Temperature
- All installed M.2 drives are M.2 SSD (Industrial)
- No GPU adapter or Ethernet adapter installed
- Shipment/storage: -40°C to 65°C (-40°F to 140°F)
- Maximum altitude: 3050 m (10,000 ft)
- Relative Humidity (non-condensing):
  - Operating: 8% to 90%, maximum dew point: 24°C (75.2°F)
  - Shipment/storage: 8% to 90%, maximum dew point : 27°C (80.6°F)
  - Non-operating (unpacked) storage can pass the following condition: 5% to 95% at 38.7°C (101.7°F) maximum dry-bulb temperature for 48 hrs.
- Particulate contamination
  - SE360 V2 supports a dust filter installed at rear of the node. The dust filter has a Minimum Efficiency Rating Value (MERV) of 5, per ASHRAE 52.2-2017 / 80% Average Arrestance per ASHRAE 52.1-1992.
  - SE360 V2 2U2N Enclosure supports a set of dust filters installed in the front shipping bracket. The dust filter set has a Minimum Efficiency Rating Value (MERV) of 5, per ASHRAE 52.2-2017 / 80% Average Arrestance per ASHRAE 52.1-1992.
  - SE360 V2 complies with IP3X Ingress Protection per ANSI/IEC60529-2020 Degrees of Protection Provided by Enclosures (IP Code)

**Notes:** The configurations with one of the following PCIe adapters do not comply with IP3X standard:

- ThinkSystem Qualcomm Cloud AI 100
- ThinkSystem Intel Flex 140 12GB Gen4 Passive GPU
- ThinkSystem Intel X710-T4L 10GBase-T 4-Port PCIe Ethernet Adapter
- ThinkSystem Intel E810-DA2 10/25GbE SFP28 2-Port PCIe Ethernet Adapter

**Attention:** Airborne particulates and reactive gases acting alone or in combination with other environmental factors such as humidity or temperature might pose a risk to the server. For information about the limits for particulates and gases, see [“Particulate contamination” on page 317](#).



## Shock and vibration specifications

The following information is a summary of the shock and vibration specifications of the server. Depending on the model, some features might not be available, or some specifications might not apply.

Table 7. Shock and vibration specifications

Mounting type of ThinkEdge SE360 V2	Shock (when the server is in operation)	Shock (when the server is not in operation, such as in shipping)	Vibration (when the server is in operation)	Vibration (when the server is not in operation, such as in shipping)
Desktop mount (standing alone)	Half-sine wave, 15G 11ms	Trapezoidal wave, 50G 167 inch/sec	5-100 Hz, 0.15 Grms, 30 mins	2-200 Hz, 1.04 Grms, 15 mins
Rack mount (in 2U2N enclosure)	Half-sine wave, 15G 3ms	Free-fall drop height: 100mm  Equivalent shock: 152 inch/sec, 2-3 ms	5-500 Hz, 0.21 Grms, 15mins	2-200 Hz, 0.8 Grms, 15 mins
DIN-rail mount	Half-sine wave, 15G 11ms	Not applicable	5-100 Hz, 0.15 Grms, 30 mins	Not applicable
Wall mount	<ul style="list-style-type: none"><li>Half-sine wave, 40G 6ms</li><li>Half-sine wave, 30G 11ms</li></ul>	Not applicable	<ul style="list-style-type: none"><li>1.91 Grms, 10-500z, 30 mins</li><li>1.04 Grms, 10-500z, 1 hr</li></ul>	Not applicable
Ceiling mount	Not applicable	Not applicable	<ul style="list-style-type: none"><li>1.91 Grms, 10-500z, 30 mins</li><li>1.04 Grms, 10-500z, 1 hr</li></ul>	Not applicable

## Particulate contamination

**Attention:** Airborne particulates (including metal flakes or particles) and reactive gases acting alone or in combination with other environmental factors such as humidity or temperature might pose a risk to the device that is described in this document.

Risks that are posed by the presence of excessive particulate levels or concentrations of harmful gases include damage that might cause the device to malfunction or cease functioning altogether. This specification sets forth limits for particulates and gases that are intended to avoid such damage. The limits must not be viewed or used as definitive limits, because numerous other factors, such as temperature or moisture content of the air, can influence the impact of particulates or environmental corrosives and gaseous contaminant transfer. In the absence of specific limits that are set forth in this document, you must implement practices that maintain particulate and gas levels that are consistent with the protection of human health and safety. If Lenovo determines that the levels of particulates or gases in your environment have caused damage to the device, Lenovo may condition provision of repair or replacement of devices or parts on implementation of appropriate remedial measures to mitigate such environmental contamination. Implementation of such remedial measures is a customer responsibility.

Table 8. Limits for particulates and gases

Contaminant	Limits
Reactive gases	<p>Severity level G1 as per ANSI/ISA 71.04-1985<sup>1</sup>:</p> <ul style="list-style-type: none"> <li>The copper reactivity level shall be less than 200 Angstroms per month (<math>\text{\AA}/\text{month} \approx 0.0035 \mu\text{g}/\text{cm}^2\text{-hour weight gain}</math>).<sup>2</sup></li> <li>The silver reactivity level shall be less than 200 Angstroms per month (<math>\text{\AA}/\text{month} \approx 0.0035 \mu\text{g}/\text{cm}^2\text{-hour weight gain}</math>).<sup>3</sup></li> <li>The reactive monitoring of gaseous corrosivity must be conducted approximately 5 cm (2 in.) in front of the rack on the air inlet side at one-quarter and three-quarter frame height off the floor or where the air velocity is much higher.</li> </ul>
Airborne particulates	<p>Data centers must meet the cleanliness level of ISO 14644-1 class 8.</p> <p>For data centers without airside economizer, the ISO 14644-1 class 8 cleanliness might be met by choosing one of the following filtration methods:</p> <ul style="list-style-type: none"> <li>The room air might be continuously filtered with MERV 8 filters.</li> <li>Air entering a data center might be filtered with MERV 11 or preferably MERV 13 filters.</li> </ul> <p>For data centers with airside economizers, the choice of filters to achieve ISO class 8 cleanliness depends on the specific conditions present at that data center.</p> <ul style="list-style-type: none"> <li>The deliquescent relative humidity of the particulate contamination should be more than 60% RH.<sup>4</sup></li> <li>Data centers must be free of zinc whiskers.<sup>5</sup></li> </ul>

<sup>1</sup> ANSI/ISA-71.04-1985. *Environmental conditions for process measurement and control systems: Airborne contaminants*. Instrument Society of America, Research Triangle Park, North Carolina, U.S.A.

<sup>2</sup> The derivation of the equivalence between the rate of copper corrosion growth in the thickness of the corrosion product in  $\text{\AA}/\text{month}$  and the rate of weight gain assumes that  $\text{Cu}_2\text{S}$  and  $\text{Cu}_2\text{O}$  grow in equal proportions.

<sup>3</sup> The derivation of the equivalence between the rate of silver corrosion growth in the thickness of the corrosion product in  $\text{\AA}/\text{month}$  and the rate of weight gain assumes that  $\text{Ag}_2\text{S}$  is the only corrosion product.

<sup>4</sup> The deliquescent relative humidity of particulate contamination is the relative humidity at which the dust absorbs enough water to become wet and promote ionic conduction.

<sup>5</sup> Surface debris is randomly collected from 10 areas of the data center on a 1.5 cm diameter disk of sticky electrically conductive tape on a metal stub. If examination of the sticky tape in a scanning electron microscope reveals no zinc whiskers, the data center is considered free of zinc whiskers.

## System-board connectors

The following illustration shows the internal connectors on the system board.

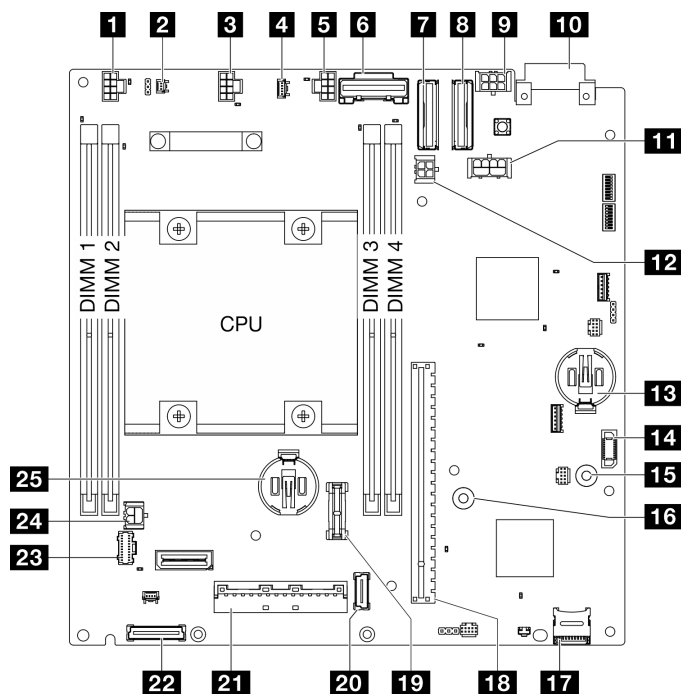


Figure 346. System-board connectors

Table 9. System-board connectors

<b>1</b> Air flow switch connector	<b>14</b> Power module board (PMB) connector
<b>2</b> Intrusion switch connector	<b>15</b> GND busbar for PMB
<b>3</b> Fan 1 connector	<b>16</b> P12V busbar for PMB
<b>4</b> Air flow sensor board connector	<b>17</b> MicroSD socket
<b>5</b> Fan 2 connector	<b>18</b> Riser slot
<b>6</b> PCIe Gen 3 / SATA connector	<b>19</b> TCM connector
<b>7</b> PCIe Gen 4 MCIO 1 connector	<b>20</b> Wireless adapter connector 1
<b>8</b> PCIe Gen 4 MCIO 2 connector	<b>21</b> I/O module board signal connector
<b>9</b> M.2 cabled adapter / PCIe cabled riser card power connector	<b>22</b> Wireless adapter connector 2
<b>10</b> PIB connector	<b>23</b> Operator panel connector
<b>11</b> GPU power connector	<b>24</b> I/O module board power connector
<b>12</b> M.2 cabled adapter power connector	<b>25</b> 3V security battery (CR2032)
<b>13</b> 3V system battery (CR2032)	

## Troubleshooting by system LEDs

See the following section for information on available system LEDs.

### Drive LEDs

This topic provides information on drive LEDs.

The following table describes the problems that are indicated by drive activity LED and drive status LED.

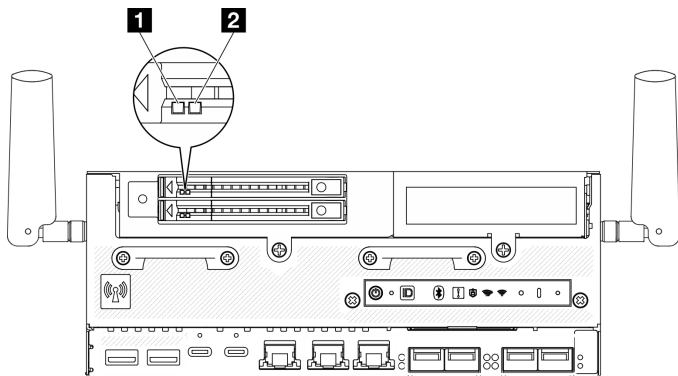


Figure 347. Drive LEDs

LED	Description
<b>1</b> Drive activity LED (green)	Each hot-swap drive comes with an activity LED. When this LED is flashing, it indicates that the drive is in use.
<b>2</b> Drive status LED (yellow)	The drive status LED indicates the following status: <ul style="list-style-type: none"><li>• The LED is lit: the drive has failed.</li><li>• The LED is flashing slowly (once per second): the drive is being rebuilt.</li><li>• The LED is flashing rapidly (three times per second): the drive is being identified.</li></ul>

## Front operator panel LEDs

The front operator panel of the server provides controls and LEDs.

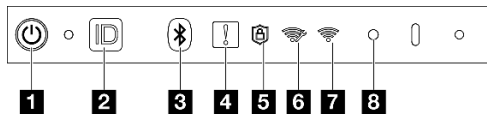


Figure 348. Front operator panel LEDs

Table 10. Front operator panel LEDs

<b>1</b> “Power button with power status LED (green)” on page 320	<b>5</b> “Security LED (green)” on page 321
<b>2</b> “System ID button with system ID LED (blue)” on page 321	<b>6</b> “XCC WLAN activity LED (green)” on page 322
<b>3</b> “Bluetooth button with LED (blue)” on page 321	<b>7</b> “x86 WLAN activity LED (green)” on page 322
<b>4</b> “System Error LED (yellow)” on page 321	<b>8</b> “NMI button” on page 322

### **1** Power button with power status LED (green)

You can press the power button to power on the server when you finish setting up the server. You also can hold the power button for several seconds to power off the server if you cannot shut down the server from the operating system. The states of the power LED are as follows:

Status	Color	Description
Off	None	No power supply is properly installed, or the LED itself has failed.
Flashing rapidly (four times per second)	Green	The server is turned off and is not ready to be turned on. The power button is disabled. This will last approximately 5 to 10 seconds.
Flashing slowly (once per second)	Green	The server is turned off and is ready to be turned on. You can press the power button to turn on the server.
Lit	Green	The server is turned on.

### 2 System ID button with system ID LED (blue)

Use the system ID button and the blue system ID LED to visually locate the server. Each time you press the system ID button, the state of the system ID LED changes. The LED can be changed to on, blinking, or off. You can also use the Lenovo XClarity Controller or a remote management program to change the state of the system ID LED to assist in visually locating the server among other servers.

### 3 Bluetooth button with LED (blue)

Press the Bluetooth button to enable Bluetooth. After the Bluetooth button is pressed, if SE360 V2 does not pair with any Bluetooth devices within 10 minutes, Bluetooth will be disabled automatically. Identify the status of Bluetooth with the Bluetooth LED.

Status	Color	Description
On	Blue	Bluetooth is enabled.
Off	None	Bluetooth is disabled, or the server does not come with Bluetooth.

### 4 System Error LED (yellow)

The system error LED helps you to determine if there are any system errors.

Status	Color	Description	Action
On	Yellow	<p>An error has been detected on the server. Causes might include one or more of the following errors:</p> <ul style="list-style-type: none"> <li>The temperature of the server reached the non-critical temperature threshold.</li> <li>The voltage of the server reached the non-critical voltage threshold.</li> <li>A fan has been detected to be running at low speed.</li> <li>The power supply has a critical error.</li> <li>The power supply is not connected to the power.</li> </ul>	Check the Event log to determine the exact cause of the error.
Off	None	The server is off or the server is on and is working correctly.	None.

### 5 Security LED (green)

The states of security LED are as following:

**Solid on:** The server is operating with security feature enabled.

**Blinking:** The server is in System Lockdown Mode. Activate or unlock the system for operation. See *Activate or unlock the system* in *User Guide* or *System Configuration Guide*.

**Off:** No security feature is enabled on the server.

#### 6 XCC WLAN activity LED (green)

The WLAN activity LED helps you identify the status of WLAN connection.

Status	Color	Description
On	Green	There is XCC WLAN connection.
Off	None	The is no XCC WLAN connection, or the server does not come with wireless module.

#### 7 x86 WLAN activity LED (green)

The WLAN activity LED helps you identify the status of WLAN connection.

Status	Color	Description
On	Green	The x86 WLAN is operating properly.
Off	None	The x86 WLAN RF is turned off, or the x86 WLAN is not operating properly, or the server does not come with wireless module.

#### 8 NMI button

Press this button to force a nonmaskable interrupt to the processor. You might have to use a pen or the end of a straightened paper clip to press the button. You can also use it to force a blue-screen memory dump. Use this button only when you are directed to do so by Lenovo Support.

## PMB status LED

This topic provides information about the PMB status LED and corresponding action suggestions.

**Note:** Depending on the model, your server might look slightly different from the illustration.

The following minimal configuration is required for the server to start:

- One DRAM memory module in DIMM slot 1
- Depending on the model, one of the following power source:
  - One 300W external power adapter
  - AC power source input
  - DC power source input
- One 2280 NVMe M.2 drive in Slot 1 on the I/O module board
- Two system fans

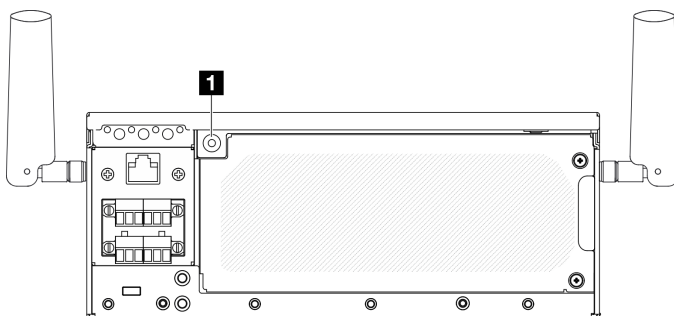


Figure 349. PMB status LED

# 1 PMB status LED

Status	Color	Description	Action
On	Green	The source power is delivered to the system board normally. The server is or is ready to be powered on.	None.
Off	None	The source power is not delivered to the system board normally: <ul style="list-style-type: none"> <li>The power source may not be connected or working properly.</li> </ul>	<ul style="list-style-type: none"> <li>Check if the external power cords are correctly connected to the server and to a functioning power source.</li> <li>Check to see if the connection of the cables between the power module board (PMB) and the power input board (PIB) module is stable.</li> <li>Replace the PMB or the PIB module.</li> </ul>

## Rear operator panel LEDs

The rear operator panel of the server provides controls and LEDs.

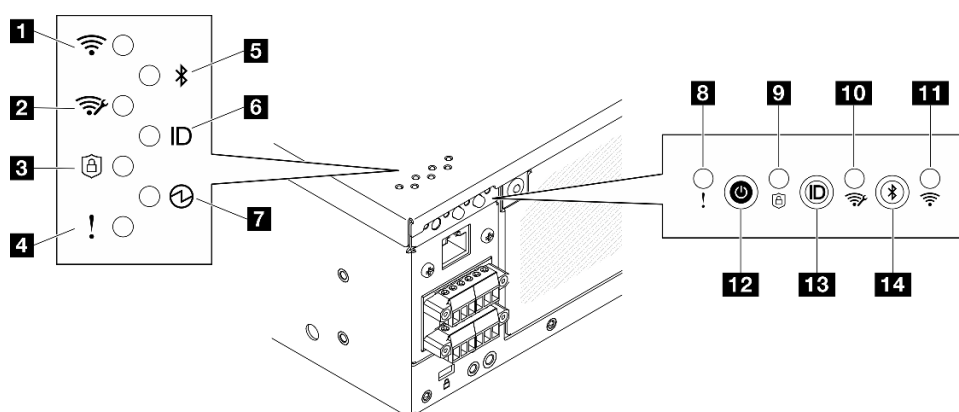


Figure 350. Rear operator panel LEDs

Table 11. Rear operator panel LEDs

<b>1</b> "x86 WLAN activity LED (green)" on page 323	<b>8</b> "System Error LED (yellow)" on page 324
<b>2</b> "XCC WLAN activity LED (green)" on page 324	<b>9</b> "Security LED (green)" on page 324
<b>3</b> "Security LED (green)" on page 324	<b>10</b> "XCC WLAN activity LED (green)" on page 324
<b>4</b> "System Error LED (yellow)" on page 324	<b>11</b> "x86 WLAN activity LED (green)" on page 323
<b>5</b> "Bluetooth LED (blue)" on page 324	<b>12</b> "Power button with power status LED (green)" on page 325
<b>6</b> "System ID LED (blue)" on page 325	<b>13</b> "System ID button with system ID LED (blue)" on page 325
<b>7</b> "Power status LED (green)" on page 325	<b>14</b> "Bluetooth button with LED (blue)" on page 324

### 1 11 x86 WLAN activity LED (green)

The WLAN activity LED helps you identify the status of WLAN connection.

Status	Color	Description
On	Green	The x86 WLAN is operating properly.
Off	None	The x86 WLAN RF is turned off, or the x86 WLAN is not operating properly, or the server does not come with wireless module.

### 2 10 XCC WLAN activity LED (green)

The WLAN activity LED helps you identify the status of WLAN connection.

Status	Color	Description
On	Green	There is XCC WLAN connection.
Off	None	There is no XCC WLAN connection, or the server does not come with wireless module.

### 3 9 Security LED (green)

The states of security LED are as following:

**Solid on:** The server is operating with security feature enabled.

**Blinking:** The server is in System Lockdown Mode. Activate or unlock the system for operation. See *Activate or unlock the system* in *User Guide* or *System Configuration Guide*.

**Off:** No security feature is enabled on the server.

### 4 8 System Error LED (yellow)

The system error LED helps you to determine if there are any system errors.

Status	Color	Description	Action
On	Yellow	<p>An error has been detected on the server. Causes might include one or more of the following errors:</p> <ul style="list-style-type: none"> <li>The temperature of the server reached the non-critical temperature threshold.</li> <li>The voltage of the server reached the non-critical voltage threshold.</li> <li>A fan has been detected to be running at low speed.</li> <li>The power supply has a critical error.</li> <li>The power supply is not connected to the power.</li> </ul>	Check the Event log to determine the exact cause of the error.
Off	None	The server is off or the server is on and is working correctly.	None.

### 5 Bluetooth LED (blue) 14 Bluetooth button with LED (blue)

Press the Bluetooth button to enable Bluetooth. After the Bluetooth button is pressed, if SE360 V2 does not pair with any Bluetooth devices within 10 minutes, Bluetooth will be disabled automatically. Identify the status of Bluetooth with the Bluetooth LED.



Status	Color	Description
On	Blue	Bluetooth is enabled.
Off	None	Bluetooth is disabled, or the server does not come with Bluetooth.

#### **6 System ID LED (blue) 16 System ID button with system ID LED (blue)**

Use the system ID button and the blue system ID LED to visually locate the server. Each time you press the system ID button, the state of the system ID LED changes. The LED can be changed to on, blinking, or off. You can also use the Lenovo XClarity Controller or a remote management program to change the state of the system ID LED to assist in visually locating the server among other servers.

#### **7 Power status LED (green) 17 Power button with power status LED (green)**

You can press the power button to power on the server when you finish setting up the server. You also can hold the power button for several seconds to power off the server if you cannot shut down the server from the operating system. The states of the power LED are as follows:

Status	Color	Description
Off	None	No power supply is properly installed, or the LED itself has failed.
Flashing rapidly (four times per second)	Green	The server is turned off and is not ready to be turned on. The power button is disabled. This will last approximately 5 to 10 seconds.
Flashing slowly (once per second)	Green	The server is turned off and is ready to be turned on. You can press the power button to turn on the server.
Lit	Green	The server is turned on.

## **System-board LEDs**

The following illustrations show the light-emitting diodes (LEDs) on the system board.

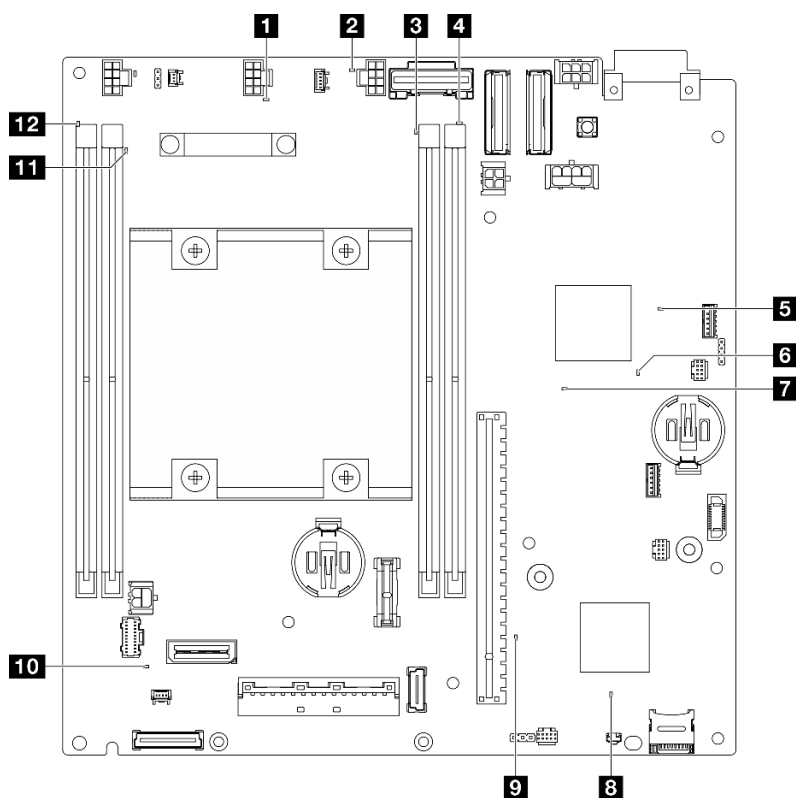


Figure 351. System-board LEDs

Table 12. System board LEDs description and actions

LED	Description and actions
<b>1</b> Fan 1 error LED	<b>LED on:</b> an error has occurred to the fan the LED represents.
<b>2</b> Fan 2 error LED	
<b>3</b> DIMM 3 error LED	<b>LED on:</b> an error has occurred to the DIMM the LED represents.
<b>4</b> DIMM 4 error LED	
<b>5</b> FPGA power status LED (green)	<p>The FPGA power LED helps to identify different FPGA errors.</p> <ul style="list-style-type: none"> <li><b>LED blinking rapidly (four times per second):</b> The FPGA permission is delayed.</li> <li><b>LED blinking slowly (once per second):</b> The FPGA is ready to power on.</li> <li><b>LED on:</b> The FPGA power is on.</li> </ul>
<b>6</b> FPGA heartbeat LED (green)	<p>This LED indicates power-on and power-off sequencing.</p> <ul style="list-style-type: none"> <li><b>LED blinking:</b> the system is functioning properly, and no action is necessary.</li> <li><b>LED not blinking:</b> replace the system board (trained technician only). See <a href="#">“System board replacement (trained technician only)” on page 229</a>.</li> </ul>

Table 12. System board LEDs description and actions (continued)

LED	Description and actions
<b>7</b> System power LED	<p>The states of the system power LED are as follows:</p> <ul style="list-style-type: none"> <li>• <b>Off:</b> No power supply is properly installed, or the LED itself has failed.</li> <li>• <b>Flashing rapidly (four times per second):</b> The server is turned off and is not ready to be turned on. The power-control button is disabled. This will last approximately 5 to 10 seconds.</li> <li>• <b>Flashing slowly (once per second):</b> The server is turned off and is ready to be turned on. Press the power-control button to turn on the server.</li> <li>• <b>On:</b> The server is turned on.</li> </ul>
<b>8</b> XCC status LED	<p>The states of the XCC status LED are as follows:</p> <ul style="list-style-type: none"> <li>• <b>On:</b> XCC is alive.</li> <li>• <b>Off:</b> XCC is not ready or not alive. The LED is in this state when the server is first connected to the power source. It does not turn on until the SSP (Synchronous Serial Port) is ready.</li> </ul>
<b>9</b> XCC heartbeat LED (green)	<p>This LED indicates the XCC heartbeat and boot process:</p> <ul style="list-style-type: none"> <li>• <b>LED blinking rapidly:</b> XCC code is in the loading process.</li> <li>• <b>LED going off momentarily and then starts blinking slowly:</b> XCC is fully operational. You can now press the power-control button to power on the server.</li> </ul>
<b>10</b> System error LED (yellow)	<p><b>LED on:</b> an error has occurred. Complete the following steps:</p> <ul style="list-style-type: none"> <li>• Check the identification LED and check log LED and follow the instructions.</li> <li>• Check the Lenovo XClarity Controller event log and the system error log for information about the error.</li> <li>• Save the log if necessary, and clear the log afterwards.</li> </ul>
<b>11</b> DIMM 2 error LED <b>12</b> DIMM 1 error LED	<p><b>LED on:</b> an error has occurred to the DIMM the LED represents.</p>

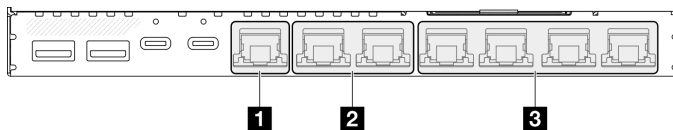
## XCC system management port and LAN port LEDs

This topic provides information on LEDs of XCC system management port and LAN ports.

The LAN ports of ThinkEdge SE360 V2 varies by model. Refer to the following information to identify XCC system management port and LAN port LEDs:

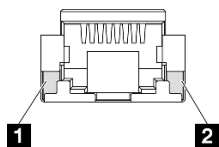
- [“LAN port LEDs of 1GbE I/O module board” on page 327](#)
- [“LAN port LEDs of 10/25GbE I/O module board” on page 329](#)

### LAN port LEDs of 1GbE I/O module board



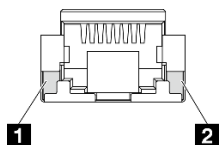
<b>1</b> “XCC system management port LEDs” on page 328	<b>3</b> “1GbE RJ-45 LAN port link and activity LED” on page 328 (LAN 3 to 6)
<b>2</b> “2.5GbE RJ-45 LAN port link and activity LED” on page 328 (LAN 1 and 2)	

### 1 XCC system management port LEDs



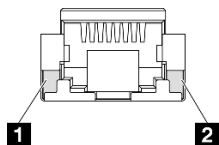
LED	Description
<b>1</b> XCC system management port (1 GbE RJ-45) activity LED	Use this green LED to distinguish the network activity status: <ul style="list-style-type: none"> <li>• <b>Off:</b> The server is disconnected from a LAN.</li> <li>• <b>Green:</b> The network is connected and active.</li> </ul>
<b>2</b> XCC system management port (1GbE RJ-45) link LED	Use this green LED to distinguish the network connectivity status: <ul style="list-style-type: none"> <li>• <b>Off:</b> The network link is disconnected.</li> <li>• <b>Green:</b> The network link is established.</li> </ul>

### 2 2.5GbE RJ-45 LAN port link and activity LED



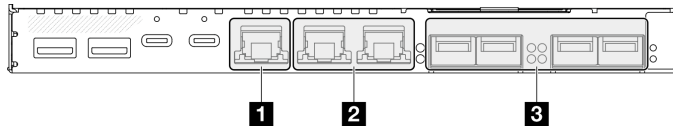
LED	Description
<b>1</b> Network activity LED (green)	<b>Blinking:</b> The network is connected and active.
<b>2</b> Network link LED (green)	<ul style="list-style-type: none"> <li>• <b>Off:</b> One of the following status: <ul style="list-style-type: none"> <li>– The network link is disconnected.</li> <li>– The network link is connected with LAN speed of 100Mbps.</li> </ul> </li> <li>• <b>On:</b> The network link is connected with LAN speed of 2.5G/1Gbps.</li> </ul>

### 3 1GbE RJ-45 LAN port link and activity LED



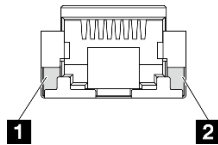
LED	Description
<b>1</b> Network activity LED (green)	<b>Blinking:</b> The network is connected and active.
<b>2</b> Network link LED (green)	<ul style="list-style-type: none"> <li>• <b>Off:</b> The network link is disconnected.</li> <li>• <b>On:</b> The network link is connected.</li> </ul>

## LAN port LEDs of 10/25GbE I/O module board



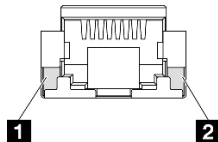
<b>1</b> “XCC system management port LEDs” on page 329	<b>3</b> “25GbE/10GbE SFP28 LAN port link and activity LED” on page 330 (LAN 3 to 6)
<b>2</b> “2.5GbE RJ-45 LAN port link and activity LED” on page 329 (LAN 1 and 2)	

### 1 XCC system management port LEDs



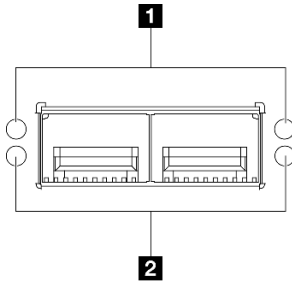
LED	Description
<b>1</b> XCC system management port (1 GbE RJ-45) activity LED	Use this green LED to distinguish the network activity status: <ul style="list-style-type: none"> <li>• <b>Off:</b> The server is disconnected from a LAN.</li> <li>• <b>Green:</b> The network is connected and active.</li> </ul>
<b>2</b> XCC system management port (1GbE RJ-45) link LED	Use this green LED to distinguish the network connectivity status: <ul style="list-style-type: none"> <li>• <b>Off:</b> The network link is disconnected.</li> <li>• <b>Green:</b> The network link is established.</li> </ul>

### 2 2.5GbE RJ-45 LAN port link and activity LED



LED	Description
<b>1</b> Network activity LED (green)	<b>Blinking:</b> The network is connected and active.
<b>2</b> Network link LED (green)	<ul style="list-style-type: none"> <li>• <b>Off:</b> One of the following status: <ul style="list-style-type: none"> <li>– The network link is disconnected.</li> <li>– The network link is connected with LAN speed of 100Mbps.</li> </ul> </li> <li>• <b>On:</b> The network link is connected with LAN speed of 2.5G/1Gbps.</li> </ul>

### ■ 25GbE/10GbE SFP28 LAN port link and activity LED



LED	Color	Description
<b>1</b> Network activity LED	Green	<b>Blinking:</b> The network is connected and active.
<b>2</b> Network link LED	The color of the LED indicates the LAN speed. <ul style="list-style-type: none"><li>• Yellow: 25G</li><li>• Green: 10G</li></ul>	<ul style="list-style-type: none"><li>• <b>Off:</b> The network link is disconnected.</li><li>• <b>On:</b> The network link is connected.</li></ul>

## General problem determination procedures

Use the information in this section to resolve problems if the event log does not contain specific errors or the server is inoperative.

If you are not sure about the cause of a problem and the power source is connected correctly, complete the following steps to attempt to resolve the problem:

1. Power off the server.
2. Make sure that the server is cabled correctly.
3. Remove or disconnect the following devices if applicable, one at a time, until you find the failure. Power on and configure the server each time you remove or disconnect a device.
  - Any external devices.
  - Surge-suppressor device (on the server).
  - Printer, mouse, and non-Lenovo devices.
  - Each adapter.
  - Hard disk drives.
  - Memory modules until you reach the minimal configuration for debugging that is supported for the server.

To determine the minimal configuration for your server, see “Minimal configuration for debugging” in [“Technical specifications” on page 307](#).

4. Power on the server.

If the problem is solved when you remove an adapter from the server, but the problem recurs when you install the same adapter again, suspect the adapter. If the problem recurs when you replace the adapter with a different one, try a different PCIe slot.

If the problem appears to be a networking problem and the server passes all system tests, suspect a network cabling problem that is external to the server.

## Resolving suspected power problems

Power problems can be difficult to solve. For example, a short circuit can exist anywhere on any of the power distribution buses. Usually, a short circuit will cause the power subsystem to shut down because of an overcurrent condition.

Complete the following steps to diagnose and resolve a suspected power problem.

Step 1. Check the event log and resolve any errors related to the power.

**Note:** Start with the event log of the application that is managing the server. For more information about event logs, see [“Event logs” on page 305](#).

Step 2. Check for short circuits, for example, if a loose screw is causing a short circuit on a circuit board.

Step 3. Remove the adapters and disconnect the cables and power cords to all internal and external devices until the server is at the minimal configuration for debugging that is required for the server to start. To determine the minimal configuration for your server, see “Minimal configuration for debugging” in [“Technical specifications” on page 307](#).

Step 4. Reconnect all power cords and turn on the server. If the server starts successfully, reseat the adapters and devices one at a time until the problem is isolated.

If the server does not start from the minimal configuration, replace the components in the minimal configuration one at a time until the problem is isolated.

## Resolving suspected Ethernet controller problems

The method that you use to test the Ethernet controller depends on which operating system you are using. See the operating-system documentation for information about Ethernet controllers, and see the Ethernet controller device-driver readme file.

Complete the following steps to attempt to resolve suspected problems with the Ethernet controller.

Step 1. Make sure that the correct device drivers, which come with the server are installed and that they are at the latest level.

Step 2. Make sure that the Ethernet cable is installed correctly.

- The cable must be securely attached at all connections. If the cable is attached but the problem remains, try a different cable.
- If you set the Ethernet controller to operate at 100 Mbps or 1000 Mbps, you must use Category 5 cabling.

Step 3. Determine whether the hub supports auto-negotiation. If it does not, try configuring the integrated Ethernet controller manually to match the speed and duplex mode of the hub.

Step 4. Check the Ethernet controller LEDs on the server. These LEDs indicate whether there is a problem with the connector, cable, or hub.

Ethernet controller LED locations are specified in [“Troubleshooting by system LEDs” on page 319](#).

- The Ethernet link status LED is lit when the Ethernet controller receives a link pulse from the hub. If the LED is off, there might be a defective connector or cable or a problem with the hub.
- The Ethernet transmit/receive activity LED is lit when the Ethernet controller sends or receives data over the Ethernet network. If the Ethernet transmit/receive activity is off, make sure that the hub and network are operating and that the correct device drivers are installed.

Step 5. Check the Network activity LED on the server. The Network activity LED is lit when data is active on the Ethernet network. If the Network activity LED is off, make sure that the hub and network are operating and that the correct device drivers are installed.

Network activity LED location is specified in [“Troubleshooting by system LEDs” on page 319](#).

Step 6. Check for operating-system-specific causes of the problem, and also make sure that the operating system drivers are installed correctly.

Step 7. Make sure that the device drivers on the client and server are using the same protocol.

If the Ethernet controller still cannot connect to the network but the hardware appears to be working, the network administrator must investigate other possible causes of the error.

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## Troubleshooting by symptom

Use this information to find solutions to problems that have identifiable symptoms.

To use the symptom-based troubleshooting information in this section, complete the following steps:

1. Check the event log of the application that is managing the server and follow the suggested actions to resolve any event codes.
  - If you are managing the server from the Lenovo XClarity Administrator, begin with the Lenovo XClarity Administrator event log.
  - If you are using some other management application, begin with the Lenovo XClarity Controller event log.

For more information about event logs (see [“Event logs” on page 305](#)).

2. Review this section to find the symptoms that you are experiencing and follow the suggested actions to resolve the issue.
3. If the problem persists, contact support (see [“Contacting Support” on page 353](#)).

## Fan problems

See this section to resolve issues related the to fans.

- [“Abnormally high RPM \(revolutions per minute\)” on page 332](#)

### Abnormally high RPM (revolutions per minute)

Complete the following steps until the problem is solved.

1. With air flow sensor board installed, SE360 V2 BMC supports dust filter measurement feature to check the status of the rear dust filter. Log in to Lenovo XClarity Controller web interface, and go to **Utilization → Fan Speed (RPM) → Dust Filter Measurement** to take the measurement by selecting **Run immediately (once)**, or by setting a regular schedule. When taking the measurement, the fans will operate at full fan speed for about 30 seconds. Make sure the high RPM is not caused by dust filter measurement.
2. Check to see if the system inlet perforation or heatsinks are clogged.
3. Make sure that all air baffles are correctly installed in the server.
4. Check the thermal grease on the processor, and make sure it's not contaminated.

## Intermittent problems

Use this information to solve intermittent problems.

- [“Intermittent external device problems” on page 333](#)
- [“Intermittent KVM problems” on page 333](#)
- [“Intermittent unexpected reboots” on page 333](#)



### Intermittent external device problems

Complete the following steps until the problem is solved.

1. Update the UEFI and XCC firmware to the latest versions.
2. Make sure that the correct device drivers are installed. See the manufacturer's website for documentation.
3. For a USB device:
  - a. Make sure that the device is configured correctly.

Restart the server and press the key according to the on-screen instructions to display the LXPM system setup interface. (For more information, see the “Startup” section in the LXPM documentation compatible with your server at <https://pubs.lenovo.com/lxpm-overview/>.) Then, click **System Settings → Devices and I/O Ports → USB Configuration**.

- b. Connect the device to another port. If using a USB hub, remove the hub and connect the device directly to the server. Make sure that the device is configured correctly for the port.

### Intermittent KVM problems

Complete the following steps until the problem is solved.

#### Video problems:

1. Make sure that all cables and the console breakout cable are properly connected and secure.
2. Make sure that the monitor is working properly by testing it on another server.
3. Test the console breakout cable on a working server to ensure that it is operating properly. Replace the console breakout cable if it is defective.

#### Keyboard problems:

Make sure that all cables and the console breakout cable are properly connected and secure.

#### Mouse problems:

Make sure that all cables and the console breakout cable are properly connected and secure.

### Intermittent unexpected reboots

**Note:** Some uncorrectable errors require that the server reboot so that it can disable a device, such as a memory DIMM or a processor to allow the machine to boot up properly.

1. If the reset occurs during POST and the POST watchdog timer is enabled, make sure that sufficient time is allowed in the watchdog timeout value (POST Watchdog Timer).

To check the POST watchdog time, restart the server and press the key according to the on-screen instructions to display the LXPM system setup interface. (For more information, see the “Startup” section in the LXPM documentation compatible with your server at <https://pubs.lenovo.com/lxpm-overview/>.) Then, click **BMC Settings → POST Watchdog Timer**.

2. If the reset occurs after the operating system starts, do one of the followings:
  - Enter the operating system when the system operates normally and set up operating system kernel dump process (Windows and Linux base operating systems will be using different method). Enter the UEFI setup menus and disable the feature, or disable it with the following OneCli command. `OneCli.exe config set SystemRecovery.RebootSystemOnNMI Disable --bmc XCC_USER:XCC_PASSWORD@XCC_IPAddress`
  - Disable any automatic server restart (ASR) utilities, such as the Automatic Server Restart IPMI Application for Windows, or any ASR devices that are installed.

3. See the management controller event log to check for an event code that indicates a reboot. See [“Event logs” on page 305](#) for information about viewing the event log. If you are using Linux base operating system, then capture all logs back to Lenovo support for further investigation.

## Keyboard, mouse, KVM switch or USB-device problems

Use this information to solve problems related to a keyboard, mouse, KVM switch or USB-device problems.

- [“All or some keys on the keyboard do not work” on page 334](#)
- [“Mouse does not work” on page 334](#)
- [“KVM switch problems” on page 334](#)
- [“USB-device does not work” on page 334](#)

### All or some keys on the keyboard do not work

1. Make sure that:
  - The keyboard cable is securely connected.
  - The server and the monitor are turned on.
2. If you are using a USB keyboard, run the Setup utility and enable keyboardless operation.
3. If you are using a USB keyboard and it is connected to a USB hub, disconnect the keyboard from the hub and connect it directly to the server.
4. Replace the keyboard.

### Mouse does not work

1. Make sure that:
  - The mouse cable is securely connected to the server.
  - The mouse device drivers are installed correctly.
  - The server and the monitor are turned on.
  - The mouse option is enabled in the Setup utility.
2. If you are using a USB mouse and it is connected to a USB hub, disconnect the mouse from the hub and connect it directly to the server.
3. Replace the mouse.

### KVM switch problems

1. Make sure that the KVM switch is supported by your server.
2. Make sure that the KVM switch is powered on correctly.
3. If the keyboard, mouse or monitor can be operated normally with direct connection to the server, then replace the KVM switch.

### USB-device does not work

1. Make sure that:
  - The correct USB device driver is installed.
  - The operating system supports USB devices.
2. Make sure that the USB configuration options are set correctly in system setup.

Restart the server and press the key according to the on-screen instructions to display the LXPM system setup interface. (For more information, see the “Startup” section in the LXPM documentation compatible with your server at <https://pubs.lenovo.com/lxpm-overview/>.) Then, click **System Settings → Devices and I/O Ports → USB Configuration**.

3. If you are using a USB hub, disconnect the USB device from the hub and connect it directly to the server.

## Memory problems

See this section to resolve issues related to memory.

### Common memory problems

- [“Displayed system memory is less than installed physical memory” on page 335](#)
- [“Invalid memory population detected” on page 335](#)

### Displayed system memory is less than installed physical memory

Complete the following procedure to solve the problem.

**Note:** Each time you install or remove a memory module, you must disconnect the server from the power source; then, wait 10 seconds before restarting the server.

1. Make sure that:
  - No error LEDs are lit. See [“Troubleshooting by system LEDs” on page 319](#).
  - No memory module error LEDs are lit on the system board (system board assembly).
  - Memory mirrored channel does not account for the discrepancy.
  - The memory modules are seated correctly.
  - You have installed the correct type of memory module (see [“Memory module installation rules and order” on page 5](#) for requirements).
  - After changing or replacing a memory module, memory configuration is updated accordingly in the Setup Utility.
  - All banks of memory are enabled. The server might have automatically disabled a memory bank when it detected a problem, or a memory bank might have been manually disabled.
  - There is no memory mismatch when the server is at the minimum memory configuration.
2. Reseat the memory modules, and then restart the server.
3. Check the POST error log:
  - If a memory module was disabled by a systems-management interrupt (SMI), replace the memory module.
  - If a memory module was disabled by the user or by POST, reseat the memory module; then, run the Setup Utility and enable the memory module.
4. Re-enable all memory modules using the Setup Utility, and then restart the server.
5. (Trained technician only) Replace the system board (system board assembly).

### Invalid memory population detected

If this warning message appears, complete the following steps:

Invalid memory population (unsupported DIMM population) detected. Please verify memory configuration is valid.

1. See [“Memory module installation rules and order” on page 5](#) to make sure the present memory module population sequence is supported.
2. If the present sequence is indeed supported, see if any of the modules is displayed as “disabled” in Setup Utility.
3. Reseat the module that is displayed as “disabled,” and reboot the system.
4. If the problem persists, replace the memory module.

## Monitor and video problems

Use this information to solve problems related to a monitor or video.

- [“Incorrect characters are displayed” on page 336](#)
- [“Screen is blank” on page 336](#)
- [“Screen goes blank when you start some application programs” on page 336](#)
- [“The monitor has screen jitter, or the screen image is wavy, unreadable, rolling, or distorted” on page 336](#)
- [“The wrong characters appear on the screen” on page 337](#)

### Incorrect characters are displayed

Complete the following steps:

1. Verify that the language and locality settings are correct for the keyboard and operating system.
2. If the wrong language is displayed, update the server firmware to the latest level. See “Update the firmware” in *User Guide* or *System Configuration Guide*.

### Screen is blank

**Note:** Make sure that the expected boot mode has not been changed from the UEFI to Legacy or vice versa.

1. If the server is attached to a KVM switch, bypass the KVM switch to eliminate it as a possible cause of the problem: connect the monitor cable directly to the correct connector on the rear of the server.
2. The management controller remote presence function is disabled if you install an optional video adapter. To use the management controller remote presence function, remove the optional video adapter.
3. If the server is installed with the graphical adapters while turning on the server, the Lenovo logo is displayed on the screen after approximately 3 minutes. This is normal operation while the system loads.
4. Make sure that:
  - The server is turned on and there is power supplied to the server.
  - The monitor cables are connected correctly.
  - The monitor is turned on and the brightness and contrast controls are adjusted correctly.
5. Make sure that the correct server is controlling the monitor, if applicable.
6. Make sure that the video output is not affected by corrupted server firmware; See “Update the firmware” in *User Guide* or *System Configuration Guide*.
7. If the problem remains, contact Lenovo Support.

### Screen goes blank when you start some application programs

1. Make sure that:
  - The application program is not setting a display mode that is higher than the capability of the monitor.
  - You installed the necessary device drivers for the application.

### The monitor has screen jitter, or the screen image is wavy, unreadable, rolling, or distorted

1. If the monitor self-tests show that the monitor is working correctly, consider the location of the monitor. Magnetic fields around other devices (such as transformers, appliances, fluorescents, and other monitors) can cause screen jitter or wavy, unreadable, rolling, or distorted screen images. If this happens, turn off the monitor.

**Attention:** Moving a color monitor while it is turned on might cause screen discoloration.

Move the device and the monitor at least 305 mm (12 in.) apart, and turn on the monitor.

**Notes:**

- a. To prevent diskette drive read/write errors, make sure that the distance between the monitor and any external diskette drive is at least 76 mm (3 in.).
  - b. Non-Lenovo monitor cables might cause unpredictable problems.
2. Reseat the monitor cable.
3. Replace the following components one at a time, in the order shown, restarting the server each time:
  - a. Monitor cable
  - b. Monitor
  - c. I/O module board signal cable
  - d. I/O module board
  - e. (Trained technician only) System board (system board assembly)

### The wrong characters appear on the screen

Complete the following steps until the problem is solved:

1. Verify that the language and locality settings are correct for the keyboard and operating system.
2. If the wrong language is displayed, update the server firmware to the latest level. See “Update the firmware” in *User Guide* or *System Configuration Guide*.

## Network problems

Use this information to resolve issues related to networking.

- [“Cannot wake server using Wake on LAN” on page 337](#)
- [“Could not log in using LDAP account with SSL enabled” on page 337](#)
- [“General WLAN problems” on page 338](#)
- [“WLAN connection is unstable ” on page 338](#)
- [“x86 WLAN does not work” on page 340](#)
- [“XCC WLAN does not work” on page 340](#)
- [“The Bluetooth button does not work” on page 341](#)

### Cannot wake server using Wake on LAN

Complete the following steps until the problem is resolved:

1. Check the system event log and resolve any related problems. To view the system event log, go to **Setup Utility** and select **Security → System Event Log → View System Event Log**.
2. Change the Wake on LAN setting. Go to **Setup Utility** and select **Power → Automatic Power On → Wake on LAN**. The default setting is automatic. Change it to primary.
3. Depending on the method of using Wake on LAN, remove and reinstall the I/O module board or the network adapter.
4. Turn off the server and disconnect it from the power source; then, wait 10 seconds before restarting the server.
5. If the problem recurs, depending on the method of using Wake on LAN, replace the I/O module board or the network adapter.

### Could not log in using LDAP account with SSL enabled

Complete the following steps until the problem is resolved:

1. Make sure that the license key is valid.

2. Generate a new license key and log in again.

### General WLAN problems

The following information provides useful tips to solve general WLAN problems.

- [Video] Lenovo Self-Help: How to connect to a wireless network <https://support.lenovo.com/videos/vid100761>
- [Video] Trouble connecting to the internet or a wireless network <https://support.lenovo.com/videos/vid100753>
- [Video] Tips & Tricks - Why is My Internet Slow? <https://support.lenovo.com/videos/vid500118>
- Turn airplane mode on or off <https://support.lenovo.com/solutions/msh500061>

### WLAN connection is unstable

The WLAN signal strength might be obstructed when the server is placed at the “corner of a building/department” or in a “WLAN noisy” environment.

To improve the signal strength:

- Adjust the direction of x86 WLAN antennas.

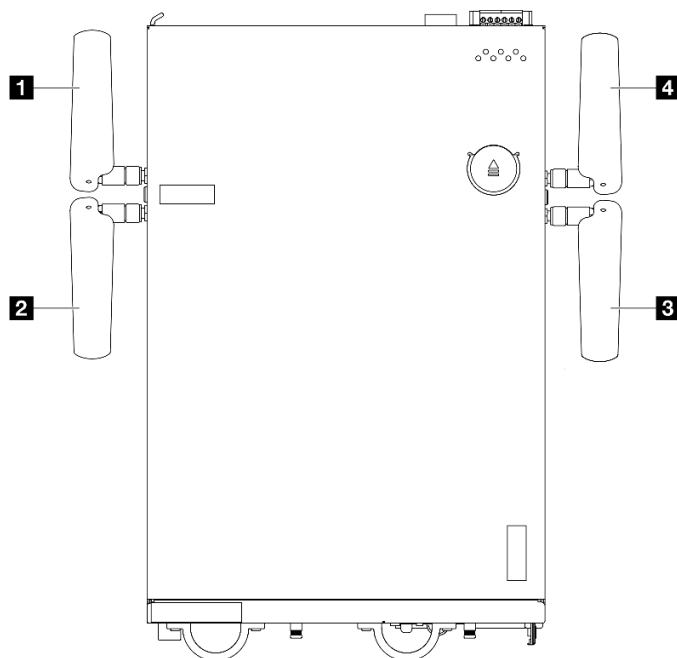
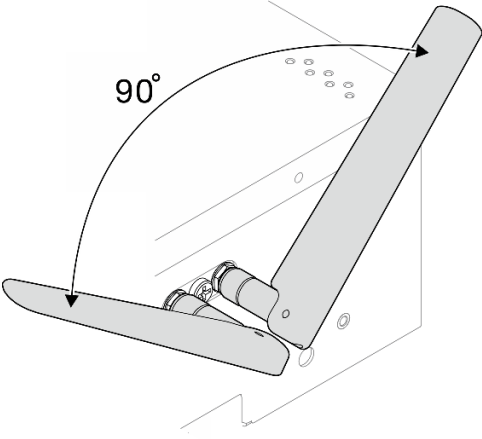
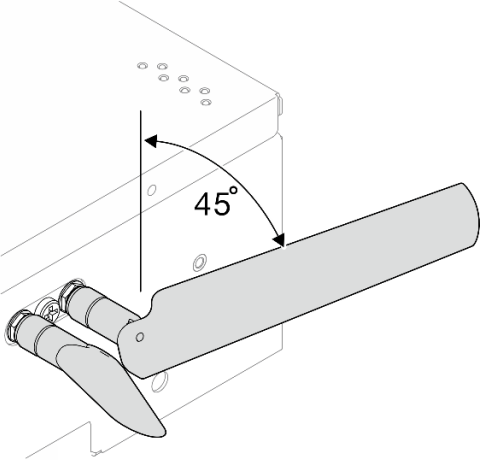


Figure 352. Locations of WLAN antennas

<b>1</b> Antenna 1 (XCC WLAN)	<b>4</b> Antenna 4 (x86 WLAN)
<b>2</b> Antenna 2 (XCC WLAN)	<b>3</b> Antenna 3 (x86 WLAN)

Adjust the angle of the antennas according to the operating environment for better performance.

Minimal requirement	Recommended angle
 <p>Keep two WLAN antennas away from each other at an angle not less than 90° to avoid signal interference.</p>	 <p>For better performance, adjust the antennas away from the chassis at a 45° angle.</p>

- Move the server to an area with less RF noise or a location without shields (metal parts).
- Move the server closer to the WLAN AP router.
- Adjust the WLAN router's frequency to a channel with less RF noise.
- Adjust the direction of the router's antennas with some positioned vertically and some positioned horizontally.
- WLAN networking performance will be affected when multiple devices are connected to the same channel at the same time. Change the frequency and channel of the WLAN router, use a WLAN extender to help spread out the signal, or use a router with a more powerful signal.
- If x86 WLAN is not stable, check the status of the x86 WLAN module (Intel AX210).

#### Notes:

- The x86 WLAN module (Intel AX210) officially supports Microsoft Windows Server operating system.
  - Some non-Windows operating systems with corresponding inbox driver might be able to support the x86 WLAN module (Intel AX210). For a list of operating systems supporting Intel AX210, see *ThinkEdge SE360 V2 Product Guide* on <https://lenovopress.lenovo.com/>.
1. Use one of the following method to open Device Manager:
    - Search for **Device Manager** from the search bar.
    - Go to **WIN+X → Device Manager**.
  2. Go to **Network adapters** and locate Intel AX210.
  3. Go to **Driver** tag and check the driver version which is displayed. If the driver version is not the latest, update the driver. See "Update the driver" of "Install and update the driver for x86 WLAN module (Intel AX210)" in *User Guide* or *System Configuration Guide*.

To check the status of x86 WLAN, implement the following commands in Command Prompt:

- For Linux:
  - `ipconfig /**check if WLAN is ready**//`
  - `ping -I wlan0 8.8.8.8 /** check if WLAN connection is functioning **//`

- For Microsoft Windows:

– ping -S x86\_WLAN IP address destination IP address // \*\*For example, ping -S 192.168.7.7 8.8.8.8\*\* //

### x86 WLAN does not work

Complete the following steps until the problem is solved.

1. Check the status of the x86 WLAN module (Intel AX210).

#### Notes:

- The x86 WLAN module (Intel AX210) officially supports Microsoft Windows Server operating system.
  - Some non-Windows operating systems with corresponding inbox driver might be able to support the x86 WLAN module (Intel AX210). For a list of operating systems supporting Intel AX210, see *ThinkEdge SE360 V2 Product Guide* on <https://lenovopress.lenovo.com/>.
- a. Use one of the following method to open Device Manager:
    - Search for **Device Manager** from the search bar.
    - Go to **WIN+X → Device Manager**.
  - b. Go to **Network adapters** and locate Intel AX210. If Intel AX210 is not shown in **Network adapters**, install the driver for Intel AX210. See “Install the driver” of “Install and update the driver for x86 WLAN module (Intel AX210)” in *User Guide* or *System Configuration Guide*.
  - c. Go to **Driver** tag and check the driver version which is displayed. If the driver version is not the latest, update the driver. See “Update the driver” of “Install and update the driver for x86 WLAN module (Intel AX210)” in *User Guide* or *System Configuration Guide*.
2. If Intel AX210 is still not shown in Device Manager after installing the driver, reseal the following components, one at a time, in the order shown. Restart the server after reseating each component.
    - a. Wireless adapter
    - b. x86 WLAN module (Intel AX210)
  3. If the problem remains, replace the following components, one at a time, in the order shown. Restart the server after replacing each component.
    - a. Wireless adapter
    - b. x86 WLAN module (Intel AX210)

### XCC WLAN does not work

Complete the following steps until the problem is solved.

1. Check the status of the wireless AP.
  - a. Make sure that the wireless AP is active and working properly.
  - b. Check if other devices can access to the wireless AP.
2. Check the status of XCC WLAN feature.
  - a. Check if XCC WLAN feature is enabled.
    - 1) Before connecting XCC to WLAN, set the network connection for XCC to access and enable XCC WLAN feature. See “Set the network connection for the Lenovo XClarity Controller” in *User Guide* or *System Configuration Guide*.
    - 2) To enable XCC WLAN feature, see “XCC WLAN configuration” in *User Guide* or *System Configuration Guide*.
  - b. Check if XCC WLAN connects to WLAN successfully. If not, check if the required information for WLAN connection is correct.



- c. If WLAN connection is successfully established, but the problem remains, check the WLAN connection status to find the possible problem and resolve it. Go to **BMC Configuration → Network → WLAN → Status** for WLAN connection status.
  - 1) Check if the IP assignment from DHCP is successful.
  - 2) Check the network settings, like IPv4, netmask, gateway, DNS.
  - 3) Check if an IP address conflict happens.
  - 4) If the problem remains but the hardware appears to be working, the network administrator must investigate other possible causes of the problem.

### The Bluetooth button does not work

The Bluetooth buttons (one on the front and one on the rear of the node) can be disabled through Lenovo XClarity Controller web interface or ThinkShield Edge Mobile Management App.

Once the Bluetooth buttons are disabled, the buttons do not work.

See *Activate the system in User Guide* or *System Configuration Guide*, and activate the system with another method.

## Observable problems

Use this information to solve observable problems.

- “Server hangs during the UEFI boot process” on page 341
- “The server immediately displays the POST Event Viewer when it is turned on” on page 341
- “Server is unresponsive (POST is complete and operating system is running)” on page 342
- “Server is unresponsive (POST failed and cannot start System Setup)” on page 342
- “Voltage planar fault is displayed in the event log” on page 342
- “Unusual smell” on page 343
- “Server seems to be running hot” on page 343
- “Cracked parts or cracked chassis” on page 343

### Server hangs during the UEFI boot process

If the system hangs during the UEFI boot process with the message UEFI: DXE INIT on the display, make sure that Option ROMs were not configured with a setting of **Legacy**. You can remotely view the current settings for Option ROMs by running the following command using the Lenovo XClarity Essentials OneCLI:

```
onecli config show EnableDisableAdapterOptionROMSupport --bmc xcc_userid:xcc_password@xcc_ipaddress
```

To recover a system that hangs during the boot process with Legacy Option ROM settings, see the following Tech Tip:

<https://datacentersupport.lenovo.com/solutions/ht506118>

If legacy Option ROMs must be used, do not set slot Option ROMs to **Legacy** on the Devices and I/O Ports menu. Instead, set slot Option ROMs to **Auto** (the default setting), and set the System Boot Mode to **Legacy Mode**. Legacy option ROMs will be invoked shortly before the system boots.

### The server immediately displays the POST Event Viewer when it is turned on

Complete the following steps until the problem is solved.

1. Correct any errors that are indicated by the system LEDs and diagnostics display.

2. (Trained technician only) Replace the system board (system board assembly); then, restart the server.

### **Server is unresponsive (POST is complete and operating system is running)**

Complete the following steps until the problem is solved.

- If you are in the same location as the compute node, complete the following steps:
  1. If you are using a KVM connection, make sure that the connection is operating correctly. Otherwise, make sure that the keyboard and mouse are operating correctly.
  2. If possible, log in to the compute node and verify that all applications are running (no applications are hung).
  3. Restart the compute node.
  4. If the problem remains, make sure that any new software has been installed and configured correctly.
  5. Contact your place of purchase of the software or your software provider.
- If you are accessing the compute node from a remote location, complete the following steps:
  1. Make sure that all applications are running (no applications are hung).
  2. Attempt to log out of the system and log back in.
  3. Validate the network access by pinging or running a trace route to the compute node from a command line.
    - a. If you are unable to get a response during a ping test, attempt to ping another compute node in the enclosure to determine whether it is a connection problem or compute node problem.
    - b. Run a trace route to determine where the connection breaks down. Attempt to resolve a connection issue with either the VPN or the point at which the connection breaks down.
  4. Restart the compute node remotely through the management interface.
  5. If the problem remains, verify that any new software has been installed and configured correctly.
  6. Contact your place of purchase of the software or your software provider.

### **Server is unresponsive (POST failed and cannot start System Setup)**

Configuration changes, such as added devices or adapter firmware updates, and firmware or application code problems can cause the server to fail POST (the power-on self-test).

If this occurs, the server responds in either of the following ways:

- The server restarts automatically and attempts POST again.
- The server hangs, and you must manually restart the server for the server to attempt POST again.

After a specified number of consecutive attempts (automatic or manual), the server reverts to the default UEFI configuration and starts System Setup so that you can make the necessary corrections to the configuration and restart the server. If the server is unable to successfully complete POST with the default configuration, there might be a problem with the system board (system board assembly).

You can specify the number of consecutive restart attempts in System Setup. Restart the server and press the key according to the on-screen instructions to display the LXPM system setup interface. (For more information, see the “Startup” section in the LXPM documentation compatible with your server at <https://pubs.lenovo.com/lxpm-overview/>.) Then, click **System Settings → Recovery and RAS → POST Attempts → POST Attempts Limit**. Available options are 3, 6, 9, and disable.

### **Voltage planar fault is displayed in the event log**

Complete the following steps until the problem is solved.

1. Revert the system to the minimum configuration. See [“Specifications” on page 307](#) for the minimally required number of DIMMs.
2. Restart the system.
  - If the system restarts, add each of the removed items one at a time and restart the system each time until the error occurs. Replace the item for which the error occurs.
  - If the system does not restart, suspect the system board (system board assembly).

### Unusual smell

Complete the following steps until the problem is solved.

1. An unusual smell might be coming from newly installed equipment.
2. If the problem remains, contact Lenovo Support.

### Server seems to be running hot

Complete the following steps until the problem is solved.

Multiple compute nodes or chassis:

1. Make sure that the room temperature is within the specified range (see [“Specifications” on page 307](#)).
2. Make sure that the fans are installed correctly.
3. Update the UEFI and XCC to the latest versions.
4. Make sure that the fillers in the server are installed correctly (see [Chapter 1 “Hardware replacement procedures” on page 1](#) for detailed installation procedures).
5. Use the IPMI command to ramp up the fan speed to the full fan speed to see whether the issue can be resolved.

**Note:** The IPMI raw command should only be used by trained technician and the each system has its own specific PMI raw command.

6. Check the management processor event log for rising temperature events. If there are no events, the compute node is running within normal operating temperatures. Note that you can expect some variation in temperature.

### Cracked parts or cracked chassis

Contact Lenovo Support.

## Optional-device problems

Use this information to solve problems related to optional devices.

- [“External USB device is not recognized” on page 343](#)
- [“PCIe adapter is not recognized or is not functioning” on page 344](#)
- [“Insufficient PCIe resources are detected.” on page 344](#)
- [“A Lenovo optional device that was just installed does not work.” on page 344](#)
- [“A Lenovo optional device that worked previously does not work now” on page 345](#)

### External USB device is not recognized

Complete the following steps until the problem is resolved:

1. Update the UEFI firmware to the latest version.
2. Make sure that the proper drivers are installed on the compute node. See the product documentation for the USB device for information about device drivers.

3. Use the Setup utility to make sure that the device is configured correctly.
4. If the USB device is plugged into a hub or the console breakout cable, unplug the device and plug it directly into the USB port on the front of the compute node.

### **PCIe adapter is not recognized or is not functioning**

Complete the following steps until the problem is resolved:

1. Update the UEFI firmware to the latest version.
2. Check the event log and resolve any issues related to the device.
3. Validate that the device is supported for the server (see <https://serverproven.lenovo.com>). Make sure that the firmware level on the device is at the latest supported level and update the firmware if applicable.
4. Make sure that the adapter is installed in a correct slot.
5. Make sure that the proper device drivers are installed for the device.
6. Resolve any resource conflicts if running legacy mode (UEFI). Check legacy ROM boot orders and modify the UEFI setting for MM config base.

**Note:** Ensure that you modify the ROM boot order associated with the PCIe adapter to the first execution order.

7. Check <http://datacentersupport.lenovo.com> for any tech tips (also known as retain tips or service bulletins) that might be related to the adapter.
8. Ensure any adapter external connections are correct and that the connectors are not physically damaged.
9. Make sure that the PCIe adapter is installed with the supported operating system.

### **Insufficient PCIe resources are detected.**

If you see an error message stating “Insufficient PCI Resources Detected,” complete the following steps until the problem is resolved:

1. Press Enter to access System Setup Utility.
2. Select **System Settings → Devices and I/O Ports → MM Config Base**; then, modify the setting to increase the device resources. For example, modify 3 GB to 2 GB or modify 2 GB to 1 GB.
3. Save the settings and restart the system.
4. If the error recurs with the highest device resource setting (1GB), shutdown the system and remove some PCIe devices; then, power on the system.
5. If the reboot failed, repeat step 1 to step 4.
6. If the error recurs, press Enter to access System Setup Utility.
7. Select **System Settings → Devices and I/O Ports → PCI 64-Bit Resource Allocation**, then; modify the setting from **Auto** to **Enable**.
8. If the Boot Device does not support MMIO above 4GB for Legacy Boot, use UEFI Boot Mode or remove/disable some PCIe devices.
9. DC cycle the system and ensure the system is enter UEFI boot menu or the operating system; then, capture the FFDC log.
10. Contact Lenovo technical support.

### **A Lenovo optional device that was just installed does not work.**

1. Make sure that:
  - The device is supported for the server (see <https://serverproven.lenovo.com>).
  - You followed the installation instructions that came with the device and the device is installed correctly.

- You have not loosened any other installed devices or cables.
  - You updated the configuration information in system setup. When you start a server and press the key according to the on-screen instructions to display the Setup Utility. (For more information, see the “Startup” section in the LXPM documentation compatible with your server at <https://pubs.lenovo.com/lxpm-overview/>.) Whenever memory or any other device is changed, you must update the configuration.
2. Reseat the device that you have just installed.
  3. Replace the device that you have just installed.
  4. Reseat the cable connection and check there is no physical damage to the cable.
  5. If there is any cable damages, then replace the cable.

#### **A Lenovo optional device that worked previously does not work now**

1. Make sure that all of the cable connections for the device are secure.
2. If the device comes with test instructions, use those instructions to test the device.
3. Reseat the cable connection and check if any physical parts have been damaged.
4. Replace the cable.
5. Reseat the failing device.
6. Replace the failing device.

## **Performance problems**

Use this information to solve performance problems.

- “Network performance” on page 345
- “Operating system performance” on page 345

### **Network performance**

Complete the following steps until the problem is solved:

1. Isolate which network is operating slowly (such as storage, data, and management). You might find it helpful to use ping tools or operating-system tools such as task manager or resource manager.
2. Check for traffic congestion on the network.
3. Update the NIC device driver, or the storage device controller device driver.
4. Use the traffic-diagnostic tools that are provided by the IO-module manufacturer.

### **Operating system performance**

Complete the following steps until the problem is solved:

1. If you have recently made changes to the compute node (for example updated device drivers or installed software applications) remove the changes.
2. Check for any networking issues.
3. Check the operating system logs for performance related errors.
4. Check for events related to high temperatures and power issues as the compute node might be throttled to help with cooling. If it is throttled, reduce the workload on the compute node to help improve performance.
5. Check for events related to disabled DIMMs. If you do not have enough memory for the application workload, your operating system will have poor performance.
6. Ensure that the workload is not too high for the configuration.

## Power on and power off problems

Use this information to resolve issues when powering on or powering off the server.

- [“The power button does not work \(server does not start\)” on page 346](#)
- [“Server does not power on” on page 346](#)

### The power button does not work (server does not start)

**Note:** The power button will not function until approximately 1 to 3 minutes after the server has been connected to power source to allow time for BMC to initialize.

Complete the following steps until the problem is resolved:

1. Make sure that the power buttons on the server are working correctly:
  - a. If the power button on the rear operator panel does not work:
    - 1) If the power button on the front operator panel does not work as well, go to [b. on page 346](#).
    - 2) If the power button on the front operator panel is working correctly, reseal the rear operator panel and the cable that connects front and rear operator panels; then, reseal the server power cords.
    - 3) If the problem remains, go to [b. on page 346](#).
  - b. If the power button on the front operator panel does not work, or the power button on the rear operator panel does not work after completing Step a:
    - 1) If the power button on the rear operator panel is working correctly, reseal the front operator panel; then, reseal the server power cords.
    - 2) Reseat the cable that connects the front operator panel to the system board; then, reseal the server power cords.
    - 3) If the problem remains, replace the following components, one group at a time, in the order shown; reseal the server power cords after replacing each group of the components:
      - a) The front operator panel, and the cable that connects the front operator panel to the system board.
      - b) The rear operator panel, and the cable that connects front and rear operator panels.
2. Make sure that:
  - The power cords are correctly connected to the server and to a working electrical outlet.
  - The power status LED at the rear of the server does not indicate a problem.
  - The Power button LED is lit on and is flashing slowly.
  - The push force is enough and with button force response.
3. If the power button LED is not lit on or is not flashing correctly, reseal all power source, power module board (PMB), PIB module and all the cables that connect PMB and PIB module; then, check the power button LED again.
4. If you have just installed an optional device, remove it, and restart the server.
5. If the issue is still observed or without power button LED lit on, implement the minimum configuration to check whether any specific components lock the power permission. Replace the power source one at a time, and check the power button function.
6. If everything is still done and the issue cannot be resolved, please collect the failure information with system logs captured to Lenovo support.

### Server does not power on

Complete the following steps until the problem is resolved:

1. Check the event log for any events related to the server not powering on.
2. Check for any LEDs that are flashing amber.
3. Check the power LED on the system board (system board assembly).
4. Check if the power status led at the rear of the server is lit on.
5. AC cycle the system.
6. Remove the CMOS battery for at least ten seconds, then, reinstall the CMOS battery.
7. Try to power on the system by IPMI command through XCC or by the power button.
8. Implement the minimum configuration (see [“Technical specifications” on page 307](#)).
9. Reseat all power source, power module board (PMB), PIB module and all the cables that connect PMB and PIB module; then, check if the power status LED at the rear of the server is lit on.
10. If the issue cannot be resolved by above actions, call service to review the issue symptom and see whether the system board (system board assembly) replacement is necessary.

## Serial-device problems

Use this information to solve problems with serial ports or devices.

- [“Serial device does not work” on page 347](#)

### Serial device does not work

1. Make sure that:
  - The device is compatible with the server.
  - The serial port is enabled and is assigned a unique address.
  - The device is connected to the correct connector (see *Rear View* in *User Guide* or *System Configuration Guide*).
2. Reseat the following components:
  - a. Failing serial device.
  - b. Serial cable.
3. Replace the following components:
  - a. Failing serial device.
  - b. Serial cable.
4. (Trained technician only) Replace the system board (system board assembly).

## Software problems

Use this information to solve software problems.

1. To determine whether the problem is caused by the software, make sure that:
  - The server has the minimum memory that is needed to use the software. For memory requirements, see the information that comes with the software.

**Note:** If you have just installed an adapter or memory, the server might have a memory-address conflict.

  - The software is designed to operate on the server.
  - Other software works on the server.
  - The software works on another server.
2. If you receive any error messages while you use the software, see the information that comes with the software for a description of the messages and suggested solutions to the problem.

3. Contact your place of purchase of the software.

## Storage drive problems

Use this information to resolve issues related to the storage drives.

- “Server cannot recognize a hard drive” on page 348
- “Multiple hard drives fail” on page 349
- “Multiple hard drives are offline” on page 349
- “A replacement hard disk drive does not rebuild” on page 349
- “Green hard disk drive activity LED does not represent actual state of associated drive” on page 349
- “Yellow hard disk drive status LED does not represent actual state of associated drive” on page 349

### Server cannot recognize a hard drive

**Note:** When SED encryption is enabled, rebooting the system is required after installing a drive; without rebooting, the drive will not be recognized by the host OS.

Complete the following steps until the problem is solved.

1. Observe the associated yellow hard disk drive status LED. If the LED is lit, it indicates a drive fault.
2. If the status LED is lit, remove the drive from the bay, wait 45 seconds, and reinsert the drive, making sure that the drive assembly connects to the hard disk drive backplane. If SED encryption is enabled on the system, reboot the system.
3. Observe the associated green hard disk drive activity LED and the yellow status LED and perform corresponding operations in different situations:
  - If the green activity LED is flashing and the yellow status LED is not lit, the drive is recognized by the controller and is working correctly. Run the diagnostics tests for the hard disk drives. When you start a server and press the key according to the on-screen instructions, the LXPm is displayed by default. (For more information, see the “Startup” section in the LXPm documentation compatible with your server at <https://pubs.lenovo.com/lxpm-overview/>.) You can perform hard drive diagnostics from this interface. From the Diagnostic page, click **Run Diagnostic → Disk Drive Test**.
  - If the green activity LED is flashing and the yellow status LED is flashing slowly, the drive is recognized by the controller and is rebuilding.
  - If neither LED is lit or flashing, check whether the hard disk drive backplane is correctly seated. For details, go to step 4.
  - If the green activity LED is flashing and the yellow status LED is lit, replace the drive.
4. Make sure that the hard disk drive backplane is correctly seated. When it is correctly seated, the drive assemblies correctly connect to the backplane without bowing or causing movement of the backplane.
5. Reseat the backplane power cable and repeat steps 1 through 3.
6. Reseat the backplane signal cable and repeat steps 1 through 3.
7. Suspect the backplane signal cable or the backplane:
  - Replace the affected backplane signal cable.
  - Replace the affected backplane.
8. Run the diagnostics tests for the hard disk drives. When you start a server and press the key according to the on-screen instructions, the LXPm is displayed by default. (For more information, see the “Startup” section in the LXPm documentation compatible with your server at <https://pubs.lenovo.com/lxpm-overview/>.) You can perform hard drive diagnostics from this interface. From the Diagnostic page, click **Run Diagnostic → Disk Drive Test**.



Based on those tests:

- If the backplane passes the test but the drives are not recognized, replace the backplane signal cable and run the tests again.
- Replace the backplane.
- If the adapter fails the test, disconnect the backplane signal cable from the adapter and run the tests again.
- If the adapter fails the test, replace the adapter.

### **Multiple hard drives fail**

Complete the following steps until the problem is solved:

- View the Lenovo XClarity Controller event log for events related to power supplies or vibration issues and resolve those events.
- Make sure that the device drivers and firmware for the hard disk drive and server are at the latest level.

**Important:** Some cluster solutions require specific code levels or coordinated code updates. If the device is part of a cluster solution, verify that the latest level of code is supported for the cluster solution before you update the code.

### **Multiple hard drives are offline**

Complete the following steps until the problem is solved:

- View the Lenovo XClarity Controller event log for events related to power supplies or vibration issues and resolve those events.
- View the storage subsystem log for events related to the storage subsystem and resolve those events.

### **A replacement hard disk drive does not rebuild**

Complete the following steps until the problem is solved:

1. Make sure that the hard disk drive is recognized by the adapter (the green hard disk drive activity LED is flashing).
2. Review the RAID documentation to determine the correct configuration parameters and settings.

### **Green hard disk drive activity LED does not represent actual state of associated drive**

Complete the following steps until the problem is solved:

1. If the green hard disk drive activity LED does not flash when the drive is in use, run the diagnostics tests for the hard disk drives. When you start a server and press the key according to the on-screen instructions, the LXPM is displayed by default. (For more information, see the “Startup” section in the LXPM documentation compatible with your server at <https://pubs.lenovo.com/lxpm-overview/>.) You can perform hard drive diagnostics from this interface. From the Diagnostic page, click **Run Diagnostic → Disk Drive Test**
2. If the drive passes the test, replace the backplane.
3. If the drive fails the test, replace the drive.

### **Yellow hard disk drive status LED does not represent actual state of associated drive**

Complete the following steps until the problem is solved:

1. Turn off the server.
2. Reseat the backplane signal cable and backplane power cable.
3. Reseat the hard disk drive.
4. Power on the server and observe the activity of the hard disk drive LEDs.



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## Appendix A. Getting help and technical assistance

If you need help, service, or technical assistance or just want more information about Lenovo products, you will find a wide variety of sources available from Lenovo to assist you.

On the World Wide Web, up-to-date information about Lenovo systems, optional devices, services, and support are available at:

<http://datacentersupport.lenovo.com>

**Note:** IBM is Lenovo's preferred service provider for ThinkSystem.

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### Before you call

Before you call, there are several steps that you can take to try and solve the problem yourself. If you decide that you do need to call for assistance, gather the information that will be needed by the service technician to more quickly resolve your problem.

#### Attempt to resolve the problem yourself

You can solve many problems without outside assistance by following the troubleshooting procedures that Lenovo provides in the online help or in the Lenovo product documentation. The online help also describes the diagnostic tests that you can perform. The documentation for most systems, operating systems, and programs contains troubleshooting procedures and explanations of error messages and error codes. If you suspect a software problem, see the documentation for the operating system or program.

You can find the product documentation for your ThinkSystem products at the following location:

<https://pubs.lenovo.com/>

You can take these steps to try to solve the problem yourself:

- Check all cables to make sure that they are connected.
- Check the power switches to make sure that the system and any optional devices are turned on.
- Check for updated software, firmware, and operating-system device drivers for your Lenovo product. (See the following links) The Lenovo Warranty terms and conditions state that you, the owner of the Lenovo product, are responsible for maintaining and updating all software and firmware for the product (unless it is covered by an additional maintenance contract). Your service technician will request that you upgrade your software and firmware if the problem has a documented solution within a software upgrade.
  - Drivers and software downloads
    - <https://datacentersupport.lenovo.com/products/servers/thinkedge/se360v2/7dam/downloads/driver-list/>
  - Operating system support center
    - <https://datacentersupport.lenovo.com/solutions/server-os>
  - Operating system installing instructions
    - <https://pubs.lenovo.com/thinkedge#os-installation>
- If you have installed new hardware or software in your environment, check <https://serverproven.lenovo.com> to make sure that the hardware and software are supported by your product.
- Refer to [Chapter 3 “Problem determination” on page 305](#) for instructions on isolating and solving issues.
- Go to <http://datacentersupport.lenovo.com> and check for information to help you solve the problem.

To find the Tech Tips available for your server:

1. Go to <http://datacentersupport.lenovo.com> and navigate to the support page for your server.
2. Click on **How To's** from the navigation pane.
3. Click **Article Type → Solution** from the drop-down menu.

Follow the on-screen instructions to choose the category for the problem that you are having.

- Check Lenovo Data Center Forum at [https://forums.lenovo.com/t5/Datacenter-Systems/ct-p/sv\\_eg](https://forums.lenovo.com/t5/Datacenter-Systems/ct-p/sv_eg) to see if someone else has encountered a similar problem.

### Gathering information needed to call Support

If you require warranty service for your Lenovo product, the service technicians will be able to assist you more efficiently if you prepare the appropriate information before you call. You can also go to <http://datacentersupport.lenovo.com/warrantylookup> for more information about your product warranty.

Gather the following information to provide to the service technician. This data will help the service technician quickly provide a solution to your problem and ensure that you receive the level of service for which you might have contracted.

- Hardware and Software Maintenance agreement contract numbers, if applicable
- Machine type number (Lenovo 4-digit machine identifier). Machine type number can be found on the ID label, see “Identifying the server and access the Lenovo XClarity Controller” in *User Guide* or *System Configuration Guide*.
- Model number
- Serial number
- Current system UEFI and firmware levels
- Other pertinent information such as error messages and logs

As an alternative to calling Lenovo Support, you can go to <https://support.lenovo.com/servicerequest> to submit an Electronic Service Request. Submitting an Electronic Service Request will start the process of determining a solution to your problem by making the pertinent information available to the service technicians. The Lenovo service technicians can start working on your solution as soon as you have completed and submitted an Electronic Service Request.

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## Collecting service data

To clearly identify the root cause of a server issue or at the request of Lenovo Support, you might need collect service data that can be used for further analysis. Service data includes information such as event logs and hardware inventory.

Service data can be collected through the following tools:

- **Lenovo XClarity Provisioning Manager**

Use the Collect Service Data function of Lenovo XClarity Provisioning Manager to collect system service data. You can collect existing system log data or run a new diagnostic to collect new data.

- **Lenovo XClarity Controller**

You can use the Lenovo XClarity Controller web interface or the CLI to collect service data for the server. The file can be saved and sent to Lenovo Support.

- For more information about using the web interface to collect service data, see the “Backing up the BMC configuration” section in the XCC documentation compatible with your server at <https://pubs.lenovo.com/lxcc-overview/>.

- For more information about using the CLI to collect service data, see the “XCC `ffdc` command” section in the XCC documentation compatible with your server at <https://pubs.lenovo.com/lxcc-overview/>.

- **Lenovo XClarity Administrator**

Lenovo XClarity Administrator can be set up to collect and send diagnostic files automatically to Lenovo Support when certain serviceable events occur in Lenovo XClarity Administrator and the managed endpoints. You can choose to send diagnostic files to Lenovo Support using Call Home or to another service provider using SFTP. You can also manually collect diagnostic files, open a problem record, and send diagnostic files to the Lenovo Support.

You can find more information about setting up automatic problem notification within the Lenovo XClarity Administrator at [https://pubs.lenovo.com/lxca/admin\\_setupcallhome](https://pubs.lenovo.com/lxca/admin_setupcallhome).

- **Lenovo XClarity Essentials OneCLI**

Lenovo XClarity Essentials OneCLI has inventory application to collect service data. It can run both in-band and out-of-band. When running in-band within the host operating system on the server, OneCLI can collect information about the operating system, such as the operating system event log, in addition to the hardware service data.

To obtain service data, you can run the `getinfor` command. For more information about running the `getinfor`, see [https://pubs.lenovo.com/lxce-onecli/onecli\\_r\\_getinfor\\_command](https://pubs.lenovo.com/lxce-onecli/onecli_r_getinfor_command).

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## Contacting Support

You can contact Support to obtain help for your issue.

You can receive hardware service through a Lenovo Authorized Service Provider. To locate a service provider authorized by Lenovo to provide warranty service, go to <https://datacentersupport.lenovo.com/serviceprovider> and use filter searching for different countries. For Lenovo support telephone numbers, see <https://datacentersupport.lenovo.com/supportphonenumberlist> for your region support details.



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## Appendix B. Documents and supports

This section provides handy documents, driver and firmware downloads, and support resources.

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### Documents download

This section provides introduction and download links for handy documents.

#### Documents

Download the following product documentations at:

[https://pubs.lenovo.com/se360-v2/pdf\\_files](https://pubs.lenovo.com/se360-v2/pdf_files)

- **Rail Installation Guides**
  - Rail installation in a rack
- **Activation Guide**
  - Activation process and activation code
- **Regulatory Notice for ThinkEdge SE360 V2 with WLAN Module**
  - Regulation of product in different countries
- **User Guide**
  - Complete overview, system configuration, hardware components replacing, and troubleshooting.

Selected chapters from *User Guide*:

  - **System Configuration Guide** : Server overview, components identification, system LEDs and diagnostics display, product unboxing, setting up and configuring the server.
  - **Hardware Maintenance Guide** : Installing hardware components, cable routing, and troubleshooting.
- **Messages and Codes Reference**
  - XClarity Controller, LXPM, and uEFI events
- **UEFI Manual**
  - UEFI setting introduction

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### Support websites

This section provides driver and firmware downloads and support resources.

#### Support and downloads

- Drivers and Software download website for ThinkEdge SE360 V2
  - <https://datacentersupport.lenovo.com/products/servers/thinkedge/se360v2/7dam/downloads/driver-list/>
- Lenovo Data Center Forum
  - [https://forums.lenovo.com/t5/Datacenter-Systems/ct-p/sv\\_eg](https://forums.lenovo.com/t5/Datacenter-Systems/ct-p/sv_eg)
- Lenovo Data Center Support for ThinkEdge SE360 V2
  - <https://datacentersupport.lenovo.com/products/servers/thinkedge/se360v2/7dam>
- Lenovo License Information Documents

- <https://datacentersupport.lenovo.com/documents/Invo-eula>
- Lenovo Press website (Product Guides/Datasheets/White papers)
  - <https://lenovopress.lenovo.com/>
- Lenovo Privacy Statement
  - <https://www.lenovo.com/privacy>
- Lenovo Product Security Advisories
  - [https://datacentersupport.lenovo.com/product\\_security/home](https://datacentersupport.lenovo.com/product_security/home)
- Lenovo Product Warranty Plans
  - <http://datacentersupport.lenovo.com/warrantylookup>
- Lenovo Server Operating Systems Support Center website
  - <https://datacentersupport.lenovo.com/solutions/server-os>
- Lenovo ServerProven website (Options compatibility lookup)
  - <https://serverproven.lenovo.com>
- Operating System Installation Instructions
  - <https://pubs.lenovo.com/thinkedge#os-installation>
- Submit an eTicket (service request)
  - <https://support.lenovo.com/servicerequest>
- Subscribe to Lenovo Data Center Group product notifications (Stay up to date on firmware updates)
  - <https://datacentersupport.lenovo.com/solutions/ht509500>



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## Appendix C. Notices

Lenovo may not offer the products, services, or features discussed in this document in all countries. Consult your local Lenovo representative for information on the products and services currently available in your area.

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Any performance data contained herein was determined in a controlled environment. Therefore, the result obtained in other operating environments may vary significantly. Some measurements may have been made on development-level systems and there is no guarantee that these measurements will be the same on

generally available systems. Furthermore, some measurements may have been estimated through extrapolation. Actual results may vary. Users of this document should verify the applicable data for their specific environment.

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## Important notes

Processor speed indicates the internal clock speed of the processor; other factors also affect application performance.

CD or DVD drive speed is the variable read rate. Actual speeds vary and are often less than the possible maximum.

When referring to processor storage, real and virtual storage, or channel volume, KB stands for 1 024 bytes, MB stands for 1 048 576 bytes, and GB stands for 1 073 741 824 bytes.

When referring to hard disk drive capacity or communications volume, MB stands for 1 000 000 bytes, and GB stands for 1 000 000 000 bytes. Total user-accessible capacity can vary depending on operating environments.

Maximum internal hard disk drive capacities assume the replacement of any standard hard disk drives and population of all hard-disk-drive bays with the largest currently supported drives that are available from Lenovo.

Maximum memory might require replacement of the standard memory with an optional memory module.

Each solid-state memory cell has an intrinsic, finite number of write cycles that the cell can incur. Therefore, a solid-state device has a maximum number of write cycles that it can be subjected to, expressed as total bytes written (TBW). A device that has exceeded this limit might fail to respond to system-generated commands or might be incapable of being written to. Lenovo is not responsible for replacement of a device that has exceeded its maximum guaranteed number of program/erase cycles, as documented in the Official Published Specifications for the device.

Lenovo makes no representations or warranties with respect to non-Lenovo products. Support (if any) for the non-Lenovo products is provided by the third party, not Lenovo.

Some software might differ from its retail version (if available) and might not include user manuals or all program functionality.

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## Electronic emission notices

When you attach a monitor to the equipment, you must use the designated monitor cable and any interference suppression devices that are supplied with the monitor.

Additional electronic emissions notices are available at:

[https://pubs.lenovo.com/important\\_notices/](https://pubs.lenovo.com/important_notices/)

## Taiwan Region BSMI RoHS declaration

單元 Unit	限用物質及其化學符號 Restricted substances and its chemical symbols					
	鉛Lead (Pb)	汞Mercury (Hg)	鎘Cadmium (Cd)	六價鉻 Hexavalent chromium (Cr <sup>6+</sup> )	多溴聯苯 Polybrominated biphenyls (PBB)	多溴二苯醚 Polybrominated diphenyl ethers (PBDE)
機架	○	○	○	○	○	○
外部蓋板	○	○	○	○	○	○
機械組零件	—	○	○	○	○	○
空氣傳動設備	—	○	○	○	○	○
冷卻組零件	—	○	○	○	○	○
內存模組	—	○	○	○	○	○
處理器模組	—	○	○	○	○	○
電纜組零件	—	○	○	○	○	○
電源供應器	—	○	○	○	○	○
儲備設備	—	○	○	○	○	○
印刷電路板	—	○	○	○	○	○
<p>備考1. “超出0.1 wt %” 及 “超出0.01 wt %” 係指限用物質之百分比含量超出百分比含量基準值。  Note1 : “exceeding 0.1wt%” and “exceeding 0.01 wt%” indicate that the percentage content of the restricted substance exceeds the reference percentage value of presence condition.</p> <p>備考2. “○” 係指該項限用物質之百分比含量未超出百分比含量基準值。  Note2 : “○” indicates that the percentage content of the restricted substance does not exceed the percentage of reference value of presence.</p> <p>備考3. “—” 係指該項限用物質為排除項目。  Note3 : The “-” indicates that the restricted substance corresponds to the exemption.</p>						

## Taiwan Region import and export contact information

Contacts are available for Taiwan Region import and export information.

委製商/進口商名稱: 台灣聯想環球科技股份有限公司  
進口商地址: 台北市南港區三重路 66 號 8 樓  
進口商電話: 0800-000-702





