VANTAGEO 2230-RE

Rack Server

Parts Replacement

Version: R1.5

VANTAGEO PRIVATE LIMITED
Corporate Address: 617, Lodha Supremus II,
Road No. 22, Wagle Estate,
Thane - 400604
URL: https://vantageo.com
E-mail: support@vantageo.com
Helpdesk - +91 18002669898

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Statement on the Use of Third-Party Embedded Software:

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Revision History

Revision No.	Revision Date	Revision Reason
R1.5	2024-07-24	Updated "2.4 Server Removal and Mounting".
R1.4	2024-06-17	Updated "3.37 Removing a Mainboard".
R1.3	2024-05-31	Added "3.33.2 Removing a CPU from the Liquid-Cooled Server", "3.34.2 Installing a CPU in the Liquid-Cooled Server".
R1.2	2023-07-25	Updated "3.28 Installing a Memory Module", "3.29 Removing a CPU", "3.36 Installing a Left Flange", "4 Reference: Mainboard Replacement Operations".
R1.1	2022-08-20	Updated "3.2 Installing a Hard Disk".
R1.0	2022-04-29	First edition.

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About This Manual

Purpose

This manual describes how to replace the parts of the 2230-RE rack server.

Intended Audience

This manual is intended for:

- Network planning engineers
- Onsite maintenance engineers

What Is in This Manual

This manual contains the following chapters.

Chapter 1, Parts Replacement Overview	Describes the scenarios, flows, and precautions for replacing the parts of the 2230-RE.
Chapter 2, Parts Replacement Knowledge	Describes the parts of the 2230-RE, routine operations, and internal cabling.
Chapter 3, Parts Replacement Operations	Describes the procedures for replacing the parts of the 2230-RE and the verification methods.
Chapter 4, Reference: Mainboard Replacement Operations	Describes the operations related to mainboard replacement, including data backup and restoration.

Conventions

This manual uses the following conventions.

	Caution: indicates a potentially hazardous situation. Failure to comply can result in moderate or minor personal injury.
	Notice: indicates equipment or environment safety information. Failure to comply can result in equipment damage, data loss, equipment performance degradation, environmental contamination, or other unpredictable results.
	Note: provides additional information about a topic.

Chapter 1
Parts Replacement Overview

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1.1 Parts Replacement Scenarios

For a description of common parts replacement scenarios, refer to Table 1-1.

Table 1-1 Parts Replacement Scenario Descriptions

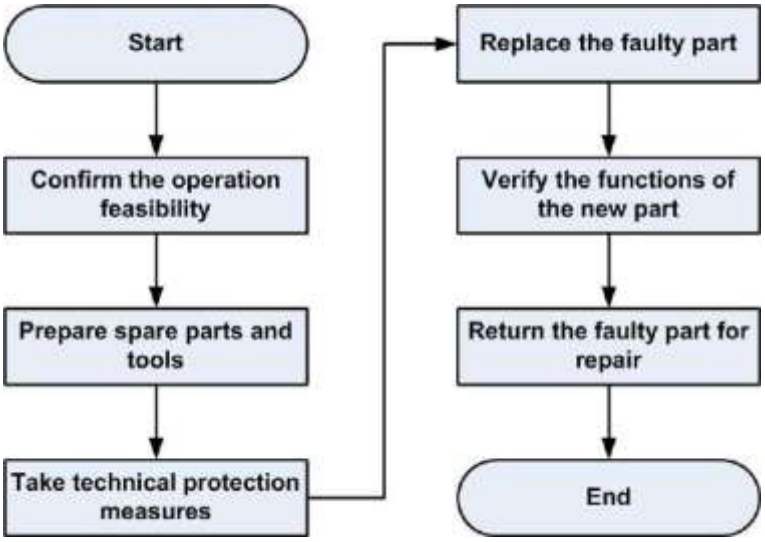
Scenario	Description
Device maintenance	Parts replacement is a common device maintenance method. The hardware fault scope can be determined through alarms or the corresponding device maintenance information. If a board or shelf cannot provide services due to a fault, the board or shelf can be replaced directly.
Hardware upgrade	To enable a part to provide new functions, you must upgrade its hardware (for example, replace the chip). In this case, you need to remove the old part, install a new part, and then restore its operation.
Capacity expansion of the device	During the capacity expansion of the device, you need to replace or re-install some parts as needed.

1.2 Parts Replacement Flow

Basic Operation Flow

To ensure the safe operation of the device and minimize the impact on system services, you must strictly follow the basic operational flow specified in this manual, see Figure 1-1.

Figure 1-1 Basic Parts Replacement Flow



Operational Flow Description

1. Ensure operation feasibility.

   Before replacing a part, you should verify that the operation is feasible. For a description of parts replacement feasibility, refer to Table 1-2.

   Table 1-2 Parts Replacement Feasibility Descriptions

Operation	Description
Verify that there are available spare parts in the warehouse.	When there is no available spare part in the warehouse, you should immediately contact the local representative office of VANTAGEO.
Verify that you have the capability to perform the replacement operation.	Only qualified maintenance personnel can replace parts. You must meet the following requirements: ● Be familiar with the functions of each part. ● Know the basic parts replacement flow. ● Master basic parts replacement skills.
Verify that you can control risks during parts replacement.	Before replacing a part, you must consider whether you can control risks by taking some technical protection measures during parts replacement without powering off the device. You can perform the replacement operation only if the risk is controllable. If the risk is out of control, you need to contact VANTAGEO technical support as soon as possible before parts replacement.

2. Prepare spare parts and tools.

   After verifying that the replacement is feasible, prepare necessary spare parts and tools.

   - The customer should keep a certain number of spare parts in the warehouse for parts repair and replacement.

- Common tools, such as work gloves, flathead screwdrivers, PH2 crosshead screwdriver, T30 Torx screwdriver, marker pens, labels, anti-static gloves or ESD wrist straps, and packaging materials (for example, antistatic packing bags), are available.

3. Take technical protection measures.

   Although there are risks during parts replacement, you can avoid them in most cases by taking some technical protective measures.

4. Replace the part.

   After proper technical protective measures are taken, you can perform the replacement operation in accordance with the operating instructions.

Note

After an old part is replaced with a new one, you need to upgrade the software and firmware of the new part to the versions used in the original network environment (recommended) or the latest versions.
If the new part needs to be reconfigured, you need to set the related configuration items (including the BMC/BIOS/RAID) the same as those in the live network environment.

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5. Check the functions of the new part.

   After the old part is replaced with the new one, you should verify the functions of the new part by referring to the check or test methods provided in this manual. The replacement operation is successful only after you verify that the new part can provide functions properly. Otherwise, you should contact the local representative office of VANTAGEO immediately for technical support.

6. Return faulty parts for repair.

   Return replaced faulty parts to the local representative office of VANTAGEO for repair, and verify that there are enough spare parts in the warehouse.

1.3 Precautions

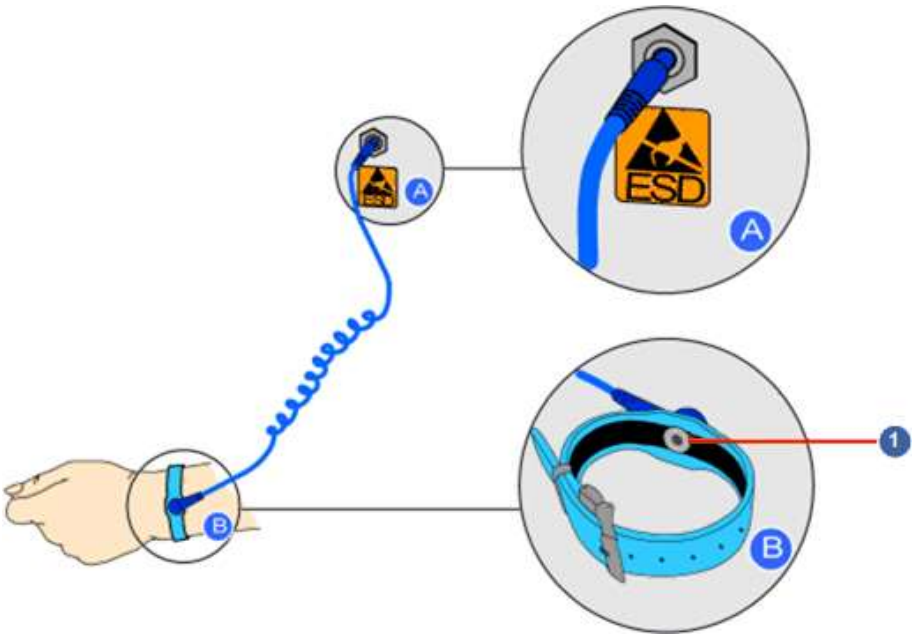
During parts replacement, do not damage the device or affect services.

Security precautions are as follows:

- Before pulling out the server, check the guide rails to ensure that they are installed properly.
- When the server is located at a height more than 1.2 m above the ground, you must stand on a ladder for operation.
- The on-rack maintenance time must be controlled within 10 minutes. For maintenance operations longer than 10 minutes, the server needs to be removed from the rack for maintenance.
- Do not cause other damage to the device during the replacement. For example, pins on the rear panel must not be bent because of excessive force.

- Take anti-static measures as required.
  For example, wear anti-static gloves or an anti-static wrist strap, see Figure 1-2.

Figure 1-2 Wearing an Anti-Static Wrist Strap



1. Metal buckle

- It is forbidden to lean against the server, step on the server, or use the server as a support.
- It is recommended that you should not replace any part that may cause service interruption during peak traffic hours. A part should be replaced during idle traffic hours, for example, from 02:00 to 04:00.
- For parts operating in active/standby mode, never replace the active part directly but perform switchover first. Perform replacement after the part that you want to replace changes to the standby status.
- Install or remove a part evenly and smoothly to avoid any damage to the part or its connector.
- When replacing parts with golden fingers, do not touch the golden fingers of any part.
- Install device parts with matching screws. Longer screws may cause damage to device parts.
- To achieve the best performance, it is recommended to replace a faulty device part with a part of the same model.
- Keep the replaced faulty part properly. It is recommended to package it with the original packing bag, and record the bar codes and serial numbers of the faulty part and spare part.

Chapter 2
Parts Replacement Knowledge

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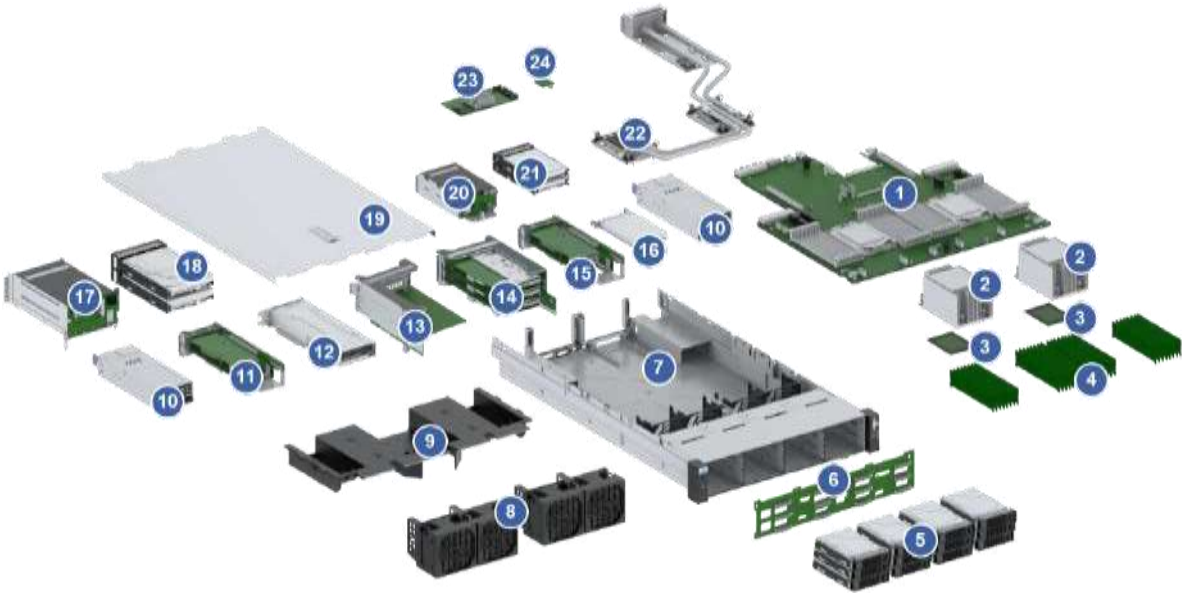
2.1 Parts Overview

Figure 2-1 shows the internal layout of the 2230-RE with a 12-disk front panel.

Figure 2-1 Internal Layout



For a description of the internal components of the 2230-RE, refer to Table 2-1.

Table 2-1 Internal Component Descriptions

No.	Component	Description
1	Mainboard	The CPUs, memory, and other components are installed on the main-board.

No.	Component	Description
2	CPU heat sink	Dissipates heat for a CPU. Each CPU has one heat sink. A liquid-cooled server is configured with a liquid-cooled heat sink, and no additional CPU heat sink is required.
3	CPU	A maximum of 2 CPUs can be configured.
4	Memory	A maximum of 32 DDR4 RDIMM/LRDIMM memory modules can be configured. 3200 MT/s DDR4 memory module is supported.
5	Front hard disk	A maximum of 12 3.5-inch hard disks or 25 2.5-inch hard disks can be installed.
6	Backplane of front hard disk	Provides 8/12/16/24/25 2.5/3.5-inch hard disk slots.
7	Chassis	The main body of the server which is used to accommodate all internal components.
8	Fan module	Provides heat dissipation for the components inside the chassis. Four 8038/8056 high-performance fans are installed, supporting dynamic intelligent fan speed adjustment and N+1 redundancy.
9	Air baffle	Optimizes the cooling air ducts inside the system.
10	Power module	Supports three types of power supply modules (550 W, 800 W, and 1,200 W). The Platinum power supply module is supported. ● Supports 110 V/220 V AC power supply. ● Supports 240 V/336 V HVDC power supply. ● Supports -48 V DC power supply. ● The efficiency can reach 94%. ● Supports 1+1 redundancy.
11	I/O module 4	I/O module 4 supports the following configurations: ● Two half-height half-length PCIe 4.0 x8 cards. One of the two slots can be extended to the PCIe 4.0 x16 slot. ● Two 2.5-inch SAS/SATA hard disks. The NVMe SSD is supported.
12	Standard PCIe card	Supports PCIe 4.0 x8/x16, full-height and full-length/half-height and half-length/full-height and half-length/dual-width and full-length PCIe standard expansion card, and GPU card. The PCIe card can be installed on the riser card of I/O module 1/2/3/4.
13	I/O Module 3	● I/O module 3/2 supports the following configurations: → A full-height full-length PCIe 4.0 x16 card, a full-height full-length PCIe 4.0 x8 card, and a full-height half-length PCIe 4.0 x8 card. → A full-height full-length PCIe 4.0 x16 card and a full-height half-length PCIe 4.0 x16 card. → Two 3.5/2.5-inch SAS/SATA hard disks.
14	I/O Module 2	

No.	Component	Description
15	I/O Module 1	I/O module 1 supports the following configurations: ● Two half-height half-length PCIe 4.0 x8 cards. One of the two slots can be extended to the PCIe 4.0 x16 slot. ● Two 2.5-inch SAS/SATA hard disks. The NVMe SSD is supported. ● Coolant inlet and outlet.
16	OCP card	Various OCP NIC 3.0 cards with the interface rate of 1, 10 or 25 Gbps can be installed in the OCP card slot.
17	Rear 3.5-inch hard disk module	Used for I/O modules 2/3, supporting two 2.5/3.5 hard disks.
18	Rear 3.5-inch hard disk	A maximum of four hot-swappable 3.5-inch SAS/SATA HDD hard disks can be configured.
19	Top cover	Top cover of the chassis for opening detection.
20	Rear 2.5-inch hard disk module	Used for I/O modules 1/4, supporting two 2.5-inch hard disks.
21	Rear 2.5-inch hard disk	A maximum of eight hot-swappable 2.5-inch SAS/SATA HDD/SSD hard disks can be configured.
22	Liquid-cooled heat sink	The component is configured exclusively for liquid-cooled servers to dissipate heat for CPUs. The I/O module 1 area on the rear panel serves as the coolant inlet and outlet area.
22	Mezz RAID card	Supports RAID modes such as RAID 0/1/5/6/10/50/60, and the interface rate is up to 12 Gbps.
23	TPM card	Trusted platform module which protects the server and prevents unauthorized access.

2.2 Replaceable Parts

The following parts of the 2230-RE can be replaced:

- Hard disk
- Power module
- OCP card
- Fan unit
- Anti-intrusion sensor
- Front hard drive backplane
- Rear hard drive cage
- Hard disk backplane of an I/O module
- PCIe card
- GPU card

- Riser card
- RAID card
- Super capacitor
- TPM card
- Memory module
- CPU
- Mainboard battery
- Mainboard
- Left flange
- Right flange

2.3 Internal Cabling

Cables inside the 2230-RE are routed in different ways based on the different backplanes of the front hard disks. If internal cables need to be replaced, you can carry out operations by referring to this procedure.

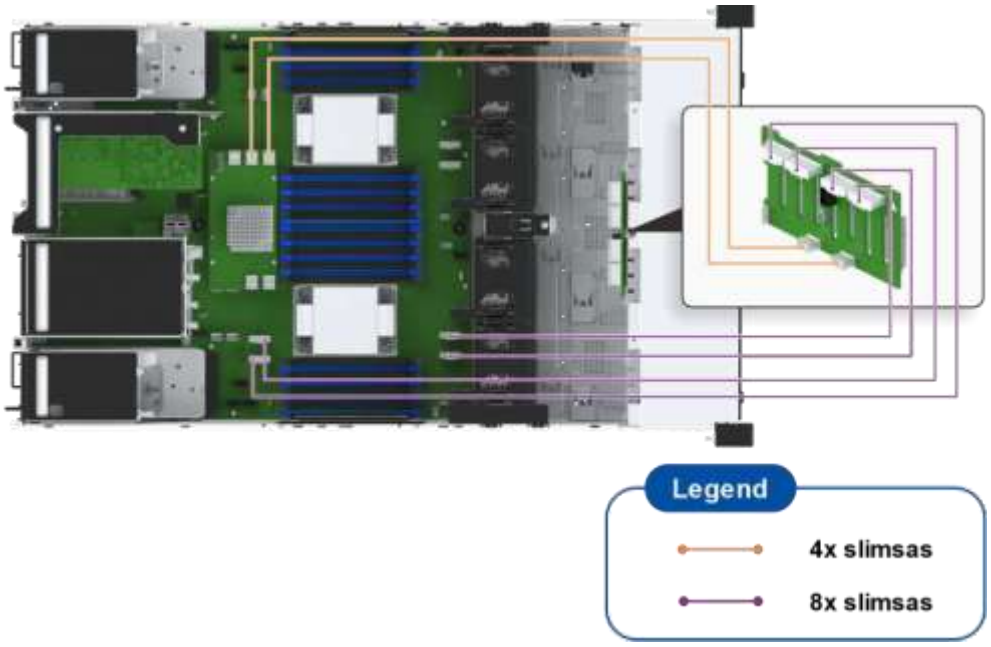
Note

The following internal cabling is of typical cabling mode. The cabling mode may vary with configurations. The actual product configuration shall prevail.

Internal Cabling (Backplane for 8 Front Hard Disks)

Figure 2-2 shows the internal cabling when eight front hard disks are installed.

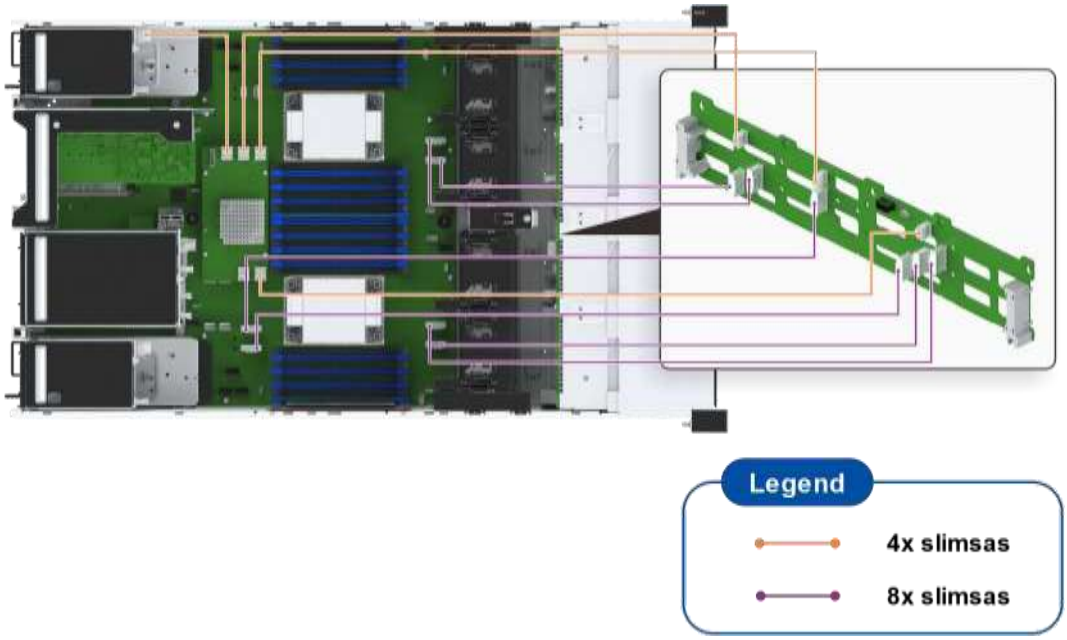
Figure 2-2 Internal Cabling (Backplane for 8 Front Hard Disks)



Internal Cabling (Backplane for 12 Front Hard Disks)

Figure 2-3 shows the internal cabling when 12 front hard disks are installed.

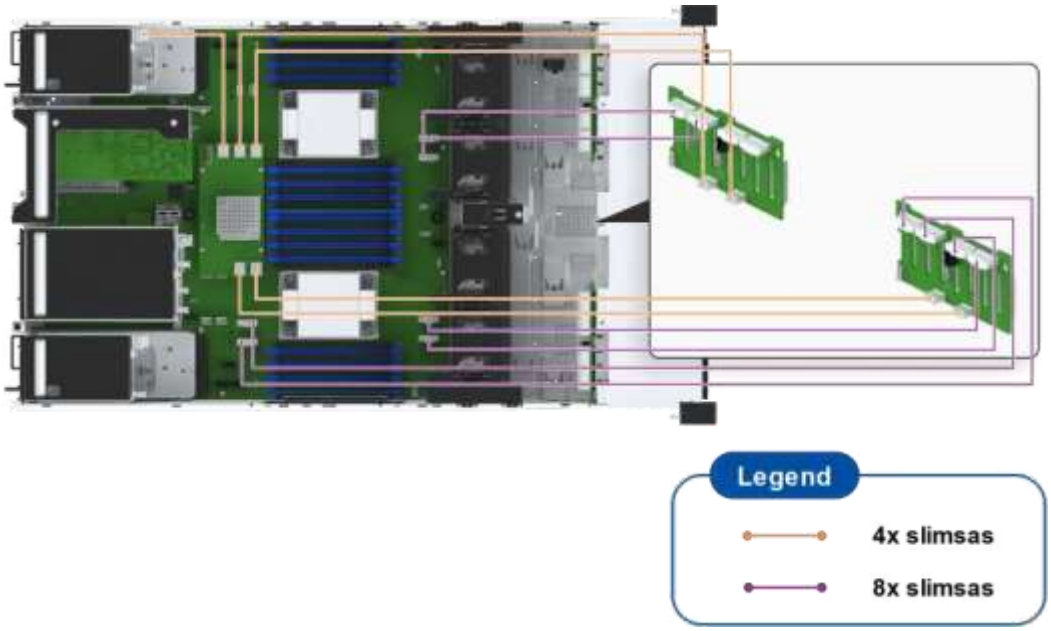
Figure 2-3 Internal Cabling (Backplane for 12 Front Hard Disks)



Internal Cabling (Backplane for 16 Front Hard Disks)

Figure 2-4 shows the internal cabling when 16 front hard disks are installed.

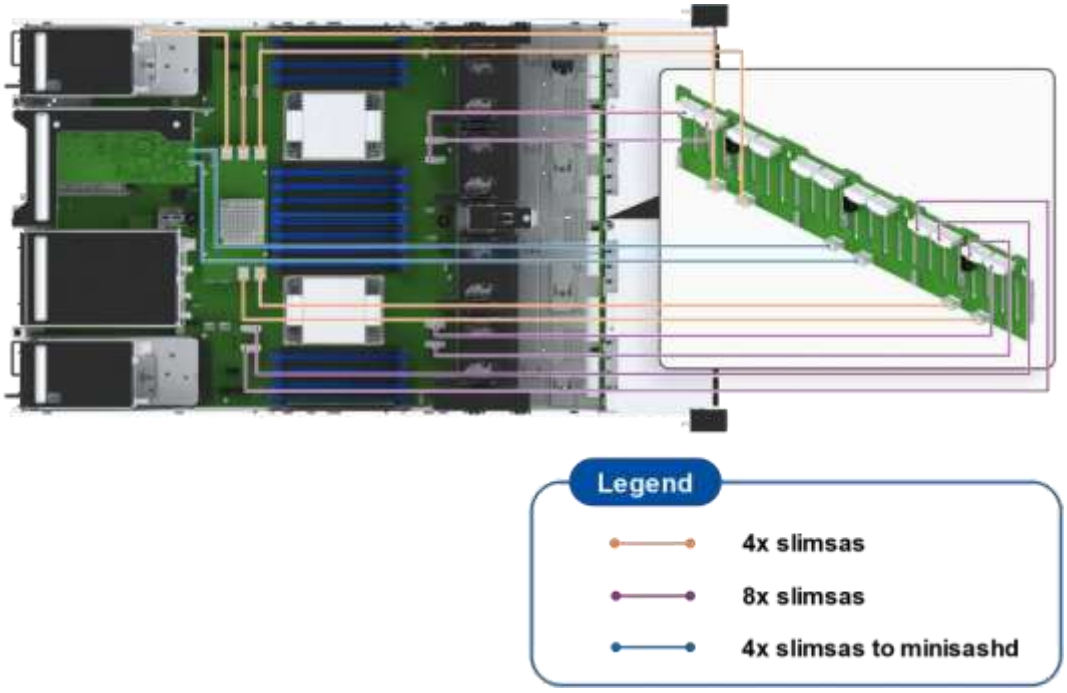
Figure 2-4 Internal Cabling (Backplane for 16 Front Hard Disks)



Internal Cabling (Backplane for 24 Front Hard Disks)

Figure 2-5 shows the internal cabling when 24 front hard disks are installed.

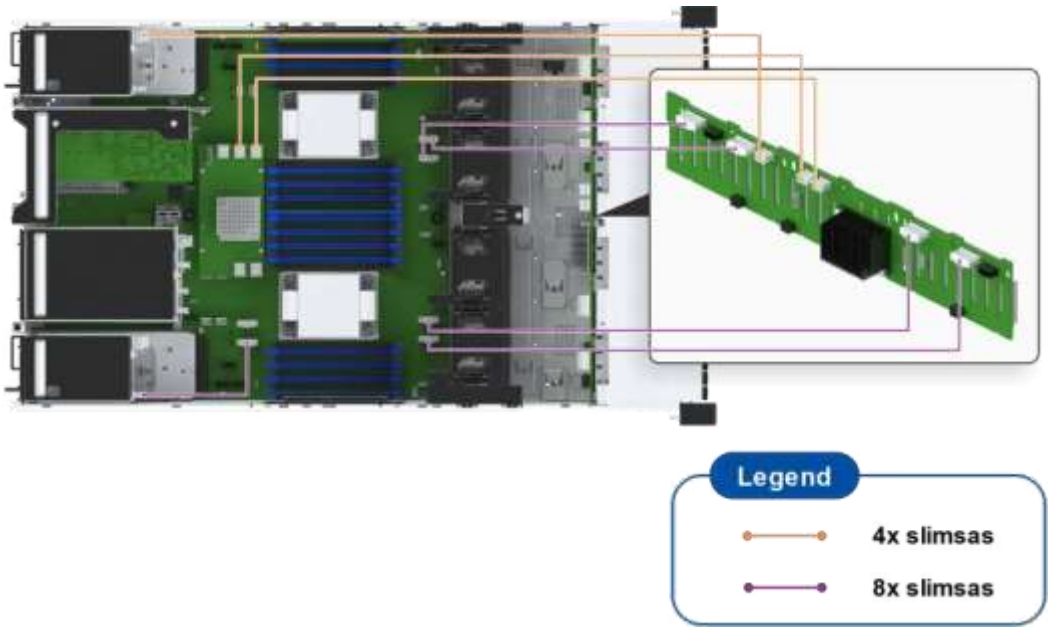
Figure 2-5 Internal Cabling (Backplane for 24 Front Hard Disks)



Internal Cabling (Backplane for 25 Front Hard Disks)

Figure 2-6 shows the internal cabling when 25 front hard disks are installed.

Figure 2-6 Internal Cabling (Backplane for 25 Front Hard Disks)



2.4 Server Removal and Mounting

When the 2230-RE is installed with guide rails, you can directly replace the parts of the serv- er on the rack. Pay attention to the following during replacement:

- Before pulling out the server, check the guide rails to ensure that they are installed properly.
- When the server is located above 1.2 m, you must stand on a ladder for operation.
- It is forbidden to lean against the server, step on the server, or use the server as a support.
- The on-rack maintenance time must be controlled within 10 minutes. For maintenance operations longer than 10 minutes, the server needs to be removed from the rack for maintenance.

During the maintenance, the parts of the server need to be removed and re-installed. For details, refer to Table 2-2.

Table 2-2 Operation Descriptions for Server Removal and Installation

No.	Operation	Description
1	Powering off the server	For details, refer to 2.4.1 Powering Off the Server.
2	Removing the server from the rack	For details, refer to 2.4.2 Removing the Server From the Rack.
3	Removing the server cover	For details, refer to 2.4.3 Removing the Server Cover.
4	Installing the server cover	For details, refer to 2.4.4 Installing the Server Cover.
5	Mounting the server into the rack	For details, refer to 2.4.5 Mounting the Server Into the Rack.
6	Powering on the server	For details, refer to 2.4.6 Powering On the Server.

2.4.1 Powering Off the Server

Abstract

Before the 2230-RE server is maintained or moved, you need to power it off.

Prerequisite

- All data is backed up.

Notice

After power-off, all services and programs are terminated. Therefore, before power-off, you must verify that all services and programs on the 2230-RE server already stop operating or are transferred to other servers.

- The cabinet number and location of the server are known.
- All tools required for parts replacement such as labels and antistatic wrist straps are ready.

Steps

1. Wear an ESD wrist strap.
2. Press the power button on the front panel of the 2230-RE to power off the server.
3. When the server enters Standby status, remove the power cable of the power module, so that the server is completely powered off.

Note

When the power indicator on the front panel of the server is yellow on, it means that the system is powered on in Standby mode.

2.4.2 Removing the Server From the Rack

Abstract

Before the 2230-RE server is maintained or moved, you need to remove the server from the rack.

Prerequisite

- The server is powered off.
- All tools required for parts replacement such as a PH2 crosshead screwdriver, labels, and ESD wrist straps are ready.

Steps

Removing Cables from the Server

1. Wear an ESD wrist strap.
2. Remove the cables connected to the server, and mark them with labels.

(Optional) Disconnecting the Liquid Cooling Pipes

3. For a liquid-cooled server with pass-through liquid cooling pipes, disconnect the connectors of the liquid cooling pipes from the cabinet, see Figure 2-7.

Figure 2-7 Disconnecting the Liquid Cooling Pipes

4. Use hook-and-loop fasteners to bind the liquid cooling pipes and connectors.

Removing the Server from the Rack

5. Open the screw shielding covers of the server, and loosen them, see Figure 2-8.

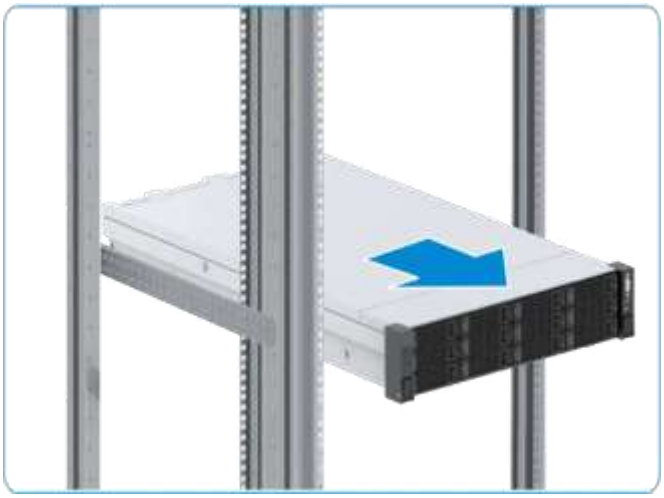
Figure 2-8 Loosening the Fastening Screws

6. Pull the server out of the cabinet along the guide rail, see Figure 2-9. Place it on an antistatic desk.

CAUTION

The 2230-RE is heavy. At least two persons are required to install the server to avoid injury to personnel or damage to the device.

Figure 2-9 Pulling the Server Out of the Cabinet Along the Guide Rail



2.4.3 Removing the Server Cover

Abstract

Before replacing the internal components of the 2230-RE server, you need to remove the server cover.

Prerequisite

- The server is already removed from the cabinet.
- All tools required for parts replacement such as a PH2 crosshead screwdriver, labels, and ESD wrist straps are ready.

Steps

1. Wear an ESD wrist strap.
2. Use a PH2 crosshead screwdriver to loosen the lock on the ejector lever of the server cover, and open the ejector lever, as indicated by Ⓒ in Figure 2-10.

Figure 2-10 Removing the Server Cover

3. Open the ejector lever of the server cover, and push the cover backwards, as indicated by ② in Figure 2-10.
4. Remove the server cover upwards, as indicated by Ⓒ in Figure 2-10.

2.4.4 Installing the Server Cover

Abstract

After the internal components of the 2230-RE server are replaced, you need to install the cover back to the server.

Notice

Do not damage the anti-Intrusion sensor when installing the server cover.

Prerequisite

- The internal components of the server are replaced.
- All tools required for parts replacement such as a PH2 crosshead screwdriver, labels, and ESD wrist straps are ready.

Steps

1. Wear an ESD wrist strap.
2. Fully open the ejector lever on the server cover to the maximum extent.

3. Place the server cover in a horizontal way, and secure it into the slot, as indicated by Ⓒ in Figure 2-11.

Figure 2-11 Installing the Server Cover

4. Close the server cover, as indicated by ② in Figure 2-11.
5. Use a PH2 crosshead screwdriver to rotate the lock of the ejector lever in clockwise order to secure the ejector lever, as indicated by Ⓒ in Figure 2-11.

2.4.5 Mounting the Server Into the Rack

Abstract

After maintenance operations are carried out for the 2230-RE server, you need to remount the server into the rack.

Prerequisite

- Maintenance operations are already carried out for the server.
- All tools required for parts replacement such as a PH2 crosshead screwdriver, labels, and ESD wrist straps are ready.

Steps

Installing the Server into the Cabinet

1. Wear an ESD wrist strap.

2. Align the server along the front end of the guide rail, and then push the server into the cabinet, see Figure 2-12.

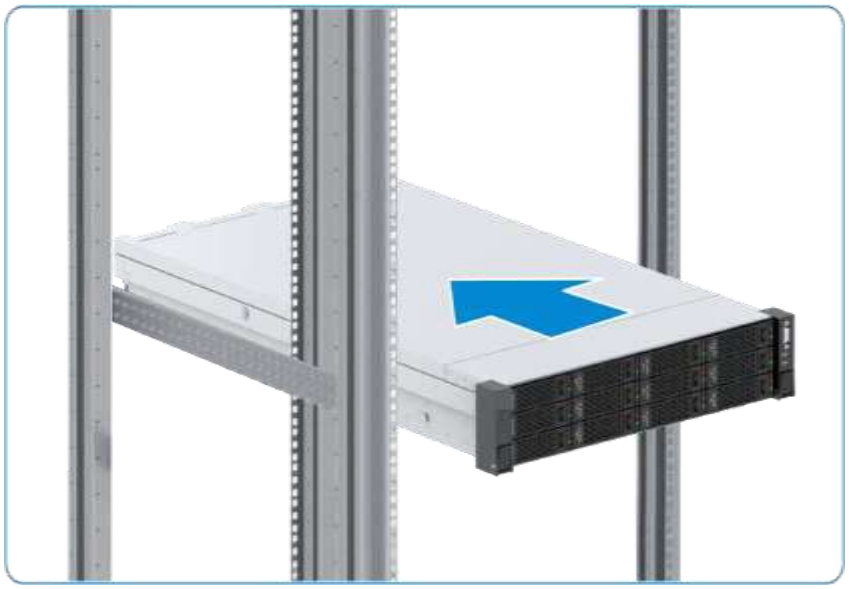
CAUTION

The 2230-RE rack server is heavy. At least two persons are required to mount the server to avoid personal injuries or prevent the server from falling onto the ground.

Notice

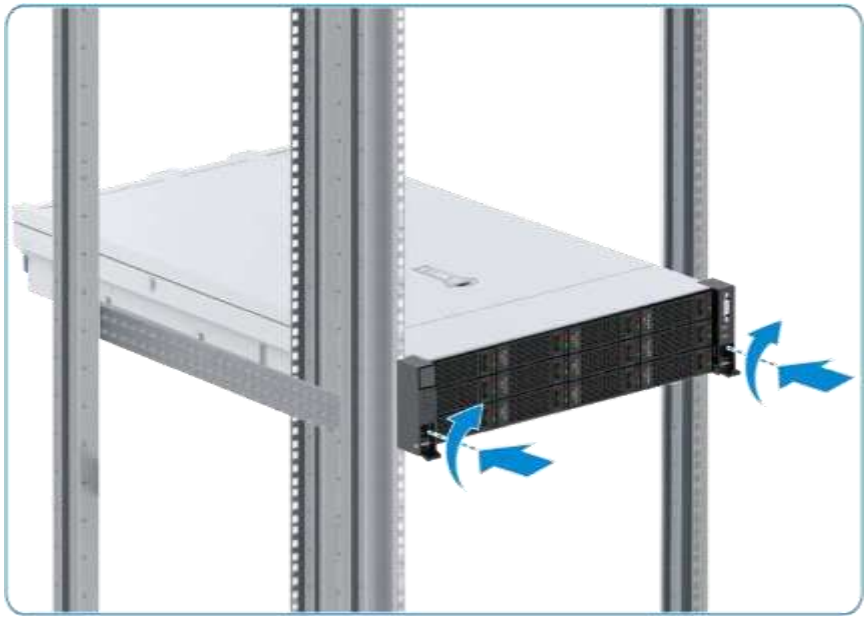
When moving and installing the server, be careful with the fragile parts of the server. Otherwise, the device may be deformed or damaged.

Figure 2-12 Mounting the Server



3. Open the screw shielding covers under the front panel of the 2230-RE server, and secure the server onto the cabinet with screws, see Figure 2-13.

Figure 2-13 Securing the Server



(Optional) Connecting the Liquid Cooling Pipes

4. For a liquid-cooled server with pass-through liquid cooling pipes, you need to remove the hook-and-loop fasteners that bind the liquid cooling pipes and connectors.
5. Connect the connectors of the liquid cooling pipes to the corresponding connectors of the cabinet based on the color rings indicating a coolant inlet and outlet, see Figure 2-14.

Figure 2-14 Connecting the Liquid Cooling Pipes

Note

There are color rings on the liquid cooling panel (at the rear of the chassis), liquid cooling connectors, and connectors on the cabinet. Blue ring indicates a coolant inlet, and red ring indicates a coolant outlet.
You need to ensure that a color ring on each liquid cooling connector is the same as that of the corresponding interface on the liquid cooling panel.

2.4.6 Powering On the Server

Abstract

After maintenance operations are carried out for the server, you need to power it on again.

Prerequisite

- The server is already installed back to the cabinet.
- All tools required for parts replacement such as antistatic wrist straps are ready.

Steps

1. Wear an ESD wrist strap.
2. Re-connect the cables that are removed in Step 2 of 2.4.1 Powering Off the Server to the server.
3. Connect the power module to an external power supply by using a power cable, and then the server and power module are powered on.
4. When the server enters Standby status, you can power it on by pressing the power button on the front panel.

Note

When the power indicator on the front panel of the server is yellow on, it means that the system is powered on in Standby mode.

Chapter 3
Parts Replacement Operations

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2.1 Removing a Hard Disk

Abstract

To replace a faulty hard disk, a hard disk with full space, or a hard disk backplane, you need to remove the hard disk.

Notice

When taking a hard disk, do not touch the bare circuit board on the back of the hard disk and the golden fingers of the connector.
When removing a hard disk, pull part of the hard disk out of the slot first, wait for 20 seconds until the hard disk stops operating, and then pull out the hard disk completely.

Context

The hard disks of the 2230-RE are divided into front hard disks and rear hard disks in accordance with their positions.

- Figure 3-1 and Figure 3-2 show the numbers of the front hard disk slots.

Figure 3-1 Numbers of Horizontal Hard Disk Slots

Figure 3-2 Numbers of Vertical Hard Disk Slots

- For the numbers of the rear hard disk slots, see Figure 3-3.

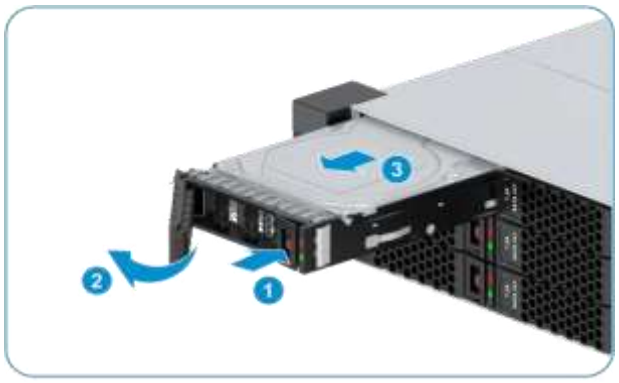
Figure 3-3 Numbers of Rear Hard Disk Slots

Steps

Removing an HDB

1. Wear an ESD wrist strap.
2. Locate the faulty hard disk on the server, and paste a replacement label on the panel of the hard disk.
3. Press the release button on the HDB to unlock the ejector lever, as indicated by Ⓒ in Figure 3-4.

Figure 3-4 Removing an HDB



4. Hold the ejector lever and pull out the HDB for about 3 cm to make the hard disk offline, as indicated by ② in Figure 3-4.
5. Wait for at least 20 seconds until the hard disk stops operating. Pull out the hard disk, as indicated by Ⓒ in Figure 3-4.

6. Perform the following operations as required.

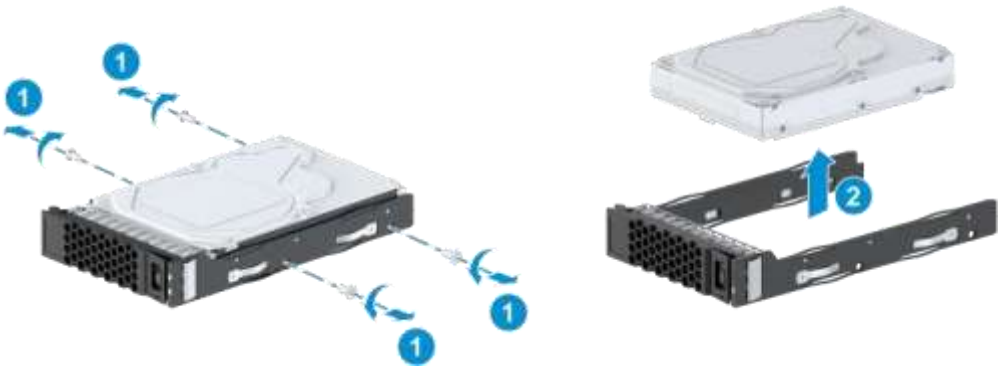
If...	Then...
The parts to be removed are the entire hard disk module (including the hard disk and HDB)	Put the removed hard disk module into an antistatic packing bag and record the bar code of the faulty hard disk.
The parts to be removed is the hard disk in the HDB	Remove the hard disk in accordance with Removing a Hard Disk.

Removing a Hard Disk

7. Place the removed HDB on an antistatic table.
8. Perform the following operations based on the size of the HDB and the hard disk.

If...	Then...
A 2.5-inch hard disk is installed in a 2.5 -inch HDB	a. Loosen the 4 fastening screws of the HDB by using a PH2 crosshead screwdriver, as indicated by © in Figure 3-5. b. Take the hard disk out of the HDB, as indicated by ② in Figure 3-5.
A 3.5-inch hard disk is installed in a 3.5 -inch HDB	
A 2.5-inch hard disk is installed in a 3.5 -inch HDB	a. Loosen the 5 fastening screws of the HDB by using a PH2 crosshead screwdriver, as indicated by © in Figure 3-6. b. Take the hard disk mounting bracket out of the HDB, indicated by ② in Figure 3-6. c. Loosen the 2 fastening screws of the mounting bracket with a PH2 crosshead screwdriver, indicated by © in Figure 3-6 . d. Take the hard disk out of the mounting bracket, indicated by ④ in Figure 3-6.

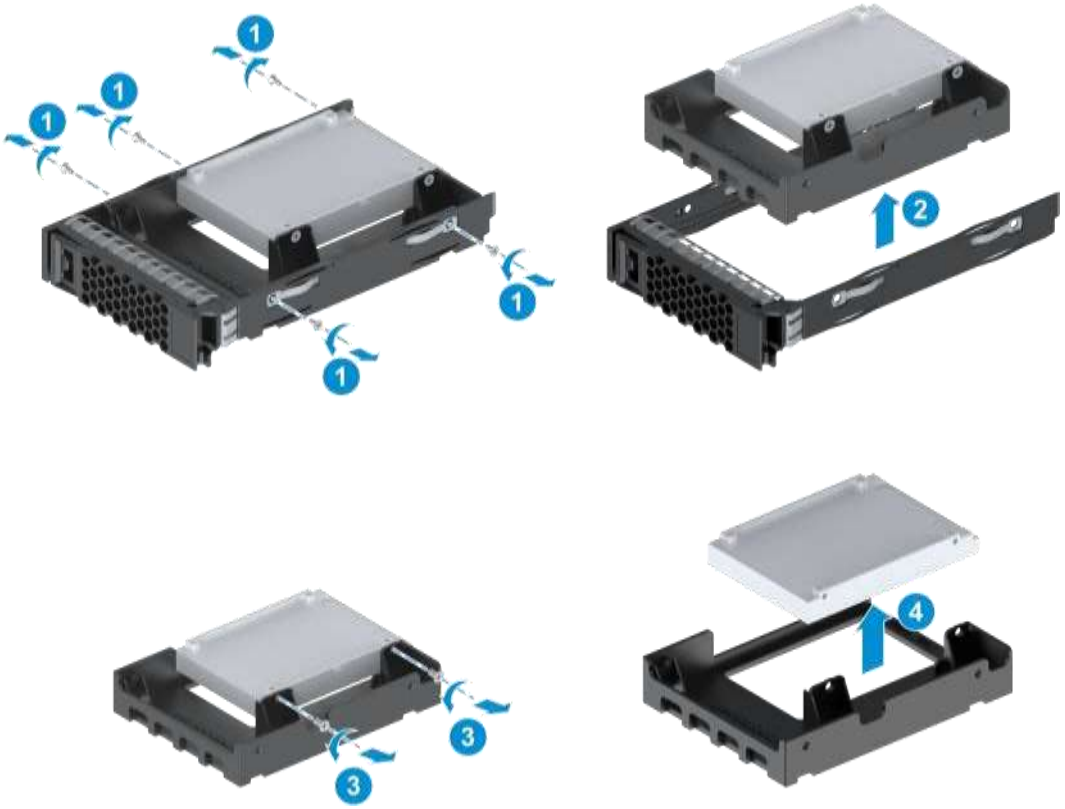
Figure 3-5 Removing a Hard Disk 1



Note

The operations for removing a 2.5-inch hard disk is the same as that for removing a 3.5-inch hard disk. This diagram takes the 3.5-inch hard disk as an example.

Figure 3-6 Removing a Hard Disk 2



9. Put the removed hard disk into an antistatic packing bag and record the bar code of the hard disk.

3.2 Installing a Hard Disk

Abstract

To replace a faulty hard disk, a hard disk with full space or a hard disk backplane, or add a hard disk, you need to install a new hard disk.

Notice

- A mechanical hard disk should be used within half a year to avoid damage from long-term storage.
- When taking a hard disk, do not touch the bare circuit board on the back of the hard disk and the golden fingers of the connector.

Note

After the hard disk is installed, you need to wait for the completion of the RAID reassembly before the alarm can be cleared. To avoid repeated offline alarms of the hard disk, do not repeatedly remove or install hard disks online at a high frequency.

Steps

Installing a Hard Disk

1. Wear an ESD wrist strap.
2. Remove the hard disk to be replaced. For detailed operations, refer to 3.1 Removing a Hard Disk.
3. Take the spare hard disk from an antistatic packing bag and record the bar code of the hard disk.
4. Perform the following operations based on the size of the HDB and the hard disk.

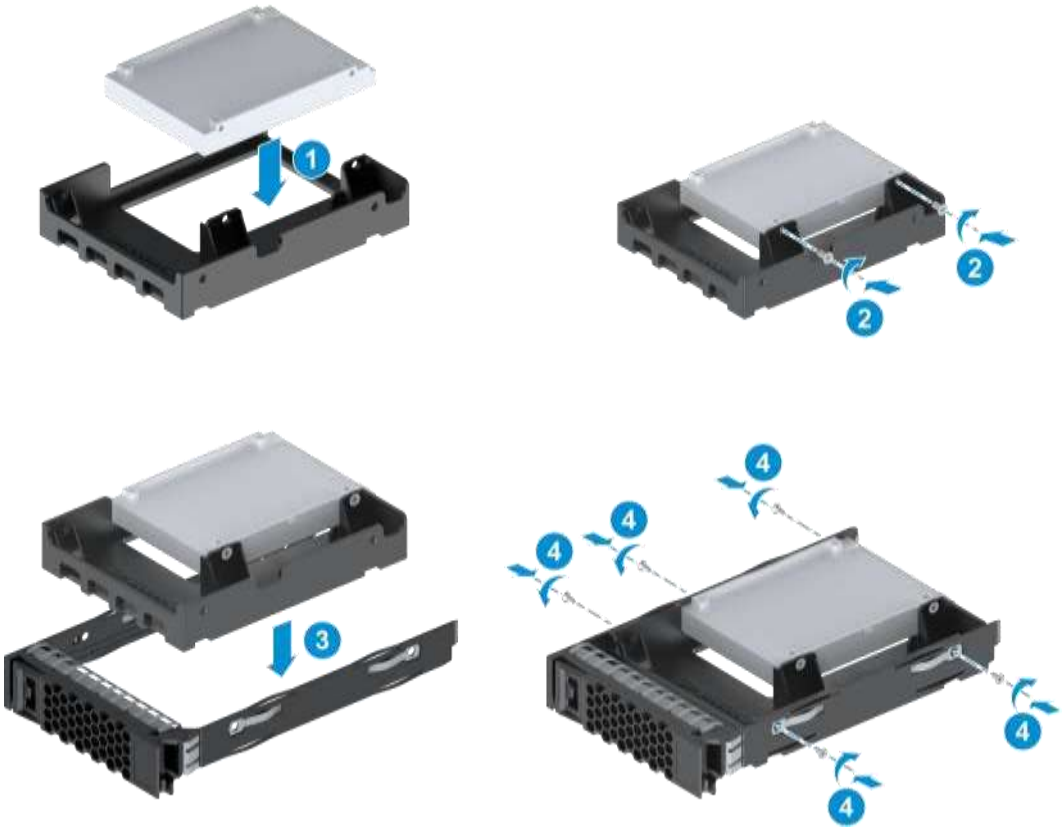
If...	Then...
A 2.5-inch hard disk is installed in a 2.5-inch HDB A 3.5-inch hard disk is installed in a 3.5-inch HDB	a. Put the hard disk into the HDB, as indicated by Ⓒ in Figure 3-7. b. Tighten the 4 fastening screws of the HDB by using a PH2 crosshead screwdriver, as indicated by ② in Figure 3-7.
A 2.5-inch hard disk is installed in a 3.5-inch HDB	a. Put the hard disk into the mounting bracket, as indicated by Ⓒ in Figure 3-8. b. Tighten the 2 fastening screws of the mounting bracket by using a PH2 crosshead screwdriver, as indicated by ② in Figure 3-8. c. Put the hard disk mounting bracket into the HDB, as indicated by Ⓒ in Figure 3-8. d. Tighten the 5 fastening screws of the HDB by using a PH2 crosshead screwdriver, as indicated by ④ in Figure 3-8.

Figure 3-7 Installing a Hard Disk 1

Note

The operations for installing a 2.5-inch hard disk is the same as that for installing a 3.5-inch hard disk. This diagram takes the 3.5-inch hard disk as an example.

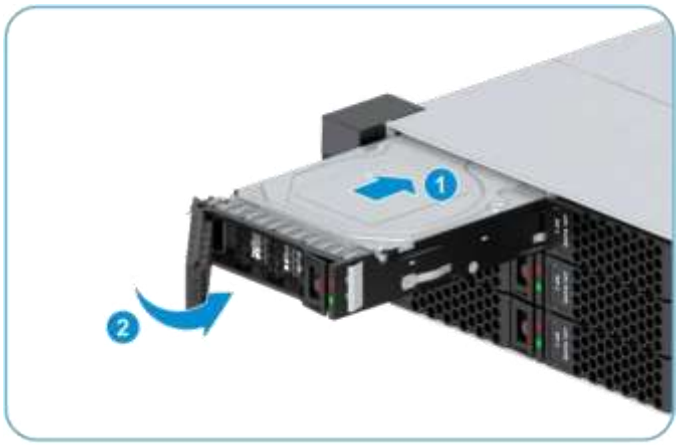
Figure 3-8 Installing a Hard Disk 2



Installing an HDB

5. Completely open the ejector lever, and slide the HDB into the server until it reaches the stop, as indicated by Ⓒ in Figure 3-9.

Figure 3-9 Installing an HDB



6. Close the ejector lever, and push the HDB completely into the server until the release button locks the ejector lever, as indicated by ② in Figure 3-9.
7. Verify that the hard disk status is normal in accordance with the hard disk indicators.

Note

The hard disk is in normal status if the red indicator on the panel of the HDB is off, and the green indicator is on or flashing.

8. (Optional) If the replaced hard disk has been added to a RAID array, after the RAID controller card detects the new disk, you need to re-import or clear the original RAID information.

Note

For how to configure RAID, refer to the *VANTAGEO Server RAID User Guide*.

3.3 Removing a Power Module

Abstract

To replace a faulty power module or replace an existing power module with a power module of a different model, you need to remove the power module.

Notice

If the server is fully configured with power modules, the power module can be directly removed without power-off. However, you must ensure that the power supply of other power modules is normal before the replacement, and the rated power of the remaining power modules is greater than the rated power of the server.

When replacing a power module, do not touch the golden fingers of the power module.

Context

The power module locates at the rear of the 2230-RE, see Figure 3-10.

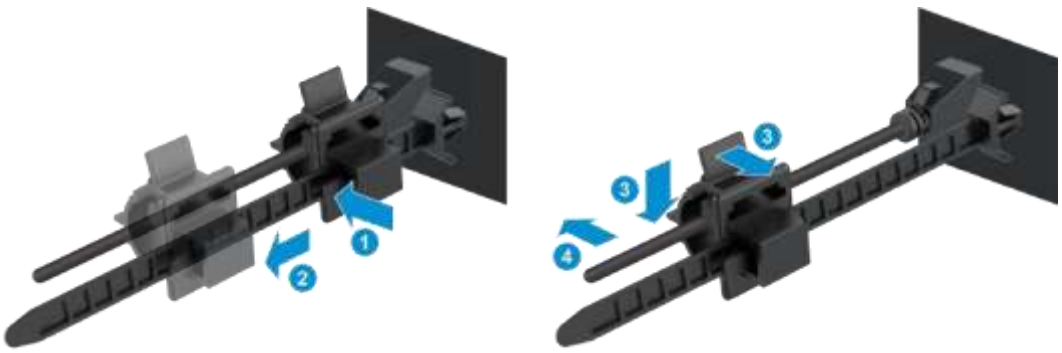
Figure 3-10 Power Module Location

1. Spring plate
2. Indicator of the power module
3. Power socket
4. Ejector lever
5. Power module 2
6. Power module 1

Steps

1. Wear an ESD wrist strap.
2. Locate the faulty power module on the server, and paste a replacement label on its panel.
3. (Optional) If only a single power module is configured, power off the server. For detailed operations, refer to 2.4.1 Powering Off the Server.
4. Set the PDU corresponding to the power module to the **OFF** state.
5. (Optional) If the power cable is fixed with a cable tie, remove the cable tie.
   a. Open the latch of the plastic ring on the cable tie, and at the same time slide the plastic ring back to keep the ring away from the power plug, as indicated by Ⓒ and ② in Figure 3-11.

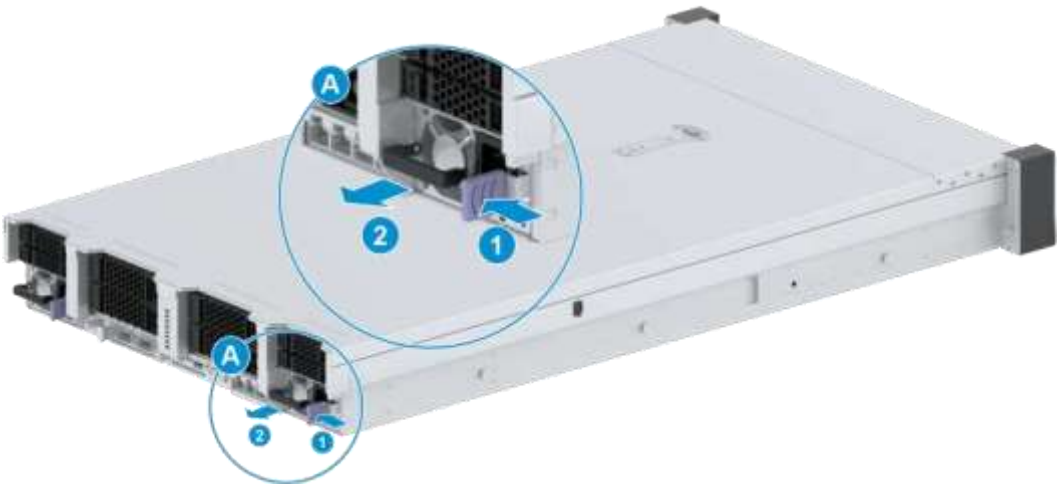
Figure 3-11 Removing the Cable Tie



b. Open the buckles of the plastic ring, and remove the power cable from the plastic ring, as indicated by Ⓒ and ④ in Figure 3-11.

6. Unplug the power module to power down the system.
7. Press the spring plate of the power module, and pull the power module out of the chassis by holding the ejector lever, as indicated by Ⓒ and ② in Figure 3-12.

Figure 3-12 Removing the Power Module



8. Put the removed power module into an antistatic packing bag and record the bar code of the power module.

3.4 Installing a Power Module

Abstract

To replace a faulty power module or replace an existing power module with a power module of a different model, you need to install a new power module.

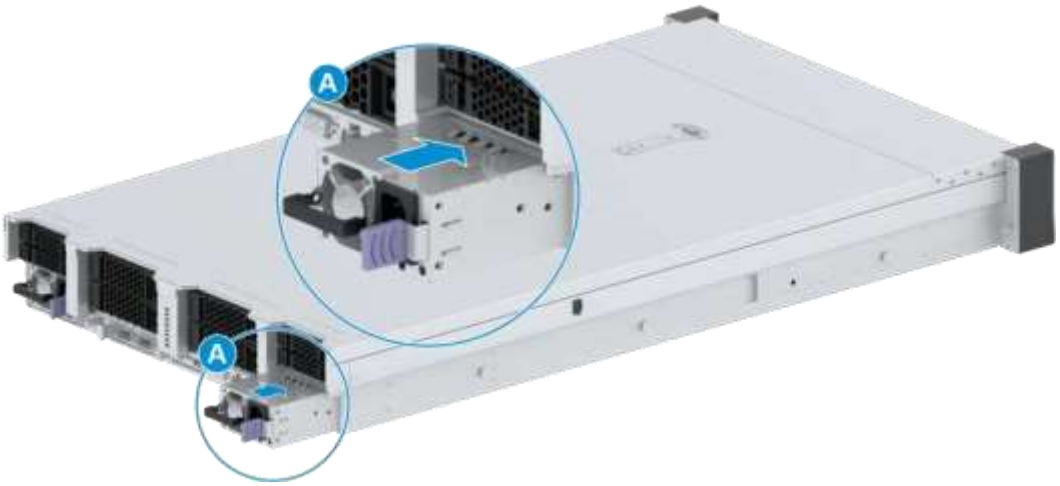
Notice

When replacing a power module, do not touch the golden fingers of the power module.

Steps

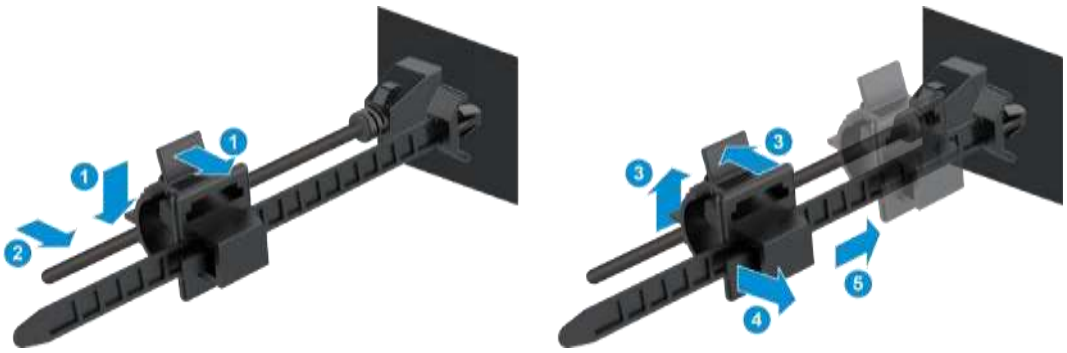
1. Wear an ESD wrist strap.
2. Remove the power module to be replaced. For detailed operations, refer to 3.3 Removing a Power Module.
3. Take the spare power module from an antistatic packing bag and record the bar code of the power module.
4. Slide the power module into the server until the spring plate is automatically locked and the power module reaches the stop, see Figure 3-13.

Figure 3-13 Installing a Power Module



5. Connect the power cable to the power module.
6. (Optional) If there is a cable tie on the power module, use the cable tie to fix the power cable.
   a. Open the buckles of the plastic ring, and put the power cable into the plastic ring, as indicated by Ⓒ and ② in Figure 3-14.

Figure 3-14 Install the Cable Tie



   b. Close the buckles of the plastic ring, as indicated by Ⓒ in Figure 3-14.
   c. Open the latch of the plastic ring, and at the same time slide the plastic ring forward to make the ring close to the power plug, as indicated by ④ and ⑤ in Figure 3-14.
7. Set the PDU corresponding to the power module to the **ON** state.
8. (Optional) If the server is powered off, power on the server. For detailed operations, refer to 2.4.6 Powering On the Server.

3.5 Removing an OCP Card

Abstract

To replace a faulty OCP card, you need to remove the OCP card.

Notice

When replacing an OCP card, do not touch the golden fingers of the OCP card.

Context

The OCP card is located at the rear of the 2230-RE, see Figure 3-15.

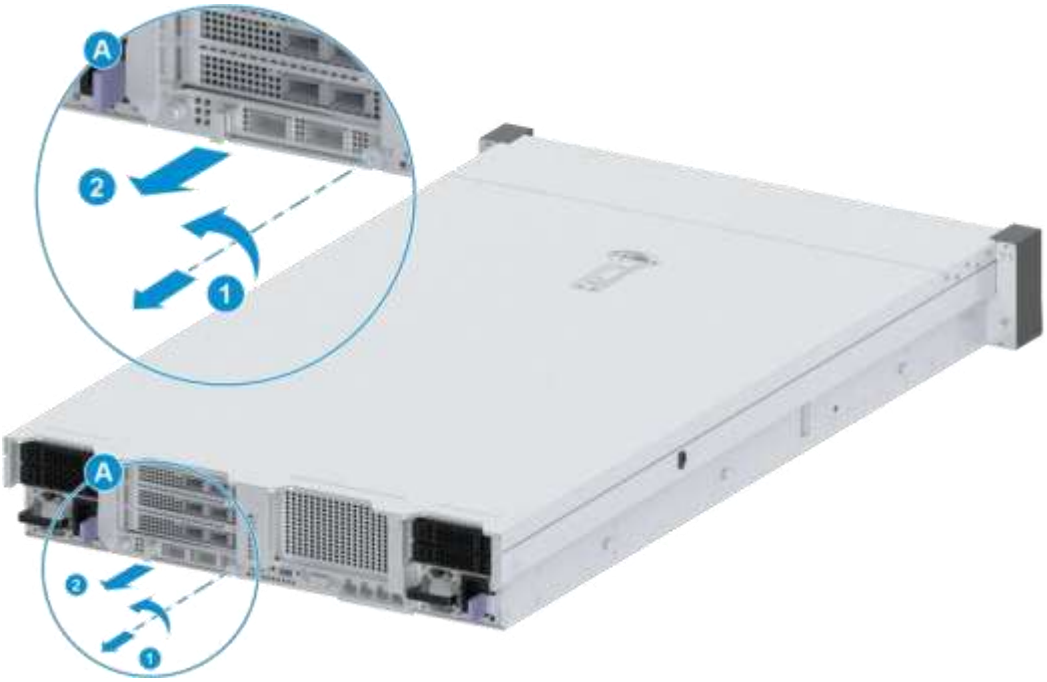
Figure 3-15 OCP Card Location

1. OCP card

Steps

1. Wear an ESD wrist strap.
2. Power off the server. For details, refer to 2.4.1 Powering Off the Server.
3. Label all the cables connected to the OCP card panel, and unplug these cables.
4. Loosen the captive screw of the OCP card by using a PH2 crosshead screwdriver, as indicated by Ⓒ in Figure 3-16.

Figure 3-16 Removing an OCP Card



5. Hold the handle of the OCP card and slowly remove the card from the server, as indicated by ② in Figure 3-16.
6. Put the removed OCP card into an antistatic packing bag and record the bar code of the OCP card.

3.6 Installing an OCP Card

Abstract

To replace a faulty OCP card, you need to install a new OCP card.

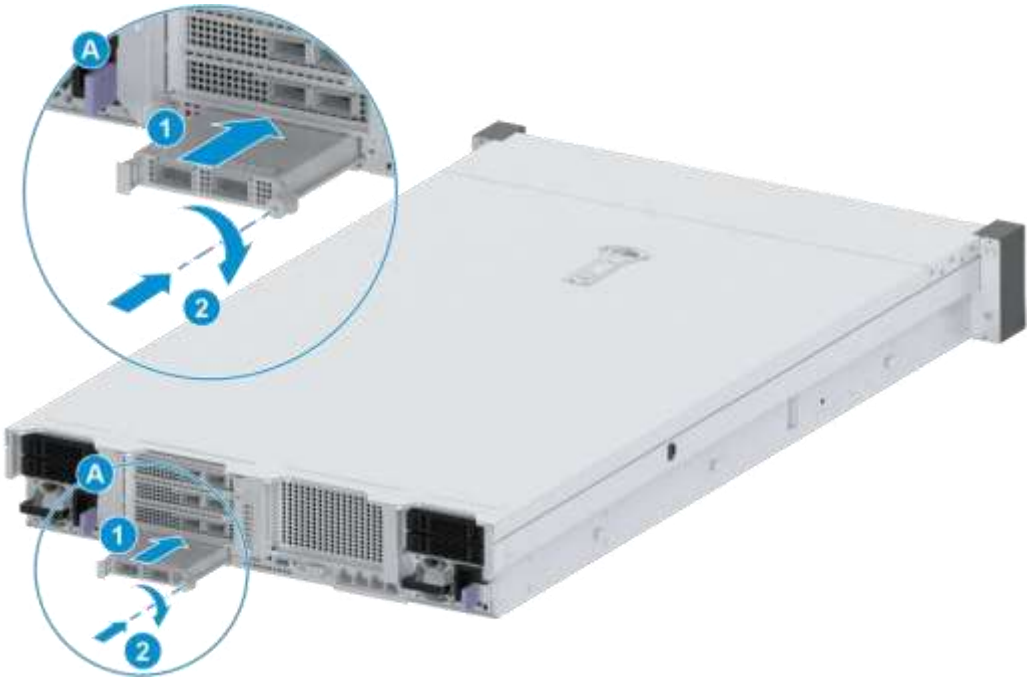
Notice

When replacing an OCP card, do not touch the golden fingers of the OCP card.

Steps

1. Wear an ESD wrist strap.
2. Remove the OCP card to be replaced. For detailed operations, refer to 3.5 Removing an OCP Card.
3. Take the spare OCP card from an antistatic packing bag and record the bar code of the OCP card.
4. Slide the OCP card into the server along the guide rials until it reaches the stop, as indicated by Ⓒ in Figure 3-17.

Figure 3-17 Installing an OCP Card



5. Tighten the captive screw of the OCP card by using a PH2 crosshead screwdriver, as indicated by ② in Figure 3-17.
6. Re-connect all the cables on the panel of OCP card.
7. Power on the server. For details, refer to 2.4.6 Powering On the Server.

3.7 Removing a Fan Unit

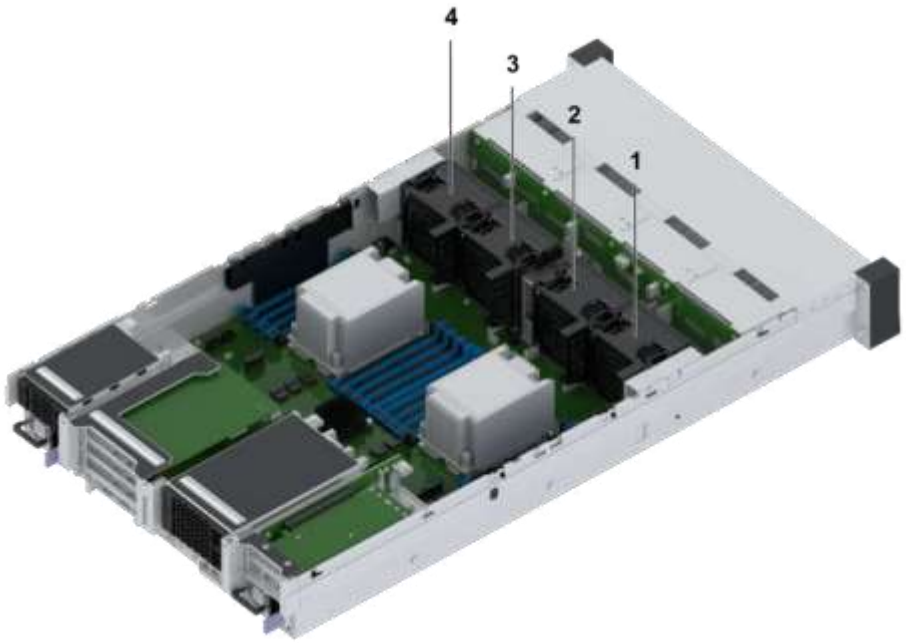
Abstract

To replace a faulty fan unit or the backplane of the front hard disks, you need to remove the fan unit.

Context

There are four fan units located in the middle part of the 2230-RE, see Figure 3-18.

Figure 3-18 Fan Unit Location



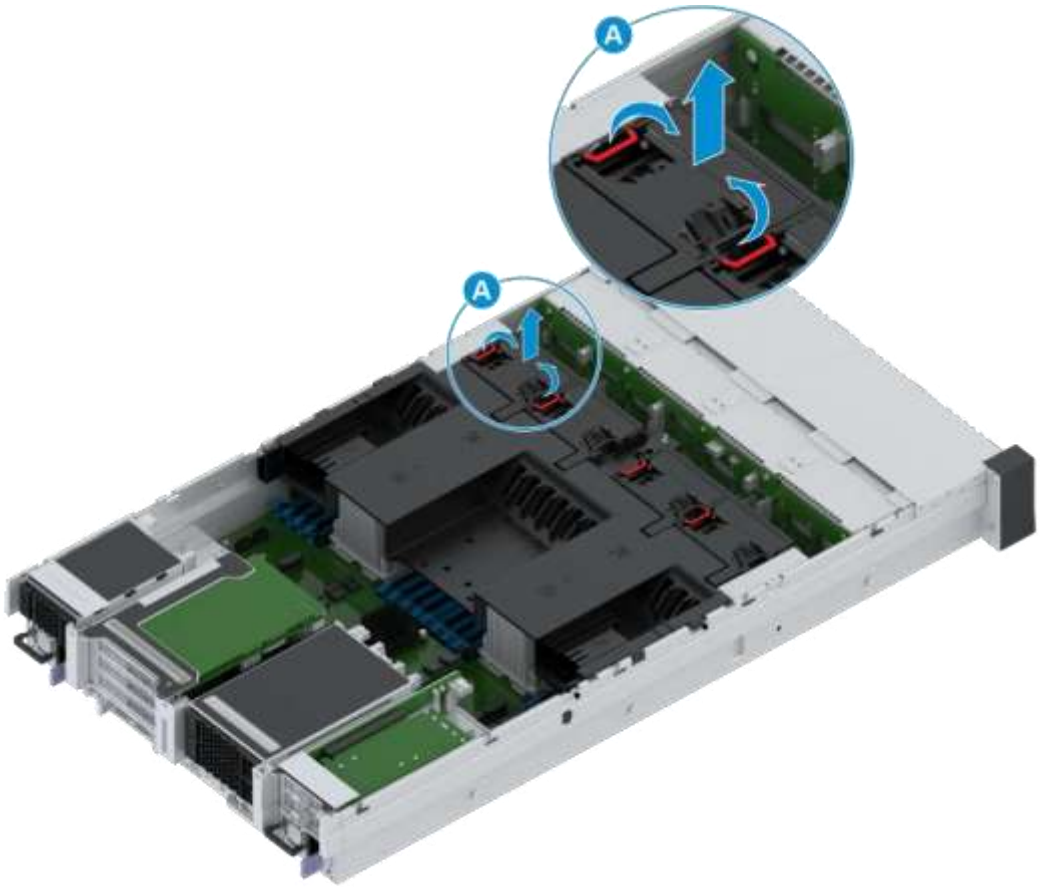
1. Fan unit 1
2. Fan unit 2
3. Fan unit 3
4. Fan unit 4

Steps

1. Wear an ESD wrist strap.
2. Open the server cover. For details, refer to 2.4.1 Powering Off the Server, 2.4.2 Removing the Server From the Rack and 2.4.3 Removing the Server Cover.
3. Locate the fan unit on the server, and paste a replacement label on the its panel.

4. Hold the fastening plastic components on both sides of the fan unit, and remove the fan unit out of the chassis slowly, see Figure 3-19.

Figure 3-19 Removing a Fan Unit



5. Put the removed fan unit into an antistatic packing bag and record the bar code of the fan unit.

3.8 Installing a Fan Unit

Abstract

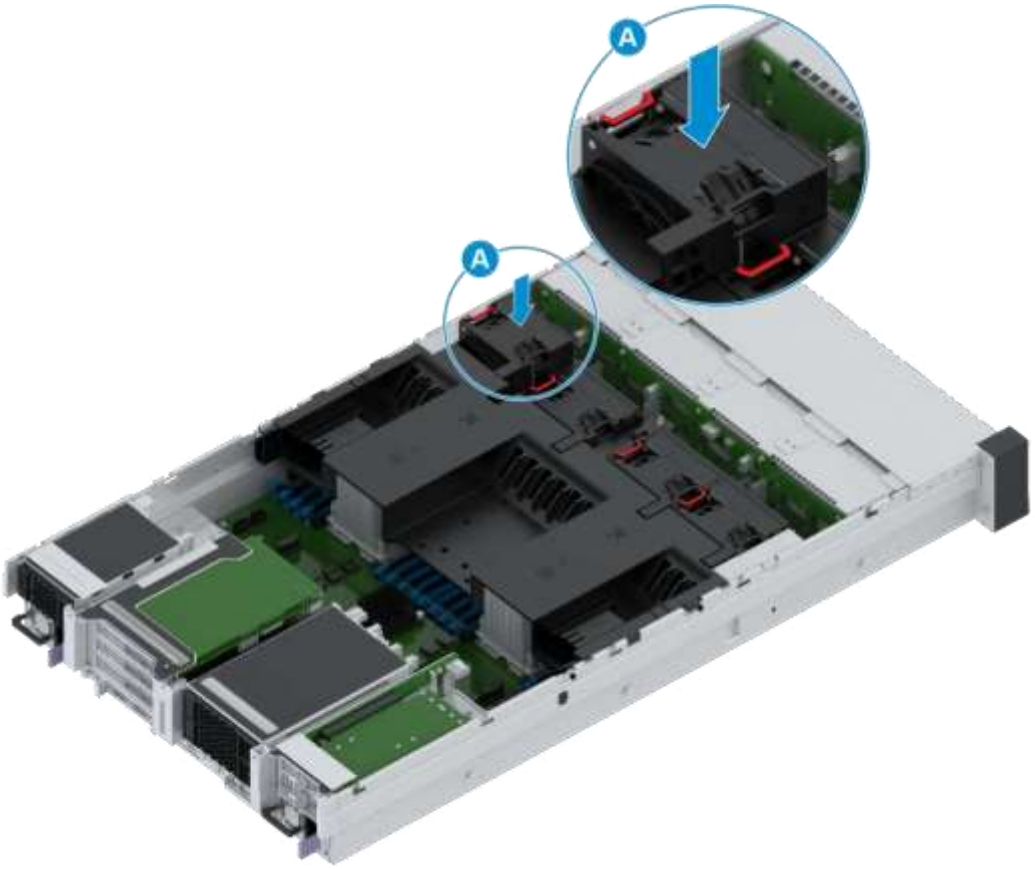
To replace a faulty fan unit or the backplane of the front hard disks, you need to install a new fan unit.

Steps

1. Wear an ESD wrist strap.
2. Remove the fan unit to be replaced. For detailed operations, refer to 3.7 Removing a Fan Unit.
3. Take the spare fan unit from an antistatic packing bag and record the bar code of the fan unit.

4. Slide the fan unit slowly in the arrow direction, and verify that the power cable interface of the fan unit is successfully connected to the mainboard interface, see Figure 3-20.

Figure 3-20 Installing a Fan Unit



5. Mounting the server into the rack. For details, refer to 2.4.4 Installing the Server Cover, 2.4.5 Mounting the Server Into the Rack and 2.4.6 Powering On the Server.

3.9 Removing an Air Baffle

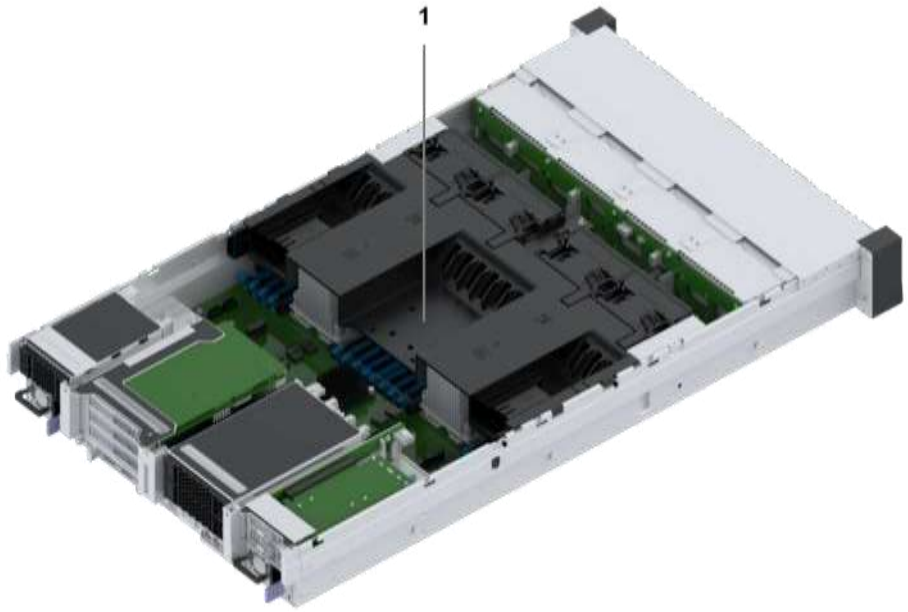
Abstract

To replace a faulty air baffle, the backplane of the front hard disks, CPU, or memory, you need to remove the air baffle.

Context

For the location of the air baffle on the 2230-RE, see Figure 3-21.

Figure 3-21 Air Baffle Location

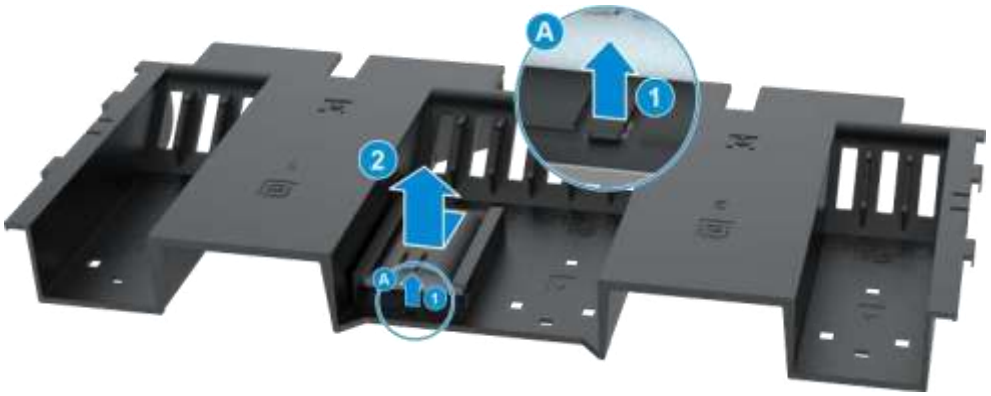


1. Air baffle

Steps

1. Wear an ESD wrist strap.
2. Open the server cover. For details, refer to 2.4.1 Powering Off the Server, 2.4.2 Removing the Server From the Rack and 2.4.3 Removing the Server Cover.
3. Label the cable of the super capacitor connected to the RAID card, and unplug the cable.
4. (Optional) Pull the latches of the super capacitor box in the direction indicated by arrow Ⓒ, and push and remove the super capacitor box in the direction indicated by arrow ②, see Figure 3-22.

Figure 3-22 Removing the Super Capacitor Box

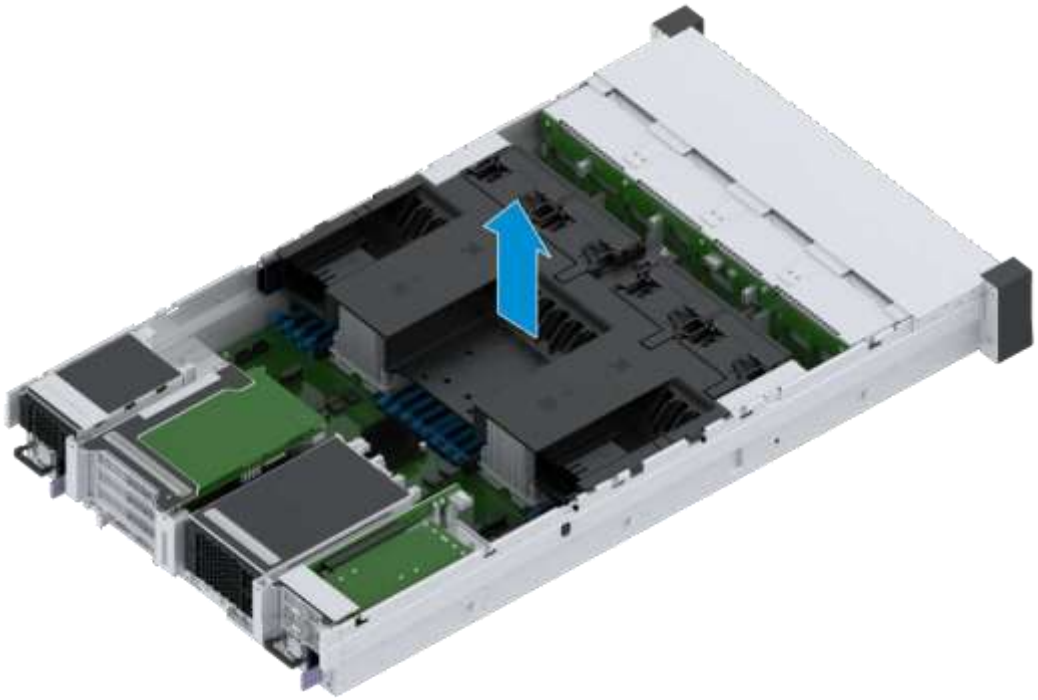


Note

If you temporarily remove the air baffle to replace other parts, you do not need to remove the super capacitor box.

5. Lift the air baffle up slowly, see Figure 3-23.

Figure 3-23 Removing the Air Baffle



6. Put the removed air baffle into an antistatic packing bag and record the bar code of the air baffle.

3.10 Installing an Air Baffle

Abstract

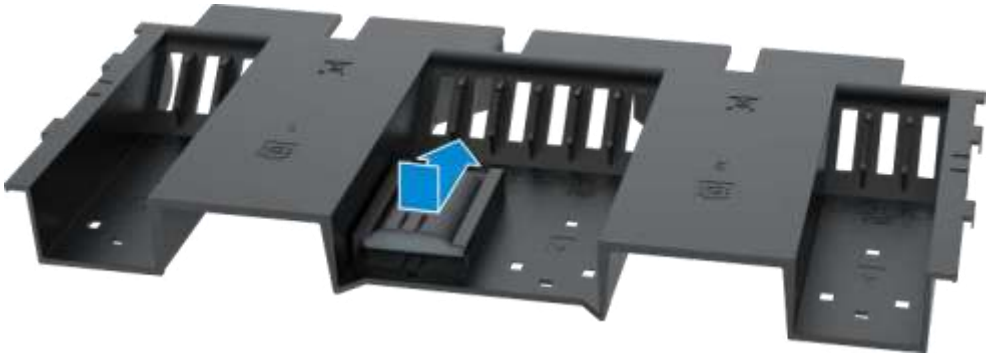
To replace a faulty air baffle, the backplane of the front hard disks, CPU, or memory, you need to install a new air baffle.

Steps

1. Wear an ESD wrist strap.
2. Remove an air baffle, For detailed operations, refer to 3.9 Removing an Air Baffle.
3. Take the spare air baffle from an antistatic packing bag, and record the bar code of the air baffle.

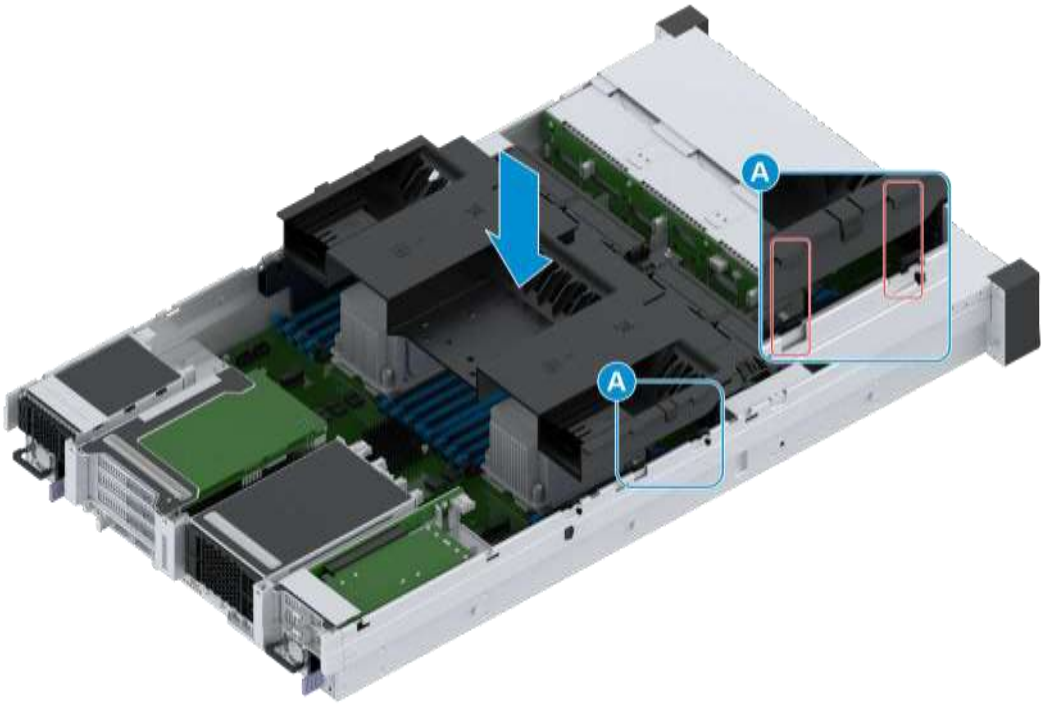
4. (Optional) Align the three fixing posts at the bottom of the super capacitor box to the three jacks on the air baffle, and install the super capacitor box on the air baffle in the direction of the arrow until the latch of the super capacitor box locks the air baffle, see Figure 3-24.

Figure 3-24 Installing the Super Capacitor Box



5. Align the latches on the four corners of the air baffle with the slots of the server, and slowly install the air baffle until it is secured into the slot, see Figure 3-25.

Figure 3-25 Installing the Air Baffle



6. Re-connect the cable of the super capacitor to the RAID card.
7. Mounting the server into the rack. For details, refer to 2.4.4 Installing the Server Cover, 2.4.5 Mounting the Server Into the Rack and 2.4.6 Powering On the Server.

3.11 Removing an Anti-Intrusion Sensor

Abstract

To replace a faulty anti-intrusion sensor, you need to remove the anti-intrusion sensor.

Steps

1. Put on an anti-static wrist strap.
2. Open the server cover. For detailed operations, refer to 2.4.1 Powering Off the Server, 2.4.2 Removing the Server From the Rack and 2.4.3 Removing the Server Cover.
3. Remove the air baffle, For detailed operations, refer to 3.9 Removing an Air Baffle.
4. Label all the cables connected to the anti-intrusion sensor, and unplug these cables.
5. Move the anti-intrusion sensor in the direction of the arrow to unlock it, and remove it from the fan tray, see Figure 3-26.

Figure 3-26 Removing the Anti-Intrusion Sensor

6. Record the bar code of the removed anti-intrusion sensor and put it into an anti-static bag.

3.12 Installing an Anti-Intrusion Sensor

Abstract

To replace a faulty anti-intrusion sensor, you need to install an anti-intrusion sensor.

Steps

1. Put on an anti-static wrist strap.
2. Take the spare anti-intrusion sensor from an anti-static bag, and record the bar code of the anti-intrusion sensor.
3. Place the anti-intrusion sensor into the fan tray, and move the sensor in the direction of the arrow to secure it in the fan tray, see Figure 3-27.

Figure 3-27 Installing the Anti-Intrusion Sensor

4. Reconnect the cables to the anti-intrusion sensor.
5. Install the air baffle. For detailed operations, refer to 3.10 Installing an Air Baffle.
6. Mount the server into the rack. For detailed operations, refer to 2.4.4 Installing the Server Cover, 2.4.5 Mounting the Server Into the Rack and 2.4.6 Powering On the Server.

3.13 Removing a Front Hard Disk Backplane

Abstract

To replace a faulty front hard disk backplane, you need to remove the backplane.

Note

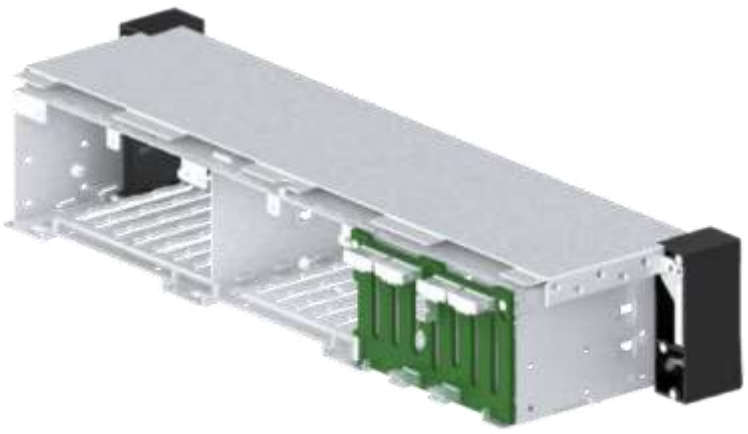
This procedure uses the backplane of 12 front disks as an example to describe how to remove a front hard disk backplane. For how to remove the backplane of other types of front hard disks, you can also refer to this procedure.

Context

The backplanes of the 2230-RE are divided into the following types in accordance with the number of front hard disks:

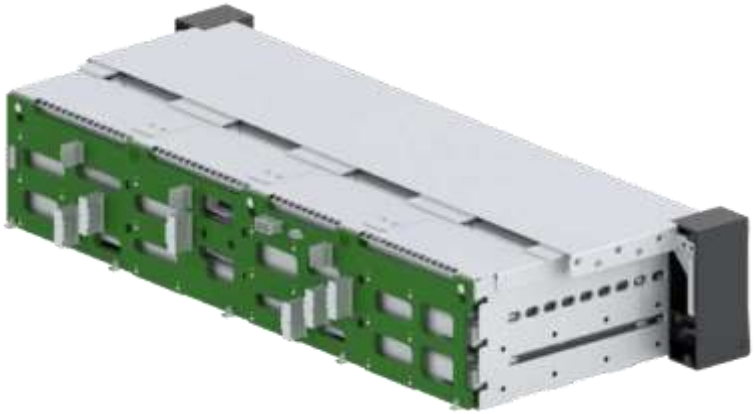
- Backplane supporting 8 hard disks, see Figure 3-28.

Figure 3-28 Backplane of 8 Front Hard Disks



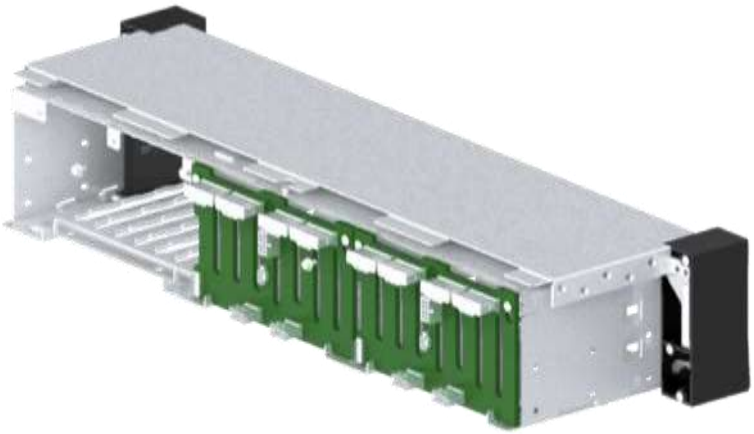
- Backplane supporting 12 hard disks, see Figure 3-29.

Figure 3-29 Backplane of 12 Front Hard Disks



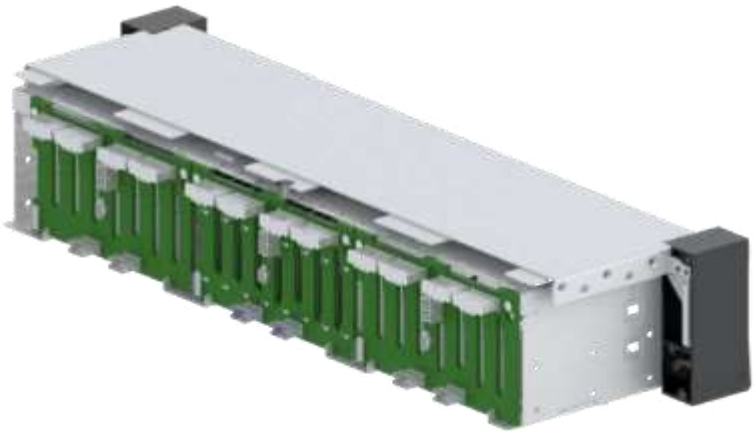
- Backplane supporting 16 hard disks, which is composed of two backplanes of 8 front hard disks, see Figure 3-30.

Figure 3-30 Backplane of 16 Front Hard Disks



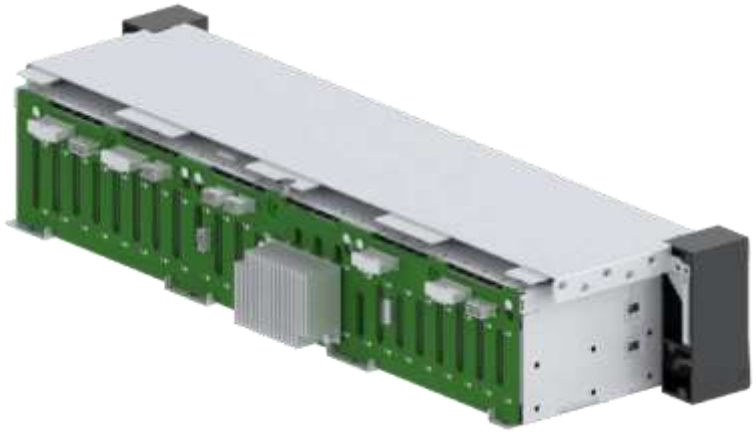
- Backplane supporting 24 hard disks, which is composed of three backplanes of 8 front hard disks, see Figure 3-31.

Figure 3-31 Backplane of 24 Front Hard Disks



- Backplane supporting 25 hard disks, see Figure 3-32.

Figure 3-32 Backplane of 25 Front Hard Disks



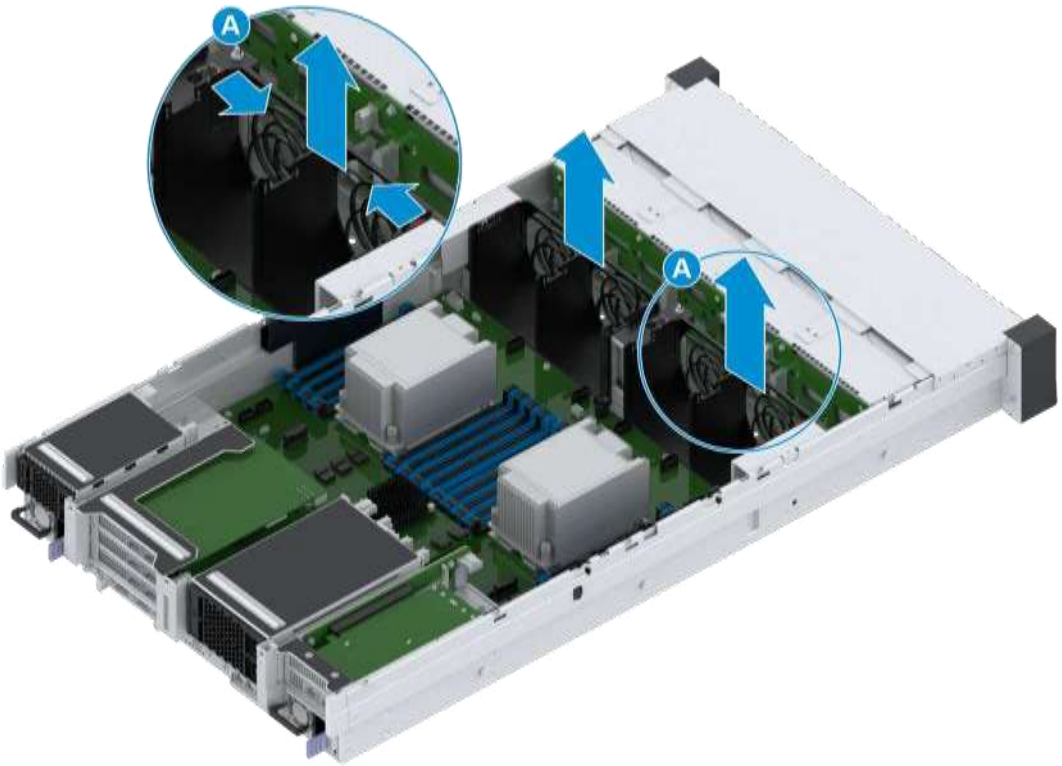
Steps

1. Wear an ESD wrist strap.
2. Open the server cover. For details, refer to 2.4.1 Powering Off the Server, 2.4.2 Removing the Server From the Rack and 2.4.3 Removing the Server Cover.
3. Remove all front hard disks. For detailed operations, refer to 3.1 Removing a Hard Disk.
4. Remove the air baffle, For detailed operations, refer to 3.9 Removing an Air Baffle.
5. Remove all fan units. For detailed operations, refer to 3.7 Removing a Fan Unit.
6. Raise the fan tray while pressing the lockers on both sides of the fan tray inward, see Figure 3-33.

Note

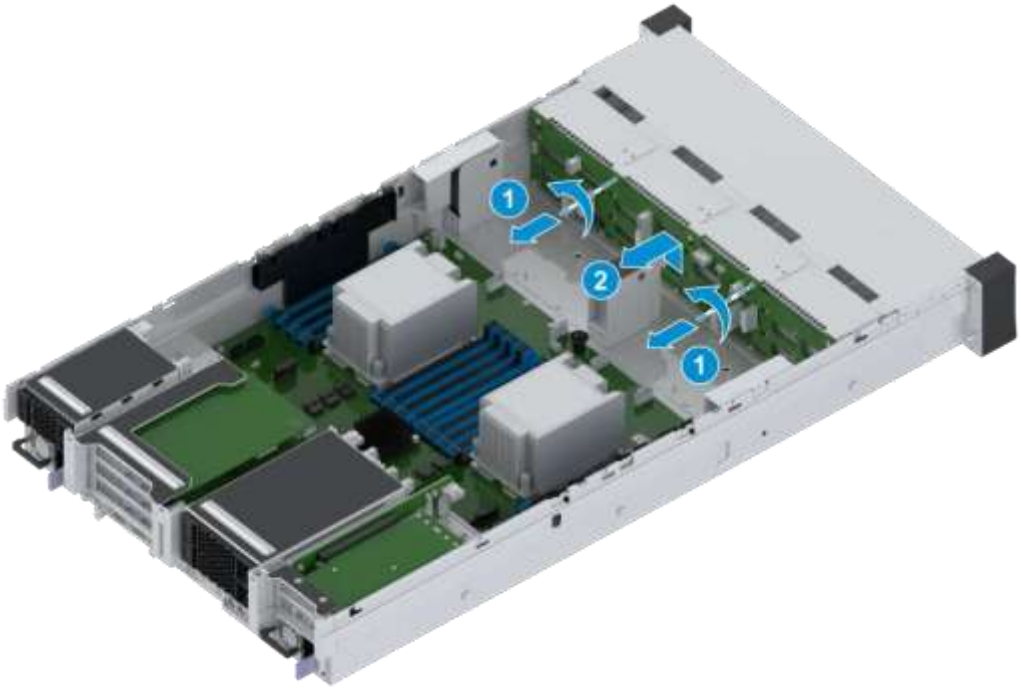
Two fan trays need to be removed.

Figure 3-33 Removing the Fan Trays



7. Label all the cables connected to the front hard disk backplane, and unplug these cables.
8. Loosen the fastening screws of the front hard disk backplane by using a PH2 crosshead screwdriver, as indicated by Ⓒ in Figure 3-34.

Figure 3-34 Removing the Front Hard Disk Blackplane



9. Slowly lift the front hard disk backplane upwards until the backplane cannot be moved. Remove the backplane in the direction of the arrow, as indicated by ② in Figure 3-34.
10. Put the removed front hard disk backplane into an antistatic packing bag and record the bar code of the backplane.

3.14 Installing a Front Hard Disk Backplane

Abstract

To replace a faulty front hard disk backplane, you need to install a new backplane.

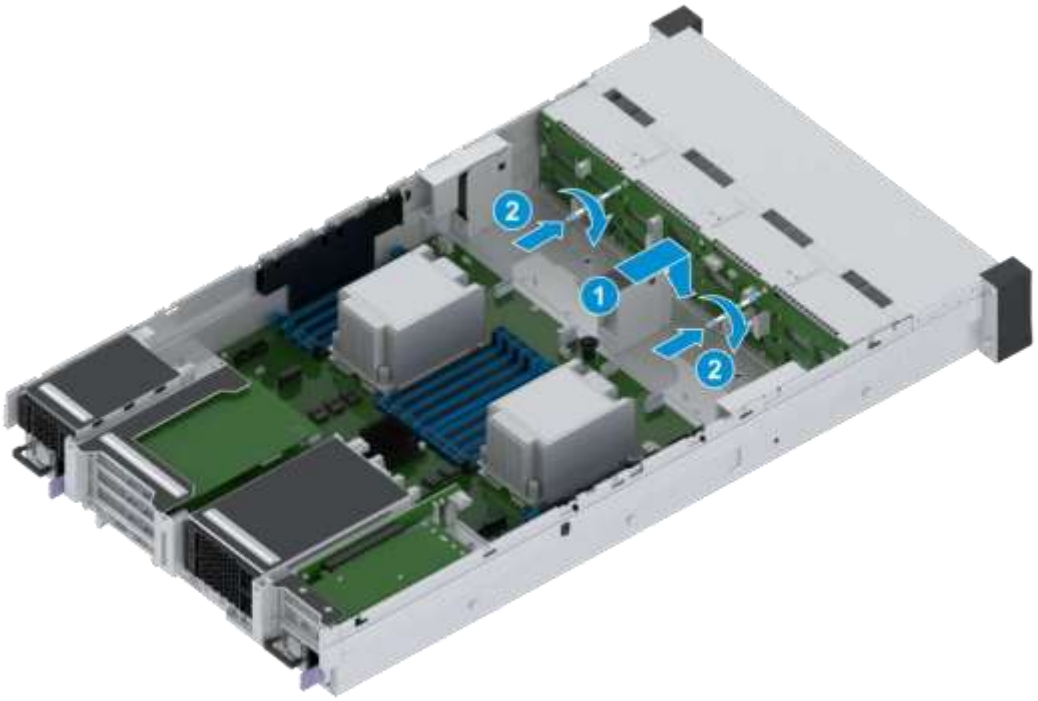
Note

This procedure uses the backplane for 12 front disks as an example to describe how to install a front hard disk backplane. For how to install the backplane for other types of front hard disks, you can also refer to this procedure.

Steps

1. Wear an ESD wrist strap.
2. Remove the front hard disk backplane to be replaced. For detailed operations, refer to 3.13 Removing a Front Hard Disk Backplane.
3. Take the spare front hard disk backplane from an antistatic packing bag and record the bar code of the backplane.
4. Attach the front hard disk backplane to the T-shaped columns of the disk enclosure in horizontal direction, and press down the backplane slowly until the backplane is fixed by the hook of the disk enclosure, as indicated by Ⓒ in Figure 3-35.

Figure 3-35 Installing the Front Hard Disk Blackplane

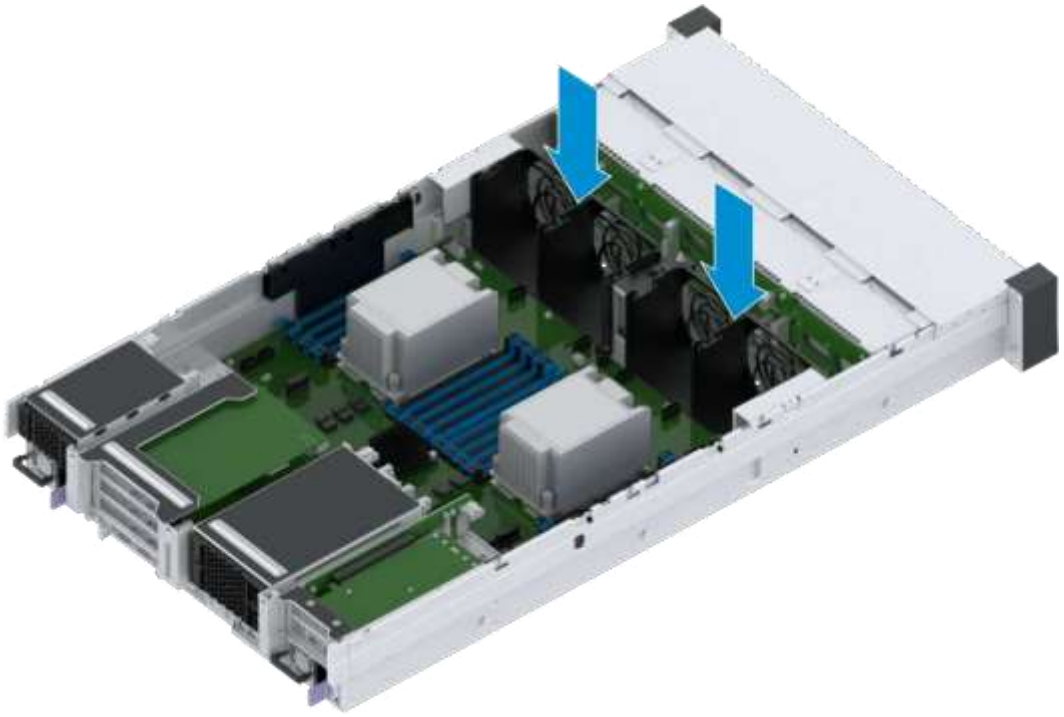


5. Tighten the fastening screws of the front hard disk backplane by using a PH2 crosshead screwdriver, as indicated by ② in Figure 3-35.
6. Re-connect the cables of the front hard disk backplane.
7. Make the side of the fan tray with the mesh cover face the front of the server. Slide the fan tray into the server along the guide rails until the location hole at the bottom of the fan tray is inserted by the location column of the server, see Figure 3-36.

Note

Two fan trays need to be installed.

Figure 3-36 Installing Fan Trays



8. Install all the fan units. For detailed operations, refer to 3.8 Installing a Fan Unit.
9. Install the air baffle, For detailed operations, refer to 3.10 Installing an Air Baffle.
10. Install all the front hard disks. For detailed operations, refer to 3.2 Installing a Hard Disk.
11. Mount the server into the rack. For details, refer to 2.4.4 Installing the Server Cover, 2.4.5 Mounting the Server Into the Rack and 2.4.6 Powering On the Server.

3.15 Removing a Rear Hard Disk Cage

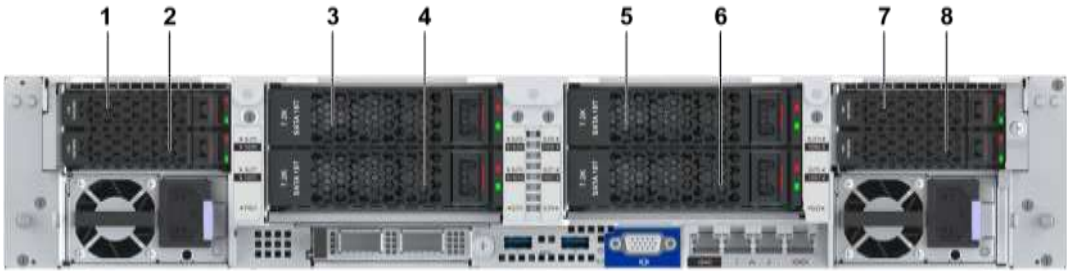
Abstract

To replace a mainboard or I/O module, you need to remove a hard disk cage.

Context

The four I/O modules at the rear of the 2230-RE can be configured with hard disk cages. When all I/O modules are configured with hard disk cages, the rear view of the server is shown in Figure 3-37.

Figure 3-37 Rear Hard Disk Location



1. 2.5-inch hard disk in I/O module 1 (HD50)
2. 2.5-inch hard disk in I/O module 1 (HD51)
3. 3.5-inch hard disk in I/O module 2 (HD52)
4. 3.5-inch hard disk in I/O module 2 (HD53)
5. 3.5-inch hard disk in I/O module 3 (HD56)
6. 3.5-inch hard disk in I/O module 3 (HD57)
7. 2.5-inch hard disk in I/O module 4 (HD60)
8. 2.5-inch hard disk in I/O module 4 (HD61)

Steps

1. Wear an ESD wrist strap.
2. Open the server cover. For details, refer to 2.4.1 Powering Off the Server, 2.4.2 Removing the Server From the Rack and 2.4.3 Removing the Server Cover.
3. Locate the hard disk cage on the server, and paste a replacement label on its panel.
4. Remove all hard disks in the hard disk cage. For details, refer to 3.1 Removing a Hard Disk.
5. Label all the cables connected to the hard disk backplanes, and unplug these cables.
6. Perform the following operations in accordance with the location of the I/O module where the hard disk cage is located.

If...	Then...
The hard disk cage is located in I/O module 1 or 4	a. Loosen the captive screw of the hard disk cage by using a PH2 crosshead screwdriver, as indicated by Ⓒ in Figure 3-38. b. Push the hard disk cage in the direction of the arrow until the cage cannot be moved, and lift the cage up and out, as indicated by ② in Figure 3-38.
The hard disk cage is located in I/O module 2 or 3	a. Loosen the captive screws and fastening screws of the hard disk cage by using a PH2 crosshead screwdriver, as indicated by Ⓒ in Figure 3-39. b. Hold the force applied component on the hard disk cage with both hands, and slowly lift the cage up and out, as indicated by ② in Figure 3-39.

Figure 3-38 Removing the Hard Disk Cage of I/O Module 1 or 4

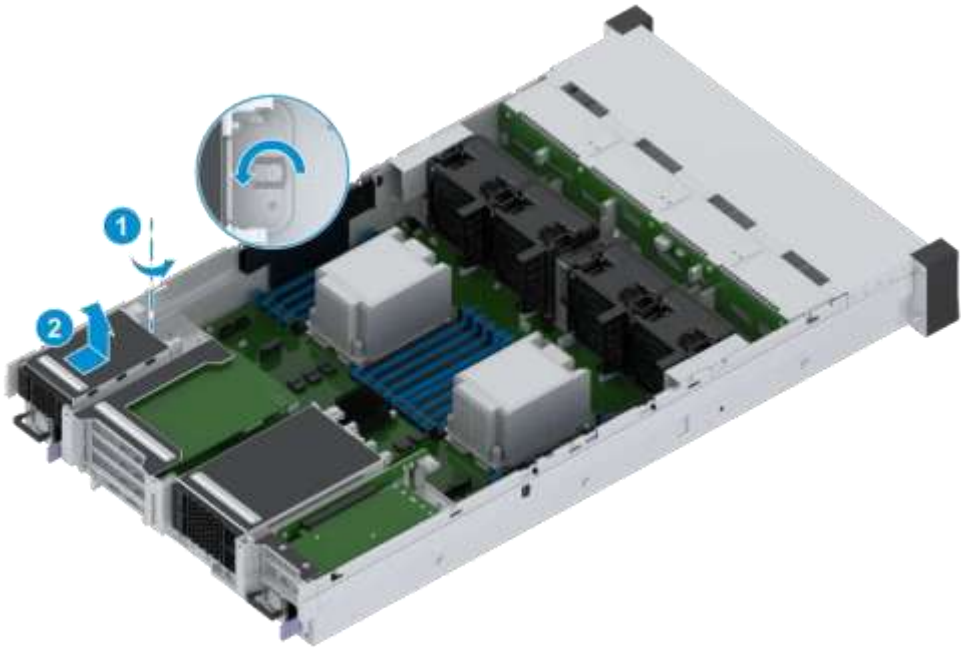
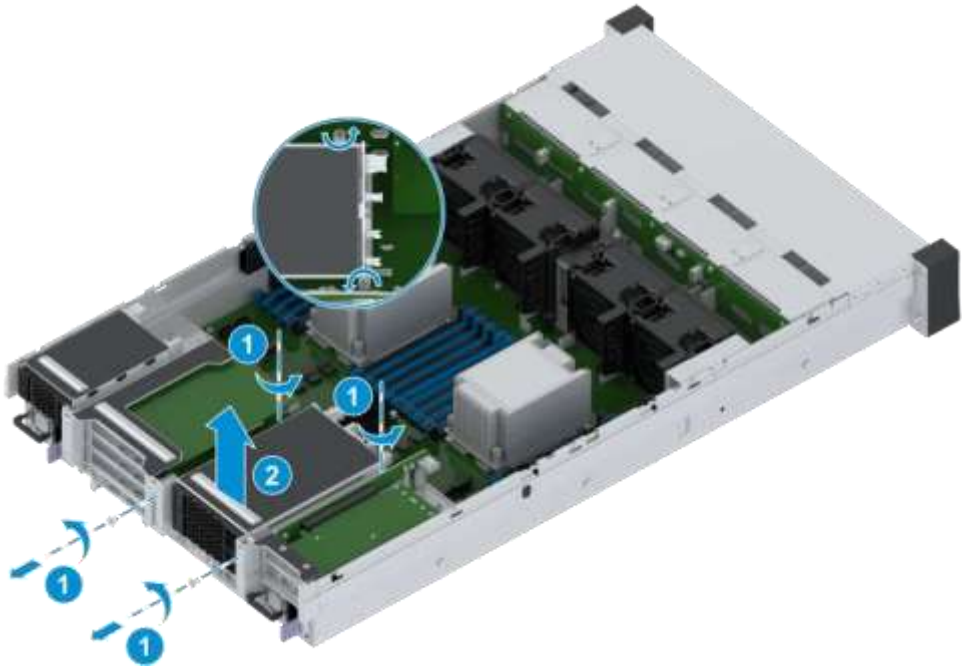


Figure 3-39 Removing the Hard Disk Cage of I/O Module 2 or 3



7. Put the removed hard disk cage into an antistatic packing bag and record the bar code of the cage.

3.16 Installing a Rear Hard Disk Cage

Abstract

To replace a mainboard or I/O module, you need to install a hard disk cage.

Steps

1. Wear an ESD wrist strap.
2. Remove the hard disk cage to be replaced. For detailed operations, refer to 3.15 Removing a Rear Hard Disk Cage.
3. Take the spare hard disk cage from an antistatic packing bag and record the bar code of the hard disk cage.
4. Perform the following operations in accordance with the location of the I/O module where the hard disk cage is located.

If...	Then...
The hard disk cage is located in I/O module 1 or 4	a. Slowly slide the hard disk cage into the corresponding I/O module slot until the slot at the rear of the cage is secured into the T-shaped column of the server power socket. Push the hard disk cage to the rear of the server until the observation holes are overlapped, as indicated by Ⓒ in Figure 3-40. b. Tighten the captive screw of the hard disk cage by using a PH2 crosshead screwdriver, as indicated by ② in Figure 3-40.
The hard disk cage is located in I/O module 2 or 3	a. Slowly slide the hard disk cage into the corresponding I/O module slot, as indicated by Ⓒ in Figure 3-41. b. Tighten the captive screws and fastening screws of the hard disk cage by using a PH2 crosshead screwdriver, as indicated by ② in Figure 3-41.

Figure 3-40 Installing the Hard Disk Cage of I/O Module 1 or 4

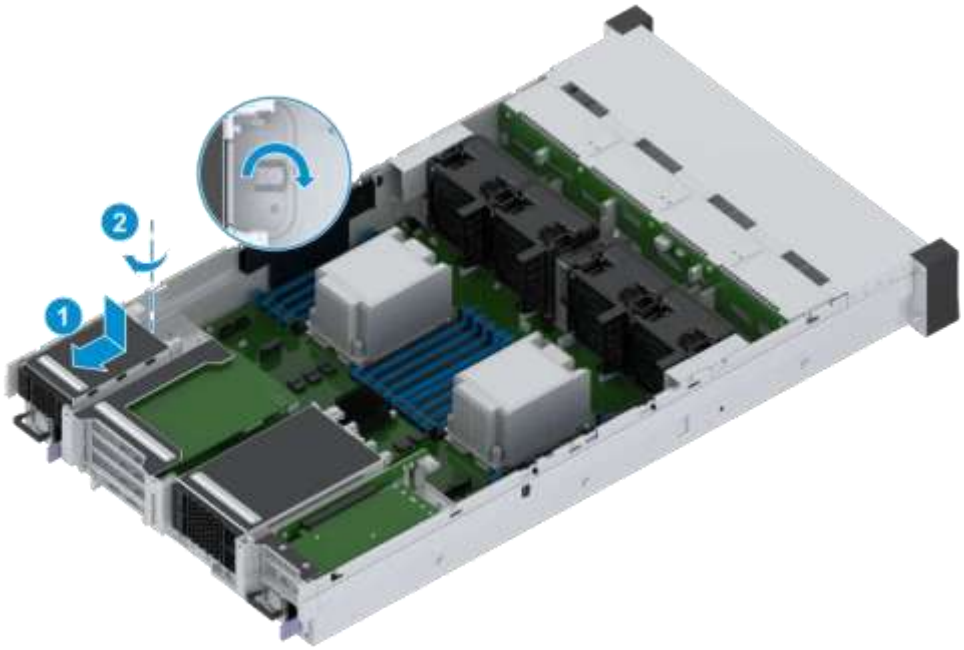
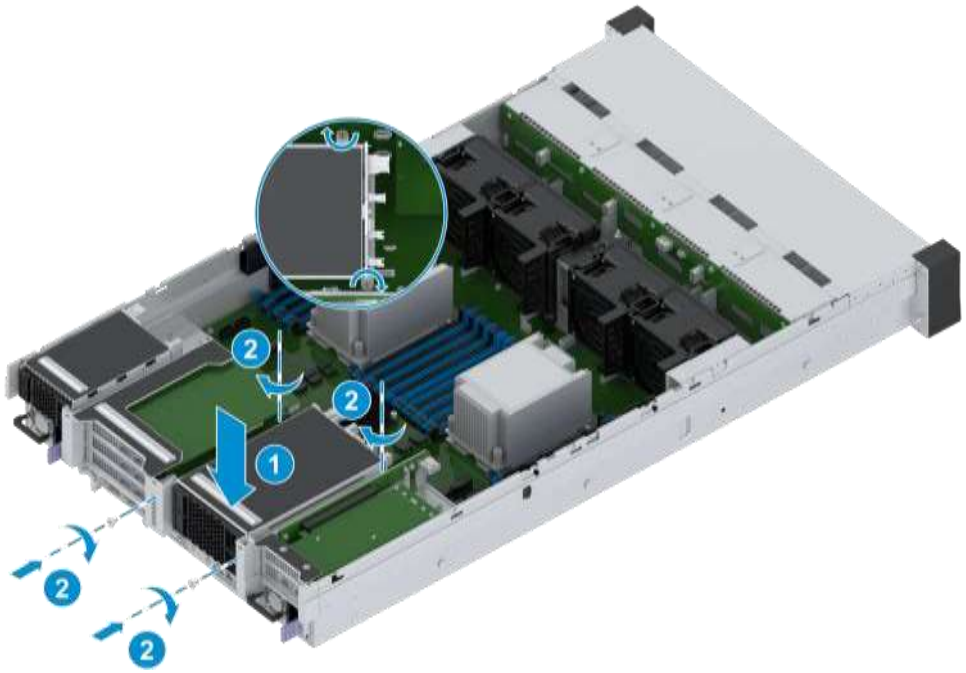


Figure 3-41 Installing the Hard Disk Cage of I/O Module 2 or 3



5. Re-connect the cables of the rear hard disk backplane.
6. Install all hard disks in the hard disk cage. For details, refer to 3.2 Installing a Hard Disk.
7. Mount the server into the rack. For details, refer to 2.4.4 Installing the Server Cover, 2.4.5 Mounting the Server Into the Rack and 2.4.6 Powering On the Server.

3.17 Removing the Hard Disk Backplane of an I/O Module

Abstract

Before replacing a faulty hard disk backplane of an I/O module, you need to first remove the hard disk backplane.

Steps

1. Put on an anti-static wrist strap.
2. Open the server cover. For detailed operations, refer to 2.4.1 Powering Off the Server, 2.4.2 Removing the Server From the Rack and 2.4.3 Removing the Server Cover.
3. Locate the hard disk backplane to be replaced in the server, and paste a replacement label on the hard disk backplane.
4. Remove all hard disks in the hard disk cage. For detailed operations, refer to 3.1 Removing a Hard Disk.
5. Label all the cables connected to the hard disk backplane, and unplug these cables.
6. Perform the following operations in accordance with the location of the I/O module where the hard disk backplane is located.

If...	Then...
The hard disk backplane is located in I/O module 1 or 4	a. Loosen the fastening screws of the hard disk backplane by using a PH2 crosshead screwdriver, see Ⓒ in Figure 3-42. b. Lift the hard disk backplane up and out, see ② in Figure 3-42.
The hard disk backplane is located in I/O module 2 or 3	a. Loosen the fastening screw of the hard disk backplane by using a PH2 crosshead screwdriver, see Ⓒ in Figure 3-43. b. Lift the hard disk backplane upwards until the backplane is detached from the latches of the I/O module bracket, and horizontally take out the backplane, see ② in Figure 3-43.

Figure 3-42 Removing the Hard Disk Backplane of I/O Module 1/4

Figure 3-43 Removing the Hard Disk Backplane of I/O Module 2/3

7. Record the bar code of the removed hard disk backplane, and put it into an anti-static bag.

3.18 Installing the Hard Disk Backplane of an I/O Module

Abstract

To replace the faulty hard disk backplane of an I/O module, you need to install a new hard disk backplane.

Steps

1. Put on an anti-static wrist strap.
2. Take the spare hard disk backplane from an anti-static bag and record the bar code of the backplane.
3. Perform the following operations in accordance with the location of the I/O module where the hard disk backplane is located.

If...	Then...
The hard disk backplane is located in I/O module 1 or 4	a. Place the hard disk backplane down along the positioning slot of the I/O module bracket, see © in Figure 3-44. b. Tighten the fastening screws of the hard disk backplane by using a PH2 crosshead screwdriver, see ② in Figure 3-44.
The hard disk backplane is located in I/O module 2 or 3	a. Horizontally attach the hard disk backplane to the latches of the I/O module bracket, and press down the hard disk backplane slowly until the hard disk backplane is fixed by the latches, see © in Figure 3-45. b. Tighten the fastening screw of the hard disk backplane by using a PH2 crosshead screwdriver, see ② in Figure 3-45.

Figure 3-44 Installing the Hard Disk Backplane of I/O Module 1/4

Figure 3-45 Installing the Hard Disk Backplane of I/O Module 2/3

4. Reconnect the cables to the hard disk backplane.
5. Install all hard disks in the hard disk cage. For detailed operations, refer to 3.2 Installing a Hard Disk.
6. Mount the server into the rack. For detailed operations, refer to 2.4.4 Installing the Server Cover, 2.4.5 Mounting the Server Into the Rack and 2.4.6 Powering On the Server.

3.19 Removing a PCIe Card

Abstract

To replace a faulty PCIe card, an existing PCIe card with a PCIe card of a different module, or a riser card connected to a PCIe card, you need to remove the PCIe card.

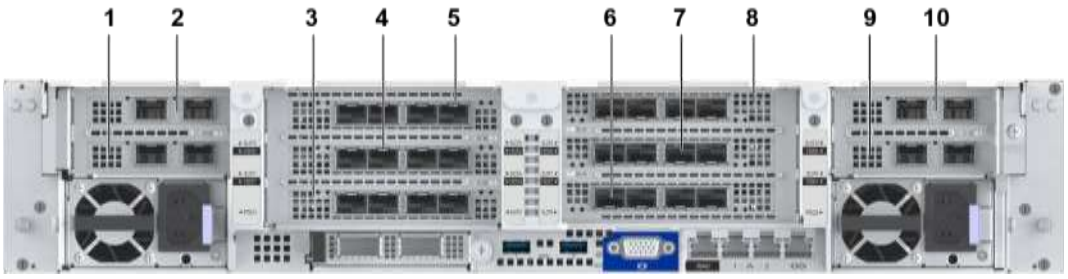
Notice

When replacing a PCIe card, do not touch the golden fingers of the PCIe card.

Context

The four I/O modules at the rear of the server can be configured with PCIe cards. When all I/O modules are configured with PCIe cards, the rear view of the server is shown in Figure 3-46.

Figure 3-46 PCIe Card Location



1. PCIe card slot 1 of I/O module 1
2. PCIe card slot 2 of I/O module 1
3. PCIe card slot 3 of I/O module 2
4. PCIe card slot 4 of I/O module 2
5. PCIe card slot 5 of I/O module 2
6. PCIe card slot 6 of I/O module 3
7. PCIe card slot 7 of I/O module 3
8. PCIe card slot 8 of I/O module 3
9. PCIe card slot 9 of I/O module 4
10. PCIe card slot 10 of I/O module 4

Steps

Removing the I/O Module Bracket

1. Wear an ESD wrist strap.
2. Open the server cover. For details, refer to 2.4.1 Powering Off the Server, 2.4.2 Removing the Server From the Rack and 2.4.3 Removing the Server Cover.
3. Locate the PCIe card to be replaced on the server, and paste a replacement label on the PCIe card.
4. (Optional) If cables are connected to the PCIe card, use labels to mark the cables and unplug the cables.
5. Perform the following operations in accordance with the location of the I/O module where the PCIe card is located.

If...	Then...
The PCIe card is located in I/O module 1 or 4	a. Loosen the captive screw of the bracket of the I/O module where the PCIe card is located by using a PH2 crosshead screwdriver, as indicated by Ⓒ in Figure 3-47. b. Push the I/O module bracket in the direction of the arrow until the bracket cannot be moved, and lift the I/O module bracket up and out, as indicated by ② in Figure 3-47.
The PCIe card is located in I/O module 2 or 3	a. Loosen the captive screw and fastening screws of the I/O module bracket by using a PH2 crosshead screwdriver, as indicated by Ⓒ in Figure 3-48.

If...	Then...
	b. Hold the force applied component on the I/O module bracket with both hands, and slowly lift the bracket up and out, as indicated by ② in Figure 3-48.

Figure 3-47 Removing the I/O module Bracket 1 or 4

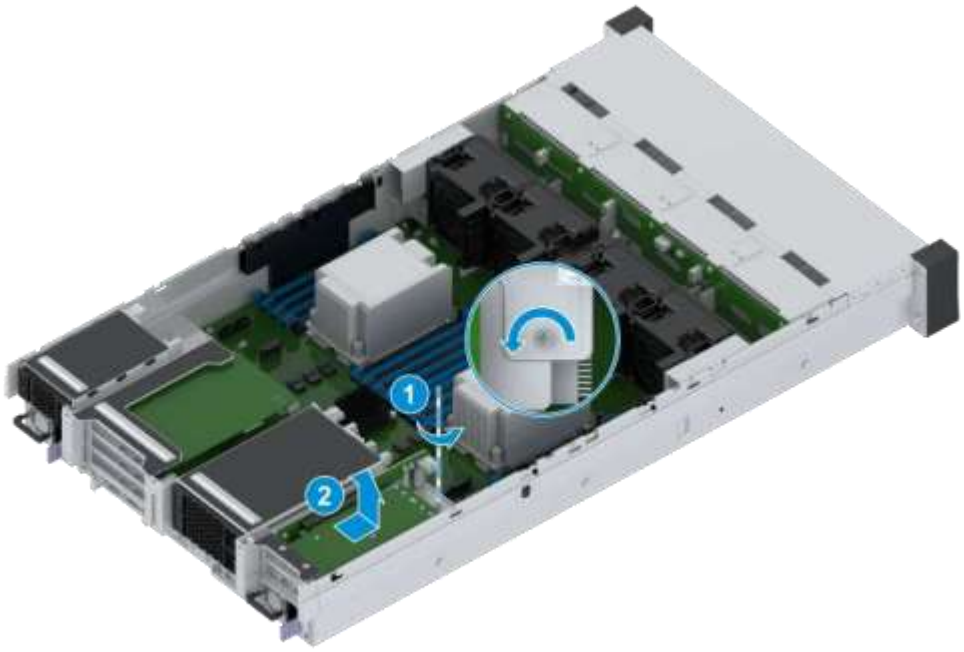
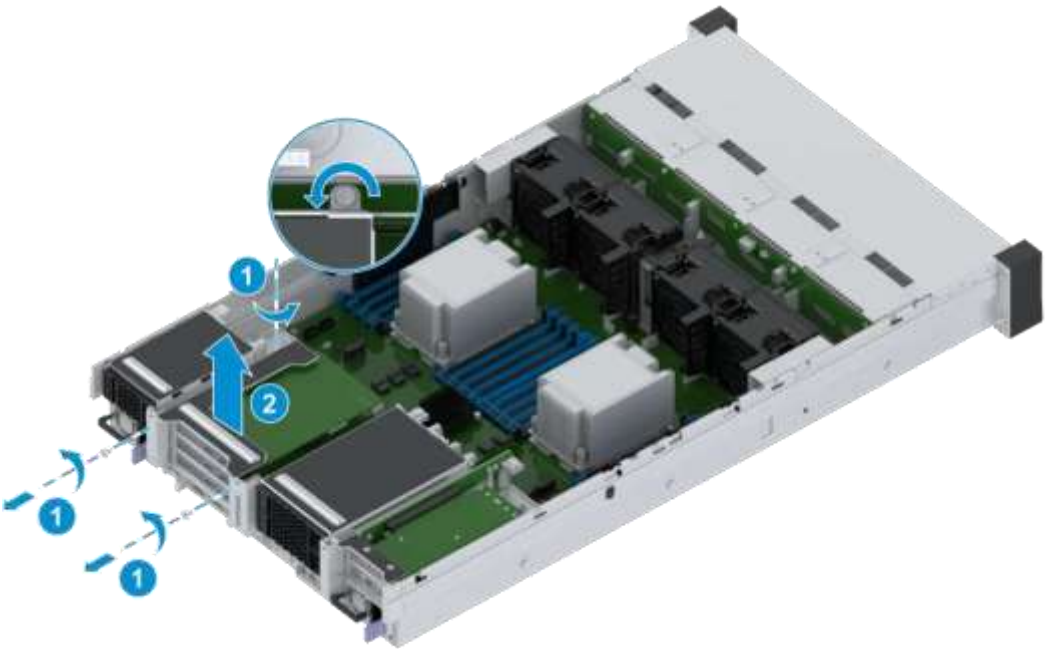


Figure 3-48 Removing the I/O module Bracket 2 or 3



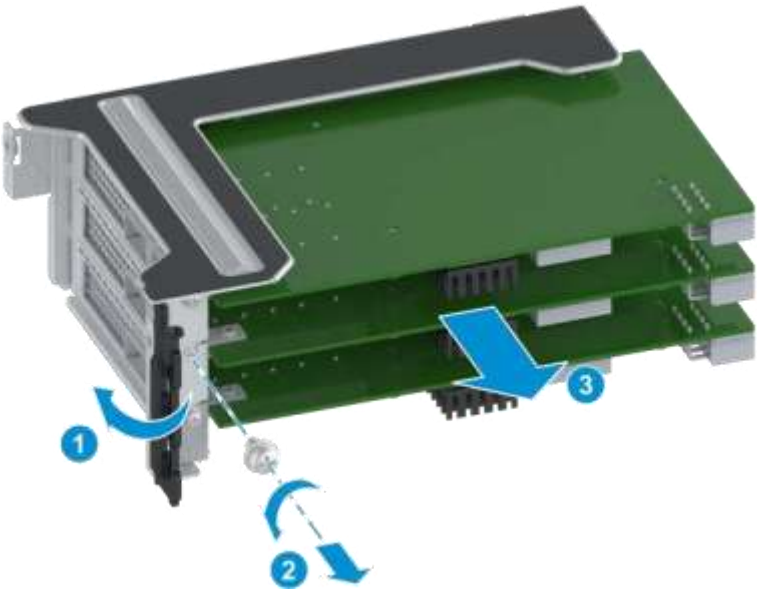
Removing the PCIe Card

Note

This procedure describes how to remove a PCIe card from I/O module 2 or 3. The procedure for removing a PCIe card from I/O module 1 or 4 is the same, and you can refer to this procedure.

6. Rotate the cover plate of the PCIe cards, as indicated by Ⓒ in Figure 3-49.

Figure 3-49 Removing a PCIe Card



7. Loosen the fastening screw of the PCIe card by using a PH2 crosshead screwdriver, as indicated by ② in Figure 3-49.
8. Horizontally pull the PCIe card out as indicated by Ⓒ in Figure 3-49
9. Put the removed PCIe card into an antistatic packing bag and record the bar code of the PCIe card.

3.20 Installing a PCIe Card

Abstract

To replace a faulty PCIe card, an existing PCIe card with a PCIe card of a different module, or a riser card connected to a PCIe card, you need to install a new PCIe card.

Notice

When replacing a PCIe card, do not touch the golden fingers of the PCIe card.

Steps

Installing a PCIe Card

Note

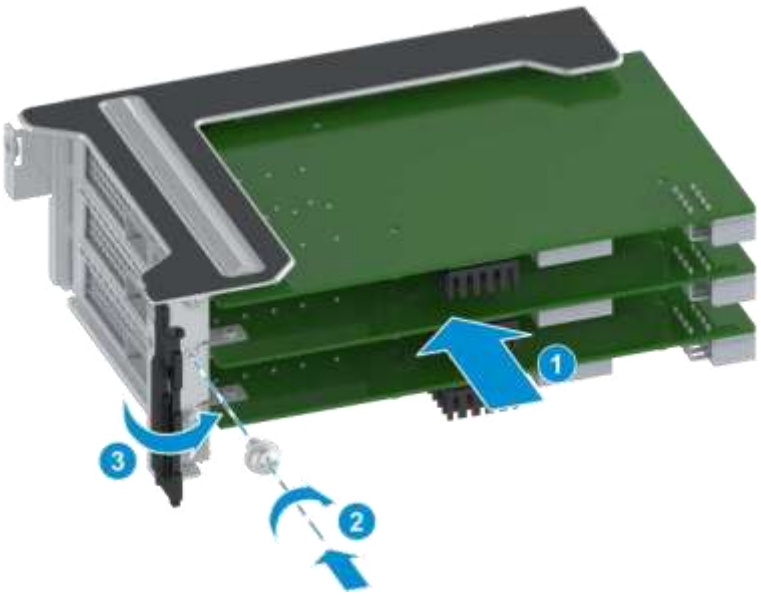
This procedure describes how to install a PCIe card in I/O module 2 or 3. The procedure for installing a PCIe card in I/O module 1 or 4 is the same, and you can also refer to this procedure.

1. Wear an ESD wrist strap.
2. Remove the OCP card to be replaced. For detailed operations, refer to 3.19 Removing a PCIe Card.
3. Take the spare PCIe card from an antistatic packing bag and record the bar code of the PCIe card.
4. Horizontally insert the PCIe card into the slot, as indicated by Ⓒ in Figure 3-50.

Notice

If there are multiple PCIe cards in the I/O module, when you install a PCIe card, you should leave some space for two adjacent PCIe cards to avoid collision.

Figure 3-50 Installing a PCIe Card



5. Tighten the fastening screw of the PCIe card by using a PH2 crosshead screwdriver, as indicated by ② in Figure 3-50.
6. Rotate and close the cover plate of the PCIe cards as indicated by Ⓒ in Figure 3-50

Installing the I/O Module Bracket

7. Perform the following operations in accordance with the location of the I/O module where the PCIe card is located.

If...	Then...
The PCIe card is located in I/O module 1 or 4	a. Slowly slide the I/O module bracket into the corresponding I/O module slot until the slot at the rear of the bracket is secured into the T-shaped column of the server power socket. Push the I/O module bracket to the rear of the server until the observation holes are overlapped, as indicated by Ⓒ in Figure 3-51. b. Tighten the captive screw of the I/O module bracket by using a PH2 crosshead screwdriver, as indicated by ② in Figure 3-51.
The PCIe card is located in IO module 2 or 3	a. Slowly slide the I/O module bracket into the corresponding I/O module slot, as indicated by Ⓒ in Figure 3-52. b. Tighten the captive screw and fastening screws of the I/O module bracket by using a PH2 crosshead screwdriver, as indicated by ② in Figure 3-52.

Figure 3-51 Installing the I/O module Bracket 1 or 4

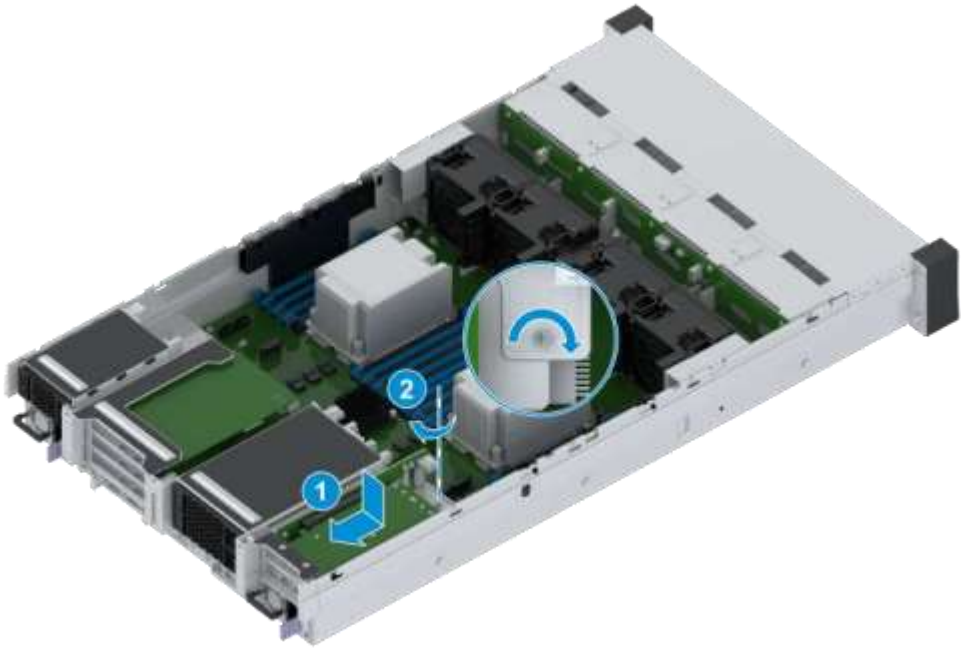
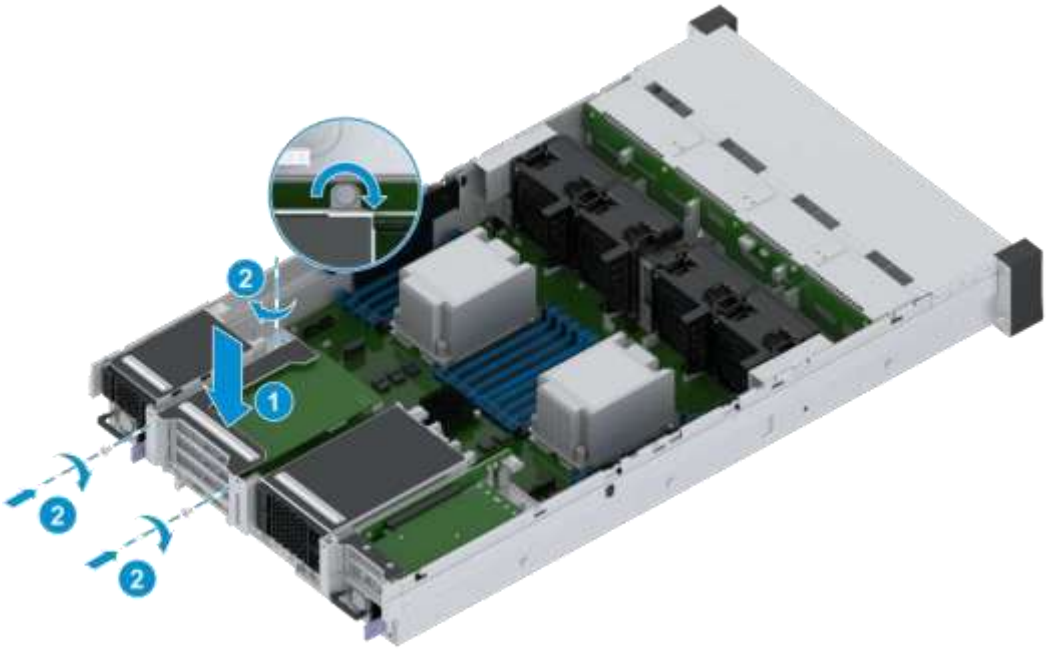


Figure 3-52 Installing the I/O module Bracket 2 or 3



8. (Optional) If the PCIe card were previously connected with cables, reconnect the cables to the newly installed PCIe card.
9. Mount the server into the rack. For details, refer to 2.4.4 Installing the Server Cover, 2.4.5 Mounting the Server Into the Rack and 2.4.6 Powering On the Server.

3.21 Removing a GPU Card

Abstract

To replace a faulty GPU card or replace an existing GPU card with a GPU card of a different model, you need to remove the GPU card.

Notice

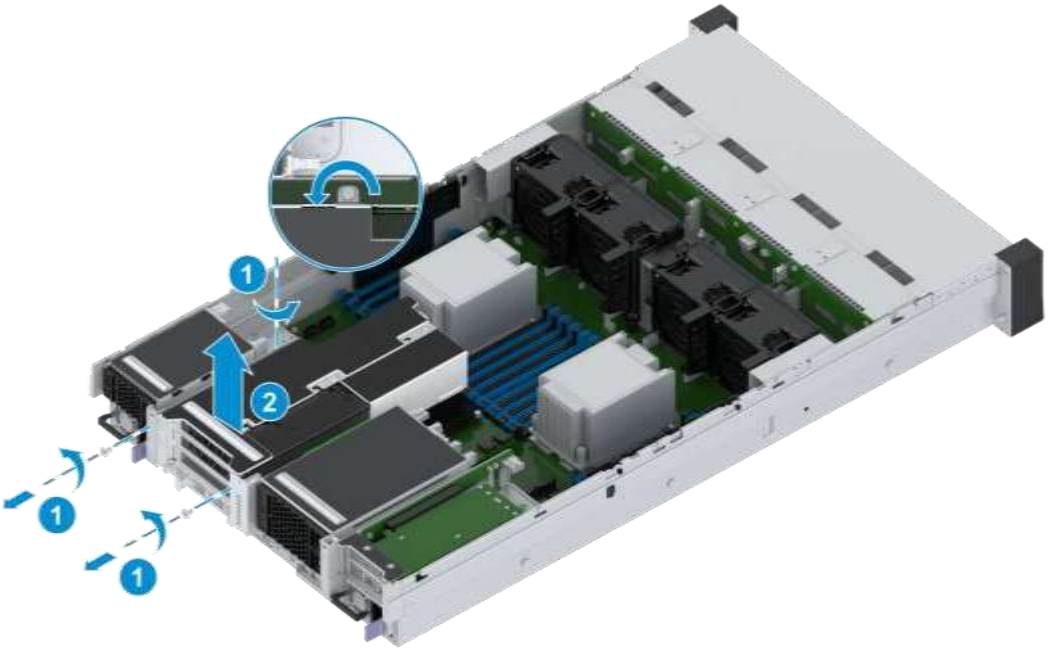
When replacing a GPU card, do not touch the golden fingers of the GPU card.

Steps

1. Wear an ESD wrist strap.
2. Open the server cover. For details, refer to 2.4.1 Powering Off the Server, 2.4.2 Removing the Server From the Rack and 2.4.3 Removing the Server Cover.
3. Locate the GPU card to be replaced on the server, and paste a replacement label on its panel.
4. (Optional) If cables are connected to the GPU card, use labels to mark the cables and unplug the cables.

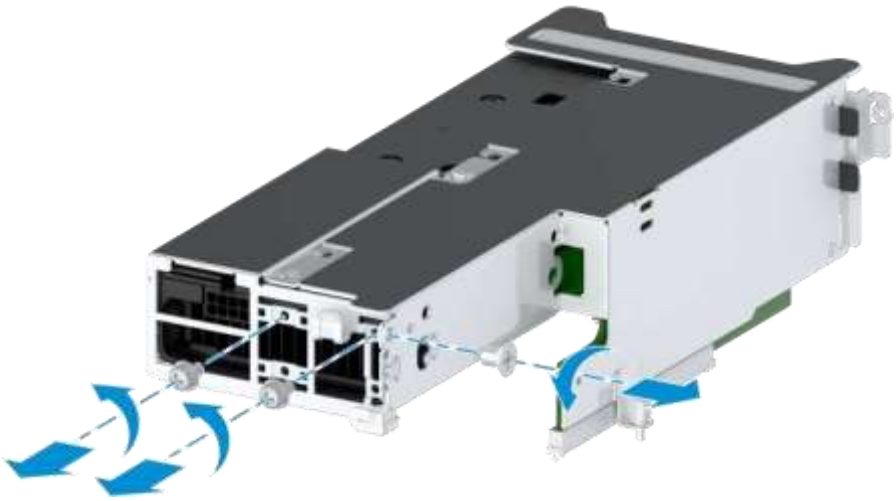
5. Loosen the captive screw and fastening screws of the bracket of the I/O module where the GPU card is located by using a PH2 crosshead screwdriver, as indicated by Ⓒ in Figure 3-53.

Figure 3-53 Removing the GPU Module Bracket



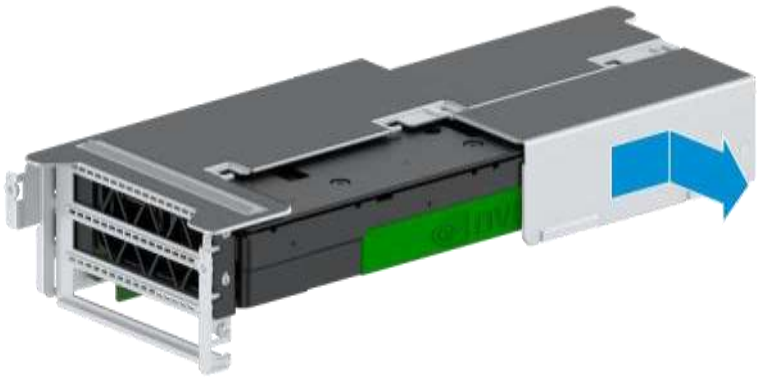
6. Hold the force applied component on the I/O module bracket with both hands, and slowly lift the bracket up and out, as indicated by ② in Figure 3-53.
7. Loosen the fastening screws of the GPU support bracket by using a PH2 crosshead screwdriver, see Figure 3-54.

Figure 3-54 Loosening the Fastening Screws of the GPU Support Bracket



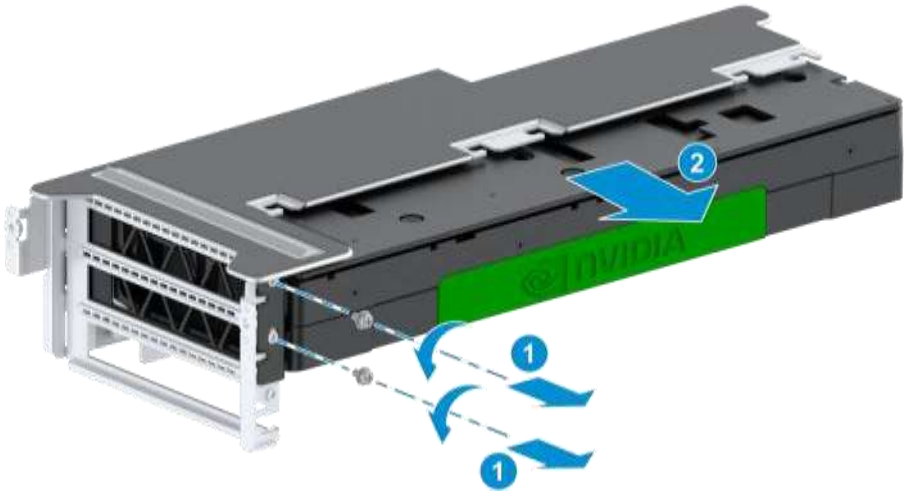
8. Remove the GPU support bracket in the direction of the arrow, see Figure 3-55.

Figure 3-55 Removing the GPU Support Bracket



9. Loosen the fastening screws of the GPU card by using a PH2 crosshead screwdriver, as indicated by Ⓒ in Figure 3-56.

Figure 3-56 Removing the GPU Card



10. Horizontally pull the GPU card out, as indicated by ② in Figure 3-56.
11. Put the removed GPU card into an antistatic packing bag and record the bar code of the GPU card.

3.22 Installing a GPU Card

Abstract

To replace a faulty GPU card or replace an existing GPU card with a GPU card of a different model, you need to install a new GPU card.

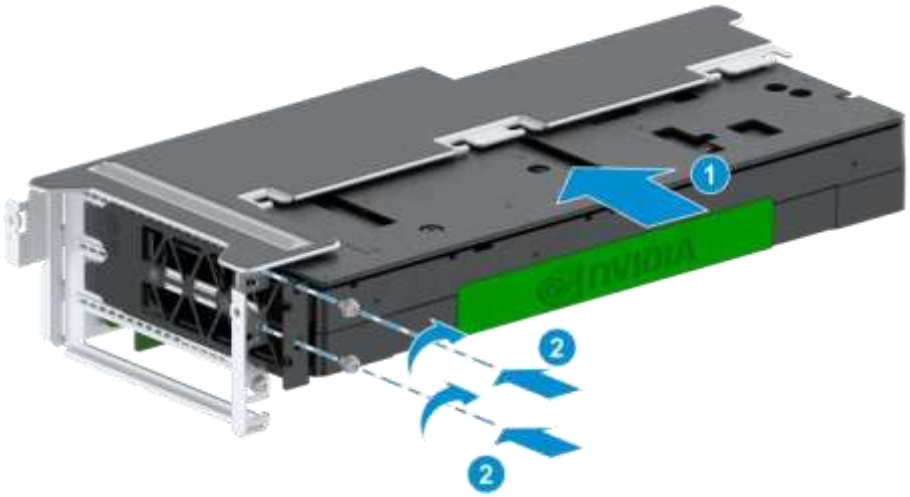
Notice

When replacing a GPU card, do not touch the golden fingers of the OCP card and rise card.

Steps

1. Wear an ESD wrist strap.
2. Remove the GPU card to be replaced. For detailed operations, refer to 3.21 Removing a GPU Card.
3. Take the spare GPU card from an antistatic packing bag and record the bar code of the GPU card.
4. Horizontally insert the GPU card into the slot, as indicated by Ⓒ in Figure 3-57.

Figure 3-57 Installing a GPU Card

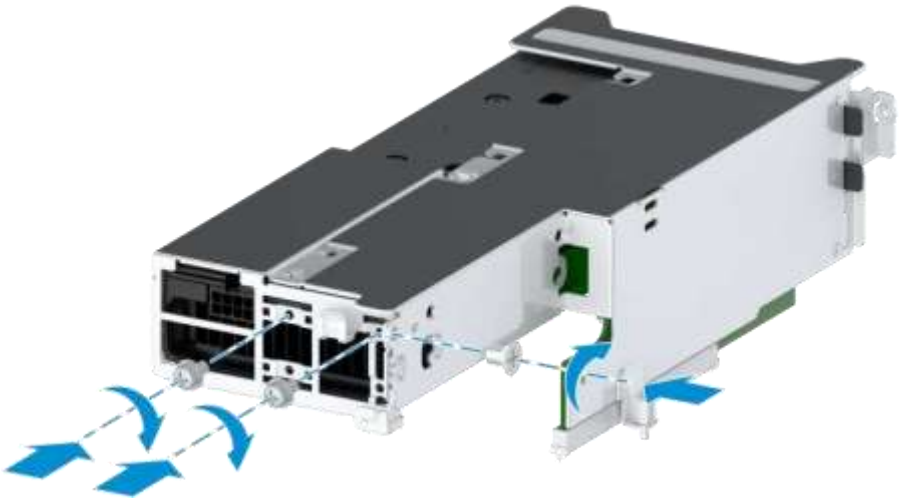


5. Tighten the fastening screws of the GPU card by using a PH2 crosshead screwdriver, as indicated by ② in Figure 3-57.
6. Install the GPU support bracket in the direction of the arrow, see Figure 3-58.

Figure 3-58 Installing the GPU Support Bracket

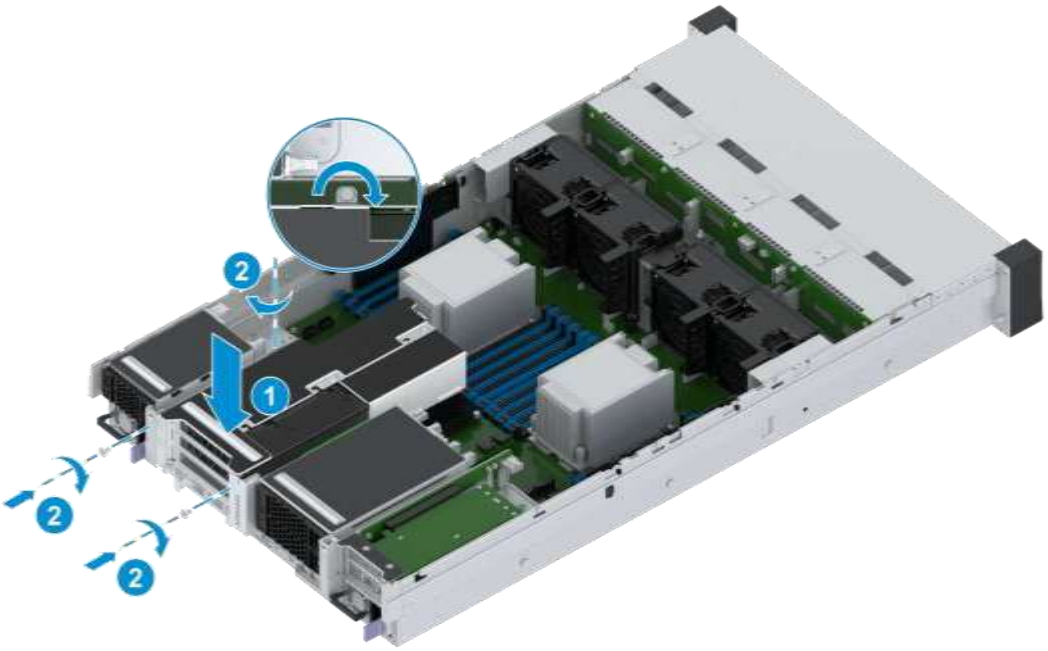
7. Tighten the fastening screws of the GPU support bracket by using a PH2 crosshead screwdriver, see Figure 3-59.

Figure 3-59 Tightening the Fastening Screws of the GPU Support Bracket



8. Slowly slide the I/O module bracket where the GPU card is installed into the corresponding I/O module slot, as indicated by Ⓒ in Figure 3-60.

Figure 3-60 Installing the GPU Support Bracket



9. Tighten the captive screw and fastening screws of the I/O module bracket by using a PH2 crosshead screwdriver, as indicated by ② in Figure 3-60.
10. (Optional) If the GPU card were previously connected with cables, reconnect the cables to the newly installed GPU card.
11. Mount the server into the rack. For details, refer to 2.4.4 Installing the Server Cover, 2.4.5 Mounting the Server Into the Rack and 2.4.6 Powering On the Server.

3.23 Removing a Riser Card

Abstract

To replace a faulty riser card, you need to remove the riser card.

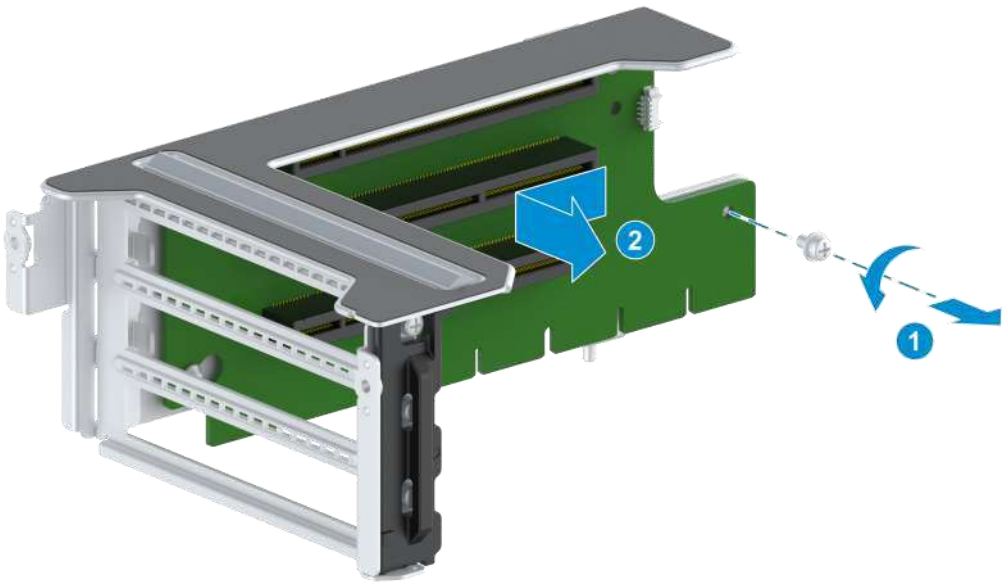
Notice

When replacing a riser card, do not touch the golden fingers of the riser card.

Steps

1. Wear an ESD wrist strap.
2. Open the server cover. For details, refer to 2.4.1 Powering Off the Server, 2.4.2 Removing the Server From the Rack and 2.4.3 Removing the Server Cover.
3. Locate the riser card to be replaced on the server, and paste a replacement label on its panel.
4. Remove function cards connected to the riser card.
   - Remove the PCIe card. For detailed operations, refer to 3.19 Removing a PCIe Card.
   - Remove the GPU card. For detailed operations, refer to 3.21 Removing a GPU Card.
5. Loosen the fastening screw of the riser card by using a PH2 crosshead screwdriver, as indicated by Ⓒ in Figure 3-61.

Figure 3-61 Removing a Riser Card



6. Push the riser card in the direction of the arrow until the card cannot be moved, and take out the riser card, as indicated by ② in Figure 3-61.
7. Put the removed riser card into an antistatic packing bag and record the bar code of the riser card.

3.24 Installing a Riser Card

Abstract

To replace a faulty riser card, you need to install a new riser card.

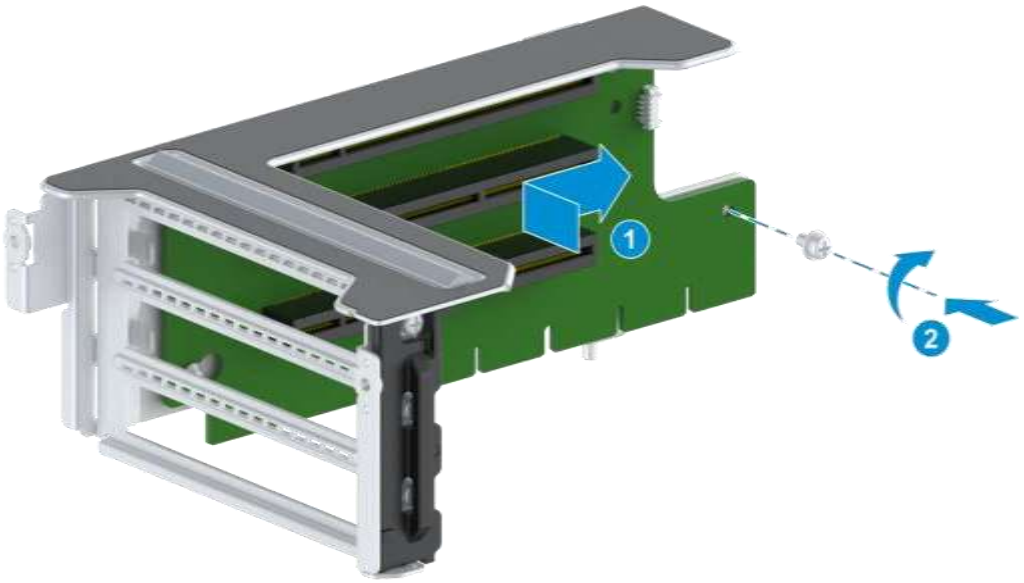
Notice

When replacing a riser card, do not touch the golden fingers of the riser card.

Steps

1. Wear an ESD wrist strap.
2. Remove the riser card to be replaced. For detailed operations, refer to 3.23 Removing a Riser Card.
3. Take the spare riser card from an antistatic packing bag and record the bar code of the riser card.
4. Put the gourd-shaped hole of the riser card on the T-shaped column of the riser card frame, and push the riser card in the direction of the arrow until it cannot be moved, as indicated by Ⓒ in Figure 3-62.

Figure 3-62 Installing a Riser Card



5. Tighten the fastening screw of the riser card by using a PH2 crosshead screwdriver, as indicated by ② in Figure 3-62.
6. Install the removed function cards.
   - Install the PCIe card. For detailed operations, refer to 3.20 Installing a PCIe Card.
   - Install the GPU card. For detailed operations, refer to 3.22 Installing a GPU Card.

7. Mount the server into the rack. For details, refer to 2.4.4 Installing the Server Cover, 2.4.5 Mounting the Server Into the Rack and 2.4.6 Powering On the Server.

3.25 Removing a RAID Card

Abstract

To replace a faulty RAID card or an existing RAID card with a RAID card of a different model, you need to remove the RAID card.

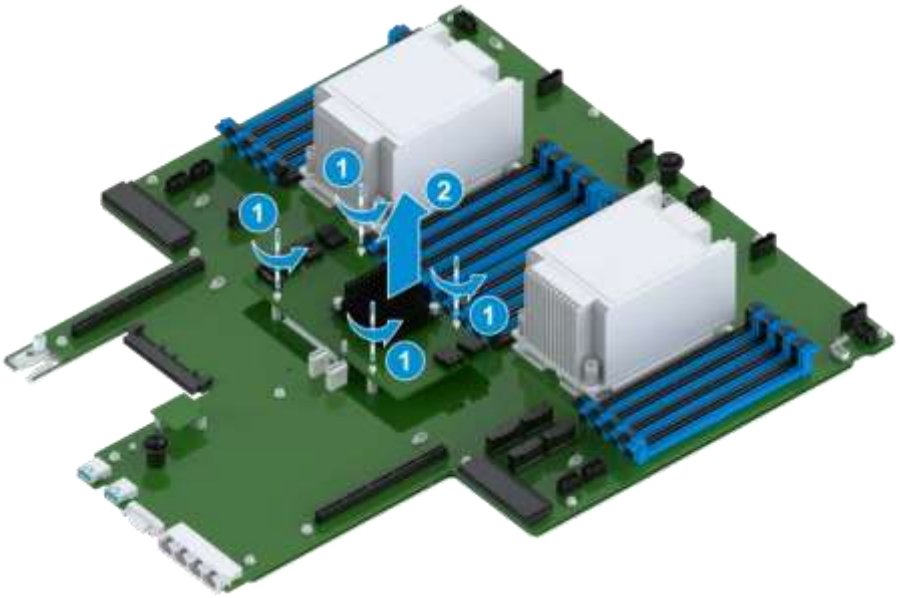
Note

Different models of RAID cards may have different external views, but they share the same replacement method.

Steps

1. Wear an ESD wrist strap.
2. Open the server cover. For details, refer to 2.4.1 Powering Off the Server, 2.4.2 Removing the Server From the Rack and 2.4.3 Removing the Server Cover.
3. (Optional) If I/O module 2 or 3 is configured with a full-height and full-length PCIe card, you need to remove the bracket of the I/O module where the PCIe card is located. For details, refer to Removing an I/O Module Bracket.
4. Label all the cables connected to the RAID card, and unplug these cables.
5. Loosen the fastening screws of the RAID card by using a PH2 crosshead screwdriver, as indicated by © in Figure 3-63.

Figure 3-63 Removing a RAID Card



6. Slowly pull out the RAID card upwards, as indicated by ② in Figure 3-63.
7. Put the removed RAID card into an antistatic packing bag and record the bar code of the RAID card.

3.26 Installing a RAID Card

Abstract

To replace a faulty RAID card or an existing RAID card with a RAID card of a different model, you need to install a new RAID card.

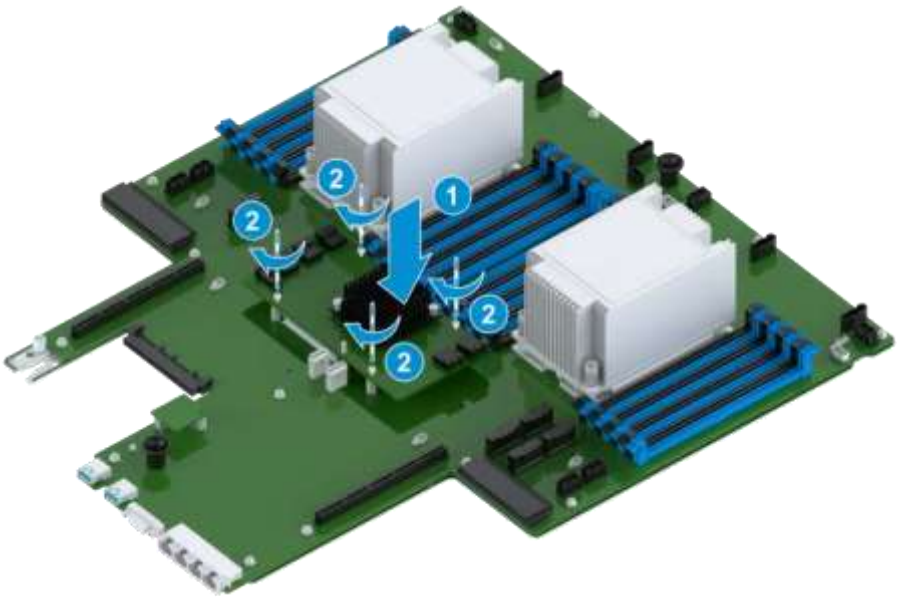
Note

Different models of RAID cards may have different external views, but they share the same replacement method.

Steps

1. Wear an ESD wrist strap.
2. Remove the RAID card to be replaced. For detailed operations, refer to 3.25 Removing a RAID Card.
3. Take the spare RAID card from an antistatic packing bag and record the bar code of the RAID card.
4. (Optional) If a rubber plug is inserted into the RAID card interface, remove the plug.
5. Align the RAID card with the location pins and bolts of the mainboard, and slowly insert the RAID card into the mainboard, as indicated by Ⓒ in Figure 3-64.

Figure 3-64 Installing a RAID Card



6. Tighten the fastening screws of the RAID card by using a PH2 crosshead screwdriver, as indicated by ② in Figure 3-64.
7. Re-connect the cables to the RAID card.
8. (Optional) If I/O module 2 or 3 is configured with a full-height and full-length PCIe card, you need to install the bracket of the I/O module where the PCIe card is located. For details, refer to Installing an I/O Module Bracket.
9. Mount the server into the rack. For details, refer to 2.4.4 Installing the Server Cover, 2.4.5 Mounting the Server Into the Rack and 2.4.6 Powering On the Server.

3.27 Removing a Super Capacitor

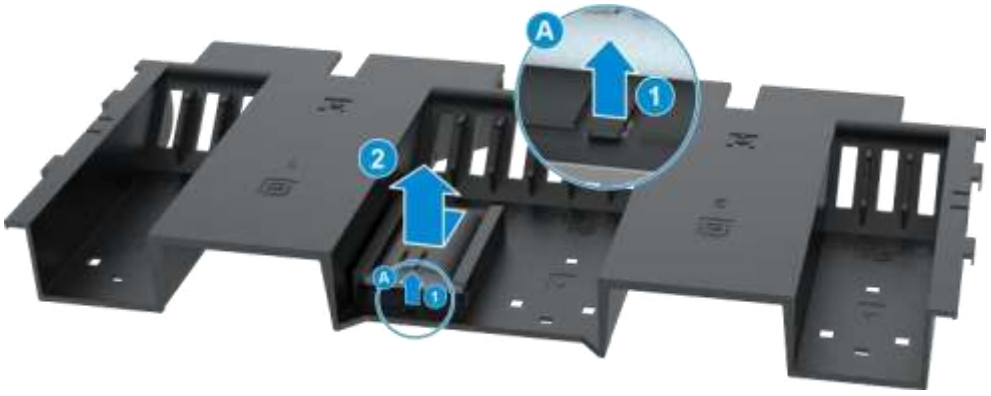
Abstract

To replace a faulty super capacitor or a super capacitor whose power is completely consumed, you need to remove the super capacitor.

Steps

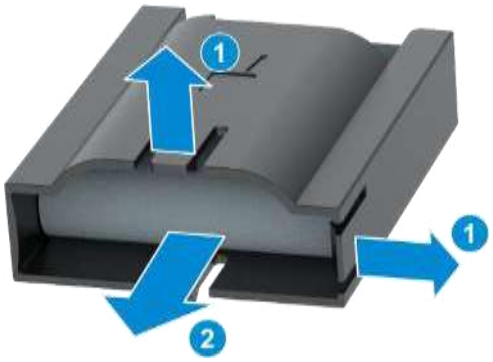
1. Wear an ESD wrist strap.
2. Open the server cover. For details, refer to 2.4.1 Powering Off the Server, 2.4.2 Removing the Server From the Rack and 2.4.3 Removing the Server Cover.
3. Locate the super capacitor to be replaced on the server, and paste a replacement label on its panel.
4. Label the cable of the the super capacitor connected to the RAID card, and unplug the cable.
5. Pull the latch of the super capacitor box in the direction indicated by arrow Ⓒ, and push and remove the super capacitor box in the direction indicated by arrow ②, see Figure 3-65.

Figure 3-65 Removing a Super Capacitor Box



6. (Optional) Pull the latch of the super capacitor in the direction indicated by arrow Ⓒ, and slowly pull out the super capacitor in the direction indicated by arrow ②, see Figure 3-66.

Figure 3-66 Removing a Super Capacitor



7. Put the removed super capacitor into an antistatic packing bag and record the bar code of the super capacitor.

3.28 Installing a Super Capacitor

Abstract

To replace a faulty super capacitor or a super capacitor whose power is completely consumed, you need to install a new super capacitor.

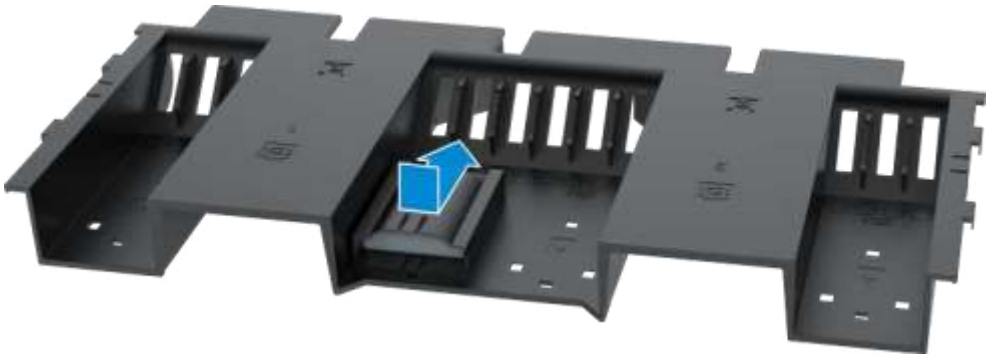
Steps

1. Wear an ESD wrist strap.
2. Remove the super capacitor to be replaced. For detailed operations, refer to 3.27 Removing a Super Capacitor.
3. Take the spare super capacitor from an antistatic packing bag and record the bar code of the super capacitor.
4. Insert the super capacitor into the super capacitor box horizontally, see Figure 3-67.

Figure 3-67 Installing a Super Capacitor

5. Align the three fixing posts at the bottom of the super capacitor box to the three jacks on the air baffle, and install the super capacitor box on the air baffle in the direction of the arrow until the latch of the super capacitor box locks the air baffle, see Figure 3-68.

Figure 3-68 Installing a Super Capacitor Box



6. Re-connect the cable of the super capacitor to the RAID card.
7. Mount the server into the rack. For details, refer to 2.4.4 Installing the Server Cover, 2.4.5 Mounting the Server Into the Rack and 2.4.6 Powering On the Server.

3.29 Removing a TPM Card

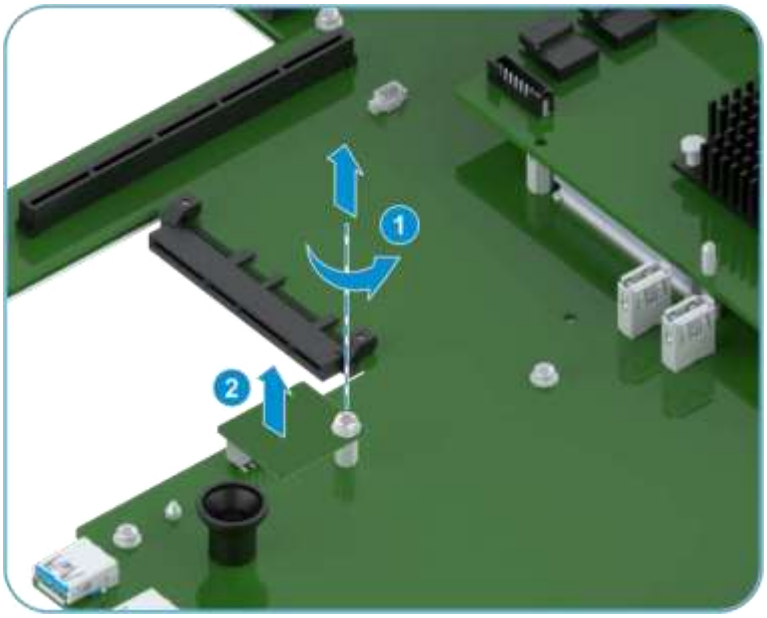
Abstract

To replace a faulty TPM card or an existing TPM card with a TPM card of a different model, you need to remove the TPM card.

Steps

1. Wear an ESD wrist strap.
2. Open the server cover. For details, refer to 2.4.1 Powering Off the Server, 2.4.2 Removing the Server From the Rack and 2.4.3 Removing the Server Cover.
3. (Optional) If I/O module 2 or 3 is configured with a PCIe card or a hard disk, you need to remove the corresponding I/O module bracket. For details, refer to Removing an I/O module Bracket or 3.15 Removing a Rear Hard Disk Cage.
4. Loosen the fastening screw of the TPM card by using a PH2 crosshead screwdriver, as indicated by Ⓒ in Figure 3-69.

Figure 3-69 Removing a TPM Card



5. Slowly pull out the TPM card upwards, as indicated by ② in Figure 3-69.
6. Put the removed TPM card into an antistatic packing bag and record the bar code of the TPM card.

3.30 Installing a TPM Card

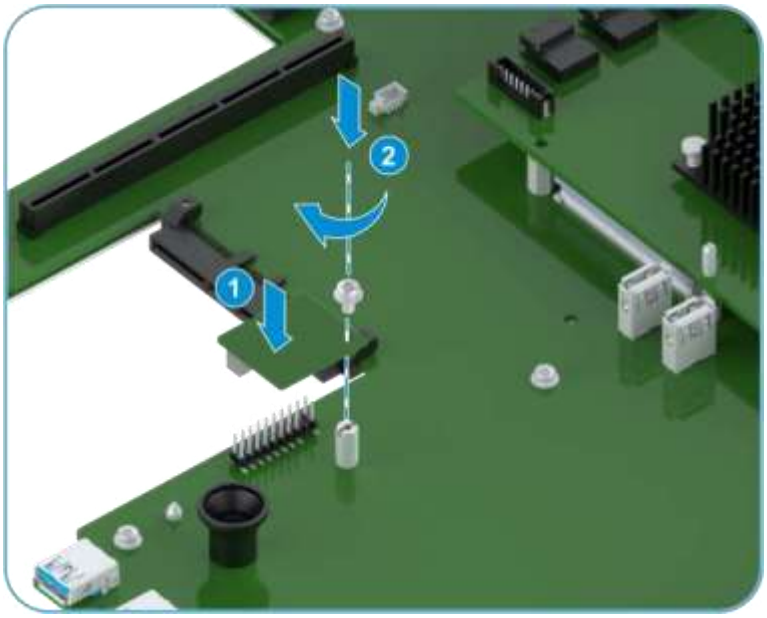
Abstract

To replace a faulty TPM card or an existing TPM card with a TPM card of a different model, you need to install a new TPM card.

Steps

1. Wear an ESD wrist strap.
2. Remove the TPM card to be replaced. For detailed operations, refer to 3.29 Removing a TPM Card.
3. Take the spare TPM card from an antistatic packing bag and record the bar code of the TPM card.
4. Align the pins of the TPM card with the slots on the mainboard, and insert the TPM card into the mainboard, as indicated by Ⓒ in Figure 3-70.

Figure 3-70 Installing a TPM Card



5. Tighten the fastening screw of the TPM card by using a PH2 crosshead screwdriver, as indicated by ② in Figure 3-70.
6. (Optional) If I/O module 2 or 3 is configured with a PCIe card or a hard disk, you need to install the removed I/O module bracket. For details, refer to Installing an I/O module Bracket or 3.16 Installing a Rear Hard Disk Cage.
7. Mount the server into the rack. For details, refer to 2.4.4 Installing the Server Cover, 2.4.5 Mounting the Server Into the Rack and 2.4.6 Powering On the Server.

3.31 Removing a Memory Module

Abstract

To replace a faulty memory module or an existing memory module with a memory module of a different model, you need to remove the memory module.

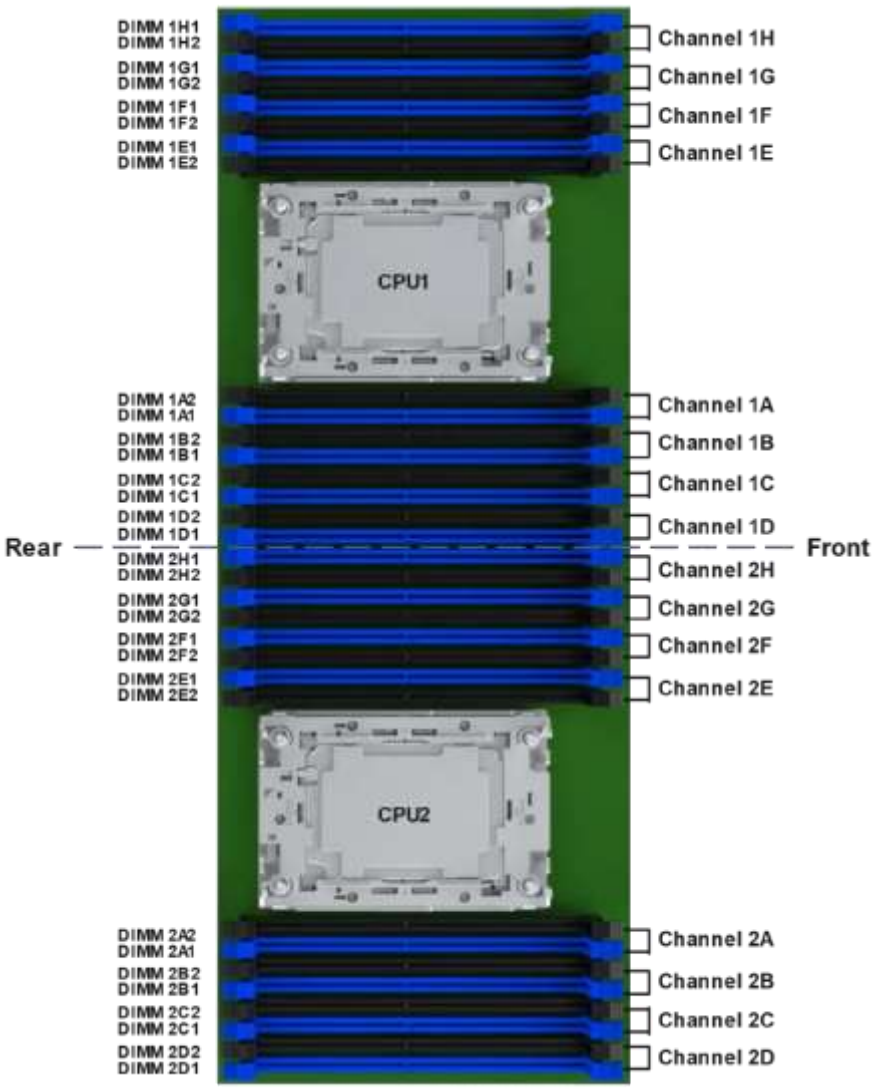
Notice

When replacing a memory module, do not touch the memory chips or golden fingers of the memory module.

Context

Memory modules are located on the internal mainboard of the Figure 3-71. 2230-RE shows the mapping relations between memory module slots and CPUs and the memory module numbers.

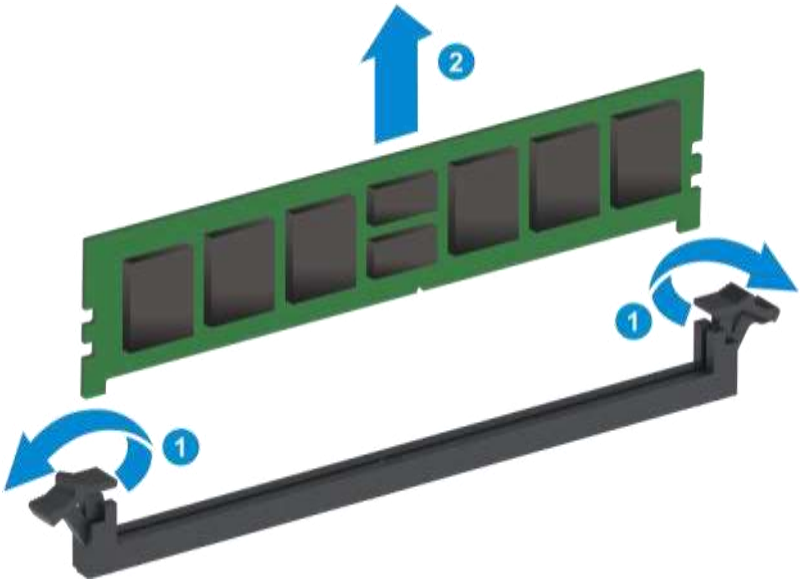
Figure 3-71 CPUs and Memory Module Slots



Steps

1. Wear an ESD wrist strap.
2. Open the server cover. For details, refer to 2.4.1 Powering Off the Server, 2.4.2 Removing the Server From the Rack and 2.4.3 Removing the Server Cover.
3. Locate the memory module on the server, and paste a replacement label on its panel.
4. Remove the air baffle, For detailed operations, refer to 3.9 Removing an Air Baffle.
5. Open the fixing clips on both sides of the memory module slot, as indicated by © in Figure 3-72.

Figure 3-72 Removing a Memory Module



6. Slowly pull out the memory module upwards, as indicated by ② in Figure 3-72.
7. Put the removed memory module into an antistatic packing bag and record the bar code of the memory module.

3.32 Installing a Memory Module

Abstract

To replace a faulty memory module or an existing memory module with a memory module of a different model, you need to install a new memory module.

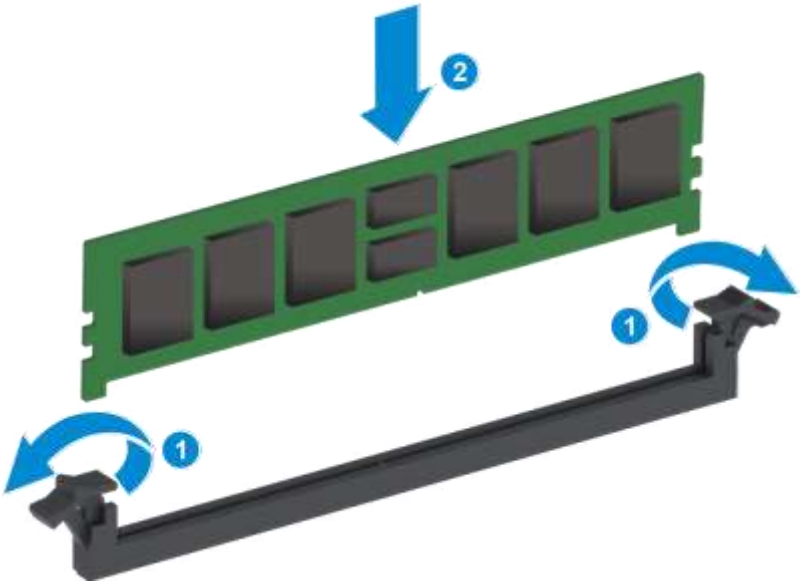
Notice

- The brand and model of the memory module to be installed must be the same as those of the removed memory module.
- When replacing a memory module, do not touch the memory chips or golden fingers of the memory module.

Steps

1. Wear an ESD wrist strap.
2. Remove the memory module to be replaced. For detailed operations, refer to 3.31 Removing a Memory Module.
3. Take the spare memory module from an antistatic packing bag and record the bar code of the memory module.
4. Open the fixing clips on both sides of the memory module slot, as indicated by Ⓒ in Figure 3-73.

Figure 3-73 Installing a Memory Module



5. Align the fool-proofing notch of the memory module with the protrusion in the slot of the mainboard, and insert the memory module into the slot slowly. The fixing clips are automatically closed, as indicated by ② in Figure 3-73.
6. Install the air baffle, For detailed operations, refer to 3.10 Installing an Air Baffle.
7. Mount the server into the rack. For details, refer to 2.4.4 Installing the Server Cover, 2.4.5 Mounting the Server Into the Rack and 2.4.6 Powering On the Server.

3.33 Removing a CPU

3.33.1 Removing a CPU from the Air-Cooled Server

Abstract

To replace a faulty CPU or an existing CPU with a CPU of a different model, you need to remove the CPU.

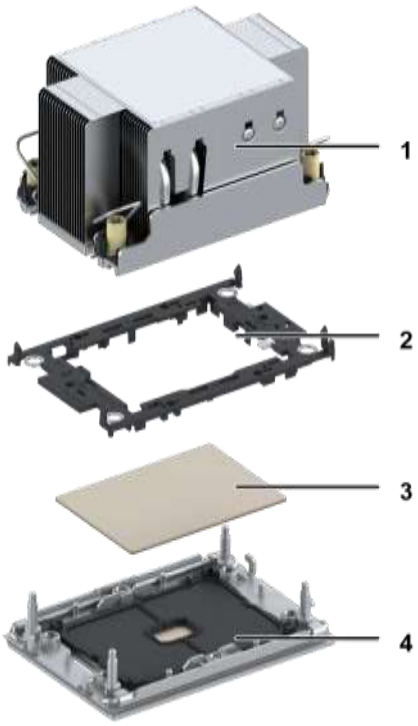
Notice

When replacing a CPU, do not touch the pins of the CPU.

Context

The CPU is fastened to the bottom of the heat sink by using a CPU bracket, see Figure 3-74.

Figure 3-74 CPU Location



1. CPU heat sink
2. CPU bracket
3. CPU
4. CPU socket

Steps

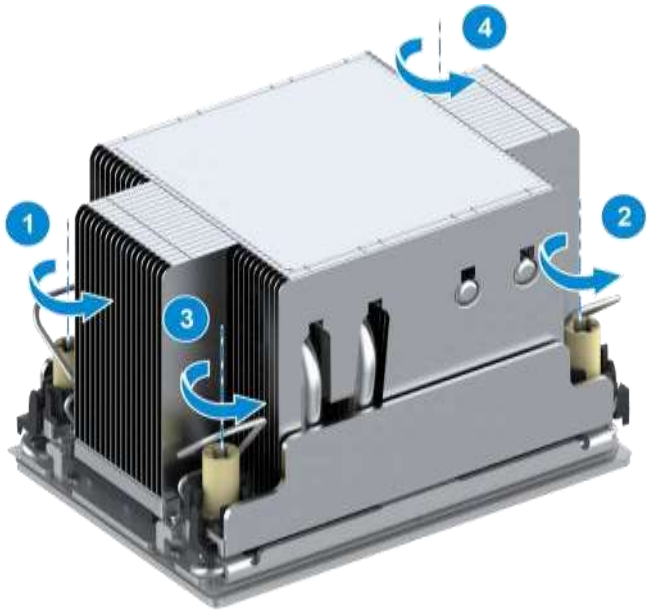
Removing the Heat Sink

1. Wear an ESD wrist strap.
2. Open the server cover. For details, refer to 2.4.1 Powering Off the Server, 2.4.2 Removing the Server From the Rack and 2.4.3 Removing the Server Cover.
3. Locate the CPU on the server.
4. Remove the air baffle, For detailed operations, refer to 3.9 Removing an Air Baffle.
5. Use a T30 Torx screwdriver to loosen the four screws used to fasten the CPU heat sink by following the sequence marked on the heat sink, see Figure 3-75.

Notice

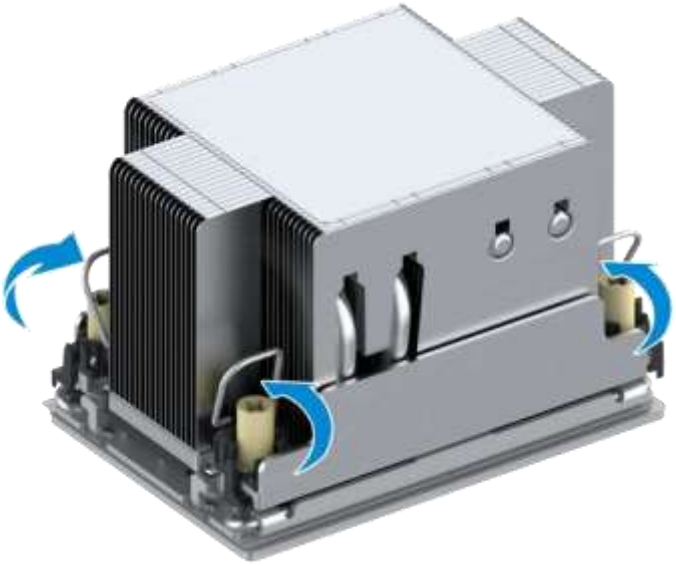
To remove the CPU heat sink, you need to use a T30 Torx screwdriver. Other types of screwdrivers may damage the screws.

Figure 3-75 Loosening the Fastening Screws of the Heat Sink



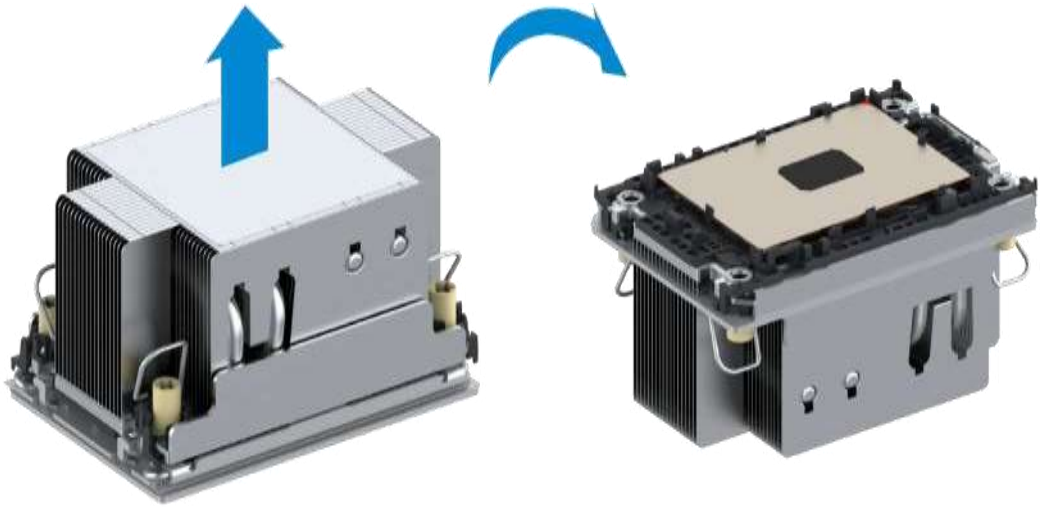
6. Pull the anti-tilt latches in the following directions to unlock the heat sink, see Figure 3-76.

Figure 3-76 Unlocking the Anti-Tilt Latches of the Heat Sink



7. Slowly take out the CPU heat sink in vertical direction, turn it upside down, and place the CPU heat sink on the antistatic table, see Figure 3-77.

Figure 3-77 Removing the Heat Sink

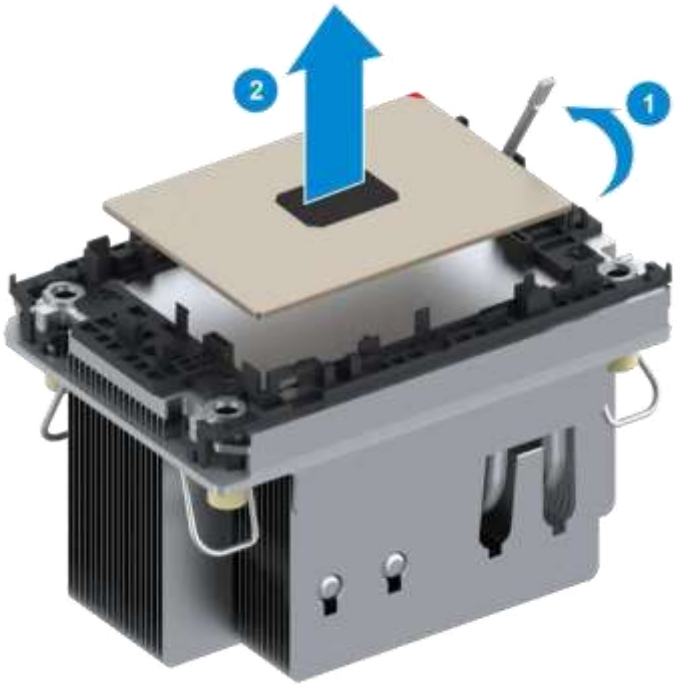


8. Cover the CPU socket with a dust cover.

Removing a CPU

9. Pull the rod upwards until the rod is perpendicular to the CPU bracket to detach the CPU from the CPU bracket, as indicated by Ⓒ in Figure 3-78.

Figure 3-78 Removing a CPU



10. Remove the CPU from the CPU bracket, as indicated by ② in Figure 3-78.
11. Clean the thermally conductive silicone grease on the CPU surface, record the CPU bar-code, and put the removed CPU into an antistatic packing bag.

Notice

If multiple CPUs are removed, pack them separately and separate them with foam to avoid stacking and storage. Otherwise, the CPUs may be damaged.

3.33.2 Removing a CPU from the Liquid-Cooled Server

Abstract

To replace a faulty CPU or an existing CPU with a CPU of a different model, you need to remove the liquid-cooled heat sink, and then the CPU.

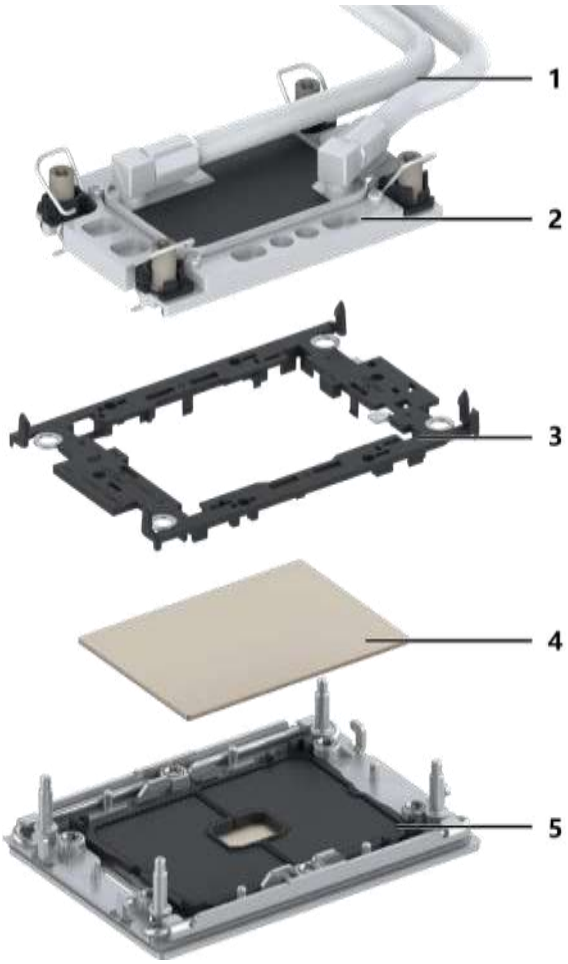
Notice

When replacing a CPU, do not touch the pins of the CPU.

Context

A CPU is secured to the bottom of a liquid cold plate of the liquid-cooled heat sink through a CPU bracket, see Figure 3-79.

Figure 3-79 CPU Location



1. Liquid cooling pipe of the liquid-cooled heat sink
2. Liquid cold plate of the liquid-cooled heat sink
3. CPU bracket
4. CPU
5. CPU socket

Steps

Removing the Liquid-Cooled Heat Sink

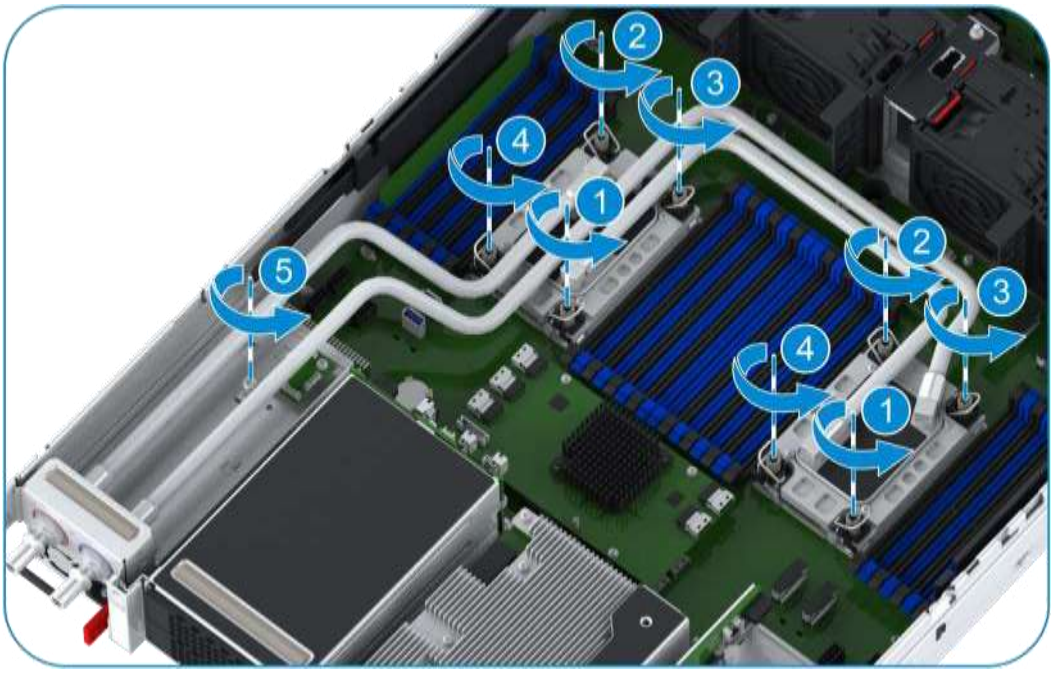
1. Put on an anti-static wrist strap.
2. Open the server cover. For details, refer to 2.4.1 Powering Off the Server, 2.4.2 Removing the Server From the Rack and 2.4.3 Removing the Server Cover.
3. Remove the air baffle. For details, refer to 3.9 Removing an Air Baffle.
4. Locate the CPU in the server.
5. Remove the hook-and-loop fasteners that bind the liquid cooling pipes.
6. Label all the cables connected to the liquid cooling adapter, and unplug these cables.

7. Loosen the eight fastening screws with a T30 Torx screwdriver by following the sequence marked on the liquid cold plates, as indicated by Ⓒ through ④ in Figure 3-80. Loosen the captive screw on the liquid cooling panel by using a PH2 crosshead screwdriver, as indicated by ⑤ in Figure 3-80.

Note

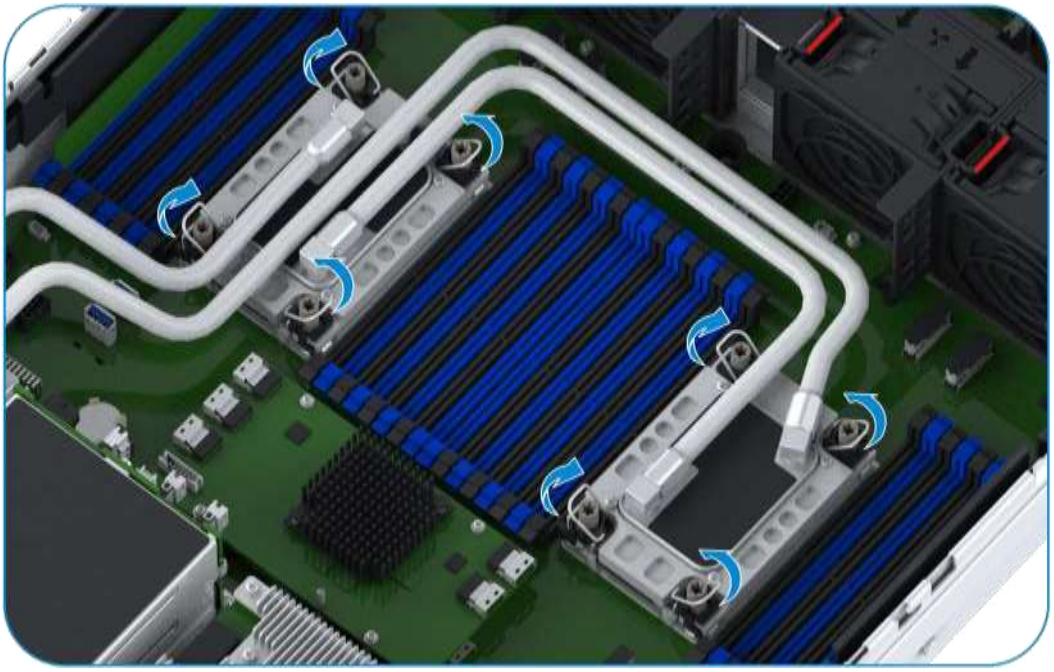
The liquid cooling pipes connected to the liquid cold plates may be led out from the server directly or through adapters. This procedure uses liquid cold plates with pass-through liquid cooling pipes as an example to describe how to remove the liquid cold plates of the liquid-cooled heat sink.

Figure 3-80 Loosening the Screws of the Liquid-Cooled Heat Sink



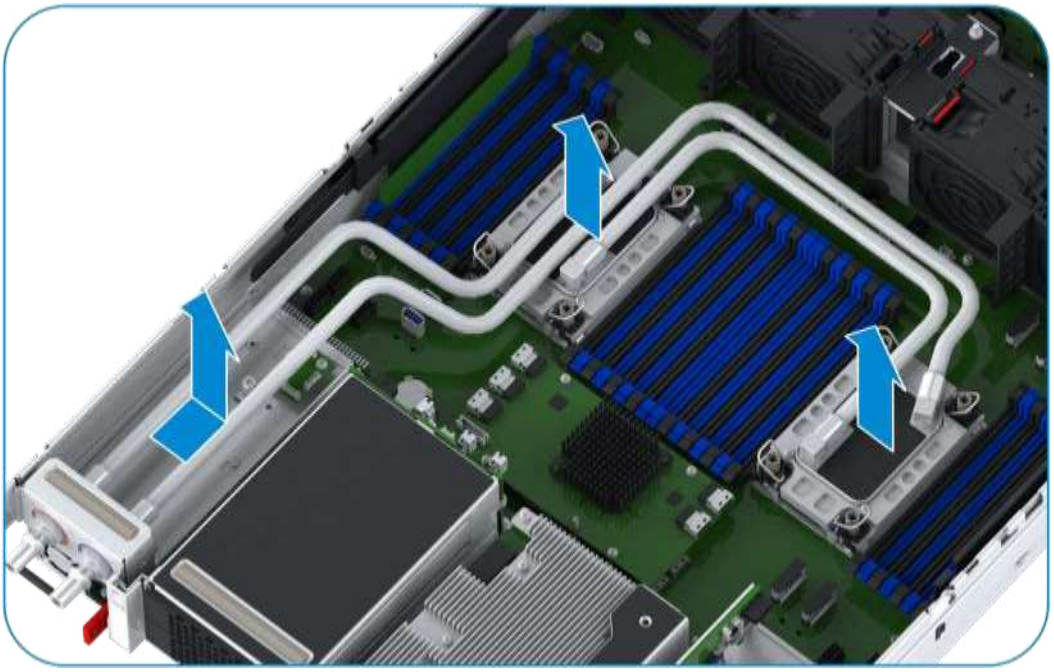
8. Pull the anti-tilt latches inwards to unlock the liquid cold plates, see Figure 3-81.

Figure 3-81 Unlocking the Liquid Cold Plates



9. Push the liquid cooling panel in the direction of the arrow until it reaches the stop, and lift the liquid cooling panel and two liquid cold plates, see Figure 3-82.

Figure 3-82 Removing the Liquid-Cooled Heat Sink



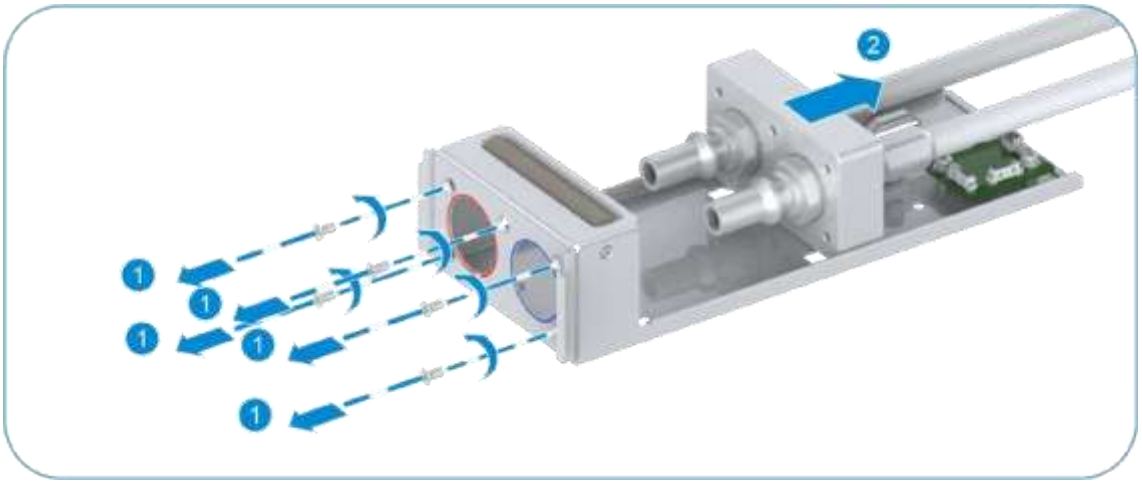
10. Cover the CPU sockets with dust covers.
11. (Optional) Remove the liquid cooling pipes.

Loosen the fastening screws on the liquid cooling panel by using a PH2 crosshead screwdriver, and take the liquid cooling pipes out of the holes on the liquid cooling panel, see Figure 3-83.

Notice

When taking the liquid cooling pipes out of the holes on the liquid cooling panel, you need to avoid scratching the pipes with the edge of the holes.

Figure 3-83 Removing the Liquid Cooling Pipes



12. (Optional) Remove the liquid cooling adapter.

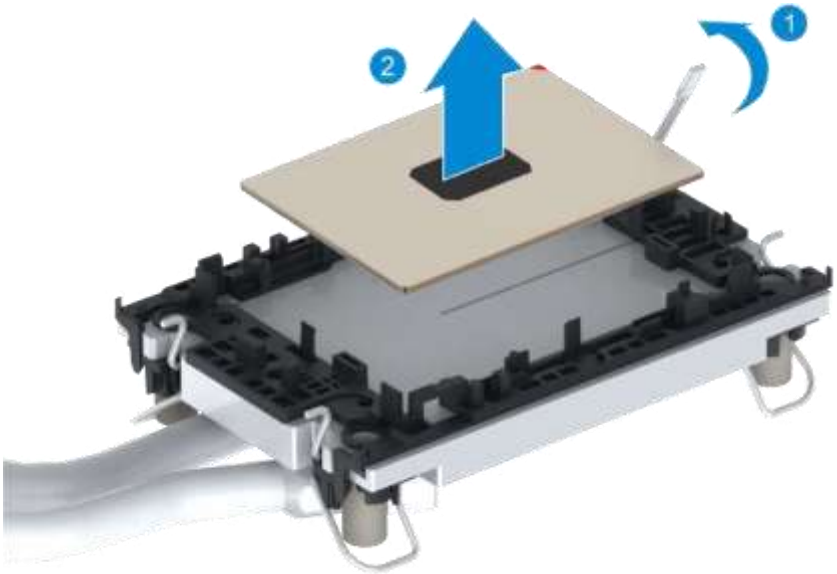
    Loosen the fastening screws of the liquid cooling adapter by using a PH2 crosshead screwdriver, as indicated by Ⓒ and ② in Figure 3-84.

Figure 3-84 Removing the Liquid Cooling Adapter

Removing a CPU

13. Place the liquid-cooled heat sink on an anti-static table.
14. Pull the rod upwards until the rod is perpendicular to the CPU bracket to detach the CPU from the CPU bracket, as indicated by Ⓒ in Figure 3-85.

Figure 3-85 Removing a CPU



15. Remove the CPU from the CPU bracket, as indicated by ② in Figure 3-85.
16. Clean the thermally conductive silicone grease on the CPU surface, record the CPU bar-code, and put the removed CPU into an antistatic packing bag.

Notice

If multiple CPUs are removed, pack them separately and separate them with foam to prevent them from being stacked. Otherwise, the CPUs may be damaged.

3.34 Installing a CPU

3.34.1 Installing a CPU in the Air-Cooled Server

Abstract

When replacing a faulty CPU or an existing CPU with a CPU of a different model, you need to install a new CPU.

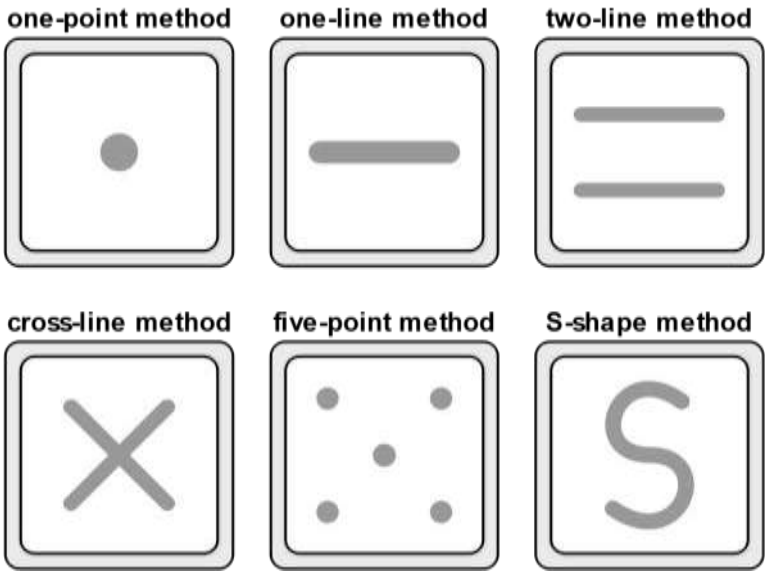
Notice

When installing a CPU, do not touch the pins of the CPU.

Context

When installing a CPU, you need to re-apply the thermally conductive silicone grease to the CPU. Figure 3-86 shows the common methods to apply the thermally conductive silicone grease. The two-line method, cross-line method, five-point method, and S-shape method are recommended.

Figure 3-86 Methods for Applying Thermally Conductive Silicone Grease



Steps

Installing a CPU

1. Wear an ESD wrist strap.
2. Remove the CPU to be replaced. For detailed operations, refer to 3.33.1 Removing a CPU from the Air-Cooled Server.
3. Remove the CPU dust cover, and check the CPU base to ensure that it is not polluted and the pins are not bent.

Note

If there is pollution or bent pin, stop the operation and contact VANTAGEO technical support.

4. Take the spare CPU from an antistatic packing bag and record the bar code of the spare CPU.
5. Determine the area on the base of the heat sink that is in contact with the CPU. Squeeze 0.4 ml thermally conductive silicone grease to the area and evenly apply it.

Note

Do not apply too much thermally conductive silicone grease. Too little or too much silicone grease will affect the heat dissipation of the CPU.

6. Pull the CPU rod down to the CPU bracket, see Figure 3-87.

Figure 3-87 Closing the CPU Rod

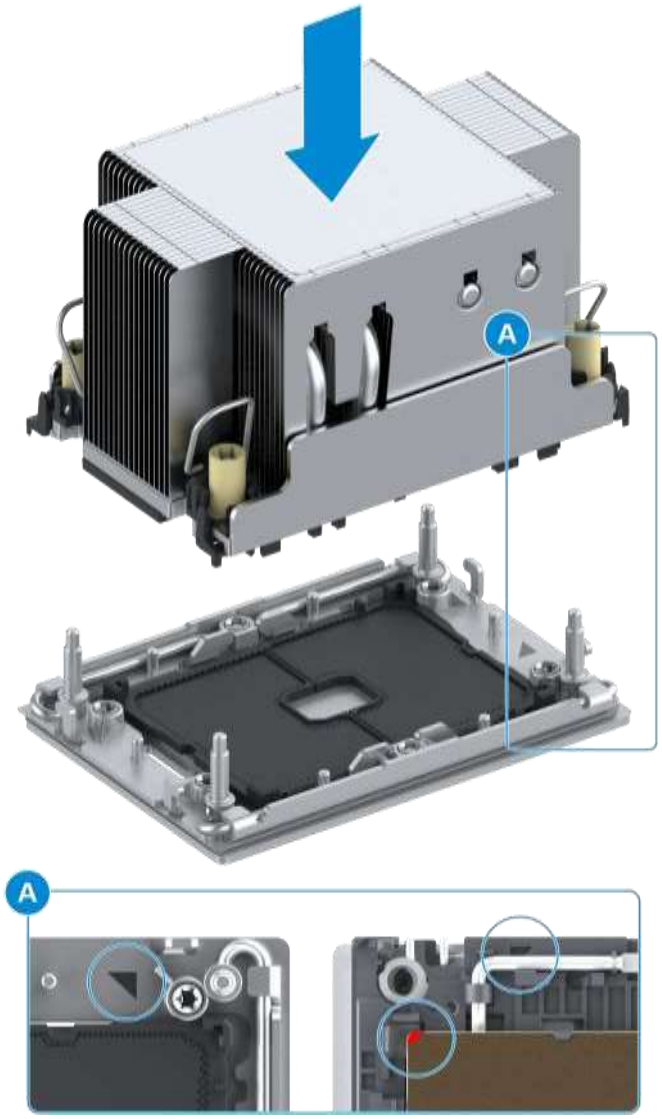
7. Align the corner of the CPU with a triangle mark with the triangle mark on the CPU bracket, place the CPU vertically in the CPU bracket, and gently press the sides of the CPU so that the clips on the CPU bracket are locked to the edges of the CPU, see Figure 3-88.

Figure 3-88 Installing the CPU on the Heat Sink

Installing the Heat Sink

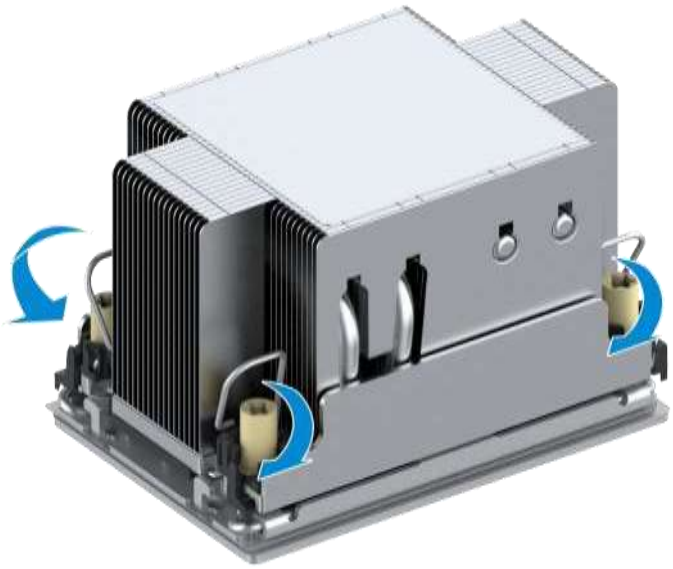
8. Turn the heat sink to align the corner of the CPU with a triangle mark with the triangle mark on the CPU socket, and insert the heat sink vertically into the CPU socket, see Figure 3-89.

Figure 3-89 Installing the Heat Sink



9. Pull the anti-tilt latches in the following directions to lock the heat sink, see Figure 3-90.

Figure 3-90 Locking the Anti-Tilt Latches of the Heat Sink

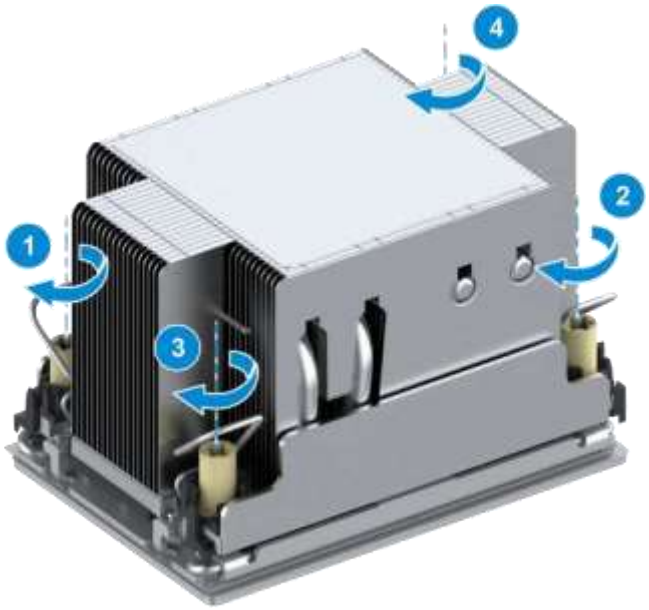


10. Use a T30 Torx screwdriver to tighten the four screws used to fasten the CPU heat sink by following the sequence marked on the heat sink, see Figure 3-91.

Notice

The sequence cannot be reversed! Otherwise, the CPU may be damaged.
To install the CPU heat sink, you need to use a T30 Torx screwdriver. Other types of screwdrivers may damage the screws.

Figure 3-91 Tightening the Fastening Screws of the Heat Sink



11. Install the air baffle, For detailed operations, refer to 3.10 Installing an Air Baffle.

12. Mount the server into the rack. For details, refer to 2.4.4 Installing the Server Cover, 2.4.5 Mounting the Server Into the Rack and 2.4.6 Powering On the Server.

3.34.2 Installing a CPU in the Liquid-Cooled Server

Abstract

When replacing a faulty CPU or an existing CPU with a CPU of a different model, you need to first install a new CPU and then install the liquid-cooled heat sink.

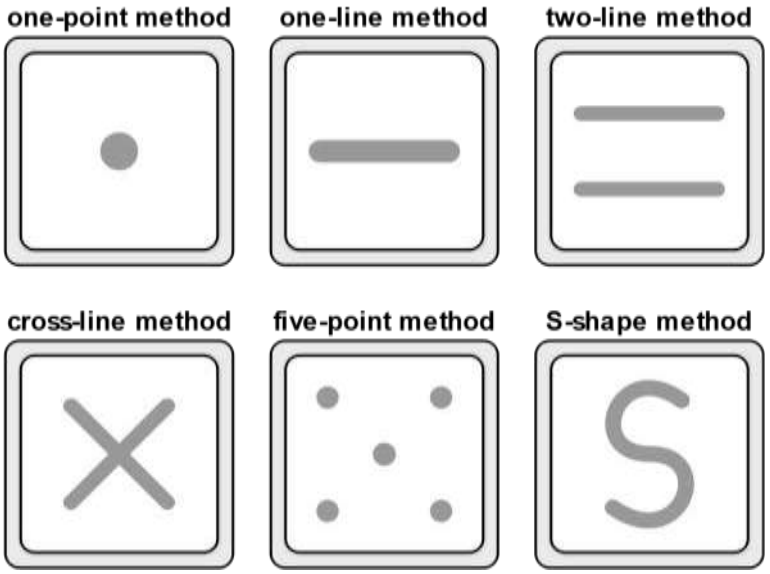
Notice

When installing a CPU, do not touch the pins of the CPU.

Context

When installing a CPU, you need to re-apply the thermally conductive silicone grease to the CPU. Figure 3-92 shows the common methods to apply the thermally conductive silicone grease. The two-line method, cross-line method, five-point method, and S-shape method are recommended.

Figure 3-92 Methods for Applying Thermally Conductive Silicone Grease



Steps

Installing a CPU

1. Wear an ESD wrist strap.
2. Remove the CPU to be replaced. For detailed operations, refer to 3.33.2 Removing a CPU from the Liquid-Cooled Server.

3. Remove the CPU dust cover, and check the CPU base to ensure that it is not polluted and the pins are not bent.

Note

If there is pollution or bent pin, stop the operation and contact VANTAGEO technical support.

4. Take the spare CPU from an antistatic packing bag and record the bar code of the spare CPU.
5. Determine the area on the base of the heat sink that is in contact with the CPU. Squeeze 0.4 ml thermally conductive silicone grease to the area and evenly apply it.

Note

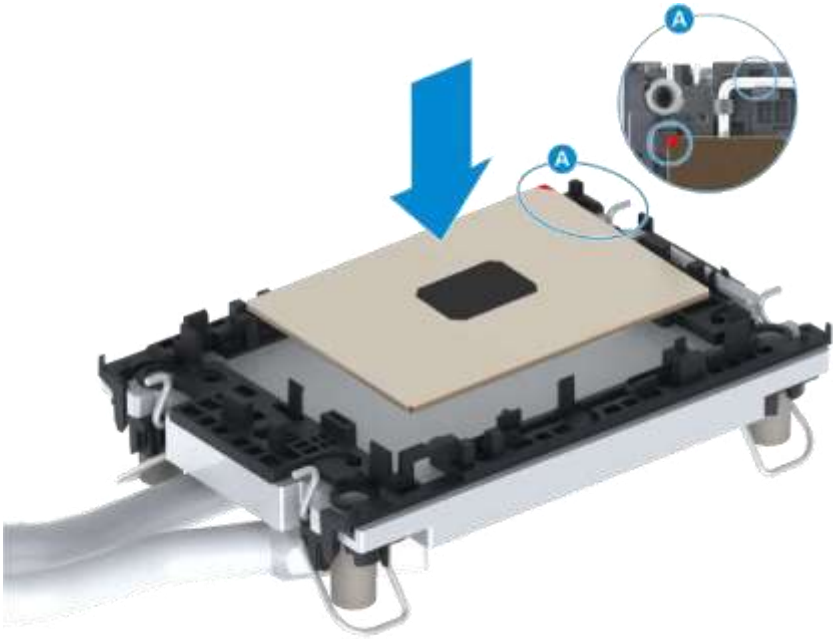
Do not apply too much thermally conductive silicone grease. Too little or too much silicone grease will affect the heat dissipation of the CPU.

6. Pull the CPU rod down to the CPU bracket, see Figure 3-93.

Figure 3-93 Closing the CPU Rod

7. Align the corner of the CPU with a triangle mark with the triangle mark on the CPU bracket, place the CPU vertically in the CPU bracket, and gently press the sides of the CPU so that the clips on the CPU bracket are locked to the edges of the CPU, see Figure 3-94.

Figure 3-94 Installing the CPU on the Heat Sink



Installing the Liquid-Cooled Heat Sink

Note

The liquid cooling pipes connected to the liquid cold plates may be led out from the server directly or through adapters. The operations for installing the two types of the liquid cold plates are the same. This procedure uses liquid cold plates with adapted liquid cooling pipes as an example to describe how to install a liquid-cooled heat sink.

8. (Optional) Install a liquid cooling adapter.

   Align the liquid cooling adapter with the standoffs on the liquid cooling panel, and place the adapter onto the panel. Tighten the fastening screws of the liquid cooling adapter by using a PH2 crosshead screwdriver, as indicated by Ⓒ and ② in Figure 3-95.

Figure 3-95 Installing a Liquid Cooling Adapter

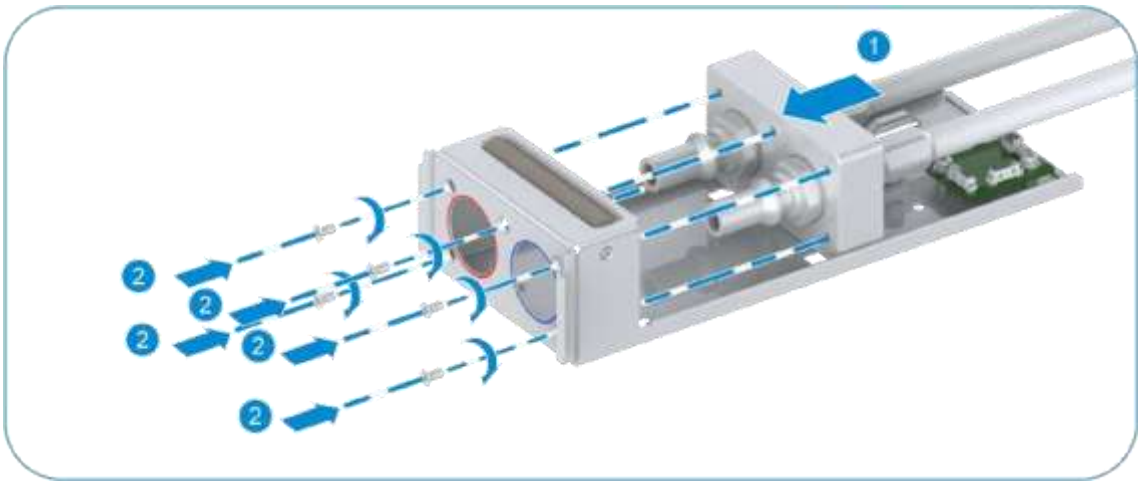
9. (Optional) Install the liquid cooling pipes.

   Thread two liquid cooling pipes through the corresponding holes on the liquid cooling panel based on the color rings indicating a coolant inlet and outlet. Ensure that the positioning pins on the inner side of the liquid cooling panel are tightly locked into the positioning holes on the pipe connector board, and tighten the fastening screws on the outer side of the liquid cooling panel by using a PH2 crosshead screwdriver, see Ⓒ and ② in Figure 3-96.

Notice

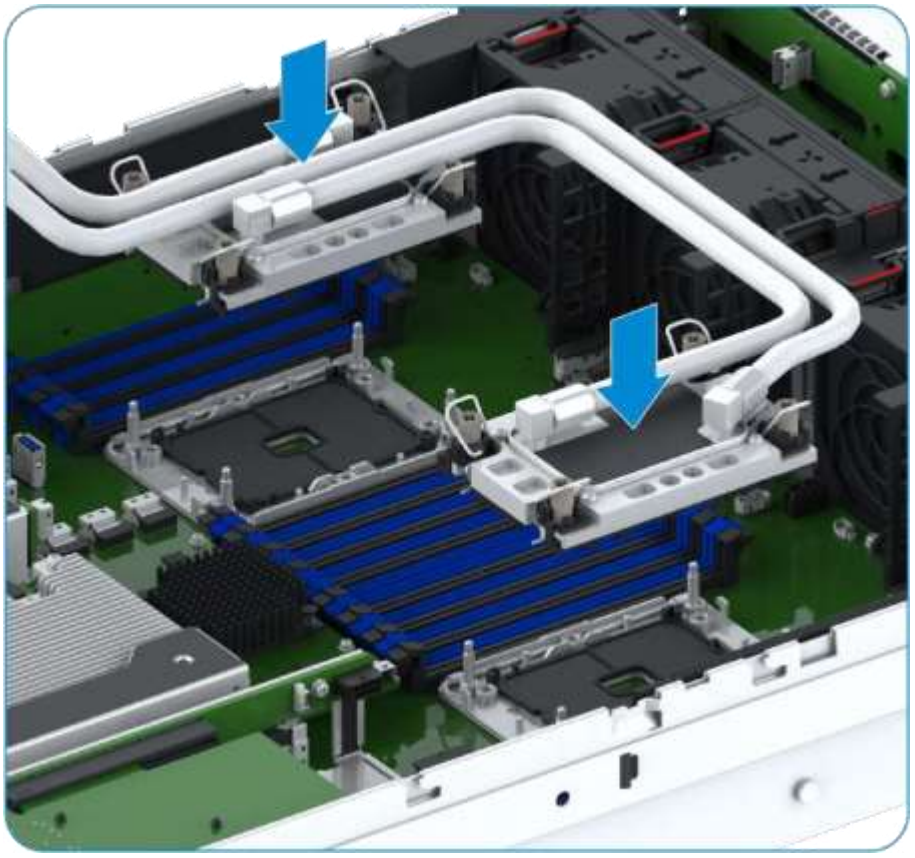
When threading liquid cooling pipes from the holes on the liquid cooling panel, ensure that the color ring on each pipe connector is the same as that of the corresponding hole on the liquid cooling panel (blue ring indicates a coolant inlet, and red ring indicates a coolant outlet), and avoid scratching the pipes with the edge of the holes.

Figure 3-96 Installing the Liquid Cooling Pipes



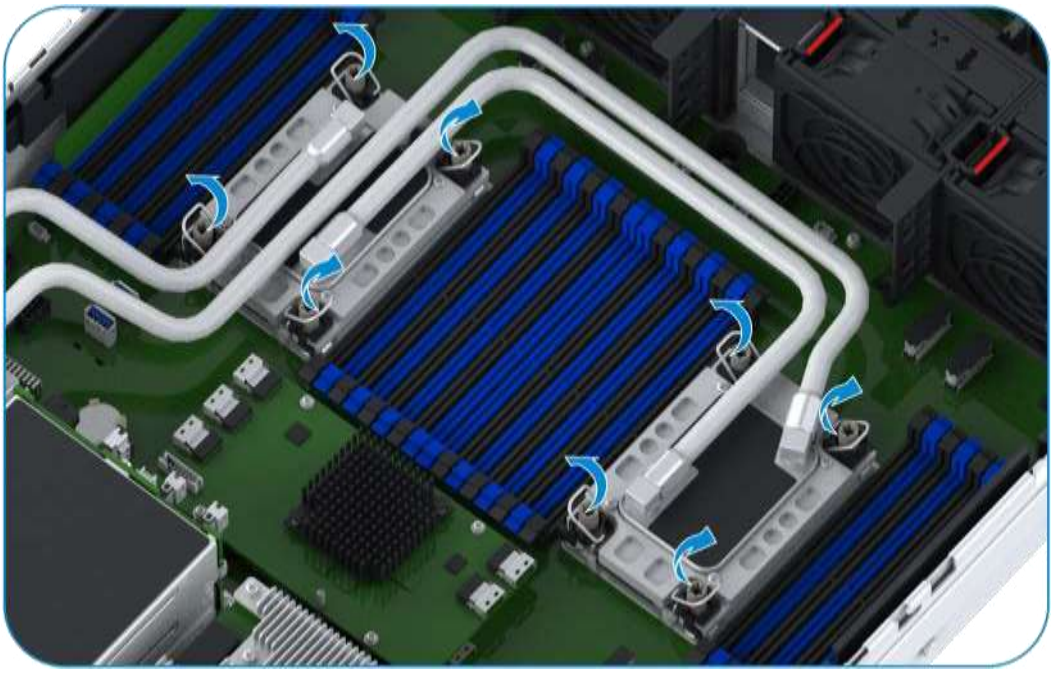
10. Hold both sides of one liquid cold plate. Align the corner of the CPU with a triangle mark with the corner of the CPU socket with a triangle mark, align the liquid cold plate with the stand-offs of the CPU socket, and insert it into the socket, see Figure 3-97. Install another liquid cold plate in the same way.

Figure 3-97 Installing Liquid Cold Plates



11. Pull the anti-tilt latches outwards to lock the liquid cold plates, see Figure 3-98.

Figure 3-98 Locking the Liquid Cold Plates

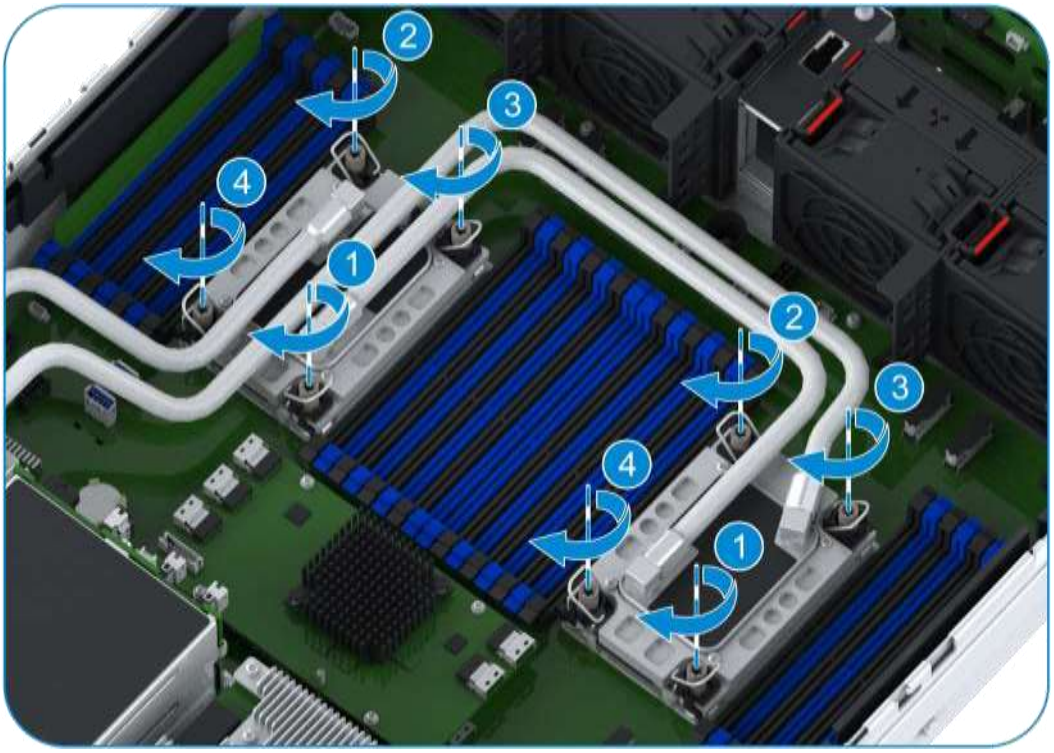


12. Use a T30 Torx screwdriver to tighten the eight screws used to secure the liquid cold plates by following the sequence marked in the figure, as indicated by Ⓒ through ④ in Figure 3-99.

Notice

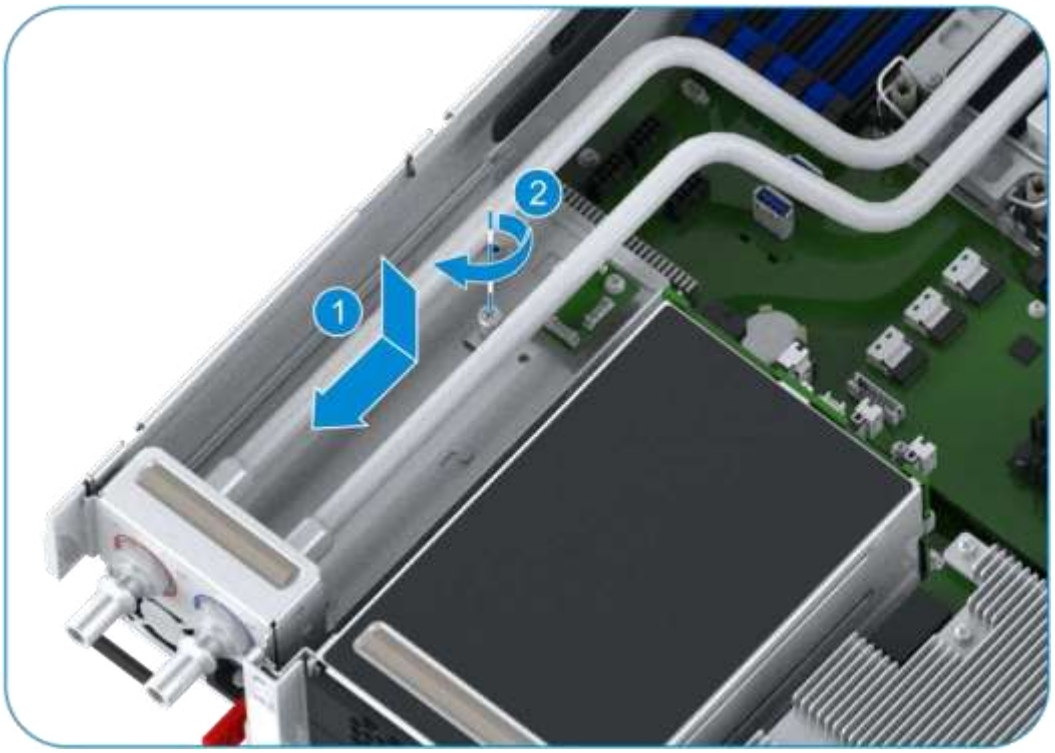
You need to tighten the screws along the diagonals. The sequence cannot be reversed. Otherwise, CPUs may be damaged.
You need to use a T30 Torx screwdriver to install the liquid cold plates. Other types of screwdrivers may damage the screws.

Figure 3-99 Tightening the Fastening Screws of the Liquid Cold Plates



13. Slowly slide the liquid cooling panel equipped with pipes into the corresponding slot along the guide rails of I/O module 1 until the standoffs on the top of the PSU are secured into the gourd-shaped holes on the panel. Push the panel to the rear of the server until the observation holes align with each other, as indicated by Ⓒ in Figure 3-100.

Figure 3-100 Installing the Liquid Cooling Panel



14. Tighten the captive screw of the liquid cooling panel by using a PH2 crosshead screwdriver, as indicated by ② in Figure 3-100.
15. Reconnect the cables to the liquid cooling adapter.
16. Use hook-and-loop fasteners to bind the liquid cooling pipes.
17. Install the air baffle. For details, refer to 3.10 Installing an Air Baffle.
18. Mount the server into the rack. For details, refer to 2.4.4 Installing the Server Cover, 2.4.5 Mounting the Server Into the Rack and 2.4.6 Powering On the Server.

3.35 Removing a Mainboard Battery

Abstract

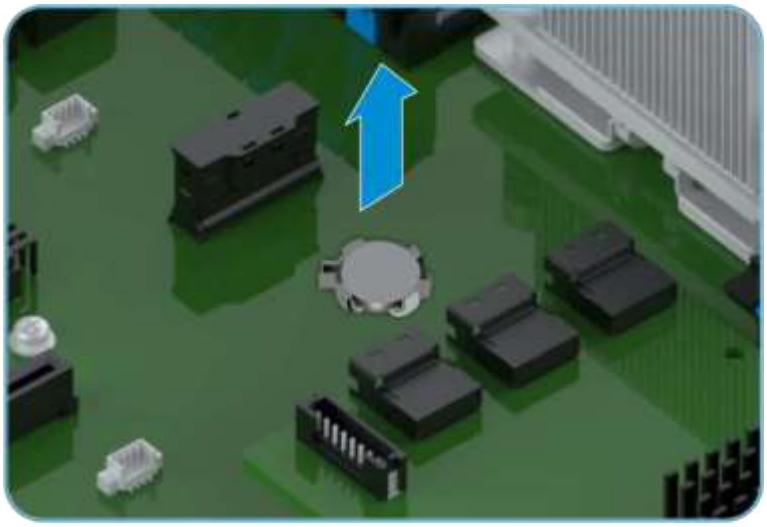
To replace a faulty mainboard battery or a mainboard battery whose power is completely consumed, you need to remove the mainboard battery.

Steps

1. Wear an ESD wrist strap.
2. Open the server cover. For details, refer to 2.4.1 Powering Off the Server, 2.4.2 Removing the Server From the Rack and 2.4.3 Removing the Server Cover.
3. (Optional) If I/O module 2 or 3 is configured with a full-height and full-length PCIe card, you need to remove the bracket of the I/O module where the PCIe card is located. For details, refer to Removing an I/O module Bracket.

4. Label all the cables connected to the RAID card that cover the mainboard battery, and unplug these cables.
5. Use a flat head screwdriver to lift the right side of the battery, and remove the battery, see Figure 3-101.

Figure 3-101 Removing a Mainboard Battery



6. Put the removed mainboard battery into an antistatic packing bag and record the bar code of the mainboard battery.

3.36 Installing a Mainboard Battery

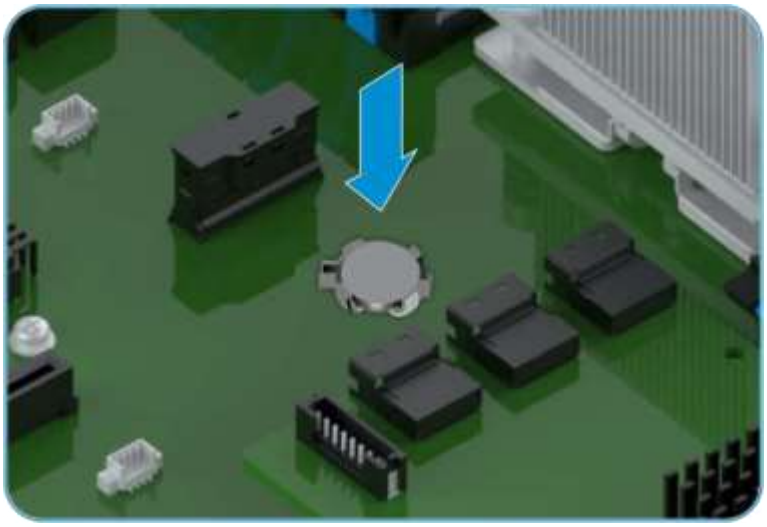
Abstract

To replace a faulty mainboard battery or a mainboard battery whose power is completely consumed, you need to install a new mainboard battery.

Steps

1. Wear an ESD wrist strap.
2. Remove the mainboard battery to be replaced. For detailed operations, refer to 3.35 Removing a Mainboard Battery.
3. Take the spare mainboard battery from an antistatic packing bag and record the bar code of the mainboard battery.
4. Turn the battery side with texts upwards, insert the left side of the battery into the slot, and then gently press the battery entirely into the slot, see Figure 3-102.

Figure 3-102 Installing a Mainboard Battery



5. Re-connect the cables to the RAID card.
6. (Optional) If I/O module 2 or 3 is configured with a full-height and full-length PCIe card, you need to install the bracket of the I/O module where the PCIe card is located. For details, refer to Installing an I/O module Bracket.
7. Mount the server into the rack. For details, refer to 2.4.4 Installing the Server Cover, 2.4.5 Mounting the Server Into the Rack and 2.4.6 Powering On the Server.

3.37 Removing a Mainboard

Abstract

To replace a faulty mainboard, you need to remove the mainboard.

Context

After the mainboard of the server is replaced, the following impacts will be caused:

- The BMC configuration of the server is restored to the default configuration.
- The BIOS configuration of the server is restored to the default configuration.
- The firmware version of the server is the same as the version of the spare mainboard, which may be different from the firmware version of the faulty mainboard.
- The serial number of the server queried on the BMC is null.

Therefore, before removing the mainboard, you need to back up the product serial number, firmware version, BMC configuration data, and BIOS configuration data of the mainboard.

Prerequisite

The serial number, firmware version number, BMC configuration data, BIOS configuration data and the cable connections are backed up. For details, refer to 4.1 Backing Up Data.

Steps

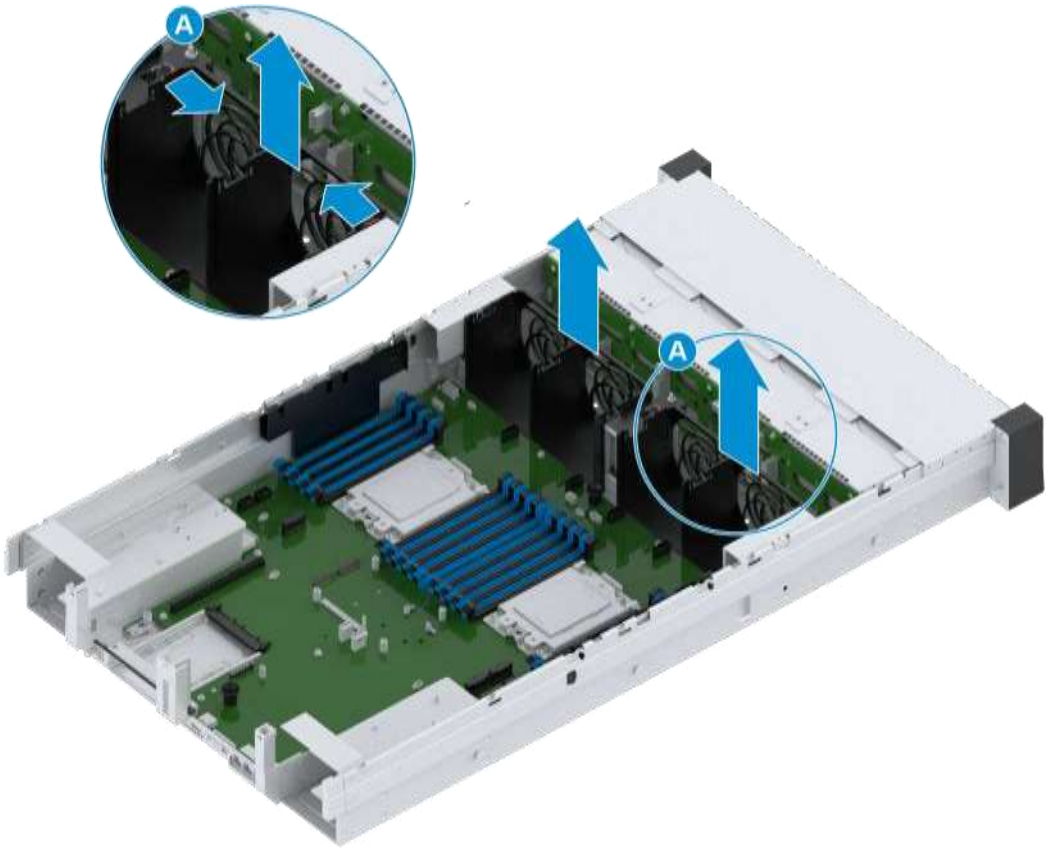
1. Wear an ESD wrist strap.
2. Open the server cover. For details, refer to 2.4.1 Powering Off the Server, 2.4.2 Removing the Server From the Rack and 2.4.3 Removing the Server Cover.
3. Remove the air baffle, For detailed operations, refer to 3.9 Removing an Air Baffle.
4. Remove all fan units. For detailed operations, refer to 3.7 Removing a Fan Unit.
5. Remove all the cables connected to the mainboard, and mark them with labels.
6. Remove all I/O modules.
   - If the I/O modules are configured with PCIe cards, you need to remove the brackets of the I/O modules where the PCIe cards are located. For details, refer to Removing the I/O module Bracket.
   - If the I/O modules are configured with hard disk cages, you need to remove the hard disk cages. For details, refer to 3.15 Removing a Rear Hard Disk Cage.
7. Remove the RAID card. For detailed operations, refer to 3.25 Removing a RAID Card.
8. Remove the TPM card. For detailed operations, refer to 3.29 Removing a TPM Card.
9. Remove all the memory modules. For detailed operations, refer to 3.31 Removing a Memory Module.
10. Remove all CPUs. For detailed operations, refer to 3.33 Removing a CPU.

Notice

Cover the CPU socket with a dust cover.

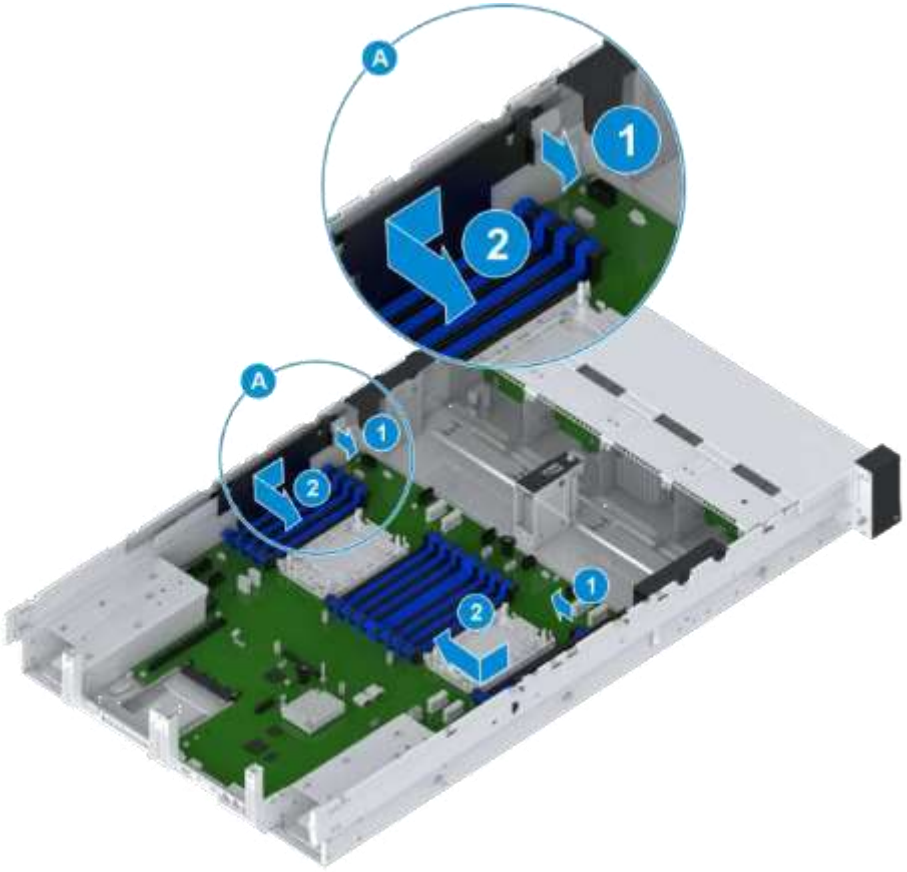
11. Remove all power modules. For detailed operations, refer to 3.3 Removing a Power Module.
12. Remove the OCP card. For detailed operations, refer to 3.5 Removing an OCP Card.
13. Raise the fan tray while pressing the lockers on both sides of the fan tray inward, see Figure 3-103.

Figure 3-103 Removing the Fan Tray



14. Pull the latches of the cable manager arms in the direction indicated by arrow Ⓒ to detach the cable manager arms from the chassis, and push and remove the cable manager arms in the direction indicated by arrow ②, as shown in Figure 3-104.

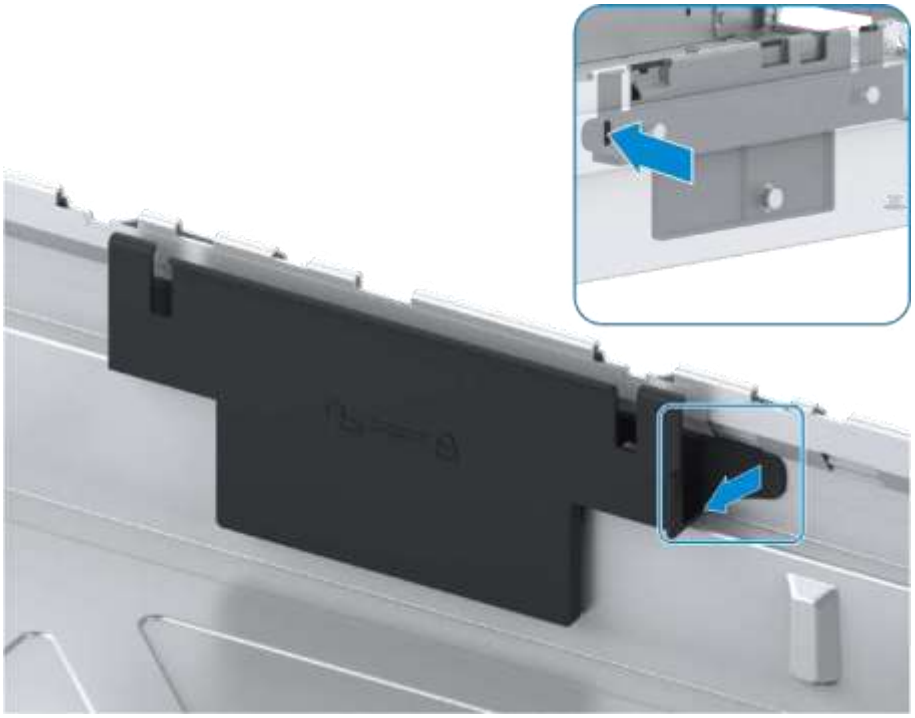
Figure 3-104 Removing Cable Manager Arms



Note

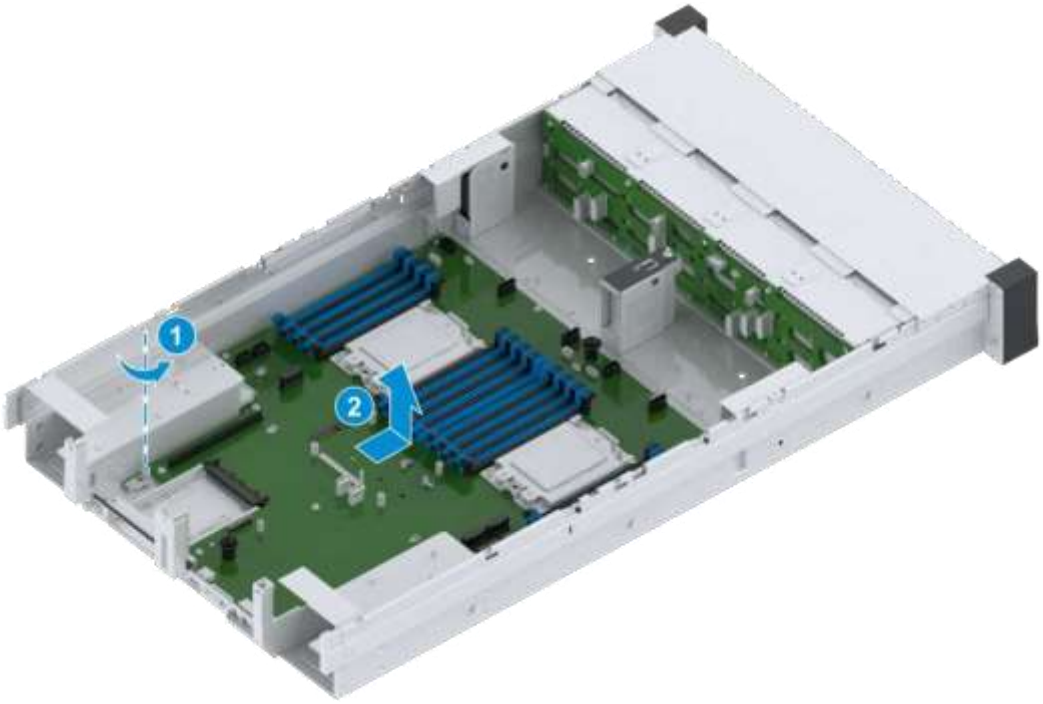
Figure 3-105 shows the position of the latch of a cable manager arm.

Figure 3-105 Latch of a Cable Manager Arm



15. Loosen the captive screw of the mainboard by using a PH2 crosshead screwdriver, as indicated by Ⓒ in Figure 3-106.

Figure 3-106 Removing the Mainboard



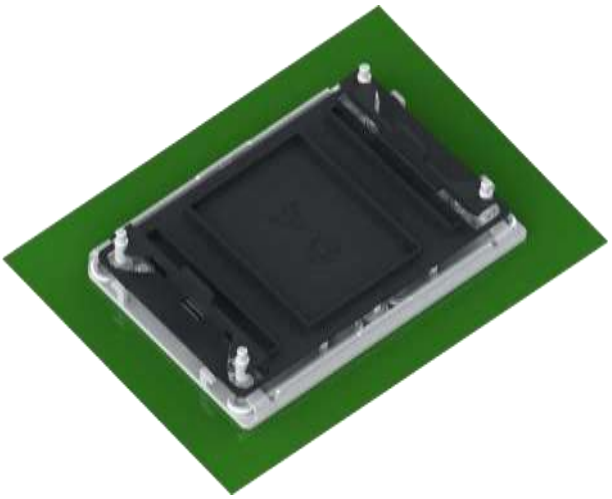
16. Hold the two handles on the mainboard, and slowly push the mainboard in the direction indicated by the arrow until it cannot be moved, and remove the mainboard, as indicated by ② in Figure 3-106.

Notice

It is forbidden to lift the mainboard through any protruding components on the mainboard to avoid damaging the components.

17. Record the bar code of the faulty mainboard, and feed back the bar code to the local representative office.
18. Verify that the CPU sockets on the faulty mainboard are installed with CPU dust covers, see Figure 3-107.

Figure 3-107 CPU Dust Cover Installed



Note

The dust covers of the spare mainboard can be installed on the CPU sockets of the removed mainboard.

19. Pack the removed mainboard with antistatic bags, place the mainboard in the packing box, and fix the mainboard with the foam inside the box.

3.38 Installing a Mainboard

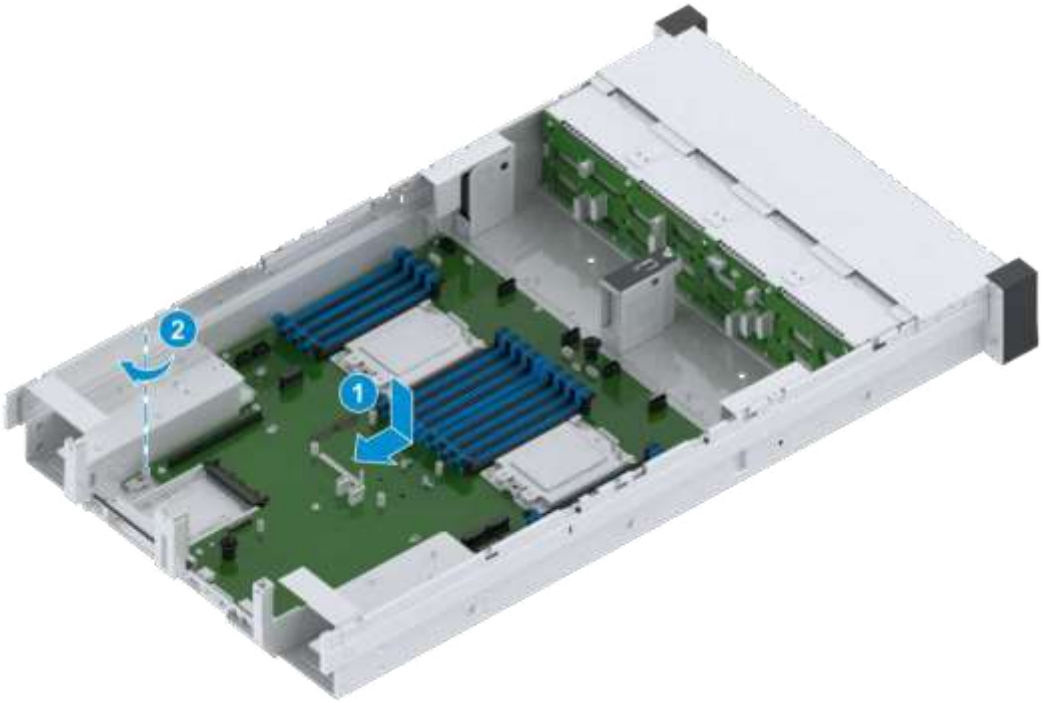
Abstract

To replace a faulty mainboard, you need to install a new mainboard.

Steps

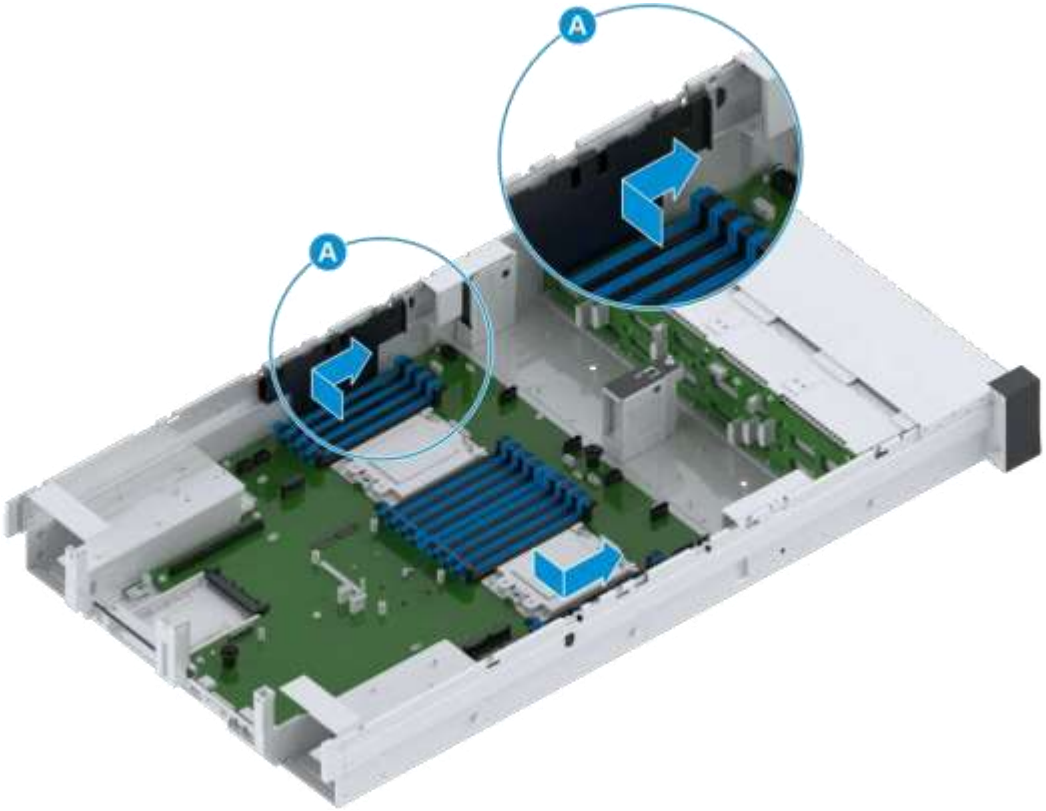
1. Wear an ESD wrist strap.
2. Remove the mainboard to be replaced. For detailed operations, refer to 3.37 Removing a Mainboard.
3. Remove foreign matter such as cables and screws from the chassis.
4. Take the spare mainboard from an antistatic packing bag and record the bar code of the spare mainboard.
5. Put the mainboard into the chassis by holding the handles on the mainboard, and push the mainboard in the direction of the arrow until the slot next to the captive screw of the mainboard is locked to the fixing post of the server, as indicated by Ⓒ in Figure 3-108.

Figure 3-108 Installing a Mainboard



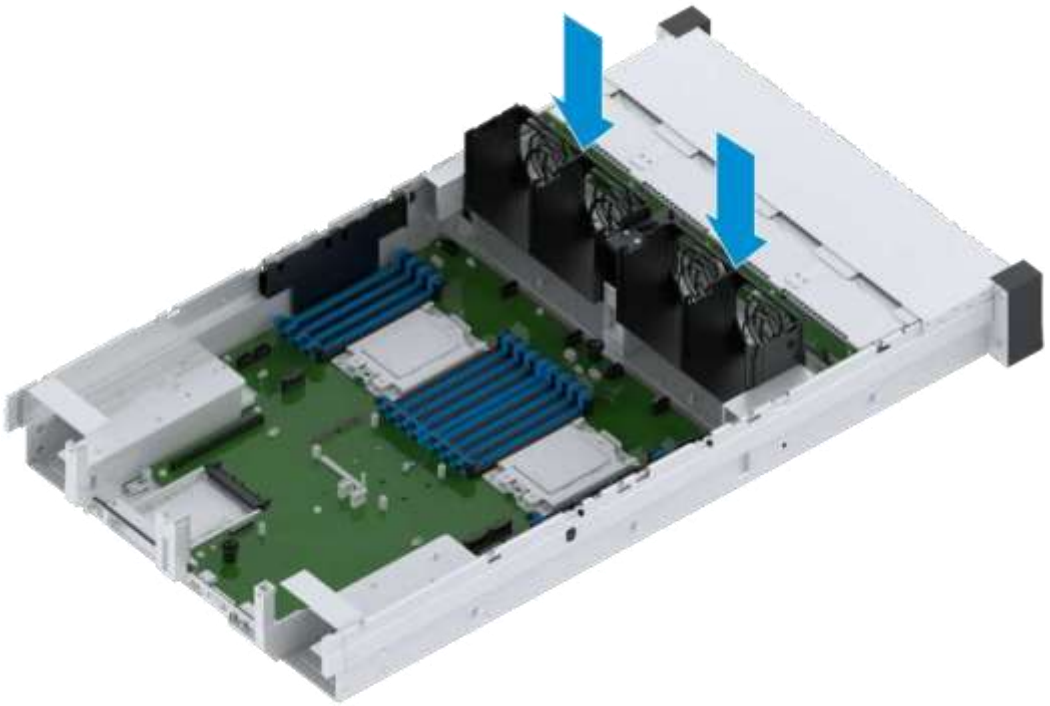
6. Tighten the captive screw of the mainboard by using a PH2 crosshead screwdriver, as indicated by ② in Figure 3-108.
7. Align the cable tray with the corresponding slot of the server, and push the cable tray in the arrow direction until the clip of the cable tray locks into the slot of the server, see Figure 3-109.

Figure 3-109 Installing a Cable Tray



8. Make the side of the fan tray with the mesh cover face the front of the server. Slide the fan tray into the server along until the location hole at the bottom of the fan tray is inserted by the location column of the server, see Figure 3-110.

Figure 3-110 Installing a Fan Tray



9. Install the OCP card. For detailed operations, refer to 3.6 Installing an OCP Card.
10. Install the power modules. For detailed operations, refer to3.4 Installing a Power Module.
11. Install all CPUs. For detailed operations, refer to 3.34 Installing a CPU.
12. Install all the memory modules. For detailed operations, refer to 3.32 Installing a Memory Module.
13. Install the TPM card. For detailed operations, refer to 3.30 Installing a TPM Card.
14. Install the RAID card. For detailed operations, refer to 3.26 Installing a RAID Card.
15. Install all I/O modules.
    - If the I/O modules are configured with PCIe cards, you need to install the brackets of the I/O modules where the PCIe cards are located. For details, refer to Installing an I/O Module Bracket.
    - If the I/O modules are configured with hard disk cages, you need to install the hard disk cages. For details, refer to 3.15 Removing a Rear Hard Disk Cage.
16. Re-connect all the cables to the mainboard.
17. Install all the fan units. For detailed operations, refer to 3.8 Installing a Fan Unit.
18. Install the air baffle, For detailed operations, refer to 3.10 Installing an Air Baffle.
19. Mount the server into the rack. For details, refer to 2.4.4 Installing the Server Cover, 2.4.5 Mounting the Server Into the Rack and 2.4.6 Powering On the Server.
20. After the server is powered on, you need to restore the BMC IP address, firmware version number, BMC configuration data, BIOS configuration data and the cable connections. For details, refer to 4.2 Restoring Data.

3.39 Removing a Left Flange

Abstract

To replace the faulty backplane of a left flange or the left flange where the button is recessed, you need to remove the left flange first.

Context

Figure 3-111 shows the position of the left flange.

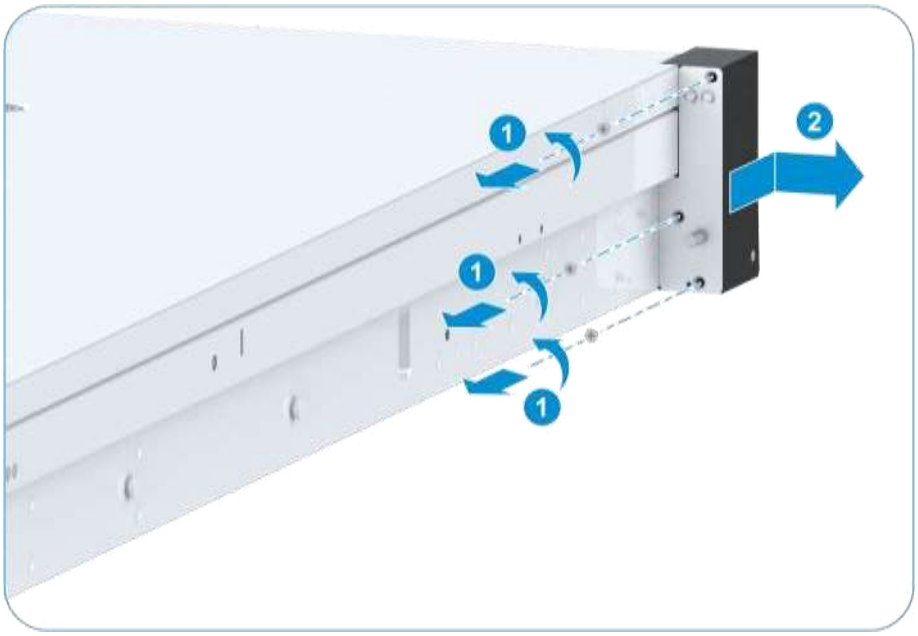
Figure 3-111 Left Flange Position

1. Left flange

Steps

1. Wear an ESD wrist strap.
2. Power off the server. For details, refer to 2.4.1 Powering Off the Server.
3. Loosen the 3 fastening screws of the left flange by using a PH2 crosshead screwdriver, as indicated by Ⓒ in Figure 3-112.

Figure 3-112 Removing the Fastening Screws on the Left Flange



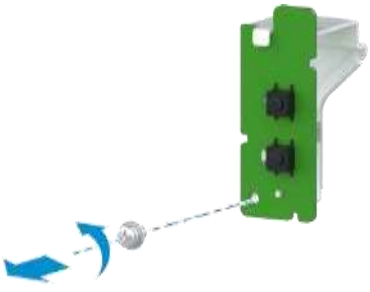
4. Push the left flange to the front of the server until it cannot be moved, and slowly remove the left flange to the outside of the server, as indicated by ② in Figure 3-112.

Notice

The connection cable of the flange backplane is short. If the left flange is removed too far away, the backplane may be damaged.

5. Take out the backplane from the left flange, and remove the cable connected to the backplane.
6. Loosen the fastening screw of the backplane bracket by using a PH2 crosshead screwdriver, and remove the backplane bracket, see Figure 3-113.

Figure 3-113 Removing the Backplane Bracket of the Left Flange



7. Put the removed left flange into an antistatic packing bag and record the bar code of the left flange backplane.

3.40 Installing a Left Flange

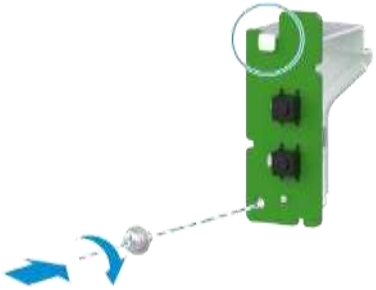
Abstract

To replace the faulty backplane of a left flange, you need to install a left flange.

Steps

1. Wear an ESD wrist strap.
2. Remove the backplane of the left flange to be replaced. For detailed operations, refer to 3.39 Removing a Left Flange.
3. Take the spare left flange backplane from an antistatic packing bag and record the bar code of the spare left flange backplane.
4. Fasten the hook on the backplane bracket to the notch on the backplane, and secure the backplane with a fastening screw, see Figure 3-114.

Figure 3-114 Installing the Backplane Bracket of the Left Flange

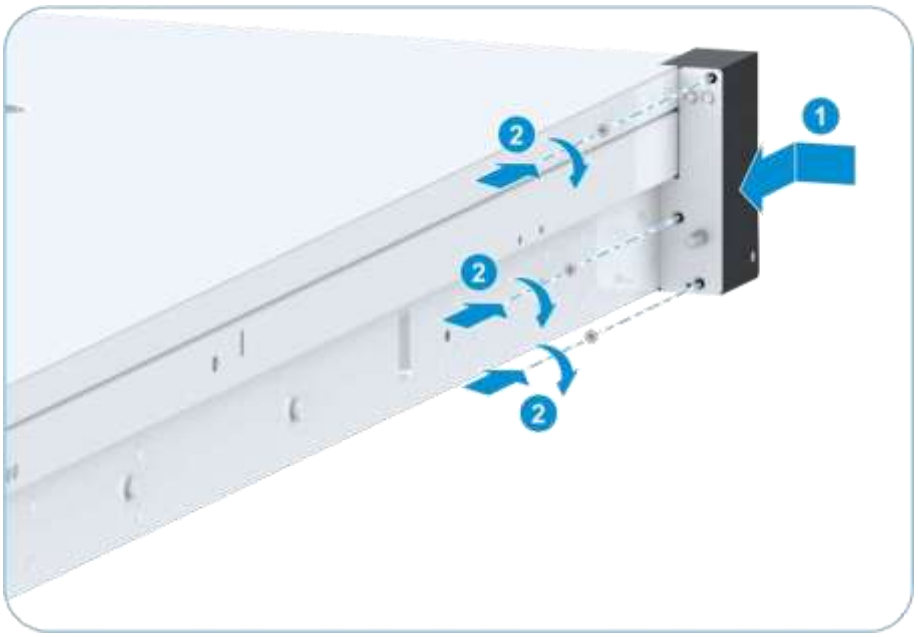


5. Re-connect the cable of the left flange to its backplane.
6. Align the notch on the backplane of the left flange with the slide in the left flange, and insert the backplane into the left flange, see Figure 3-115.

Figure 3-115 Installing the Backplane of the Left Flange

7. Lock the large hole of the gourd-shaped hole in the left flange into the T-shaped column on the left of the server, and push the left flange to the rear of the server until it cannot be moved, as indicated by Ⓒ in Figure 3-116.

Figure 3-116 Installing the Left Flange



8. Tighten the three fastening screws of the left flange by using a PH2 crosshead screwdriver, as indicated by ② in Figure 3-116.
9. Press the button on the left flange, and verify that the button can be pressed properly without any dent.
10. Power on the server. For details, refer to 2.4.6 Powering On the Server.

3.41 Removing a Right Flange

Abstract

To replace the faulty backplane of a right flange, you need to remove the right flange.

Context

Figure 3-117 shows the position of the right flange.

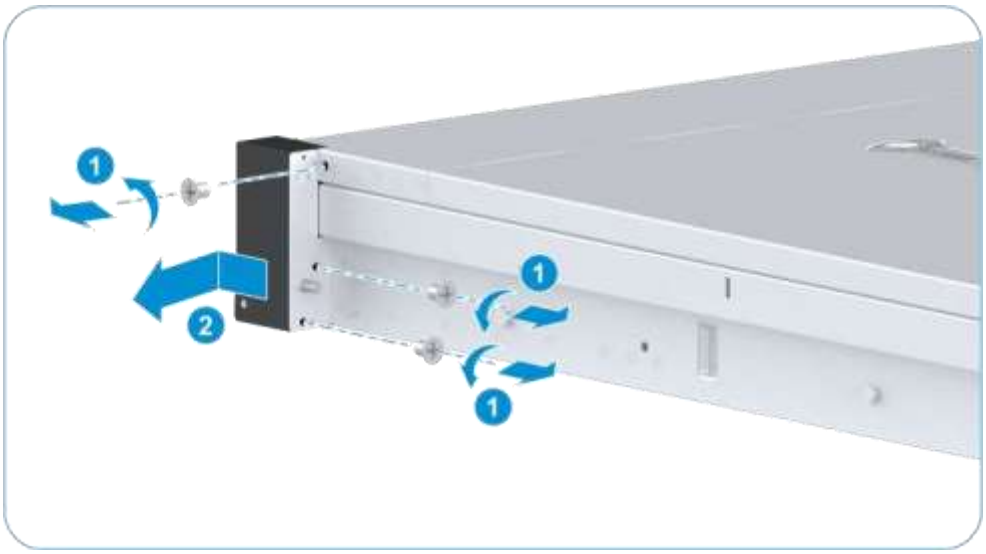
Figure 3-117 Right Flange Position

1. Right flange

Steps

1. Wear an ESD wrist strap.
2. Power off the server, For details, refer to 2.4.1 Powering Off the Server.
3. Loosen the 3 fastening screws of the right flange by using a PH2 crosshead screwdriver, as indicated by Ⓒ in Figure 3-118.

Figure 3-118 Removing the Right Flange



4. Push the right flange towards the front of the server until it cannot be moved, and slowly remove the right flange to the outside of the server, as indicated by ② in Figure 3-118.

Notice

The connection cable of the flange backplane is short. If the right flange is moved beyond the length of the cable, the backplane may be damaged.

5. Take out the backplane from the right flange, and remove the cable connected to the backplane.
6. Put the removed right flange into an antistatic packing bag and record the bar code of the right flange backplane.

3.42 Installing a Right Flange

Abstract

To replace the faulty backplane of a right flange, you need to install a right flange.

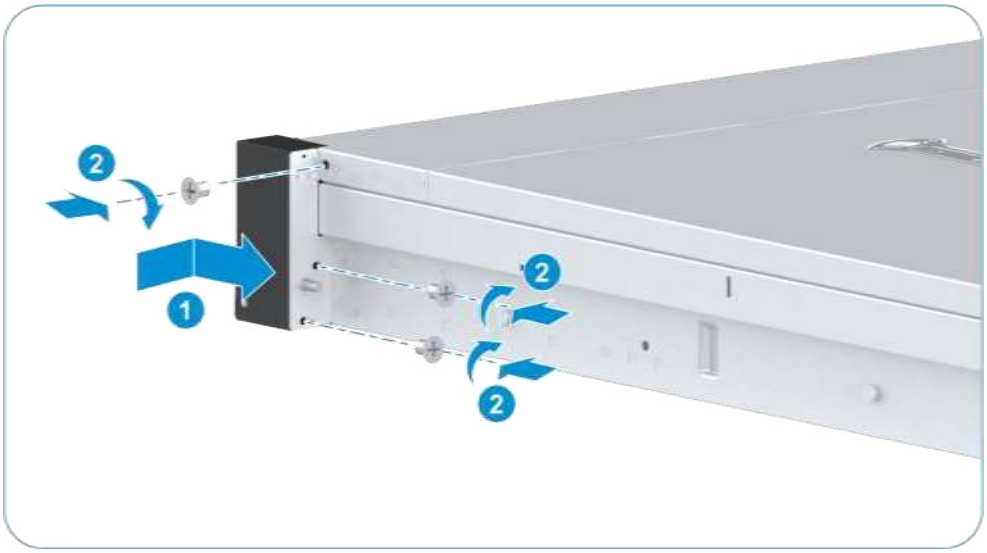
Steps

1. Wear an ESD wrist strap.
2. Remove the backplane of the right flange to be replaced. For detailed operations, refer to 3.41 Removing a Right Flange.
3. Take the spare right flange backplane from an antistatic packing bag and record the bar code of the spare right flange backplane.
4. Re-connect the cable of the right flange to its backplane.
5. Align the notch on the backplane of the right flange with the slide in the right flange, and insert the backplane into the right flange, see Figure 3-119.

Figure 3-119 Installing the Backplane of the Right Flange

6. Lock the large hole of the gourd-shaped hole in the right flange into the T-shaped column on the right of the server, and push the right flange to the rear of the server until it cannot be moved, as indicated by Ⓒ in Figure 3-120.

Figure 3-120 Installing the Right Flange



7. Tighten the three fastening screws of the right flange by using a PH2 crosshead screwdriver, as indicated by ② in Figure 3-120.
8. Power on the server. For details, refer to 2.4.6 Powering On the Server.

Chapter 4
Reference: Mainboard Replacement Operations

Table of Contents

After the mainboard of a server is replaced, the following impacts will be caused:

- The BMC and BIOS configurations of the server are restored to the default configuration.
- The firmware version of the server is the same as the version of the spare mainboard, which may be different from the firmware version of the faulty mainboard.
- The serial number of the server is displayed as null on the BMC Web portal.

Therefore, before removing the mainboard, you need to back up the BMC and BIOS configuration data for restoration after the mainboard is replaced.

4.1 Backing Up and Restoring Data

The data that needs to be backed up includes the following:

- Product serial number
- Firmware version
- BMC configuration data
- BIOS configuration data
- Cable connections

Basic principles for backup are as follows:

- If the server is not configured, you do not need to back up the configuration data.
- If you cannot log in to the BMC and BIOS because of a mainboard fault, refer to the configuration data set during initial configuration or the configuration of the same batch of servers to restore data after the mainboard is replaced.
- If you can log in to the BMC and BIOS of the server, you need to perform backup operations on the server.

4.1.1 Backing Up Product Serial Number and Firmware Version

Abstract

The product serial number is the unique identifier of the server. The server cannot be identified if the serial number is changed after the mainboard is replaced. The firmware version includes the BMC version and BIOS version. There may be connection problems between servers of different firmware versions. Therefore, the product serial number and firmware version must be backed up for restoration after the mainboard is replaced.

Steps

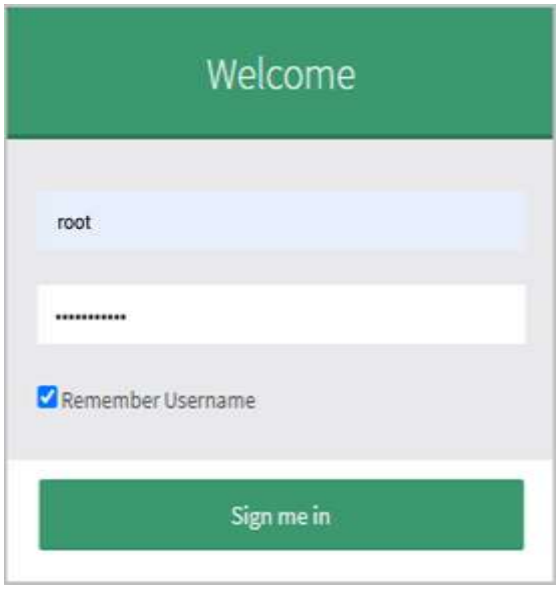
1. Use a network cable to interconnect the network port of the debugging PC with the iSAC management network port on the rear panel of the server.

   Note

   The network port with the **iSAC** silk screen on the rear panel of the server is the iSAC management network port.

2. Configure an IP address for the debugging PC which is in the same network segment as that of the BMC of the server.
3. On the debugging PC, enter the IP address of the BMC (for example, https://192.168.5.7) in the browser and press **Enter** to open the login page of the BMC Web portal, see Figure 4-1.

   Figure 4-1 Login Page

4. Enter **Username** and **Password**. Click **Sign me in**, the home page of the BMC Web portal is displayed, see Figure 4-2.

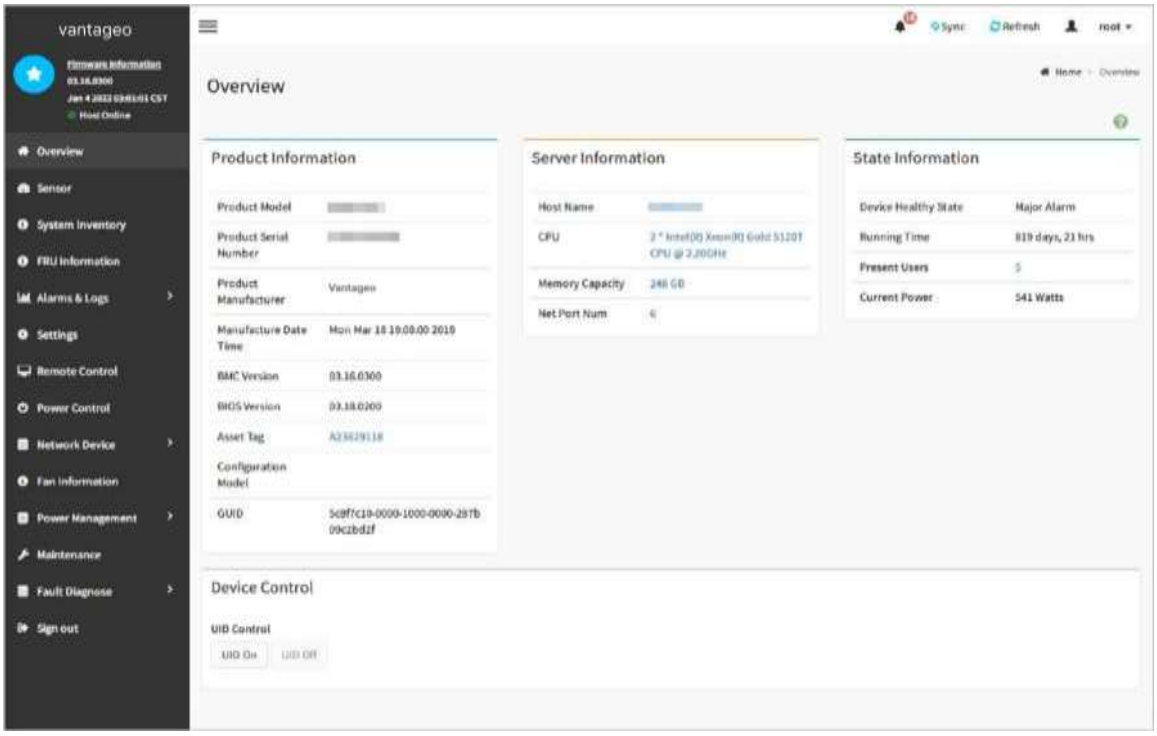
Note

The default username and password are as follows:

- Username: root
- Password: Superuser9!

If the password has been changed, enter the actual password.

Figure 4-2 Home Page of the BMC Web Portal



5. From the menu bar in the left pane, select **Overview**. The **Overview** page is displayed, see Figure 4-2.
6. Use screenshots or take notes to back up **Product Serial Number**, **BMC Version** and **BIOS Version**.

Related Tasks

If the server cannot be powered on and you cannot log in to the BMC Web portal, you can find the serial number from the label on the front panel of the server and perform the backup operation.

4.1.2 Backing Up BMC Configuration Data

Abstract

BMC configurations include configurations related to the server. Before replacing the mainboard, you need to back up the BMC configuration data for restoration after the mainboard is replaced.

The following BMC configuration data must be backed up:

- Date and time
- Log settings
- Network settings
- User group management
- User management
- SNMP settings
- Asset tag settings
- Cooling mode

Note

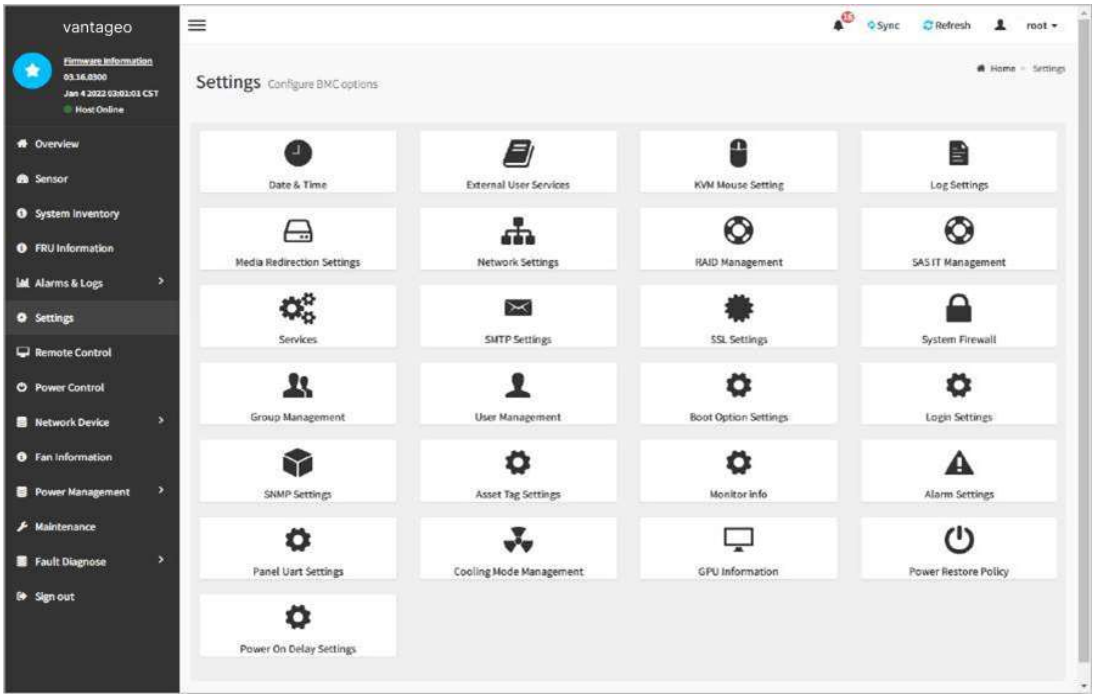
This procedure describe how to back up the BMC configuration data by using the backup of network settings as an example. For how to back up other BMC configuration items, you can also refer to this procedure.

Steps

A Version Earlier than BMC 3.16.300

1. On the BMC Web portal, select **Settings** from the menu bar in the left pane. The **Settings** page is displayed, see Figure 4-3.

Figure 4-3 Settings Page

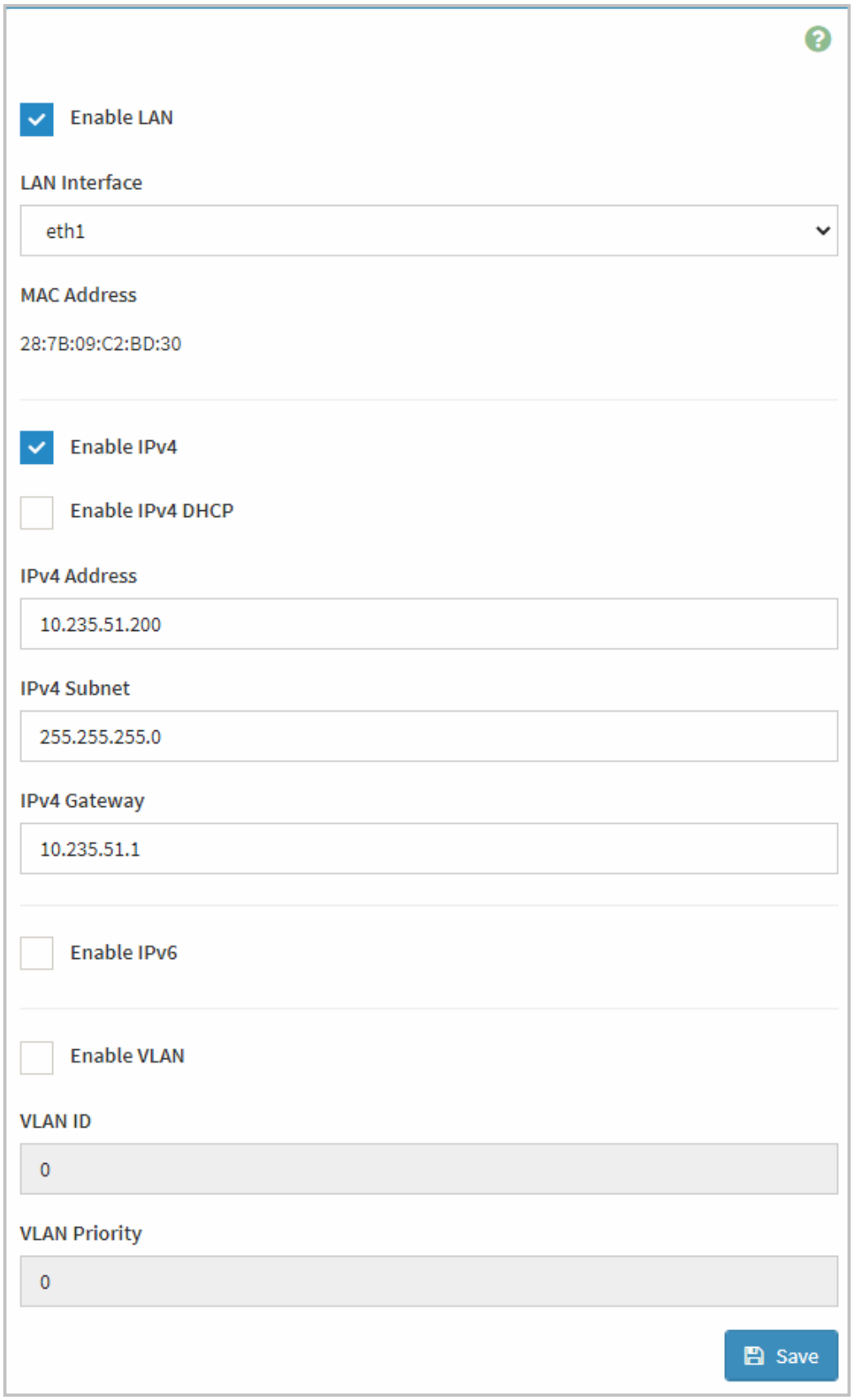


2. Click **Network Settings**. The **Network Settings** page is displayed, see Figure 4-4.

Figure 4-4 Network Settings Page

3. Click **Network IP Settings**. The **Network IP Settings** dialog box is displayed, see Figure 4-5.

Figure 4-5 Network IP Settings Dialog Box



4. Take a screenshot of the IPv4 and IPv6 configuration in the **Network IP Settings** dialog box.
5. Return to the **Network Settings** page and repeat Step 3 through Step 4 until all the configuration items on the **Network Settings** page are backed up.
6. Repeat Step 2 through Step 5 to back up other configuration items.

BMC 3.16.300 or a Later Version

1. On the BMC Web portal, select **Maintenance** from the menu bar in the left pane. The **Maintenance** page is displayed.
2. Select **Backup Configuration > Export Configuration**. The **Export Configuration** page is displayed.
3. Select **BMC** or **Product Serial Number**, and click **Download Configuration**.

Note

The downloaded configuration files are as follows:
Product serial number: *210114155107_20220419205757.bak*
BMC: *bmcconfig_20220421111520.tar.gz*

---

4. Back up all configurations on the **Network Settings** page and the **Asset Tag Settings** page by referring to "BMC 3.16.300 or an Earlier Version".

4.1.3 Restoring the IP Address of the BMC Port

Abstract

The IP address of the new mainboard is a pre-configured IP address. After the mainboard is replaced, the IP address of the BMC port must be changed to the actual address before the follow-up restore operations.

Note

The default IP address of the new mainboard is **192.168.5.7**.

Steps

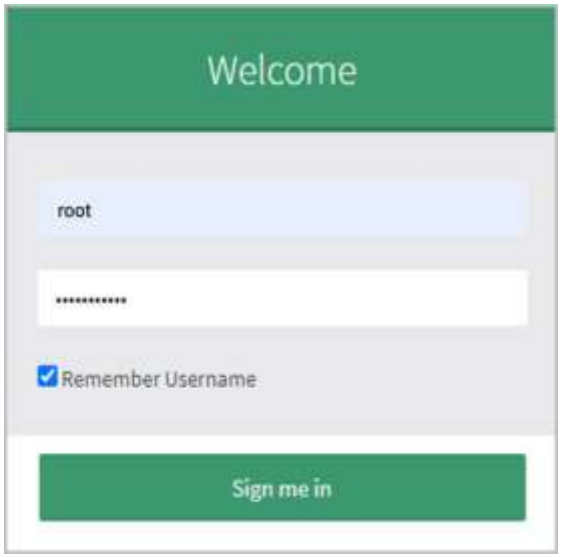
1. Use a network cable to interconnect the network port of the debugging PC with the iSAC management network port on the back panel of the server.

   Note

   The network port with the **iSAC** silk screen on the rear panel of the server is the iSAC management network port.

2. Configure an IP address for the debugging PC which is in the same network segment as that of the BMC of the server.
3. On the debugging PC, enter the IP address of the BMC (for example, https://192.168.5.7) in the browser and press **Enter**. The login page of the BMC Web portal is displayed, see Figure 4-14.

Figure 4-6 Login Window



4. Enter **Username** and **Password**. Click **Sign me in**. The home page of the BMC Web portal is displayed.

Note

The default username and password are as follows:
- Username: root
- Password: Superuser9!

If the password has been changed, enter the actual password.

5. Click **Network Settings**. The **Network Settings** page is displayed.
6. Click **Network IP Settings**. The **Network IP Settings** dialog box is displayed.
7. Modify the values of the configuration items in accordance with the backup data.
8. Click **Save**.

Verification

Use the newly configured IP address to log in to the BMC Web portal. If you can log in to the portal properly, it indicates that the IP address of the BMC port is restored successfully.

4.1.4 Restoring BIOS and BMC Versions

Abstract

After the mainboard is replaced, if the BIOS version or BMC version of the mainboard is different from that before the replacement, you need to restore the BIOS version or BMC version to the previous version.

Notice

- If both the BMC and BIOS versions need to be upgraded, you need to upgrade the BIOS version first, and then upgrade the BMC version.
- You cannot switch to other pages during the version upgrade process. Otherwise, the version upgrade process may be interrupted.

Prerequisite

The upgrade file is obtained.

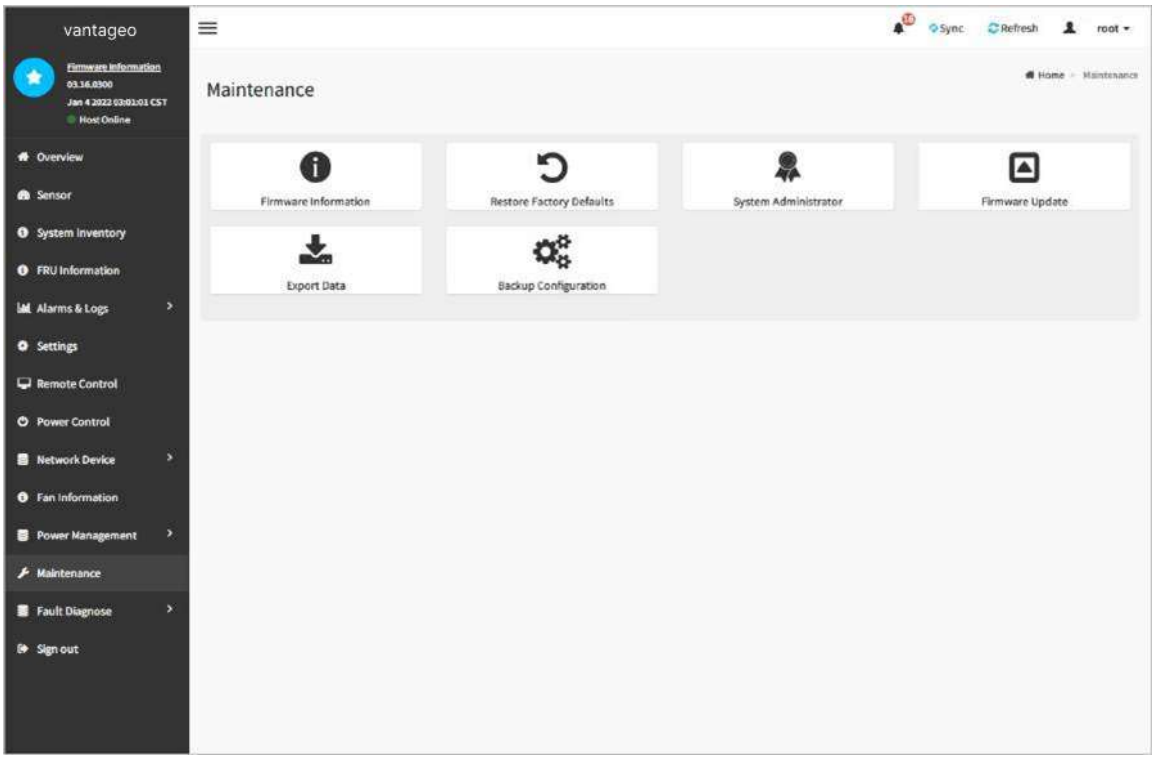
Note

The upgrade file can be obtained from the server and storage product Web portal.

Steps

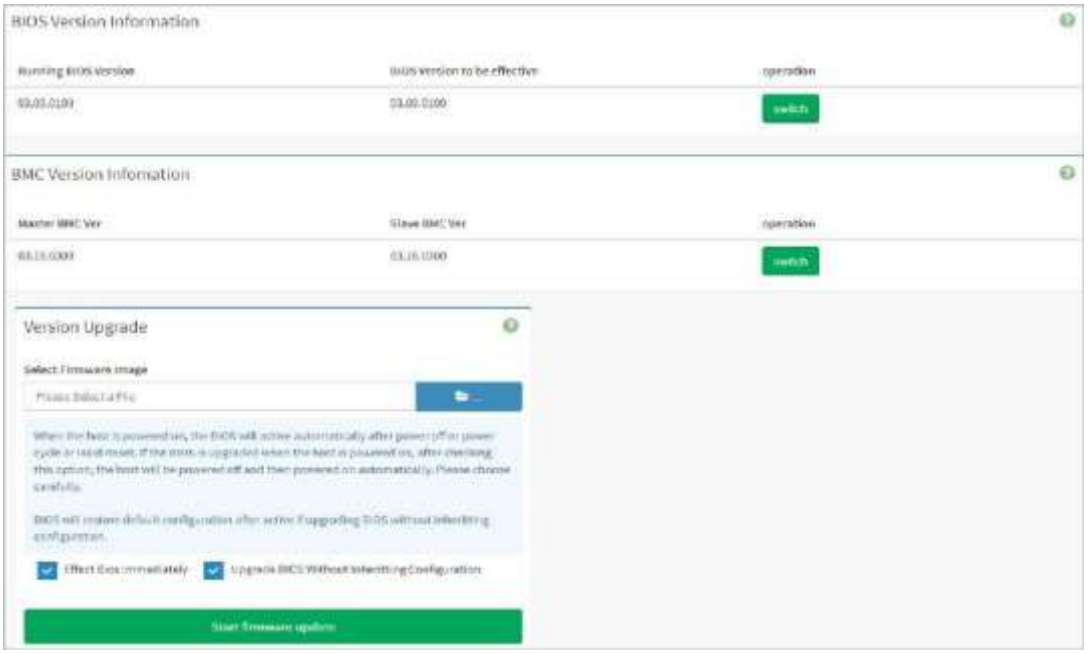
1. Log in to the BMC Web portal, and click **Overview** from the menu bar in the left pane. The **Overview** page is displayed. Check whether the BMC version number and BIOS version number in this page are the same as the backup BMC version number and BIOS version number respectively.
   - Yes → End.
   - No → Step 2.
2. Select **Maintenance** from the menu bar in the left pane. The **Maintenance** page is displayed, see Figure 4-15.

   Figure 4-7 Maintenance Page



3. Click **Firmware Update**. The **Other Firmware Update** page is displayed, see Figure 4-16.

Figure 4-8 Other Firmware Update Page



4. In the **Version Upgrade** area, click ... . In the displayed dialog box, select the BIOS version file.

Note

Only one version file can be selected at a time. When the firmware version is updated, the firmware type is automatically matched.

5. Select the following check box as needed.
   - **Effect Bios Immediately**: When the server is powered on and the BIOS firmware is upgraded, the server is automatically powered off and then powered on to make the upgraded firmware take effect.
   - **Upgrade BIOS Without Inheriting Configuration**: After the upgraded BIOS firmware takes effect, the default BIOS configuration is restored.

Note

When the server is powered on, the upgraded BIOS firmware takes effect after the server is powered off, power cycled, or hard rebooted.

6. Click **Start firmware update**. The firmware upgrade progress is displayed below.

Note

After the BIOS firmware is upgraded, the **Other Firmware Update** page is refreshed as follows:
- When the server is powered on, the firmware version number generated after upgrade is displayed in the **BIOS Version to be effective** column, and **Active** is displayed in the **operation** column.
- When the server is powered off, the firmware version number generated after upgrade is displayed in the **Running BIOS Version**, and **switch** is displayed in the **operation** column.

7. (Optional) When the **Effect Bios Immediately** is not selected, click **Active** in the **operation** column of the **BIOS Version Information** after the upgrade.

Note

The server is powered off and then powered on automatically to make the upgraded firmware take effect.

8. In the **Version Upgrade** area, click  . In the displayed dialog box, select the BMC version file.
9. Click **Start firmware update**. The firmware upgrade progress is displayed below.

Note

After the BMC firmware is upgraded, on the **Other Firmware Update** page, the new firmware version number is displayed in the **Master BMC Ver** column, and the original firmware version number is displayed in the **Slave BMC Ver** column.

4.1.5 Restoring BMC configurations

Abstract

After the mainboard is replaced, the BMC is configured in default values. Therefore, you need to restore the BMC configurations to those before the replacement.

The following BMC configuration data must be backed up:

- Date and time
- Log settings
- Network settings
- User group management
- User management
- SNMP settings
- Asset tag settings
- Cooling mode

Note

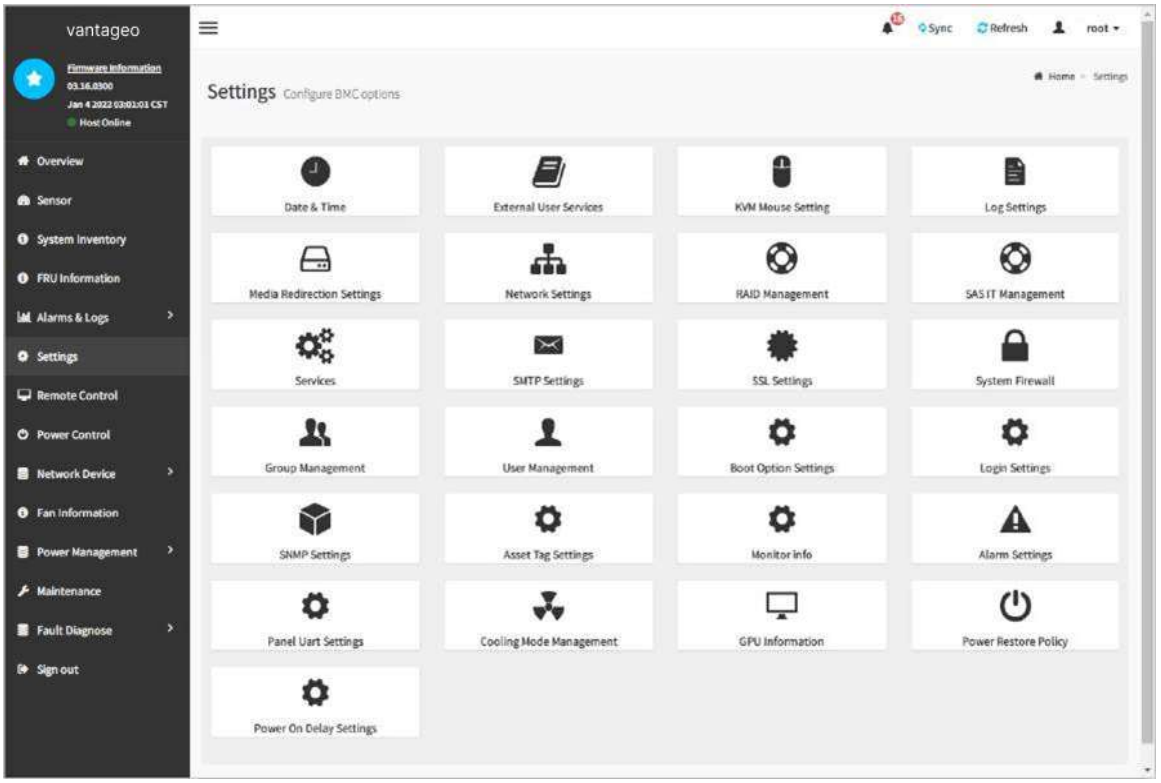
This procedure describes how to back up the BMC configuration data by using the backup of network settings as an example. For how to back up other BMC configuration items, you can also refer to this procedure.

Steps

A Version Earlier than BMC 3.16.300

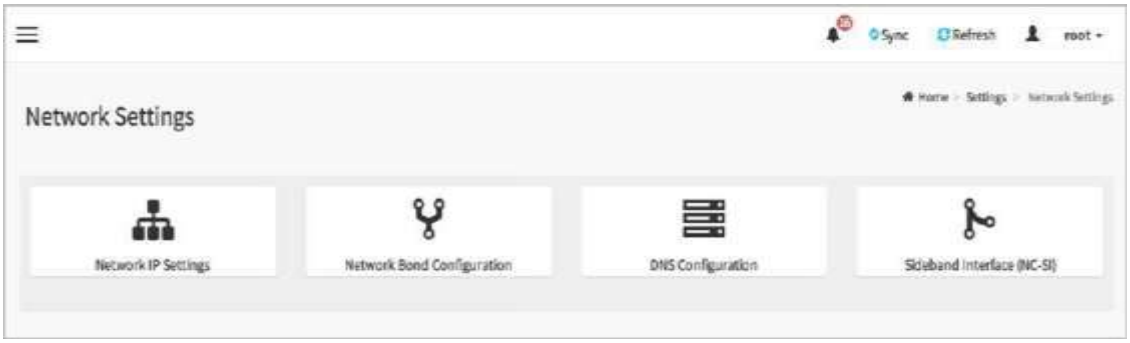
1. On the BMC Web portal, select **Settings** from the menu bar in the left pane. The **Settings** page is displayed, see Figure 4-21.

Figure 4-21 Settings Page



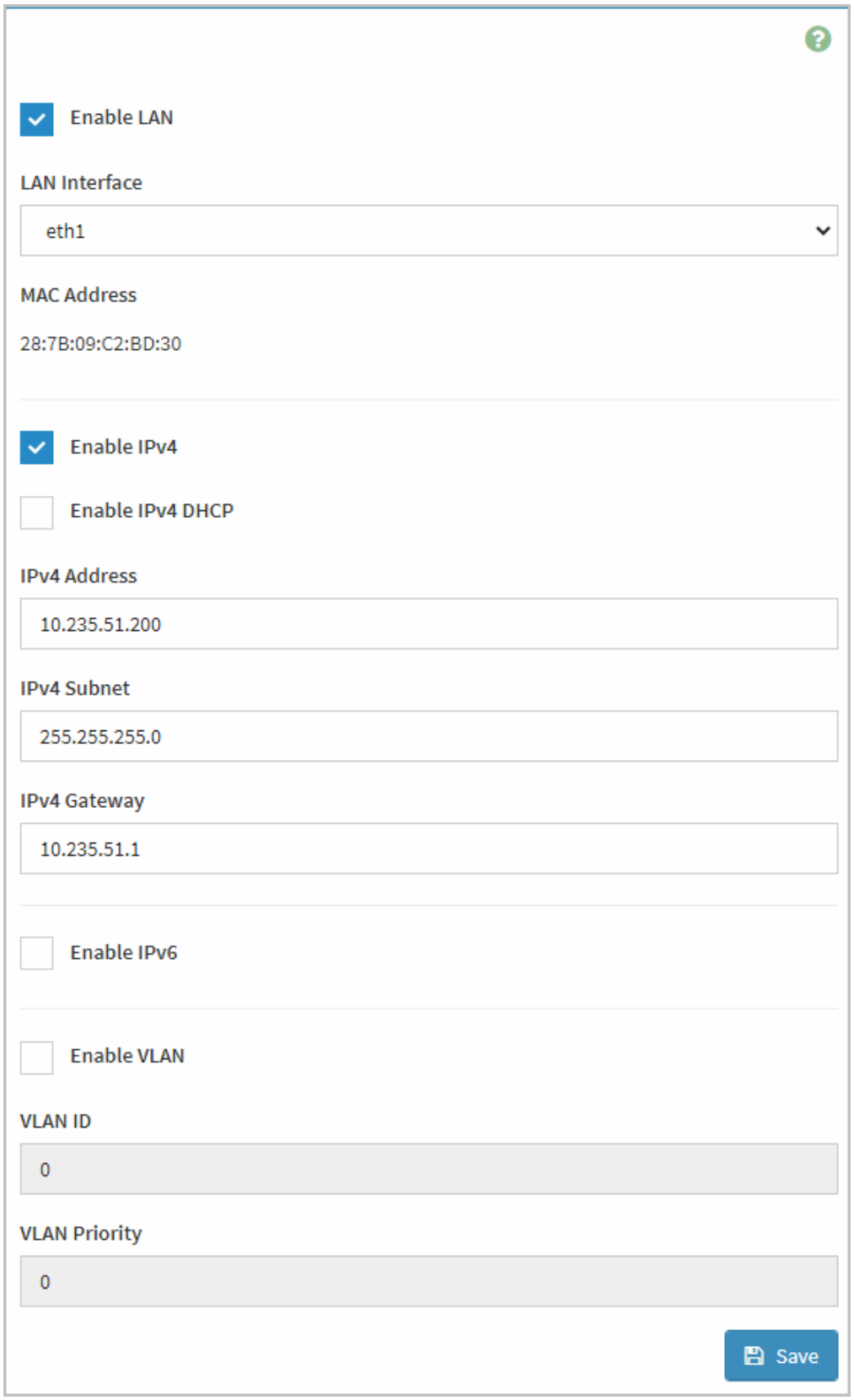
2. Click **Network Settings**. The **Network Settings** page is displayed, see Figure 4-22.

Figure 4-22 Network Settings Page



3. Click **Network IP Settings**. The **Network IP Settings** dialog box is displayed, see Figure 4-23.

Figure 4-23 Network IP Settings Dialog Box



4. Check whether the values of the IPv4 and IPv6 configuration items in the **Network IP Settings** dialog box are the same as the backup data.
   - Yes → Step 7
   - No → Step 5
5. Modify the values of the configuration items in the **Network IP Settings** dialog box in accordance with the backup data.
6. Click **Save**.
7. Return to the **Network Settings** page and repeat Step 3 to Step 6 until all the configuration items on the **Network Settings** page are restored to their pre-backup state.
8. Repeat Step 2 through Step 7 to restore other BMC configuration items.

BMC 3.16.300 or a Later Version

1. On the BMC Web portal, select **Maintenance** from the menu bar in the left pane. The **Maintenance** page is displayed.
2. Select **Backup Configuration > Import Configuration**. The **Import Configuration** page is displayed.
3. Click  and select the exported BMC or product serial number configuration file.
4. Click **Upload Configuration**. A confirmation dialog box is displayed.
5. Click **OK**.
6. Check and restore the configurations on the **Network Settings** page and the **Asset Tag Settings** page by referring to the restoration method in BMC 3.16.300 or an Earlier Version.

Glossary

AC

- Alternating Current

AES

- Advanced Encryption Standard

BIOS

- Basic Input/Output System

BMC

- Baseboard Management Controller

BMC

- Baseboard Management Controller

BMC

- Baseboard Management Controller

CPU

- Central Processing Unit

DC

- Direct Current

DDR

- Double Data Rate

DES

- Data Encryption Standard

ESD

- Electrostatic Discharge

GPU

- Graphics Processing Unit

HDB

- Hard Disk Box

HDD

- Hard Disk Drive

HVDC

- High-Voltage Direct Current

I/O

- Input/Output

IP

- Internet Protocol

IPMI

- Intelligent Platform Management Interface

LRDIMM

- Load Reduced Dual Inline Memory Module

MD5

- Message Digest 5 Algorithm

OCP

- Open Computer Project

PC

- Personal Computer

PCIe

- Peripheral Component Interconnect Express

PDU

- Power Distribution Unit

POST

- Power-On Self-Test

RAID

- Redundant Array of Independent Disks

RDIMM

- Registered Dual Inline Memory Module

SHA

- Secure Hash Algorithm

SNMP

- Simple Network Management Protocol

SSH

- Secure Shell

TPM

- Trusted Platform Module

XML

- Extensible Markup Language

iSAC

- Integrated Server Administrator Controller