# OceanStor
# V500R007 Kunpeng
# Parts Replacement

| | |
|---|---|
| **Issue** | 14 |
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# About This Document

## Purpose

This document describes how to replace parts of OceanStor V5 series and provides instructions on safety operations, preparations, and precautions.

The following table lists the product models that this document is applicable to.

| Product Series | Product Model |
| --- | --- |
| OceanStor 2000 V5 series | OceanStor 2200 V5/2600 V5 |
| OceanStor 5000 V5 series | OceanStor 5300 V5/5500 V5/5600 V5/5800 V5 |
| OceanStor 5000F V5 series | OceanStor 5300F V5/5500F V5/5600F V5/5800F V5 |
| OceanStor 6000 V5 series | OceanStor 6800 V5 |
| OceanStor 6000F V5 series | OceanStor 6800F V5 |
| OceanStor 18000 V5 series | OceanStor 18500 V5/18800 V5 |
| OceanStor 18000F V5 series | OceanStor 18500F V5/18800F V5 |

## Intended Audience

This document is intended for:

- Technical support engineers
- Maintenance engineers

## Symbol Conventions

The symbols that may be found in this document are defined as follows.

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| Symbol | Description |
| --- | --- |
| DANGER | Indicates a hazard with a high level of risk which, if not avoided, will result in death or serious injury. |
| WARNING | Indicates a hazard with a medium level of risk which, if not avoided, could result in death or serious injury. |
| CAUTION | Indicates a hazard with a low level of risk which, if not avoided, could result in minor or moderate injury. |
| NOTICE | Indicates a potentially hazardous situation which, if not avoided, could result in equipment damage, data loss, performance deterioration, or unanticipated results.<br>NOTICE is used to address practices not related to personal injury. |
| NOTE | Supplements the important information in the main text.<br>NOTE is used to address information not related to personal injury, equipment damage, and environment deterioration. |

# Change History

Changes between document issues are cumulative. The latest document issue contains all the changes made in earlier issues.

## Issue 14 (2024-04-25)

This is the fourteenth release.

Refresh some description.

## Issue 13 (2023-01-16)

This is the thirteenth release.

Refresh some description.

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This issue is the twelfth official release.

Added section "Replacing a Power Module (for OceanStor 5300 V5)."

Optimized descriptions in section "Replacing a Power Module (for OceanStor 5500 V5, 5500F V5, 5600 V5, 5600F V5, 5800 V5, or 5800F V5)."

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Optimized descriptions in section "Replacing a Power Module (for a Smart Disk Enclosure)."

## Issue 11 (2021-10-30)

This issue is the eleventh official release.

Optimized description of some sections.

## Issue 10 (2021-09-15)

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Added the description of OceanStor 2200 V5.

## Issue 09 (2021-06-30)

This issue is the ninth official release.

Added chapter "Parts Replacement/Removal Description".

## Issue 08 (2021-01-30)

This issue is the fifth official release.

Optimized description of some sections.

## Issue 07 (2020-11-30)

This issue is the seventh official release.

- Added the description of OceanStor 2600 V5.
- Added the description of controller enclosures of OceanStor 5300 V5 (NVMe) and OceanStor 5300F V5 (NVMe).

## Issue 06 (2020-09-15)

This issue is the sixth official release.

Added chapter "Replacing a Data Switch".

## Issue 05 (2020-07-15)

This issue is the fifth official release.

Added the operation guide for replacing high-density disk enclosure components.

## Issue 04 (2020-04-10)

This issue is the fourth official release.

Optimized description of some sections.

## Issue 03 (2019-12-30)

This issue is the third official release.

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Added chapter "Before You Start".

## Issue 02 (2019-10-30)

This issue is the second official release.

Added OceanStor 6800 V5, 6800F V5, 18500 V5, 18500F V5, 18800 V5, and 18800F V5 to product models.

## Issue 01 (2019-07-30)

This issue is the first official release.

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# 1 Before You Start

Before using this document, read this chapter carefully to ensure that the document is applicable to your storage device. This document applies to V500R007 Kunpeng, not V500R007. You can check whether the storage device version is V500R007 Kunpeng by observing the rear view of a controller enclosure or querying the version on DeviceManager or the CLI.

- If yes, use this document.
- If no, use the *OceanStor 5000, 5000F, 6000, and 6000F Series V500R007 Parts Replacement* or *OceanStor 18000 and 18000F Series V500R007 Parts Replacement* base on your product model.

For details about how to check the device version, see **Checking the Device Version from the Rear View of a Controller Enclosure**, **Checking the Device Version on DeviceManager**, and **Checking the Device Version on the CLI**.

## Checking the Device Version from the Rear View of a Controller Enclosure

If the slot layout in the rear view of a controller enclosure is shown as **Figure 1-1**, **Figure 1-2**, **Figure 1-3**, **Figure 1-4**, or **Figure 1-5**, the device version is V500R007 Kunpeng.

**Figure 1-1** Rear view of a controller enclosure

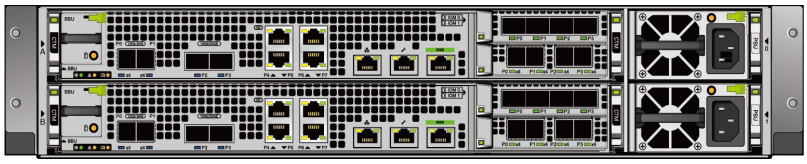
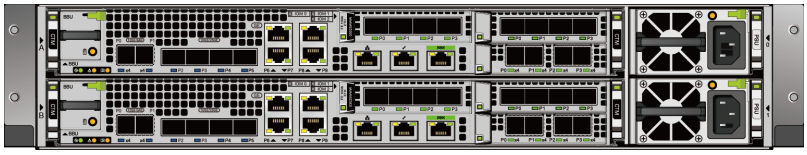


**Figure 1-2** Rear view of a controller enclosure



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**Figure 1-3** Rear view of a controller enclosure

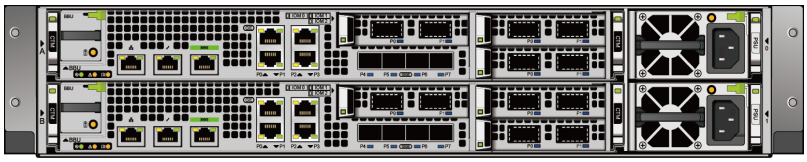


**Figure 1-4** Rear view of a controller enclosure

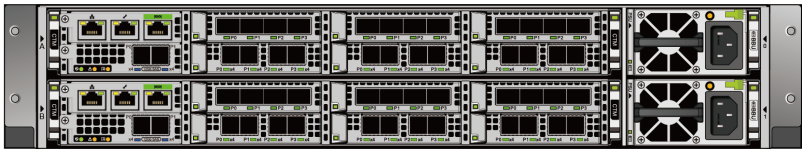
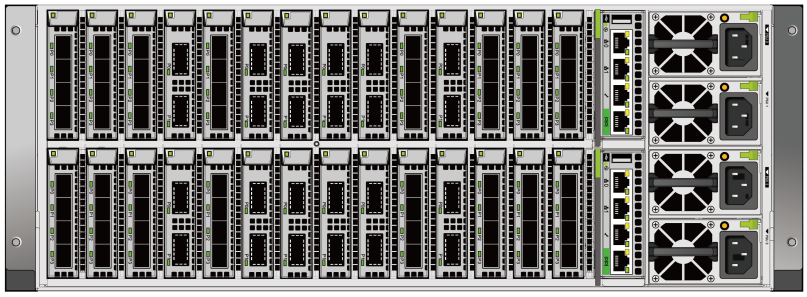


**Figure 1-5** Rear view of a controller enclosure



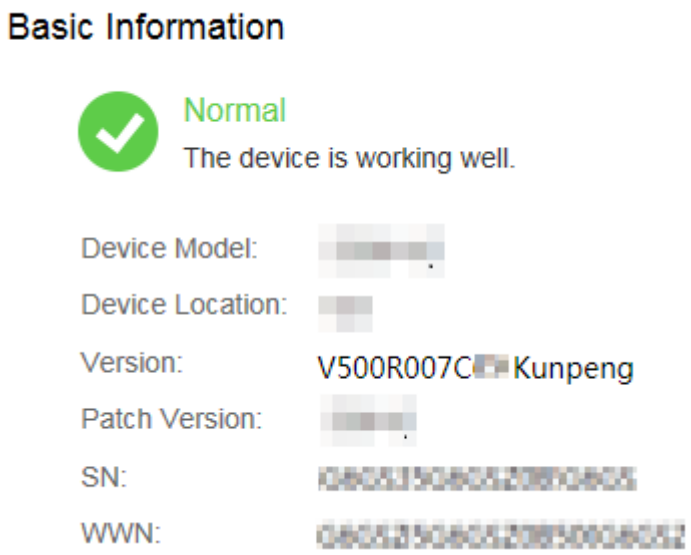
## Checking the Device Version on DeviceManager

Log in to DeviceManager. In the navigation tree of DeviceManager, click **Home**. In the **Basic Information** area of the function pane, check whether **Version** is **V500R007C*XX* Kunpeng**, as shown in **Figure 1-6**.

- If **Version** is **V500R007C*XX* Kunpeng**, the device version is V500R007 Kunpeng.
- If **Version** is **V500R007C*XX***, the device version is V500R007.

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**Figure 1-6** Basic information about the storage device




NOTE

For details about how to log in to DeviceManager, see section "Logging In to DeviceManager" in the installation guide of the corresponding product model.

## Checking the Device Version on the CLI

Log in to the command-line interface (CLI) of a storage device and check **Product Version**.

- If **Product Version** is **V500R007C*XX* Kunpeng**, the device version is V500R007 Kunpeng.
- If **Product Version** is **V500R007C*XX***, the device version is V500R007.

```
System Name     : Huawei.Storage
Health Status   : Normal
Running Status  : Normal
Total Capacity  : XXXXX
SN              : XXXXXXXXXXXXXXXXXXXXXXXXX
Location        :
Product Model   : XXXXX
Product Version : V500R007CXX Kunpeng
Time            : XXXX-XX-XX/XX:XX:XX UTC+XX:XX
Patch Version   : XXXXX
```

NOTE

For details about how to log in to the CLI, see section "Logging In to the CLI" in the installation guide of the corresponding product model.


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# 2 Parts Replacement/Removal Description

- The storage system supports the independent replacement of disks (non-system disks), controllers, interface modules, power modules, system subracks, and BBUs.
- The storage system does not support the independent replacement of memory, system disks, and button cells, but it does support the independent removal of memory, system disks, and button cells. The storage system does not support the independent replacement or removal of CPUs. You can only replace CPUs, memory, system disks, and button cells by replacing the controllers where the CPUs, memory, system disks, and button cells reside.

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# 3 Safety Operation Guide

This chapter provides guidelines for safety operations during activities such as installation, maintenance, and troubleshooting. The guidelines consist of safety regulations for both personnel and equipment. You must follow these guidelines to avoid personal injury and equipment damage.

3.1 Alarm and Safety Symbols

3.2 Safety Precautions for ESD Protection

3.3 Safety Precautions for Laser Protection

3.4 Safety Precautions for Using Fibers

3.5 Safety Precautions for Using Power Cables (Applicable to Japan)

3.6 Safety Precautions for Short Circuit Protection

3.7 Safety Precautions for Operating Equipment

3.8 Safety Precautions for Condensation Prevention

## 3.1 Alarm and Safety Symbols

When installing or maintaining equipment, follow the precautions indicated by alarm and safety symbols to prevent personal injury and equipment damage.

**Table 3-1** lists the alarm and safety symbols labeled on equipment.

**Table 3-1** Alarm and safety symbols labeled on equipment

| Symbol | Description |
| --- | --- |
|  | ESD Protection Symbol<br>Indicates that you must wear an electrostatic discharge (ESD) wrist strap or glove to avoid personal injury and equipment damage caused by electrostatic discharge. |

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| Symbol | Description |
| --- | --- |
|  | Cabinet Grounding Symbol<br>Indicates the position of a grounding point. |
|  | Disk Swap and Install Warning Symbol<br>Indicates that you should be cautious when you swap, install, or pull out a disk. |

# 3.2 Safety Precautions for ESD Protection

When installing or maintaining the equipment, follow the ESD safety precautions to prevent personal injury and equipment damage.

 indicates an electrostatic sensitive area. To prevent personal injury and equipment damage when operating equipment in this area, wear an ESD wrist strap, ESD clothing, or ESD gloves. Note the following:

- Do not wear an ESD wrist strap when powering on the equipment to prevent an electric shock.
- Do not touch devices with bare hands to prevent damage to the electrostatic sensitive devices (ESSDs) on the circuit boards.
- The electronic line is prone to electrostatic damage. Wear an ESD wrist strap, ESD gloves, and ESD clothing when handling disks, especially bare disks. Hold a disk by its edge.
- Since an ESD wrist strap only prevents static electricity from the body, the ESD clothing is required to prevent static electricity from clothes.
- Before installing or replacing devices, wear an ESD wrist strap, ESD gloves, and ESD clothing to protect you and the equipment from static electricity.
- Use special ESD bags to carry or transport device components.

# 3.3 Safety Precautions for Laser Protection

When installing or maintaining equipment, follow the laser safety precautions to ensure the safety of personnel and equipment.

Laser safety risks include:

- Personal injury
- Equipment damage


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### Personal Injury

**DANGER**

The laser emitted by an optical module is an invisible infrared ray, which may cause permanent eye injury. Do not look into the optical module during device maintenance.

### Equipment Damage

To prevent equipment damage when you handle the equipment, follow these precautions:

- When not in use, the optical interfaces on the equipment and fiber connectors on fiber jumpers must be covered with dust-proof caps.
- After removing a fiber jumper that connects to an optical interface on the equipment, cover the optical interface and the fiber jumper connector with dust-proof caps.
- When performing a hardware loopback test by connecting a fiber jumper to an optical interface, add an attenuator to prevent the risk of damage to the optical module caused by excessively strong optical power.
- When using the Optical Time Domain Reflectometer (OTDR), disconnect the fiber jumper between the peer equipment and the local equipment to avoid damage to the optical module caused by excessively strong optical power.
- Unless necessary, do not remove or insert the modules connecting to fibers.

## 3.4 Safety Precautions for Using Fibers

Use fibers in a safe and correct manner to ensure proper operation of the equipment and prevent personal injury and equipment damage.

**DANGER**

The laser beam on an optical interface board or from a fiber may cause eye injury. Do not look into optical interfaces or fiber connectors during installation and maintenance.

### Cleaning Fiber Connectors and Optical Interfaces

Use special cleaning tools and materials to clean fiber connectors and optical interfaces. Common tools and materials are as follows:

- Special cleaning solvent (Isoamylol is preferred, propyl alcohol is the next option, however ethanol and formalin are forbidden.)
- Non-woven lens tissue
- Dedicated compressed gas


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- Cotton stick (medical or long fiber cotton)
- Special cleaning roll (used with the preceding special cleaning solvent)
- Magnifier for optical connectors

### Replacing Fibers

Use dust-proof caps to cap the connectors of the fibers that are not in use.

## 3.5 Safety Precautions for Using Power Cables (Applicable to Japan)

Using power cables safely and correctly can prevent personal injury and ensure proper device running.

- 機器と人体の安全を確保するため、必ず製品に付属されている電源ケーブルを使用してください。
- 製品付属の電源ケーブルを他の機器で使用することはできません。

## 3.6 Safety Precautions for Short Circuit Protection

When installing or maintaining equipment, follow the regulations on operating tools to avoid short circuits.

**NOTICE**

- Do not place tools on air intake boards of cabinets. Otherwise, a short circuit may occur.
- Do not drop screws into a cabinet or the equipment. Otherwise, a short circuit may occur.

## 3.7 Safety Precautions for Operating Equipment

When installing and maintaining devices, follow the electrical safety precautions to prevent personal injury and equipment damage.

### Power-on and Power-off

**DANGER**

- Before checking device installation and cable connections, ensure that the system power supply is switched off. Otherwise, incorrect or loose cable connections may result in personal injury or equipment damage.
- Do not wear an ESD wrist strap when powering on the equipment to prevent an electric shock.


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- Do not remove or insert cables and field replaceable units (FRUs) during a system startup. Otherwise, data loss may occur.
- After you switch off the power supply, wait at least one minute before switching it back on.
- To avoid disk damage and data loss, do not switch the power supply off while any disk running indicators are still blinking.

### Troubleshooting

**DANGER**

- Do not touch the connectors of power cables or communication cables. Otherwise, an electric shock may occur.
- Do not touch devices with bare hands in electrostatic sensitive areas. Wear an ESD wrist strap, ESD gloves, or ESD clothing to prevent personal injury and equipment damage.

When you perform troubleshooting, follow these precautions:

- Do not perform troubleshooting during a thunderstorm.
- Ensure that power cables are intact and the grounding measures are safe and effective.
- Keep the troubleshooting area clean and dry.

## 3.8 Safety Precautions for Condensation Prevention

Before installing the equipment, ensure that no condensation is on the equipment. Otherwise, the equipment may fail to be powered on.

If the indoor and outdoor temperature difference is 15°C or more, wait eight hours after moving devices to the equipment room and before installing them.

**NOTE**

If the temperature difference cannot be determined, wait one night after moving devices to the equipment room and then install them.


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# 4 Preparations Before Parts Replacement

This chapter describes preparations required before parts replacement, including requirements for maintenance personnel as well as tools and instruments that need to be prepared.

4.1 Requirements for Maintenance Personnel

4.2 Tools and Instruments

4.3 IDs of Spare Parts

## 4.1 Requirements for Maintenance Personnel

This section describes the professional techniques and knowledge, basic operations, test instruments, as well as networking and device information that maintenance personnel must master.

### Professional Techniques and Knowledge

The maintenance personnel must have an understanding of:

- Storage technologies such as redundant array of independent disks (RAID), network attached storage (NAS), direct attached storage (DAS), and storage area network (SAN)
- Ethernet technologies
- TCP and IP protocols
- Components of storage devices at the deployment site

### Basic Operations

The maintenance personnel must know how to operate:

- Storage devices
- Various application servers
- Data transfer devices, such as routers

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### Test Instruments

The maintenance personnel must know how to use:

- Optical power meter
- Network cable tester
- Multimeter

### Networking Information

The maintenance personnel must know:

- Common networks of storage systems
- Networks at maintenance sites
- Device running status at maintenance sites

### Device Information

The maintenance personnel must collect and save:

- Alarms of devices
- Logs of devices
- Preventive maintenance information

## 4.2 Tools and Instruments

This section describes tools and instruments required for parts replacement.

Table 4-1 lists the tools and instruments required for parts replacement.

**Table 4-1** Tools and instruments required for parts replacement

| Tool and Instrument | Used To |
| --- | --- |
| Optical power meter | Measure optical power. |
| Optical fiber jumper | Replace faulty fiber jumpers. |
| Fiber binding straps | Bind faulty fiber jumpers. |
| Network cable | Replace faulty network cables. |
| Network cable tester | Test the connection of network cables. |
| Multimeter | Test electrical parameters. |
| ESD wrist strap | Protect ESSDs from the static electricity of users. |
| ESD bag | Protect ESSDs from static electricity. |
| ESD gloves | Protect ESSDs from the static electricity of users. |


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| Tool and Instrument | Used To |
| --- | --- |
| ESD clothes | Protect ESSDs from the static electricity of users. |
| Phillips screwdriver | Loosen or tighten screws on devices. |
| Labels | Mark devices or cables. |
| Diagonal pliers | Remove binding straps or cable ties. |

# 4.3 IDs of Spare Parts

Before replacing a component, verify that the spare part of the component is correct.

1. On the alarm page of DeviceManager, view details to obtain the spare part ID of the component to be replaced. Alternatively, you can obtain the spare part ID by viewing the paper label on the component to be replaced.

   NOTE

   On the paper label of a component, the entire code starts with 21 and the spare part ID ranges from the third character to tenth character of the entire code. For example, if the code on the paper label is 210235G75BZ0D3000027, the spare part ID is 0235G75B.

2. Use the Spare Parts Query tool (**https://info.support.huawei.com/storage/spareparts/#/home**) to query the IDs of the spare parts that can be used to replace the component. On the **By BOM Number** tab page, type the ID of the faulty component to search for the spare parts that can be used for replacement.


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# 5 Distinguishing CRUs and FRUs

This chapter describes how to distinguish customer replaceable units (CRUs) and field replaceable units (FRUs).

## CRUs

CRUs are components that customers can replace at the deployment site by referring to the operation guides of CRUs.

Operators: customers

**NOTICE**

Customers are allowed to replace CRUs, but are prohibited from replacing other components, due to the risk of personal injury and device damage.

## FRUs

FRUs are components that engineers can replace at the deployment site by referring to the operation guides of FRUs.

Operators: Huawei technical support engineers and maintenance engineers as well as technical support engineers and maintenance engineers certified by Huawei

**NOTICE**

To effectively check software and hardware status and ensure the successful replacement of an FRU, use the FRU replacement tool of OceanStor SmartKit to guide you through the replacement.

## CRU and FRU List

**NOTE**

All components of OceanStor 18500 V5, 18800 V5, 18500F V5, and 18800F V5 storage systems are FRUs.

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For models other than OceanStor 18000 V5 Kunpeng/18000F V5 Kunpeng, CRU/FRU attributes vary by component. **Table 5-1** lists CRUs and FRUs.

**Table 5-1** CRUs and FRUs

| CRU | FRU |
| --- | --- |
| Fan module (4 U controller enclosure and 4 U SAS disk enclosure used by 6800 V5 and 6800F V5 storage systems)[a] | Fan module |
| BBU | BBU[b] |
| Power module | System subrack |
| Disk module | Controller |
| Expansion module | Cable |
| Optical module | Interface module |
| Electrical module | Assistant cooling unit |
| - | Management module |
| - | Quorum server |
| a: Only fan modules of 4 U controller enclosures and 4 U SAS disk enclosures used by OceanStor 6800 V5 and 6800F V5 storage systems are CRUs. Fan modules of other enclosures are FRUs.<br>b: BBU modules of OceanStor 2200 V5 are FRUs, and BBU modules of other models are CRUs. | |

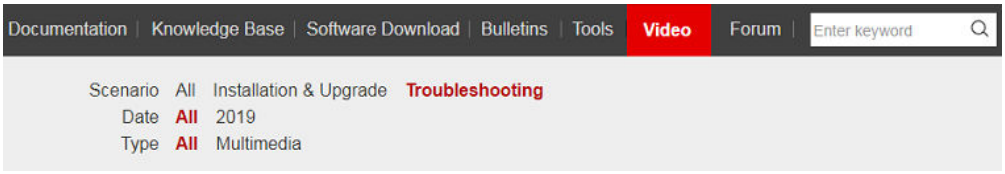
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# 6 How to Access Parts Replacement Multimedia

Parts replacement multimedia provides a dynamic display of the parts replacement procedure. You can access the multimedia as follows:

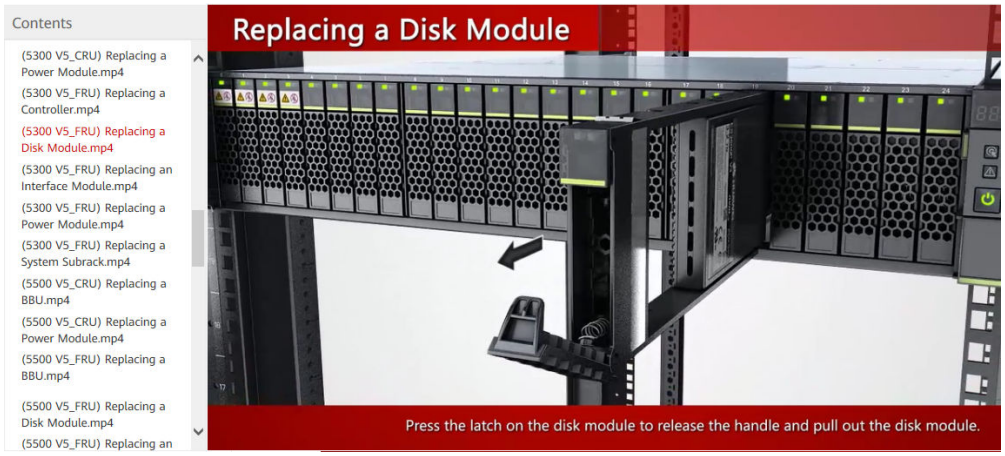
1. Log in to **https://support.huawei.com/enterprise/**.
2. In the **PRODUCT SUPPORT** area, choose **Data Storage** > **Flash Storage**.
3. Select a desired product model.
4. Click the **Video** tab and select **Troubleshooting** for **Scenario**, as shown in **Figure 6-1**.

**Figure 6-1** Selecting Troubleshooting




5. In **Contents**, select the video you want to watch, as shown in **Figure 6-2**.

**Figure 6-2** Selecting a video




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# 7 Replacing CRUs

This chapter describes how to replace CRUs.

NOTE

You can refer to the parts replacement multimedia for a dynamic view of the replacement procedure. For details, see **6 How to Access Parts Replacement Multimedia**.

7.1 Installing and Using SmartKit

7.2 Replacing a Power Module

7.3 Replacing a BBU

7.4 Replacing a Fan Module

7.5 Replacing a Disk Module

7.6 Replacing an Expansion Module

7.7 Replacing an Optical Module

7.8 Replacing an Electrical Module

## 7.1 Installing and Using SmartKit

SmartKit (formerly named Toolkit) is a serviceability tool developed by Huawei. It helps technical service engineers and maintenance engineers manage and maintain devices.

### 7.1.1 Installing SmartKit

This section describes how to install SmartKit and desired tool packages on your maintenance terminal.

#### Prerequisite

- Requirements for software installation environments

  Being installed on external maintenance terminals, SmartKit has the following requirements for software installation environments, as listed in **Table 7-1**.

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**Table 7-1** Requirements for software installation environments

| Configuration Item | Requirement | Description |
| --- | --- | --- |
| Supported operating systems | • Windows XP 32-bit<br>• Windows 7 32-bit<br>• Windows Server 2003 32-bit<br>• Windows Server 2008 32-bit<br>• Windows 7 64-bit<br>• Windows Server 2003 64-bit<br>• Windows Server 2008 64-bit<br>• Windows Server 2012 64-bit<br>• Windows Server 2016 64-bit<br>• Windows 10 64-bit | The following tools that use private protocols do not support 64-bit operating systems:<br>• Default Management IP Address Modification Tool<br>• Unified Storage Deployment<br>You are advised not to use Windows Server 2003 if the DHCP protocol deployment tool is used.<br>Microsoft officially ceased its support for Windows Server 2003 operating system from July 14, 2015. Meanwhile, Windows Server 2003 is not compatible with JRE 1.7.0.80. Therefore, this operating system is not recommended. |
| Recommended Java runtime environment (JRE) version | JRE 1.7.0.80 32-bit | The software package contains the JRE.<br>Run the OceanStor SmartKit on 32-bit and 64-bit operating systems using 32-bit JRE.<br>Some of the earlier operating system versions do not support JRE 1.7.0.80. Upgrade your operating system to the latest version before using it. |
| CPU | Dual-core 2.4 GHz or higher | If SmartKit is installed on a VM, the CPU of the VM must be at least 2.4 GHz. |
| Memory | 400 MB or more free memory | If SmartKit is installed on a VM, the memory of the VM must be at least 400 MB. |

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| Configuration Item | Requirement | Description |
| --- | --- | --- |
| Disk space | Larger than 2 GB for the remaining space of the disk on which the OceanStor SmartKit resides | - |
| Screen resolution | 1024 x 768 or above | - |
| Supported browsers | Internet Explorer: IE 7, IE 8, IE 9, and IE 10 | Used when you view maintenance reports. |
| Max. number of managed devices | 256 | - |
| Installation requirement | Only support for letters, digits, underscores, and single blank spaces in the installation path | SmartKit needs to use 7z (compression software). The compression software only supports directories containing letters, digits, underscores, and spaces. Therefore, the installation path of SmartKit must contain only letters, digits, underscores, and single blank spaces. |

- Requirements for networks

  The maintenance terminal where SmartKit is installed must be correctly connected to the management network ports of storage systems.

## Procedure

**Step 1** Download SmartKit.

NOTE

If the maintenance terminal cannot access the Internet, you need to use another terminal that can access the Internet to download the **SmartKit installation package**. Then copy the package to the maintenance terminal.

- If you are an enterprise user:
  a. Use the maintenance terminal to log in to **https://support.huawei.com/enterprise** and Choose **Tools** > **SmartKit**.
  b. Select the latest version.
  c. In the **Version and Patch Software** area, select and download the software you need.
- If you are a carrier user:

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a. Use the maintenance terminal to log in to **https://support.huawei.com**. In the search box on the home page, type **SmartKit** and choose the associated SmartKit path from the drop-down list.

b. On the search result page, click the **Software** tab.

c. On the **Software** tab page, click the latest version.

The page for downloading the software is displayed.

d. In the **Software** area, download the software you need.

**Step 2** Install SmartKit.

1. On the maintenance terminal, run the SmartKit installation package and follow the instructions provided by the installation wizard to install SmartKit.

   After the installation is complete, SmartKit will automatically start.

2. Type your support website account as prompted to activate SmartKit and read the safety precautions.

NOTE

- You can apply for an account of the support website at **https://support.huawei.com**.
- You have 180 days to use an account after it is activated. If there are only 45 days or fewer days left, you will be reminded of activating the tool again. If the tool is not activated after 180 days, you only have permissions of a **Visitor**.

**----End**

## 7.1.2 Checking System Status

This section describes how to check system status and ensure that the status of all components you do not intend to replace is normal.

### Procedure

**Step 1** Run SmartKit.

**Step 2** Choose **Home** > **Storage** > **Routine Maintenance** > **Health Check**.

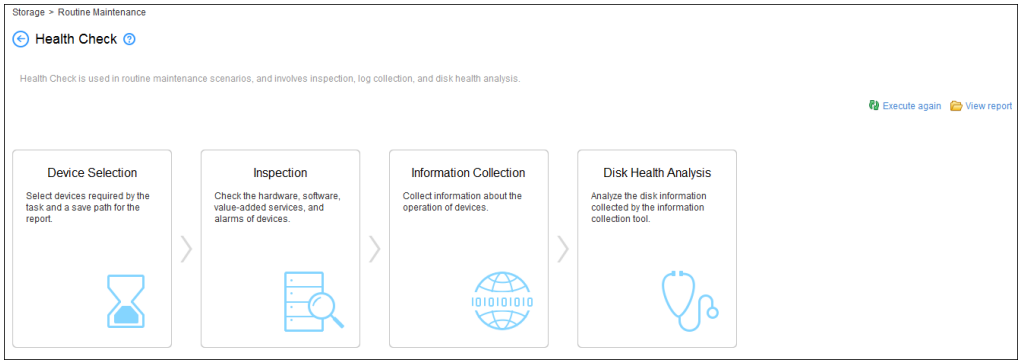
NOTE

- OceanStor SmartKit users are grouped into **Huawei engineers**, **Channel partner engineers**, **Customers**, and **Visitors** based on user permissions. You can log in to the **Inspection** tool using one of the preceding roles.
- **Visitors** users do not have corresponding accounts. When you log in to OceanStor SmartKit, on the tool activation page that is displayed, select **Not activate** and go to the SmartKit GUI. Then you can use the tool as a **Visitor**.
- If you log in to OceanStor SmartKit as a **Visitor**, you have only 15 days for trial use. You cannot use the tool after the trial period expires.
- The following uses **Huawei engineers** as an example.

**Step 3** On the **Health Check** page, perform a health check in the sequence of **Device Selection**, **Inspection**, **Information Collection**, and then **Disk Health Analysis**, as shown in **Figure 7-1**.

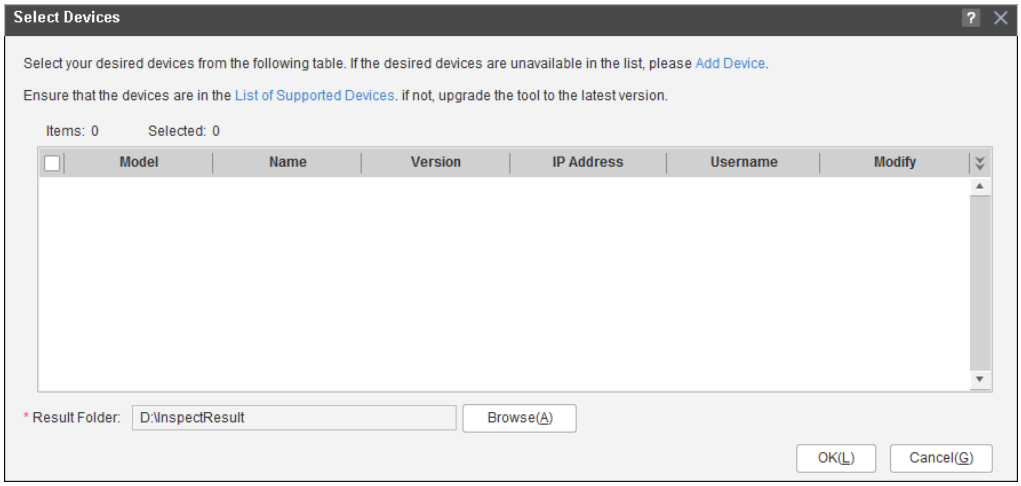
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**Figure 7-1** Health check sequence




**Step 4** Click **Device Selection**. The **Select Devices** page is displayed, as shown in **Figure 7-2**.

**Figure 7-2** Selecting devices

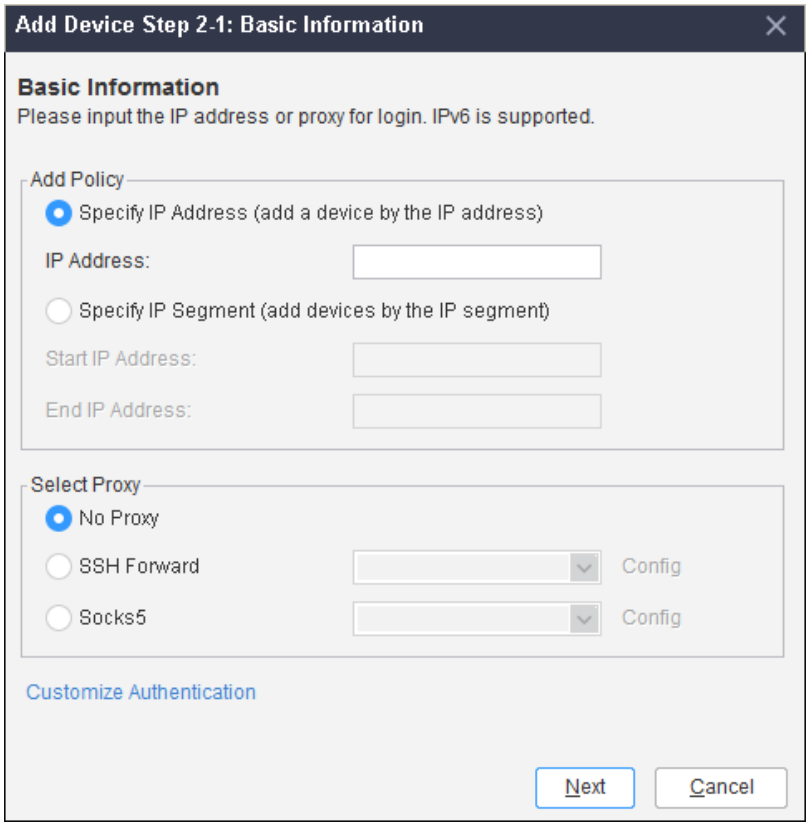



**Step 5** Add devices.

1. Click **Add Device**.
   The **Basic Information** window is displayed, as shown in **Figure 7-3**.

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**Figure 7-3** Add Device Step 2-1: Basic Information

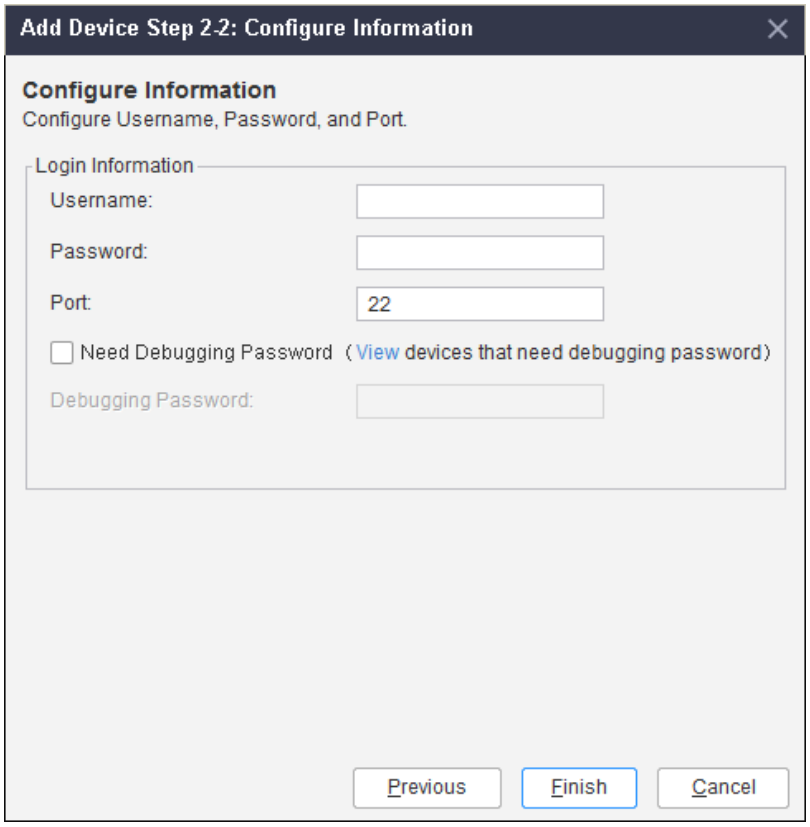



2. Enter basic information, including the IP address and proxy. In the **Add Policy** and **Select Proxy** areas, select **Specify IP Address (add a device by the IP address)** and **No Proxy**, respectively.
3. Click **Next**.

   The **Configure Information** window is displayed, as shown in **Figure 7-4**.

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**Figure 7-4** Add Device Step 2-2: Configure Information




4. Enter configurations, including the user name, password, and port of the device. In the **Login Information** area, enter the **Username**, **Password**, and **Port** of the device to be added. The default value of **Port** is **22**.

   NOTE

   Run the **show system server_port server_name=SSH** command to check whether the SSH port ID is 22. If the port ID is not 22, for storage systems earlier than V500R007C60SPC300, run the **change system server_port server_name=SSH port_num=22** command to change the port ID to 22. For V500R007C60SPC300 and later versions, you do not need to change the SSH port ID to 22.

5. Click **Finish**.

   The newly added device is displayed in the device list.

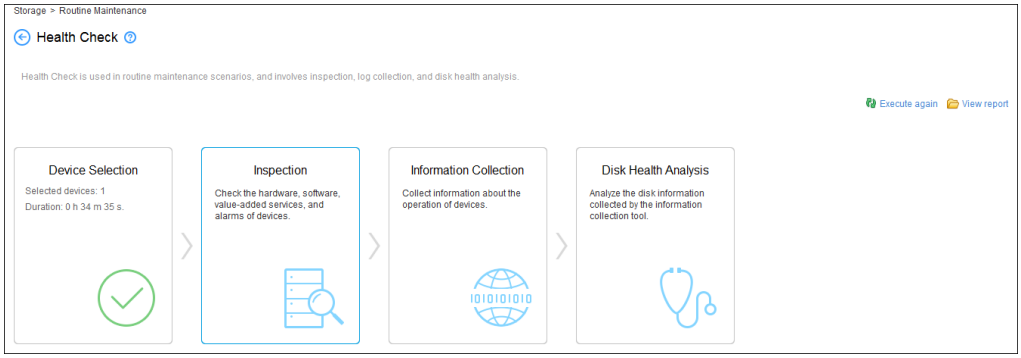
NOTE

- When a device is added for the first time or a device certificate is not trusted, a message is displayed indicating that the connection is not trusted.
- When an SSH server is added for the first time or the fingerprint of an SSH server changes, a message is displayed asking whether you want to continue to register the SSH server.

**Step 6** Select the added device, click **OK**, go back to the **Health Check** page, and click **Inspection**, as shown in **Figure 7-5**.

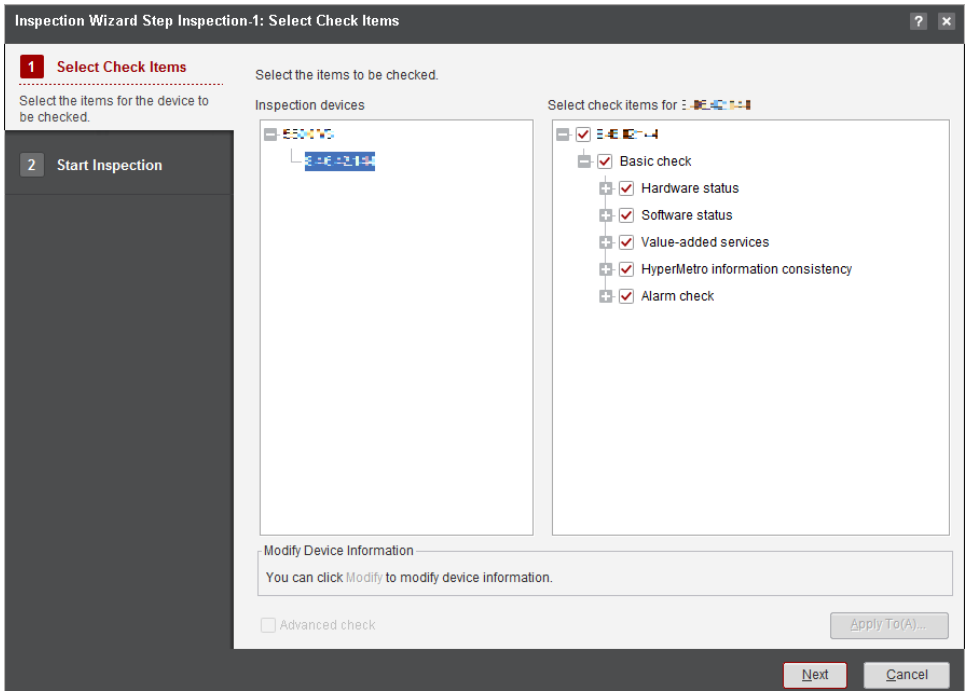
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**Figure 7-5** Inspection




**Step 7** On the **Select Check Items** page, select check items, as shown in **Figure 7-6**. Then click **Next**. (This step uses the non-HyperMetro scenario as an example.)

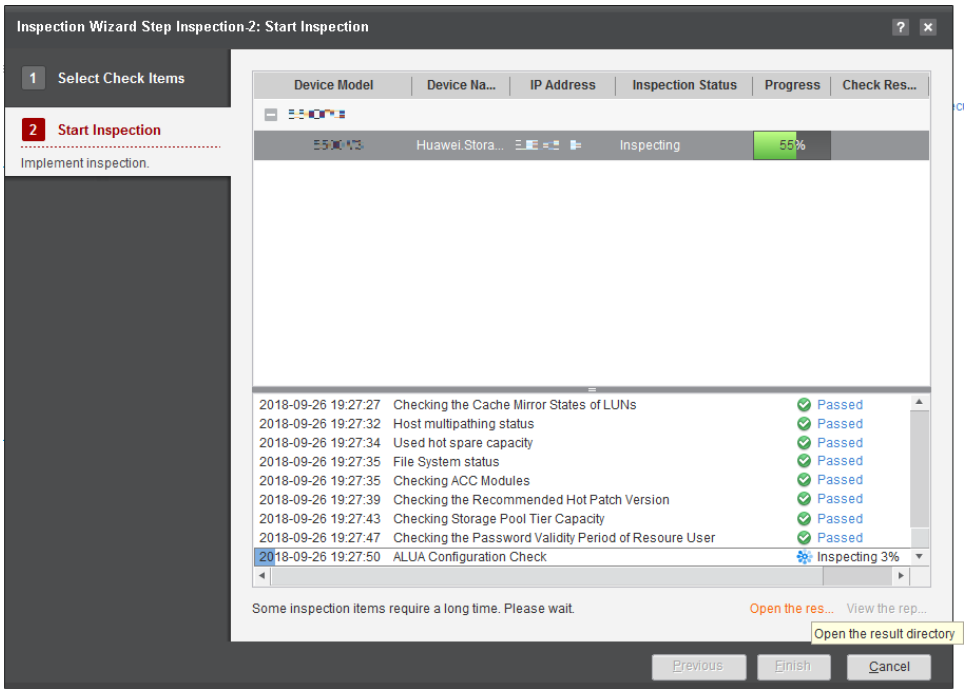
**Figure 7-6** Inspection Wizard Step Inspection-1: Select Check Items




**Step 8** On the **Start Inspection** page, view the inspection progress, as shown in **Figure 7-7**.

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**Figure 7-7** Inspection Wizard Step Inspection-2: Start Inspection




- **Open the result directory**: It links to the path that saves inspection reports. The default path is **My Documents**.
- **View the report:** It links to an **.html** file that contains details about inspection results. The file is also compressed and saved to the path of inspection reports.

**Step 9** When the progress is 100%, click **Finish** and go back to the **Health Check** page, as shown in **Figure 7-8**.

**Figure 7-8** Health check




**Step 10** (Optional) Perform **Information Collection** and **Disk Health Analysis** based on your service requirements. The health check is complete.

**NOTE**

If there are items that fail the inspection, rectify the faults based on the suggestions listed in the inspection result report.

**----End**

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# 7.1.3 Replacing a CRU

This section describes how to use the CRU replacement tool to replace parts.

## Context

CRUs are components that users can replace at the deployment site by referring to the operation guide.

NOTE

This section uses an optical module as an example.

Operators: customers

NOTICE

- Customers are allowed to replace CRUs, but are prohibited from replacing other components to prevent personal injury and device damage.
- Before replacing a CRU, carefully read the instructions on how to use the CRU replacement tool.

You can click the question mark (?) in the upper right corner of the page to obtain the instructions.

## Procedure

**Step 1** (Optional) Download the **CRU Replacement** tool package. If the **CRU Replacement** tool package has been downloaded, go to **Step 2**.

NOTE

- If the maintenance terminal cannot access the Internet, use another terminal that can access the Internet to download **[Tool package] CRU Replacement** and copy it to the maintenance terminal.
- You can also export the function package from another SmartKit environment and copy it to the maintenance terminal. For details, see section "Function Export" in the *SmartKit User Guide*.

- If you are an enterprise user:
  a. Use the maintenance terminal to log in to **https://support.huawei.com/enterprise** and Choose **Tools** > **SmartKit**.
  b. Select the latest version.
  c. In the **Version and Patch Software** area, download the software **[Tool package] CRU Replacement** you need.
- If you are a carrier user:
  a. Use the maintenance terminal to log in to **https://support.huawei.com**. In the search box on the home page, type **SmartKit** and choose the associated SmartKit path from the drop-down list.
  b. On the search result page, click the **Software** tab.
  c. On the **Software** tab page, click the SmartKit version that you want to download. The page for downloading the software is displayed.

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d. In the **Software** area, download the software **[Tool package] CRU Replacement** you need.

**Step 2** Run SmartKit.

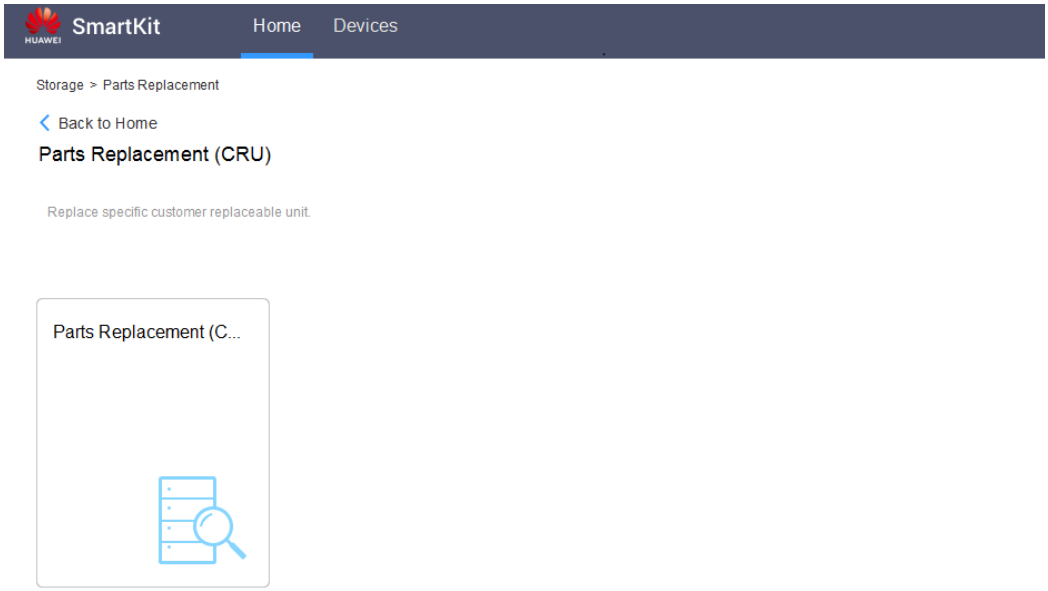
**Step 3** (Optional) Install the **CRU Replacement** tool package. If the **CRU Replacement** tool package has been installed, go to **Step 4**.

1. On the **Home** page of SmartKit, click **Function Management**.
2. In the function pane, click **Import** and select the **CRU Replacement** tool package for import and installation.

NOTE

For details about how to install the **CRU Replacement** tool package in offline mode, see section "Function Export" in the *SmartKit User Guide*.

**Step 4** Return to the SmartKit home page and choose **Storage** > **Parts Replacement** > **More** > **Parts Replacement (CRU)**. The **Parts Replacement (CRU)** page is displayed.

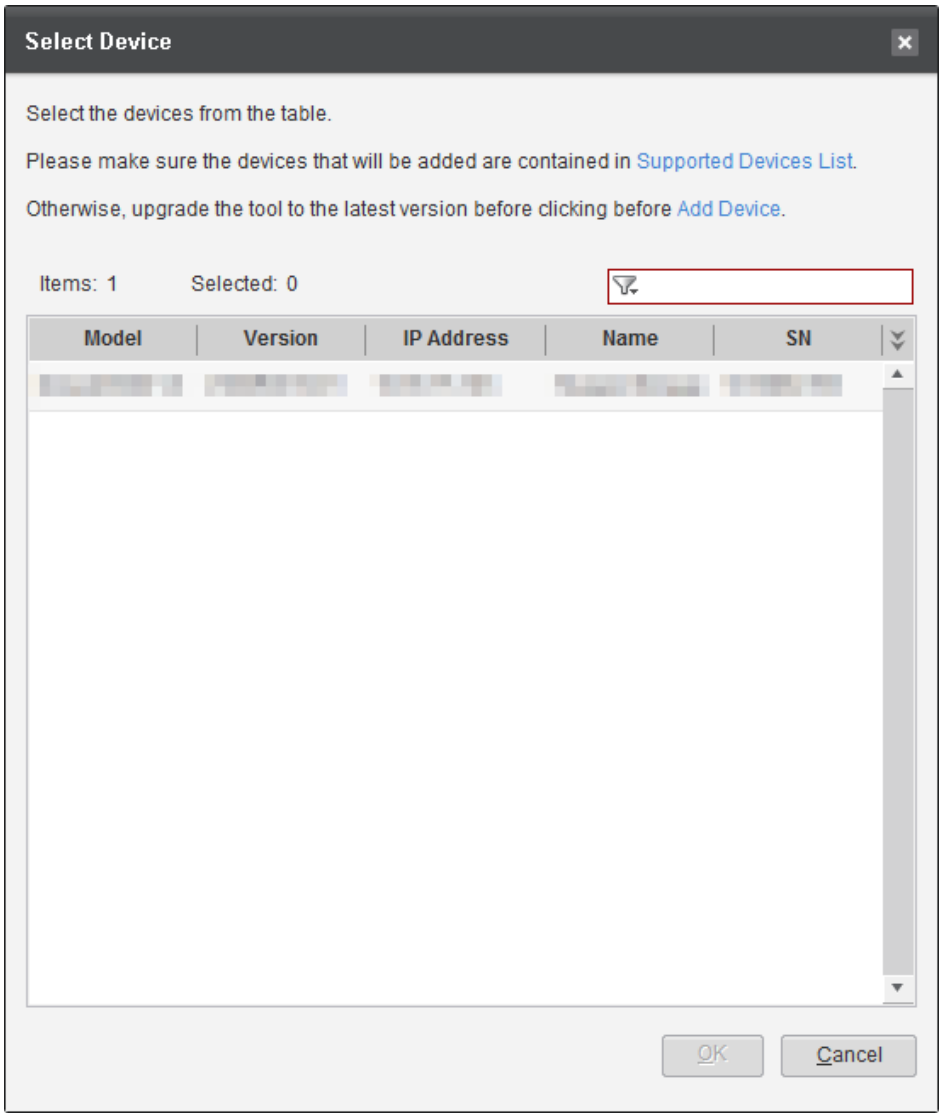



**Step 5** In the function pane, click **Parts Replacement (CRU)**.

The **Select Device** dialog box is displayed.

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**Figure 7-9** Selecting a device




**Step 6** In the device list, select the device of which parts you want to replace and click **OK**.

NOTE

If the device does not exist in the list, click **Add Device**. For details, see **Step 5** in **7.1.2 Checking System Status**.

**Step 7** In the **CRU Replacement** dialog box, select the parts to be replaced. For example, select **Optical Module**.

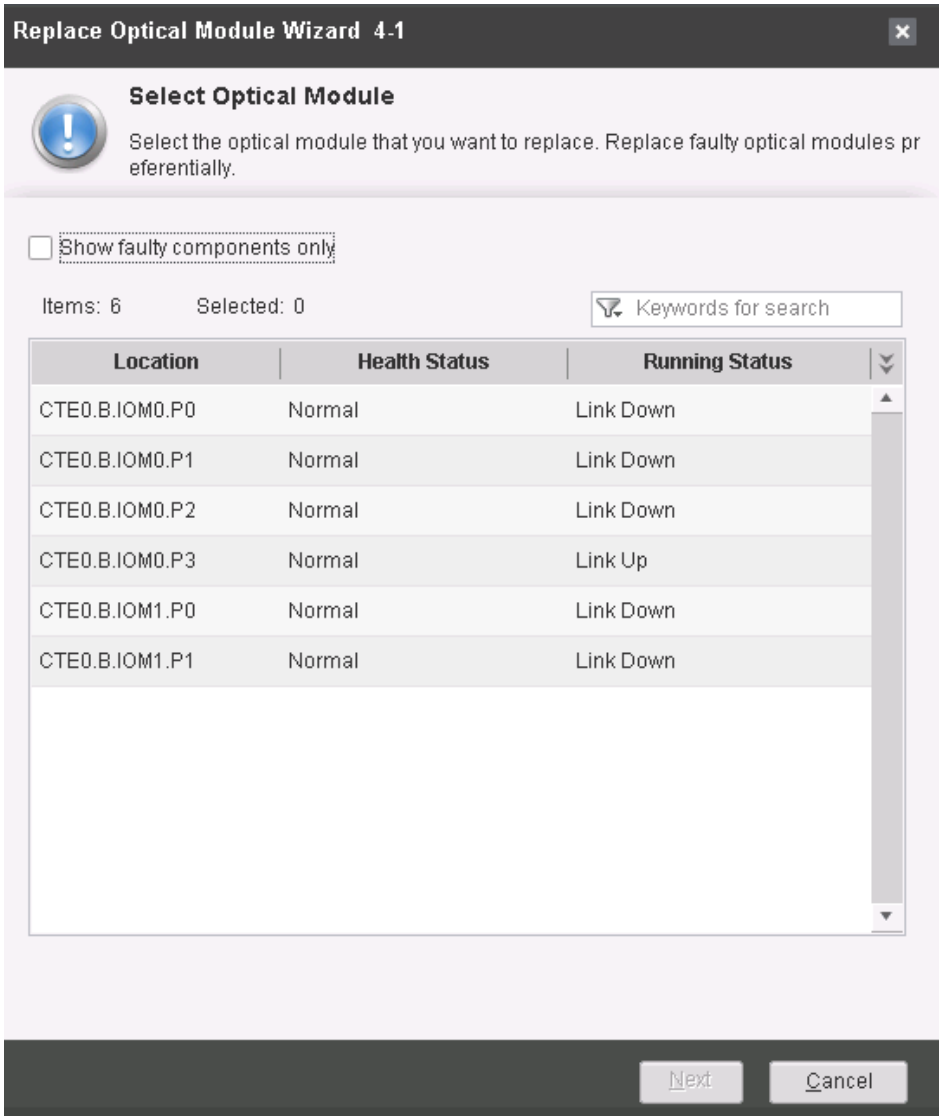
The **Replace Optical Module Wizard** dialog box is displayed.

NOTE

By default, only faulty optical modules are displayed. If you want to view all optical modules, deselect **Show faulty components only**.

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**Figure 7-10** Replace Optical Module Wizard 4-1

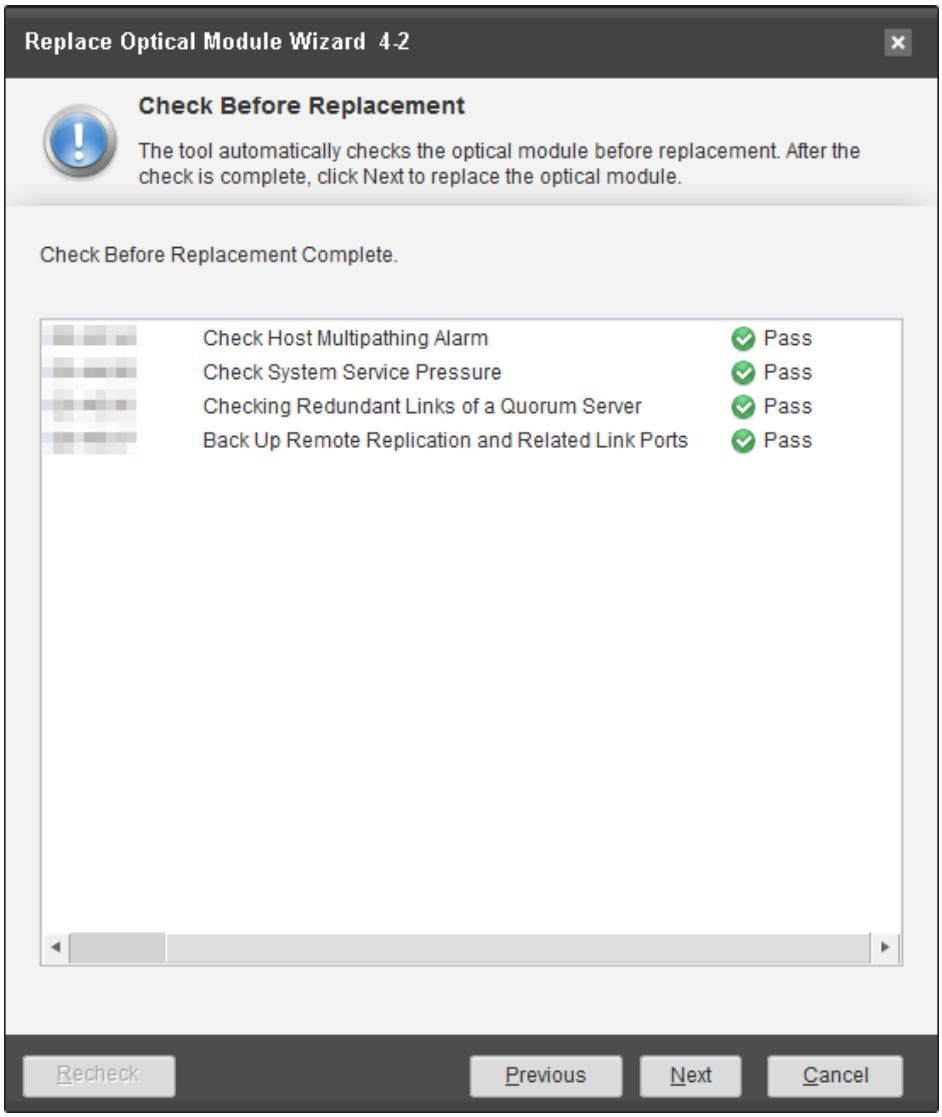



**Step 8** In the optical module list, select the optical module that you want to replace and click **Next**.

In the displayed **Confirm** dialog box, select **I have read and understand the consequences associated with performing this operation**. Then, the system performs the pre-replacement check.

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**Figure 7-11** Replace Optical Module Wizard 4-2




NOTE

If services on the port corresponding to the replaced optical module fail, the **Danger** dialog box is displayed.

- If the risk can be ignored, select **I have read and understand the consequence associated with performing this operation**, click **OK**, and go to **Step 9**.
- If you need to perform the replacement again, click **Cancel** and then confirm that the interface module and the controller corresponding to the optical module are working normally. If the **Danger** dialog box is displayed again, contact Huawei technical support.

**Step 9** Click **Next**.

The optical module replacement page is displayed.

NOTE

You can proceed to the next operation only when all items pass the pre-replacement check.

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**Step 10** Replace the optical module by performing operations in the operation guide.

**Step 11** Click **Replaced**.

The **Warning** dialog box is displayed.

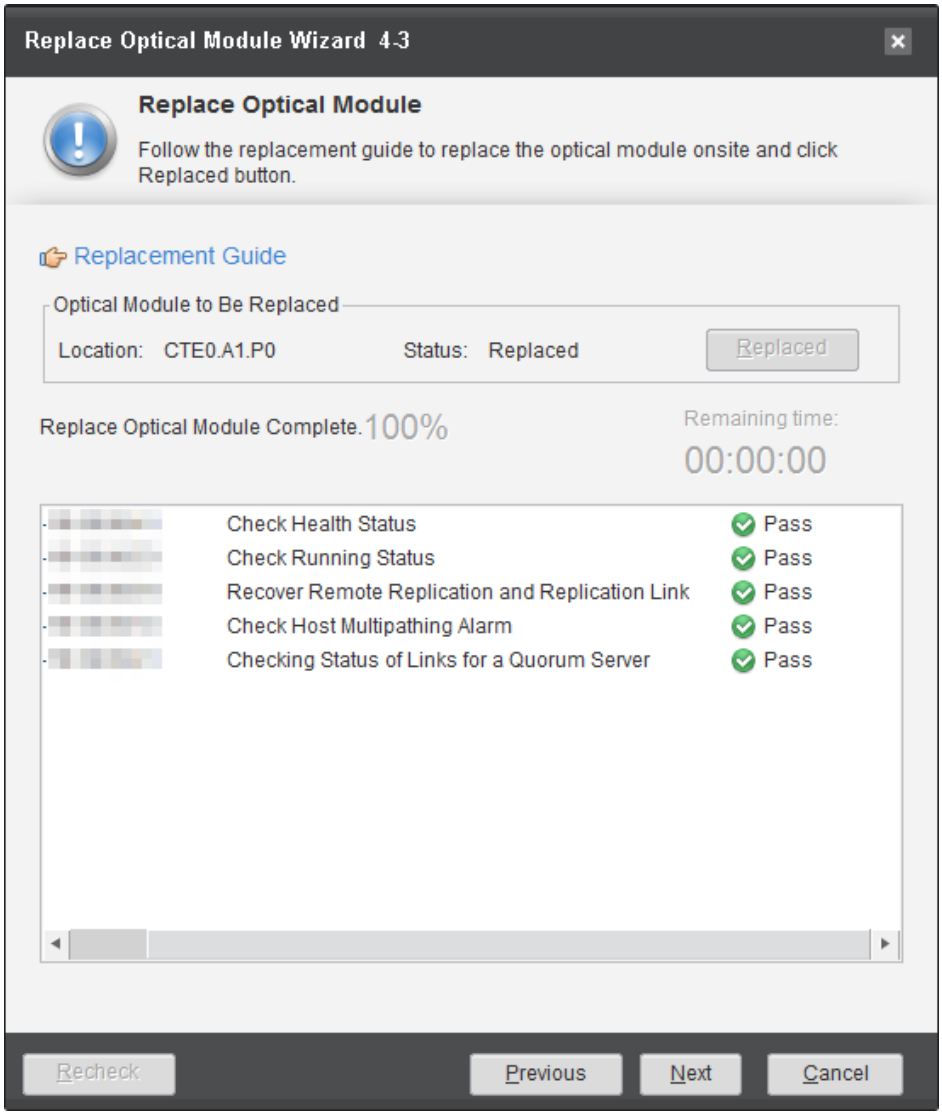
NOTE

Before this operation, you need to manually replace the faulty parts.

**Step 12** Click **OK**.

Check the system after the replacement.

**Figure 7-12** Replace Optical Module Wizard 4-3

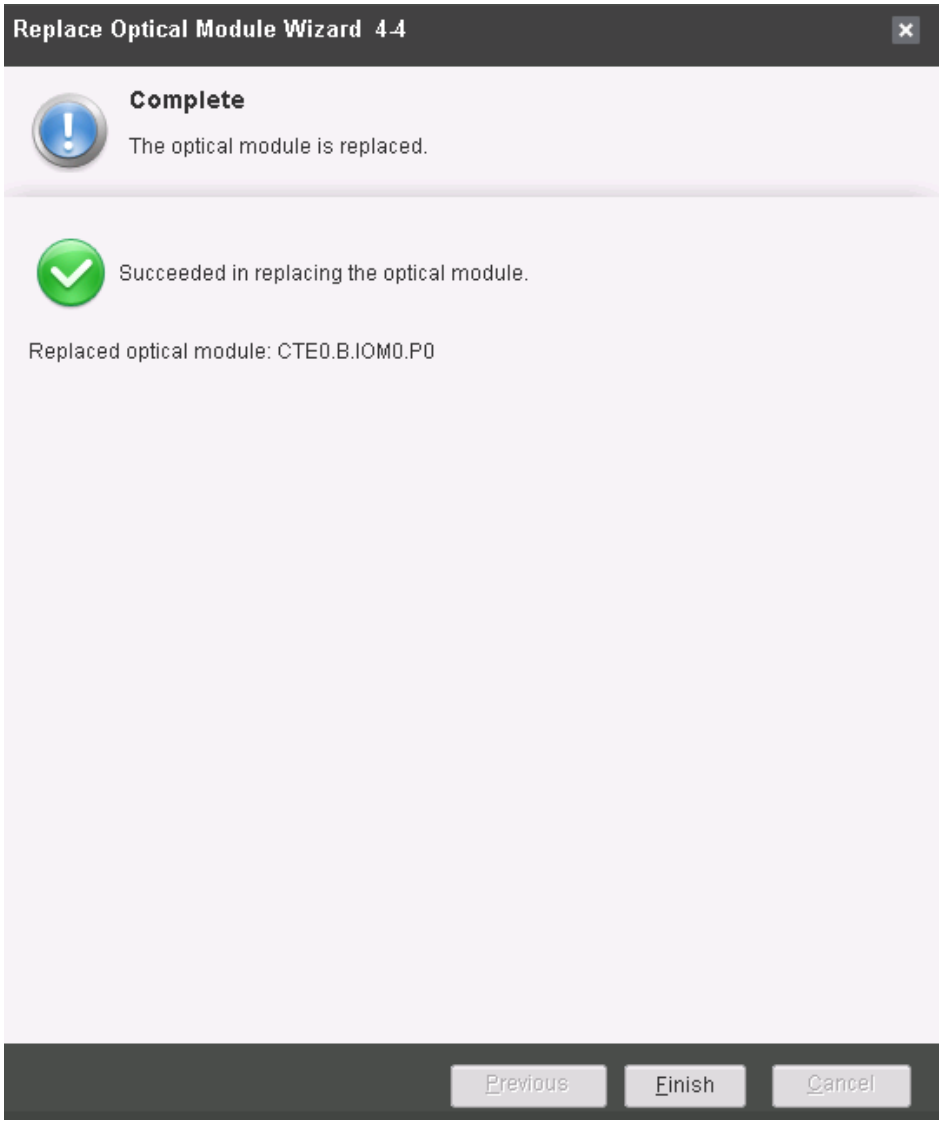



**Step 13** Click **Next**.

The **Complete** page is displayed.

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**Figure 7-13** Replace Optical Module Wizard 4-4




**Step 14** Click **Finish**.

The optical module replacement is complete.

**----End**

# 7.2 Replacing a Power Module

This section describes how to replace a power module.

## 7.2.1 Replacing a Power Module (for OceanStor 2200 V5)

This section describes how to replace a power module.

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NOTE

The procedure for replacing the power module of a 12-slot controller enclosure is the same as that for replacing the power module of a 25-slot controller enclosure. This section describes how to replace the power module of a 12-slot controller enclosure.

## Prerequisites

- The spare part is on hand.
- The power module that you want to replace has been located.

NOTE

You can locate a component in either of the following ways:

- Locating a component based on alarms in DeviceManager: On the **Alarms and Events** page of DeviceManager, view the help information and determine the ID of the component to be replaced. Then locate the component at your site based on its ID.
- Locating a component based on the status of its Alarm indicator: For details about the indicators on different components, see "Indicator Introduction" of each component in the *Product Description* specific to your product model and version.

- Before replacing a power module, ensure that the other power module is working properly.

## Precautions

- Do not touch the connectors of a power module and a power cable.
- Remove and insert a power module with even force. Excessive force may damage the appearance of the power module or cause faults.
- Remove only one power module at a time.
- A power module must be replaced within three minutes. Otherwise, the system heat dissipation is compromised.

## Tools and Materials

- ESD wrist strap
- ESD bag
- Labels
- Phillips screwdriver

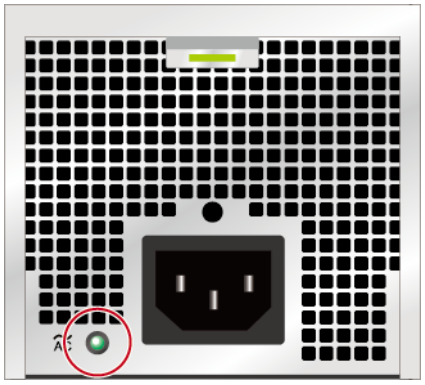
## Procedure

**Step 1** Perform a pre-replacement check.

Check whether there is a redundant power module and whether the Running/Alarm indicator of the redundant power module is steady green, as shown in **Figure 7-14**. For details about the indicators on different components, see "Indicator Introduction" in the *Product Description* of the corresponding model.

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**Figure 7-14** Running/Alarm indicator on a power module



**NOTICE**

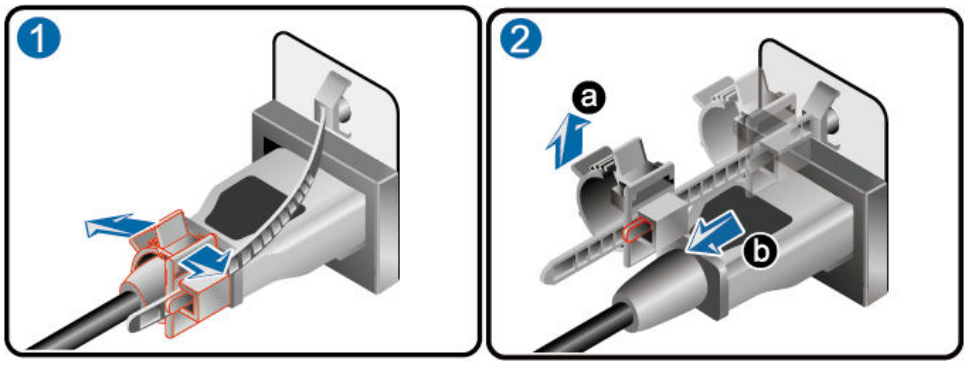
You can perform replacement only when a redundant power module exists and the redundant power module is working properly.

**Step 2** Wear an ESD wrist strap.

**Step 3** Remove the power cable.

1. Loosen the retention clip, as shown in step 1 in **Figure 7-15**.

**Figure 7-15** Removing the AC power cable

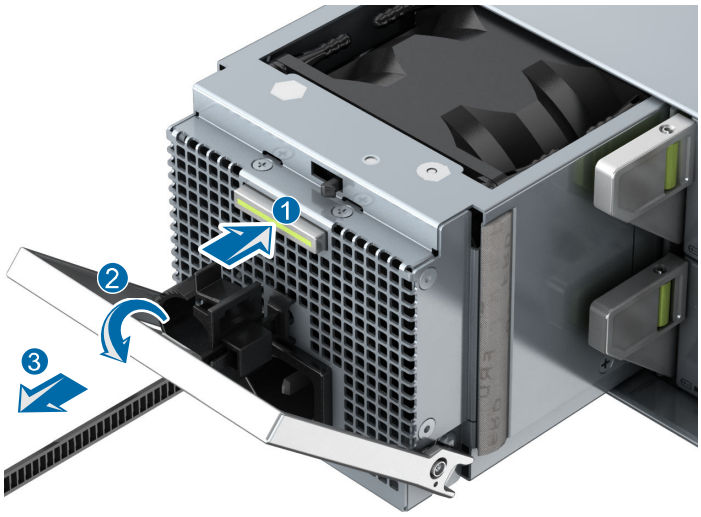



2. Pull up the retention clip, as shown in a of step 2 in **Figure 7-15**.
3. Remove the AC power cable, as shown in b of step 2 in **Figure 7-15**.

**Step 4** Press the latch on the power module to release the handle and pull out the power module, as shown in **Figure 7-16**.

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**Figure 7-16** Removing an AC power module

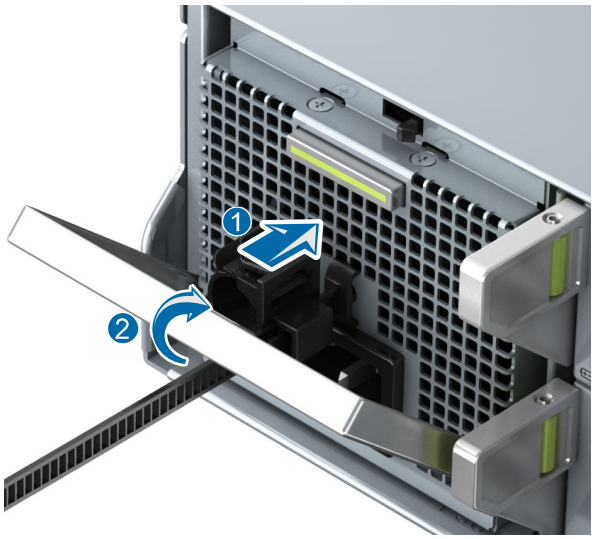



**Step 5** Put the removed power module into an ESD bag.

**Step 6** Take the spare part out of its ESD bag.

**Step 7** Open the handle of the spare part, insert the spare part into the empty slot, and close the handle, as shown in **Figure 7-17**.

**Figure 7-17** Installing the AC power module

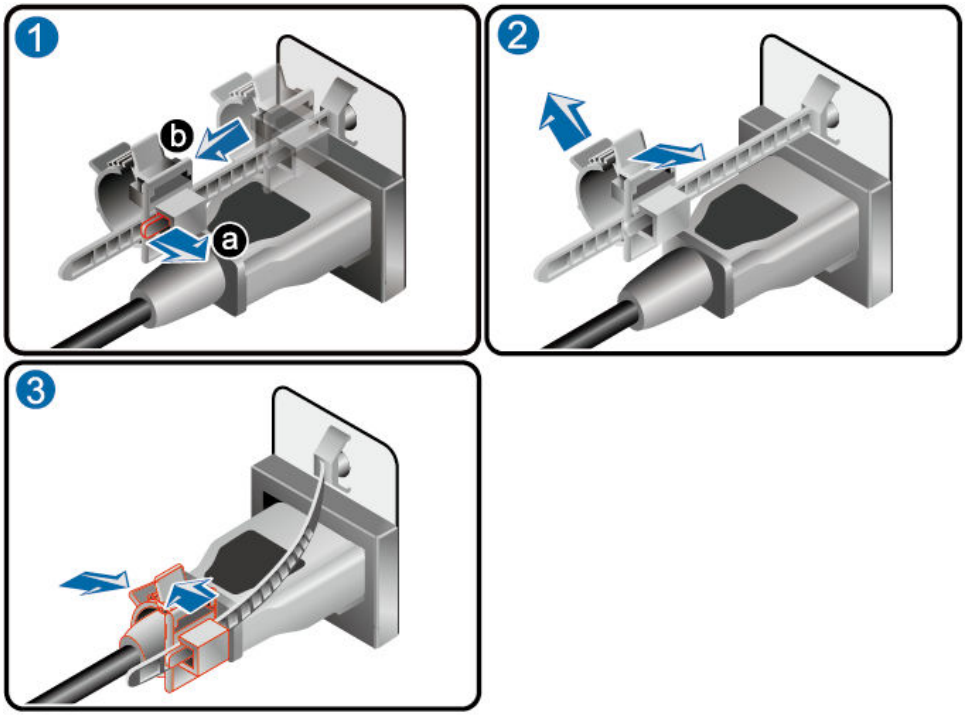



**Step 8** Insert the power cables.

1. Press the locker of the retention clip outwards (as shown in a of step 1 in **Figure 7-18**), and meanwhile slide the retention clip to the connection part of the AC power cable (as shown in b of step 1 in **Figure 7-18**).

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**Figure 7-18** Securing the AC power cables with retention clips




2. Loosen the retention clip, as shown in step 2 in **Figure 7-18**.
3. Press the retention clip inwards to secure the connection part of the AC power cable, as shown in step 3 in **Figure 7-18**.

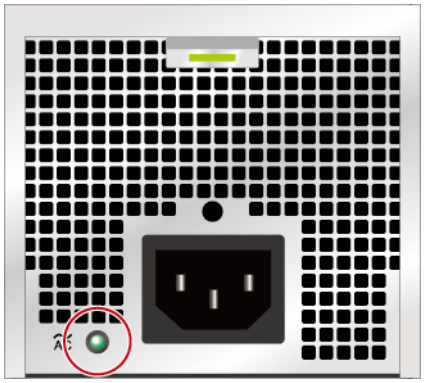
NOTE

Adjust the retention clip to ensure that it holds the AC power cable tightly.

**Step 9** Wait about two minutes and check the status of the Running/Alarm indicator on the power module to determine whether the power module has been successfully installed. **Figure 7-19** shows the location of the Running/Alarm indicator.

- If the indicator is steady green, the power module has been successfully installed.
- If the indicator is blinking green, the power input is normal but the controller enclosure is powered off.
- If the indicator is steady red or off, the newly installed power module is faulty or the power module slot is faulty.

**Figure 7-19** Running/Alarm indicator on a power module



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**Step 10** Confirm the replacement.

After the preceding procedure is complete, check services on the host for storage-related errors. If any storage-related error is reported, contact Huawei technical support.

**----End**

## Follow-up Procedure

After the power module is replaced, label it to facilitate subsequent operations.

# 7.2.2 Replacing a Power Module (for OceanStor 2600 V5 or 5300F V5)

This section describes how to replace a power module. Except that there is a slight difference on removing and inserting power cables between AC and DC power modules, other operations performed for them are the same. This section uses AC power modules as an example.

NOTE

For details about DC power modules supported by each product model, see "Electrical Specifications" in Specifications Query (**https://info.support.huawei.com/storage/spec/#/home**).

## Prerequisites

- The spare part is on hand.
- The power module that you want to replace has been located.

NOTE

You can locate a component in either of the following ways:

- Locating a component based on alarms in DeviceManager: On the **Alarms and Events** page of DeviceManager, view the help information and determine the ID of the component to be replaced. Then locate the component at your site based on its ID.
- Locating a component based on the status of its Running/Alarm indicator: For details about the indicators on different components, see "Indicator Introduction" of each component in the *Product Description* specific to your product model and version.

- Before replacing a power module, ensure that the other power module is working properly.
- Check whether connectors of other power modules are securely inserted. Otherwise, connectors of other power modules may become loose during replacement and may be powered off unexpectedly.

## Precautions

- Do not touch the connectors of a power module and a power cable.
- Remove and insert a power module with even force. Excessive force may damage the appearance of the power module or cause faults.
- Remove only one power module at a time.
- A power module must be replaced within three minutes. Otherwise, the system heat dissipation is compromised.

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## Tools and Materials

- ESD wrist strap
- ESD bag
- Labels
- Phillips screwdriver

## Procedure

**Step 1** Perform a pre-replacement check.

Check whether there is a redundant power module and whether the Running/Alarm indicator of the redundant power module is steady green, as shown in **Figure 7-20** or **Figure 7-21**. For details about the indicators on different components, see "Indicator Introduction" in the *Product Description* of the corresponding model.

**Figure 7-20** Running/Alarm indicator on a power module

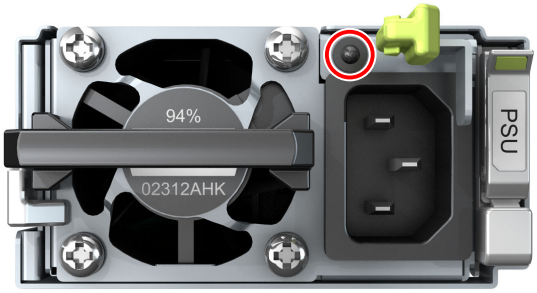
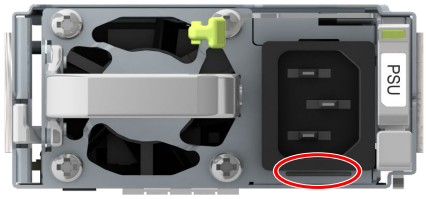



**Figure 7-21** (Optional) Running/Alarm indicator on a power module




**NOTICE**

You can perform replacement only when a redundant power module exists and the redundant power module is working properly.

**Step 2** Wear an ESD wrist strap.

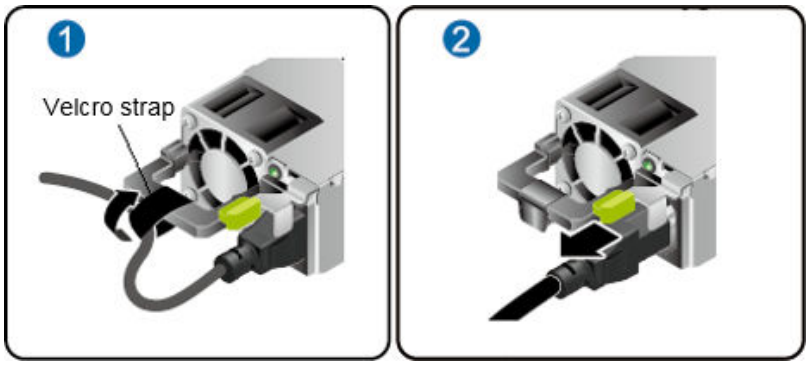
**Step 3** Remove the power cable.

- Remove the AC power cable.

1. Remove the velcro strap that secures the power cable, as shown in step 1 in **Figure 7-22**.

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**Figure 7-22** Removing the AC power cable

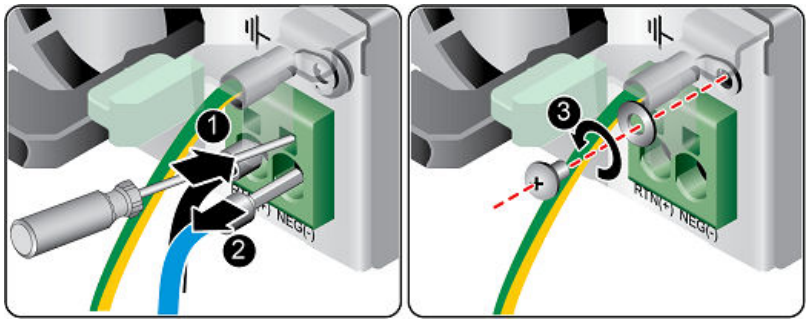



2. Remove the AC power cable, as shown in step 2 in **Figure 7-22**.

- Remove the DC power cable.

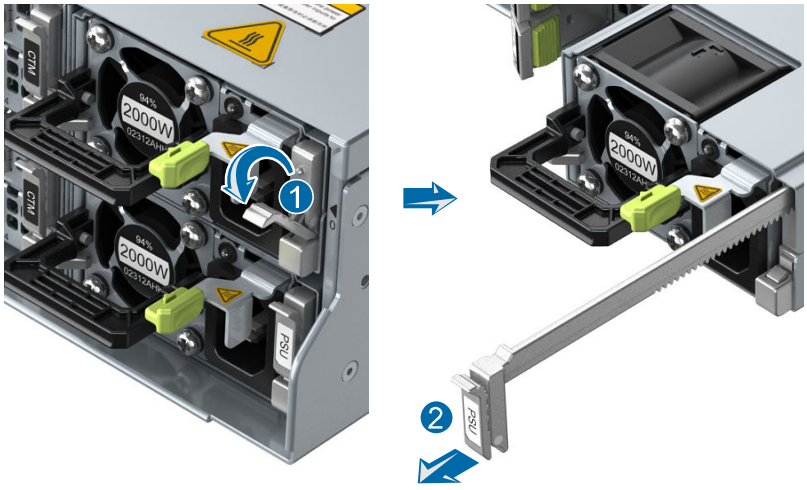
1. Turn off the circuit breaker that connects to the DC power module.
2. Use a flat-head screwdriver to press the spring in the square hole on the top of the power cable, and remove the cable, as shown in steps 1 and 2 in **Figure 7-23**.
3. Use the Phillips screwdriver to remove the screw from the ground hole, and remove the ground cable from the screw, as shown in step 3 in **Figure 7-23**.

**Figure 7-23** Removing the DC power cable




**Step 4** Open the latch on the ejector lever of the power module, hold the ejector lever, and pull out the power module, as shown in **Figure 7-24**.

**Figure 7-24** Opening the power module latch to pull out the power module




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**NOTICE**

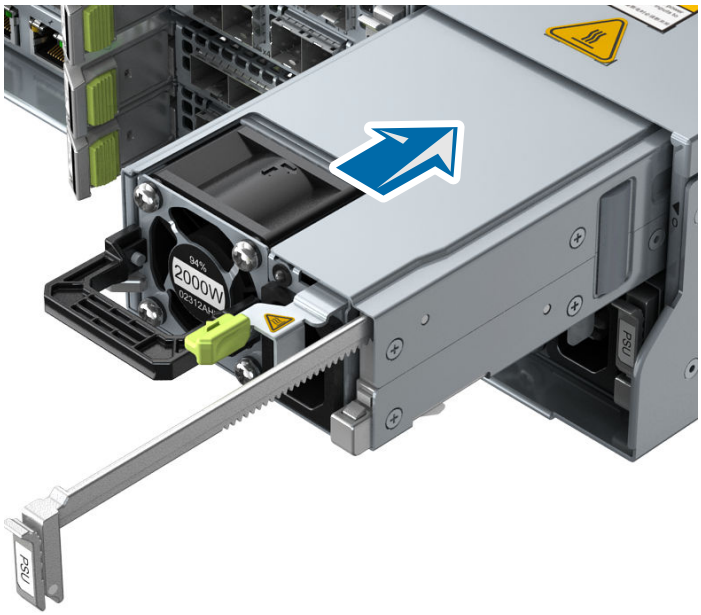
Do not press the yellow-green latch when removing the power module.

**Step 5** Put the removed power module into an ESD bag.

**Step 6** Take the spare part out of its ESD bag.

**Step 7** Pull out the ejector lever of the power module to be installed, insert the power module into the empty slot, and push the power module into the slot as much as possible, as shown in **Figure 7-25**.

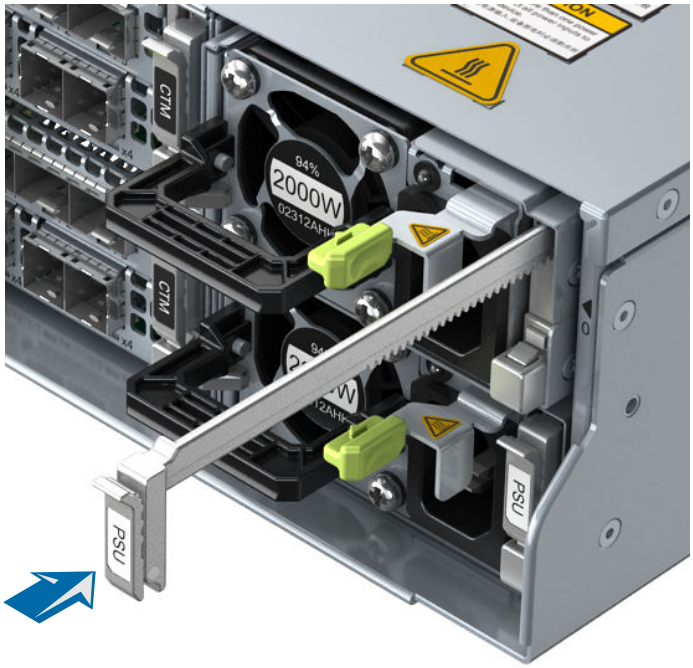
**Figure 7-25** Inserting the power module into the empty slot




**Step 8** Push the power module inwards using the ejector lever until the power module is completely inserted into the slot, as shown in **Figure 7-26**.

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**Figure 7-26** Pushing the power module inwards using the ejector lever

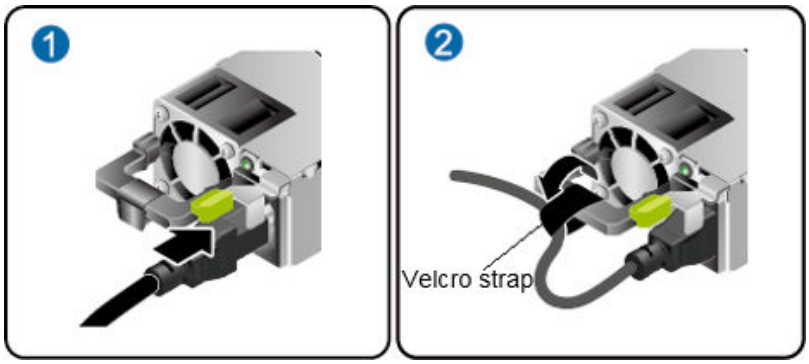



**Step 9** Connect the power cables.

- Connect the AC power cable.

1. Connect the power cable to the cable port on the AC power module, as shown in step 1 in **Figure 7-27**.

**Figure 7-27** Connecting the AC power cable




2. Secure the power cable using a velcro strap, as shown in step 2 in **Figure 7-27**.

NOTE

Adjust the position of the velcro strap to ensure that the velcro strap can fasten the AC power cable and the connector of the AC power cable is secure.

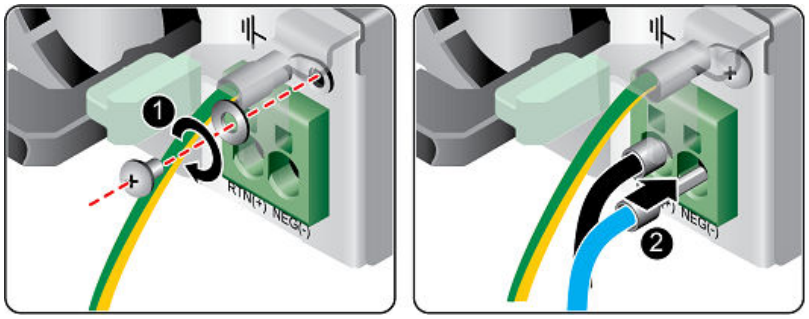
- Connect the DC power cables.

1. Connect one end (OT terminal) of the ground cable to the screw removed from the ground hole, install the screw in the ground hole, and tighten the screw, as shown in step 1 in **Figure 7-28**.
2. Connect the power cable to the wiring terminal on the power module until the power cable snaps into the spring, as shown in step 2 in **Figure 7-28**.

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- Connect the OT terminal on the cathode power cable (blue) to the NEG (-) wiring terminal on the power module.
- Connect the OT terminal on the anode power cable (black) to the RTN (+) wiring terminal on the power module.

**Figure 7-28** Connecting the DC power cable




3. Turn on the circuit breaker that connects to the DC power module.

**Step 10** Wait about two minutes and check the status of the Running/Alarm indicator on the power module to determine whether the power module has been successfully installed. **Figure 7-29** or **Figure 7-30** shows the location of the Running/Alarm indicator.

- If the indicator is steady green, the power module has been successfully installed.
- If the indicator is blinking green, the power input is normal but the controller enclosure is powered off.
- If the indicator is steady yellow or off, the newly installed power module is faulty or the power module slot is faulty.

**Figure 7-29** Running/Alarm indicator on a power module

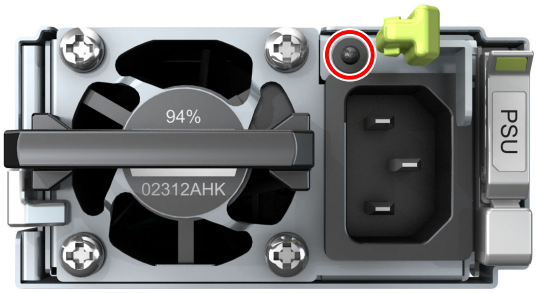
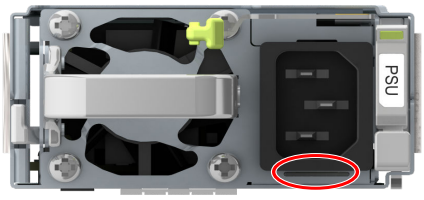



**Figure 7-30** (Optional) Running/Alarm indicator on a power module




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**Step 11** Confirm the replacement.

After the preceding procedure is complete, check services on the host for storage-related errors. If any storage-related error is reported, contact Huawei technical support.

**----End**

## Follow-up Procedure

After the power module is replaced, label it to facilitate subsequent operations.

# 7.2.3 Replacing a Power Module (for OceanStor 5300 V5)

This section describes how to replace a power module. Except that there is a slight difference on removing and inserting power cables between AC and DC power modules, other operations performed for them are the same. This section uses AC power modules as an example.

NOTE

For details about DC power modules supported by each product model, see "Electrical Specifications" in Specifications Query (**https://info.support.huawei.com/storage/spec/#/home**).

## Prerequisites

- The spare part is on hand.
- The power module that you want to replace has been located.

NOTE

You can locate a component in either of the following ways:

- Locating a component based on alarms in DeviceManager: On the **Alarms and Events** page of DeviceManager, view the help information and determine the ID of the component to be replaced. Then locate the component at your site based on its ID.
- Locating a component based on the status of its Running/Alarm indicator: For details about the indicators on different components, see "Indicator Introduction" of each component in the *Product Description* specific to your product model and version.

- Before replacing a power module, ensure that the other power module is working properly.
- Check whether connectors of other power modules are securely inserted. Otherwise, connectors of other power modules may become loose during replacement and may be powered off unexpectedly.

## Precautions

- Do not touch the connectors of a power module and a power cable.
- Remove and insert a power module with even force. Excessive force may damage the appearance of the power module or cause faults.
- Remove only one power module at a time.
- A power module must be replaced within three minutes. Otherwise, the system heat dissipation is compromised.

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## Tools and Materials

- ESD wrist strap
- ESD bag
- Labels
- Phillips screwdriver

## Procedure

**Step 1** Perform a pre-replacement check.

Check whether there is a redundant power module and whether the Running/Alarm indicator of the redundant power module is steady green, as shown in **Figure 7-31** or **Figure 7-32**. For details about the indicators on different components, see "Indicator Introduction" in the *Product Description* of the corresponding model.

**Figure 7-31** Running/Alarm indicator on a power module

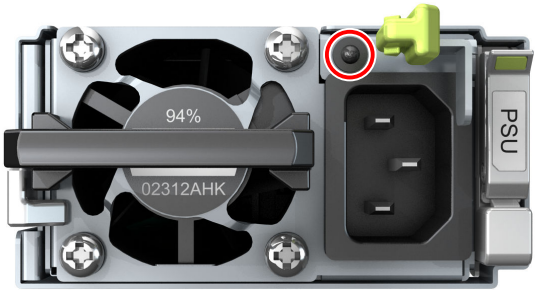
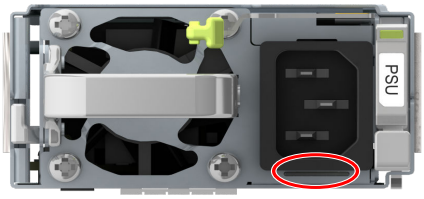



**Figure 7-32** (Optional) Running/Alarm indicator on a power module




**NOTICE**

You can perform replacement only when a redundant power module exists and the redundant power module is working properly.

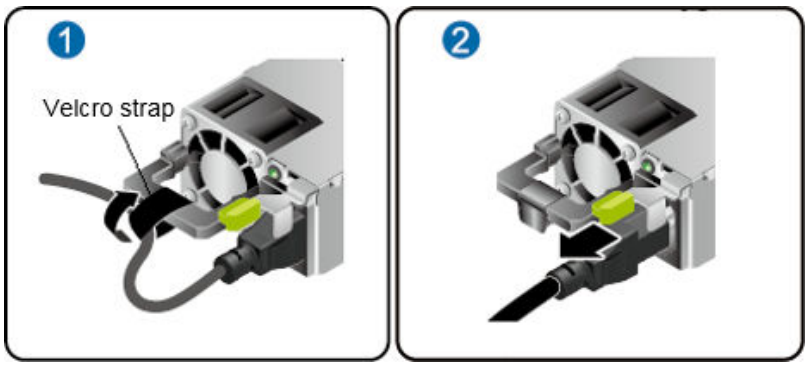
**Step 2** Wear an ESD wrist strap.

**Step 3** Remove the power cable.

- Remove the AC power cable.
  a. Remove the velcro strap that secures the power cable, as shown in step 1 in **Figure 7-33**.

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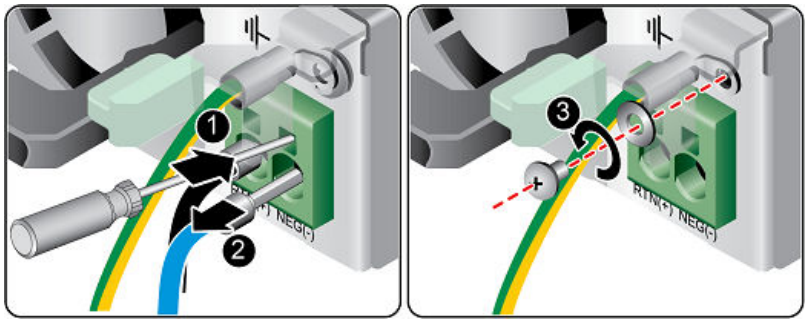
**Figure 7-33** Removing the AC power cable




b. Remove the AC power cable, as shown in step 2 in **Figure 7-33**.

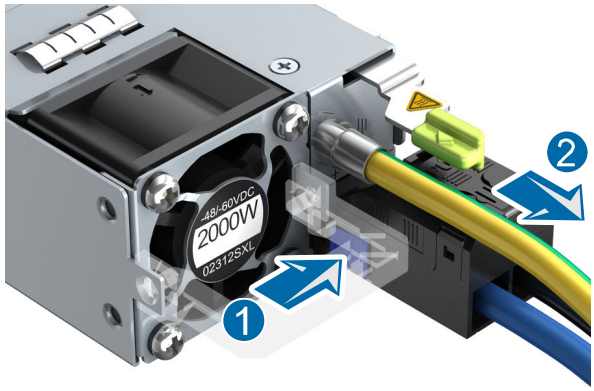
- Remove the DC power cable (applicable to 1200 W power modules).
  a. Turn off the circuit breaker that connects to the DC power module.
  b. Use a flat-head screwdriver to press the spring in the square hole on the top of the power cable, and remove the cable, as shown in steps 1 and 2 in **Figure 7-34**.
  c. Use the Phillips screwdriver to remove the screw from the ground hole, and remove the ground cable from the screw, as shown in step 3 in **Figure 7-34**.

**Figure 7-34** Removing the DC power cable




- Remove the DC power cable (applicable to 2000 W power modules).
  a. Turn off the circuit breaker that connects to the DC power module.
  b. Press the latch on the inner side of the power connector and remove the cable, as shown in steps 1 and 2 in **Figure 7-35**.

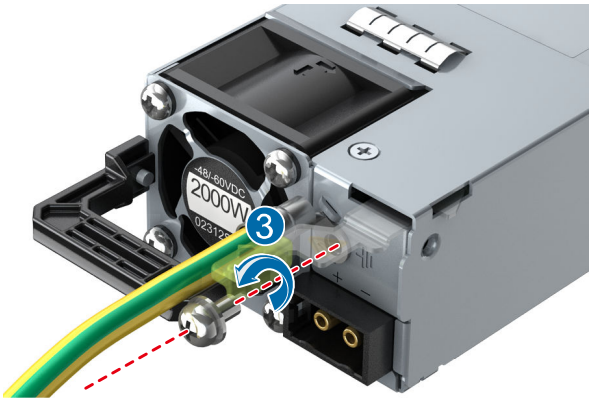
**Figure 7-35** Removing the DC power cable




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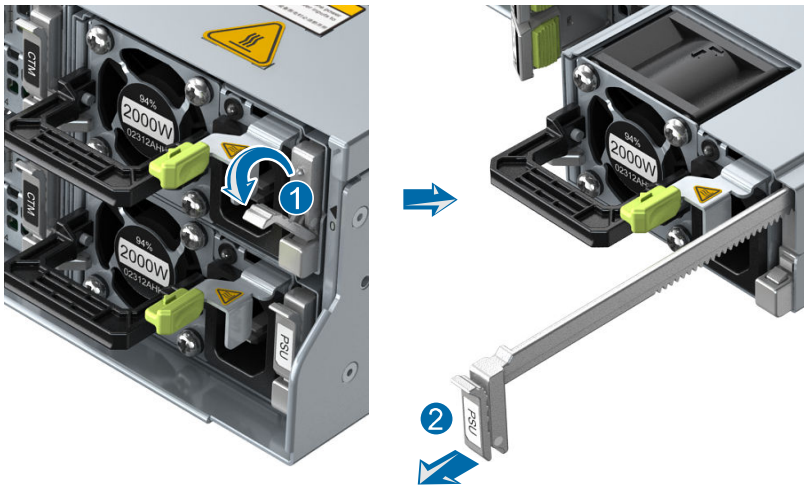
c. Use the Phillips screwdriver to remove the screw from the ground hole, and remove the ground cable from the screw, as shown in step 3 in **Figure 7-36**.

**Figure 7-36** Removing the ground cable




**Step 4** Open the latch on the ejector lever of the power module, hold the ejector lever, and pull out the power module, as shown in **Figure 7-37**.

**Figure 7-37** Opening the power module latch to pull out the power module




**NOTICE**

Do not press the yellow-green latch when removing the power module.

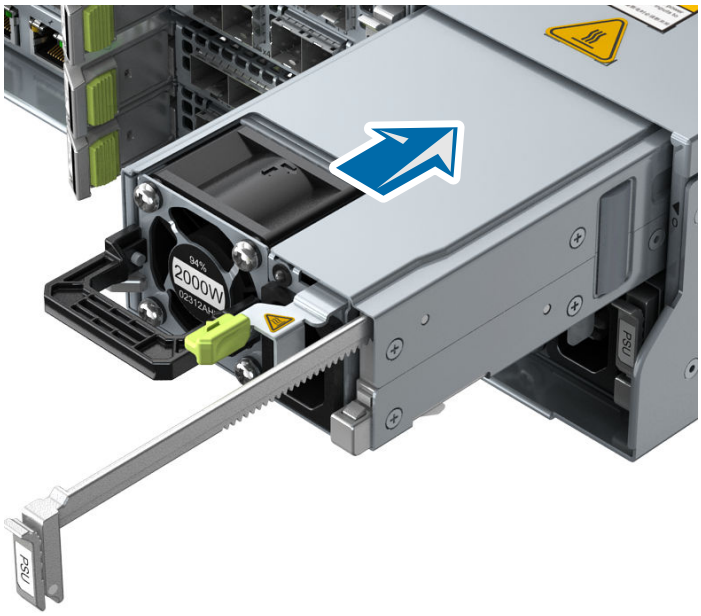
**Step 5** Put the removed power module into an ESD bag.

**Step 6** Take the spare part out of its ESD bag.

**Step 7** Pull out the ejector lever of the power module to be installed, insert the power module into the empty slot, and push the power module into the slot as much as possible, as shown in **Figure 7-38**.

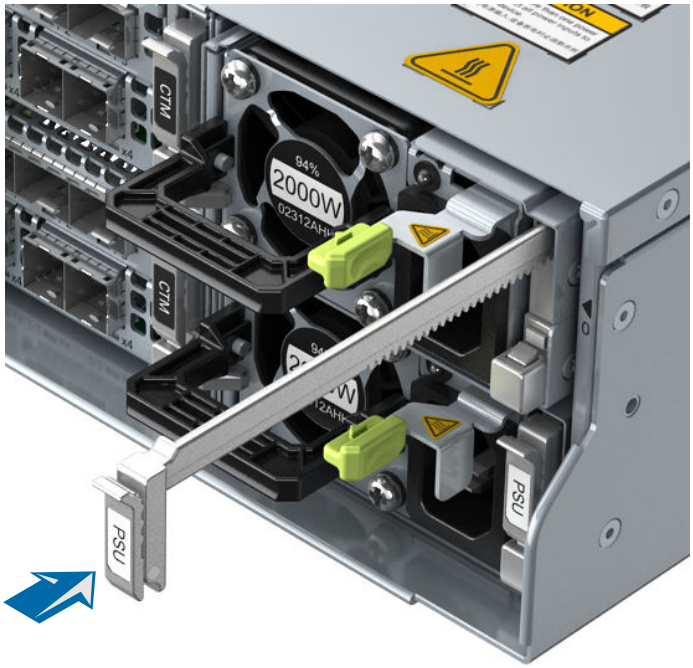
 Copyright © Huawei Technologies Co., Ltd. 

**Figure 7-38** Inserting the power module into the empty slot




**Step 8** Push the power module inwards using the ejector lever until the power module is completely inserted into the slot, as shown in **Figure 7-39**.

**Figure 7-39** Pushing the power module inwards using the ejector lever

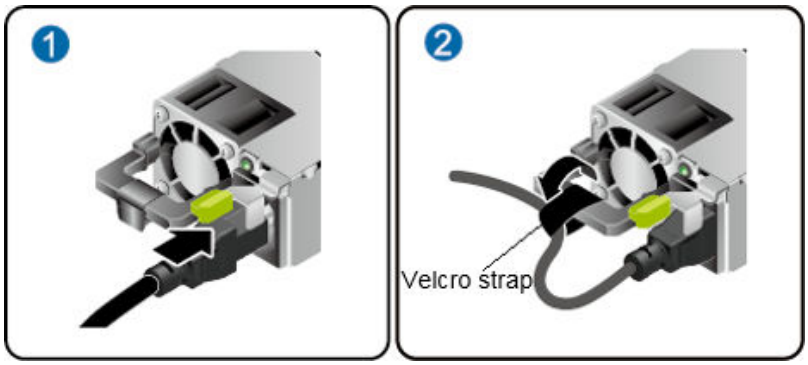



**Step 9** Connect the power cables.

- Connect the AC power cable.
  a. Connect the power cable to the cable port on the AC power module, as shown in step 1 in **Figure 7-40**.

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**Figure 7-40** Connecting the AC power cable



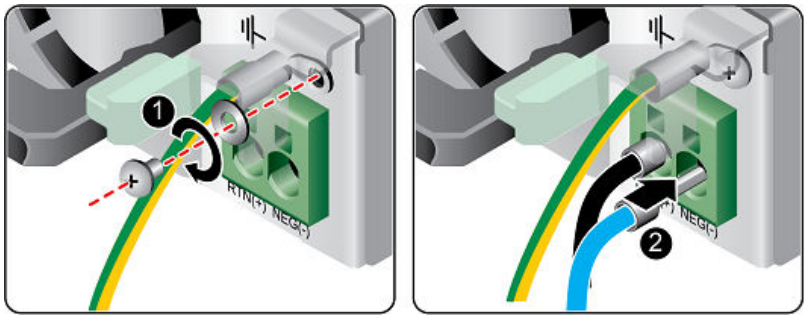

b. Secure the power cable using a velcro strap, as shown in step 2 in **Figure 7-40**.

NOTE

Adjust the position of the velcro strap to ensure that the velcro strap can fasten the AC power cable and the connector of the AC power cable is secure.

- Connect the DC power cables (applicable to 1200 W power modules).
  a. Connect one end (OT terminal) of the ground cable to the screw removed from the ground hole, install the screw in the ground hole, and tighten the screw, as shown in step 1 in **Figure 7-41**.
  b. Connect the power cable to the wiring terminal on the power module until the power cable snaps into the spring, as shown in step 2 in **Figure 7-41**.
     - Connect the OT terminal on the cathode power cable (blue) to the NEG (-) wiring terminal on the power module.
     - Connect the OT terminal on the anode power cable (black) to the RTN (+) wiring terminal on the power module.

**Figure 7-41** Connecting the DC power cable




  c. Turn on the circuit breaker that connects to the DC power module.
- Connect the DC power cables (applicable to 2000 W power modules).
  a. Connect one end (OT terminal) of the ground cable to the screw removed from the ground hole, install the screw in the ground hole, and tighten the screw, as shown in step 1 in **Figure 7-42**.

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b. Insert one end of the power cable into the matched quick-connect terminal, and use a screwdriver to tighten the two screws on the quick-connect terminal, as shown in steps 2 and 3 in **Figure 7-42**.

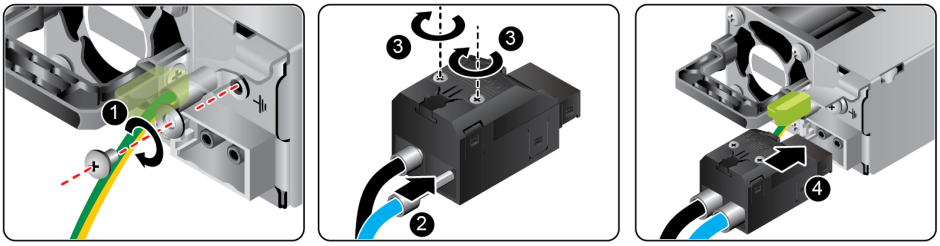
NOTE

This step applies to the scenario where a 1200 W DC power module is removed or a 2000 W DC power module is installed.

c. Insert the quick-connect terminal inserted with the power cable into the cable port on the power module. If you hear a "click" sound, the power cable is properly inserted, as shown in step 4 in **Figure 7-42**.

d. Turn on the circuit breaker that connects to the DC power module.

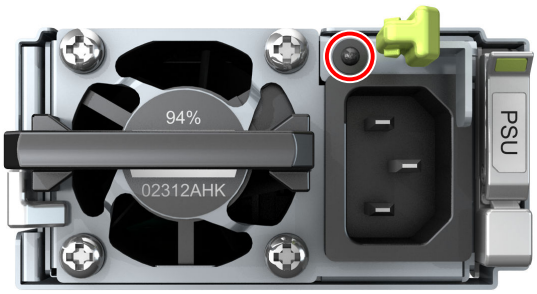
**Figure 7-42** Connecting the DC power cable




**Step 10** Wait about two minutes and check the status of the Running/Alarm indicator on the power module to determine whether the power module has been successfully installed. **Figure 7-43** or **Figure 7-44** shows the location of the Running/Alarm indicator.

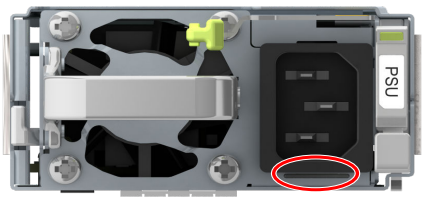
- If the indicator is steady green, the power module has been successfully installed.
- If the indicator is blinking green, the power input is normal but the controller enclosure is powered off.
- If the indicator is steady yellow or off, the newly installed power module is faulty or the power module slot is faulty.

**Figure 7-43** Running/Alarm indicator on a power module




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**Figure 7-44** (Optional) Running/Alarm indicator on a power module




**Step 11** Confirm the replacement.

After the preceding procedure is complete, check services on the host for storage-related errors. If any storage-related error is reported, contact Huawei technical support.

**----End**

## Follow-up Procedure

After the power module is replaced, label it to facilitate subsequent operations.

# 7.2.4 Replacing a Power Module (for OceanStor 5500 V5, 5500F V5, 5600 V5, 5600F V5, 5800 V5, or 5800F V5)

This section describes how to replace a power module.

## Prerequisites

- The spare part is on hand.
- The power module that you want to replace has been located.

  NOTE

  You can locate a component in either of the following ways:

  - Locating a component based on alarms in DeviceManager: On the **Alarms and Events** page of DeviceManager, view the help information and determine the ID of the component to be replaced. Then locate the component at your site based on its ID.
  - Locating a component based on the status of its Running/Alarm indicator: For details about the indicators on different components, see "Indicator Introduction" of each component in the *Product Description* specific to your product model and version.
- Before replacing a power module, ensure that the other power module is working properly.
- Check whether connectors of other power modules are securely inserted. Otherwise, connectors of other power modules may become loose during replacement and may be powered off unexpectedly.

## Precautions

- Do not touch the connectors of a power module and a power cable.
- Remove and insert a power module with even force. Excessive force may damage the appearance of the power module or cause faults.

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- Remove only one power module at a time.
- A power module must be replaced within three minutes. Otherwise, the system heat dissipation is compromised.

## Tools and Materials

- ESD wrist strap
- ESD bag
- Labels
- Phillips screwdriver

## Procedure

**Step 1** Perform a pre-replacement check.

Check whether there is a redundant power module and whether the Running/Alarm indicator of the redundant power module is steady green, as shown in **Figure 7-45** or **Figure 7-46**. For more details about indicators, see "Indicator Description" of each component in the *Product Description* specific to your product model and version.

**Figure 7-45** Running/Alarm indicator on a power module

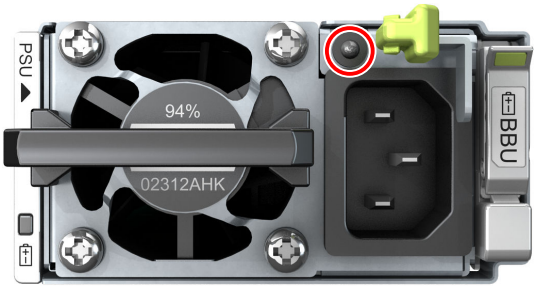



**Figure 7-46** (Optional) Running/Alarm indicator on a power module




**NOTICE**

You can perform replacement only when a redundant power module exists and the redundant power module is working properly.

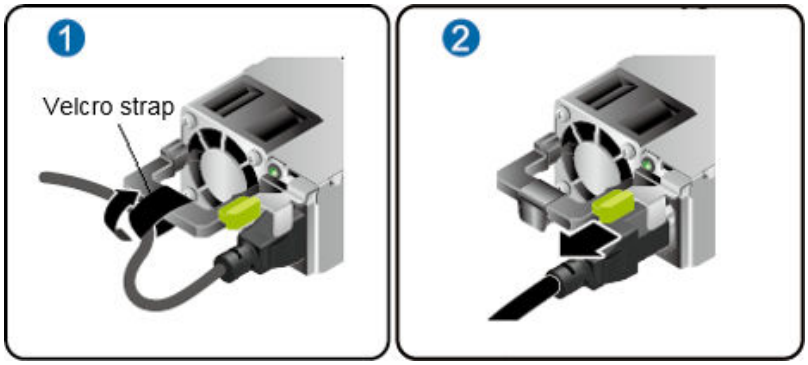
**Step 2** Wear an ESD wrist strap.

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**Step 3** Remove the power cable.

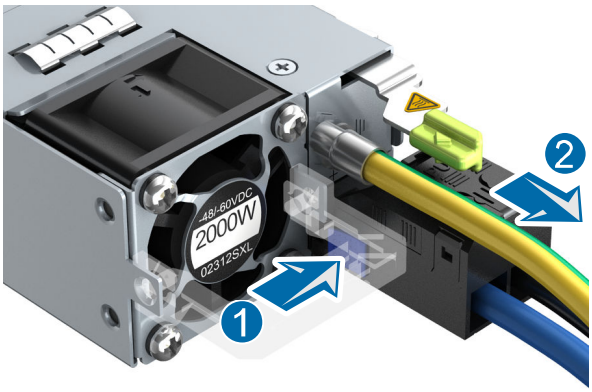
- Remove the AC power cable.
  a. Remove the velcro strap that secures the power cable, as shown in step 1 in **Figure 7-47**.

  **Figure 7-47** Removing the AC power cable

  b. Remove the AC power cable, as shown in step 2 in **Figure 7-47**.
- Remove the DC power cable.
  a. Turn off the circuit breaker that connects to the DC power module.
  b. Press the latch on the inner side of the power connector and remove the cable, as shown in steps 1 and 2 in **Figure 7-48**.

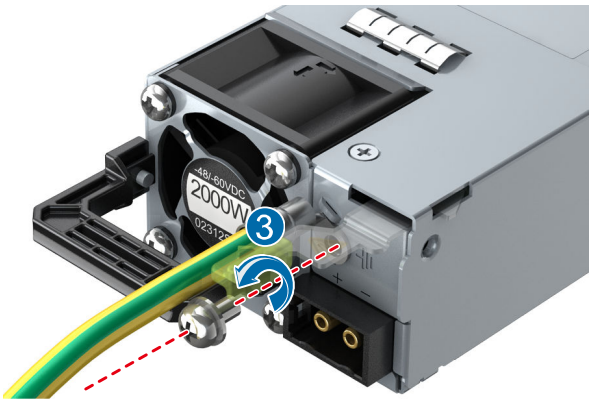
  **Figure 7-48** Removing the DC power cable

  c. Use the Phillips screwdriver to remove the screw from the ground hole, and remove the ground cable from the screw, as shown in step 3 in **Figure 7-49**.

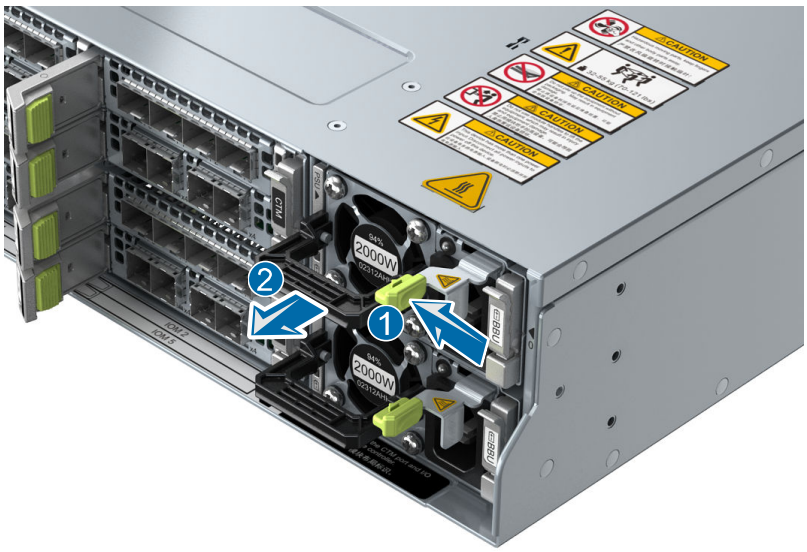
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**Figure 7-49** Removing the ground cable




**Step 4** Press the latch on the power module and pull the handle of the power module outwards to pull out the power module, as shown in **Figure 7-50**.

**Figure 7-50** Pulling out the power module



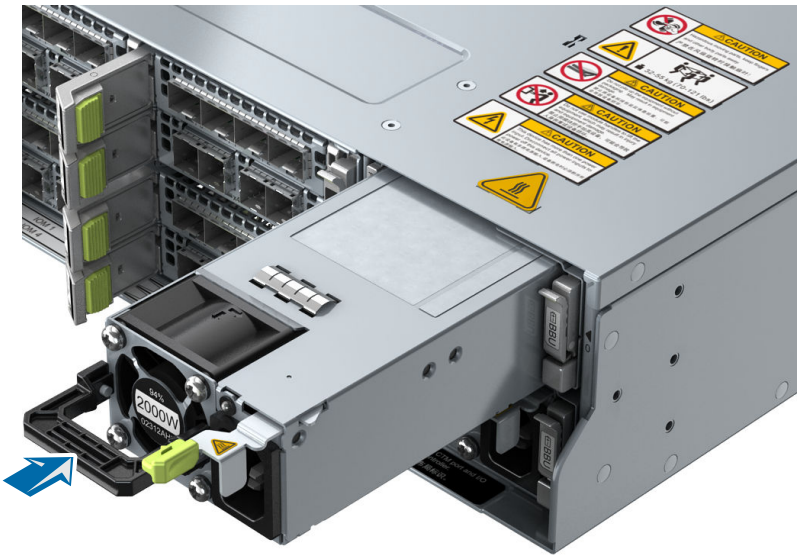

**Step 5** Put the removed power module into an ESD bag.

**Step 6** Take the replacement power module out of its ESD bag.

**Step 7** Insert the power module into the empty slot, as shown in **Figure 7-51**.

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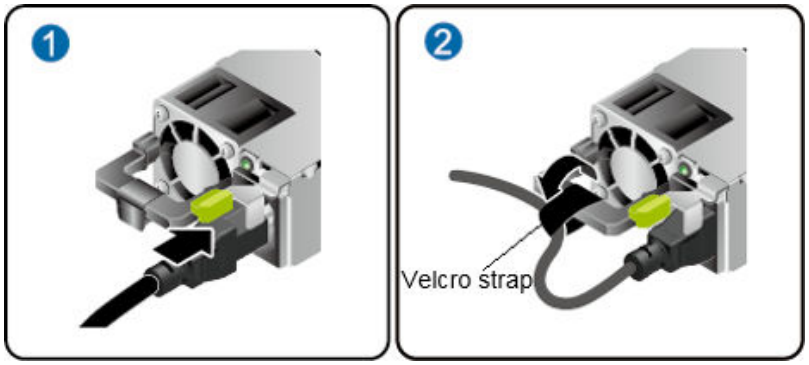
**Figure 7-51** Inserting the power module into the empty slot




**Step 8** Connect the power cable.

- Connect the AC power cable.
  a. Connect the power cable to the cable port on the power module, as shown in step 1 in **Figure 7-52**.

  **Figure 7-52** Connecting the power cable

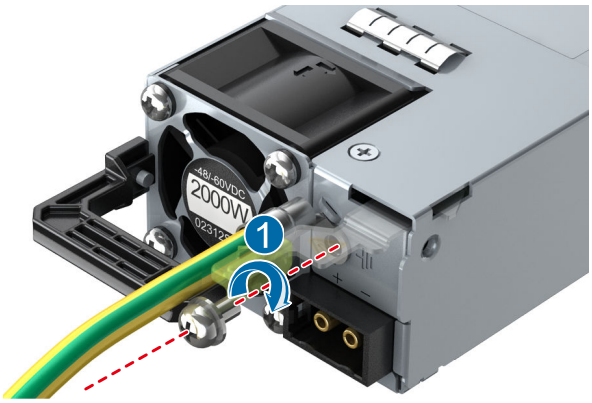
  b. Secure the power cable using a velcro strap, as shown in step 2 in **Figure 7-52**.

  NOTE

  Adjust the velcro strap to ensure that it fastens the power cable so that the connector of the power cable is secured tightly.
- Connect the DC power cables.
  a. Connect one end (OT terminal) of the ground cable to the screw removed from the ground hole, install the screw in the ground hole, and tighten the screw, as shown in step 1 in **Figure 7-54**.

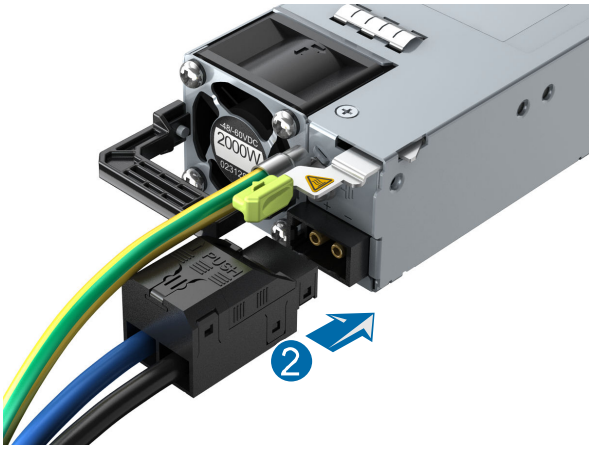
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**Figure 7-53** Installing the ground cable




b. Insert the power cable into the cable port on the power module. If you hear a "click" sound, the power cable is properly inserted, as shown in step 2 in **Figure 7-54**.

**Figure 7-54** Connecting the DC power cable




c. Turn on the circuit breaker that connects to the DC power module.

**Step 9** Wait about 2 minutes and check the status of the Running/Alarm indicator on the power module to determine whether the installation is successful. **Figure 7-55** or **Figure 7-56** shows the location of the indicator.

- If the indicator is steady green, the installation is successful.
- If the indicator is blinking green, the power input is normal but the device is not powered on.
- If the indicator is steady yellow or off, the newly installed power module is faulty or the power module slot is faulty.

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**Figure 7-55** Running/Alarm indicator on a power module

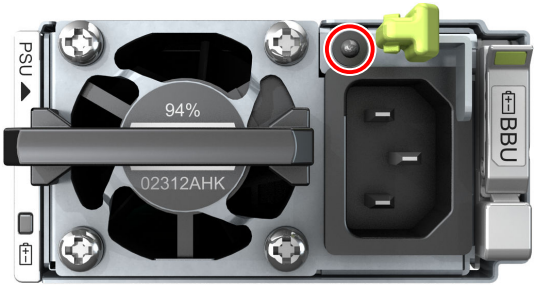



**Figure 7-56** (Optional) Running/Alarm indicator on a power module




**Step 10** Confirm the replacement.

After the preceding procedure is complete, check services on the host for storage-related errors. If any storage-related error is reported, contact Huawei technical support.

**----End**

## Follow-up Procedure

After the power module is replaced, label it to facilitate subsequent operations.

# 7.2.5 Replacing a Power Module (for OceanStor 6800 V5 or 6800F V5)

This section describes how to replace a power module.

## Prerequisites

- The spare part is on hand.
- The power module that you want to replace has been located.

NOTE

You can locate a component in either of the following ways:

- Locating a component based on alarms in DeviceManager: On the **Alarms and Events** page of DeviceManager, view the help information and determine the ID of the component to be replaced. Then locate the component at your site based on its ID.
- Locating a component based on the status of its Running/Alarm indicator: For details about the indicators on different components, see "Indicator Introduction" of each component in the *Product Description* specific to your product model and version.

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- Before replacing a power module, ensure that the other power module is working properly.
- Check whether connectors of other power modules are securely inserted. Otherwise, connectors of other power modules may become loose during replacement and may be powered off unexpectedly.

## Precautions

- Do not touch the connectors of a power module and a power cable.
- Remove and insert a power module with even force. Excessive force may damage the appearance of the power module or cause faults.
- Remove only one power module at a time.
- A power module must be replaced within three minutes. Otherwise, the system heat dissipation is compromised.

## Tools and Materials

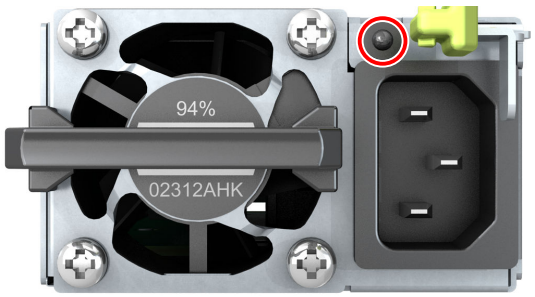
- ESD wrist strap
- ESD bag
- Labels
- Phillips screwdriver

## Procedure

**Step 1** Perform a pre-replacement check.

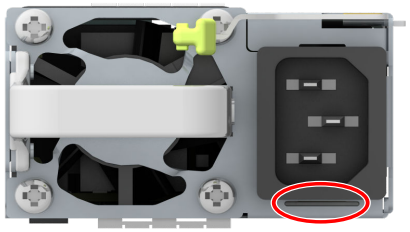
Check whether there is a redundant power module and whether the Running/Alarm indicator of the redundant power module is steady green, as shown in **Figure 7-57** or **Figure 7-58**. For details about the indicators on different components, see "Indicator Introduction" in the *Product Description* of the corresponding model.

**Figure 7-57** Running/Alarm indicator on a power module




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**Figure 7-58** (Optional) Running/Alarm indicator on a power module



**NOTICE**

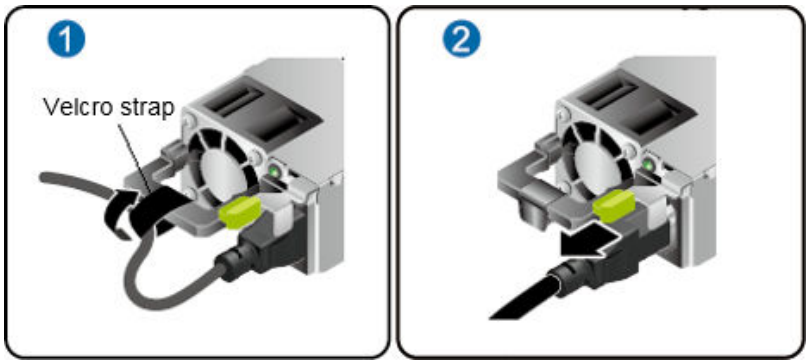
You can perform replacement only when a redundant power module exists and the redundant power module is working properly.

**Step 2** Wear an ESD wrist strap.

**Step 3** Remove the power cable.

1. Remove the velcro strap that secures the power cable, as shown in step 1 in **Figure 7-59**.

   **Figure 7-59** Removing the AC power cable

2. Remove the AC power cable, as shown in step 2 in **Figure 7-59**.

**Step 4** Open the latch on the ejector lever of the power module, hold the ejector lever, and pull out the power module, as shown in **Figure 7-60**.

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**Figure 7-60** Opening the power module latch to pull out the power module

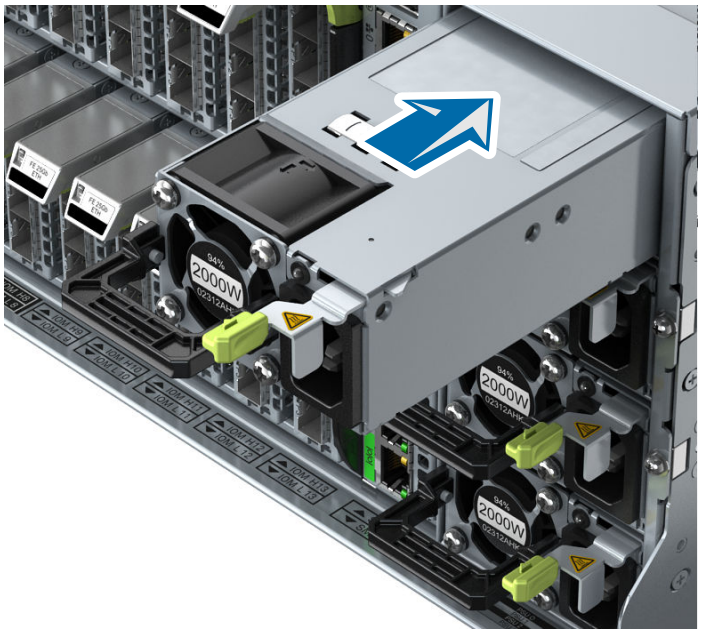



**Step 5** Put the removed power module into an ESD bag.

**Step 6** Take the spare part out of its ESD bag.

**Step 7** Insert the power module into the empty slot, as shown in **Figure 7-61**.

**Figure 7-61** Inserting the power module into the empty slot

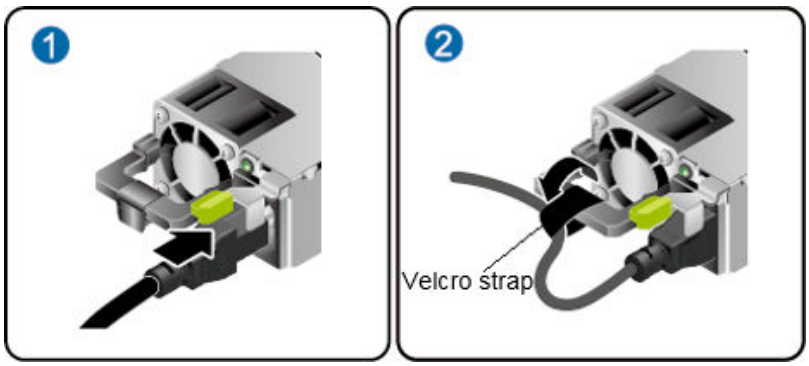



**Step 8** Connect the power cables.

1. Connect the power cable to the cable port on the AC power module, as shown in step 1 in **Figure 7-62**.

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**Figure 7-62** Connecting the AC power cable




2. Secure the power cable using a velcro strap, as shown in step 2 in **Figure 7-62**.

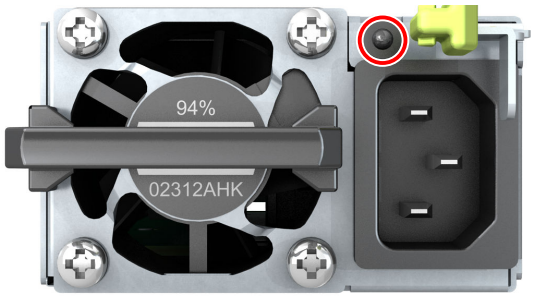
NOTE

Adjust the position of the velcro strap to ensure that the velcro strap can fasten the AC power cable and the connector of the AC power cable is secure.

**Step 9** Wait about two minutes and check the status of the Running/Alarm indicator on the power module to determine whether the power module has been successfully installed. **Figure 7-63** or **Figure 7-64** shows the location of the Running/Alarm indicator.

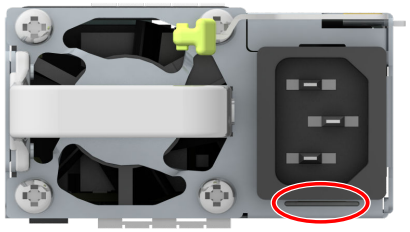
- If the indicator is steady green, the power module has been successfully installed.
- If the indicator is blinking green, the power input is normal but the controller enclosure is powered off.
- If the indicator is steady yellow or off, the newly installed power module is faulty or the power module slot is faulty.

**Figure 7-63** Running/Alarm indicator on a power module




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**Figure 7-64** (Optional) Running/Alarm indicator on a power module



**Step 10** Confirm the replacement.

After the preceding procedure is complete, check services on the host for storage-related errors. If any storage-related error is reported, contact Huawei technical support.

**----End**

## Follow-up Procedure

After the power module is replaced, label it to facilitate subsequent operations.

# 7.2.6 Replacing a Power Module (for a SAS Disk Enclosure)

This section describes how to replace a power module. Except that there is a slight difference on removing and inserting power cables between AC and DC power modules, other operations performed for them are the same. This section uses AC power modules as an example.

## Prerequisites

- The spare part is on hand.
- The power module that you want to replace has been located.

  NOTE

  You can locate a component in either of the following ways:

  - Locating a component based on alarms in DeviceManager: On the **Alarms and Events** page of DeviceManager, view the help information and determine the ID of the component to be replaced. Then locate the component at your site based on its ID.
  - Locating a component based on the status of its Running/Alarm indicator: For details about the indicators on different components, see "Indicator Introduction" of each component in the *Product Description* specific to your product model and version.

- Before replacing a power module, ensure that the other power module is working properly.

## Precautions

- Do not touch the connectors of a power module and a power cable.
- Remove and insert a power module with even force. Excessive force may damage the appearance of the power module or cause faults.

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- Remove only one power module at a time.
- A power module must be replaced within three minutes. Otherwise, the system heat dissipation is compromised.

## Tools and Materials

- ESD wrist strap
- ESD bag
- Labels
- Phillips screwdriver

## Procedure

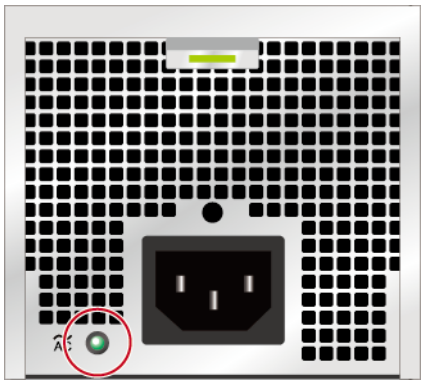
NOTE

The procedure for replacing the power module of a 2 U SAS disk enclosure is the same as that for replacing the power module of a 4 U SAS disk enclosure. This section describes how to replace the power module of a 4 U SAS disk enclosure.

**Step 1** Perform a pre-replacement check.

Check whether there is a redundant power module and whether the Running/Alarm indicator of the redundant power module is steady green, as shown in **Figure 7-65**. For details about the indicators on different components, see "Indicator Introduction" in the *Product Description* of the corresponding model.

**Figure 7-65** Running/Alarm indicator on a power module



NOTICE

You can perform replacement only when a redundant power module exists and the redundant power module is working properly.

**Step 2** Wear an ESD wrist strap.

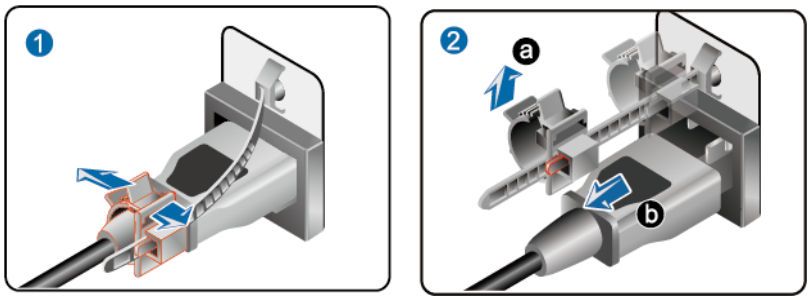
**Step 3** Remove the power cable.

- Remove the AC power cable.

1. Loosen the retention clip, as shown in step 1 in **Figure 7-66**.

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**Figure 7-66** Removing the AC power cable

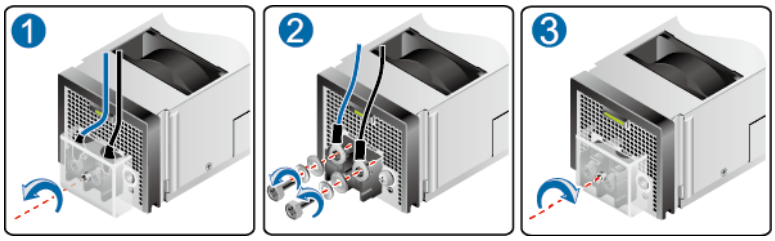



2. Pull up the retention clip, as shown in a of step 2 in **Figure 7-66**.
3. Remove the AC power cable, as shown in b of step 2 in **Figure 7-66**.

- Remove the DC power cable.

1. Turn off the circuit breaker that connects to the DC power module.
2. Remove the protective cover on the DC power module, as shown in step 1 in **Figure 7-67**.

**Figure 7-67** Removing the DC power cable




3. Unfasten the screws of the DC power cable with the Phillips screwdriver, remove the shock absorption sheets, washers, and OT terminal round holes, as shown in step 2 in **Figure 7-67**.

   NOTE

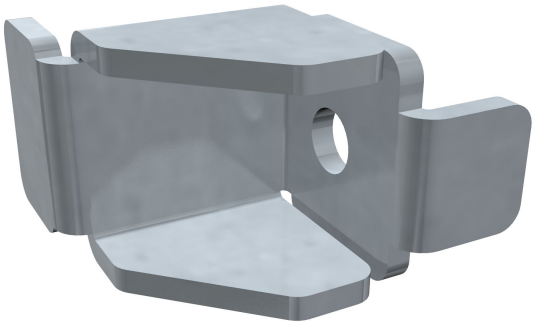
   When unfastening the screws from the DC power cable, prevent the shock absorption sheets and washers from sliding off.

4. Install the protective cover on the DC power module, as shown in step 3 in **Figure 7-67**.

**Step 4** (Optional) If there is a positioning block next to the power module to be replaced and the positioning block hinders the removal of the power module, remove the positioning block first. **Figure 7-68** shows the appearance of the positioning block.

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**Figure 7-68** Positioning block

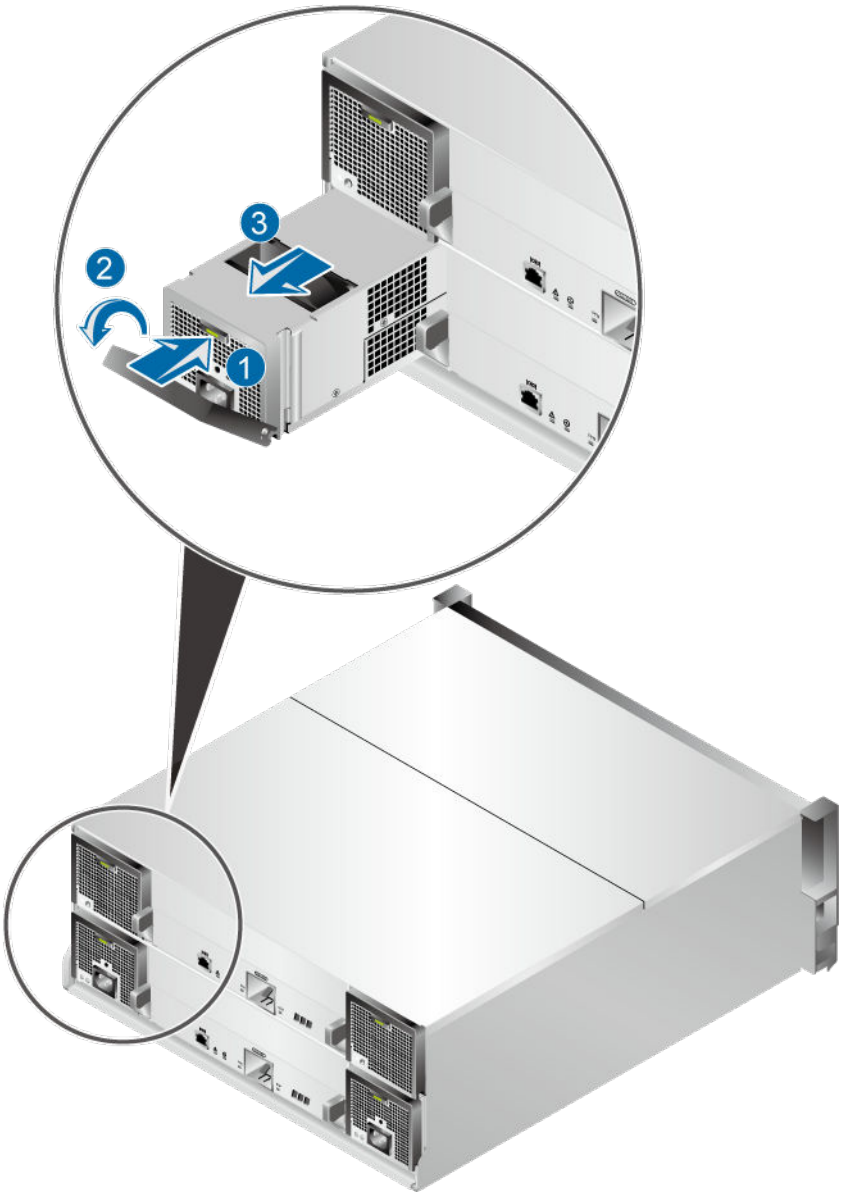


The method of removing positioning blocks for a SAS disk enclosure is the same as that of removing positioning blocks for a smart disk enclosure. For details, see **Step 4** in **7.2.7 Replacing a Power Module (for a Smart Disk Enclosure)**.

**Step 5** Press the latch on the power module to release the handle and pull out the power module, as shown in **Figure 7-69**.

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**Figure 7-69** Removing an AC power module



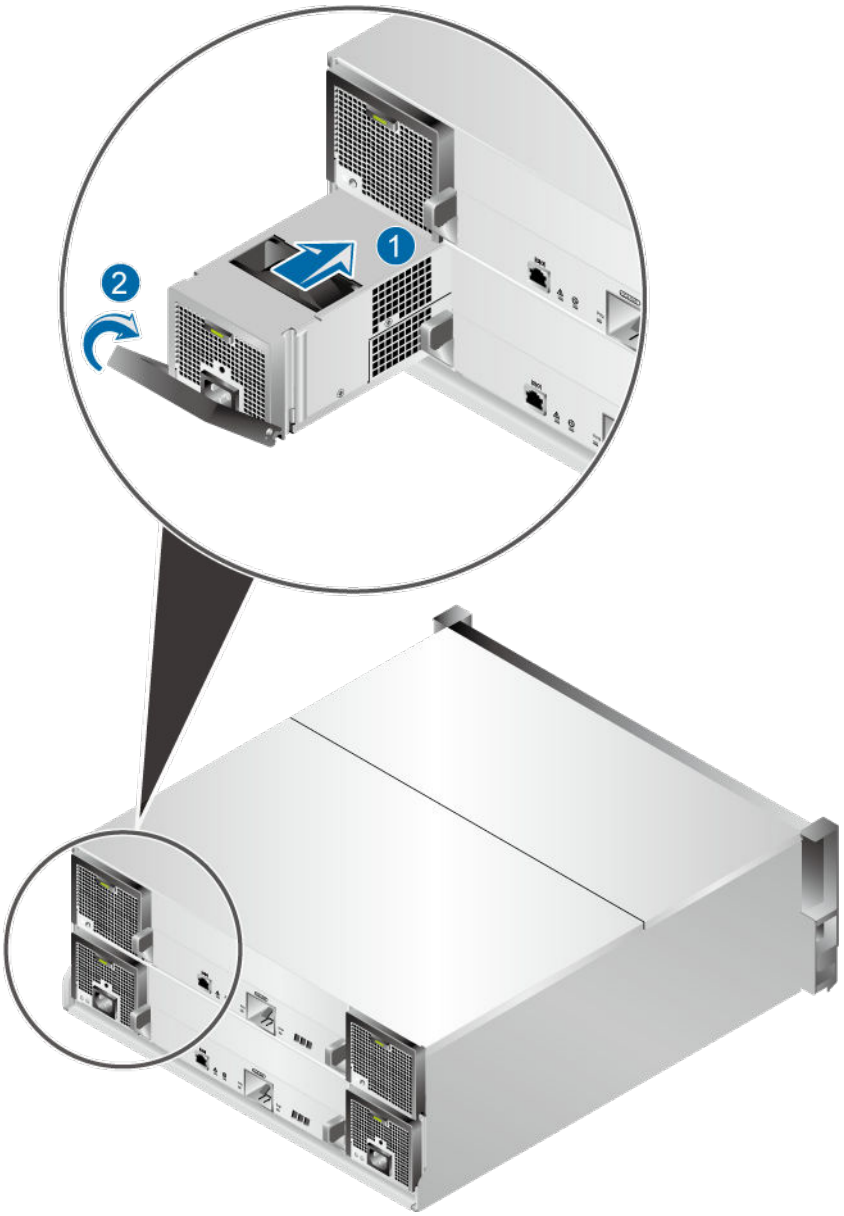

**Step 6** Put the removed power module into an ESD bag.

**Step 7** Take the spare part out of its ESD bag.

**Step 8** Open the handle of the spare part, insert the spare part into the empty slot, and close the handle, as shown in **Figure 7-70**.

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**Figure 7-70** Installing the AC power module



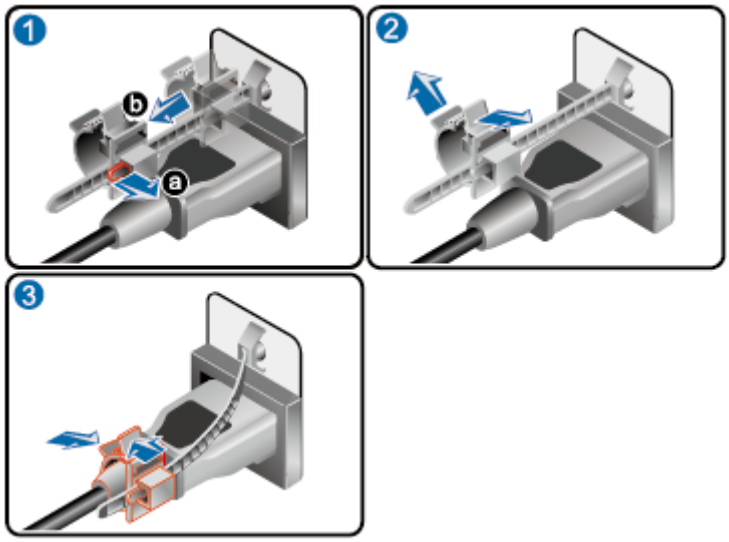

**Step 9** Insert the power cables.

- Secure the AC power cables with retention clips.

1. Press the locker of the retention clip outwards (as shown in a of step 1 in **Figure 7-71**), and meanwhile slide the retention clip to the connection part of the AC power cable (as shown in b of step 1 in **Figure 7-71**).

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**Figure 7-71** Securing the AC power cables with retention clips




2. Loosen the retention clip, as shown in step 2 in **Figure 7-71**.
3. Press the retention clip inwards to secure the connection part of the AC power cable, as shown in step 3 in **Figure 7-71**.

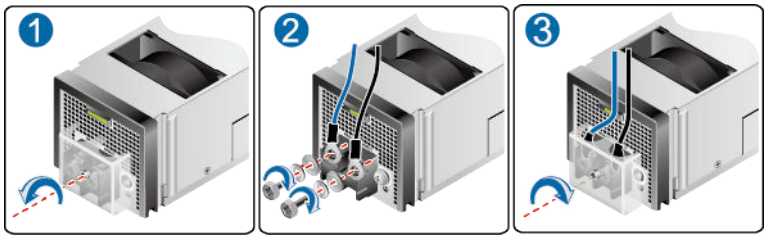
NOTE

Adjust the retention clip to ensure that it holds the AC power cable tightly.

- Connect the DC power cables.

1. Remove the protective cover on the DC power module, as shown in step 1 in **Figure 7-72**.

**Figure 7-72** Connecting the DC power cable




2. Unfasten the screws of the DC power cable using the Phillips screwdriver, put the screws through the shock absorption sheets, washers, and OT terminal round holes in sequence, connect the OT terminal of the black cable to the RTN (+) end, and the OT terminal of the blue cable to the NEG (-) end, and then fasten the screws, as shown in step 2 in **Figure 7-72**.

NOTE

- When unfastening the screws from the DC power cable, prevent the shock absorption sheets and washers from sliding off.
- In some users' equipment rooms, the colors of DC power cables that connect to the anode and cathode of the DC power supply may differ from the colors specified here.

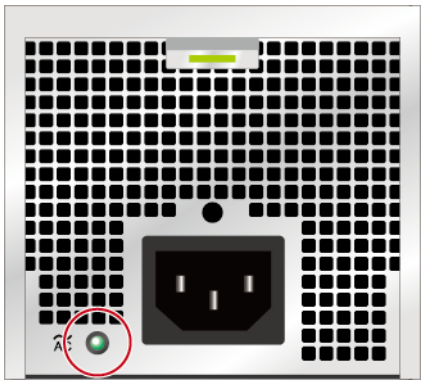
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3. Install the protective cover on the DC power module, as shown in step 3 in **Figure 7-72**.
4. Turn on the circuit breaker that connects to the DC power module.

**Step 10** Wait about two minutes and check the status of the Running/Alarm indicator on the power module to determine whether the power module has been successfully installed. **Figure 7-73** shows the location of the Running/Alarm indicator.

- If the indicator is steady green, the power module has been successfully installed.
- If the indicator is blinking green, the power input is normal but the disk enclosure is powered off.
- If the indicator is steady yellow or off, the newly installed power module is faulty or the power module slot is faulty.

**Figure 7-73** Running/Alarm indicator on a power module



**Step 11** Confirm the replacement.

After the preceding procedure is complete, check services on the host for storage-related errors. If any storage-related error is reported, contact Huawei technical support.

**----End**

## Follow-up Procedure

After the power module is replaced, label it to facilitate subsequent operations.

# 7.2.7 Replacing a Power Module (for a Smart Disk Enclosure)

This section describes how to replace a power module. Except that there is a slight difference on removing and inserting power cables between AC and DC power modules, other operations performed for them are the same. This section uses AC power modules as an example.

## Prerequisites

- The spare part is on hand.
- The power module that you want to replace has been located.

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NOTE

You can locate a component in either of the following ways:

- Locating a component based on alarms in DeviceManager: On the **Alarms and Events** page of DeviceManager, view the help information and determine the ID of the component to be replaced. Then locate the component at your site based on its ID.
- Locating a component based on the status of its Running/Alarm indicator: For details about the indicators on different components, see "Indicator Introduction" of each component in the *Product Description* specific to your product model and version.

- Before replacing a power module, ensure that the other power module is working properly.
- Check whether connectors of other power modules are securely inserted. Otherwise, connectors of other power modules may become loose during replacement and may be powered off unexpectedly.

## Precautions

- Do not touch the connectors of a power module and a power cable.
- Remove and insert a power module with even force. Excessive force may damage the appearance of the power module or cause faults.
- Remove only one power module at a time.
- A power module must be replaced within three minutes. Otherwise, the system heat dissipation is compromised.

## Tools and Materials

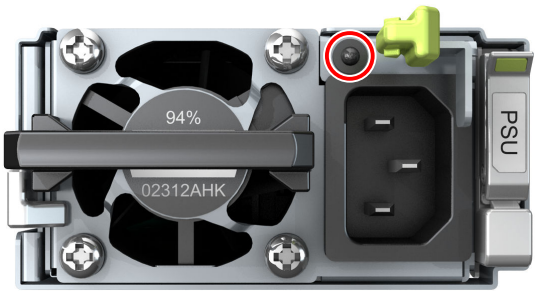
- ESD wrist strap
- ESD bag
- Labels
- Phillips screwdriver

## Procedure

**Step 1** Perform a pre-replacement check.

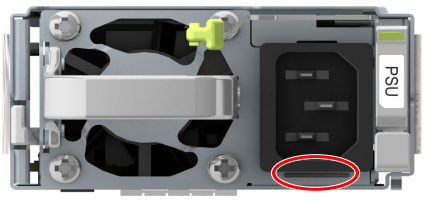
Check whether there is a redundant power module and whether the Running/Alarm indicator of the redundant power module is steady green, as shown in **Figure 7-74** or **Figure 7-75**. For details about the indicators on different components, see "Indicator Introduction" in the *Product Description* of the corresponding model.

**Figure 7-74** Running/Alarm indicator on a power module




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**Figure 7-75** (Optional) Running/Alarm indicator on a power module




**NOTICE**

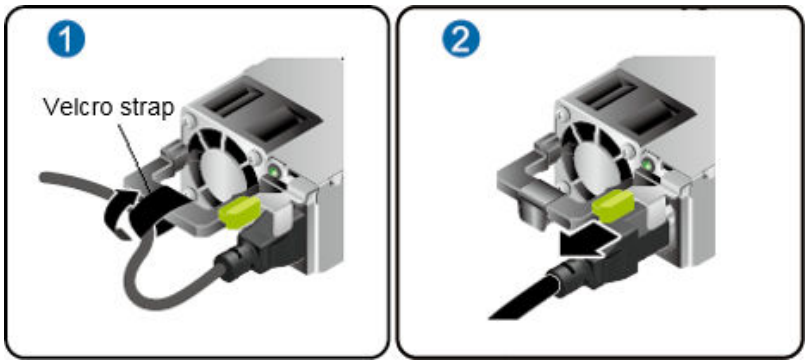
You can perform replacement only when a redundant power module exists and the redundant power module is working properly.

**Step 2** Wear an ESD wrist strap.

**Step 3** Remove the power cable.

- Remove the AC power cable.
  a. Remove the velcro strap that secures the power cable, as shown in step 1 in **Figure 7-76**.

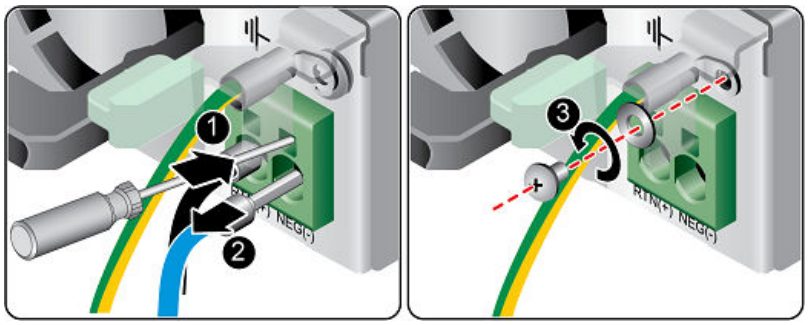
  **Figure 7-76** Removing the AC power cable

  b. Remove the AC power cable, as shown in step 2 in **Figure 7-76**.
- Remove the DC power cable (applicable to 1200 W power modules).
  a. Turn off the circuit breaker that connects to the DC power module.
  b. Use a flat-head screwdriver to press the spring in the square hole on the top of the power cable, and remove the cable, as shown in steps 1 and 2 in **Figure 7-77**.
  c. Use the Phillips screwdriver to remove the screw from the ground hole, and remove the ground cable from the screw, as shown in step 3 in **Figure 7-77**.

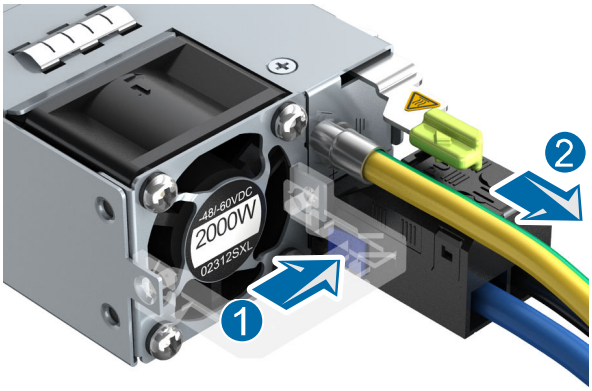
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**Figure 7-77** Removing the DC power cable



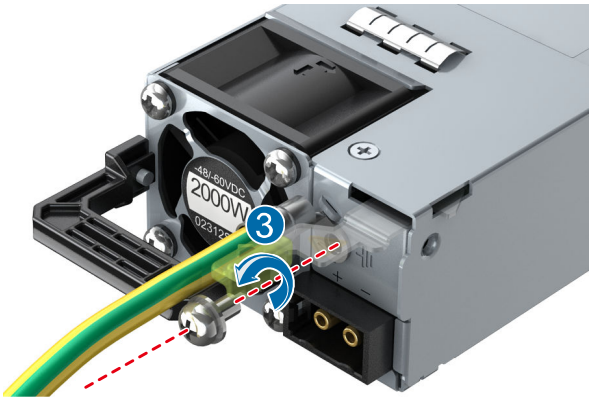
- Remove the DC power cable (applicable to 2000 W power modules).
  a. Turn off the circuit breaker that connects to the DC power module.
  b. Press the latch on the inner side of the power connector and remove the cable, as shown in steps 1 and 2 in **Figure 7-78**.

**Figure 7-78** Removing the DC power cable




  c. Use the Phillips screwdriver to remove the screw from the ground hole, and remove the ground cable from the screw, as shown in step 3 in **Figure 7-79**.

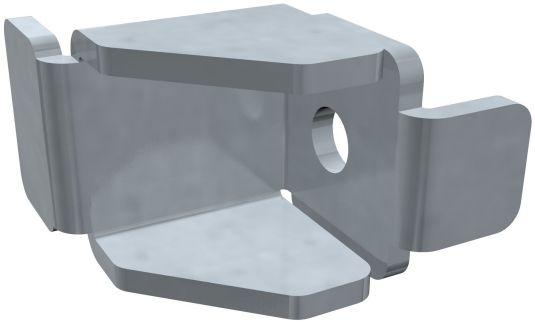
**Figure 7-79** Removing the ground cable




**Step 4** (Optional) If there is a positioning block next to the power module to be replaced and the positioning block hinders the removal of the power module, remove the positioning block first. **Figure 7-80** shows the appearance of the positioning block. **Step 4.1** and **Step 4.2** describe the method of removing the positioning block.

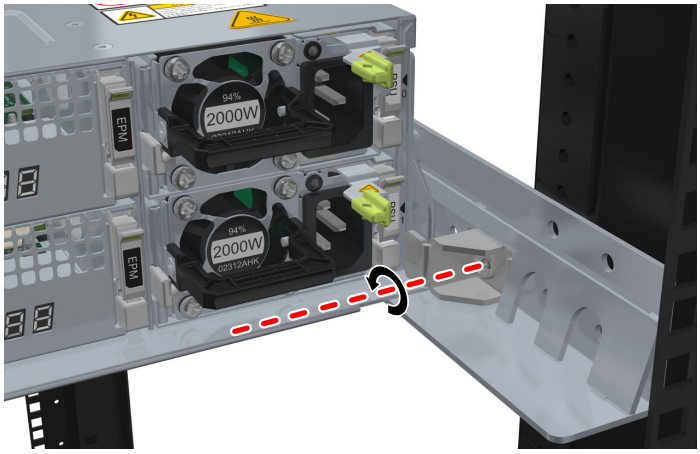
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**Figure 7-80** Positioning block



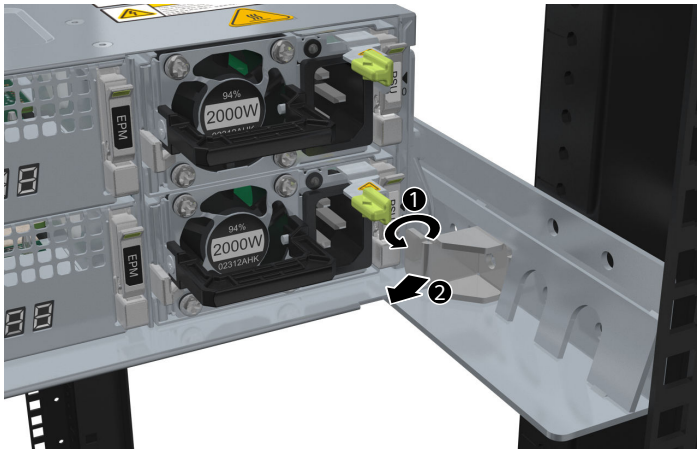
1. Use a Phillips screwdriver to loosen the screw counterclockwise on the positioning block and remove the screw, as shown in **Figure 7-81**.

   **Figure 7-81** Removing the screw on the positioning block

2. Lossen the positioning block counterclockwise by holding its handle, and then pull out the positioning block. See steps 1 and 2 in **Figure 7-82**.

   **Figure 7-82** Removing the positioning block

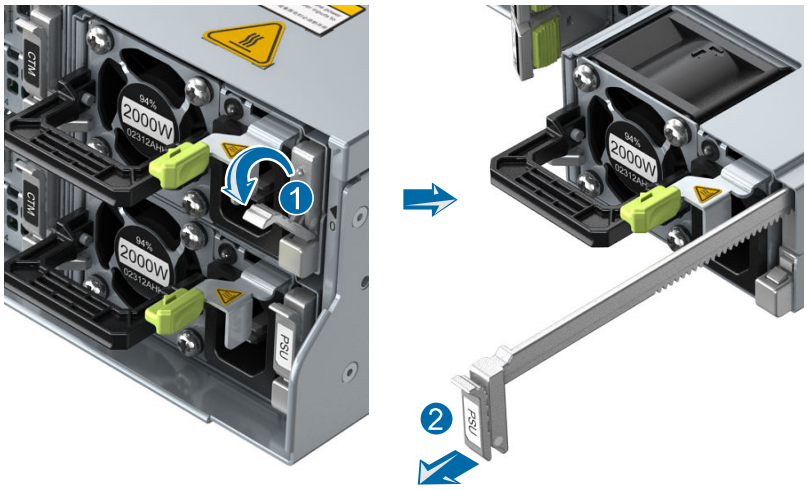
   
   

3. Repeat **Step 4.1** and **Step 4.2** to remove the positioning block on the other side of the disk enclosure.

**Step 5** Open the latch on the ejector lever of the power module, hold the ejector lever, and pull out the power module, as shown in **Figure 7-83**.

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**Figure 7-83** Opening the power module latch to pull out the power module




**NOTICE**

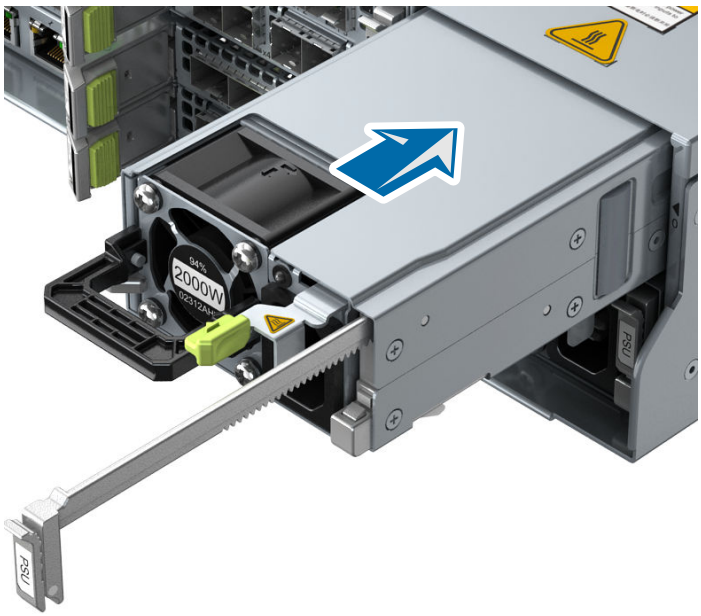
Do not press the yellow-green latch when removing the power module.

**Step 6** Put the removed power module into an ESD bag.

**Step 7** Take the spare part out of its ESD bag.

**Step 8** Pull out the ejector lever of the power module to be installed, insert the power module into the empty slot, and push the power module into the slot as much as possible, as shown in **Figure 7-84**.

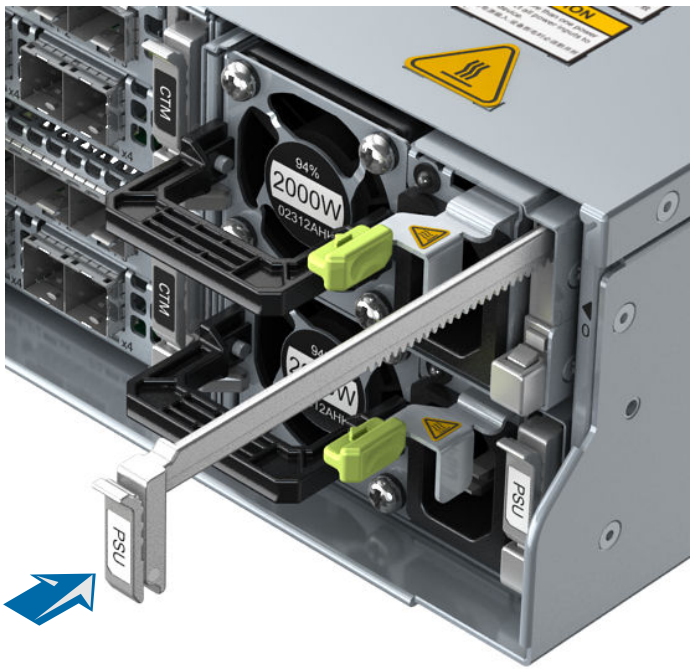
**Figure 7-84** Inserting the power module into the empty slot




**Step 9** Push the power module inwards using the ejector lever until the power module is completely inserted into the slot, as shown in **Figure 7-85**.

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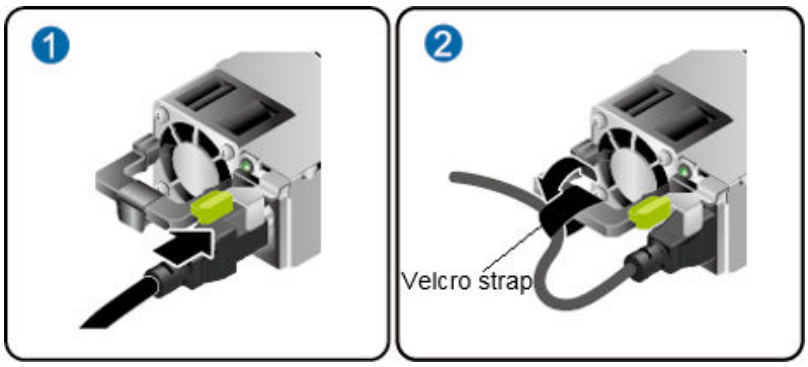
**Figure 7-85** Pushing the power module inwards using the ejector lever




**Step 10** Connect the power cables.

- Connect the AC power cable.
  a. Connect the power cable to the cable port on the AC power module, as shown in step 1 in **Figure 7-86**.

  **Figure 7-86** Connecting the AC power cable

  b. Secure the power cable using a velcro strap, as shown in step 2 in **Figure 7-86**.

  NOTE

  Adjust the position of the velcro strap to ensure that the velcro strap can fasten the AC power cable and the connector of the AC power cable is secure.

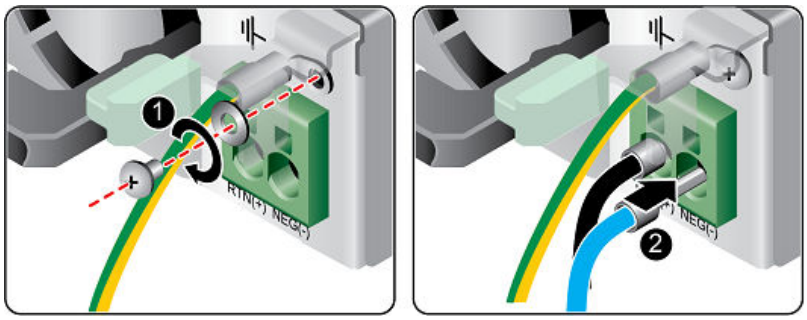
- Connect the DC power cables (applicable to 1200 W power modules).
  a. Connect one end (OT terminal) of the ground cable to the screw removed from the ground hole, install the screw in the ground hole, and tighten the screw, as shown in step 1 in **Figure 7-87**.

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b. Connect the power cable to the wiring terminal on the power module until the power cable snaps into the spring, as shown in step 2 in **Figure 7-87**.

- Connect the OT terminal on the cathode power cable (blue) to the NEG (-) wiring terminal on the power module.
- Connect the OT terminal on the anode power cable (black) to the RTN (+) wiring terminal on the power module.

**Figure 7-87** Connecting the DC power cable




c. Turn on the circuit breaker that connects to the DC power module.

- Connect the DC power cables (applicable to 2000 W power modules).

a. Connect one end (OT terminal) of the ground cable to the screw removed from the ground hole, install the screw in the ground hole, and tighten the screw, as shown in step 1 in **Figure 7-88**.

b. Insert one end of the power cable into the matched quick-connect terminal, and use a screwdriver to tighten the two screws on the quick-connect terminal, as shown in steps 2 and 3 in **Figure 7-88**.

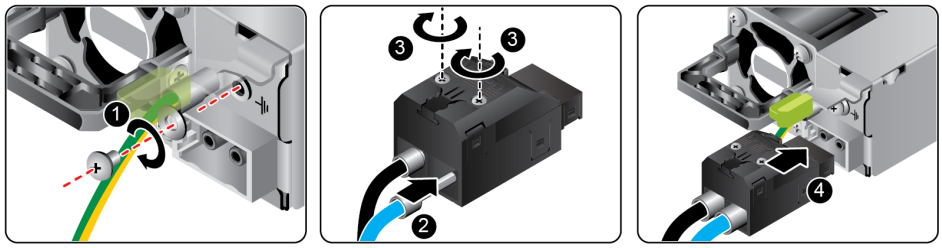
NOTE

This step applies to the scenario where a 1200 W DC power module is removed or a 2000 W DC power module is installed.

c. Insert the quick-connect terminal inserted with the power cable into the cable port on the power module. If you hear a "click" sound, the power cable is properly inserted, as shown in step 4 in **Figure 7-88**.

d. Turn on the circuit breaker that connects to the DC power module.

**Figure 7-88** Connecting the DC power cable




**Step 11** Wait about two minutes and check the status of the Running/Alarm indicator on the power module to determine whether the power module has been successfully installed. **Figure 7-89** or **Figure 7-90** shows the location of the Running/Alarm indicator.

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- If the indicator is steady green, the power module has been successfully installed.
- If the indicator is blinking green, the power input is normal but the controller enclosure is powered off.
- If the indicator is steady yellow or off, the newly installed power module is faulty or the power module slot is faulty.

**Figure 7-89** Running/Alarm indicator on a power module

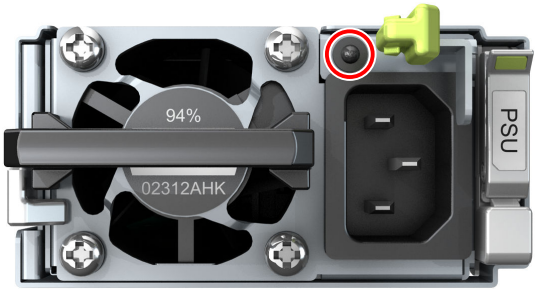
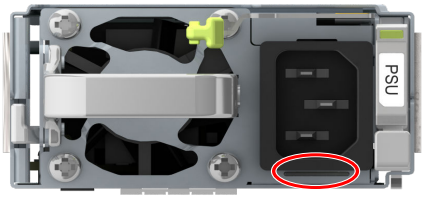



**Figure 7-90** (Optional) Running/Alarm indicator on a power module




**Step 12** Confirm the replacement.

After the preceding procedure is complete, check services on the host for storage-related errors. If any storage-related error is reported, contact Huawei technical support.

**----End**

## Follow-up Procedure

After the power module is replaced, label it to facilitate subsequent operations.

# 7.2.8 Replacing a Power Module (for a High-Density Disk Enclosure)

This section describes how to replace a power module.

## Prerequisites

- The spare part is on hand.
- The power module that you want to replace has been located.

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NOTE

You can locate a component in either of the following ways:

- Locating a component based on alarms in DeviceManager: On the **Alarms and Events** page of DeviceManager, view the help information and determine the ID of the component to be replaced. Then locate the component at your site based on its ID.
- Locating a component based on the status of its Running/Alarm indicator: For details about the indicators on different components, see "Indicator Introduction" of each component in the *Product Description* specific to your product model and version.

- Before replacing a power module, ensure that the other power module is working properly.

## Precautions

- Do not touch the connectors of a power module and power cable.
- Remove and insert a power module with even force. Excessive force may damage the appearance or connectors.
- Remove only one power module at a time.
- Shorten the duration of replacing a power module where possible.

## Tools and Materials

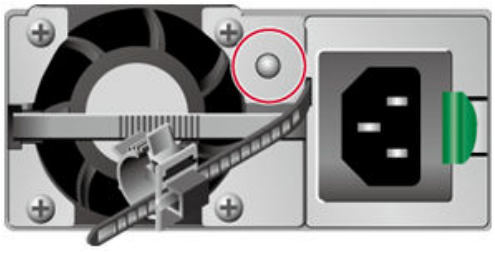
- ESD wrist strap
- ESD bag
- Labels

## Procedure

**Step 1** Perform a pre-replacement check.

Check whether there is a redundant power module and whether the Running/Alarm indicator of the redundant power module is steady green, as shown in Figure 7-91. For details about the indicators on different components, see "Indicator Introduction" in the *Product Description* of the corresponding model.

**Figure 7-91** Running/Alarm indicator on a power module



NOTICE

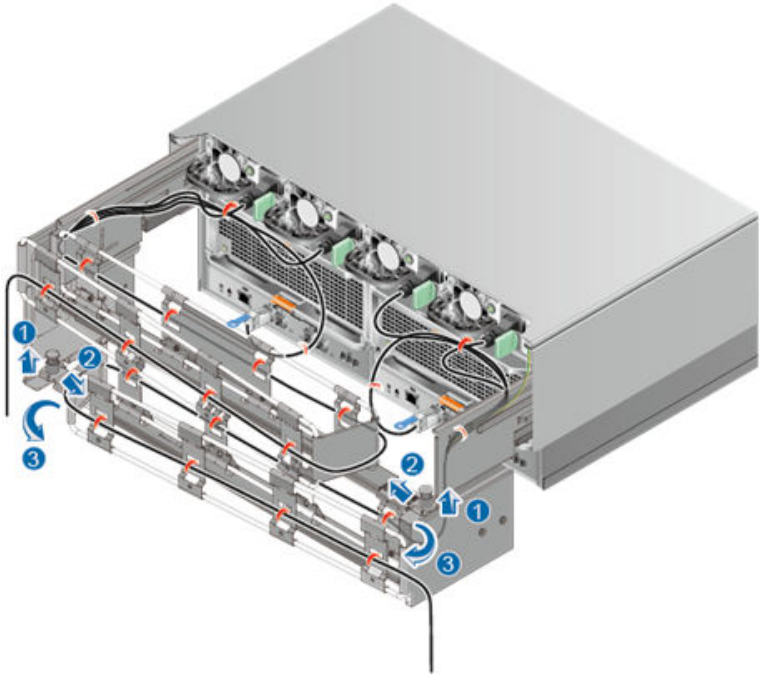
You can perform replacement only when a redundant power module exists and the redundant power module is working properly.

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**Step 2** Wear an ESD wrist strap.

**Step 3** Pull the spring pin upward, and press the adjustable guide rails of the cable manager to open the cable manager, as shown in **Figure 7-92**.

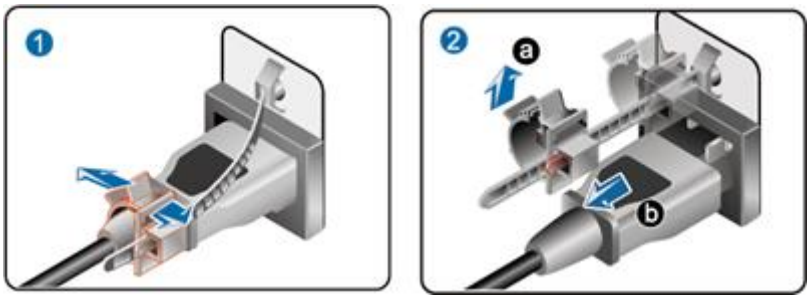
**Figure 7-92** Opening the cable manager



**Step 4** Remove the power cable from the power module that you want to replace.

1. Loosen the retention clip, as shown in step 1 in **Figure 7-93**.

**Figure 7-93** Removing the AC power cable

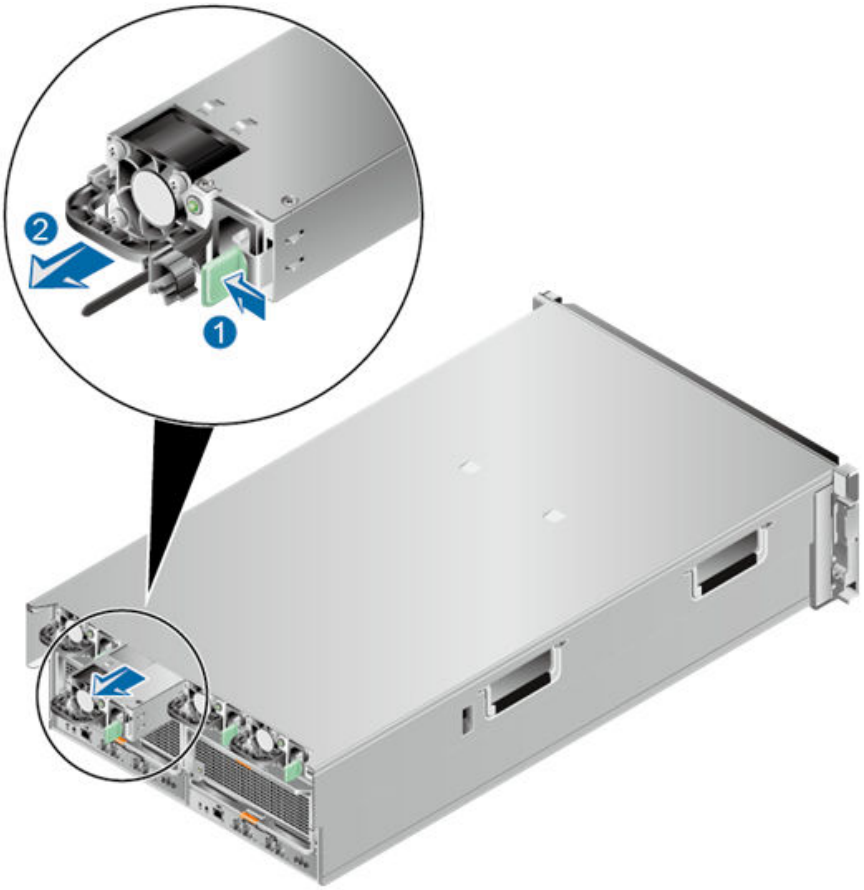


2. Pull up the retention clip, as shown in a of step 2 in **Figure 7-93**.
3. Remove the AC power cable, as shown in b of step 2 in **Figure 7-93**.

**Step 5** Press the latch on the power module and pull out the power module, as shown in **Figure 7-94**.

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**Figure 7-94** Removing a power module



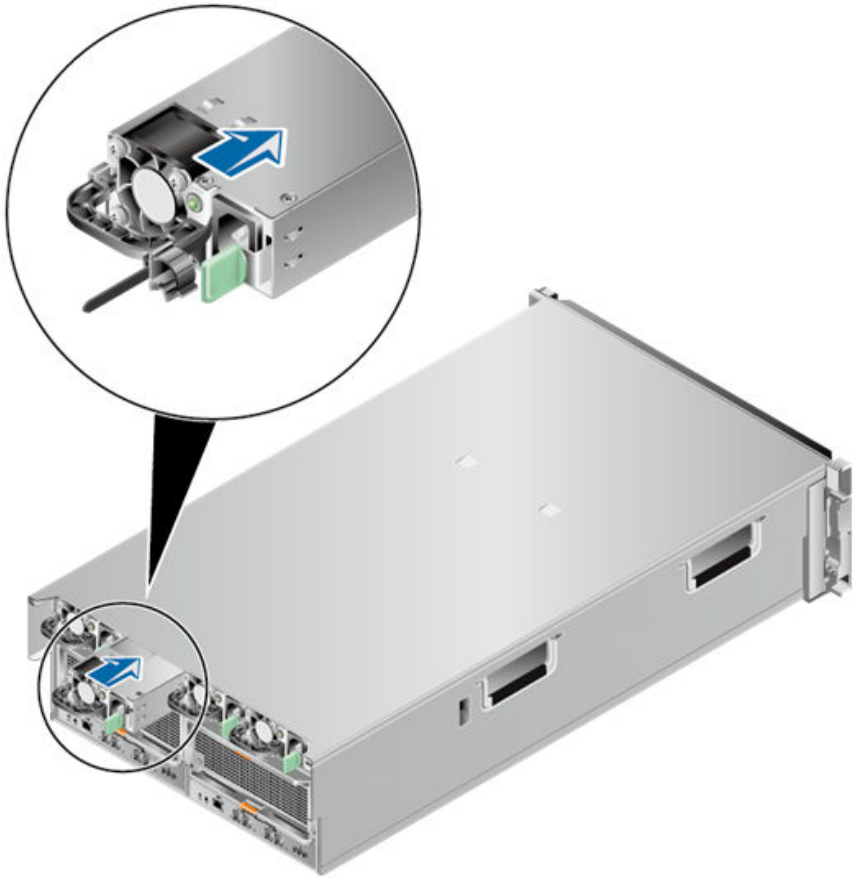

**Step 6** Put the removed power module into an ESD bag.

**Step 7** Take the spare part out of its ESD bag.

**Step 8** Insert the spare part into the slot until it clicks into place, as shown in **Figure 7-95**.

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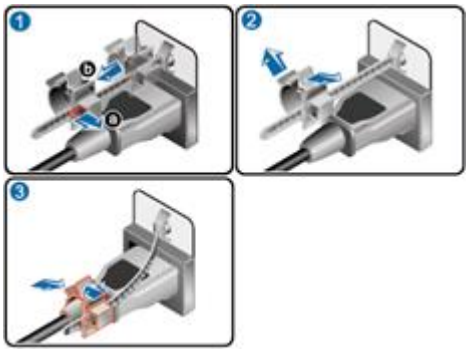
**Figure 7-95** Installing a power module



**Step 9** Connect the power cable and fix the buckle of the power socket to the power cable.

1. Press the locker of the retention clip outwards (as shown in a of step 1 in **Figure 7-96**), and meanwhile slide the retention clip to the connection part of the AC power cable (as shown in b of step 1 in **Figure 7-96**).

   **Figure 7-96** Securing the AC power cables with retention clips

2. Loosen the retention clip, as shown in step 2 in **Figure 7-96**.
3. Press the retention clip inwards to secure the connection part of the AC power cable, as shown in step 3 in **Figure 7-96**

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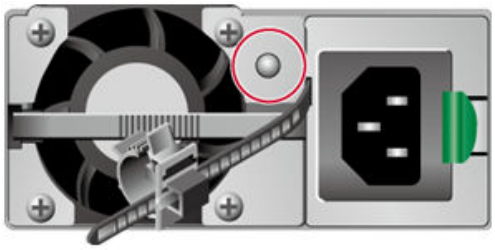
NOTE

Adjust the retention clip to ensure that it holds the AC power cable tightly.

**Step 10** Wait approximately two minutes and view the Running indicator of the power module to determine whether the power module has been successfully installed. Figure 7-97 shows the location of the Running indicator on a power module.

- If the indicator is steady green, the power module has been successfully installed.
- If the indicator is off, the newly installed power module is faulty, the slot for the power module is faulty, or the power module is incorrectly installed.

**Figure 7-97** Running indicator on a power module



**Step 11** Confirm the replacement.

After the preceding procedure is complete, check services on the host for storage-related errors. If any storage-related error is reported, contact Huawei technical support.

**----End**

### Follow-up Procedure

After the power module is replaced, label it to facilitate subsequent operations.

## 7.3 Replacing a BBU

This section describes how to replace a BBU.

### 7.3.1 Replacing a BBU (for OceanStor 2600 V5, 5300 V5, or 5300F V5)

This section describes how to replace a BBU.

### Prerequisites

- The spare part is on hand.
- Configuration data has been backed up.
- The BBU that you want to replace has been located.

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NOTE

You can locate a component in either of the following ways:

- Locating a component based on alarms in DeviceManager: On the **Alarms and Events** page of DeviceManager, view the help information and determine the ID of the component to be replaced. Then locate the component at your site based on its ID.
- Locating a component based on the status of its Running/Alarm indicator: For details about the indicators on different components, see "Indicator Introduction" of each component in the *Product Description* specific to your product model and version.

- When a BBU is being replaced, the other BBU is working properly.

## Precautions

- Remove and insert a BBU with even force. Excessive force may damage the appearance of the BBU or cause faults.
- Remove only one BBU at a time.
- A BBU must be replaced within three minutes. Otherwise, the system heat dissipation is compromised.

## Tools and Materials

- ESD wrist strap
- ESD bag
- Labels

## Procedure

**Step 1** Perform a pre-replacement check.

Check whether there is a redundant BBU and whether the Running/Alarm indicator of the BBU is steady green, as shown in **Figure 7-98**. For details about the indicators on different components, see "Indicator Introduction" in the *Product Description* of the corresponding model.

**Figure 7-98** Running/Alarm indicator on a BBU




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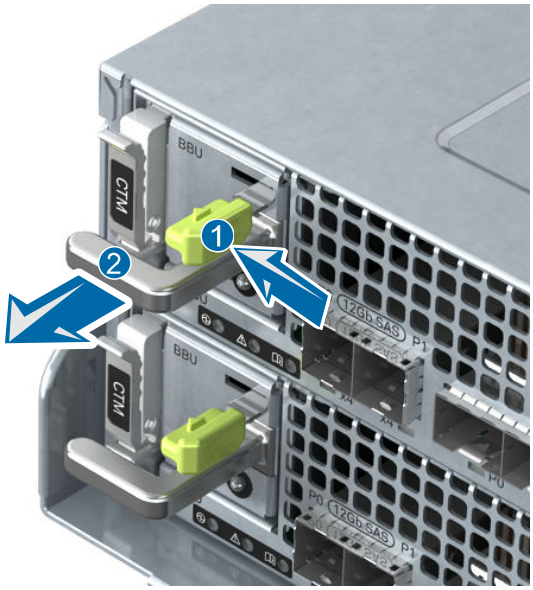
**NOTICE**

You can perform replacement only when a redundant BBU exists and the redundant BBU is working properly.

**Step 2** Wear an ESD wrist strap.

**Step 3** Press the latch on the BBU and pull the handle of the BBU outwards to pull out the BBU, as shown in **Figure 7-99**.

**Figure 7-99** Pulling out the BBU

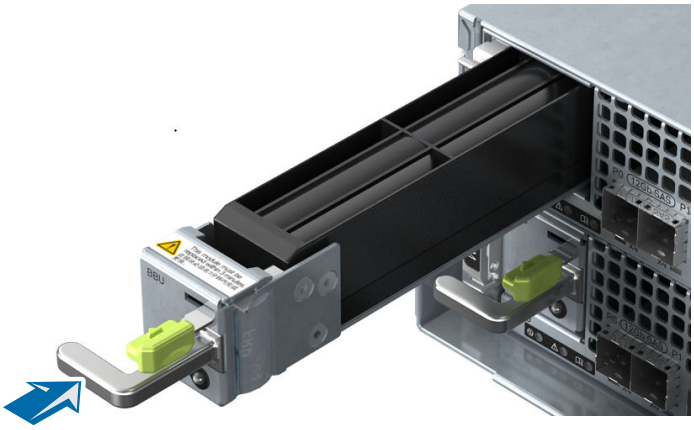



**Step 4** Put the removed BBU into an ESD bag.

**Step 5** Take the spare part out of its ESD bag.

**Step 6** Insert the BBU into the empty slot, as shown in **Figure 7-100**.

**Figure 7-100** Installing the BBU



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**Step 7** Wait about two minutes and check the status of the Running/Alarm indicator on the BBU to determine whether the BBU has been successfully installed. **Figure 7-101** shows the location of the Running/Alarm indicator.

- If the indicator is steady green or blinking green, the BBU has been successfully installed.
- If the indicator is steady yellow or off, the newly installed BBU is faulty, the BBU slot is faulty, or the BBU is incorrectly installed.

**Figure 7-101** Running/Alarm indicator on a BBU




**Step 8** Confirm the replacement.

After the preceding procedure is complete, check services on the host for storage-related errors. If any storage-related error is reported, contact Huawei technical support.

**----End**

## Follow-up Procedure

After the BBU is replaced, label it to facilitate subsequent operations.

# 7.3.2 Replacing a BBU (for OceanStor 5500 V5, 5500F V5, 5600 V5, 5600F V5, 5800 V5, or 5800F V5)

This section describes how to replace a BBU.

## Prerequisites

- The spare part is on hand.
- Configuration data has been backed up.
- The BBU that you want to replace has been located.


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NOTE

You can locate a component in either of the following ways:

- Locating a component based on alarms in DeviceManager: On the **Alarms and Events** page of DeviceManager, view the help information and determine the ID of the component to be replaced. Then locate the component at your site based on its ID.
- Locating a component based on the status of its Running/Alarm indicator: For details about the indicators on different components, see "Indicator Introduction" of each component in the *Product Description* specific to your product model and version.

- The two BBUs are installed in two power-BBU modules. Therefore, remove the power modules before removing the BBUs.
- Before replacing a BBU, ensure that the power-BBU module in which the other BBU resides is working properly.

## Precautions

- Remove and insert a BBU with even force. Excessive force may damage the appearance of the BBU or cause faults.
- Remove only one BBU at a time.
- A BBU must be replaced within three minutes. Otherwise, the system heat dissipation is compromised.

## Tools and Materials

- ESD wrist strap
- ESD bag
- Labels

## Procedure

**Step 1** Perform a pre-replacement check.

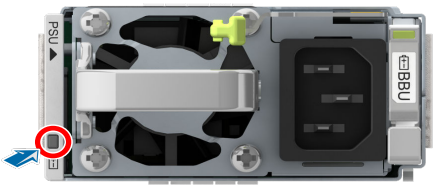
Check whether there is a redundant BBU and whether the Running/Alarm indicator of the BBU is steady green, as shown in **Figure 7-102** or **Figure 7-103**. For details about the indicators on different components, see "Indicator Introduction" in the *Product Description* of the corresponding model.

**Figure 7-102** Running/Alarm indicator on a BBU




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**Figure 7-103** (Optional) Running/Alarm indicator on a BBU




**NOTICE**

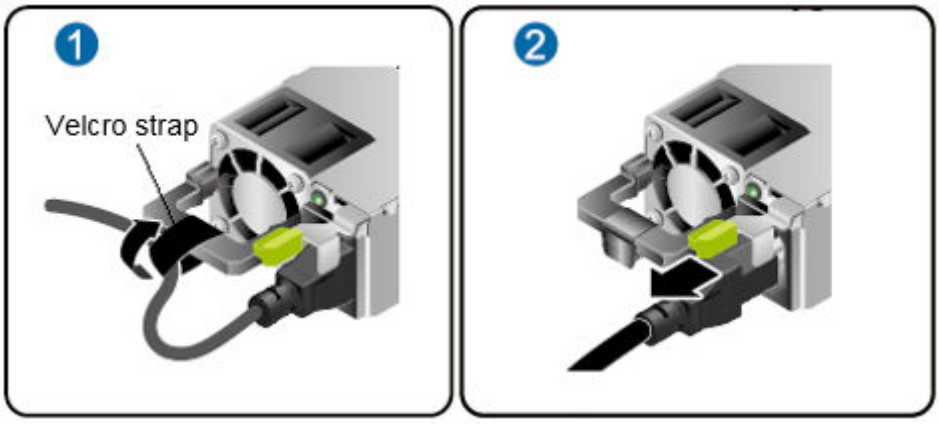
You can perform replacement only when a redundant BBU exists and the redundant BBU is working properly.

**Step 2** Wear an ESD wrist strap.

**Step 3** Remove the power cables.

1. Remove the velcro strap that secures the power cable, as shown in step 1 in **Figure 7-104**.

   **Figure 7-104** Removing the AC power cable

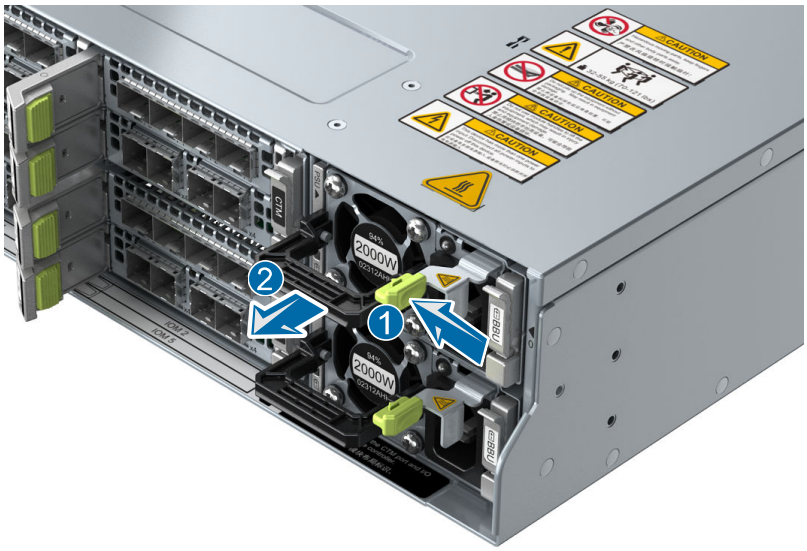
   
   

2. Remove the AC power cable, as shown in step 2 in **Figure 7-104**.

**Step 4** Press the latch on the power module and pull the handle of the power module outwards to pull out the power module, as shown in **Figure 7-105**.

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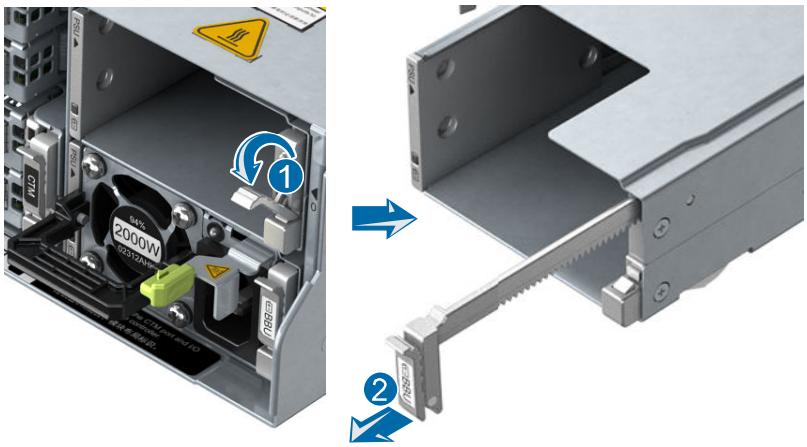
**Figure 7-105** Pulling out the power module




**Step 5** Put the removed power module into an ESD bag.

**Step 6** Open the latch on the ejector lever of the BBU, hold the ejector lever, and pull out the BBU, as shown in **Figure 7-106**.

**Figure 7-106** Opening the BBU latch to pull out the BBU



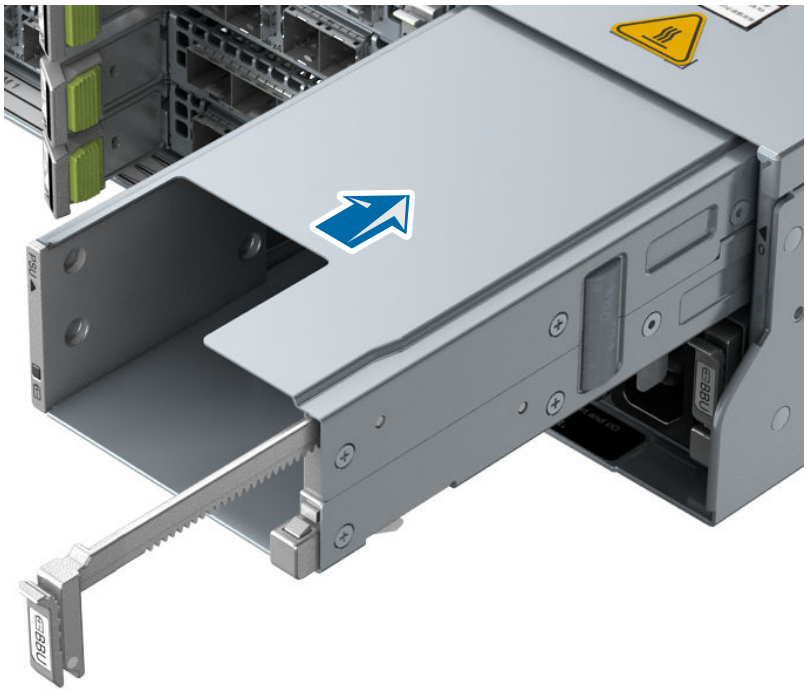

**Step 7** Put the removed BBU into an ESD bag.

**Step 8** Take the spare part out of its ESD bag.

**Step 9** Pull out the ejector lever of the BBU to be installed, insert the BBU into the empty slot, and push the BBU into the slot as much as possible, as shown in **Figure 7-107**.

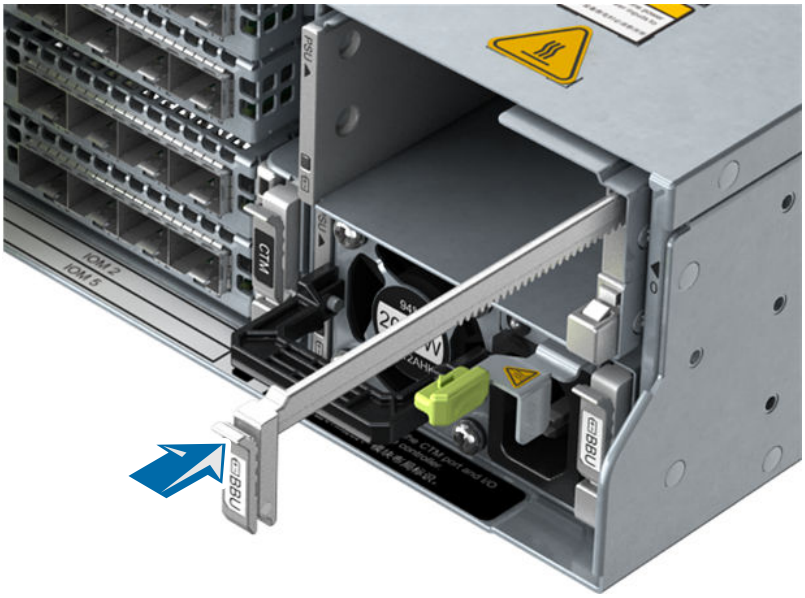
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**Figure 7-107** Inserting the BBU into the empty slot



**Step 10** Push the BBU inwards using the ejector lever until the BBU is completely inserted into the slot, as shown in **Figure 7-108**.

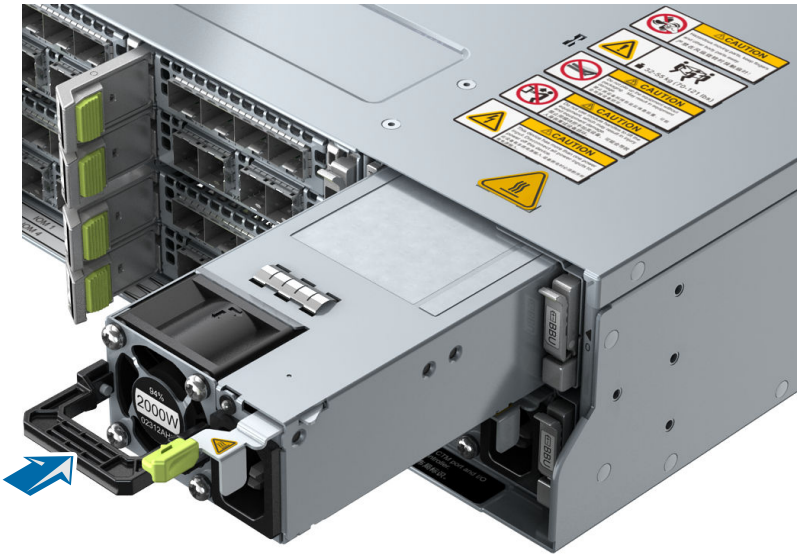
**Figure 7-108** Pushing the BBU inwards using the ejector lever



**Step 11** Insert the power module into the empty slot, as shown in **Figure 7-109**.

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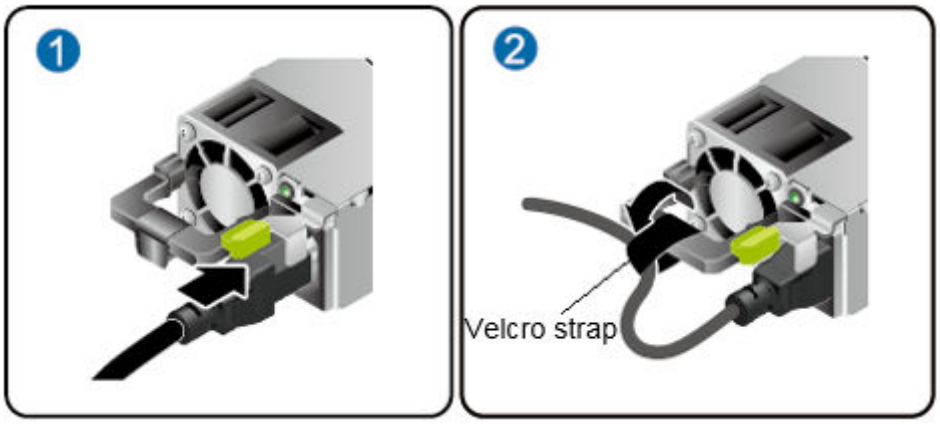
**Figure 7-109** Inserting the power module into the empty slot




**Step 12** Connect the power cables.

1. Connect the power cable to the cable port on the AC power module, as shown in step 1 in **Figure 7-110**.

   **Figure 7-110** Connecting the AC power cable




2. Secure the power cable using a velcro strap, as shown in step 2 in **Figure 7-110**.

NOTE

Adjust the position of the velcro strap to ensure that the velcro strap can fasten the AC power cable and the connector of the AC power cable is secure.

**Step 13** Wait about two minutes and check the status of the Running/Alarm indicator on the BBU to determine whether the BBU has been successfully installed. **Figure 7-111** or **Figure 7-112** shows the location of the Running/Alarm indicator.

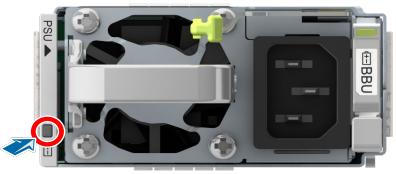
- If the indicator is steady green or blinking green, the BBU has been successfully installed.
- If the indicator is steady yellow or off, the newly installed BBU is faulty, the BBU slot is faulty, or the BBU is incorrectly installed.

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**Figure 7-111** Running/Alarm indicator on a BBU




**Figure 7-112** (Optional) Running/Alarm indicator on a BBU




**Step 14** Confirm the replacement.

After the preceding procedure is complete, check services on the host for storage-related errors. If any storage-related error is reported, contact Huawei technical support.

**----End**

## Follow-up Procedure

After the BBU is replaced, label it to facilitate subsequent operations.

# 7.3.3 Replacing a BBU (for OceanStor 6800 V5 or 6800F V5)

This section describes how to replace a BBU.

## Prerequisites

- The spare part is on hand.
- Configuration data has been backed up.
- The BBU that you want to replace has been located.

NOTE

You can locate a component in either of the following ways:

- Locating a component based on alarms in DeviceManager: On the **Alarms and Events** page of DeviceManager, view the help information and determine the ID of the component to be replaced. Then locate the component at your site based on its ID.
- Locating a component based on the status of its Running/Alarm indicator: For details about the indicators on different components, see "Indicator Introduction" of each component in the *Product Description* specific to your product model and version.

- When a BBU is being replaced, the other BBU is working properly.

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## Precautions

- Remove and insert a BBU with even force. Excessive force may damage the appearance of the BBU or cause faults.
- Remove only one BBU at a time.
- A BBU must be replaced within three minutes. Otherwise, the system heat dissipation is compromised.

## Tools and Materials

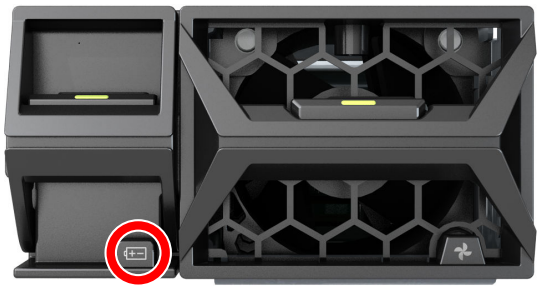
- ESD wrist strap
- ESD bag
- Labels

## Procedure

**Step 1** Perform a pre-replacement check.

Check whether there is a redundant BBU and whether the Running/Alarm indicator of the BBU is steady green, as shown in **Figure 7-113**. For details about the indicators on different components, see "Indicator Introduction" in the *Product Description* of the corresponding model.

**Figure 7-113** Running/Alarm indicator on a BBU



**NOTICE**

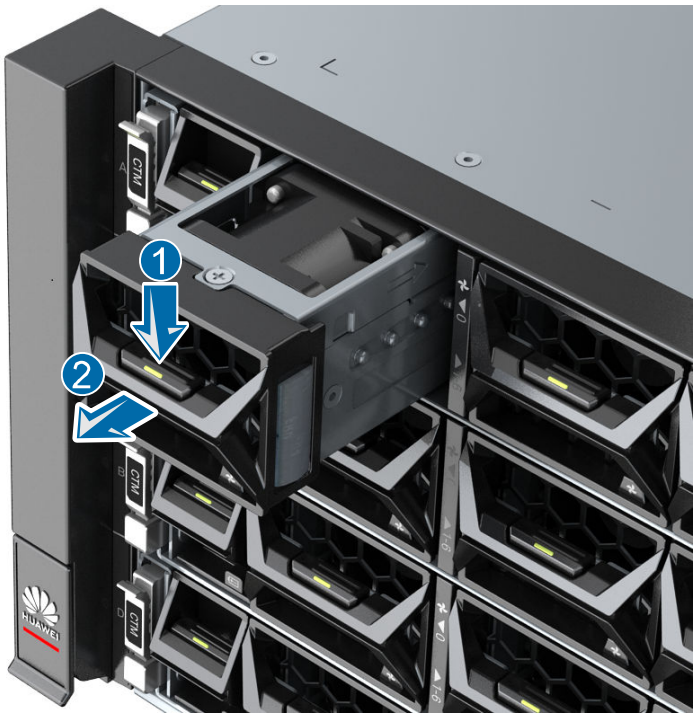
You can perform replacement only when a redundant BBU exists and the redundant BBU is working properly.

**Step 2** Wear an ESD wrist strap.

**Step 3** Press the latch on the fan module and pull the handle of the fan module outwards to pull out the fan module, as shown in **Figure 7-114**.

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**Figure 7-114** Pulling out the fan module

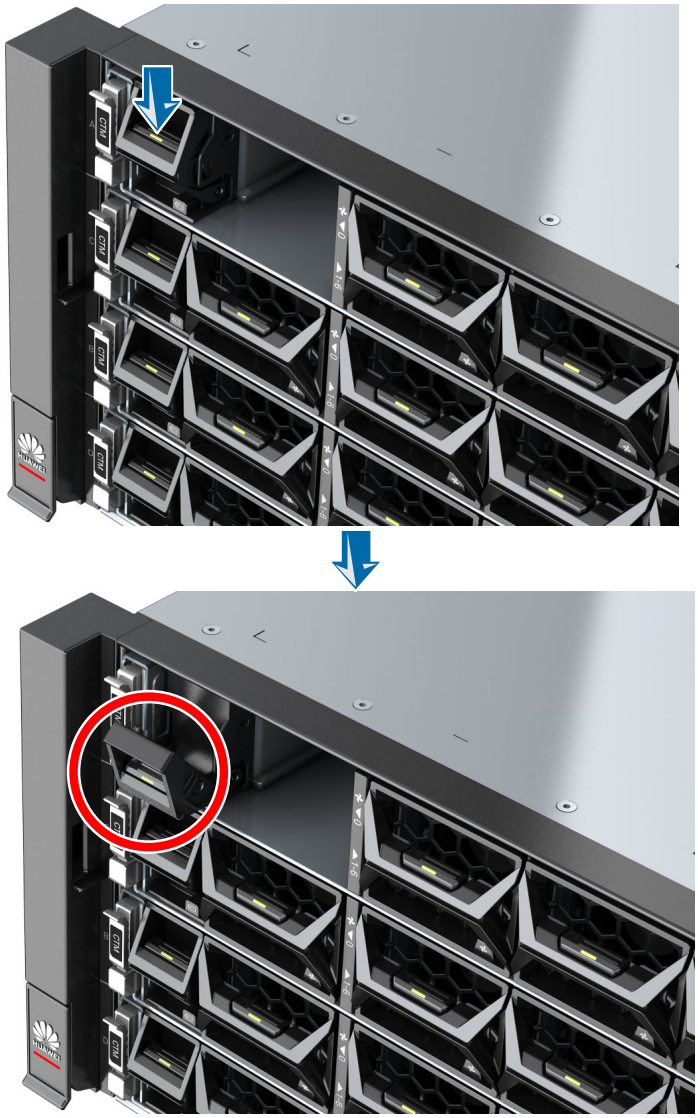



**Step 4** Put the removed fan module into an ESD bag.

**Step 5** Press the latch on the BBU to release the handle of the BBU, as shown in **Figure 7-115**.

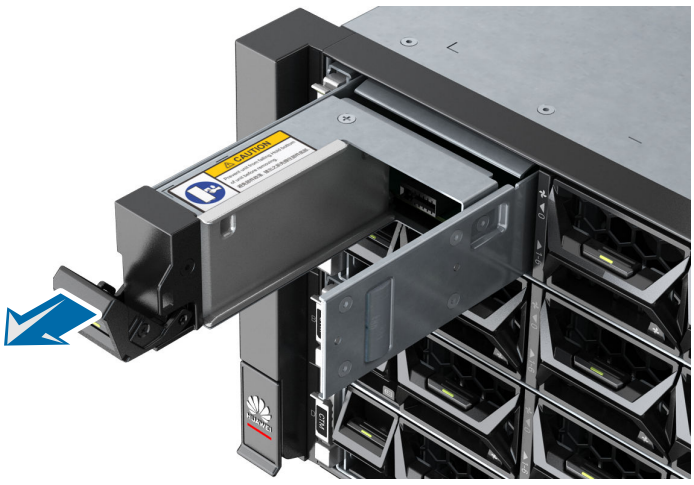
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**Figure 7-115** Releasing the handle of the BBU



**Step 6** Hold the handle of the BBU to pull it out, as shown in **Figure 7-116**.

**Figure 7-116** Pulling out the BBU



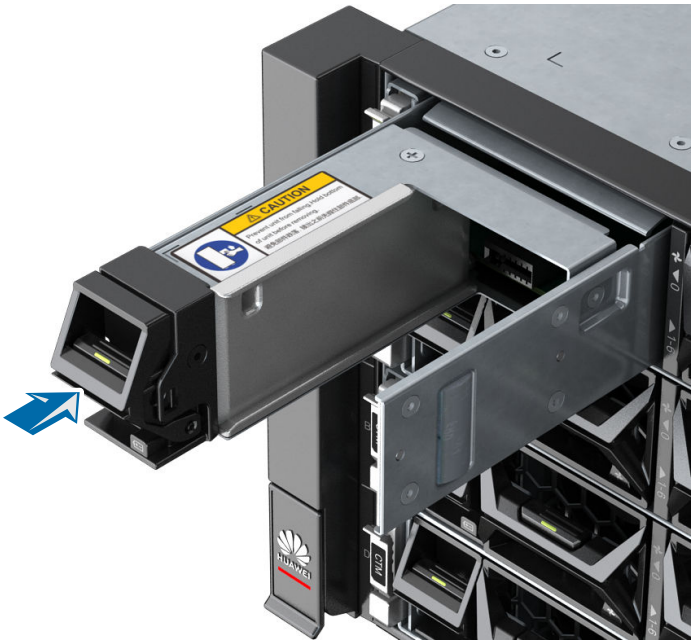
 Copyright © Huawei Technologies Co., Ltd. 

**Step 7** Put the removed BBU into an ESD bag.

**Step 8** Take the spare part out of its ESD bag.

**Step 9** Insert the spare part into the empty slot, as shown in **Figure 7-117**.

**Figure 7-117** Installing the BBU



**Step 10** Take the fan module out of its ESD bag and insert the fan module into the empty slot, as shown in **Figure 7-118**.

**Figure 7-118** Inserting the fan module into the empty slot

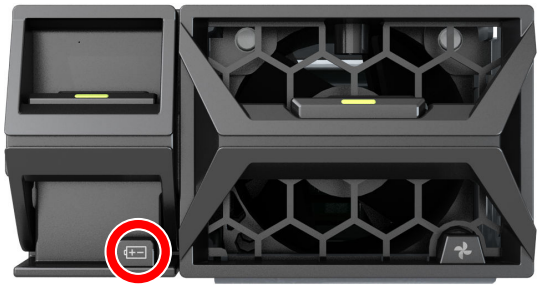


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**Step 11** Wait about two minutes and check the status of the Running/Alarm indicator on the BBU to determine whether the BBU has been successfully installed. **Figure 7-119** shows the location of the Running/Alarm indicator.

- If the indicator is steady green or blinking green, the BBU has been successfully installed.
- If the indicator is steady yellow or off, the newly installed BBU is faulty, the BBU slot is faulty, or the BBU is incorrectly installed.

**Figure 7-119** Running/Alarm indicator on a BBU



**Step 12** Confirm the replacement.

After the preceding procedure is complete, check services on the host for storage-related errors. If any storage-related error is reported, contact Huawei technical support.

**----End**

### Follow-up Procedure

After the BBU is replaced, label it to facilitate subsequent operations.

## 7.4 Replacing a Fan Module

This section describes how to replace a fan module.

## 7.4.1 Replacing a Fan Module (for OceanStor 6800 V5 or 6800F V5)

This section describes how to replace a fan module.

### Prerequisites

- The spare part is on hand.
- The fan module that you want to replace has been located.

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NOTE

You can locate a component in either of the following ways:

- Locating a component based on alarms in DeviceManager: On the **Alarms and Events** page of DeviceManager, view the help information and determine the ID of the component to be replaced. Then locate the component at your site based on its ID.
- Locating a component based on the status of its Running/Alarm indicator: For details about the indicators on different components, see "Indicator Introduction" of each component in the *Product Description* specific to your product model and version.

## Precautions

- Do not touch rotating fan blades.
- Remove and insert a fan module with even force. Excessive force may damage the appearance of the fan module or cause faults.
- Remove only one fan module at a time.
- A fan module must be replaced within three minutes. Otherwise, the system heat dissipation is compromised.
- To avoid the sharp increase of the system temperature, replace only faulty fan modules.

## Tools and Materials

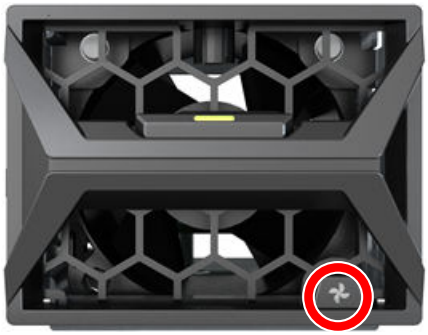
- ESD wrist strap
- ESD bag
- Labels

## Procedure

**Step 1** Perform a pre-replacement check.

Check whether there is a redundant fan module and whether the Running/Alarm indicator of the fan module is steady green, as shown in **Figure 7-120**. For details about the indicators on different components, see "Indicator Introduction" in the *Product Description* of the corresponding model.

**Figure 7-120** Running/Alarm indicator on a fan module



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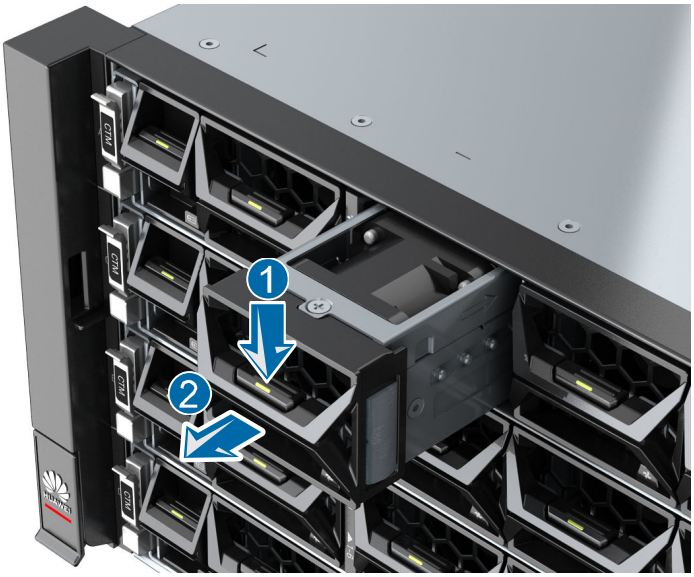
**NOTICE**

You can perform replacement only when a redundant fan module exists and the redundant fan module is working properly.

**Step 2** Wear an ESD wrist strap.

**Step 3** Press the latch on the fan module to release the handle and pull out the fan module, as shown in **Figure 7-121**.

**Figure 7-121** Removing a fan module




**Step 4** Put the removed fan module into an ESD bag.

**Step 5** Take the spare part out of its ESD bag.

**Step 6** Insert the spare part into the empty slot, as shown in **Figure 7-122**.

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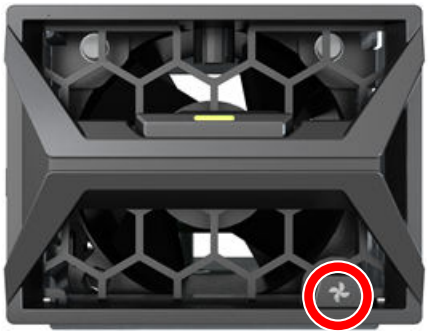
**Figure 7-122** Installing a fan module



**Step 7** Wait about two minutes and check the status of the Running/Alarm indicator on the fan module to determine whether the fan module has been successfully installed. **Figure 7-123** shows the location of the Running/Alarm indicator.

- If the indicator is steady green, the fan module has been successfully installed.
- If the indicator is steady yellow or off, the newly installed fan module is faulty, the fan module slot is faulty, or the fan module is incorrectly installed.

**Figure 7-123** Running/Alarm indicator on a fan module



**Step 8** Confirm the replacement.

After the preceding procedure is complete, check services on the host for storage-related errors. If any storage-related error is reported, contact Huawei technical support.

**----End**

## Follow-up Procedure

After the fan module is replaced, label it to facilitate subsequent operations.

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# 7.4.2 Replacing a Fan Module (for a 4 U SAS Disk Enclosure)

This section describes how to replace a fan module.

## Prerequisites

- The spare part is on hand.
- The fan module that you want to replace has been located.

NOTE

You can locate a component in either of the following ways:

- Locating a component based on alarms in DeviceManager: On the **Alarms and Events** page of DeviceManager, view the help information and determine the ID of the component to be replaced. Then locate the component at your site based on its ID.
- Locating a component based on the status of its Running/Alarm indicator: For details about the indicators on different components, see "Indicator Introduction" of each component in the *Product Description* specific to your product model and version.

## Precautions

- Do not touch rotating fan blades.
- Remove and insert a fan module with even force. Excessive force may damage the appearance of the fan module or cause faults.
- Remove only one fan module at a time.
- A fan module must be replaced within three minutes. Otherwise, the system heat dissipation is compromised.
- To avoid the sharp increase of the system temperature, replace only faulty fan modules.

## Tools and Materials

- ESD wrist strap
- ESD bag
- Labels

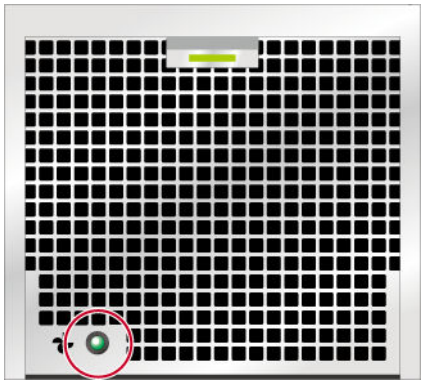
## Procedure

**Step 1** Perform a pre-replacement check.

Check whether there is a redundant fan module and whether the Running/Alarm indicator of the fan module is steady green, as shown in **Figure 7-124**. For details about the indicators on different components, see "Indicator Introduction" in the *Product Description* of the corresponding model.

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**Figure 7-124** Running/Alarm indicator on a fan module



**NOTICE**

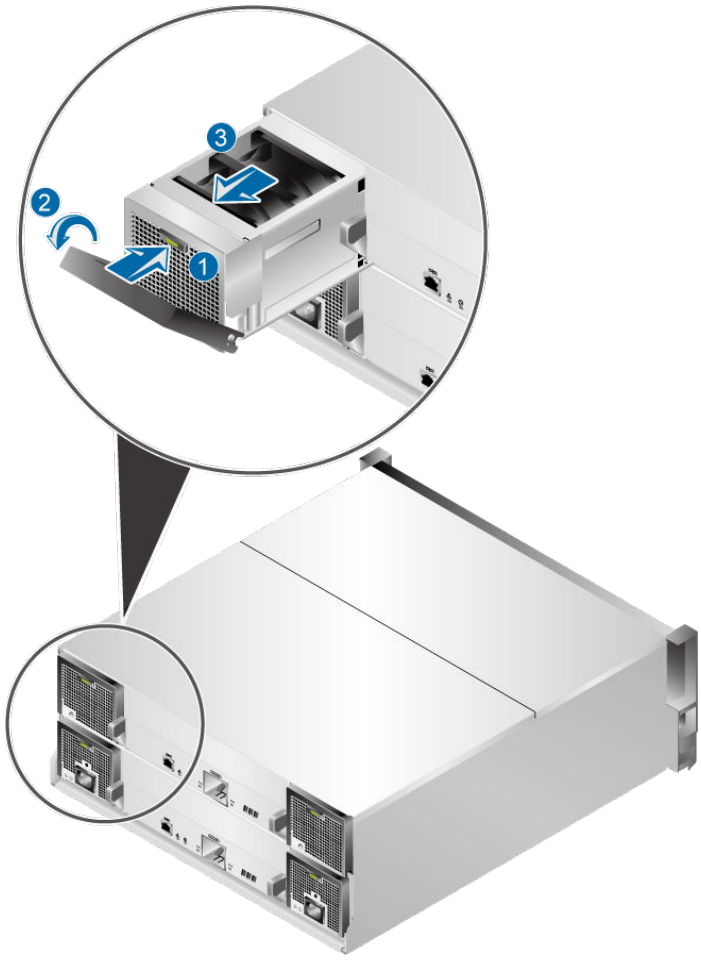
You can perform replacement only when a redundant fan module exists and the redundant fan module is working properly.

**Step 2** Wear an ESD wrist strap.

**Step 3** Press the latch on the fan module to release the handle and pull out the fan module, as shown in **Figure 7-125**.

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**Figure 7-125** Removing a fan module



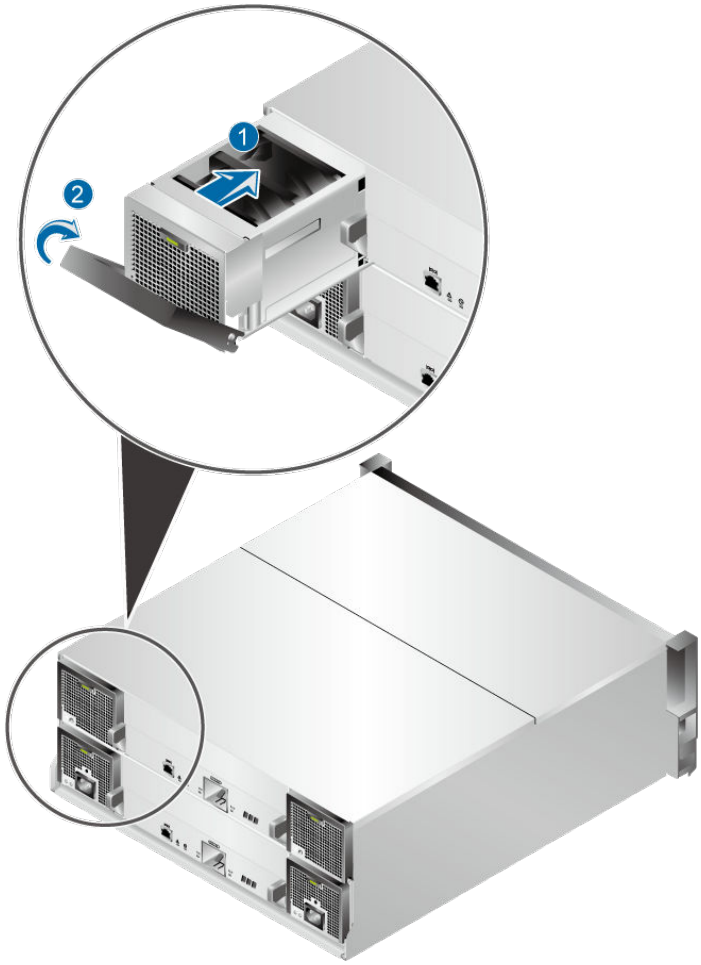

**Step 4** Put the removed fan module into an ESD bag.

**Step 5** Take the spare part out of its ESD bag.

**Step 6** Open the handle of the spare part, insert the spare part into the empty slot, and close the handle, as shown in **Figure 7-126**.

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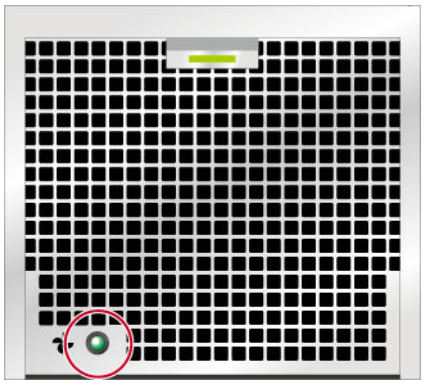
**Figure 7-126** Installing a fan module




**Step 7** Wait about two minutes and check the status of the Running/Alarm indicator on the fan module to determine whether the fan module has been successfully installed. **Figure 7-127** shows the location of the Running/Alarm indicator.

- If the indicator is steady green, the fan module has been successfully installed.
- If the indicator is steady yellow or off, the newly installed fan module is faulty, the fan module slot is faulty, or the fan module is incorrectly installed.

**Figure 7-127** Running/Alarm indicator on a fan module



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**Step 8** Confirm the replacement.

After the preceding procedure is complete, check services on the host for storage-related errors. If any storage-related error is reported, contact Huawei technical support.

**----End**

## Follow-up Procedure

After the fan module is replaced, label it to facilitate subsequent operations.

# 7.4.3 Replacing a Fan Module (for a High-Density Disk Enclosure)

This section describes how to replace a fan module.

## Prerequisites

- The spare part is on hand.
- The fan module that you want to replace has been located.

NOTE

You can locate a component in either of the following ways:

- Locating a component based on alarms in DeviceManager: On the **Alarms and Events** page of DeviceManager, view the help information and determine the ID of the component to be replaced. Then locate the component at your site based on its ID.
- Locating a component based on the status of its Running/Alarm indicator: For details about the indicators on different components, see "Indicator Introduction" of each component in the *Product Description* specific to your product model and version.

## Precautions

- Do not touch rotating fan blades.
- Remove and insert a fan module with even force. Excessive force may damage the appearance or connectors.
- Remove only one fan module at a time.
- Replace a fan within two minutes. Otherwise, system services may be affected.

## Tools and Materials

- ESD wrist strap
- ESD bag
- Labels

## Procedure

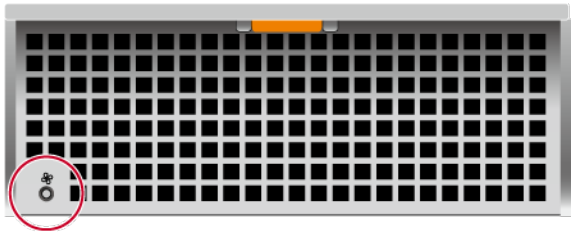
**Step 1** Perform a pre-replacement check.

Check whether there is a redundant fan module and whether the Running/Alarm indicator of the fan module is steady green, as shown in **Figure 7-128**. For details

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about the indicators on different components, see "Indicator Introduction" in the *Product Description* of the corresponding model.

**Figure 7-128** Running/Alarm indicator on a fan module



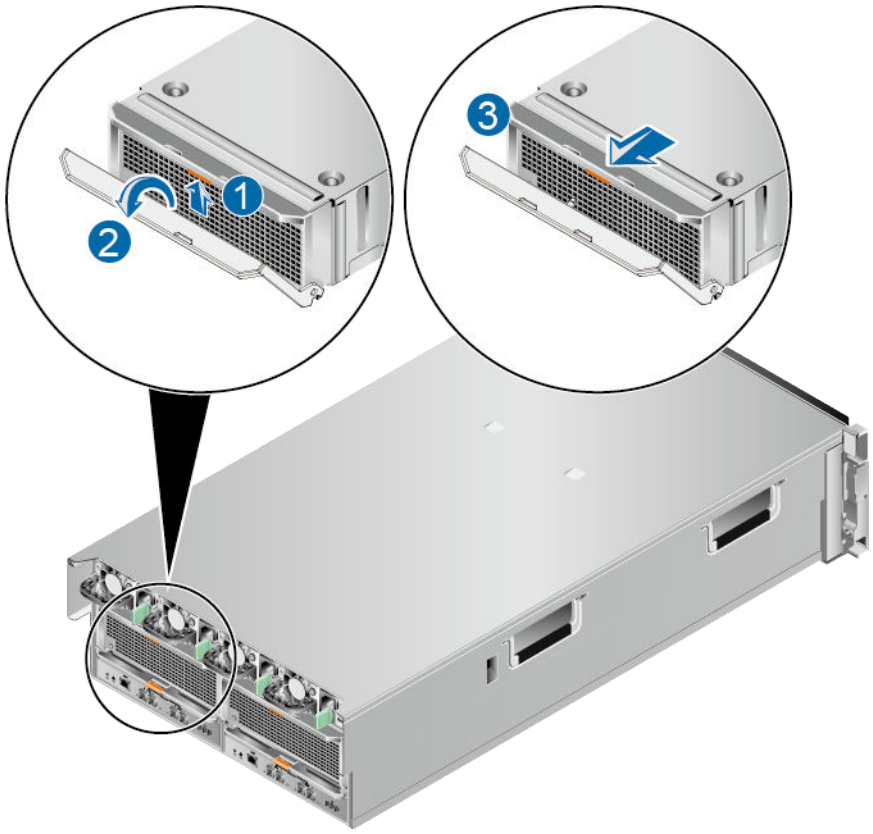
**NOTICE**

You can perform replacement only when a redundant fan module exists and the redundant fan module is working properly.

**Step 2** Wear an ESD wrist strap.

**Step 3** Press the latch on the fan module to release the handle and pull out the fan module, as shown in **Figure 7-129**.

**Figure 7-129** Removing a fan module



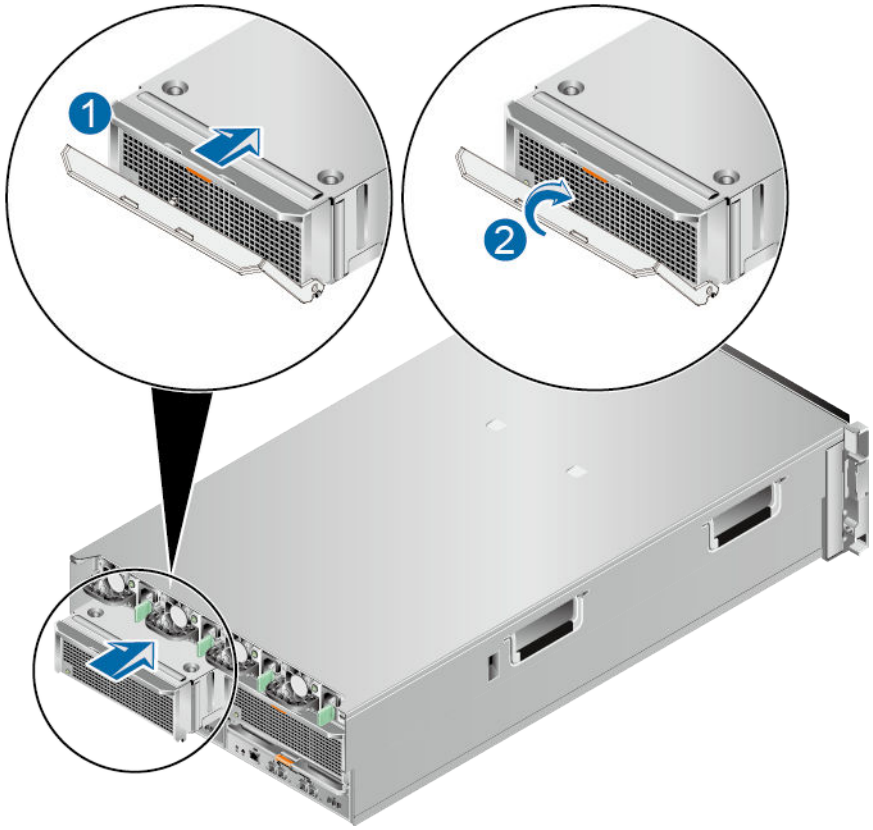

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**Step 4** Put the removed fan module into an ESD bag.

**Step 5** Take the spare part out of its ESD bag.

**Step 6** Fully open the handle on the spare part, insert the spare part, and close the handle, as shown in **Figure 7-130**.

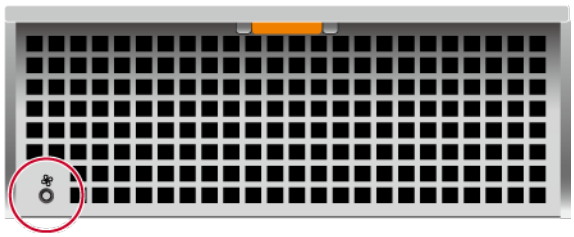
**Figure 7-130** Installing a fan module




**Step 7** Wait approximately two minutes and check the status of the fan module Running/Alarm indicator to determine whether the fan module has been successfully installed. **Figure 7-131** shows the location of a fan module Running/Alarm indicator.

- If the indicator is steady green, the fan module has been successfully installed.
- If the indicator is steady red or off, the newly installed fan module is faulty, the slot for the fan module is faulty, or the fan module is incorrectly installed.

**Figure 7-131** Running/Alarm indicator on a fan module



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**Step 8** Confirm the replacement.

After the preceding procedure is complete, check services on the host for storage-related errors. If any storage-related error is reported, contact Huawei technical support.

**----End**

### Follow-up Procedure

After the fan module is replaced, label it to facilitate subsequent operations.

# 7.5 Replacing a Disk Module

This section describes how to replace a disk module.

## 7.5.1 Replacing a Disk Module (for a 12-Slot Disk Enclosure)

This section describes how to replace a disk module, including the replacement of failing disks (disks not yet completely faulty) and faulty disks.

### Impact on the System

The replacement of a disk triggers the pre-copy process of the disk. The pre-copy time depends on factors such as the used capacity of the disk and its utilization. You are advised to replace the disk in off-peak hours.

### Prerequisites

- The spare part is on hand.
- Huawei-certified disk modules that match the product model are used as spare disk modules. These modules are obtained by service engineers based on the part codes of failed disk modules.
- The disk module that you want to replace has been located.

NOTE

You can locate a component in one of the following ways:

- Locating a disk based on alarms in DeviceManager: On the **Alarms and Events** page of DeviceManager, view the help information and determine the ID of the disk to be replaced. Then locate the disk at your site based on the disk enclosure ID and slot ID.
- Locating a component based on its location indicator: You are advised to set the location indicator of the component in DeviceManager. For details, see the *Online Help* of DeviceManager. Then, locate the component at your site based on its location indicator.
- Locating a component based on the status of its Running/Alarm indicator: For details about the indicators on different components, see "Indicator Introduction" of each component in the *Product Description* specific to your product model and version.

### Precautions

- When handling a disk module, hold only its edge to prevent it from damage.
- Remove and insert a disk module with even force. Excessive force may damage the appearance of the disk module or cause faults.

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- When removing a non-SSD disk module, pull it partially out of its slot. Wait about 20 seconds until it spins down and then pull it completely out of the slot.
- After inserting or removing a disk module, wait at least one minute before removing or inserting it to prevent disk module damage.
- To prevent data loss, replace only a disk module of which Alarm/Location indicator is steady yellow.
- Complete the replacement within five minutes after removing the original disk. Otherwise, the system heat dissipation is compromised.
- Use SmartKit to replace a failing disk.
- Ensure that the spare part is inserted in to the same slot as the replaced disk. Otherwise, the system may work incorrectly.

## Tools and Materials

- ESD wrist strap
- ESD bag
- Labels

## Procedure

**Step 1** Check status before replacement.

1. Check system status.

   Start SmartKit and choose **Home** > **Storage** > **Routine Maintenance** > **Health Check**. On the **Health Check** page, perform inspection as instructed. For details, see **7.1.2 Checking System Status**.

   NOTE

   If any items fail the inspection, rectify the faults by performing the recommended actions in the inspection reports. Ensure that all other parts except the parts to be replaced are working properly.

2. Perform a pre-replacement check.

   Start SmartKit and choose **Home** > **Storage** > **Parts Replacement** > **More** > **Parts Replacement (CRU)**. On the CRU replacement page, complete the check before the replacement as prompted. For details, see **7.1.3 Replacing a CRU**.

   NOTICE

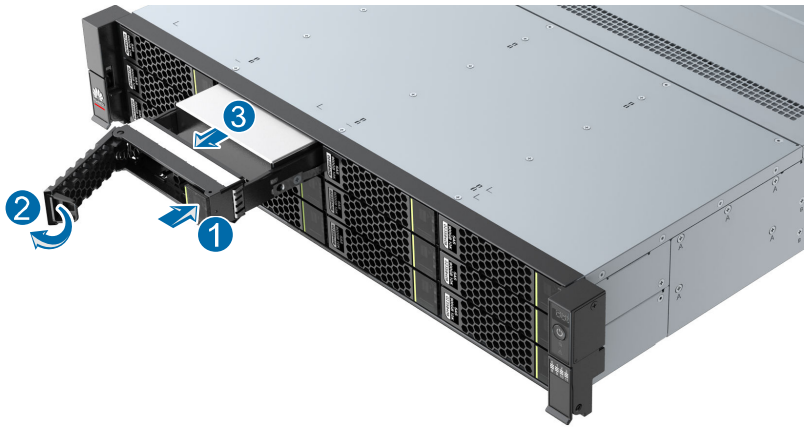
   You can proceed to next steps only when all items pass the pre-replacement check and the replacement page is displayed. If any item fails, rectify the fault as prompted.

**Step 2** Wear an ESD wrist strap.

**Step 3** Press the latch on the disk module to release the handle and pull out the disk module, as shown in **Figure 7-132**.

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**Figure 7-132** Removing a disk module




**Step 4** Put the removed disk module into an ESD bag.

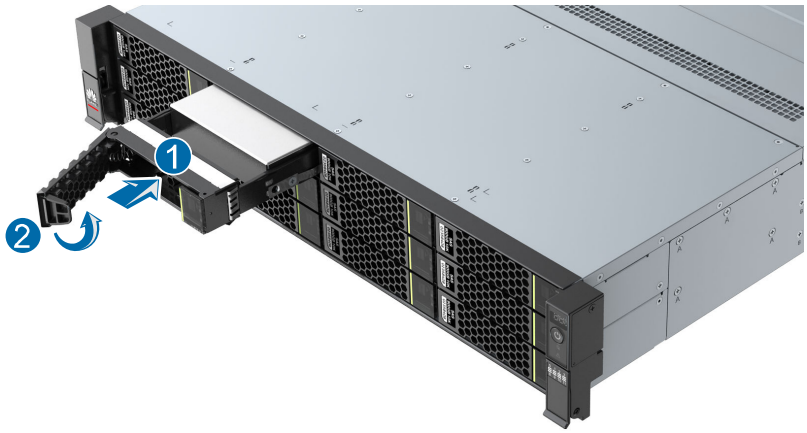
**Step 5** Take the spare part out of its ESD bag.

**Step 6** Open the handle of the spare part, insert the spare part into the empty slot, and close the handle, as shown in **Figure 7-133**.

**NOTICE**

Insert the disk module into the slot by pushing the middle area of the disk module (as shown in arrow 1 in **Figure 7-133**) to ensure that the disk module is properly inserted into its position.

**Figure 7-133** Installing a disk module




**Step 7** Wait about two minutes and check the status of the Running and Alarm/Location indicators on the disk module to determine whether the disk module has been successfully installed. **Figure 7-134** shows the locations of the Running and Alarm/Location indicators.

- If the Running indicator is steady on and the Alarm/Location indicator is off, the disk module has been successfully installed.
- If the Running indicator is off or the Alarm/Location indicator is steady on, the newly installed disk module is faulty, the disk module slot is faulty, or the disk module is incorrectly installed.

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**Figure 7-134** Indicators on a disk module




| | | | |
|---|---|---|---|
| 1 | Running indicator of the disk module | 2 | Alarm/Location indicator of the disk module |

**Step 8** Confirm the replacement.

1. Perform a post-replacement inspection.

   After the parts replacement, return to the SmartKit page and click **Replaced**. Then complete the check after the replacement as prompted.

2. Check the system status after the replacement.

   Return to the home page, choose **Home** > **Storage** > **Routine Maintenance** > **Health Check**, and check the system status again. If any inspection item fails, rectify the fault based on the suggestions in the inspection report.

3. After the preceding procedure is complete, check services on the host for storage-related errors. If any storage-related error is reported, contact Huawei technical support.

**----End**

## Follow-up Procedure

After the disk module is replaced, label it to facilitate subsequent operations.

# 7.5.2 Replacing a Disk Module (for a 24-Slot Disk Enclosure)

This section describes how to replace a disk module, including the replacement of failing disks (disks not yet completely faulty) and faulty disks.

## Impact on the System

The replacement of a disk triggers the pre-copy process of the disk. The pre-copy time depends on factors such as the used capacity of the disk and its utilization. You are advised to replace the disk in off-peak hours.

## Prerequisites

- The spare part is on hand.
- Huawei-certified disk modules that match the product model are used as spare disk modules. These modules are obtained by service engineers based on the part codes of failed disk modules.
- The disk module that you want to replace has been located.

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NOTE

You can locate a component in one of the following ways:

- Locating a disk based on alarms in DeviceManager: On the **Alarms and Events** page of DeviceManager, view the help information and determine the ID of the disk to be replaced. Then locate the disk at your site based on the disk enclosure ID and slot ID.
- Locating a component based on its location indicator: You are advised to set the location indicator of the component in DeviceManager. For details, see the *Online Help* of DeviceManager. Then, locate the component at your site based on its location indicator.
- Locating a component based on the status of its Running/Alarm indicator: For details about the indicators on different components, see "Indicator Introduction" of each component in the *Product Description* specific to your product model and version.

## Precautions

- When handling a disk module, hold only its edge to prevent it from damage.
- Remove and insert a disk module with even force. Excessive force may damage the appearance of the disk module or cause faults.
- When removing a non-SSD disk module, pull it partially out of its slot. Wait about 20 seconds until it spins down and then pull it completely out of the slot.
- After inserting or removing a disk module, wait at least one minute before removing or inserting it to prevent disk module damage.
- To prevent data loss, replace only a disk module of which Alarm/Location indicator is steady yellow.
- Complete the replacement within five minutes after removing the original disk. Otherwise, the system heat dissipation is compromised.
- Use SmartKit to replace a failing disk.
- Ensure that the spare part is inserted in to the same slot as the replaced disk. Otherwise, the system may work incorrectly.

## Tools and Materials

- ESD wrist strap
- ESD bag
- Labels

## Procedure

**Step 1** Check status before replacement.

1. Check system status.

   Start SmartKit and choose **Home** > **Storage** > **Routine Maintenance** > **Health Check**. On the **Health Check** page, perform inspection as instructed. For details, see **7.1.2 Checking System Status**.

   NOTE

   If any items fail the inspection, rectify the faults by performing the recommended actions in the inspection reports. Ensure that all other parts except the parts to be replaced are working properly.

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2. Perform a pre-replacement check.

   Start SmartKit and choose **Home** > **Storage** > **Parts Replacement** > **More** > **Parts Replacement (CRU)**. On the CRU replacement page, complete the check before the replacement as prompted. For details, see **7.1.3 Replacing a CRU**.

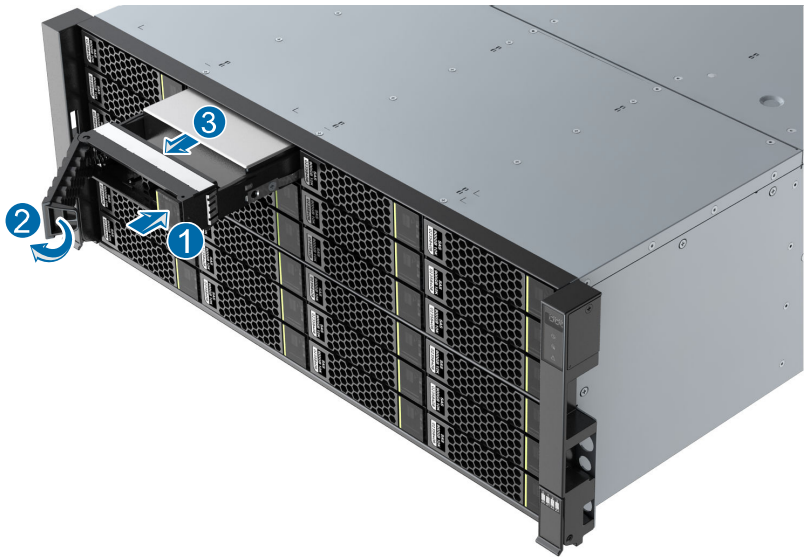
**NOTICE**

You can proceed to next steps only when all items pass the pre-replacement check and the replacement page is displayed. If any item fails, rectify the fault as prompted.

**Step 2** Wear an ESD wrist strap.

**Step 3** Press the latch on the disk module to release the handle and pull out the disk module, as shown in **Figure 7-135**.

**Figure 7-135** Removing a disk module




**Step 4** Put the removed disk module into an ESD bag.

**Step 5** Take the spare part out of its ESD bag.

**Step 6** Open the handle of the spare part, insert the spare part into the empty slot, and close the handle, as shown in **Figure 7-136**.

**NOTICE**

Insert the disk module into the slot by pushing the middle area of the disk module (as shown in arrow 1 in **Figure 7-136**) to ensure that the disk module is properly inserted into its position.

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**Figure 7-136** Installing a disk module




**Step 7** Wait about two minutes and check the status of the Running and Alarm/Location indicators on the disk module to determine whether the disk module has been successfully installed. **Figure 7-137** shows the locations of the Running and Alarm/Location indicators.

- If the Running indicator is steady on and the Alarm/Location indicator is off, the disk module has been successfully installed.
- If the Running indicator is off or the Alarm/Location indicator is steady on, the newly installed disk module is faulty, the disk module slot is faulty, or the disk module is incorrectly installed.

**Figure 7-137** Indicators on a disk module




| | | | |
|---|---|---|---|
| 1 | Running indicator of the disk module | 2 | Alarm/Location indicator of the disk module |

**Step 8** Confirm the replacement.

1. Perform a post-replacement inspection.

   After the parts replacement, return to the SmartKit page and click **Replaced**. Then complete the check after the replacement as prompted.

2. Check the system status after the replacement.

   Return to the home page, choose **Home** > **Storage** > **Routine Maintenance** > **Health Check**, and check the system status again. If any inspection item fails, rectify the fault based on the suggestions in the inspection report.

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3. After the preceding procedure is complete, check services on the host for storage-related errors. If any storage-related error is reported, contact Huawei technical support.

**----End**

## Follow-up Procedure

After the disk module is replaced, label it to facilitate subsequent operations.

# 7.5.3 Replacing a Disk Module (for a 25-Slot Disk Enclosure with 2.5-Inch Disks)

This section describes how to replace a disk module, including the replacement of failing disks (disks not yet completely faulty) and faulty disks.

## Impact on the System

The replacement of a disk triggers the pre-copy process of the disk. The pre-copy time depends on factors such as the used capacity of the disk and its utilization. You are advised to replace the disk in off-peak hours.

## Prerequisites

- The spare part is on hand.
- Huawei-certified disk modules that match the product model are used as spare disk modules. These modules are obtained by service engineers based on the part codes of failed disk modules.
- The disk module that you want to replace has been located.

NOTE

You can locate a component in one of the following ways:

- Locating a disk based on alarms in DeviceManager: On the **Alarms and Events** page of DeviceManager, view the help information and determine the ID of the disk to be replaced. Then locate the disk at your site based on the disk enclosure ID and slot ID.
- Locating a component based on its location indicator: You are advised to set the location indicator of the component in DeviceManager. For details, see the *Online Help* of DeviceManager. Then, locate the component at your site based on its location indicator.
- Locating a component based on the status of its Running/Alarm indicator: For details about the indicators on different components, see "Indicator Introduction" of each component in the *Product Description* specific to your product model and version.

## Precautions

- When handling a disk module, hold only its edge to prevent it from damage.
- Remove and insert a disk module with even force. Excessive force may damage the appearance of the disk module or cause faults.
- When removing a non SSD disk module, pull it partially out of its slot. Wait about 20 seconds until it spins down and then pull it completely out of the slot.
- After inserting or removing a disk module, wait at least one minute before removing or inserting it to prevent disk module damage.

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- To prevent data loss, replace only a disk module of which Alarm/Location indicator is steady yellow.
- Complete the replacement within five minutes after removing the original disk. Otherwise, the system heat dissipation is compromised.
- Use SmartKit to replace a failing disk.
- Ensure that the spare part is inserted in to the same slot as the replaced disk. Otherwise, the system may work incorrectly.

## Tools and Materials

- ESD wrist strap
- ESD bag
- Labels

## Procedure

**Step 1** Check status before replacement.

1. Check system status.

   Start SmartKit and choose **Home** > **Storage** > **Routine Maintenance** > **Health Check**. On the **Health Check** page, perform inspection as instructed. For details, see **7.1.2 Checking System Status**.

   NOTE

   If any items fail the inspection, rectify the faults by performing the recommended actions in the inspection reports. Ensure that all other parts except the parts to be replaced are working properly.

2. Perform a pre-replacement check.

   Start SmartKit and choose **Home** > **Storage** > **Parts Replacement** > **More** > **Parts Replacement (CRU)**. On the CRU replacement page, complete the check before the replacement as prompted. For details, see **7.1.3 Replacing a CRU**.

   NOTICE

   You can proceed to next steps only when all items pass the pre-replacement check and the replacement page is displayed. If any item fails, rectify the fault as prompted.

**Step 2** Wear an ESD wrist strap.

**Step 3** Press the latch on the disk module to release the handle and pull out the disk module, as shown in **Figure 7-138**.

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**Figure 7-138** Removing a disk module




**Step 4** Put the removed disk module into an ESD bag.

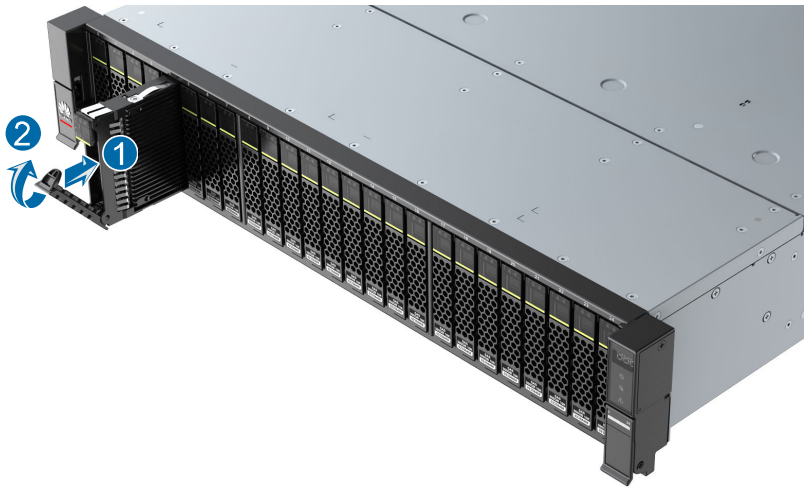
**Step 5** Take the spare part out of its ESD bag.

**Step 6** Open the handle of the spare part, insert the spare part into the empty slot, and close the handle, as shown in **Figure 7-139**.

**NOTICE**

Insert the disk module into the slot by pushing the middle area of the disk module (as shown in arrow 1 in **Figure 7-139**) to ensure that the disk module is properly inserted into its position.

**Figure 7-139** Installing a disk module



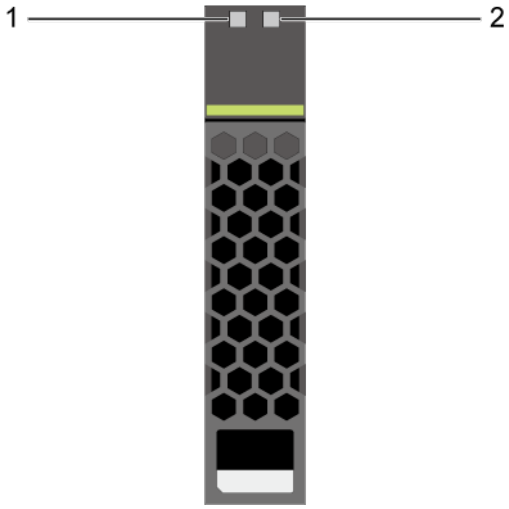

**Step 7** Wait about two minutes and check the status of the Running and Alarm/Location indicators on the disk module to determine whether the disk module has been successfully installed. **Figure 7-140** shows the locations of the Running and Alarm/Location indicators.

- If the Running indicator is steady on and the Alarm/Location indicator is off, the disk module has been successfully installed.

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- If the Running indicator is off or the Alarm/Location indicator is steady on, the newly installed disk module is faulty, the disk module slot is faulty, or the disk module is incorrectly installed.

**Figure 7-140** Indicators on a disk module




| | | | |
|---|---|---|---|
| 1 | Running indicator of the disk module | 2 | Alarm/Location indicator of the disk module |

**Step 8** Confirm the replacement.

1. Perform a post-replacement inspection.

   After the parts replacement, return to the SmartKit page and click **Replaced**. Then complete the check after the replacement as prompted.

2. Check the system status after the replacement.

   Return to the home page, choose **Home** > **Storage** > **Routine Maintenance** > **Health Check**, and check the system status again. If any inspection item fails, rectify the fault based on the suggestions in the inspection report.

3. After the preceding procedure is complete, check services on the host for storage-related errors. If any storage-related error is reported, contact Huawei technical support.

**----End**

## Follow-up Procedure

After the disk module is replaced, label it to facilitate subsequent operations.

# 7.5.4 Replacing a Disk Module (for a 25-Slot Disk Enclosure with Palm-sized Disks)

This section describes how to replace a disk module, including the replacement of failing disks (disks not yet completely faulty) and faulty disks.

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## Impact on the System

The replacement of a disk triggers the pre-copy process of the disk. The pre-copy time depends on factors such as the used capacity of the disk and its utilization. You are advised to replace the disk in off-peak hours.

## Prerequisites

- The spare part is on hand.
- Huawei-certified disk modules that match the product model are used as spare disk modules. These modules are obtained by service engineers based on the part codes of failed disk modules.
- The disk module that you want to replace has been located.

NOTE

You can locate a component in one of the following ways:

- Locating a disk based on alarms in DeviceManager: On the **Alarms and Events** page of DeviceManager, view the help information and determine the ID of the disk to be replaced. Then locate the disk at your site based on the disk enclosure ID and slot ID.
- Locating a component based on its location indicator: You are advised to set the location indicator of the component in DeviceManager. For details, see the *Online Help* of DeviceManager. Then, locate the component at your site based on its location indicator.
- Locating a component based on the status of its Running/Alarm indicator: For details about the indicators on different components, see "Indicator Introduction" of each component in the *Product Description* specific to your product model and version.

## Precautions

- When handling a disk module, hold only its edge to prevent it from damage.
- Remove and insert a disk module with even force. Excessive force may damage the appearance of the disk module or cause faults.
- After inserting or removing a disk module, wait at least one minute before removing or inserting it to prevent disk module damage.
- To prevent data loss, replace only a disk module of which Alarm/Location indicator is steady yellow.
- Complete the replacement within five minutes after removing the original disk. Otherwise, the system heat dissipation is compromised.
- Use SmartKit to replace a failing disk.
- Ensure that the spare part is inserted in to the same slot as the replaced disk. Otherwise, the system may work incorrectly.

## Tools and Materials

- ESD wrist strap
- ESD bag
- Labels

## Procedure

**Step 1** Check status before replacement.

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1. Check system status.

   Start SmartKit and choose **Home** > **Storage** > **Routine Maintenance** > **Health Check**. On the **Health Check** page, perform inspection as instructed. For details, see **7.1.2 Checking System Status**.

   NOTE

   If any items fail the inspection, rectify the faults by performing the recommended actions in the inspection reports. Ensure that all other parts except the parts to be replaced are working properly.

2. Perform a pre-replacement check.

   Start SmartKit and choose **Home** > **Storage** > **Parts Replacement** > **More** > **Parts Replacement (CRU)**. On the CRU replacement page, complete the check before the replacement as prompted. For details, see **7.1.3 Replacing a CRU**.

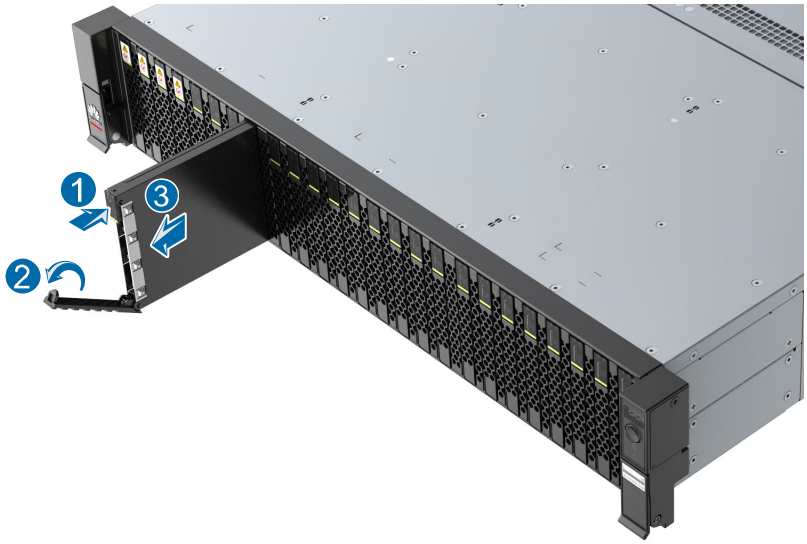
NOTICE

You can proceed to next steps only when all items pass the pre-replacement check and the replacement page is displayed. If any item fails, rectify the fault as prompted.

**Step 2** Wear an ESD wrist strap.

**Step 3** Press the latch on the disk module to release the handle and pull out the disk module, as shown in **Figure 7-141**.

**Figure 7-141** Removing a disk module




**Step 4** Put the removed disk module into an ESD bag.

**Step 5** Take the spare part out of its ESD bag.

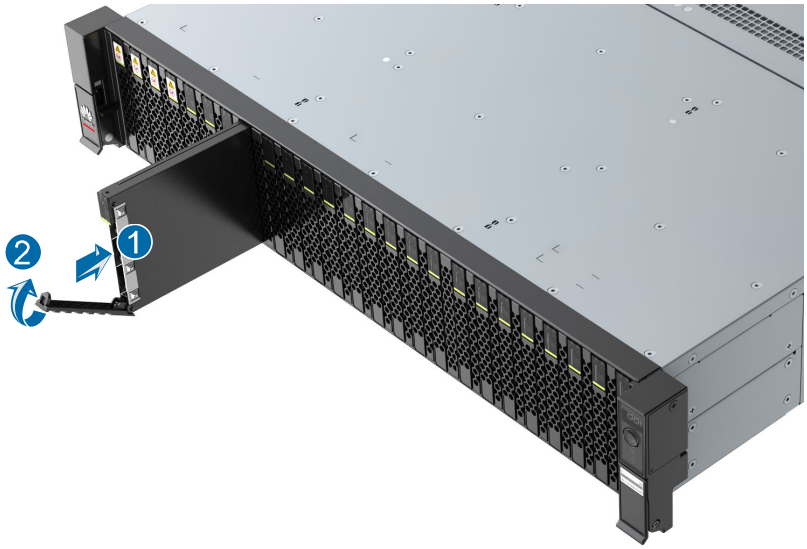
**Step 6** Open the handle of the spare part, insert the spare part into the empty slot, and close the handle, as shown in **Figure 7-142**.

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**NOTICE**

Insert the disk module into the slot by pushing the middle area of the disk module (as shown in arrow 1 in **Figure 7-142**) to ensure that the disk module is properly inserted into its position.

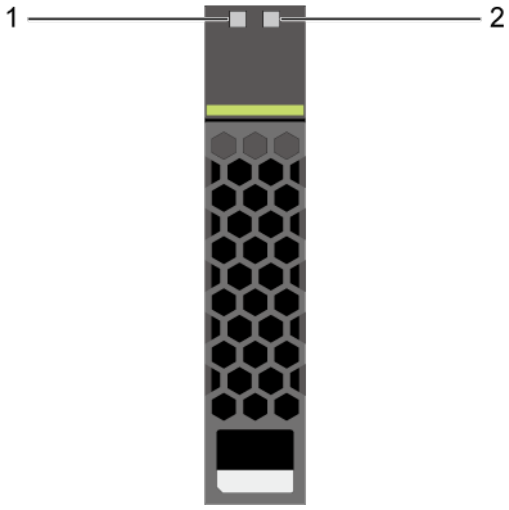
**Figure 7-142** Installing a disk module




**Step 7** Wait about two minutes and check the status of the Running and Alarm/Location indicators on the disk module to determine whether the disk module has been successfully installed. **Figure 7-143** shows the locations of the Running and Alarm/Location indicators.

- If the Running indicator is steady on and the Alarm/Location indicator is off, the disk module has been successfully installed.
- If the Running indicator is off or the Alarm/Location indicator is steady on, the newly installed disk module is faulty, the disk module slot is faulty, or the disk module is incorrectly installed.

**Figure 7-143** Indicators on a disk module




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| | | | |
|---|---|---|---|
| 1 | Running indicator of the disk module | 2 | Alarm/Location indicator of the disk module |

**Step 8** Confirm the replacement.

1. Perform a post-replacement inspection.

   After the parts replacement, return to the SmartKit page and click **Replaced**. Then complete the check after the replacement as prompted.

2. Check the system status after the replacement.

   Return to the home page, choose **Home** > **Storage** > **Routine Maintenance** > **Health Check**, and check the system status again. If any inspection item fails, rectify the fault based on the suggestions in the inspection report.

3. After the preceding procedure is complete, check services on the host for storage-related errors. If any storage-related error is reported, contact Huawei technical support.

**----End**

## Follow-up Procedure

After the disk module is replaced, label it to facilitate subsequent operations.

# 7.5.5 Replacing a Disk Module (for a 36-Slot Disk Enclosure)

This section describes how to replace a disk module, including the replacement of failing disks (disks not yet completely faulty) and faulty disks.

## Impact on the System

The replacement of a disk triggers the pre-copy process of the disk. The pre-copy time depends on factors such as the used capacity of the disk and its utilization. You are advised to replace the disk in off-peak hours.

## Prerequisites

- The spare part is on hand.
- Huawei-certified disk modules that match the product model are used as spare disk modules. These modules are obtained by service engineers based on the part codes of failed disk modules.
- The disk module that you want to replace has been located.

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NOTE

You can locate a component in one of the following ways:

- Locating a disk based on alarms in DeviceManager: On the **Alarms and Events** page of DeviceManager, view the help information and determine the ID of the disk to be replaced. Then locate the disk at your site based on the disk enclosure ID and slot ID.
- Locating a component based on its location indicator: You are advised to set the location indicator of the component in DeviceManager. For details, see the *Online Help* of DeviceManager. Then, locate the component at your site based on its location indicator.
- Locating a component based on the status of its Running/Alarm indicator: For details about the indicators on different components, see "Indicator Introduction" of each component in the *Product Description* specific to your product model and version.

## Precautions

- When handling a disk module, hold only its edge to prevent it from damage.
- Remove and insert a disk module with even force. Excessive force may damage the appearance of the disk module or cause faults.
- After inserting or removing a disk module, wait at least one minute before removing or inserting it to prevent disk module damage.
- To prevent data loss, replace only a disk module of which Alarm/Location indicator is steady yellow.
- Complete the replacement within five minutes after removing the original disk. Otherwise, the system heat dissipation is compromised.
- Use SmartKit to replace a failing disk.
- Ensure that the spare part is inserted in to the same slot as the replaced disk. Otherwise, the system may work incorrectly.

## Tools and Materials

- ESD wrist strap
- ESD bag
- Labels

## Procedure

**Step 1** Check status before replacement.

1. Check system status.

   Start SmartKit and choose **Home** > **Storage** > **Routine Maintenance** > **Health Check**. On the **Health Check** page, perform inspection as instructed. For details, see **7.1.2 Checking System Status**.

   NOTE

   If any items fail the inspection, rectify the faults by performing the recommended actions in the inspection reports. Ensure that all other parts except the parts to be replaced are working properly.

2. Perform a pre-replacement check.

   Start SmartKit and choose **Home** > **Storage** > **Parts Replacement** > **More** > **Parts Replacement (CRU)**. On the CRU replacement page, complete the

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check before the replacement as prompted. For details, see **7.1.3 Replacing a CRU**.

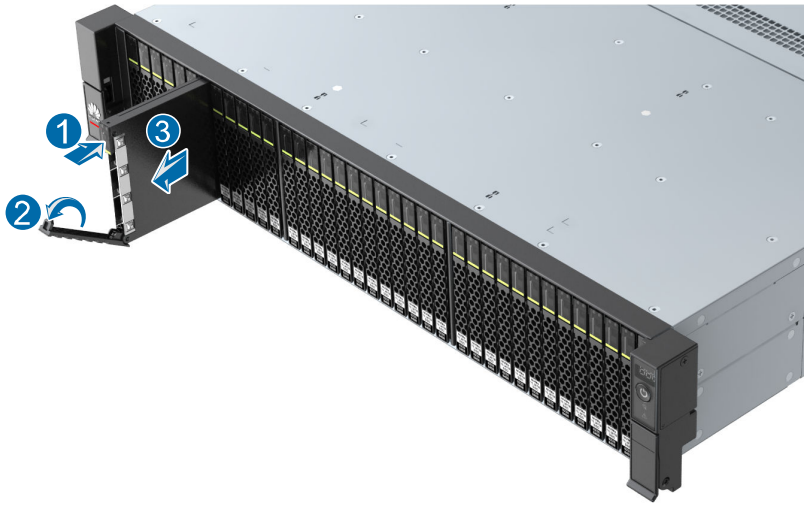
**NOTICE**

You can proceed to next steps only when all items pass the pre-replacement check and the replacement page is displayed. If any item fails, rectify the fault as prompted.

**Step 2** Wear an ESD wrist strap.

**Step 3** Press the latch on the disk module to release the handle and pull out the disk module, as shown in **Figure 7-144**.

**Figure 7-144** Removing a disk module




**Step 4** Put the removed disk module into an ESD bag.

**Step 5** Take the spare part out of its ESD bag.

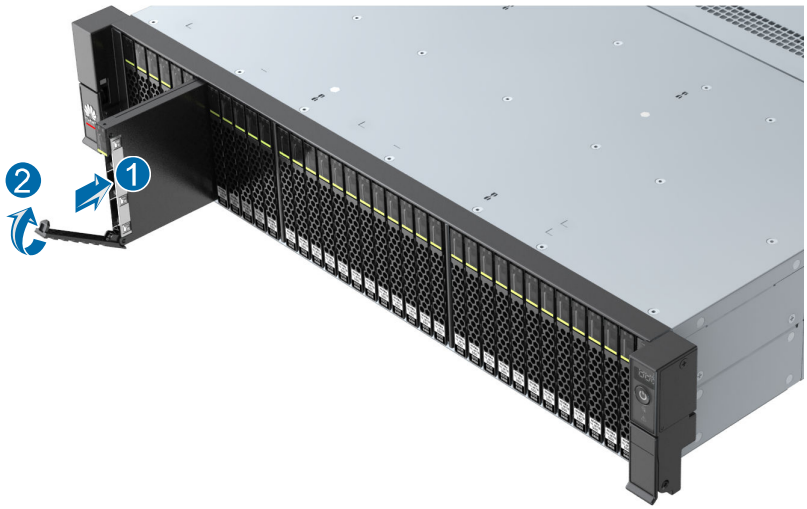
**Step 6** Open the handle of the spare part, insert the spare part into the empty slot, and close the handle, as shown in **Figure 7-145**.

**NOTICE**

Insert the disk module into the slot by pushing the middle area of the disk module (as shown in arrow 1 in **Figure 7-145**) to ensure that the disk module is properly inserted into its position.

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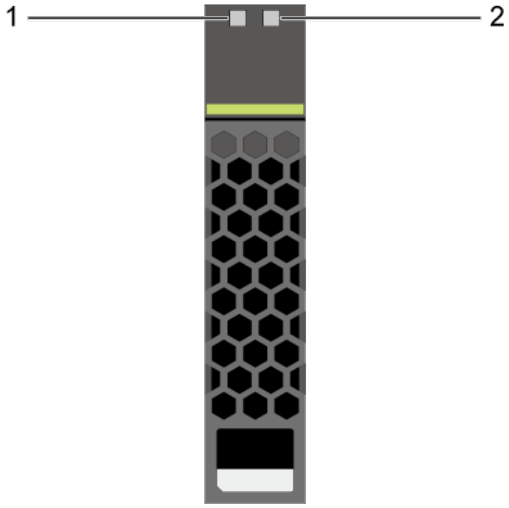
**Figure 7-145** Installing a disk module




**Step 7** Wait about two minutes and check the status of the Running and Alarm/Location indicators on the disk module to determine whether the disk module has been successfully installed. **Figure 7-146** shows the locations of the Running and Alarm/Location indicators.

- If the Running indicator is steady on and the Alarm/Location indicator is off, the disk module has been successfully installed.
- If the Running indicator is off or the Alarm/Location indicator is steady on, the newly installed disk module is faulty, the disk module slot is faulty, or the disk module is incorrectly installed.

**Figure 7-146** Indicators on a disk module




| | | | |
|---|---|---|---|
| 1 | Running indicator of the disk module | 2 | Alarm/Location indicator of the disk module |

**Step 8** Confirm the replacement.

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1. Perform a post-replacement inspection.

   After the parts replacement, return to the SmartKit page and click **Replaced**. Then complete the check after the replacement as prompted.

2. Check the system status after the replacement.

   Return to the home page, choose **Home** > **Storage** > **Routine Maintenance** > **Health Check**, and check the system status again. If any inspection item fails, rectify the fault based on the suggestions in the inspection report.

3. After the preceding procedure is complete, check services on the host for storage-related errors. If any storage-related error is reported, contact Huawei technical support.

**----End**

## Follow-up Procedure

After the disk module is replaced, label it to facilitate subsequent operations.

# 7.5.6 Replacing a Disk Module (for a High-Density Disk Enclosure)

This section describes how to replace a disk module, including the replacement of failing disks (disks not yet completely faulty) and faulty disks.

## Impact on the System

The replacement of a disk triggers the pre-copy process of the disk. The pre-copy time depends on factors such as the used capacity of the disk and its utilization. You are advised to replace the disk in off-peak hours.

## Prerequisites

- The spare part is on hand.
- To prevent services from being affected, use Huawei-certified disk modules that match the product model as spare disk modules (which are obtained by service engineers based on the part codes of failed disk modules).
- The disk module that you want to replace has been located.

  **NOTE**

  You can locate a component in one of the following ways:

  - Locating a disk based on alarms in DeviceManager: On the **Alarms and Events** page of DeviceManager, view the help information and determine the ID of the disk to be replaced. Then locate the disk at your site based on the disk enclosure ID and slot ID.
  - Locating a component based on its location indicator: You are advised to set the location indicator of the component in DeviceManager. For details, see the *Online Help* of DeviceManager. Then, locate the component at your site based on its location indicator.
  - Locating a component based on the status of its Running/Alarm indicator: For details about the indicators on different components, see "Indicator Introduction" of each component in the *Product Description* specific to your product model and version.

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## Precautions

- To prevent the disk module from damage, pull out the enclosure of or slide the enclosure into the cabinet slowly.
- Remove and insert a disk module with even force. Excessive force may damage the appearance or connectors of the disk module.
- To prevent data loss, replace only a disk module of which status indicator is steady red.
- The duration of pulling an enclosure completely out of the cabinet must be shorter than five minutes.
- After sliding an enclosure into a cabinet, wait at least 15 minutes before pulling it out again.
- Only one enclosure can be pulled out at a time.
- When the overheating alarm indicator of the high-density disk enclosure is red on, slide the enclosure into the cabinet immediately. Otherwise, system services may be affected.
- Use SmartKit to replace a failing disk.

## Tools and Materials

- ESD wrist strap
- ESD bag
- Labels

## Procedure

**Step 1** Check status before replacement.

1. Check system status.

   Start SmartKit and choose **Home** > **Storage** > **Routine Maintenance** > **Health Check**. On the **Health Check** page, perform inspection as instructed. For details, see **7.1.2 Checking System Status**.

   NOTE

   If any items fail the inspection, rectify the faults by performing the recommended actions in the inspection reports. Ensure that all other parts except the parts to be replaced are working properly.

2. Check the status of the parts to be replaced.

   Start SmartKit and choose **Home** > **Storage** > **Parts Replacement** > **More** > **Parts Replacement (CRU)**. On the CRU replacement page, complete the check before the replacement as prompted. For details, see **7.1.3 Replacing a CRU**.

NOTICE

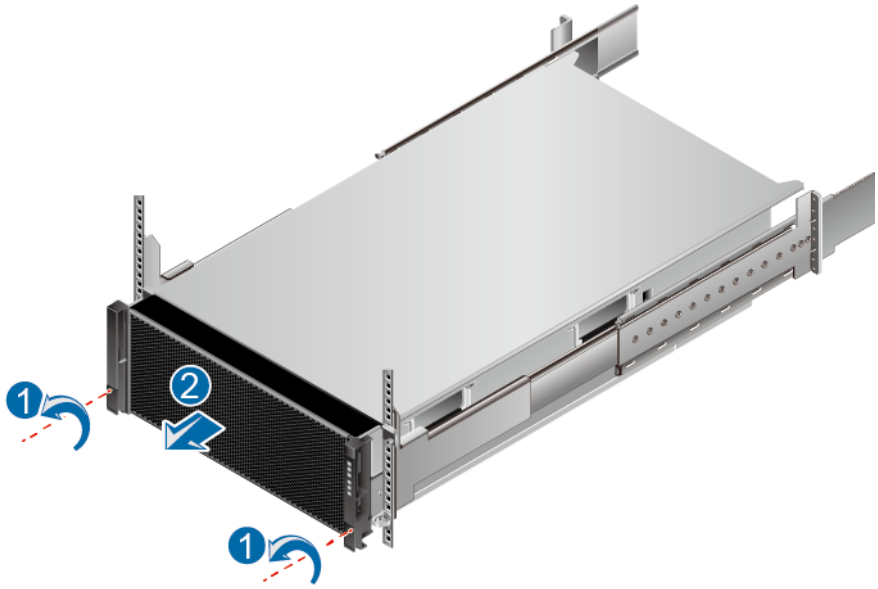
You can proceed to next steps only when all items pass the pre-replacement check and the replacement page is displayed. If any item fails, rectify the fault as prompted.

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**Step 2** Wear an ESD wrist strap.

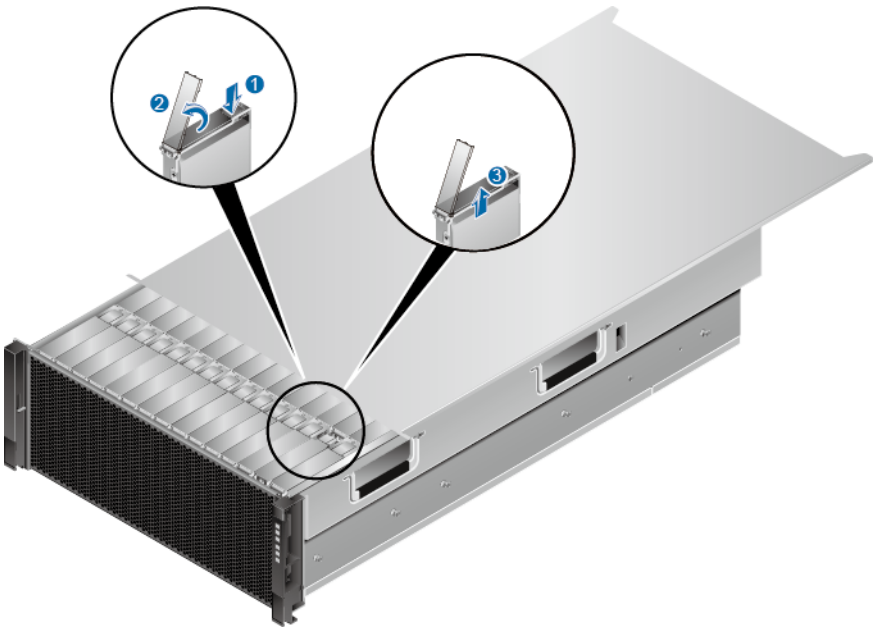
**Step 3** Loosen the two screws on the panel and pull out the enclosure slowly, as shown in Figure 7-147.

**Figure 7-147** Pulling out an enclosure




**Step 4** Press the latch of the disk module and pull out the disk module, as shown in Figure 7-148.

**Figure 7-148** Removing a disk module




**Step 5** Put the removed disk module into an ESD bag.

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**Step 6** Take the spare part out of its ESD bag.

**Step 7** Fully open the handle of the disk module (to an angle of about 90 degrees), fully insert the disk module into the slot by pressing its middle part, and close the handle, as shown in **Figure 7-149**. Then press the two ends of the disk module with both hands to ensure that it is completely inserted into the slot, as shown in **Figure 7-150**.

**Figure 7-149** Inserting a disk module

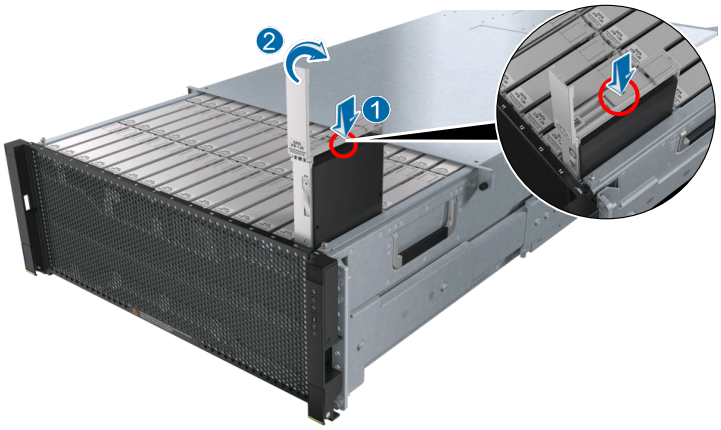
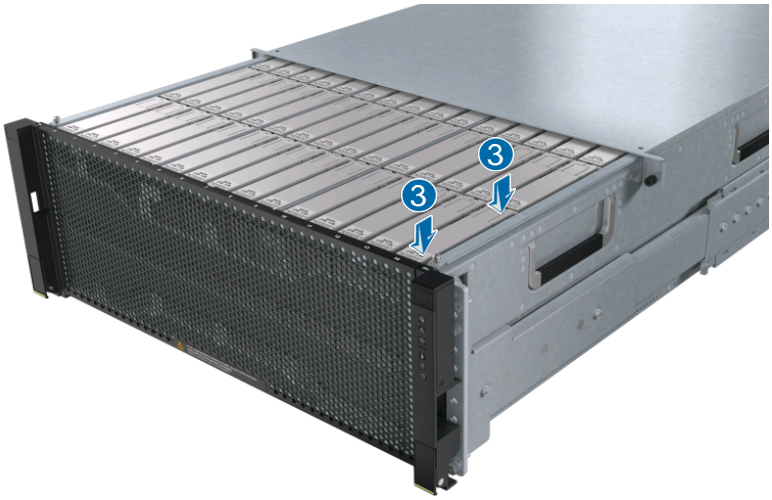



**Figure 7-150** Pressing the two ends of the disk module




**Step 8** Wait approximately two minutes and view the status indicator on the disk module to determine whether the disk module has been successfully installed. **Figure 7-151** shows the location of the status indicator on the disk module.

- If the indicator is steady green, the disk module has been successfully installed.
- If the indicator is steady red or off, the newly installed disk module is faulty, the slot for the disk module is faulty, or the disk module is incorrectly installed.

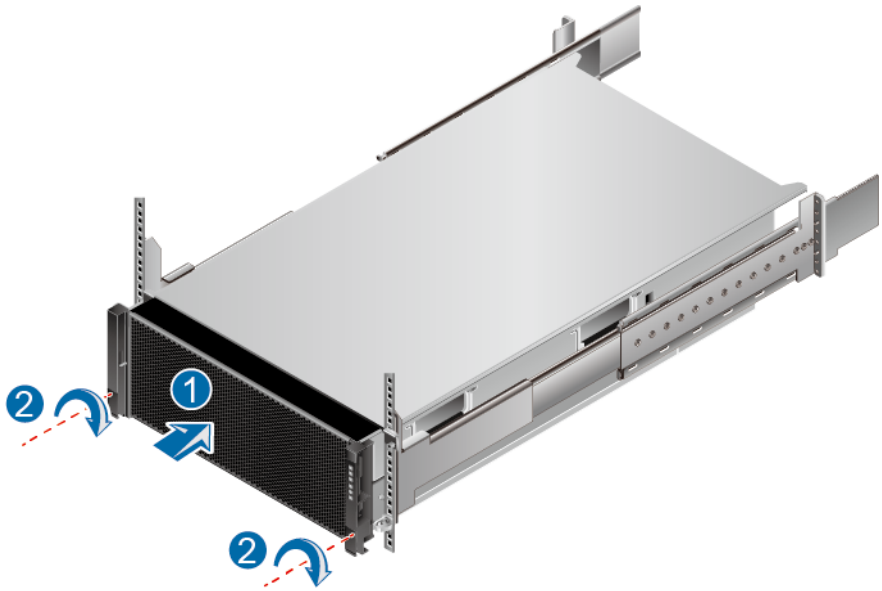
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**Figure 7-151** Status indicator on a disk module



**Step 9** After the disk module has been successfully installed, slide the enclosure into the cabinet slowly and fasten the two screws on the panel, as shown in **Figure 7-152**.

**Figure 7-152** Sliding an enclosure into the cabinet




**Step 10** Confirm the replacement.

1. Perform a post-replacement inspection.

   After the parts replacement, return to the SmartKit page and click **Replaced**. Then complete the parts check after the replacement as prompted.

2. Check system status.

   Choose **Home** > **Storage** > **Routine Maintenance** > **Health Check** to check the system status again. If any inspection item fails, rectify the fault based on the suggestions in the inspection report.

3. After the preceding procedure is complete, check services on the host for storage-related errors.

**----End**

## Follow-up Procedure

After the disk module is replaced, label it to facilitate subsequent operations.

# 7.6 Replacing an Expansion Module

This section describes how to replace an expansion module.

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# 7.6.1 Replacing an Expansion Module (for a SAS Disk Enclosure)

This section describes how to replace an expansion module.

NOTE

The procedure for replacing a 2 U disk enclosure is the same as that for replacing a 4 U disk enclosure. This section describes how to replace a 4 U SAS disk enclosure.

## Impact on the System

During the replacement of an expansion module, the system switches services from ports on this module to ports on the other expansion module in the same disk enclosure. Only one expansion module is working, causing the system reliability to degrade. You are advised to replace an expansion module during off-peak hours.

## Prerequisites

- The spare part is on hand.
- The expansion module that you want to replace has been located.

NOTE

You can locate a component in either of the following ways:

- Locating a component based on alarms in DeviceManager: On the **Alarms and Events** page of DeviceManager, view the help information and determine the ID of the component to be replaced. Then locate the component at your site based on its ID.
- Locating a component based on the status of its Running/Alarm indicator: For details about the indicators on different components, see "Indicator Introduction" of each component in the *Product Description* specific to your product model and version.

- You have confirmed that the cables of the expansion module to be replaced are properly connected using Huawei Storage Product Networking Assistant (**https://info.support.huawei.com/storage/sna/#/home**).
- The cable connection positions of the expansion module are labeled on the cables.
- The cables have been disconnected from the expansion module that you want to replace.

NOTE

Before removing a SAS cable, gently push the connector of the cable inward. Then pull the plastic ring on the connector outward until the cable is completely removed from the expansion module.

## Precautions

- Remove and insert an expansion module with even force. Excessive force may damage the appearance of the expansion module or cause faults.
- An expansion module must be replaced within five minutes. Otherwise, the system heat dissipation is compromised.

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## Tools and Materials

- ESD wrist strap
- ESD bag
- Labels

## Procedure

**Step 1** Check status before replacement.

1. Check system status.

   Start SmartKit and choose **Home** > **Storage** > **Routine Maintenance** > **Health Check**. On the **Health Check** page, perform inspection as instructed. For details, see **7.1.2 Checking System Status**.

   NOTE

   If any items fail the inspection, rectify the faults by performing the recommended actions in the inspection reports. Ensure that all other parts except the parts to be replaced are working properly.

2. Perform a pre-replacement check.

   Start SmartKit and choose **Home** > **Storage** > **Parts Replacement** > **More** > **Parts Replacement (CRU)**. On the CRU replacement page, complete the check before the replacement as prompted. For details, see **7.1.3 Replacing a CRU**.

   NOTICE

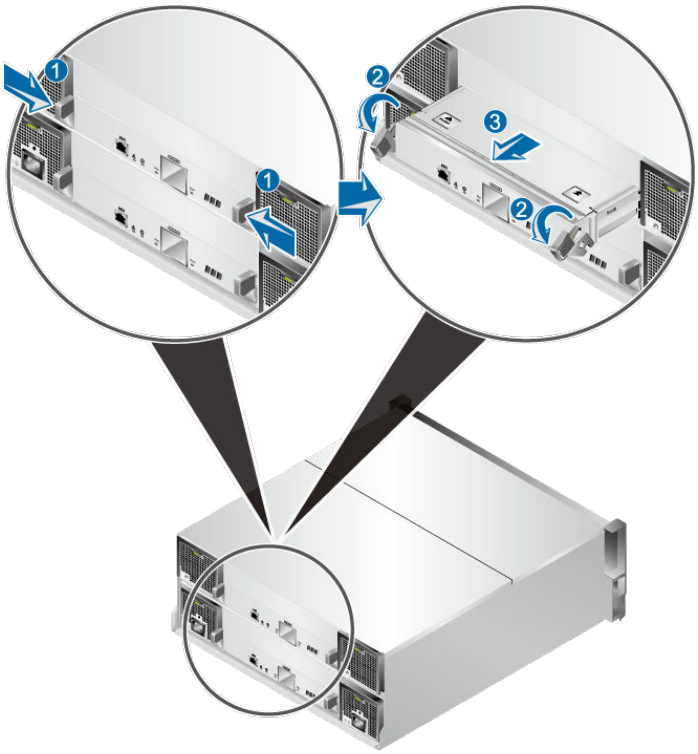
   You can proceed to next steps only when all items pass the pre-replacement check and the replacement page is displayed. If any item fails, rectify the fault as prompted.

**Step 2** Wear an ESD wrist strap.

**Step 3** Press latches on the expansion module to release the handles and pull out the expansion module, as shown in **Figure 7-153**.

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**Figure 7-153** Removing an expansion module



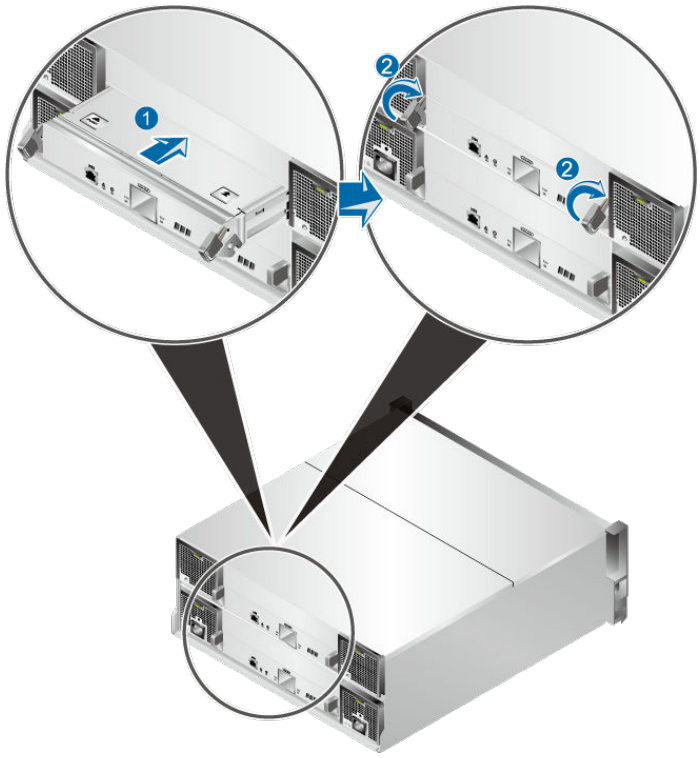
**Step 4** Put the removed expansion module into an ESD bag.

**Step 5** Take the spare part out of its ESD bag.

**Step 6** Open the handles of the spare part, insert the spare part into the empty slot, and close the handles, as shown in **Figure 7-154**.

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**Figure 7-154** Installing the expansion module

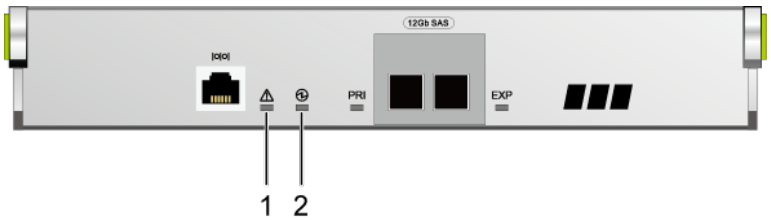



**Step 7** Connect the cables as labeled.

**Step 8** Wait about two minutes and check the status of the Power and Alarm indicators on the expansion module to determine whether the expansion module has been successfully installed. **Figure 7-155** shows the locations of the Power and Alarm indicators.

- If the Power indicator is steady on and the Alarm indicator is off, the expansion module has been successfully installed.
- If the Power indicator is off or the Alarm indicator is steady on, the newly installed expansion module is faulty, the expansion module slot is faulty, or the expansion module is incorrectly installed.

**Figure 7-155** Indicators on an expansion module




| | | | |
|---|---|---|---|
| 1 | Alarm indicator of the expansion module | 2 | Power indicator of the expansion module |

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**Step 9** Confirm the replacement.

1. Perform a post-replacement inspection.

   After the parts replacement, return to the SmartKit page and click **Replaced**. Then complete the check after the replacement as prompted.

2. Check the system status after the replacement.

   Return to the home page, choose **Home** > **Storage** > **Routine Maintenance** > **Health Check**, and check the system status again. If any inspection item fails, rectify the fault based on the suggestions in the inspection report.

3. After the preceding procedure is complete, check services on the host for storage-related errors. If any storage-related error is reported, contact Huawei technical support.

**----End**

## Follow-up Procedure

After the expansion module is replaced, label it to facilitate subsequent operations.

# 7.6.2 Replacing an Expansion Module (for a Smart Disk Enclosure)

This section describes how to replace an expansion module.

## Impact on the System

During the replacement of an expansion module, the system switches services from ports on this module to ports on the other expansion module in the same disk enclosure. Only one expansion module is working, causing the system reliability to degrade. You are advised to replace an expansion module during off-peak hours.

## Prerequisites

- The spare part is on hand.
- The expansion module that you want to replace has been located.

  NOTE

  You can locate a component in either of the following ways:

  - Locating a component based on alarms in DeviceManager: On the **Alarms and Events** page of DeviceManager, view the help information and determine the ID of the component to be replaced. Then locate the component at your site based on its ID.
  - Locating a component based on the status of its Running/Alarm indicator: For details about the indicators on different components, see "Indicator Introduction" of each component in the *Product Description* specific to your product model and version.
- You have confirmed that the cables of the expansion module to be replaced are properly connected using Huawei Storage Product Networking Assistant (**https://info.support.huawei.com/storage/sna/#/home**).
- The cable connection positions of the expansion module are labeled on the cables.

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- The cables have been disconnected from the expansion module that you want to replace.

NOTE

Before removing an RDMA cable, gently push the connector of the cable inward. Then pull the plastic ring on the connector outward until the cable is completely removed from the expansion module.

## Precautions

- Remove and insert an expansion module with even force. Excessive force may damage the appearance of the expansion module or cause faults.
- An expansion module must be replaced within ten minutes. Otherwise, the system heat dissipation is compromised.

## Tools and Materials

- ESD wrist strap
- ESD bag
- Labels

## Procedure

**Step 1** Check status before replacement.

1. Check system status.

   Start SmartKit and choose **Home** > **Storage** > **Routine Maintenance** > **Health Check**. On the **Health Check** page, perform inspection as instructed. For details, see **7.1.2 Checking System Status**.

   NOTE

   If any items fail the inspection, rectify the faults by performing the recommended actions in the inspection reports. Ensure that all other parts except the parts to be replaced are working properly.

2. Perform a pre-replacement check.

   Start SmartKit and choose **Home** > **Storage** > **Parts Replacement** > **More** > **Parts Replacement (CRU)**. On the CRU replacement page, complete the check before the replacement as prompted. For details, see **7.1.3 Replacing a CRU**.

NOTICE

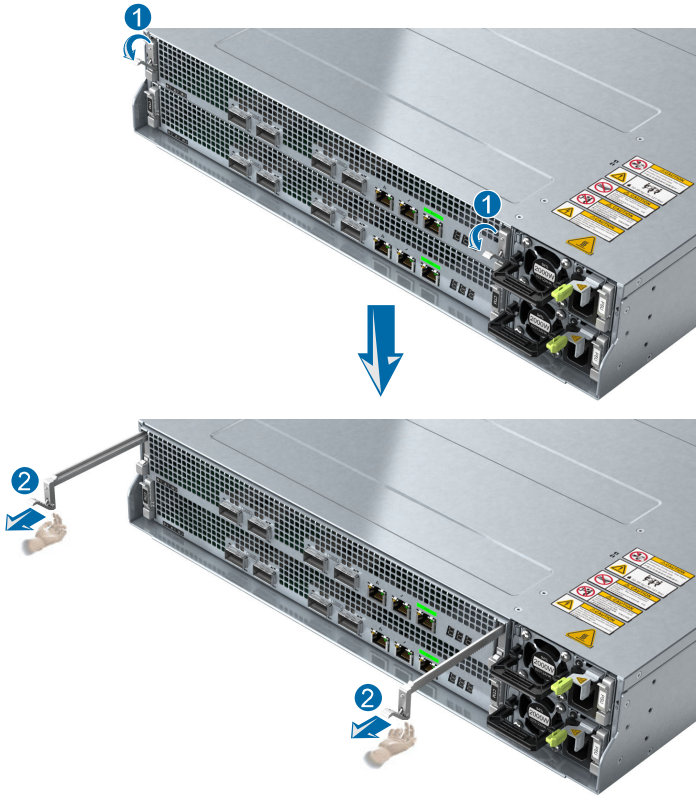
You can proceed to next steps only when all items pass the pre-replacement check and the replacement page is displayed. If any item fails, rectify the fault as prompted.

**Step 2** Wear an ESD wrist strap.

**Step 3** Open the latches on the ejector levers on both sides of the expansion module, and hold the ejector levers to pull out the expansion module, as shown in **Figure 7-156**.

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**Figure 7-156** Opening the latches to pull out the expansion module

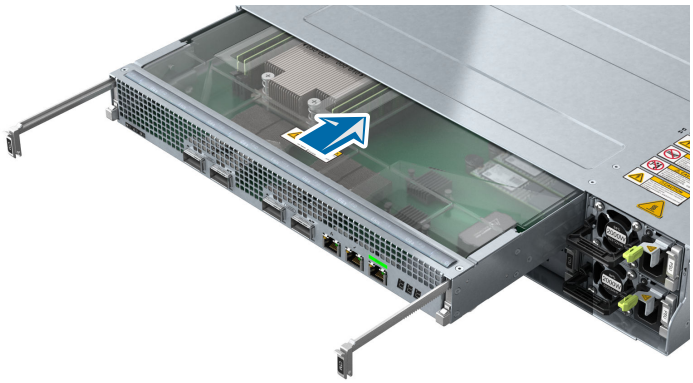


**Step 4** Put the removed expansion module into an ESD bag.

**Step 5** Take the spare part out of its ESD bag.

**Step 6** Open the ejector levers of the expansion module to be installed, insert the expansion module into the empty slot, and push the expansion module into the slot as much as possible, as shown in **Figure 7-157**.

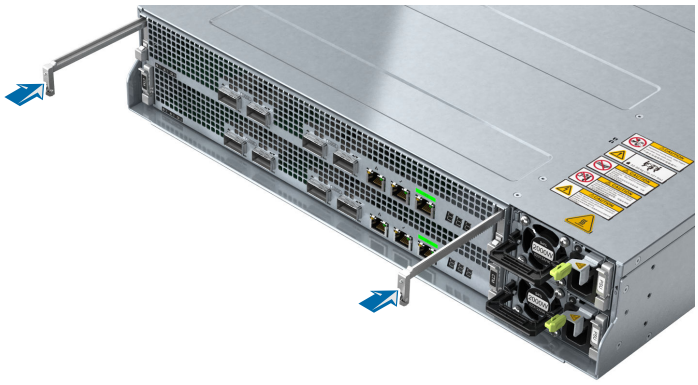
**Figure 7-157** Pushing the expansion module to be installed inward



**Step 7** Press and hold the ejector levers and push the expansion module inwards until the expansion module is fully inserted into the slot, as shown in **Figure 7-158**.

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**Figure 7-158** Installing the expansion module



**NOTICE**

Hold the ejector levers on both sides and push the expansion module into the slot with even force to prevent poor contact between the expansion module and the backplane.

**Step 8** Connect the cables as labeled.

**Step 9** Wait about five minutes and check the status of the Power and Alarm indicators on the expansion module to determine whether the expansion module has been successfully installed. **Figure 7-159** shows the locations of the Power and Alarm indicators.

- If the Power indicator is steady on and the Alarm indicator is off, the expansion module has been successfully installed.
- If the Power indicator is off or the Alarm indicator is steady on, the newly installed expansion module is faulty, the expansion module slot is faulty, or the expansion module is incorrectly installed.

**Figure 7-159** Indicators on an expansion module




| | | | |
|---|---|---|---|
| 1 | Power indicator of the expansion module | 2 | Alarm indicator of the expansion module |

**Step 10** Confirm the replacement.

1. Perform a post-replacement inspection.

   After the parts replacement, return to the SmartKit page and click **Replaced**. Then complete the check after the replacement as prompted.

2. Check the system status after the replacement.

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Return to the home page, choose **Home** > **Storage** > **Routine Maintenance** > **Health Check**, and check the system status again. If any inspection item fails, rectify the fault based on the suggestions in the inspection report.

3. After the preceding procedure is complete, check services on the host for storage-related errors. If any storage-related error is reported, contact Huawei technical support.

**----End**

## Follow-up Procedure

After the expansion module is replaced, label it to facilitate subsequent operations.

# 7.6.3 Replacing an Expansion Module (for a High-Density Disk Enclosure)

This section describes how to replace an expansion module.

## Impact on the System

During the replacement of an expansion module, the system switches services from ports on this module to ports on the other expansion module in the same disk enclosure. Only one expansion module is working, causing the system reliability to degrade. You are advised to replace an expansion module during off-peak hours.

## Prerequisites

- A spare part is on hand.
- The expansion module that you want to replace has been located.

NOTE

You can locate a component in either of the following ways:

- Locating a component based on alarms in DeviceManager: On the **Alarms and Events** page of DeviceManager, view the help information and determine the ID of the component to be replaced. Then locate the component at your site based on its ID.
- Locating a component based on the status of its Running/Alarm indicator: For details about the indicators on different components, see "Indicator Introduction" of each component in the *Product Description* specific to your product model and version.

- You have confirmed that the cables of the expansion module to be replaced are properly connected using Huawei Storage Product Networking Assistant (**https://info.support.huawei.com/storage/sna/#/home**).
- The cable connection positions have been labeled on the spare part.
- The cables have been disconnected from the expansion module that you want to replace.

NOTE

Before removing a SAS cable, gently push the connector of the cable inward. Then pull the plastic ring on the connector outward until the cable is completely removed from the expansion module.

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## Precautions

- Remove and insert an expansion module with even force. Excessive force may damage the appearance or connectors of the expansion module.
- Shorten the duration of replacing an expansion module as short as possible.

## Tools and Materials

- ESD wrist strap
- ESD bag
- Labels

## Procedure

**Step 1** Check status before replacement.

1. Check system status.

   Start SmartKit and choose **Home** > **Storage** > **Routine Maintenance** > **Health Check**. On the **Health Check** page, perform inspection as instructed. For details, see **7.1.2 Checking System Status**.

   NOTE

   If any items fail the inspection, rectify the faults by performing the recommended actions in the inspection reports. Ensure that all other parts except the parts to be replaced are working properly.

2. Check the status of the parts to be replaced.

   Start SmartKit and choose **Home** > **Storage** > **Parts Replacement** > **More** > **Parts Replacement (CRU)**. On the CRU replacement page, complete the check before the replacement as prompted. For details, see **7.1.3 Replacing a CRU**.

NOTICE

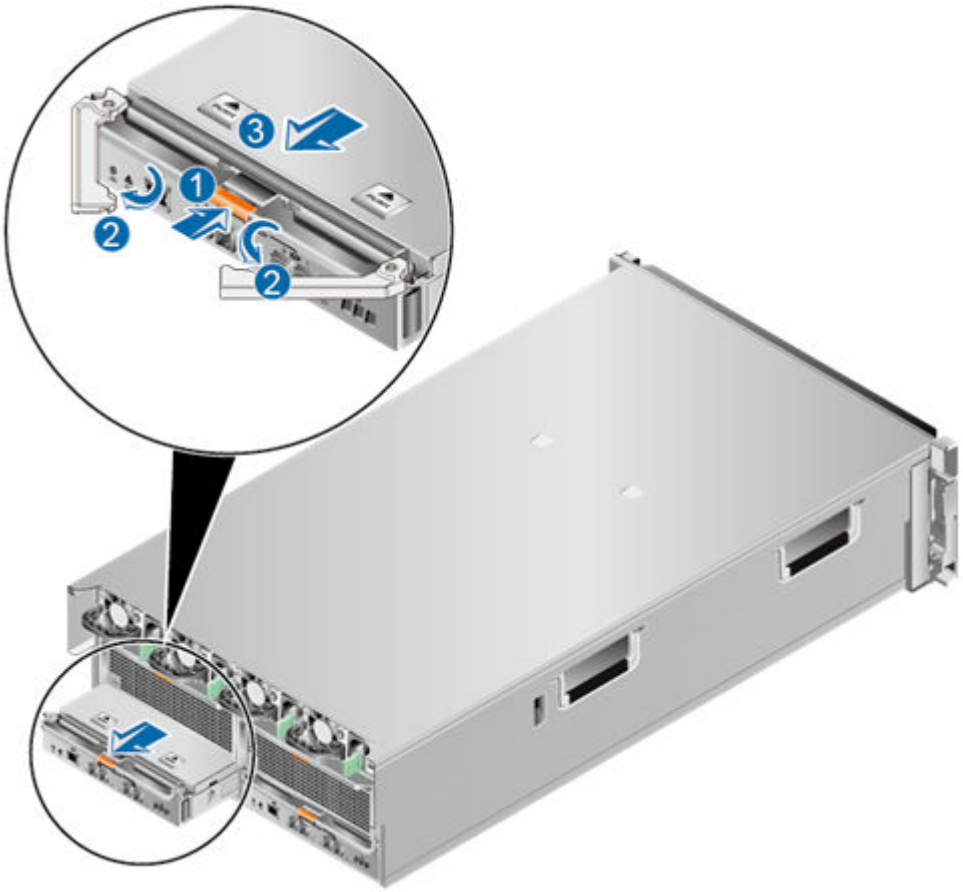
You can proceed to next steps only when all items pass the pre-replacement check and the replacement page is displayed. If any item fails, rectify the fault as prompted.

**Step 2** Wear an ESD wrist strap.

**Step 3** Press buckles on the expansion module, open the latches, and pull out the expansion module, as shown in **Figure 7-160**.

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**Figure 7-160** Removing an expansion module




**Step 4** Place the removed expansion module into an ESD bag.

**Step 5** Take the spare part out of its ESD bag.

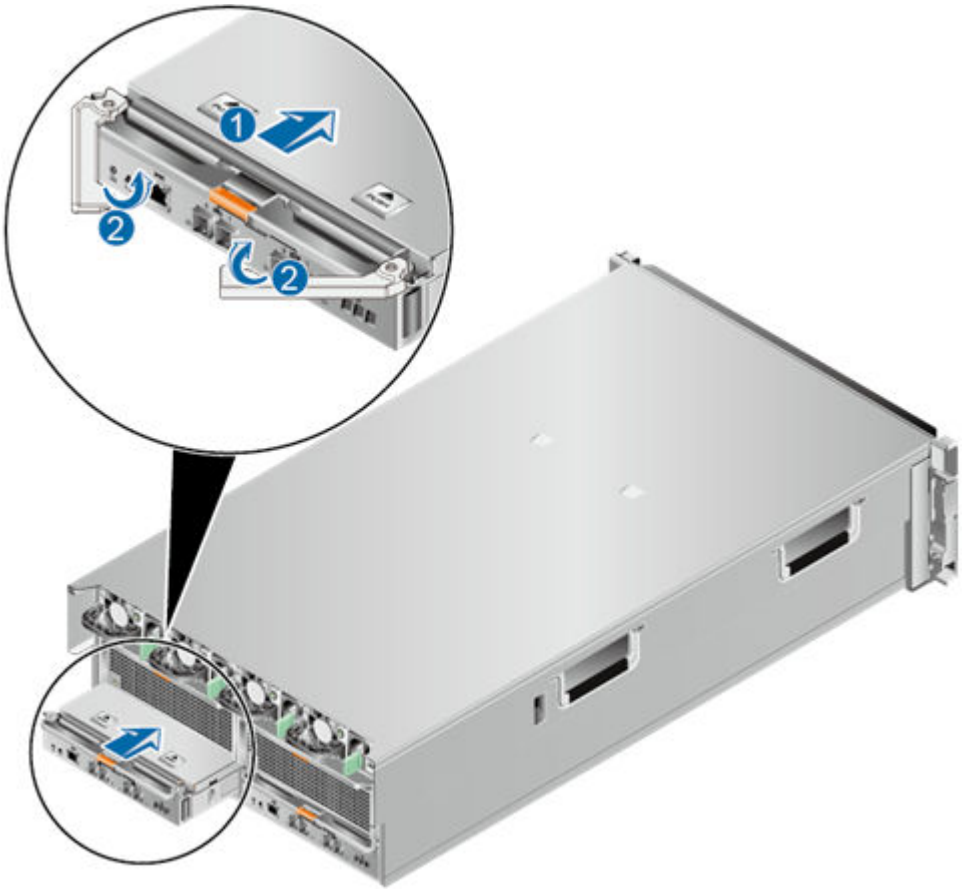
**Step 6** Open latches on the spare part, insert the spare part, and close the latches, as shown in **Figure 7-161**.

**NOTICE**

When installing the expansion module, apply even force and close the ejector levers on both sides of the expansion module.

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**Figure 7-161** Installing an expansion module

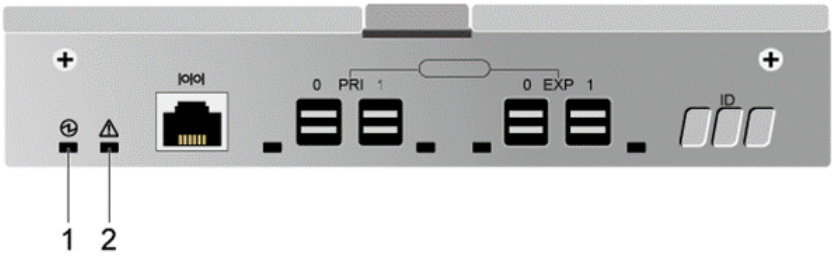



**Step 7** Connect cables of the expansion module.

**Step 8** Wait approximately two minutes and check the status of Power and Alarm indicators on the expansion module to determine whether the expansion module has been successfully installed. **Figure 7-162** shows the locations of Power and Alarm indicators on the expansion module.

- If the Power indicator is steady on and the Alarm indicator is off, the expansion module has been successfully installed.
- If the Power indicator is off or the Alarm indicator is steady on, the newly installed expansion module is faulty, the slot for the expansion module is faulty, or the expansion module is incorrectly installed.

**Figure 7-162** Indicators on an expansion module




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| | | | |
|---|---|---|---|
| 1 | Power indicator | 2 | Alarm indicator |

**Step 9** Confirm the replacement.

1. Perform a post-replacement inspection.

   After the parts replacement, return to the SmartKit page and click **Replaced**. Then complete the parts check after the replacement as prompted.

2. Check system status.

   Choose **Home** > **Storage** > **Routine Maintenance** > **Health Check** to check the system status again. If any inspection item fails, rectify the fault based on the suggestions in the inspection report.

3. After the preceding procedure is complete, check services on the host for storage-related errors.

**----End**

## Follow-up Procedure

After the expansion module is replaced, label it to facilitate subsequent operations.

# 7.7 Replacing an Optical Module

This section describes how to replace an optical module.

## Impact on the System

During the replacement of an optical module, the system switches services from the port of the optical module to another redundant port.

- For front-end and scale-out links, if available links are unable to carry the current service load, the service I/O response latency increases and the system performance deteriorates. If there are no other redundant links, services run on a single link and the system reliability decreases.
- For back-end links, disks in a loop run on a single link and the system reliability decreases.

You are advised to replace an optical module in off-peak hours.

## Prerequisites

- The spare part is on hand.
- You have located the interface module that houses the optical module you want to replace.

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NOTE

You can locate a component in either of the following ways:

- Locating a component based on alarms in DeviceManager: On the **Alarms and Events** page of DeviceManager, view the help information and determine the ID of the component to be replaced. Then locate the component at your site based on its ID.
- Locating a component based on the status of its Running/Alarm indicator: For details about the indicators on different components, see "Indicator Introduction" of each component in the *Product Description* specific to your product model and version.

## Precautions

- Remove and insert an optical module with even force. Excessive force may damage the appearance of the optical module or cause faults.
- Do not frequently or quickly remove or insert an optical module; otherwise, it may be damaged.
- After removing an optical module, wait at least 15 seconds before inserting one. Otherwise, the system cannot identify the status change of the optical module.

## Tools and Materials

- ESD wrist strap
- ESD bag
- Labels

## Procedure

**Step 1** Check status before replacement.

1. Check system status.

   Start SmartKit and choose **Home** > **Storage** > **Routine Maintenance** > **Health Check**. On the **Health Check** page, perform inspection as instructed. For details, see **7.1.2 Checking System Status**.

   NOTE

   If any items fail the inspection, rectify the faults by performing the recommended actions in the inspection reports. Ensure that all other parts except the parts to be replaced are working properly.

2. Start SmartKit and choose **Home** > **Storage** > **Parts Replacement** > **More** > **Parts Replacement (CRU)**. On the CRU replacement page, complete the check before the replacement as prompted. For details, see **7.1.3 Replacing a CRU**.

NOTICE

You can proceed to next steps only when all items pass the pre-replacement check and the replacement page is displayed. If any item fails, rectify the fault as prompted.

**Step 2** Wear an ESD wrist strap.

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**Step 3** Remove the optical fibers connected to the optical module to be replaced.

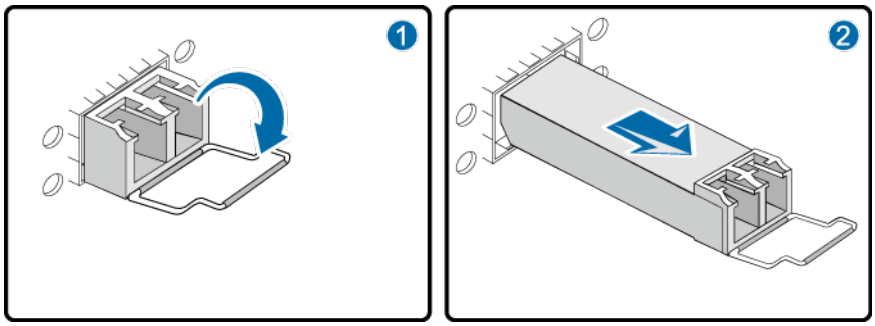
**DANGER**

Do not look into the optical port without eye protection. The laser beam on the optical interface board or from the fiber may cause injuries to eyes.

**Step 4** Remove the optical module as follows based on your optical module type.

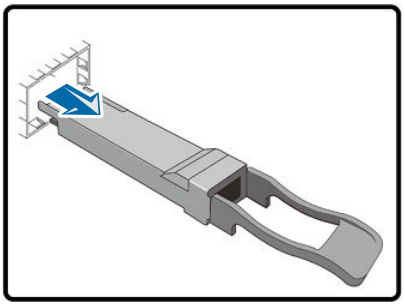
- Open the latch of the optical module, and pull out the optical module, as shown in **Figure 7-163**.

  **Figure 7-163** Removing the optical module

- Hold the handle and pull out the optical module, as shown in **Figure 7-164**.

  **Figure 7-164** Removing the optical module

**Step 5** Put the removed optical module into an ESD bag.

**Step 6** Take the spare part out of its ESD bag.

**Step 7** Remove the protective cap from the replacement optical module, and insert the replacement optical module into the port, as shown in **Figure 7-165** and **Figure 7-166**.

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**CAUTION**

- Before inserting an optical module, ensure that its latch is completely closed.
- Insert the optical module to the enclosure until you hear a "click" sound or feel a slight shake, which indicates that the optical module is inserted in place.
- If the optical module is not inserted in place, it will fall out or will cause a link fault.

**Figure 7-165** Installing the replacement optical module

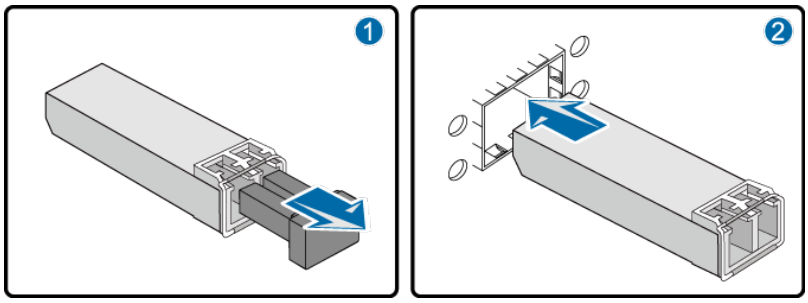
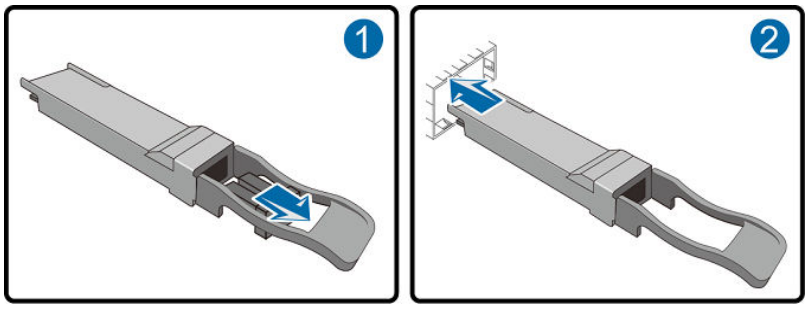



**Figure 7-166** Installing the replacement optical module




**Step 8** Insert the optical fibers into the optical module.

**DANGER**

Do not look into the optical port without eye protection. The laser beam on the optical interface board or from the fiber may cause injuries to eyes.

**NOTE**

Insert the optical fibers until they snap into place.

**Step 9** Observe the port indicator to check whether the optical module is properly installed.

- If the indicator is steady green or blue, the installation is successful.
- If the indicator is steady yellow or off, the newly installed optical module is faulty, the optical module slot is faulty, or the optical module is incorrectly installed.

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**Step 10** Confirm the replacement.

1. Perform a post-replacement inspection.

   After the parts replacement, return to the SmartKit page and click **Replaced**. Then complete the check after the replacement as prompted.

2. Check the system status after the replacement.

   Return to the home page, choose **Home** > **Storage** > **Routine Maintenance** > **Health Check**, and check the system status again. If any inspection item fails, rectify the fault based on the suggestions in the inspection report.

3. After the preceding procedure is complete, check services on the host for storage-related errors. If any storage-related error is reported, contact Huawei technical support.

**----End**

## Follow-up Procedure

After the optical module is replaced, label it to facilitate subsequent operations.

# 7.8 Replacing an Electrical Module

This section describes how to replace an electrical module.

## Impact on the System

During the replacement of an electrical module, the system switches services from the port of the electrical module to another redundant port. If available links are unable to carry the current service load, the service I/O response latency increases and the system performance deteriorates. If there are no other redundant links, services run on a single link and the system reliability decreases. You are advised to replace an electrical module in off-peak hours.

## Prerequisites

- The replacement electrical module (spare part) has been prepared.
- The interface module that houses the electrical module you want to replace has been located.

  NOTE

  You can locate a component in either of the following ways:

  - Locating a component based on alarms in DeviceManager: On the **Alarms and Events** page of DeviceManager, view the help information and determine the ID of the component to be replaced. Then locate the component at your site based on its ID.
  - Locating a component based on the status of its Running/Alarm indicator: For details about the indicators on different components, see Indicator Introduction of each component in the *Product Description* specific to your product model and version.

## Precautions

- Remove and insert an electrical module with even force. Excessive force may damage the appearance or connectors of the electrical module.

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- Do not repeatedly or quickly remove or insert an electrical module; otherwise, it may be damaged.
- After removing an electrical module, wait at least 15 seconds before inserting one. Otherwise, the system cannot identify the status change of the electrical module.

## Tools and Materials

- ESD wrist strap
- ESD bag
- Labels

## Procedure

**Step 1** Perform a pre-replacement check.

1. Check system status.

   Start SmartKit and choose **Home** > **Storage** > **Routine Maintenance** > **Health Check**. On the **Health Check** page, perform inspection as instructed. For details, see **7.1.2 Checking System Status**.

   NOTE

   If any items fail the inspection, rectify the faults by performing the recommended actions in the inspection reports. Ensure that all other parts except the parts to be replaced are working properly.

2. Check the status of the parts to be replaced.

   Start SmartKit and choose **Home** > **Storage** > **Parts Replacement** > **More** > **Parts Replacement (CRU)**. On the CRU replacement page, complete the check before the replacement as prompted. For details, see **7.1.3 Replacing a CRU**.

NOTICE

You can proceed to next steps only when all items pass the pre-replacement check and the replacement page is displayed. If any item fails, rectify the fault as prompted.

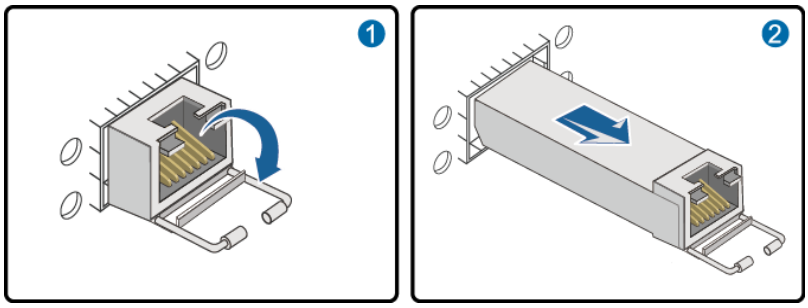
**Step 2** Wear an ESD wrist strap.

**Step 3** Remove the network cables connected to the electrical module to be replaced.

**Step 4** Open the latch of the electrical module, and pull out the electrical module, as shown in **Figure 7-167**.

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**Figure 7-167** Removing the electrical module




**Step 5** Put the removed electrical module into an ESD bag.

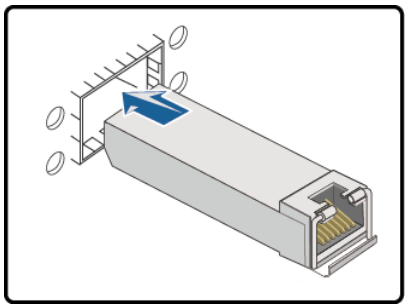
**Step 6** Take the replacement electrical module out of its ESD bag.

**Step 7** Insert the replacement electrical module into the port, as shown in **Figure 7-168**.

**NOTICE**

- Before inserting an electrical module, ensure that its latch is completely closed.
- Insert the electrical module until you hear a "click" sound or feel a slight shake, which indicates that the electrical module is inserted in place.
- If the electrical module is not inserted in place, it will fall out or will cause an unexpected link interruption.

**Figure 7-168** Installing the replacement electrical module



**Step 8** Insert the network cables into the electrical module.

**Step 9** Observe the port indicator to check whether the electrical module has been properly installed.

- If the indicator is steady green or blue, the installation is successful.
- If the indicator is steady yellow or off, the newly installed electrical module is faulty, the slot for the electrical module is faulty, or the electrical module is incorrectly installed.

**Step 10** Confirm the replacement.

1. Perform a post-replacement inspection.

   After the parts replacement, return to the SmartKit page and click **Replaced**. Then complete the check after the replacement as prompted.
2. Check system status.

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Choose **Home** > **Storage** > **Routine Maintenance** > **Health Check** to check the system status again. If any inspection item fails, rectify the fault based on the suggestions in the inspection report.

3. After the preceding procedure is complete, check services on the host for storage-related errors.

**----End**

## Follow-up Procedure

After the electrical module is replaced, label it to facilitate subsequent operations.

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# 8 Replacing FRUs

This chapter describes how to replace FRUs.

NOTE

You can refer to the parts replacement multimedia for a dynamic view of the replacement procedure. For details, see **6 How to Access Parts Replacement Multimedia**.

8.1 Installing and Using SmartKit

8.2 Replacing a System Subrack

8.3 Replacing a Controller

8.4 Replacing an Assistant Cooling Module

8.5 Replacing a Cable

8.6 Replacing an Interface Module

8.7 Replacing a Power Module

8.8 Replacing a Fan Module

8.9 Replacing a BBU

8.10 Replacing a Management Module

8.11 Replacing the Parts of a Quorum Server

8.12 Replacing a Data Switch

## 8.1 Installing and Using SmartKit

SmartKit (formerly named Toolkit) is a serviceability tool developed by Huawei. It helps technical service engineers and maintenance engineers manage and maintain devices.

### 8.1.1 Installing SmartKit

This section describes how to install SmartKit and desired tool packages on your maintenance terminal.

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## Prerequisite

- Requirements for software installation environments

  Being installed on external maintenance terminals, SmartKit has the following requirements for software installation environments, as listed in **Table 8-1**.

**Table 8-1** Requirements for software installation environments

| Configuration Item | Requirement | Description |
| --- | --- | --- |
| Supported operating systems | • Windows XP 32-bit<br>• Windows 7 32-bit<br>• Windows Server 2003 32-bit<br>• Windows Server 2008 32-bit<br>• Windows 7 64-bit<br>• Windows Server 2003 64-bit<br>• Windows Server 2008 64-bit<br>• Windows Server 2012 64-bit<br>• Windows Server 2016 64-bit<br>• Windows 10 64-bit | The following tools that use private protocols do not support 64-bit operating systems:<br>• Default Management IP Address Modification Tool<br>• Unified Storage Deployment<br>You are advised not to use Windows Server 2003 if the DHCP protocol deployment tool is used.<br>Microsoft officially ceased its support for Windows Server 2003 operating system from July 14, 2015. Meanwhile, Windows Server 2003 is not compatible with JRE 1.7.0.80. Therefore, this operating system is not recommended. |
| Recommended Java runtime environment (JRE) version | JRE 1.7.0.80 32-bit | The software package contains the JRE.<br>Run the OceanStor SmartKit on 32-bit and 64-bit operating systems using 32-bit JRE.<br>Some of the earlier operating system versions do not support JRE 1.7.0.80. Upgrade your operating system to the latest version before using it. |

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| Configuration Item | Requirement | Description |
| --- | --- | --- |
| CPU | Dual-core 2.4 GHz or higher | If SmartKit is installed on a VM, the CPU of the VM must be at least 2.4 GHz. |
| Memory | 400 MB or more free memory | If SmartKit is installed on a VM, the memory of the VM must be at least 400 MB. |
| Disk space | Larger than 2 GB for the remaining space of the disk on which the OceanStor SmartKit resides | - |
| Screen resolution | 1024 x 768 or above | - |
| Supported browsers | Internet Explorer: IE 7, IE 8, IE 9, and IE 10 | Used when you view maintenance reports. |
| Max. number of managed devices | 256 | - |
| Installation requirement | Only support for letters, digits, underscores, and single blank spaces in the installation path | SmartKit needs to use 7z (compression software). The compression software only supports directories containing letters, digits, underscores, and spaces. Therefore, the installation path of SmartKit must contain only letters, digits, underscores, and single blank spaces. |

- Requirements for networks

  The maintenance terminal where SmartKit is installed must be correctly connected to the management network ports of storage systems.

## Procedure

**Step 1** Download SmartKit.

NOTE

If the maintenance terminal cannot access the Internet, you need to use another terminal that can access the Internet to download the **SmartKit installation package**. Then copy the package to the maintenance terminal.

- If you are an enterprise user:

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a. Use the maintenance terminal to log in to **https://support.huawei.com/enterprise** and Choose **Tools** > **SmartKit**.
b. Select the latest version.
c. In the **Version and Patch Software** area, select and download the software you need.

- If you are a carrier user:
  a. Use the maintenance terminal to log in to **https://support.huawei.com**. In the search box on the home page, type **SmartKit** and choose the associated SmartKit path from the drop-down list.
  b. On the search result page, click the **Software** tab.
  c. On the **Software** tab page, click the latest version.
     The page for downloading the software is displayed.
  d. In the **Software** area, download the software you need.

**Step 2** Install SmartKit.

1. On the maintenance terminal, run the SmartKit installation package and follow the instructions provided by the installation wizard to install SmartKit.
   After the installation is complete, SmartKit will automatically start.
2. Type your support website account as prompted to activate SmartKit and read the safety precautions.

NOTE

- You can apply for an account of the support website at **https://support.huawei.com**.
- You have 180 days to use an account after it is activated. If there are only 45 days or fewer days left, you will be reminded of activating the tool again. If the tool is not activated after 180 days, you only have permissions of a **Visitor**.

**----End**

## 8.1.2 Checking System Status

This section describes how to check system status and ensure that the status of all components you do not intend to replace is normal.

### Procedure

**Step 1** Run SmartKit.

**Step 2** Choose **Home** > **Storage** > **Routine Maintenance** > **Health Check**.

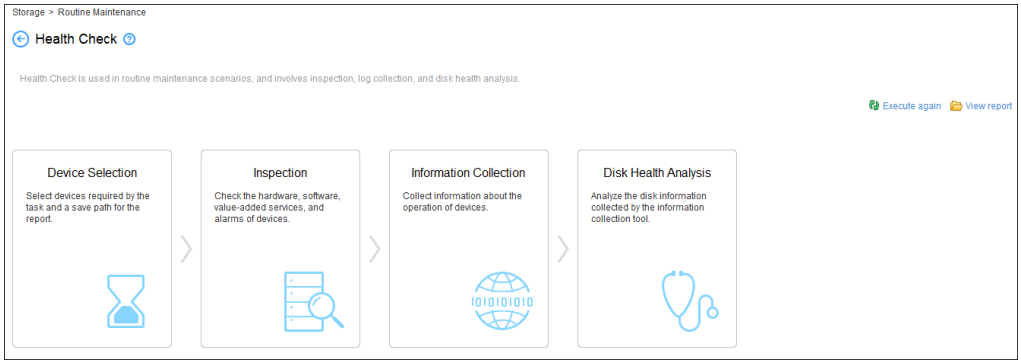
NOTE

- OceanStor SmartKit users are grouped into **Huawei engineers**, **Channel partner engineers**, **Customers**, and **Visitors** based on user permissions. You can log in to the **Inspection** tool using one of the preceding roles.
- **Visitors** users do not have corresponding accounts. When you log in to OceanStor SmartKit, on the tool activation page that is displayed, select **Not activate** and go to the SmartKit GUI. Then you can use the tool as a **Visitor**.
- If you log in to OceanStor SmartKit as a **Visitor**, you have only 15 days for trial use. You cannot use the tool after the trial period expires.
- The following uses **Huawei engineers** as an example.

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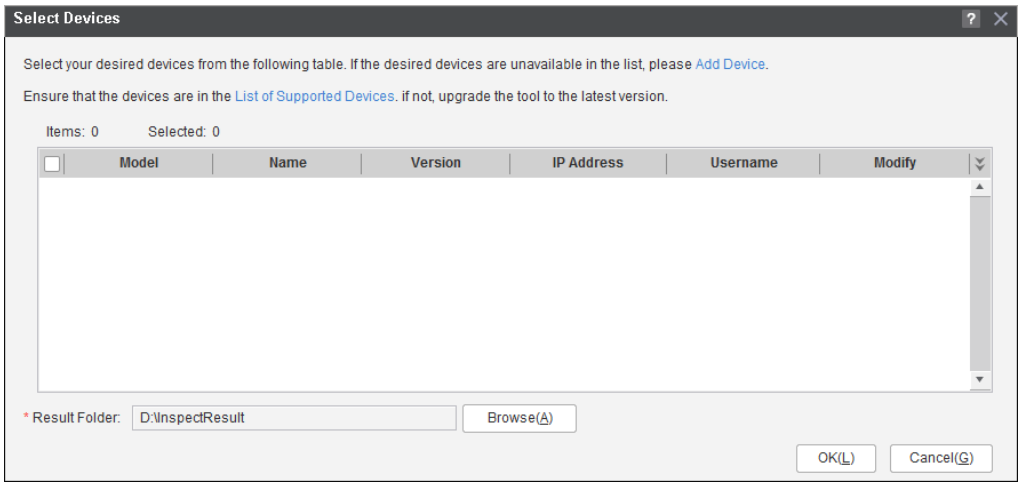
**Step 3** On the **Health Check** page, perform a health check in the sequence of **Device Selection**, **Inspection**, **Information Collection**, and then **Disk Health Analysis**, as shown in **Figure 8-1**.

**Figure 8-1** Health check sequence




**Step 4** Click **Device Selection**. The **Select Devices** page is displayed, as shown in **Figure 8-2**.

**Figure 8-2** Selecting devices

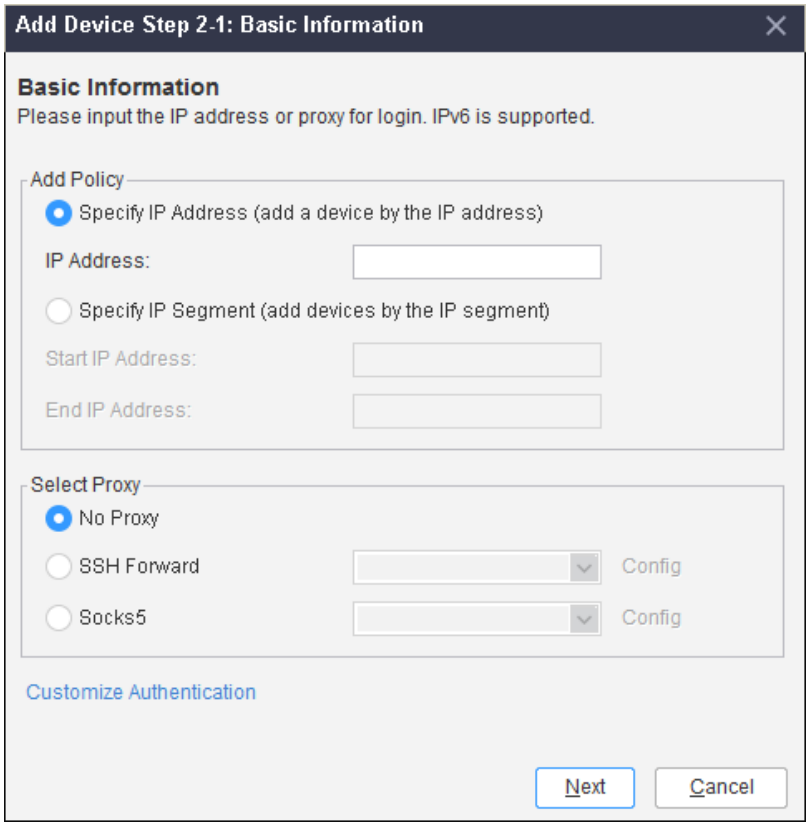



**Step 5** Add devices.

1. Click **Add Device**.
   The **Basic Information** window is displayed, as shown in **Figure 8-3**.

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**Figure 8-3** Add Device Step 2-1: Basic Information

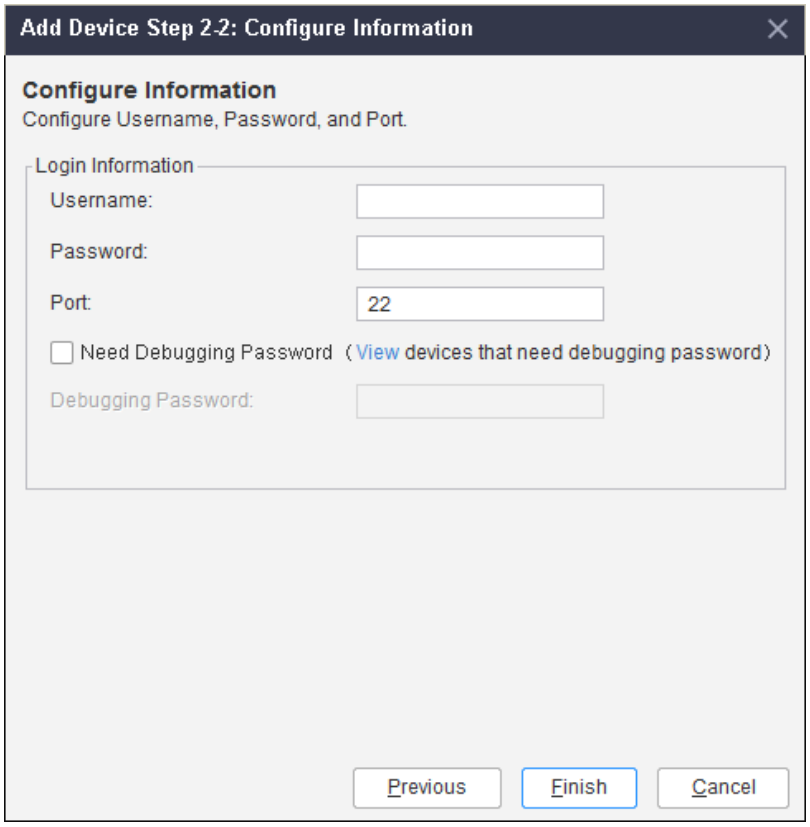



2. Enter basic information, including the IP address and proxy. In the **Add Policy** and **Select Proxy** areas, select **Specify IP Address (add a device by the IP address)** and **No Proxy**, respectively.
3. Click **Next**.

   The **Configure Information** window is displayed, as shown in **Figure 8-4**.

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**Figure 8-4** Add Device Step 2-2: Configure Information




4. Enter configurations, including the user name, password, and port of the device. In the **Login Information** area, enter the **Username**, **Password**, and **Port** of the device to be added. The default value of **Port** is **22**.

   NOTE

   Run the **show system server_port server_name=SSH** command to check whether the SSH port ID is 22. If the port ID is not 22, for storage systems earlier than V500R007C60SPC300, run the **change system server_port server_name=SSH port_num=22** command to change the port ID to 22. For V500R007C60SPC300 and later versions, you do not need to change the SSH port ID to 22.

5. Click **Finish**.

   The newly added device is displayed in the device list.

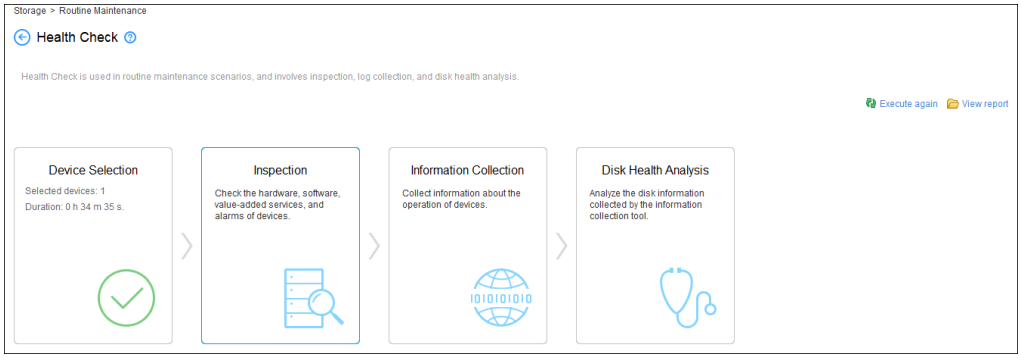
NOTE

- When a device is added for the first time or a device certificate is not trusted, a message is displayed indicating that the connection is not trusted.
- When an SSH server is added for the first time or the fingerprint of an SSH server changes, a message is displayed asking whether you want to continue to register the SSH server.

**Step 6** Select the added device, click **OK**, go back to the **Health Check** page, and click **Inspection**, as shown in **Figure 8-5**.

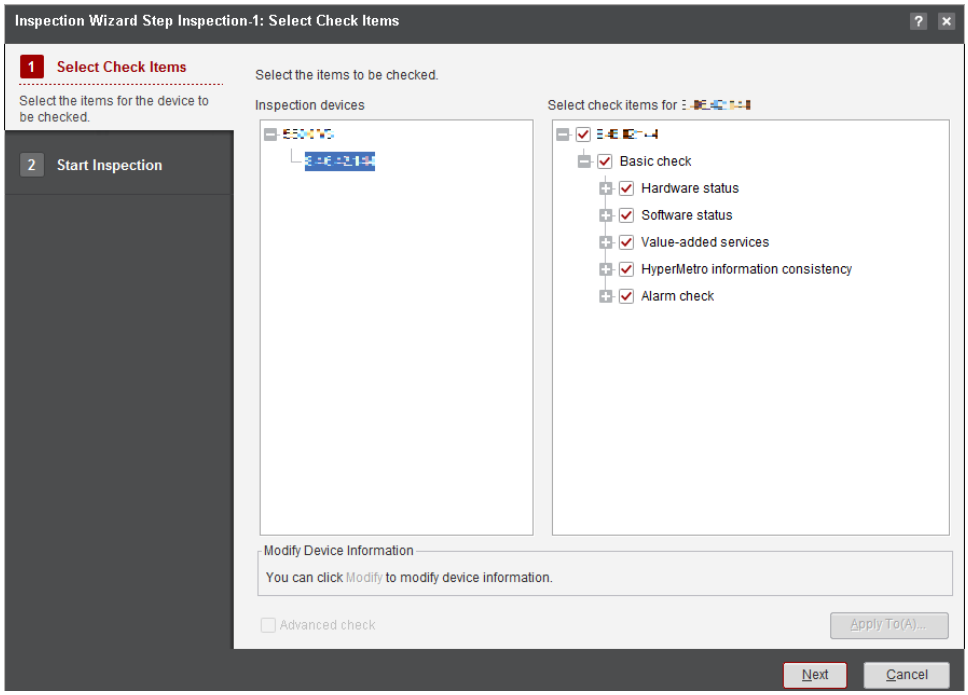
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**Figure 8-5** Inspection




**Step 7** On the **Select Check Items** page, select check items, as shown in **Figure 8-6**. Then click **Next**. (This step uses the non-HyperMetro scenario as an example.)

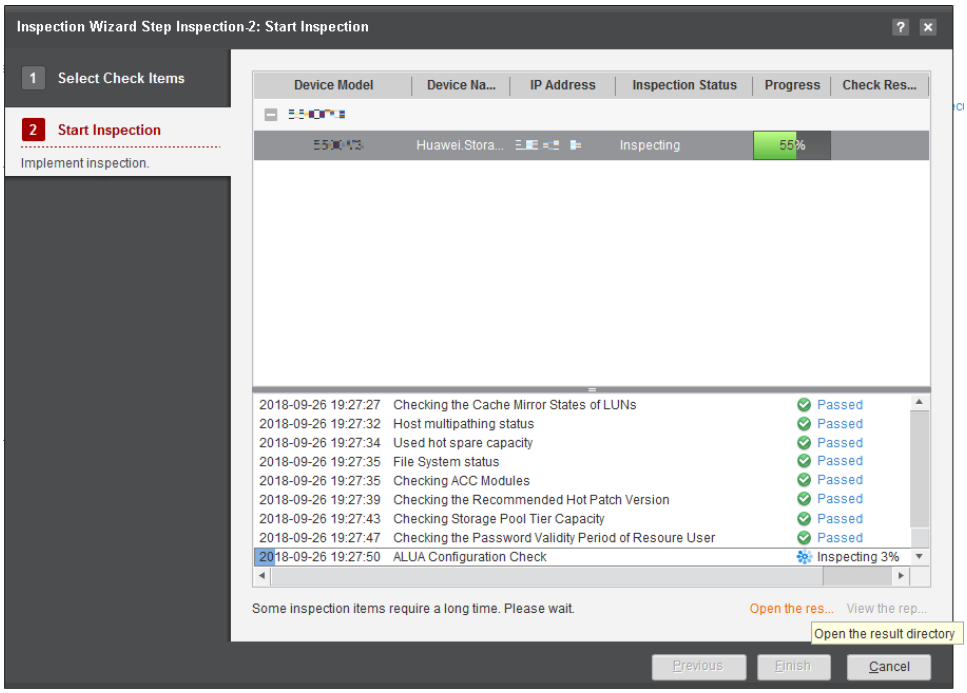
**Figure 8-6** Inspection Wizard Step Inspection-1: Select Check Items




**Step 8** On the **Start Inspection** page, view the inspection progress, as shown in **Figure 8-7**.

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**Figure 8-7** Inspection Wizard Step Inspection-2: Start Inspection




- **Open the result directory**: It links to the path that saves inspection reports. The default path is **My Documents**.
- **View the report:** It links to an **.html** file that contains details about inspection results. The file is also compressed and saved to the path of inspection reports.

**Step 9** When the progress is 100%, click **Finish** and go back to the **Health Check** page, as shown in **Figure 8-8**.

**Figure 8-8** Health check




**Step 10** (Optional) Perform **Information Collection** and **Disk Health Analysis** based on your service requirements. The health check is complete.

NOTE

If there are items that fail the inspection, rectify the faults based on the suggestions listed in the inspection result report.

**----End**

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# 8.1.3 Replacing an FRU

This section describes how to use the FRU replacement tool to replace parts.

## Context

FRUs are components that engineers can replace at the deployment site by performing the operations in the operation guide.

NOTE

This section uses an optical module as an example.

Install the latest SmartKit before replacing an FRU.

Operators: technical support engineers and maintenance engineers from Huawei or certified by Huawei

You can click the question mark (?) in the upper right corner of the page to obtain the instructions.

## Procedure

**Step 1** Log in to SmartKit.

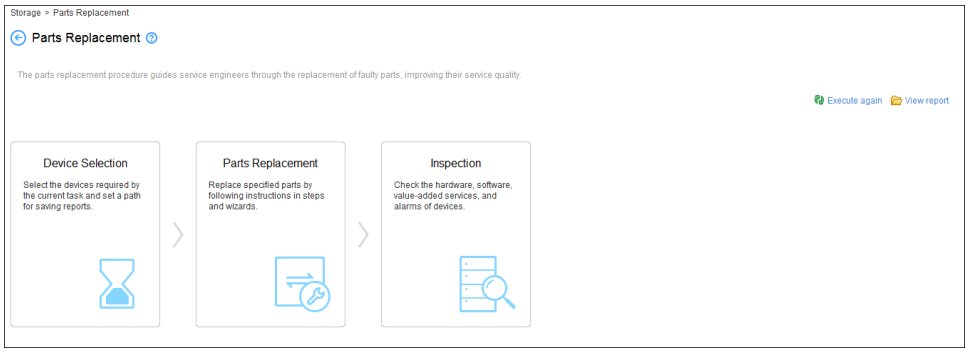
**Step 2** (Optional) Download the **FRU Replacement** tool package. If the **FRU Replacement** tool package has been downloaded, go to **Step 3**.

- If you can access Internet on your maintenance terminal, choose **Home** > **Storage** > **Parts Replacement** > **Parts Replacement**. In the dialog box that is displayed, click **OK** to download and install the **FRU Replacement** tool.
- If you cannot access Internet on your maintenance terminal, click **Function Management** on the home page. On the page that is displayed, click **Import** to import a package that has been exported from another SmartKit environment and install it in offline mode.

NOTE

For details about offline installation operations, see "Function Import" and "Function Export" in the *SmartKit User Guide*.

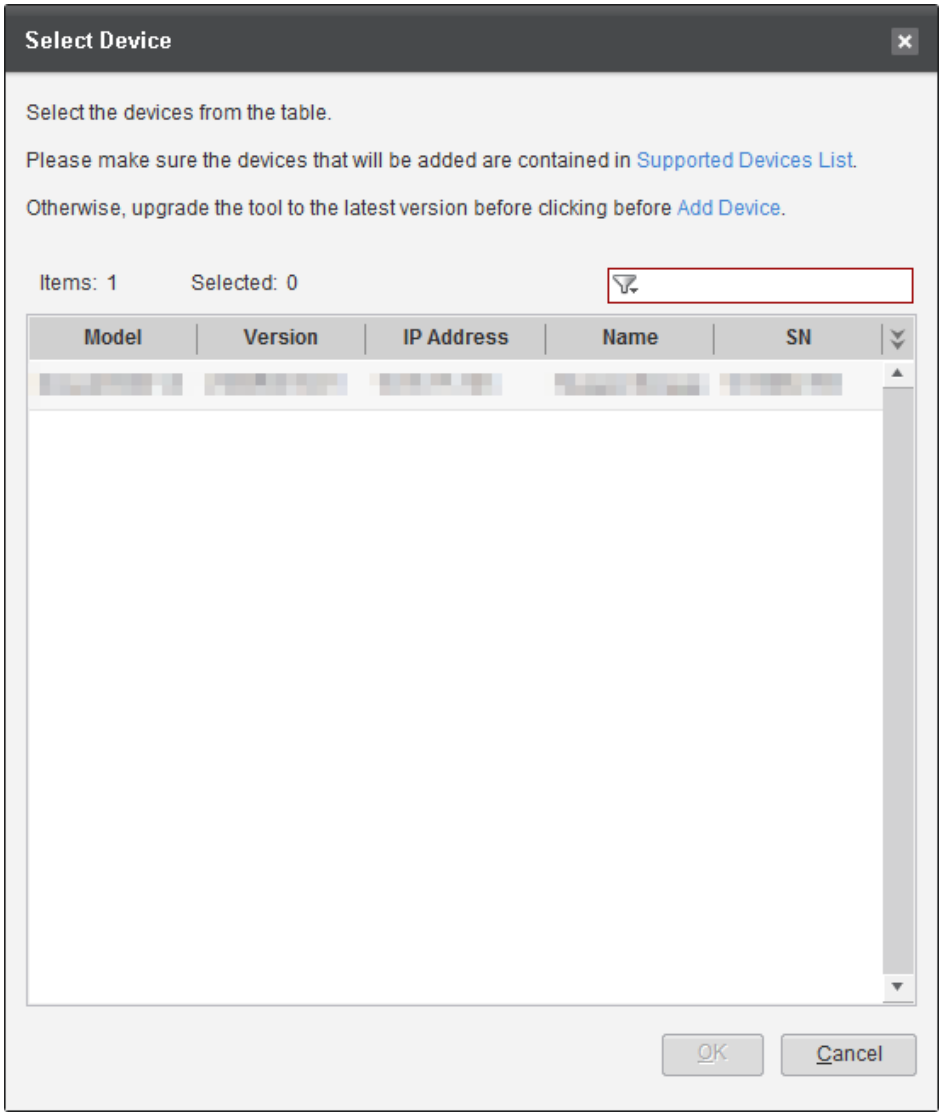
**Step 3** Choose **Home** > **Storage** > **Parts Replacement** > **Parts Replacement**. The **Parts Replacement** page is displayed.




**Step 4** Click **Device Selection**. The **Select Device** dialog box is displayed.

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**Figure 8-9** Select Device




**Step 5** In the device list, select the device of which parts you want to replace and click **OK**.

NOTE

If the device does not appear in the list, follow instructions in **Add Device** to add the device. For details, see **Step 5** in **8.1.2 Checking System Status**.

**Step 6** Click **Parts Replacement**, select the device of which parts you want to replace and click **OK**. In the **FRU Replacement** dialog box, select the parts to be replaced. For example, select **Optical Module**.

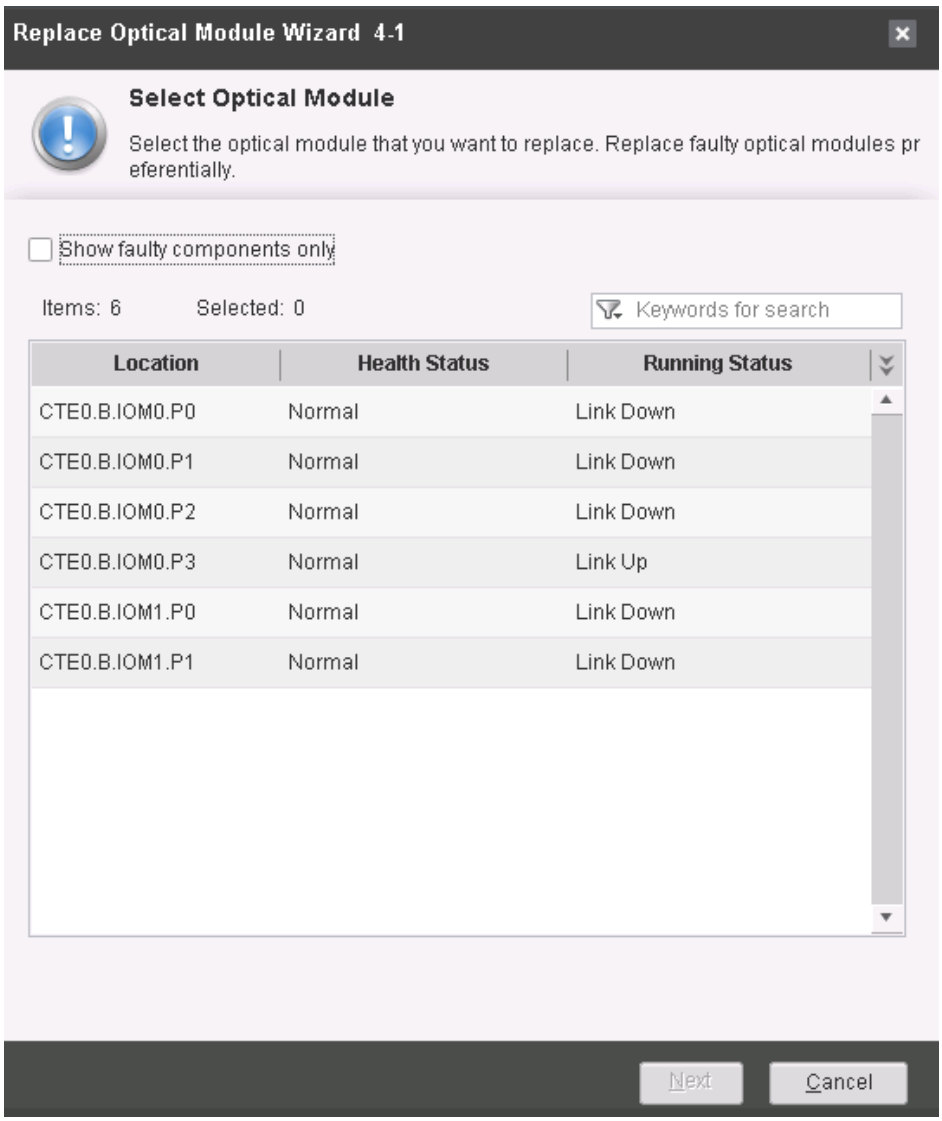
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NOTE

- After selecting a part that you want to replace, perform the subsequent operations as prompted by the wizard. This section uses an optical module as an example to describe how to replace an FRU.
- On the **FRU Replacement** page, the components include:
  - Front-end components: Indicates components connected to application servers, such as front-end interface modules and cables.
  - Back-end components: Indicates components connected to disk enclosures, such as back-end interface modules and cables.
  - IP scale-out components: Indicates components connected to controller enclosures, such as IP scale-out interface modules and cables.

The **Replace Optical Module Wizard** dialog box is displayed.

**Figure 8-10** Replace Optical Module Wizard 4-1




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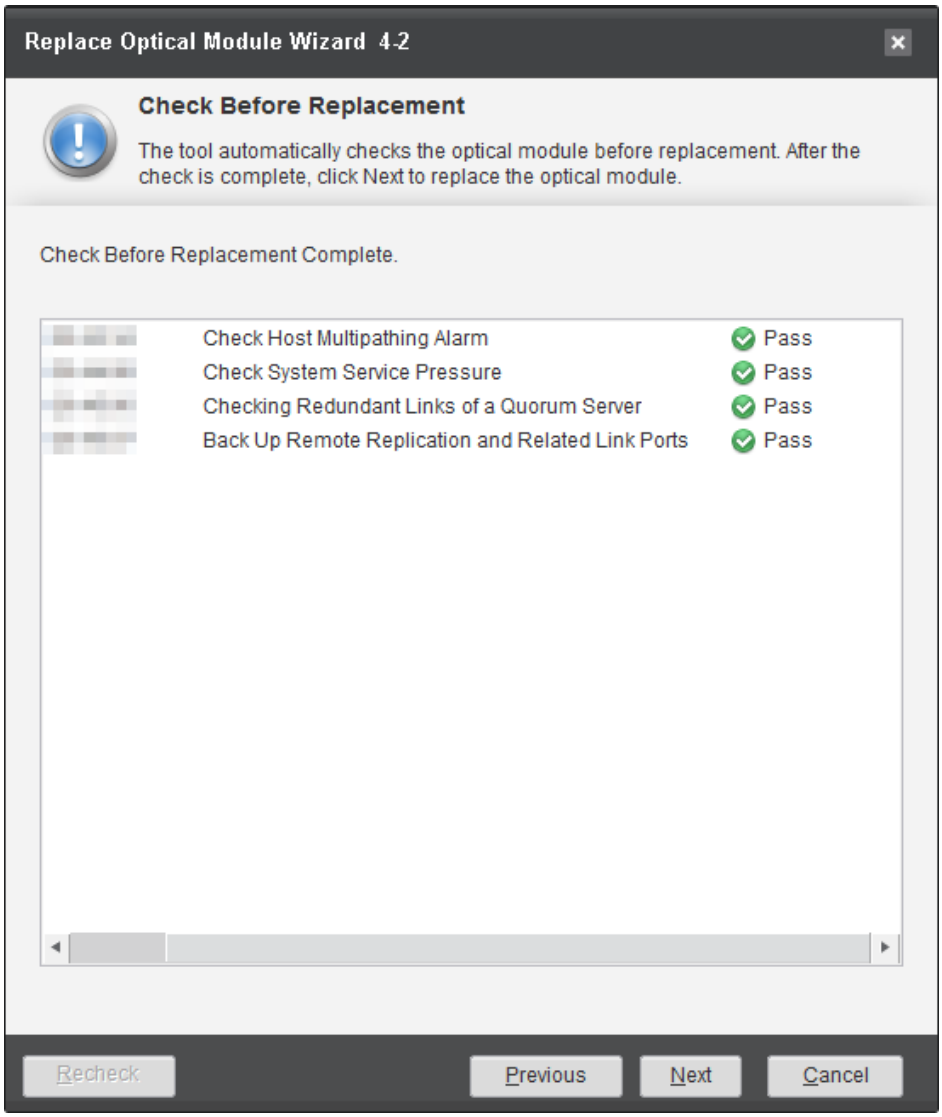
NOTE

By default, only faulty optical modules are displayed. If you want to view all optical modules, deselect **Show faulty components only**.

**Step 7** In the optical module list, select the optical module that you want to replace and click **Next**.

Check the system before the replacement.

**Figure 8-11** Replace Optical Module Wizard 4-2




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NOTE

If services on the port corresponding to the replaced optical module fail, the **Danger** dialog box is displayed.

- If the risk can be ignored, select **I have read and understand the consequence associated with performing this operation**, click **OK**, and go to **Step 8**.
- If you need to perform the replacement again, click **Cancel** and then confirm that the interface module and the controller corresponding to the optical module are working normally. If the **Danger** dialog box is displayed again, contact Huawei technical support.

**Step 8** Click **Next**.

The optical module replacement page is displayed.

NOTE

You can proceed to next steps only when all items pass the pre-replacement check.

**Step 9** Replace the optical module by performing operations in the operation guide.

**Step 10** Click **Replaced**.

The **Warning** dialog box is displayed.

NOTE

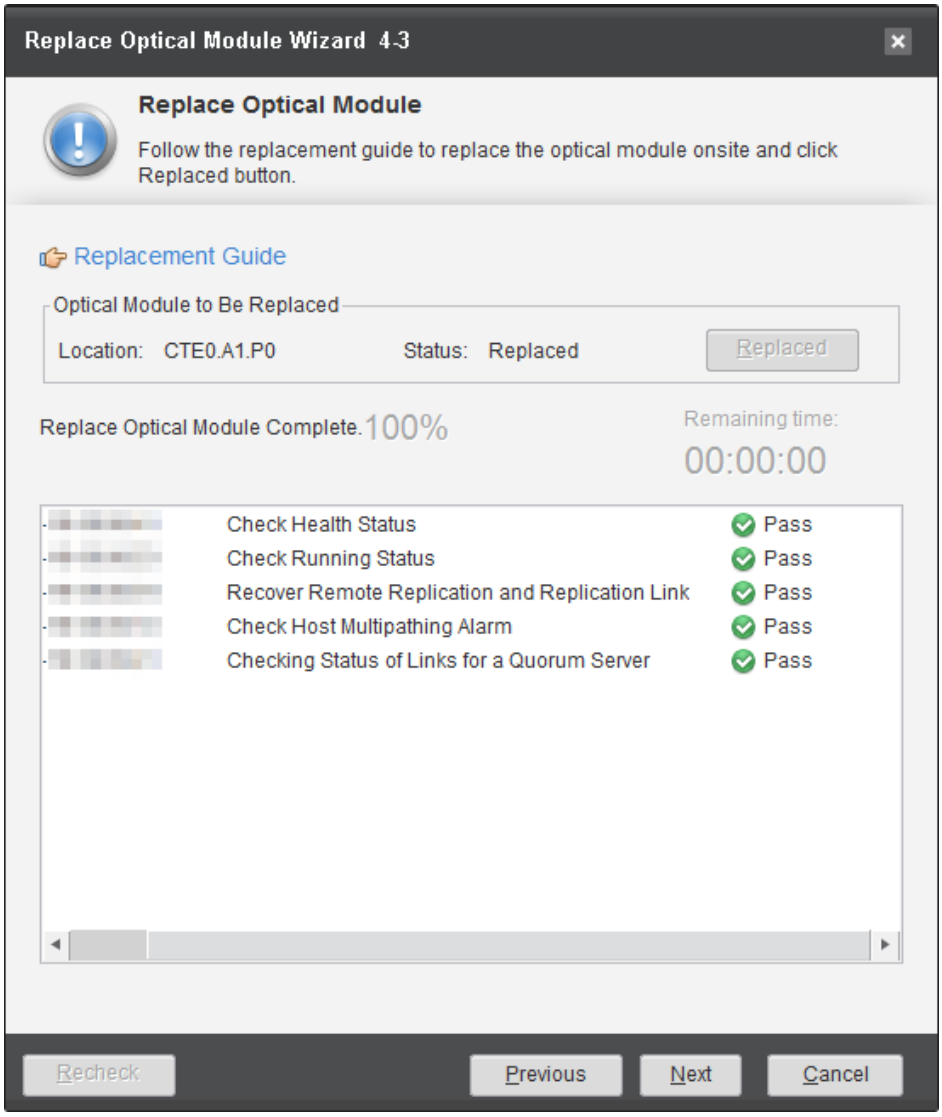
Before this operation, you need to manually replace the faulty parts.

**Step 11** Click **OK**.

Check the system after the replacement.

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**Figure 8-12** Replace Optical Module Wizard 4-3

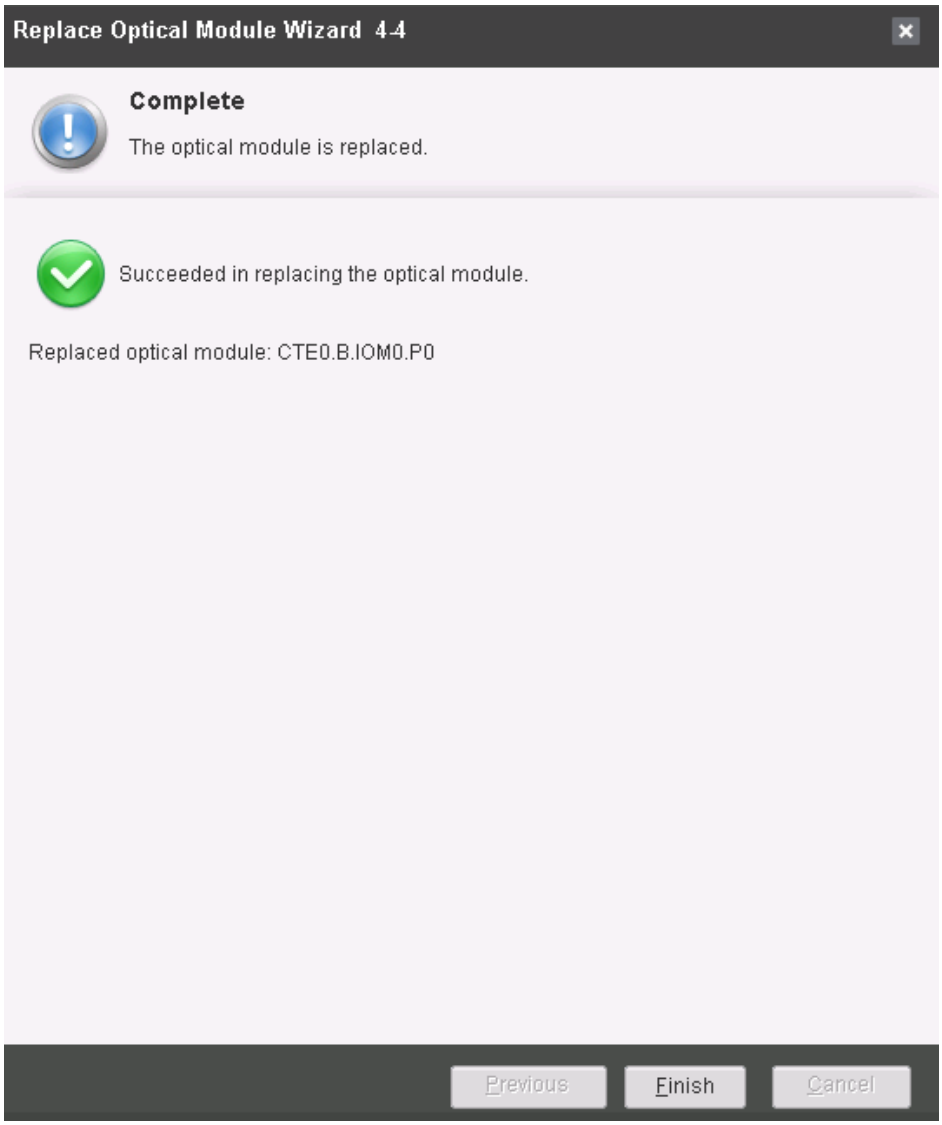



**Step 12** Click **Next**.

The **Complete** page is displayed.

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**Figure 8-13** Replace Optical Module Wizard 4-4




**Step 13** Click **Finish**.

The optical module replacement is complete.

**----End**

# 8.2 Replacing a System Subrack

This section describes how to replace the system subrack of a disk enclosure and controller enclosure.

## 8.2.1 Replacing a System Subrack (for a Disk Enclosure)

This section describes how to replace the system subrack of a disk enclosure.

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NOTE

The procedure for replacing a SAS disk enclosure is the same as that for replacing a smart disk enclosure. This section describes how to replace a 4 U SAS disk enclosure.

## Impact on the System

Replacing a system subrack interrupts services running on the system subrack. Perform this operation with caution and under the guidance of technical support engineers.

## Prerequisites

- The spare part is on hand.
- The system subrack that you want to replace has been located.

NOTE

You can locate a component in one of the following ways:

- Locating a component based on alarms in DeviceManager: On the **Alarms and Events** page of DeviceManager, view the help information and determine the ID of the component to be replaced. Then locate the component at your site based on its ID.
- Locating a component based on its location indicator: You are advised to set the location indicator of the component in DeviceManager. For details, see the *Online Help* of DeviceManager. Then, locate the component at your site based on its location indicator.
- Locating a component based on the status of its Running/Alarm indicator: For details about the indicators on different components, see "Indicator Introduction" of each component in the *Product Description* specific to your product model and version.

- The cable connection positions of the system subrack that you want to replace are labeled on the cables.

## Precautions

- Before replacing the system subrack, confirm that cascading cables are properly connected.
- Remove and insert a system subrack with even force. Excessive force may damage the appearance of the system subrack or cause faults.
- It is recommended that three persons are present when moving a fully configured system subrack to prevent personal injury.

## Tools and Materials

- Phillips screwdriver (M3 to M6)
- ESD wrist strap
- ESD bag
- ESD table
- Labels
- Protective gloves
- Nameplate
- Huawei logo label

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## Procedure

**Step 1** Check status before replacement.

1. Check system status.

   Start SmartKit and choose **Home** > **Storage** > **Routine Maintenance** > **Health Check**. On the **Health Check** page, perform inspection as instructed. For details, see **8.1.2 Checking System Status**.

   NOTE

   If any items fail the inspection, rectify the faults by performing the recommended actions in the inspection reports. Ensure that all other parts except the parts to be replaced are working properly.

2. Check the status of the parts to be replaced.

   Start SmartKit and choose **Home** > **Storage** > **Parts Replacement** > **Parts Replacement**. On the **Parts Replacement** page, click **FRU Replacement**. Then complete the check before the replacement as prompted. For details, see **8.1.3 Replacing an FRU**.

   NOTICE

   You can proceed to next steps only when all items pass the pre-replacement check and the replacement page is displayed. If any item fails, rectify the fault as prompted.

**Step 2** Wear an ESD wrist strap and protective gloves and remove the cables from the system subrack that you want to replace.

**Step 3** Take the spare part out of its ESD bag and place the spare part on the ESD table.

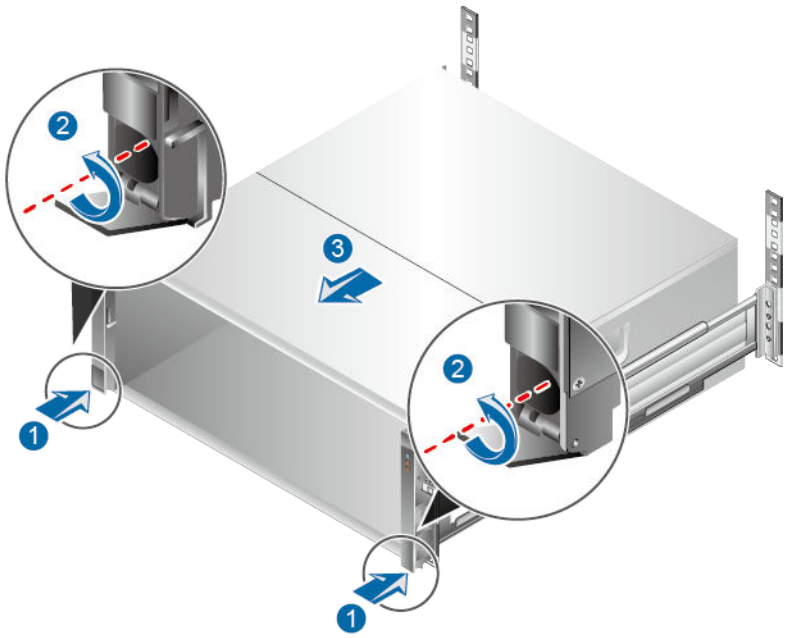
**Step 4** Remove components from the system subrack that you want to replace and reinstall them to their corresponding positions in the spare part.

**Step 5** Remove the system subrack that you want to replace from the cabinet, as shown in **Figure 8-14**.

1. Use the Phillips screwdriver to loosen the captive screws from the system subrack.
2. Pull the system subrack out of the cabinet along guide rails and place the system subrack on the ESD table.

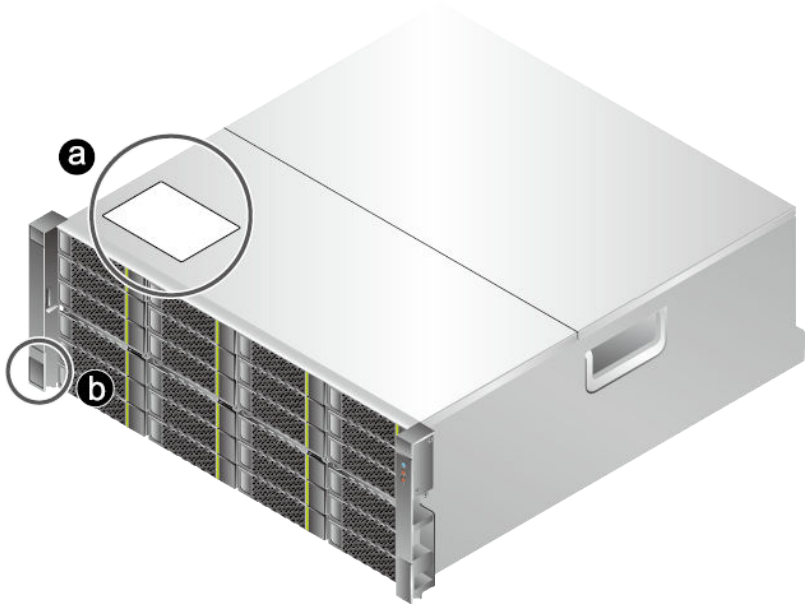
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**Figure 8-14** Removing a system subrack




**Step 6** **Optional:** Attach the nameplate and the Huawei logo label to the same positions on the spare part as those on the removed system subrack, as shown in **Figure 8-15**. **a** indicates the nameplate location and **b** indicates the Huawei logo label location.

**Figure 8-15** Positions of the nameplate and Huawei logo label




NOTE

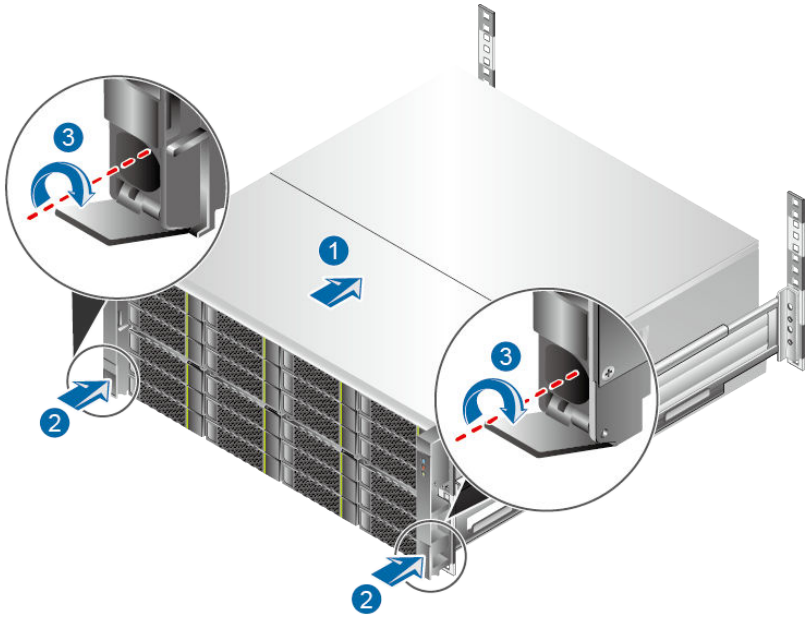
Two different nameplates are often included in the product. Select the one that contains identical information to the nameplate on the removed system subrack.

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**Step 7** Install the spare part into the cabinet, as shown in **Figure 8-16**.

1. Slide the spare part into the cabinet along guide rails.
2. Tighten the captive screws to fix the spare part in the cabinet.
3. Ensure that the spare part is horizontally installed and tightly screwed.

**Figure 8-16** Installing a system subrack




**Step 8** Connect the cables that you removed to the spare part in the same connection way.

**Step 9** When the Power indicator is steady on, check whether the status of each component is normal.

- If yes, the system subrack has been successfully installed.
- If no, cables are incorrectly connected, components are incorrectly installed, or the newly installed system subrack is faulty.

**Step 10** Confirm the replacement.

1. Perform a post-replacement inspection.

   After the parts replacement, return to the SmartKit page and click **Replaced**. Then complete the check after the replacement as prompted.

   NOTE

   If the 0xF00CE002A and 0xF00D00016 alarms are generated and contain the SN of the faulty system subrack that has been replaced, check the device configuration according to the alarm information. If the configuration is correct, log in to DeviceManager to manually clear the alarms, return to the SmartKit page, and click **Recheck**.

2. Check system status.

   On the **Parts Replacement** page, click **Inspection** to check the system status again. If any item fails inspection, rectify the fault based on the suggestions in the inspection report.

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3. After the preceding procedure is complete, check services on the host for storage-related errors.

**----End**

### Follow-up Procedure

After the system subrack is replaced, label it to facilitate subsequent operations.

## 8.2.2 Replacing a System Subrack (for a High-Density Disk Enclosure)

This section describes how to replace a system subrack.

### Impact on the System

Replacing a system subrack interrupts services running on the system subrack. Perform this operation with caution and under the guidance of technical support engineers.

### Prerequisites

- The spare part is on hand.
- The system subrack that you want to replace has been located.

  NOTE

  You can locate a component in one of the following ways:
  - Locating a component based on alarms in DeviceManager: On the **Alarms and Events** page of DeviceManager, view the help information and determine the ID of the component to be replaced. Then locate the component at your site based on its ID.
  - Locating a component based on its location indicator: You are advised to set the location indicator of the component in DeviceManager. For details, see the *Online Help* of DeviceManager. Then, locate the component at your site based on its location indicator.
  - Locating a component based on the status of its Running/Alarm indicator: For details about the indicators on different components, see "Indicator Introduction" of each component in the *Product Description* specific to your product model and version.
- The installation positions of the cables connecting to the system subrack that you want to replace have been clearly marked.
- Services running on the system subrack that you want to replace have been stopped.

### Precautions

- To avoid personal injury, arrange three persons to move a system subrack.

### Tools and Materials

- Phillips screwdriver (M3 to M6)
- ESD wrist strap
- ESD bag
- ESD table

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- Diagonal pliers
- Cable tie
- Labels
- Protective gloves

## Procedure

**Step 1** Check status before replacement.

1. Check system status.

   Start SmartKit and choose **Home** > **Storage** > **Routine Maintenance** > **Health Check**. On the **Health Check** page, perform inspection as instructed. For details, see **8.1.2 Checking System Status**.

   NOTE

   If any items fail the inspection, rectify the faults by performing the recommended actions in the inspection reports. Ensure that all other parts except the parts to be replaced are working properly.

2. Check the status of the parts to be replaced.

   Start SmartKit and choose **Home** > **Storage** > **Parts Replacement** > **Parts Replacement**. On the **Parts Replacement** page, click **FRU Replacement**. Then complete the check before the replacement as prompted. For details, see **8.1.3 Replacing an FRU**.

NOTICE

You can proceed to next steps only when all items pass the pre-replacement check and the replacement page is displayed. If any item fails, rectify the fault as prompted.

**Step 2** Wear an ESD wrist strap and protective gloves.

**Step 3** Uninstall cable trays and disconnect cables from the system subrack.

**Step 4** Take the spare part out of its ESD bag and place it on the ESD table.

**Step 5** Remove parts from the system subrack that you want to replace and place them on the ESD table.

CAUTION

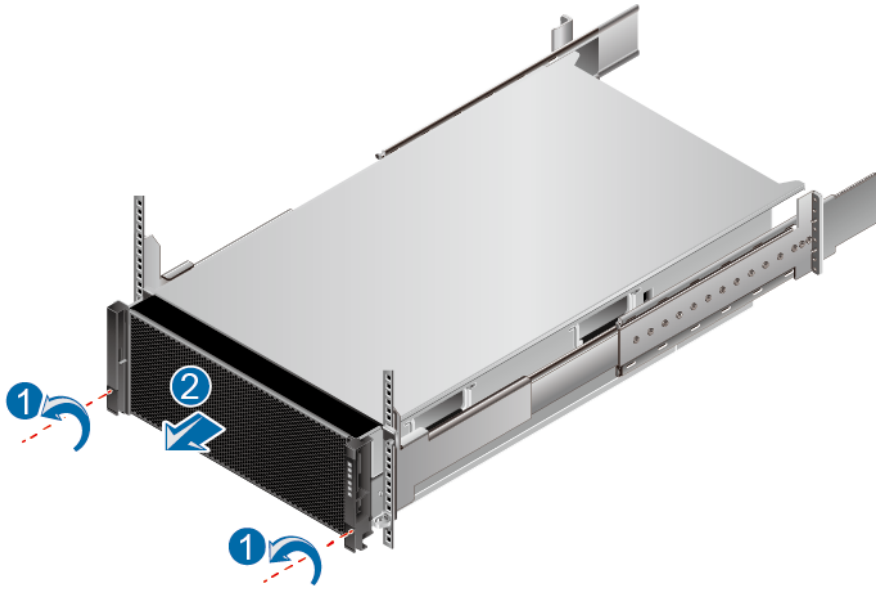
Record the slots of all components. Install these components into the same slots as in the system subrack that you want to replace. Otherwise, system services may be affected.

**Step 6** Remove the system subrack that you want to replace from the cabinet.

1. Loosen the two screws on the panel and pull out the subrack slowly, as shown in **Figure 8-17**.

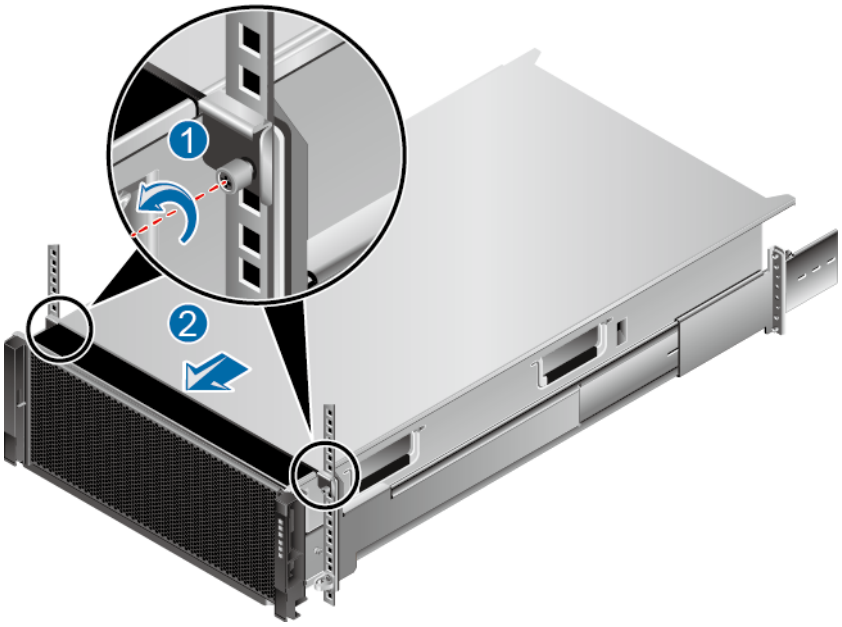
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**Figure 8-17** Pulling out an enclosure




2. Loosen the two screws on the cover and remove the cover, as shown in **Figure 8-18**.

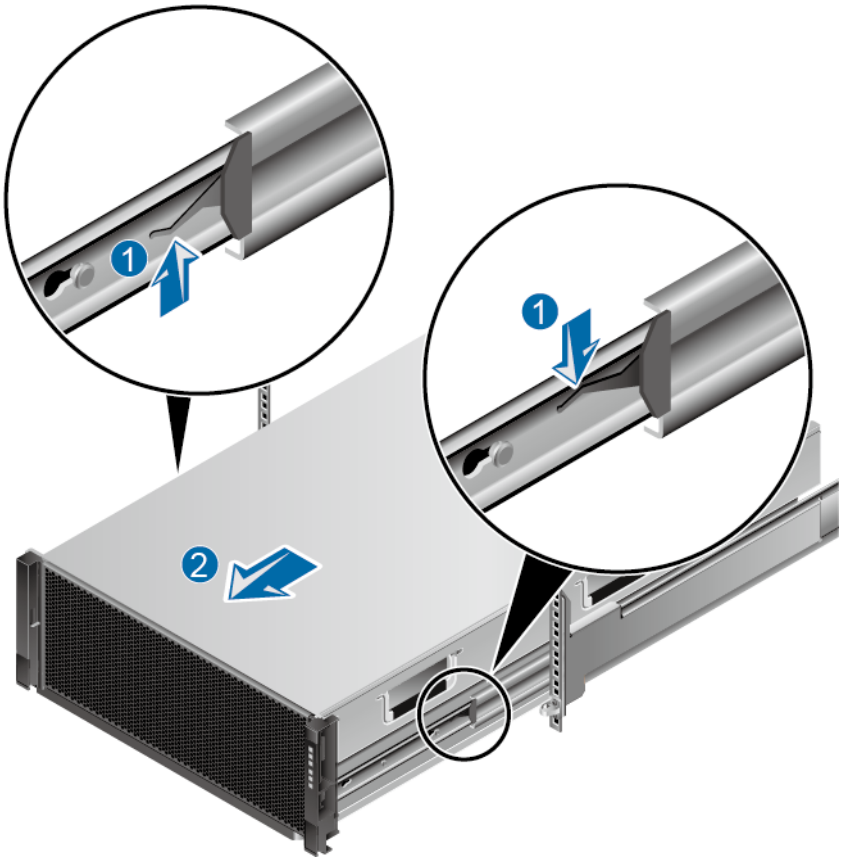
**Figure 8-18** Removing a cover




3. Press the retention clips on ball bearing guide rails, pull out the system subrack, and place the system subrack on the ESD table, as shown in **Figure 8-19**.

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**Figure 8-19** Removing a system subrack




**Step 7** Uninstall the inner guide rails on the system subrack that you want to replace and reinstall them to the same positions on the spare part.

1. Use the Phillips screwdriver to loosen the four screws on the inner guide rails, as shown in **Figure 8-20**.

   **Figure 8-20** Loosening screws on the inner guide rails



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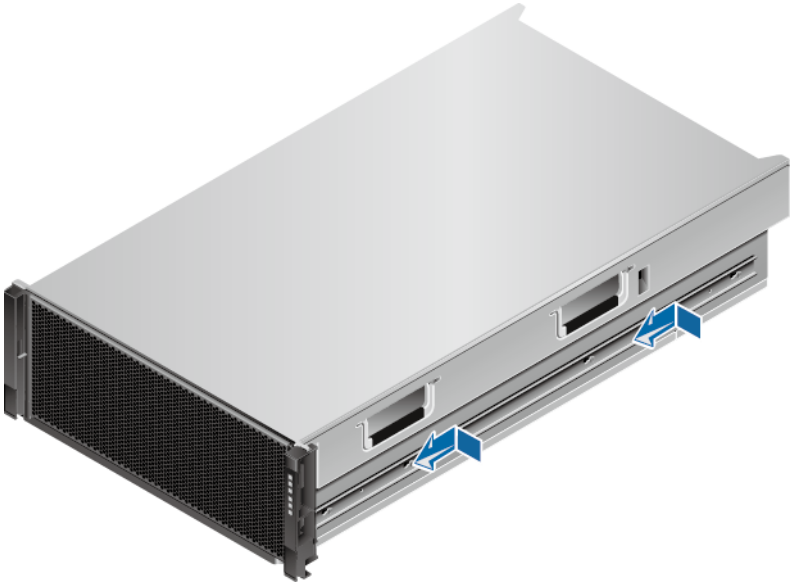
2. Remove the inner guide rails from the system subrack that you want to replace, as shown in **Figure 8-21**.

**Figure 8-21** Removing inner guide rails



3. Install the inner guide rails to the spare part, as shown in **Figure 8-22**.

**Figure 8-22** Installing inner guide rails



4. Use the Phillips screwdriver to fasten the four screws on the inner guide rails, as shown in **Figure 8-23**.

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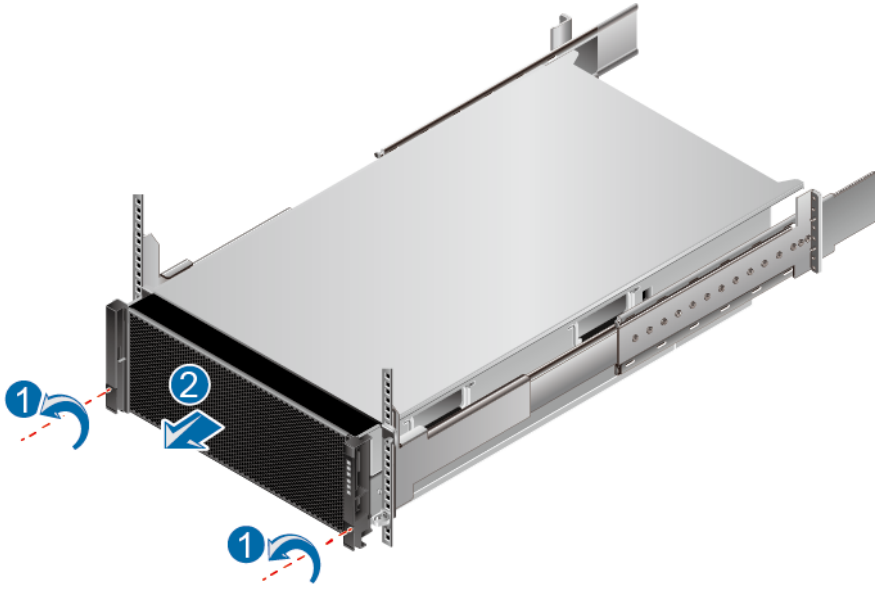
**Figure 8-23** Fastening screws on the inner guide rails



**Step 8** Install the system subrack into the cabinet.

1. Slide the system subrack into the cabinet along guide rails.
2. Loosen the two screws on the panel and slowly pull out the enclosure, as shown in **Figure 8-24**.

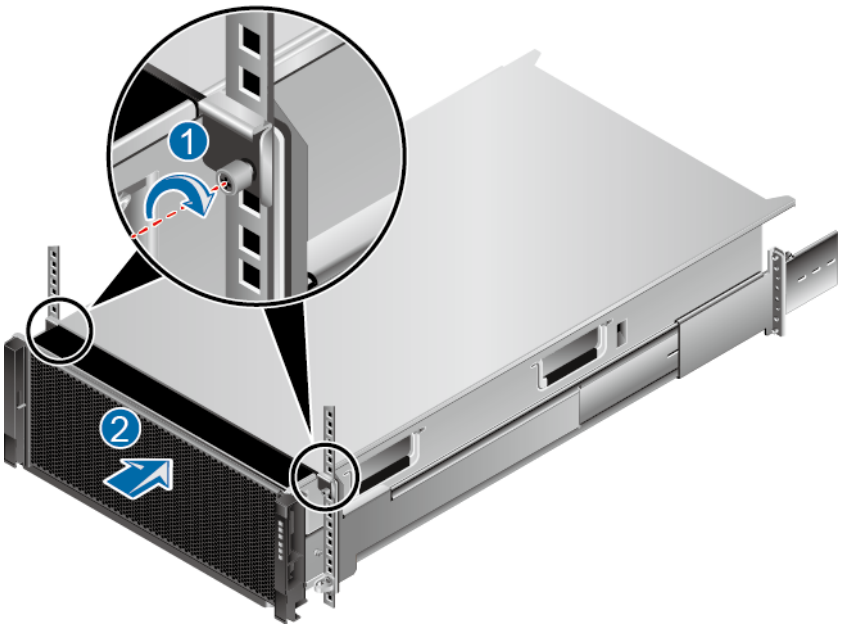
**Figure 8-24** Pulling out an enclosure




3. Fasten the two screws on the cover and slowly slide the enclosure into the cabinet, as shown in **Figure 8-25**.

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**Figure 8-25** Installing the cover of a system subrack




4. Fasten the two screws on the panel, as shown in **Figure 8-26**.

**Figure 8-26** Fastening screws on the panel



5. Verify that the system subrack is horizontally installed.
6. Install all the components into the newly installed system subrack.

**NOTICE**

Install all components in the same slots as in the removed system subrack. Otherwise, system services may be affected.

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**Step 9** Install cable trays and connect the cables of the system subrack.

**Step 10** When the Power indicator is steady on, check whether the components are running correctly.

- If yes, the installation is successful.
- If no, cables or components are incorrectly connected, or the newly installed system subrack is faulty.

**Step 11** Confirm the replacement.

1. Perform a post-replacement inspection.

   After the parts replacement, return to the SmartKit page and click **Replaced**. Then complete the parts check after the replacement as prompted.

   NOTE

   If the 0xF00CE002A and 0xF00D00016 alarms are generated and contain the SN of the faulty system subrack that has been replaced, check the device configuration according to the alarm information. If the configuration is correct, log in to DeviceManager to manually clear the alarms, return to the SmartKit page, and click **Recheck**.

2. Check system status.

   On the **Parts Replacement** page, click **Inspection** to check the system status again. If any item fails inspection, rectify the fault based on the suggestions in the inspection report.

3. After the preceding procedure is complete, check services on the host for storage-related errors.

**----End**

## Follow-up Procedure

After the system subrack is replaced, label it to facilitate subsequent operations.

# 8.2.3 Replacing a System Subrack (for a 2 U Controller Enclosure)

This section describes how to replace the system subrack of a 2 U controller enclosure.

NOTE

The procedure for replacing a 2 U controller enclosure with 12 slots, 25 slots, and 36 slots is the same. This section describes how to replace a 2 U controller enclosure with 12 slots.

## Impact on the System

Replacing a system subrack interrupts services running on the system subrack. Perform this operation with caution and under the guidance of technical support engineers.

## Prerequisites

- The spare part is on hand.

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- The system subrack that you want to replace has been located.

  NOTE

  You can locate a component in one of the following ways:

  - Locating a component based on alarms in DeviceManager: On the **Alarms and Events** page of DeviceManager, view the help information and determine the ID of the component to be replaced. Then locate the component at your site based on its ID.
  - Locating a component based on its location indicator: You are advised to set the location indicator of the component in DeviceManager. For details, see the *Online Help* of DeviceManager. Then, locate the component at your site based on its location indicator.
  - Locating a component based on the status of its Running/Alarm indicator: For details about the indicators on different components, see "Indicator Introduction" of each component in the *Product Description* specific to your product model and version.
- The cable connection positions of the system subrack that you want to replace are labeled on the cables.
- Services running on the system subrack that you want to replace have been stopped.

## Precautions

- Remove and insert a system subrack with even force. Excessive force may damage the appearance of the system subrack or cause faults.
- It is recommended that three persons are present when moving a fully configured system subrack to prevent personal injury.

## Tools and Materials

- Phillips screwdriver (M3 to M6)
- ESD wrist strap
- ESD bag
- ESD table
- Labels
- Protective gloves
- Nameplate
- Product model label
- Huawei logo label
- Device information label

## Procedure

**Step 1** Check status before replacement.

1. Check system status.

   Start SmartKit and choose **Home** > **Storage** > **Routine Maintenance** > **Health Check**. On the **Health Check** page, perform inspection as instructed. For details, see **8.1.2 Checking System Status**.

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NOTE

If any items fail the inspection, rectify the faults by performing the recommended actions in the inspection reports. Ensure that all other parts except the parts to be replaced are working properly.

2. Check the status of the parts to be replaced.

   Start SmartKit and choose **Home** > **Storage** > **Parts Replacement** > **Parts Replacement**. On the **Parts Replacement** page, click **FRU Replacement**. Then complete the check before the replacement as prompted. For details, see **8.1.3 Replacing an FRU**.

NOTICE

You can proceed to next steps only when all items pass the pre-replacement check and the replacement page is displayed. If any item fails, rectify the fault as prompted.

**Step 2** Wear an ESD wrist strap and protective gloves and remove the cables from the system subrack that you want to replace.

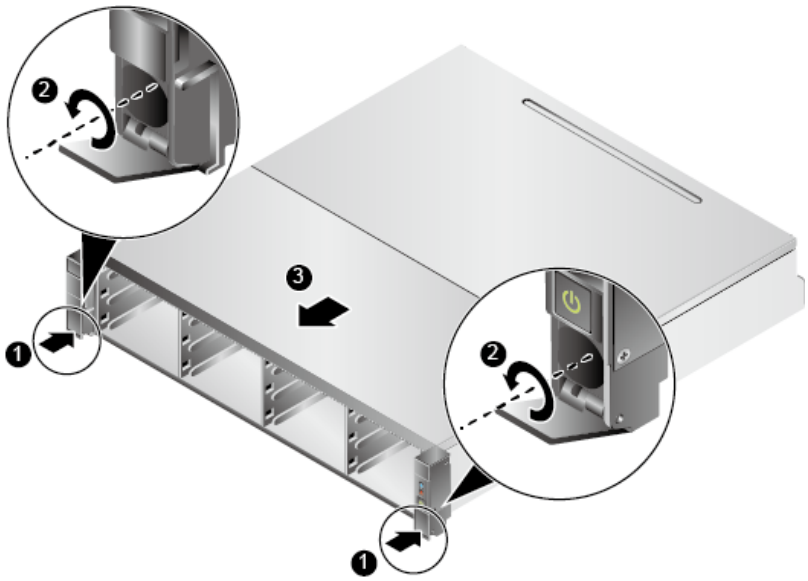
**Step 3** Take the spare part out of its ESD bag and place the spare part on the ESD table.

**Step 4** Remove components from the system subrack that you want to replace and reinstall them to their corresponding positions in the spare part.

**Step 5** Remove the system subrack that you want to replace from the cabinet, as shown in **Figure 8-27**.

1. Use the Phillips screwdriver to loosen the captive screws from the system subrack.
2. Pull the system subrack out of the cabinet along guide rails and place the system subrack on the ESD table.

**Figure 8-27** Removing a system subrack

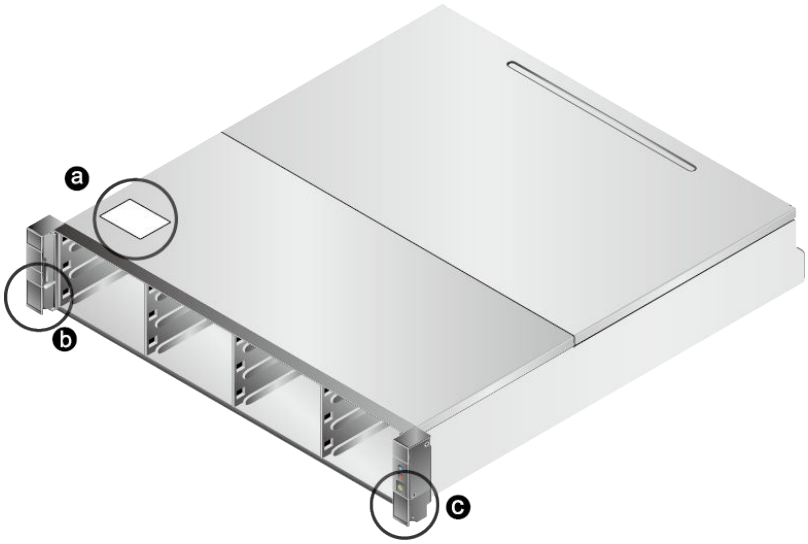




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**Step 6** **Optional:** Attach the nameplate, Huawei logo label, and product model label to the same positions on the spare part as those on the removed system subrack, as shown in **Figure 8-28**. **a** indicates the position of the nameplate, **b** indicates the position of the Huawei logo label, and **c** indicates the position of the product model label.

**Figure 8-28** Positions of the nameplate, Huawei logo label, and product model label




NOTE

Two different nameplates are often included in the product. Select the one that contains identical information to the nameplate on the removed system subrack.

**Step 7** **Optional:** Pull the information plate out of the system subrack. (If you face the front part of the system subrack, the information plate is located at the upper right of the enclosure, as shown in **Figure 8-29**. Gently pull the information plate, but not away from the enclosure.) Attach the device information label to the information plate. Then, push the information plate back to the enclosure.

**Figure 8-29** Position of the information plate



NOTE

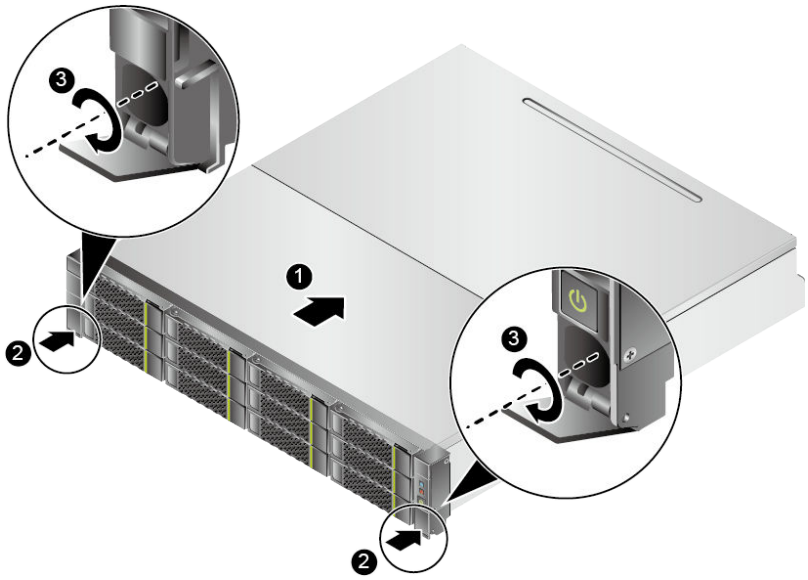
You can attach the device information labels to both the front and back of the information plate. The installation positions must be the same as those on the replaced system subrack. If a label has been attached to one side of the information plate, you only need to attach the device information label with a QR code to the other side of the information plate. Attaching the device information plate helps engineers more easily identify and maintain devices.

**Step 8** Install the spare part into the cabinet, as shown in **Figure 8-30**.

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1. Slide the spare part into the cabinet along guide rails.
2. Tighten the captive screws to fix the spare part in the cabinet.
3. Ensure that the spare part is horizontally installed and tightly screwed.

**Figure 8-30** Installing a system subrack




**Step 9** Connect cables to the system subrack and press the Power button to power on the controller enclosure.

**Step 10** When the Power indicator is steady on, check whether the status of each component is normal.

- If yes, the system subrack has been successfully installed.
- If no, cables are incorrectly connected, components are incorrectly installed, or the newly installed system subrack is faulty.

**Step 11** Confirm the replacement.

1. Perform a post-replacement inspection.

   After the parts replacement, return to the SmartKit page and click **Replaced**. Then complete the check after the replacement as prompted.
2. Check system status.

   On the **Parts Replacement** page, click **Inspection** to check the system status again. If any item fails inspection, rectify the fault based on the suggestions in the inspection report.
3. After the preceding procedure is complete, check services on the host for storage-related errors.

**----End**

## Follow-up Procedure

After the system subrack is replaced, label it to facilitate subsequent operations.

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# 8.2.4 Replacing a System Subrack (for a 4 U Controller Enclosure)

This section describes how to replace the system subrack of a 4 U controller enclosure.

## Impact on the System

Replacing a system subrack interrupts services running on the system subrack. Perform this operation with caution and under the guidance of technical support engineers.

## Prerequisites

- The spare part is on hand.
- The system subrack that you want to replace has been located.

  NOTE

  You can locate a component in one of the following ways:

  - Locating a component based on alarms in DeviceManager: On the **Alarms and Events** page of DeviceManager, view the help information and determine the ID of the component to be replaced. Then locate the component at your site based on its ID.
  - Locating a component based on its location indicator: You are advised to set the location indicator of the component in DeviceManager. For details, see the *Online Help* of DeviceManager. Then, locate the component at your site based on its location indicator.
  - Locating a component based on the status of its Running/Alarm indicator: For details about the indicators on different components, see "Indicator Introduction" of each component in the *Product Description* specific to your product model and version.
- The cable connection positions of the system subrack that you want to replace are labeled on the cables.
- Services running on the system subrack that you want to replace have been stopped.

## Precautions

- Remove and insert a system subrack with even force. Excessive force may damage the appearance of the system subrack or cause faults.
- It is recommended that four persons are present when moving a fully configured system subrack to prevent personal injury.

## Tools and Materials

- Phillips screwdriver (M3 to M6)
- ESD wrist strap
- ESD bag
- ESD table
- Labels
- Protective gloves
- Nameplate

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- Product model label
- Huawei logo label
- Device information label

## Procedure

**Step 1** Check status before replacement.

1. Check system status.

   Start SmartKit and choose **Home** > **Storage** > **Routine Maintenance** > **Health Check**. On the **Health Check** page, perform inspection as instructed. For details, see **8.1.2 Checking System Status**.

   NOTE

   If any items fail the inspection, rectify the faults by performing the recommended actions in the inspection reports. Ensure that all other parts except the parts to be replaced are working properly.

2. Check the status of the parts to be replaced.

   Start SmartKit and choose **Home** > **Storage** > **Parts Replacement** > **Parts Replacement**. On the **Parts Replacement** page, click **FRU Replacement**. Then complete the check before the replacement as prompted. For details, see **8.1.3 Replacing an FRU**.

   NOTICE

   You can proceed to next steps only when all items pass the pre-replacement check and the replacement page is displayed. If any item fails, rectify the fault as prompted.

**Step 2** Wear an ESD wrist strap and protective gloves and remove the cables from the system subrack that you want to replace.

**Step 3** Take the spare part out of its ESD bag and place the spare part on the ESD table.

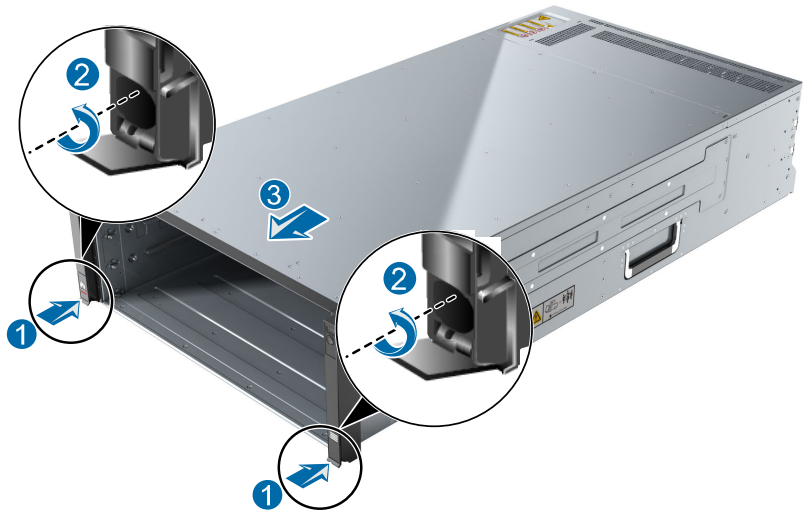
**Step 4** Remove components from the system subrack that you want to replace and reinstall them to their corresponding positions in the spare part.

**Step 5** Remove the system subrack that you want to replace from the cabinet, as shown in **Figure 8-31**.

1. Use the Phillips screwdriver to loosen the captive screws from the system subrack.
2. Pull the system subrack out of the cabinet along guide rails and place the system subrack on the ESD table.

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**Figure 8-31** Removing a system subrack




**Step 6** **Optional:** Attach the nameplate, Huawei logo label, and product model label to the same positions on the spare part as those on the removed system subrack, as shown in **Figure 8-32**. **a** indicates the position of the nameplate, **b** indicates the position of the Huawei logo label, and **c** indicates the position of the product model label.

**Figure 8-32** Positions of the nameplate, Huawei logo label, and product model label




NOTE

Two different nameplates are often included in the product. Select the one that contains identical information to the nameplate on the removed system subrack.

**Step 7** **Optional:** Pull the information plate out of the system subrack. (If you face the front part of the system subrack, the information plate is located at the upper right of the enclosure, as shown in **Figure 8-33**. Gently pull the information plate, but not away from the enclosure.) Attach the device information label to the information plate. Then, push the information plate back to the enclosure.

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**Figure 8-33** Position of the information plate



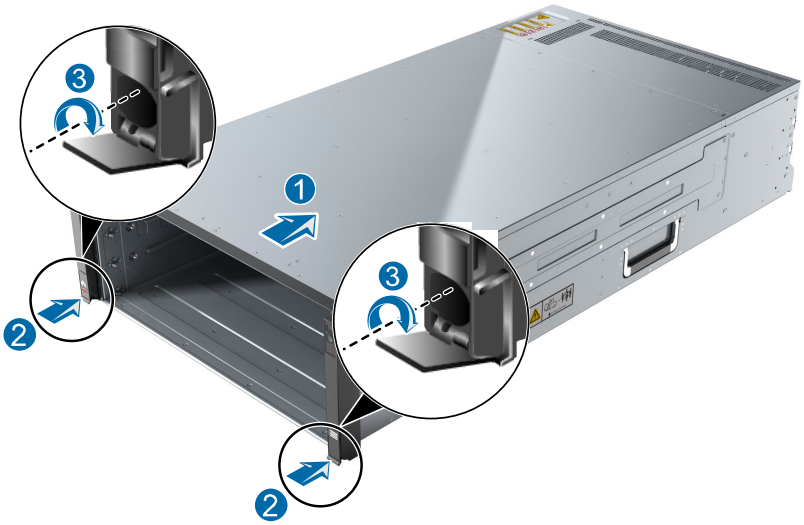
NOTE

You can attach the device information labels to both the front and back of the information plate. The installation positions must be the same as those on the replaced system subrack. If a label has been attached to one side of the information plate, you only need to attach the device information label with a QR code to the other side of the information plate. Attaching the device information plate helps engineers more easily identify and maintain devices.

**Step 8** Install the spare part into the cabinet, as shown in **Figure 8-34**.

1. Slide the spare part into the cabinet along guide rails.
2. Tighten the captive screws to fix the spare part in the cabinet.
3. Ensure that the spare part is horizontally installed and tightly screwed.

**Figure 8-34** Installing a system subrack




**Step 9** Connect cables to the system subrack and press the Power button to power on the controller enclosure.

**Step 10** When the Power indicator is steady on, check whether the status of each component is normal.

- If yes, the system subrack has been successfully installed.
- If no, cables are incorrectly connected, components are incorrectly installed, or the newly installed system subrack is faulty.

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**Step 11** Confirm the replacement.

1. Perform a post-replacement inspection.

   After the parts replacement, return to the SmartKit page and click **Replaced**. Then complete the check after the replacement as prompted.

2. Check system status.

   On the **Parts Replacement** page, click **Inspection** to check the system status again. If any item fails inspection, rectify the fault based on the suggestions in the inspection report.

3. After the preceding procedure is complete, check services on the host for storage-related errors.

**----End**

### Follow-up Procedure

After the system subrack is replaced, label it to facilitate subsequent operations.

## 8.3 Replacing a Controller

This section describes how to replace a controller.

## 8.3.1 Replacing a Controller (for OceanStor 2200 V5)

This section describes how to replace a controller.

NOTE

The procedure for replacing the controller in a 12-slot controller enclosure is the same as that for replacing the controller in a 25-slot controller enclosure. This section describes how to replace the controller in a 12-slot controller enclosure.

### Impact on the System

During the replacement of a controller, the system switches services from the port of the controller to another redundant port.

- For front-end and scale-out links, if available links are unable to carry the current service load, the service I/O response latency increases and the system performance deteriorates. If there are no other redundant links, services run on a single link and the system reliability decreases.
- For back-end links, disks in a loop run on a single link and the system reliability decreases.

You are advised to replace a controller in off-peak hours.

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## Prerequisites

**NOTICE**

Before replacement, verify that the spare part is intact without any physical damage as well as is not squeezed and deformed. If the spare part is damaged or deformed, contact Huawei technical support to check whether the spare part can be used for replacement.

- The power modules in the controller enclosure that houses the controller you want to replace are working properly (Running/Alarm indicator is steady green). If any power module is abnormal, replace the power module first.
- If the controller that you want to replace is processing services, ensure that its CPU usage does not exceed 40% before replacing it.
- Start SmartKit and choose **Home** > **Storage** > **Parts Replacement** > **Parts Replacement Evaluation**. If any check item fails, rectify the fault as instructed.
- The spare part is on hand.
- The controller that you want to replace has been located.

**NOTE**

You can locate a component in either of the following ways:

- Locating a component based on alarms in DeviceManager: On the **Alarms and Events** page of DeviceManager, view the help information and determine the ID of the component to be replaced. Then locate the component at your site based on its ID.
- Locating a component based on the status of its Running/Alarm indicator: For details about the indicators on different components, see "Indicator Introduction" of each component in the *Product Description* specific to your product model and version.

- The cable connection positions of the controller that you want to replace are labeled on the cables.
- After a user manually replaces the public/private key pair of **ibc_os_hs**, the public/private key pairs of all other functional controllers are initialized before controller replacement.

**NOTE**

To check whether **ibc_os_hs** public/private key pairs are the default ones, see the check message of the FRU tool. To initialize the public/private key pairs, log in to the serial port of the controller enclosure using user account **_super_admin** and run the **initibckey** command.

## Precautions

- Remove and insert a controller with even force. Excessive force may damage the appearance of the controller or cause faults.
- Remove only one controller at a time to ensure service continuity.
- A controller must be replaced within three minutes. Otherwise, the system heat dissipation is compromised.
- If a single controller fails, use the SmartKit to replace it when the other controller is working properly. If the entire controller enclosure has been

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powered off, power on the functioning controller before replacing the faulty one.

- If both controllers of a controller enclosure fail, contact Huawei technical support engineers for assistance.
- If the FRU tool fails to identify a controller fault, skip **Step 1**, go to **Step 3** to **Step 12**.

## Tools and Materials

- ESD wrist strap
- ESD bag
- Labels

## Procedure

**Step 1** Check status before replacement.

1. Check system status.

   Start SmartKit and choose **Home** > **Storage** > **Routine Maintenance** > **Health Check**. On the **Health Check** page, perform inspection as instructed. For details, see **8.1.2 Checking System Status**.

   NOTE

   If any items fail the inspection, rectify the faults by performing the recommended actions in the inspection reports. Ensure that all other parts except the parts to be replaced are working properly.

2. Evaluate the replacement.

   Start SmartKit and choose **Home** > **Storage** > **Parts Replacement** > **Parts Replacement Evaluation**. If any check item fails, rectify the fault as instructed.

3. Check the status of the parts to be replaced.

   Start SmartKit and choose **Home** > **Storage** > **Parts Replacement** > **Parts Replacement**. On the **Parts Replacement** page, click **FRU Replacement**. Then complete the check before the replacement as prompted. For details, see **8.1.3 Replacing an FRU**.

   NOTICE

   You can proceed to next steps only when all items pass the pre-replacement check and the replacement page is displayed. If any item fails, rectify the fault as prompted.

**Step 2** (Optional) If you need to clear the data of a faulty controller to be replaced, perform operations as instructed in **B.2 How Can I Clear Data of a To-Be-Replaced Controller?**.

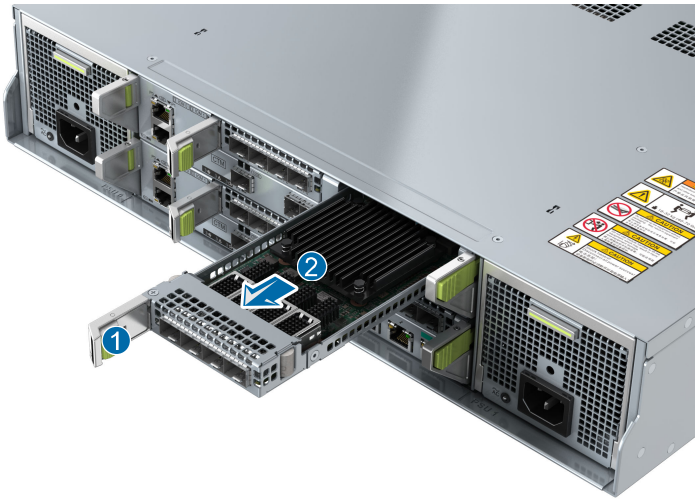
**Step 3** Wear an ESD wrist strap.

**Step 4** Remove the interface module from the controller to be replaced.

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1. Remove the cables from the interface module.
2. Press the latch on the interface module to release the handle and pull out the interface module, as shown in **Figure 8-35**.

**Figure 8-35** Removing the interface module

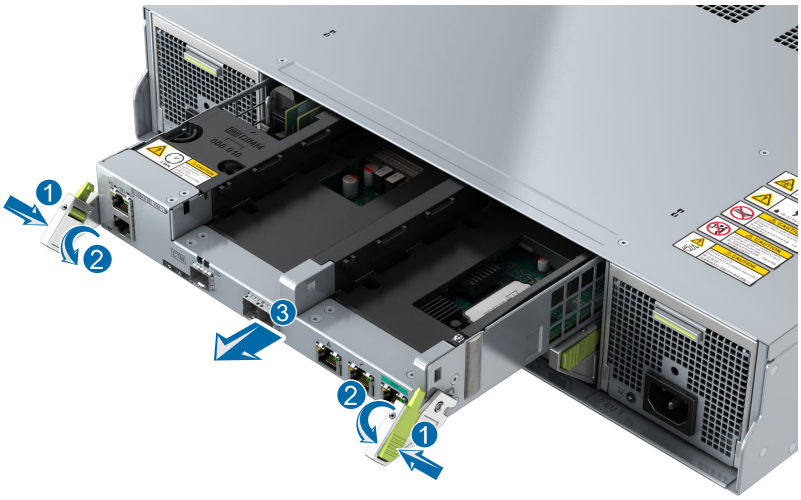


3. Put the removed interface module into an ESD bag.

**Step 5** Remove the cables from the controller.

**Step 6** Press the latch on the controller to release the handle and pull out the controller, as shown in **Figure 8-36**.

**Figure 8-36** Removing the controller



**Step 7** Put the removed controller into an ESD bag.

**Step 8** Take the spare part out of its ESD bag.

**Step 9** Open the handle of the replacement controller, insert the replacement controller into the empty slot, and close the handle, as shown in **Figure 8-37**.

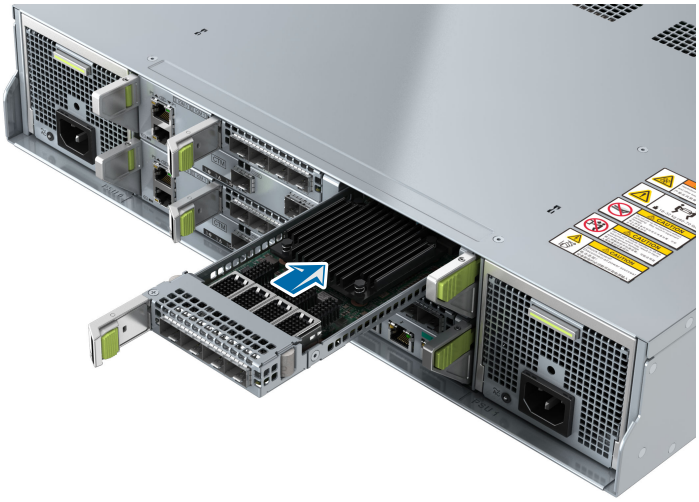
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**Figure 8-37** Installing the controller



**Step 10** Insert the removed interface module to the corresponding slot until it clicks into place, as shown in **Figure 8-38**.

**Figure 8-38** Installing the interface module



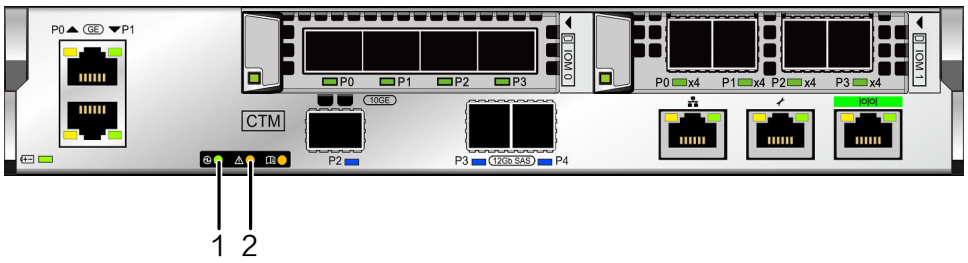
**Step 11** Connect the cables as labeled.

**Step 12** Wait about five minutes and check the status of the Power indicator on the controller to determine whether the controller has been powered on, as shown in **Figure 8-39**.

- If the Power indicator is steady green, the controller has been powered on.
- If the Power indicator is blinking green and the Alarm indicator is blinking yellow, the controller is being located.
- If the Power indicator is blinking green (0.5 Hz), the controller is powered on and in the BIOS boot process.
- If the Power indicator is blinking green (2 Hz), the controller is in the operating system boot process or power-off process.
- If the Power indicator is off, the controller is absent or powered off.

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**Figure 8-39** Power/Alarm indicators on a controller




| | | | |
|---|---|---|---|
| 1 | Power indicator of the controller | 2 | Alarm indicator of the controller |

**Step 13** Confirm the replacement.

1. Perform a post-replacement inspection.
   a. If the FRU tool can identify the faulty controller before the replacement:

      After the parts replacement, return to the SmartKit page and click **Replaced**. Then complete the check after the replacement as prompted.
   b. If the FRU tool fails to identify the faulty controller before the replacement:

      Check the status of the controller Alarm indicator to determine whether the controller works properly. **Figure 8-39** shows the location of the indicators.

      - If the Alarm indicator is steady yellow, an alarm is generated on the controller.
      - If the Alarm indicator is blinking yellow and the Power indicator is blinking green, the controller is being located.
      - If the Alarm indicator is off, the controller is working properly.

   **NOTICE**

   If the version of the newly installed controller is inconsistent with that of the faulty controller, the controller will synchronize the version after the replacement. This process takes about 30 minutes and the maximum duration is 60 minutes. If the duration exceeds 60 minutes, contact Huawei technical support. During the synchronization, do not remove the controller or power off the storage system.
2. Check system status.

   On the **Parts Replacement** page, click **Inspection** to check the system status again. If any item fails inspection, rectify the fault based on the suggestions in the inspection report.
3. After the preceding procedure is complete, check services on the host for storage-related errors.

**----End**

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## Follow-up Procedure

After the controller is replaced, label it to facilitate subsequent operations.

# 8.3.2 Replacing a Controller (for OceanStor 2600 V5)

This section describes how to replace a controller.

## Impact on the System

During the replacement of a controller, the system switches services from the port of the controller to another redundant port.

- For front-end and scale-out links, if available links are unable to carry the current service load, the service I/O response latency increases and the system performance deteriorates. If there are no other redundant links, services run on a single link and the system reliability decreases.
- For back-end links, disks in a loop run on a single link and the system reliability decreases.

You are advised to replace a controller in off-peak hours.

## Prerequisites

**NOTICE**

Before replacement, verify that the spare part is intact without any physical damage as well as is not squeezed and deformed. If the spare part is damaged or deformed, contact Huawei technical support to check whether the spare part can be used for replacement.

- The power modules in the controller enclosure that houses the controller you want to replace are working properly (Running/Alarm indicator is steady green). If any power module is abnormal, replace the power module first.
- If the controller that you want to replace is processing services, ensure that its CPU usage does not exceed 40% before replacing it.
- Start SmartKit and choose **Home** > **Storage** > **Parts Replacement** > **Parts Replacement Evaluation**. If any check item fails, rectify the fault as instructed.
- The spare part is on hand.
- The controller that you want to replace has been located.

**NOTE**

You can locate a component in either of the following ways:

- Locating a component based on alarms in DeviceManager: On the **Alarms and Events** page of DeviceManager, view the help information and determine the ID of the component to be replaced. Then locate the component at your site based on its ID.
- Locating a component based on the status of its Running/Alarm indicator: For details about the indicators on different components, see "Indicator Introduction" of each component in the *Product Description* specific to your product model and version.

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- The cable connection positions of the controller that you want to replace are labeled on the cables.
- After a user manually replaces the public/private key pair of **ibc_os_hs**, the public/private key pairs of all other functional controllers are initialized before controller replacement.

NOTE

To check whether **ibc_os_hs** public/private key pairs are the default ones, see the check message of the FRU tool. To initialize the public/private key pairs, log in to the serial port of the controller enclosure using user account **_super_admin** and run the **initibckey** command.

- For storage systems earlier than V500R007C60SPC300, if SSH port IDs can be configured, the SSH port ID of each controller in the storage system must be the default value 22. For V500R007C60SPC300 and later versions, no modification is required.

NOTE

Run **show system server_port server_name=SSH** to check whether the SSH port ID is 22. If the port ID is not 22, run **change system server_port server_name=SSH port_num=22** to change it to 22.

## Precautions

- Remove and insert a controller with even force. Excessive force may damage the appearance of the controller or cause faults.
- Remove only one controller at a time to ensure service continuity.
- A controller must be replaced within ten minutes. Otherwise, the system heat dissipation is compromised.
- If a single controller fails, use the SmartKit to replace it when the other controller is working properly. If the entire controller enclosure has been powered off, power on the functioning controller before replacing the faulty one.
- If both controllers of a controller enclosure fail, contact Huawei technical support engineers for assistance.
- If the FRU tool fails to identify a controller fault, skip **Step 1**, go to **Step 3** to **Step 13**.

## Tools and Materials

- ESD wrist strap
- ESD bag
- Labels

## Procedure

**Step 1** Check status before replacement.

1. Check system status.

   Start SmartKit and choose **Home** > **Storage** > **Routine Maintenance** > **Health Check**. On the **Health Check** page, perform inspection as instructed. For details, see **8.1.2 Checking System Status**.

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NOTE

If any items fail the inspection, rectify the faults by performing the recommended actions in the inspection reports. Ensure that all other parts except the parts to be replaced are working properly.

2. Evaluate the replacement.

   Start SmartKit and choose **Home** > **Storage** > **Parts Replacement** > **Parts Replacement Evaluation**. If any check item fails, rectify the fault as instructed.

3. Check the status of the parts to be replaced.

   Start SmartKit and choose **Home** > **Storage** > **Parts Replacement** > **Parts Replacement**. On the **Parts Replacement** page, click **FRU Replacement**. Then complete the check before the replacement as prompted. For details, see **8.1.3 Replacing an FRU**.

NOTICE

You can proceed to next steps only when all items pass the pre-replacement check and the replacement page is displayed. If any item fails, rectify the fault as prompted.

**Step 2** (Optional) If you need to clear the data of a faulty controller to be replaced, perform operations as instructed in **B.2 How Can I Clear Data of a To-Be-Replaced Controller?**.

**Step 3** Wear an ESD wrist strap.

**Step 4** Remove the interface module from the controller to be replaced.

1. Remove the cables from the interface module.
2. Press the latch on the interface module to release the handle and pull out the interface module, as shown in **Figure 8-40**.

**Figure 8-40** Removing the interface module



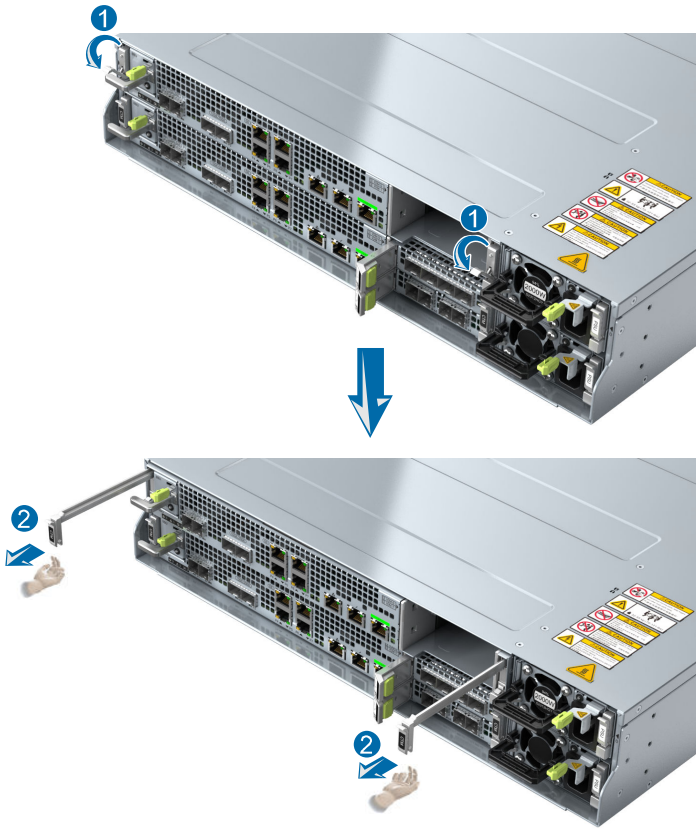

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3. Put the removed interface module into an ESD bag.

**Step 5** Remove the cables from the controller.

**Step 6** Open the latches on the ejector levers on both sides of the controller, and hold the ejector levers to pull out the controller, as shown in **Figure 8-41**.

**Figure 8-41** Opening the latches to pull out the controller



**Step 7** Put the removed controller into an ESD bag.

**Step 8** Take the spare part out of its ESD bag.

**Step 9** Open the ejector levers of the controller to be installed, insert the controller into the empty slot, and push the controller into the slot as much as possible, as shown in **Figure 8-42**.

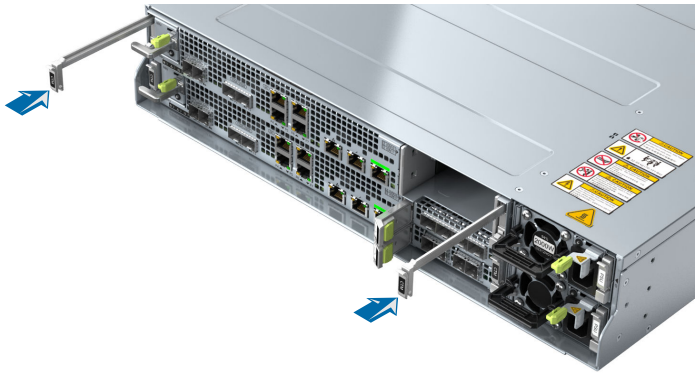
**Figure 8-42** Pushing the controller to be installed into the empty slot



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**Step 10** Press and hold the ejector levers and push the controller inwards until the controller is fully inserted into the slot, as shown in **Figure 8-43**.

**Figure 8-43** Installing the controller



**NOTICE**

Hold the ejector levers on both sides and push the controller into the slot with even force to prevent poor contact between the controller and the backplane.

**Step 11** Insert the removed interface module to the corresponding slot until it clicks into place, as shown in **Figure 8-44**.

**Figure 8-44** Installing the interface module



**Step 12** Connect the cables as labeled.

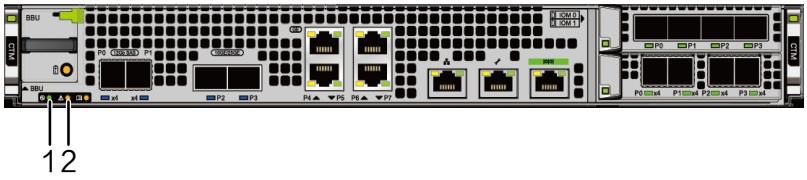
**Step 13** Wait about five minutes and check the status of the Power indicator on the controller to determine whether the controller has been powered on, as shown in **Figure 8-45**.

- If the Power indicator is steady green, the controller has been powered on.
- If the Power indicator is blinking green and the Alarm indicator is blinking yellow, the controller is being located.

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- If the Power indicator is blinking green (0.5 Hz), the controller is powered on and in the BIOS boot process.
- If the Power indicator is blinking green (2 Hz), the controller is in the operating system boot process or power-off process.
- If the Power indicator is off, the controller is absent or powered off.

**Figure 8-45** Power/Alarm indicators on a controller




| | | | |
|---|---|---|---|
| 1 | Power indicator of the controller | 2 | Alarm indicator of the controller |

**Step 14** Confirm the replacement.

1. Perform a post-replacement inspection.
   a. If the FRU tool can identify the faulty controller before the replacement:

      After the parts replacement, return to the SmartKit page and click **Replaced**. Then complete the check after the replacement as prompted.
   b. If the FRU tool fails to identify the faulty controller before the replacement:

      Check the status of the controller Alarm indicator to determine whether the controller works properly. **Figure 8-45** shows the location of the indicators.

      - If the Alarm indicator is steady yellow, an alarm is generated on the controller.
      - If the Alarm indicator is blinking yellow and the Power indicator is blinking green, the controller is being located.
      - If the Alarm indicator is off, the controller is working properly.

   **NOTICE**

   If the version of the newly installed controller is inconsistent with that of the faulty controller, the controller will synchronize the version after the replacement. This process takes about 30 minutes and the maximum duration is 60 minutes. If the duration exceeds 60 minutes, contact Huawei technical support. During the synchronization, do not remove the controller or power off the storage system.
2. Check system status.

   On the **Parts Replacement** page, click **Inspection** to check the system status again. If any item fails inspection, rectify the fault based on the suggestions in the inspection report.

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3. After the preceding procedure is complete, check services on the host for storage-related errors.

**----End**

## Follow-up Procedure

After the controller is replaced, label it to facilitate subsequent operations.

# 8.3.3 Replacing a Controller (for OceanStor 5300 V5, or 5300F V5)

This section describes how to replace a controller.

## Impact on the System

During the replacement of a controller, the system switches services from the port of the controller to another redundant port.

- For front-end and scale-out links, if available links are unable to carry the current service load, the service I/O response latency increases and the system performance deteriorates. If there are no other redundant links, services run on a single link and the system reliability decreases.
- For back-end links, disks in a loop run on a single link and the system reliability decreases.

You are advised to replace a controller in off-peak hours.

## Prerequisites

**NOTICE**

Before replacement, verify that the spare part is intact without any physical damage as well as is not squeezed and deformed. If the spare part is damaged or deformed, contact Huawei technical support to check whether the spare part can be used for replacement.

- The power modules in the controller enclosure that houses the controller you want to replace are working properly (Running/Alarm indicator is steady green). If any power module is abnormal, replace the power module first.
- If the controller that you want to replace is processing services, ensure that its CPU usage does not exceed 40% before replacing it.
- Start SmartKit and choose **Home** > **Storage** > **Parts Replacement** > **Parts Replacement Evaluation**. If any check item fails, rectify the fault as instructed.
- The spare part is on hand.
- The controller that you want to replace has been located.

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NOTE

You can locate a component in either of the following ways:

- Locating a component based on alarms in DeviceManager: On the **Alarms and Events** page of DeviceManager, view the help information and determine the ID of the component to be replaced. Then locate the component at your site based on its ID.
- Locating a component based on the status of its Running/Alarm indicator: For details about the indicators on different components, see "Indicator Introduction" of each component in the *Product Description* specific to your product model and version.

- The cable connection positions of the controller that you want to replace are labeled on the cables.
- After a user manually replaces the public/private key pair of **ibc_os_hs**, the public/private key pairs of all other functional controllers are initialized before controller replacement.

NOTE

To check whether **ibc_os_hs** public/private key pairs are the default ones, see the check message of the FRU tool. To initialize the public/private key pairs, log in to the serial port of the controller enclosure using user account **_super_admin** and run the **initibckey** command.

- For storage systems earlier than V500R007C60SPC300, if SSH port IDs can be configured, the SSH port ID of each controller in the storage system must be the default value 22. For V500R007C60SPC300 and later versions, no modification is required.

NOTE

Run **show system server_port server_name=SSH** to check whether the SSH port ID is 22. If the port ID is not 22, run **change system server_port server_name=SSH port_num=22** to change it to 22.

## Precautions

- Remove and insert a controller with even force. Excessive force may damage the appearance of the controller or cause faults.
- Remove only one controller at a time to ensure service continuity.
- A controller must be replaced within ten minutes. Otherwise, the system heat dissipation is compromised.
- If a single controller fails, use the SmartKit to replace it when the other controller is working properly. If the entire controller enclosure has been powered off, power on the functioning controller before replacing the faulty one.
- If both controllers of a controller enclosure fail, contact Huawei technical support engineers for assistance.
- If the FRU tool fails to identify a controller fault, skip **Step 1**, go to **Step 3** to **Step 13**.

## Tools and Materials

- ESD wrist strap
- ESD bag
- Labels

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## Procedure

**Step 1** Check status before replacement.

1. Check system status.

   Start SmartKit and choose **Home** > **Storage** > **Routine Maintenance** > **Health Check**. On the **Health Check** page, perform inspection as instructed. For details, see **8.1.2 Checking System Status**.

   NOTE

   If any items fail the inspection, rectify the faults by performing the recommended actions in the inspection reports. Ensure that all other parts except the parts to be replaced are working properly.

2. Evaluate the replacement.

   Start SmartKit and choose **Home** > **Storage** > **Parts Replacement** > **Parts Replacement Evaluation**. If any check item fails, rectify the fault as instructed.

3. Check the status of the parts to be replaced.

   Start SmartKit and choose **Home** > **Storage** > **Parts Replacement** > **Parts Replacement**. On the **Parts Replacement** page, click **FRU Replacement**. Then complete the check before the replacement as prompted. For details, see **8.1.3 Replacing an FRU**.

   NOTICE

   You can proceed to next steps only when all items pass the pre-replacement check and the replacement page is displayed. If any item fails, rectify the fault as prompted.

**Step 2** (Optional) If you need to clear the data of a faulty controller to be replaced, perform operations as instructed in **B.2 How Can I Clear Data of a To-Be-Replaced Controller?**.

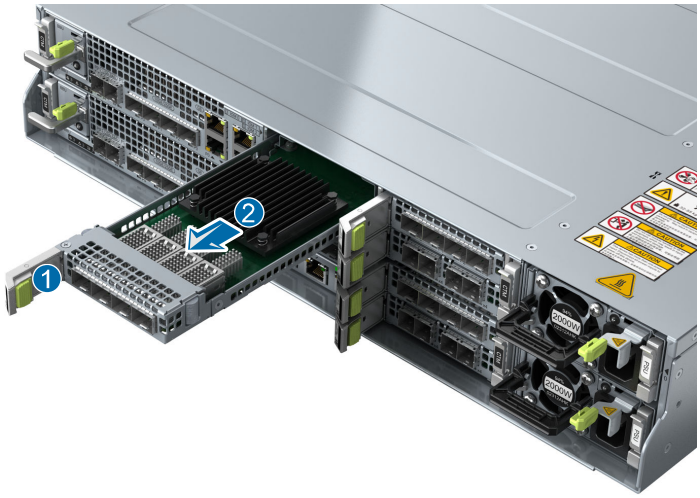
**Step 3** Wear an ESD wrist strap.

**Step 4** Remove the interface module from the controller to be replaced.

1. Remove the cables from the interface module.
2. Press the latch on the interface module to release the handle and pull out the interface module, as shown in **Figure 8-46**.

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**Figure 8-46** Removing the interface module

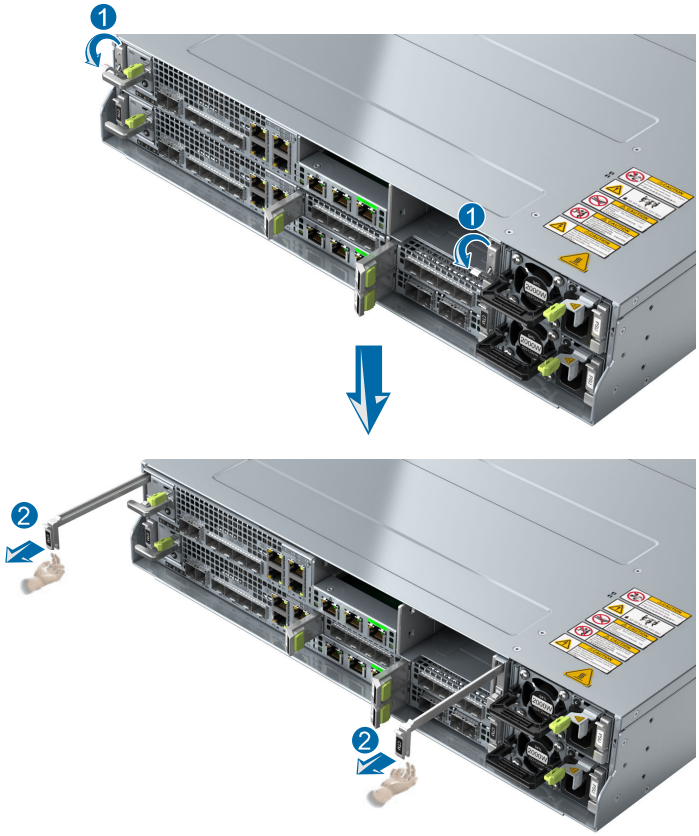


3. Put the removed interface module into an ESD bag.

**Step 5** Remove the cables from the controller.

**Step 6** Open the latches on the ejector levers on both sides of the controller, and hold the ejector levers to pull out the controller, as shown in **Figure 8-47**.

**Figure 8-47** Opening the latches to pull out the controller



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**Step 7** Put the removed controller into an ESD bag.

**Step 8** Take the spare part out of its ESD bag.

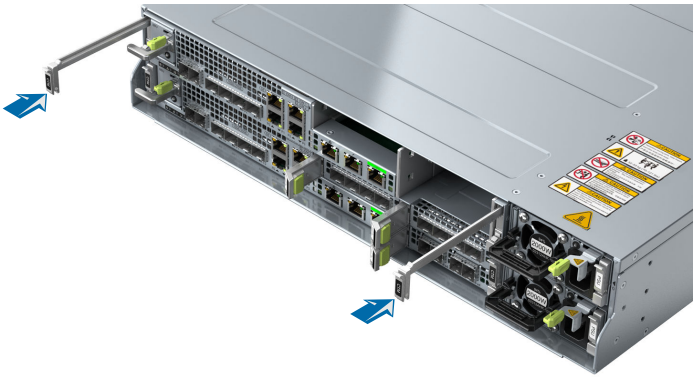
**Step 9** Open the ejector levers of the controller to be installed, insert the controller into the empty slot, and push the controller into the slot as much as possible, as shown in **Figure 8-48**.

**Figure 8-48** Pushing the controller to be installed into the empty slot



**Step 10** Press and hold the ejector levers and push the controller inwards until the controller is fully inserted into the slot, as shown in **Figure 8-49**.

**Figure 8-49** Installing the controller



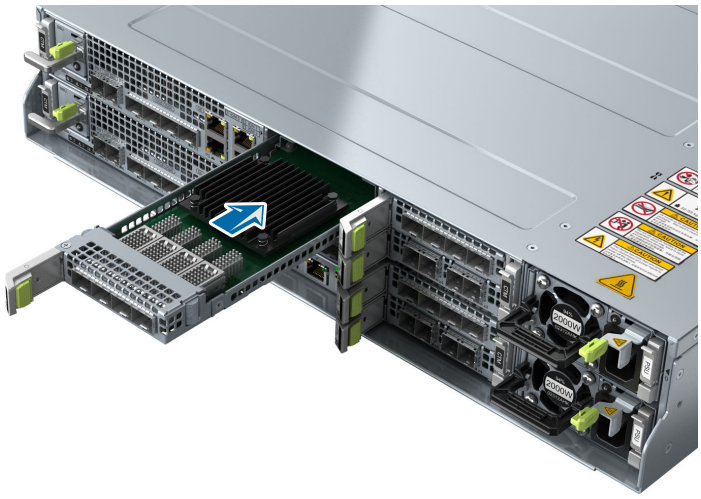
**NOTICE**

Hold the ejector levers on both sides and push the controller into the slot with even force to prevent poor contact between the controller and the backplane.

**Step 11** Insert the removed interface module to the corresponding slot until it clicks into place, as shown in **Figure 8-50**.

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**Figure 8-50** Installing the interface module



**Step 12** Connect the cables as labeled.

**Step 13** Wait about five minutes and check the status of the Power indicator on the controller to determine whether the controller has been powered on, as shown in **Figure 8-51**.

- If the Power indicator is steady green, the controller has been powered on.
- If the Power indicator is blinking green and the Alarm indicator is blinking yellow, the controller is being located.
- If the Power indicator is blinking green (0.5 Hz), the controller is powered on and in the BIOS boot process.
- If the Power indicator is blinking green (2 Hz), the controller is in the operating system boot process or power-off process.
- If the Power indicator is off, the controller is absent or powered off.

**Figure 8-51** Power/Alarm indicators on a controller




| | | | |
|---|---|---|---|
| 1 | Power indicator of the controller | 2 | Alarm indicator of the controller |

**Step 14** Confirm the replacement.

1. Perform a post-replacement inspection.
   a. If the FRU tool can identify the faulty controller before the replacement:

      After the parts replacement, return to the SmartKit page and click **Replaced**. Then complete the check after the replacement as prompted.
   b. If the FRU tool fails to identify the faulty controller before the replacement:

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Check the status of the controller Alarm indicator to determine whether the controller works properly. **Figure 8-51** shows the location of the indicators.

- If the Alarm indicator is steady yellow, an alarm is generated on the controller.
- If the Alarm indicator is blinking yellow and the Power indicator is blinking green, the controller is being located.
- If the Alarm indicator is off, the controller is working properly.

**NOTICE**

If the version of the newly installed controller is inconsistent with that of the faulty controller, the controller will synchronize the version after the replacement. This process takes about 30 minutes and the maximum duration is 60 minutes. If the duration exceeds 60 minutes, contact Huawei technical support. During the synchronization, do not remove the controller or power off the storage system.

2. Check system status.

   On the **Parts Replacement** page, click **Inspection** to check the system status again. If any item fails inspection, rectify the fault based on the suggestions in the inspection report.
3. After the preceding procedure is complete, check services on the host for storage-related errors.

**----End**

## Follow-up Procedure

After the controller is replaced, label it to facilitate subsequent operations.

# 8.3.4 Replacing a Controller (for OceanStor 5500 V5, 5500F V5, 5600 V5, 5600F V5, 5800 V5, or 5800F V5)

This section describes how to replace a controller.

## Impact on the System

During the replacement of a controller, the system switches services from the port of the controller to another redundant port.

- For front-end and scale-out links, if available links are unable to carry the current service load, the service I/O response latency increases and the system performance deteriorates. If there are no other redundant links, services run on a single link and the system reliability decreases.
- For back-end links, disks in a loop run on a single link and the system reliability decreases.

You are advised to replace a controller in off-peak hours.

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## Prerequisites

**NOTICE**

Before replacement, verify that the spare part is intact without any physical damage as well as is not squeezed and deformed. If the spare part is damaged or deformed, contact Huawei technical support to check whether the spare part can be used for replacement.

- The power modules in the controller enclosure that houses the controller you want to replace are working properly (Running/Alarm indicator is steady green). If any power module is abnormal, replace the power module first.
- If the controller that you want to replace is processing services, ensure that its CPU usage does not exceed 40% before replacing it.
- Start SmartKit and choose **Home** > **Storage** > **Parts Replacement** > **Parts Replacement Evaluation**. If any check item fails, rectify the fault as instructed.
- The spare part is on hand.
- The controller that you want to replace has been located.

**NOTE**

You can locate a component in either of the following ways:

- Locating a component based on alarms in DeviceManager: On the **Alarms and Events** page of DeviceManager, view the help information and determine the ID of the component to be replaced. Then locate the component at your site based on its ID.
- Locating a component based on the status of its Running/Alarm indicator: For details about the indicators on different components, see "Indicator Introduction" of each component in the *Product Description* specific to your product model and version.

- The cable connection positions of the controller that you want to replace are labeled on the cables.
- After a user manually replaces the public/private key pair of **ibc_os_hs**, the public/private key pairs of all other functional controllers are initialized before controller replacement.

**NOTE**

To check whether **ibc_os_hs** public/private key pairs are the default ones, see the check message of the FRU tool. To initialize the public/private key pairs, log in to the serial port of the controller enclosure using user account **_super_admin** and run the **initibckey** command.

- For storage systems earlier than V500R007C60SPC300, if SSH port IDs can be configured, the SSH port ID of each controller in the storage system must be the default value 22. For V500R007C60SPC300 and later versions, no modification is required.

**NOTE**

Run **show system server_port server_name=SSH** to check whether the SSH port ID is 22. If the port ID is not 22, run **change system server_port server_name=SSH port_num=22** to change it to 22.

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## Precautions

- Remove and insert a controller with even force. Excessive force may damage the appearance of the controller or cause faults.
- Remove only one controller at a time to ensure service continuity.
- A controller must be replaced within ten minutes. Otherwise, the system heat dissipation is compromised.
- If a single controller fails, use the SmartKit to replace it when the other controller is working properly. If the entire controller enclosure has been powered off, power on the functioning controller before replacing the faulty one.
- If both controllers of a controller enclosure fail, contact Huawei technical support engineers for assistance.
- If the FRU tool fails to identify a controller fault, skip **Step 1**, go to **Step 3** to **Step 13**.

## Tools and Materials

- ESD wrist strap
- ESD bag
- Labels

## Procedure

**Step 1** Check status before replacement.

1. Check system status.

   Start SmartKit and choose **Home** > **Storage** > **Routine Maintenance** > **Health Check**. On the **Health Check** page, perform inspection as instructed. For details, see **8.1.2 Checking System Status**.

   NOTE

   If any items fail the inspection, rectify the faults by performing the recommended actions in the inspection reports. Ensure that all other parts except the parts to be replaced are working properly.

2. Evaluate the replacement.

   Start SmartKit and choose **Home** > **Storage** > **Parts Replacement** > **Parts Replacement Evaluation**. If any check item fails, rectify the fault as instructed.

3. Check the status of the parts to be replaced.

   Start SmartKit and choose **Home** > **Storage** > **Parts Replacement** > **Parts Replacement**. On the **Parts Replacement** page, click **FRU Replacement**. Then complete the check before the replacement as prompted. For details, see **8.1.3 Replacing an FRU**.

   NOTICE

   You can proceed to next steps only when all items pass the pre-replacement check and the replacement page is displayed. If any item fails, rectify the fault as prompted.

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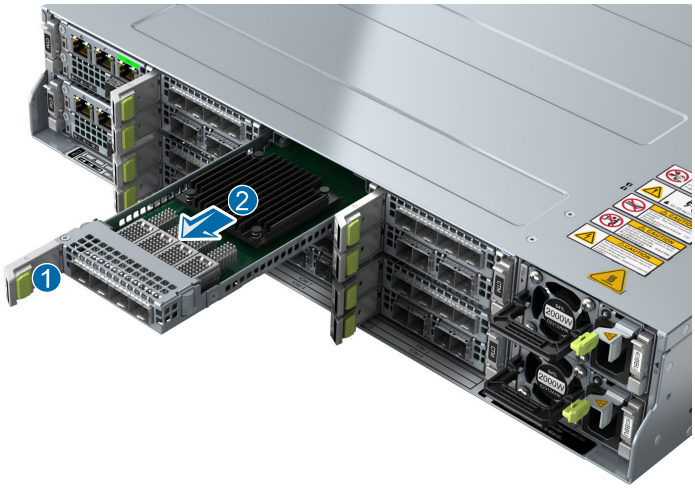
**Step 2** (Optional) If you need to clear the data of a faulty controller to be replaced, perform operations as instructed in **B.2 How Can I Clear Data of a To-Be-Replaced Controller?**.

**Step 3** Wear an ESD wrist strap.

**Step 4** Remove the interface module from the controller to be replaced.

1. Remove the cables from the interface module.
2. Press the latch on the interface module to release the handle and pull out the interface module, as shown in **Figure 8-52**.

**Figure 8-52** Removing the interface module



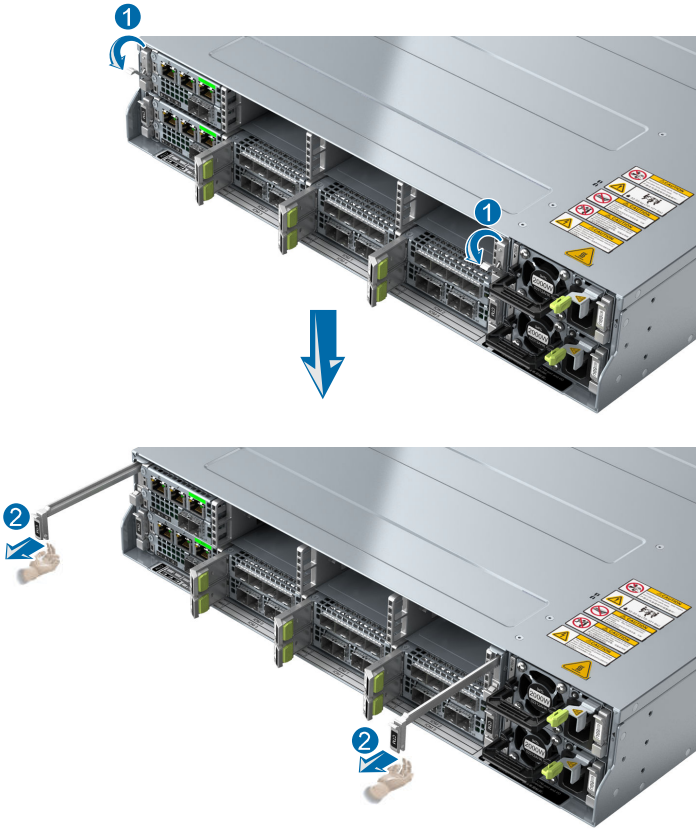

3. Put the removed interface module into an ESD bag.

**Step 5** Remove the cables from the controller.

**Step 6** Open the latches on the ejector levers on both sides of the controller, and hold the ejector levers to pull out the controller, as shown in **Figure 8-53**.

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**Figure 8-53** Opening the latches to pull out the controller

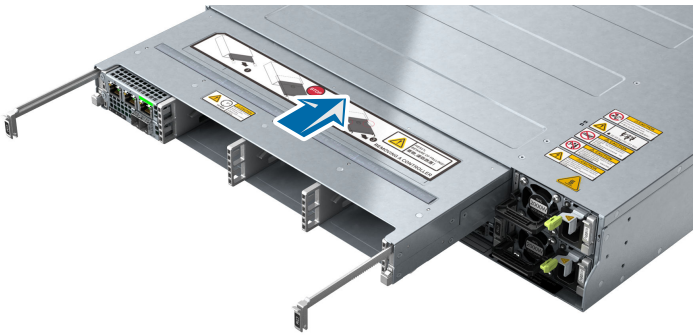



**Step 7** Put the removed controller into an ESD bag.

**Step 8** Take the spare part out of its ESD bag.

**Step 9** Open the ejector levers of the controller to be installed, insert the controller into the empty slot, and push the controller into the slot as much as possible, as shown in **Figure 8-54**.

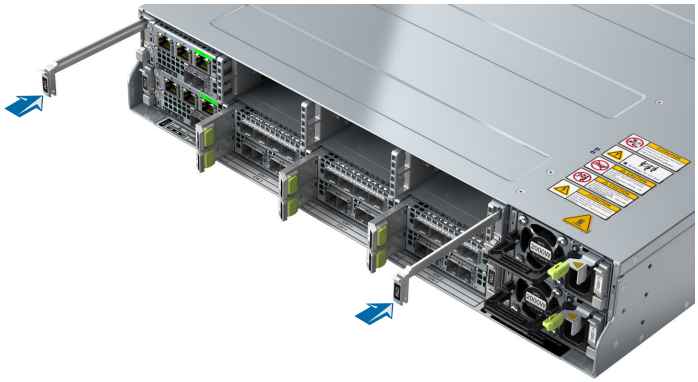
**Figure 8-54** Pushing the controller to be installed into the empty slot



**Step 10** Press and hold the ejector levers and push the controller inwards until the controller is fully inserted into the slot, as shown in **Figure 8-55**.

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**Figure 8-55** Installing the controller

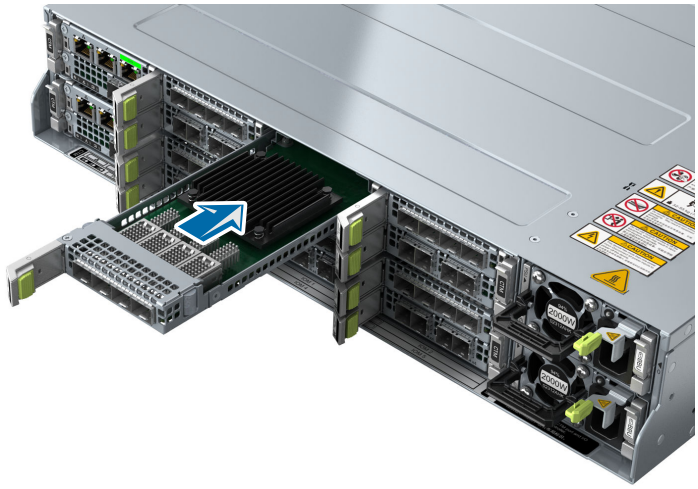


**NOTICE**

Hold the ejector levers on both sides and push the controller into the slot with even force to prevent poor contact between the controller and the backplane.

**Step 11** Insert the removed interface module to the corresponding slot until it clicks into place, as shown in **Figure 8-56**.

**Figure 8-56** Installing the interface module



**Step 12** Connect the cables as labeled.

**Step 13** Wait about five minutes and check the status of the Power indicator on the controller to determine whether the controller has been powered on, as shown in **Figure 8-57**.

- If the Power indicator is steady green, the controller has been powered on.
- If the Power indicator is blinking green and the Alarm indicator is blinking yellow, the controller is being located.
- If the Power indicator is blinking green (0.5 Hz), the controller is powered on and in the BIOS boot process.
- If the Power indicator is blinking green (2 Hz), the controller is in the operating system boot process or power-off process.

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- If the Power indicator is off, the controller is absent or powered off.

**Figure 8-57** Power/Alarm indicators on a controller




| | | | |
|---|---|---|---|
| 1 | Power indicator of the controller | 2 | Alarm indicator of the controller |

**Step 14** Confirm the replacement.

1. Perform a post-replacement inspection.
   a. If the FRU tool can identify the faulty controller before the replacement:

      After the parts replacement, return to the SmartKit page and click **Replaced**. Then complete the check after the replacement as prompted.
   b. If the FRU tool fails to identify the faulty controller before the replacement:

      Check the status of the controller Alarm indicator to determine whether the controller works properly. **Figure 8-57** shows the location of the indicators.

      - If the Alarm indicator is steady yellow, an alarm is generated on the controller.
      - If the Alarm indicator is blinking yellow and the Power indicator is blinking green, the controller is being located.
      - If the Alarm indicator is off, the controller is working properly.

**NOTICE**

If the version of the newly installed controller is inconsistent with that of the faulty controller, the controller will synchronize the version after the replacement. This process takes about 30 minutes and the maximum duration is 60 minutes. If the duration exceeds 60 minutes, contact Huawei technical support. During the synchronization, do not remove the controller or power off the storage system.

2. Check system status.

   On the **Parts Replacement** page, click **Inspection** to check the system status again. If any item fails inspection, rectify the fault based on the suggestions in the inspection report.
3. After the preceding procedure is complete, check services on the host for storage-related errors.

**----End**

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## Follow-up Procedure

After the controller is replaced, label it to facilitate subsequent operations.

# 8.3.5 Replacing a Controller (for OceanStor 6800 V5 or 6800F V5)

This section describes how to replace a controller.

## Impact on the System

During the replacement of a controller, system performance and reliability may be compromised. Therefore, replace a controller during off-peak hours.

## Prerequisites

**NOTICE**

Before replacement, verify that the spare part is intact without any physical damage as well as is not squeezed and deformed. If the spare part is damaged or deformed, contact Huawei technical support to check whether the spare part can be used for replacement.

- The power modules in the controller enclosure that houses the controller you want to replace are working properly (Running/Alarm indicator is steady green). If any power module is abnormal, replace the power module first.
- If the controller that you want to replace is processing services, ensure that its CPU usage does not exceed 40% before replacing it.
- Start SmartKit and choose **Home** > **Storage** > **Parts Replacement** > **Parts Replacement Evaluation**. If any check item fails, rectify the fault as instructed.
- The spare part is on hand.
- The controller that you want to replace has been located.

  **NOTE**

  You can locate a component in either of the following ways:

  - Locating a component based on alarms in DeviceManager: On the **Alarms and Events** page of DeviceManager, view the help information and determine the ID of the component to be replaced. Then locate the component at your site based on its ID.
  - Locating a component based on the status of its Running/Alarm indicator: For details about the indicators on different components, see "Indicator Introduction" of each component in the *Product Description* specific to your product model and version.
- The cable connection positions of the controller that you want to replace are labeled on the cables.
- After a user manually replaces the public/private key pair of **ibc_os_hs**, the public/private key pairs of all other functional controllers are initialized before controller replacement.

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NOTE

To check whether **ibc_os_hs** public/private key pairs are the default ones, see the check message of the FRU tool. To initialize the public/private key pairs, log in to the serial port of the controller enclosure using user account **_super_admin** and run the **initibckey** command.

- For storage systems earlier than V500R007C60SPC300, if SSH port IDs can be configured, the SSH port ID of each controller in the storage system must be the default value 22. For V500R007C60SPC300 and later versions, no modification is required.

NOTE

Run **show system server_port server_name=SSH** to check whether the SSH port ID is 22. If the port ID is not 22, run **change system server_port server_name=SSH port_num=22** to change it to 22.

## Precautions

- In scenarios where three controllers in a controller enclosure are faulty and need to be replaced:
  - If the three faulty controllers are controllers A, B, and C or controllers A, C, and D, replace controller A or C first.
  - If the three faulty controllers are controllers A, B, and D or controllers B, C, and D, replace controller B or D first.

    NOTE

    - The four controllers in a controller enclosure are controllers A, C, B, and D from top to bottom.
    - If a controller is faulty, you are advised to replace it in a timely manner to avoid scenarios where multiple faulty controllers exist in the same controller enclosure.
- The exterior of a controller is similar to that of an assistant cooling module. They can be distinguished according to the silkscreens on their levers. CTM indicates a controller while ACM indicates an assistant cooling module.
- Remove and insert a controller with even force. Excessive force may damage the appearance of the controller or cause faults.
- Remove only one controller at a time to ensure service continuity.
- A controller must be replaced within ten minutes. Otherwise, the system heat dissipation is compromised.
- If a single controller fails, use the SmartKit to replace it when the other controller is working properly. If the entire controller enclosure has been powered off, power on the functioning controller before replacing the faulty one.
- If multiple controllers of a controller enclosure fail, contact Huawei technical support engineers for assistance.
- If the FRU tool fails to identify a controller fault, skip **Step 1**, go to **Step 3** to **Step 9**.

## Tools and Materials

- ESD wrist strap

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- ESD bag
- Labels

## Procedure

**Step 1** Check status before replacement.

1. Check system status.

   Start SmartKit and choose **Home** > **Storage** > **Routine Maintenance** > **Health Check**. On the **Health Check** page, perform inspection as instructed. For details, see **8.1.2 Checking System Status**.

   NOTE

   If any items fail the inspection, rectify the faults by performing the recommended actions in the inspection reports. Ensure that all other parts except the parts to be replaced are working properly.

2. Evaluate the replacement.

   Start SmartKit and choose **Home** > **Storage** > **Parts Replacement** > **Parts Replacement Evaluation**. If any check item fails, rectify the fault as instructed.

3. Check the status of the parts to be replaced.

   Start SmartKit and choose **Home** > **Storage** > **Parts Replacement** > **Parts Replacement**. On the **Parts Replacement** page, click **FRU Replacement**. Then complete the check before the replacement as prompted. For details, see **8.1.3 Replacing an FRU**.

   NOTICE

   You can proceed to next steps only when all items pass the pre-replacement check and the replacement page is displayed. If any item fails, rectify the fault as prompted.

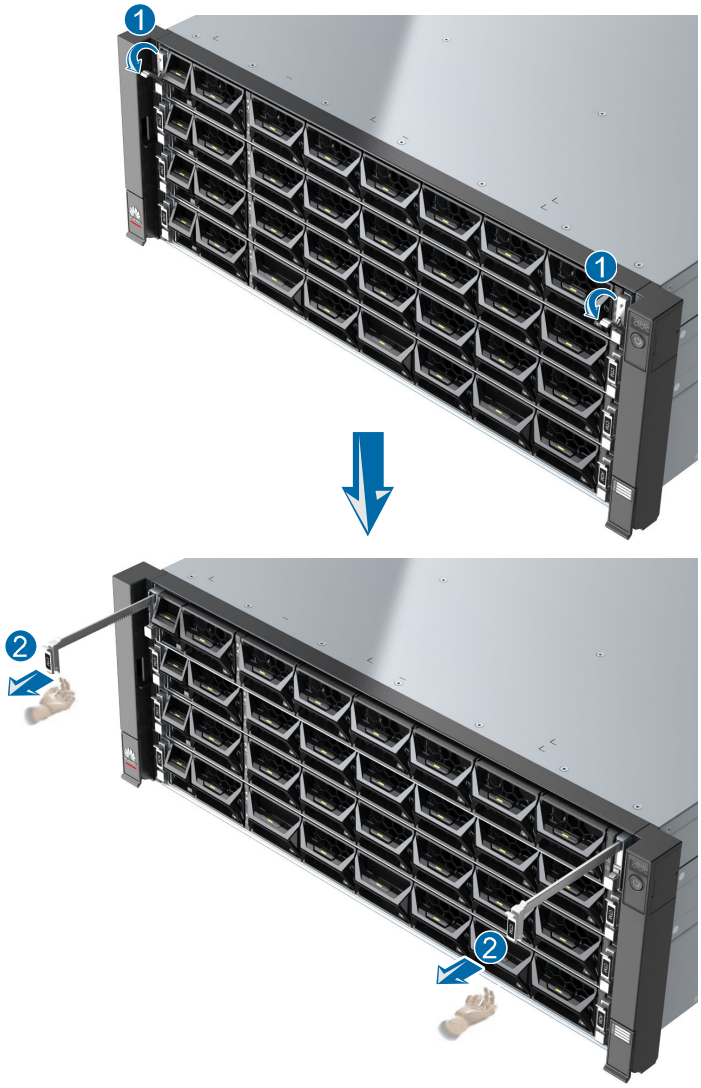
**Step 2** (Optional) If you need to clear the data of a faulty controller to be replaced, perform operations as instructed in **B.2 How Can I Clear Data of a To-Be-Replaced Controller?**.

**Step 3** Wear an ESD wrist strap.

**Step 4** Open the latches on the ejector levers on both sides of the controller, and hold the ejector levers to pull out the controller, as shown in **Figure 8-58**.

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**Figure 8-58** Opening the latches to pull out the controller




**Step 5** Put the removed controller into an ESD bag.

**Step 6** Take the spare part out of its ESD bag.

**Step 7** Open the ejector levers of the spare part, insert the spare part into the empty slot, and push it into the slot as much as possible, as shown in **Figure 8-59**.

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**Figure 8-59** Pushing the controller into the empty slot



**Step 8** Press and hold the ejector levers and push the spare part inwards until the spare part is completely inserted into the slot, as shown in **Figure 8-60**.

**Figure 8-60** Installing the controller



**NOTICE**

Hold the ejector levers on both sides and push the controller into the slot with even force to prevent poor contact between the controller and the backplane.

**Step 9** Wait about five minutes and check the status of the Power indicator on the controller to determine whether the controller has been powered on, as shown in **Figure 8-61**.

- If the Power indicator is steady green, the controller has been powered on.
- If the Power indicator is blinking green and the Alarm indicator is blinking yellow, the controller is being located.
- If the Power indicator is blinking green (0.5 Hz), the controller is powered on and in the BIOS boot process.

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- If the Power indicator is blinking green (2 Hz), the controller is in the operating system boot process or power-off process.
- If the Power indicator is off, the controller is absent or powered off.

**Figure 8-61** Power/Alarm indicators on a controller




| | | | |
|---|---|---|---|
| 1 | Power indicator of the controller | 2 | Alarm indicator of the controller |

**Step 10** Confirm the replacement.

1. Perform a post-replacement inspection.
   a. If the FRU tool can identify the faulty controller before the replacement:

      After the parts replacement, return to the SmartKit page and click **Replaced**. Then complete the check after the replacement as prompted.
   b. If the FRU tool fails to identify the faulty controller before the replacement:

      Check the status of the controller Alarm indicator to determine whether the controller works properly. **Figure 8-61** shows the location of the indicators.

      - If the Alarm indicator is steady yellow, an alarm is generated on the controller.
      - If the Alarm indicator is blinking yellow and the Power indicator is blinking green, the controller is being located.
      - If the Alarm indicator is off, the controller is working properly.

**NOTICE**

If the version of the newly installed controller is inconsistent with that of the faulty controller, the controller will synchronize the version after the replacement. This process takes about 30 minutes and the maximum duration is 60 minutes. If the duration exceeds 60 minutes, contact Huawei technical support. During the synchronization, do not remove the controller or power off the storage system.

2. Check system status.

   On the **Parts Replacement** page, click **Inspection** to check the system status again. If any item fails inspection, rectify the fault based on the suggestions in the inspection report.
3. After the preceding procedure is complete, check services on the host for storage-related errors.

**----End**

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## Follow-up Procedure

After the controller is replaced, label it to facilitate subsequent operations.

# 8.3.6 Replacing a Controller (for OceanStor 18500 V5, 18500F V5, 18800 V5, or 18800F V5)

This section describes how to replace a controller.

## Impact on the System

During the replacement of a controller, system performance and reliability may be compromised. Therefore, replace a controller during off-peak hours.

## Prerequisites

**NOTICE**

Before replacement, verify that the spare part is intact without any physical damage as well as is not squeezed and deformed. If the spare part is damaged or deformed, contact Huawei technical support to check whether the spare part can be used for replacement.

- The power modules in the controller enclosure that houses the controller you want to replace are working properly (Running/Alarm indicator is steady green). If any power module is abnormal, replace the power module first.
- If the controller that you want to replace is processing services, ensure that its CPU usage does not exceed 40% before replacing it.
- Start SmartKit and choose **Home** > **Storage** > **Parts Replacement** > **Parts Replacement Evaluation**. If any check item fails, rectify the fault as instructed.
- The spare part is on hand.
- The controller that you want to replace has been located.

  **NOTE**

  You can locate a component in either of the following ways:

  - Locating a component based on alarms in DeviceManager: On the **Alarms and Events** page of DeviceManager, view the help information and determine the ID of the component to be replaced. Then locate the component at your site based on its ID.
  - Locating a component based on the status of its Running/Alarm indicator: For details about the indicators on different components, see "Indicator Introduction" of each component in the *Product Description* specific to your product model and version.
- The cable connection positions of the controller that you want to replace are labeled on the cables.
- After a user manually replaces the public/private key pair of **ibc_os_hs**, the public/private key pairs of all other functional controllers are initialized before controller replacement.

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NOTE

To check whether **ibc_os_hs** public/private key pairs are the default ones, see the check message of the FRU tool. To initialize the public/private key pairs, log in to the serial port of the controller enclosure using user account **_super_admin** and run the **initibckey** command.

- For storage systems earlier than V500R007C60SPC300, if SSH port IDs can be configured, the SSH port ID of each controller in the storage system must be the default value 22. For V500R007C60SPC300 and later versions, no modification is required.

NOTE

Run **show system server_port server_name=SSH** to check whether the SSH port ID is 22. If the port ID is not 22, run **change system server_port server_name=SSH port_num=22** to change it to 22.

## Precautions

- In scenarios where three controllers in a controller enclosure are faulty and need to be replaced:
  - If the three faulty controllers are controllers A, B, and C or controllers A, C, and D, replace controller A or C first.
  - If the three faulty controllers are controllers A, B, and D or controllers B, C, and D, replace controller B or D first.

    NOTE

    - The four controllers in a controller enclosure are controllers A, C, B, and D from top to bottom.
    - If a controller is faulty, you are advised to replace it in a timely manner to avoid scenarios where multiple faulty controllers exist in the same controller enclosure.
- The exterior of a controller is similar to that of an assistant cooling module. They can be distinguished according to the silkscreens on their levers. CTM indicates a controller while ACM indicates an assistant cooling module.
- Remove and insert a controller with even force. Excessive force may damage the appearance of the controller or cause faults.
- Remove only one controller at a time to ensure service continuity.
- A controller must be replaced within ten minutes. Otherwise, the system heat dissipation is compromised.
- If a single controller fails, use the SmartKit to replace it when the other controller is working properly. If the entire controller enclosure has been powered off, power on the functioning controller before replacing the faulty one.
- If multiple controllers of a controller enclosure fail, contact Huawei technical support engineers for assistance.
- If the FRU tool fails to identify a controller fault, skip **Step 1**, go to **Step 3** to **Step 9**.

## Tools and Materials

- ESD wrist strap

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- ESD bag
- Labels

## Procedure

**Step 1** Check status before replacement.

1. Check system status.

   Start SmartKit and choose **Home** > **Storage** > **Routine Maintenance** > **Health Check**. On the **Health Check** page, perform inspection as instructed. For details, see **8.1.2 Checking System Status**.

   NOTE

   If any items fail the inspection, rectify the faults by performing the recommended actions in the inspection reports. Ensure that all other parts except the parts to be replaced are working properly.

2. Evaluate the replacement.

   Start SmartKit and choose **Home** > **Storage** > **Parts Replacement** > **Parts Replacement Evaluation**. If any check item fails, rectify the fault as instructed.

3. Check the status of the parts to be replaced.

   Start SmartKit and choose **Home** > **Storage** > **Parts Replacement** > **Parts Replacement**. On the **Parts Replacement** page, click **FRU Replacement**. Then complete the check before the replacement as prompted. For details, see **8.1.3 Replacing an FRU**.

   NOTICE

   You can proceed to next steps only when all items pass the pre-replacement check and the replacement page is displayed. If any item fails, rectify the fault as prompted.

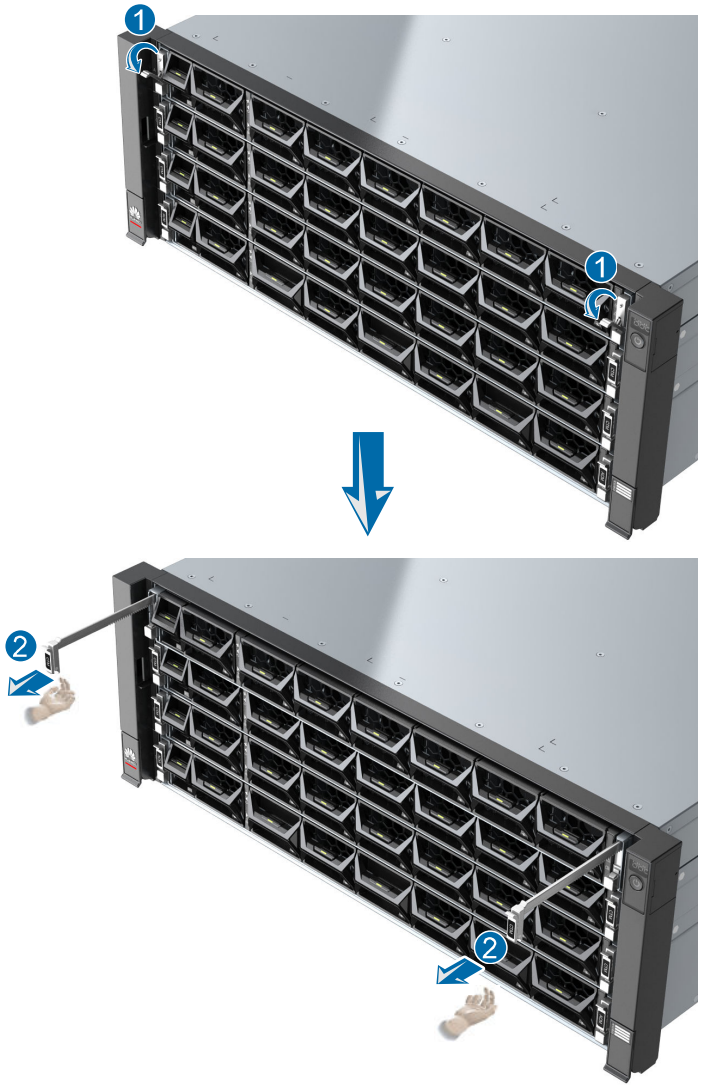
**Step 2** (Optional) If you need to clear the data of a faulty controller to be replaced, perform operations as instructed in **B.2 How Can I Clear Data of a To-Be-Replaced Controller?**.

**Step 3** Wear an ESD wrist strap.

**Step 4** Open the latches on the ejector levers on both sides of the controller, and hold the ejector levers to pull out the controller, as shown in **Figure 8-62**.

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**Figure 8-62** Opening the latches to pull out the controller




**Step 5** Put the removed controller into an ESD bag.

**Step 6** Take the spare part out of its ESD bag.

**Step 7** Open the ejector levers of the spare part, insert the spare part into the empty slot, and push it into the slot as much as possible, as shown in **Figure 8-63**.

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**Figure 8-63** Pushing the controller to be installed into the empty slot



**Step 8** Press and hold the ejector levers and push the spare part inwards until the spare part is completely inserted into the slot, as shown in **Figure 8-64**.

**Figure 8-64** Installing the controller



**NOTICE**

Hold the ejector levers on both sides and push the controller into the slot with even force to prevent poor contact between the controller and the backplane.

**Step 9** Wait about five minutes and check the status of the Power indicator on the controller to determine whether the controller has been powered on, as shown in **Figure 8-65**.

- If the Power indicator is steady green, the controller has been powered on.
- If the Power indicator is blinking green and the Alarm indicator is blinking yellow, the controller is being located.
- If the Power indicator is blinking green (0.5 Hz), the controller is powered on and in the BIOS boot process.

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- If the Power indicator is blinking green (2 Hz), the controller is in the operating system boot process or power-off process.
- If the Power indicator is off, the controller is absent or powered off.

**Figure 8-65** Power/Alarm indicators on a controller




| | | | |
|---|---|---|---|
| 1 | Power indicator of the controller | 2 | Alarm indicator of the controller |

**Step 10** Confirm the replacement.

1. Perform a post-replacement inspection.
   a. If the FRU tool can identify the faulty controller before the replacement:

      After the parts replacement, return to the SmartKit page and click **Replaced**. Then complete the check after the replacement as prompted.
   b. If the FRU tool fails to identify the faulty controller before the replacement:

      Check the status of the controller Alarm indicator to determine whether the controller works properly. **Figure 8-65** shows the location of the indicators.

      - If the Alarm indicator is steady yellow, an alarm is generated on the controller.
      - If the Alarm indicator is blinking yellow and the Power indicator is blinking green, the controller is being located.
      - If the Alarm indicator is off, the controller is working properly.

**NOTICE**

If the version of the newly installed controller is inconsistent with that of the faulty controller, the controller will synchronize the version after the replacement. This process takes about 30 minutes and the maximum duration is 60 minutes. If the duration exceeds 60 minutes, contact Huawei technical support. During the synchronization, do not remove the controller or power off the storage system.

2. Check system status.

   On the **Parts Replacement** page, click **Inspection** to check the system status again. If any item fails inspection, rectify the fault based on the suggestions in the inspection report.
3. After the preceding procedure is complete, check services on the host for storage-related errors.

**----End**

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### Follow-up Procedure

After the controller is replaced, label it to facilitate subsequent operations.

## 8.4 Replacing an Assistant Cooling Module

This section describes how to replace an assistant cooling module.

### Prerequisites

- The spare part is on hand.
- The assistant cooling module that you want to replace has been located.

  NOTE

  You can locate a component in either of the following ways:

  - Locating a component based on alarms in DeviceManager: On the **Alarms and Events** page of DeviceManager, view the help information and determine the ID of the component to be replaced. Then locate the component at your site based on its ID.
  - Locating a component based on the status of its Running/Alarm indicator: For details about the indicators on different components, see "Indicator Introduction" of each component in the *Product Description* specific to your product model and version.
- Each assistant cooling module is equipped with four fan modules. Before replacing an assistant cooling module, ensure that the fan modules of the other assistant cooling module are working properly.

### Precautions

- The exterior of a controller is similar to that of an assistant cooling module. They can be distinguished according to the silkscreens on their levers. CTM indicates a controller while ACM indicates an assistant cooling module.
- Remove and insert an assistant cooling module with even force. Excessive force may damage the appearance of the assistant cooling module or cause faults.
- Remove only one assistant cooling module at a time.
- An assistant cooling module must be replaced within ten minutes. Otherwise, the system heat dissipation is compromised.
- To avoid a sharp increase of the system temperature, replace the faulty assistant cooling module only.

### Tools and Materials

- ESD wrist strap
- ESD bag
- Labels

### Procedure

**Step 1** Perform a pre-replacement check.

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1. Check system status.

   Start SmartKit and choose **Home** > **Storage** > **Routine Maintenance** > **Health Check**. On the **Health Check** page, perform inspection as instructed. For details, see **8.1.2 Checking System Status**.

   NOTE

   If any items fail the inspection, rectify the faults by performing the recommended actions in the inspection reports. Ensure that all other parts except the parts to be replaced are working properly.

2. Check the status of the parts to be replaced.

   Start SmartKit and choose **Home** > **Storage** > **Parts Replacement** > **Parts Replacement**. On the **Parts Replacement** page, click **FRU Replacement**. Then complete the check before the replacement as prompted. For details, see **8.1.3 Replacing an FRU**.

NOTICE

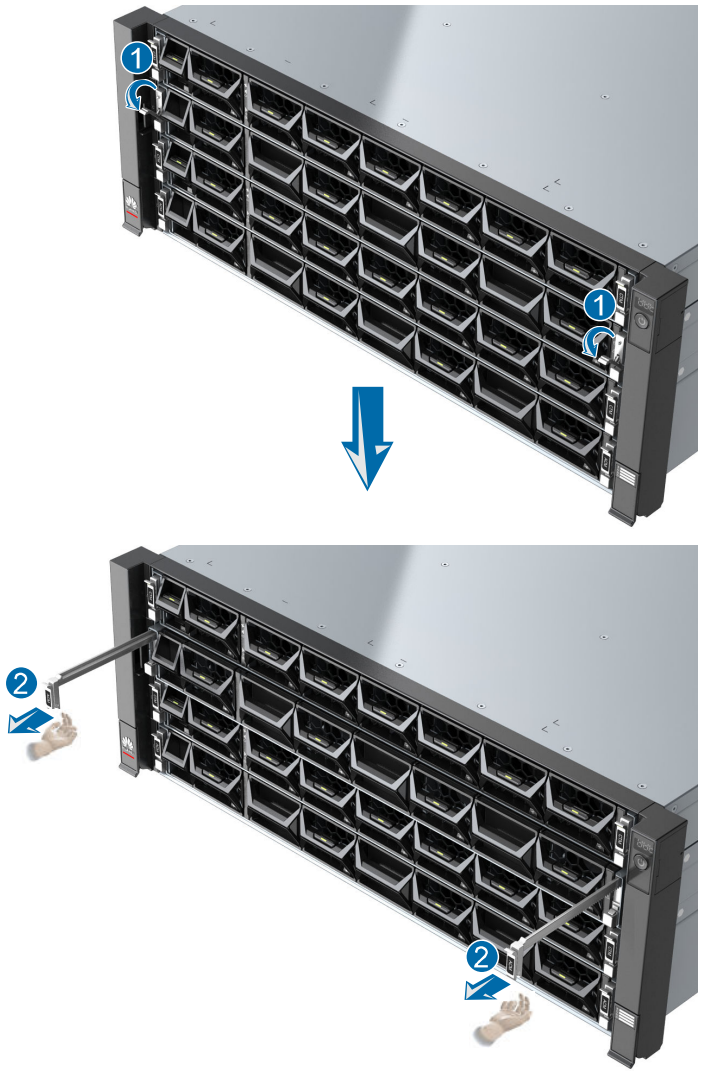
You can proceed to next steps only when all items pass the pre-replacement check and the replacement page is displayed. If any item fails, rectify the fault as prompted.

**Step 2** Wear an ESD wrist strap.

**Step 3** Open the latches on the ejector levers on both sides of the assistant cooling module, and hold the ejector levers to pull out the assistant cooling module, as shown in **Figure 8-66**.

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**Figure 8-66** Opening the latches to pull out the assistant cooling module




**Step 4** Put the removed assistant cooling module into an ESD bag.

**Step 5** Take the spare part out of its ESD bag.

**Step 6** Open the ejector levers of the spare part, insert the spare part into the empty slot, and push it into the slot as much as possible, as shown in **Figure 8-67**.

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**Figure 8-67** Pushing the assistant cooling module into the empty slot



**Step 7** Press and hold the ejector levers and push the spare part inwards until the spare part is completely inserted into the slot, as shown in **Figure 8-68**.

**Figure 8-68** Installing the assistant cooling module



**Step 8** Wait about five minutes and check the status of the Power and Alarm indicators on the assistant cooling module to determine whether the assistant cooling module has been successfully installed, as shown in **Figure 8-69**.

- If the Power indicator is steady on and the Alarm indicator is off, the assistant cooling module has been successfully installed.
- If the Power indicator is off or the Alarm indicator is steady on, the newly installed assistant cooling module is faulty, the assistant cooling module slot is faulty, or the assistant cooling module is incorrectly installed.

**Figure 8-69** Indicators on an assistant cooling unit




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| | | | |
|---|---|---|---|
| 1 | Power indicator on an assistant cooling module | 2 | Alarm indicator on an assistant cooling unit |

**Step 9** Confirm the replacement.

1. Perform a post-replacement inspection.

   After the parts replacement, return to the SmartKit page and click **Replaced**. Then complete the check after the replacement as prompted.

2. Check system status.

   On the **Parts Replacement** page, click **Inspection** to check the system status again. If any item fails inspection, rectify the fault based on the suggestions in the inspection report.

3. After the preceding procedure is complete, check services on the host for storage-related errors.

**----End**

### Follow-up Procedure

After the assistant cooling module is replaced, label it to facilitate subsequent operations.

# 8.5 Replacing a Cable

This section describes how to replace a cable.

NOTE

When the operation space is narrow, you can use a fiber extractor to remove and insert the LC optical fiber, pluggable optical module, and unshielded network cable. For details about related operations involved during the replacement, see **A Replacing an Optical Fiber, Optical Module, Electrical Module, or Network Cable Using a Fiber Extractor**.

## 8.5.1 Replacing a Mini SAS HD Cable

This section describes how to replace a mini SAS HD cable.

### Impact on the System

During the replacement of a mini SAS HD cable, the system switches services from the port of the mini SAS HD cable to another redundant port. If there are no other redundant links on back-end ports, disks in the loop run on a single link and the system reliability decreases. You are advised to replace a mini SAS HD cable in off-peak hours.

### Prerequisites

- The spare part is on hand.
- You have located the component that houses the mini SAS HD cable you want to replace.

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- Data has been backed up before you replace the cable online.

## Precautions

- Use even force when you remove or insert a mini SAS HD cable. Excessive force may damage the appearance of the mini SAS HD cable or cause faults.
- Do not frequently remove and insert a cable. Wait at least 15 seconds between removal and insertion.

## Tools and Materials

- ESD wrist strap
- ESD bags
- Labels

## Procedure

**Step 1** Check status before replacement.

1. Check system status.

   Start SmartKit and choose **Home** > **Storage** > **Routine Maintenance** > **Health Check**. On the **Health Check** page, perform inspection as instructed. For details, see **8.1.2 Checking System Status**.

   NOTE

   If any items fail the inspection, rectify the faults by performing the recommended actions in the inspection reports. Ensure that all other parts except the parts to be replaced are working properly.

2. Check the status of the parts to be replaced.

   Start SmartKit and choose **Home** > **Storage** > **Parts Replacement** > **Parts Replacement**. On the **Parts Replacement** page, click **FRU Replacement**. Then complete the check before the replacement as prompted. For details, see **8.1.3 Replacing an FRU**.

NOTICE

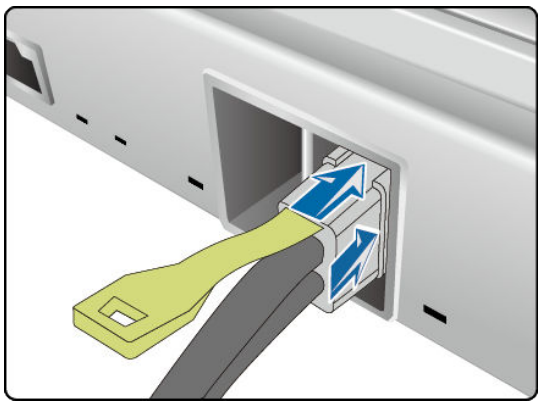
You can proceed to next steps only when all items pass the pre-replacement check and the replacement page is displayed. If any item fails, rectify the fault as prompted.

**Step 2** Wear an ESD wrist strap.

**Step 3** Hold the mini SAS HD cable and push the connector slightly inward, as shown in **Figure 8-70**.

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**Figure 8-70** Pushing the cable connector inwards



**Step 4** Hold the plastic ring and pull it outward along the arrow direction until the mini SAS HD cable is unlocked, as shown in **Figure 8-71** and **Figure 8-72**.

**Figure 8-71** Top view of removing a mini SAS HD cable

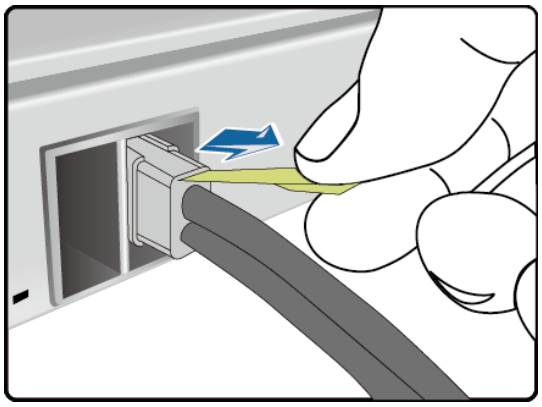
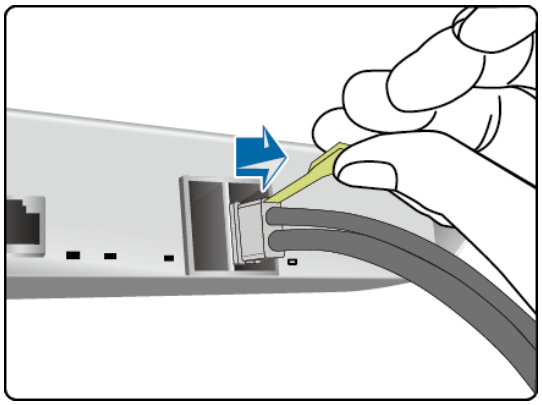


**Figure 8-72** Bottom view of removing a mini SAS HD cable



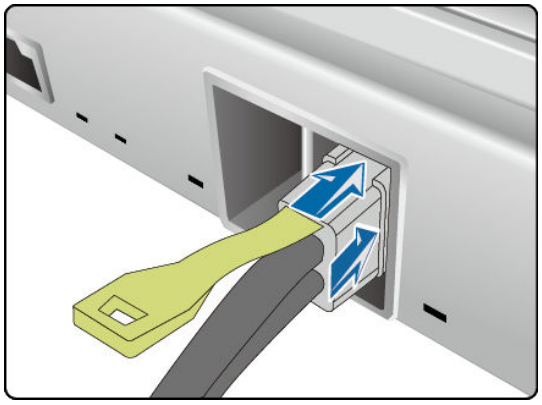
**Step 5** Pull the mini SAS HD cable connector out of the port and put it in to an ESD bag.

**Step 6** Take the spare part out of its ESD bag.

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**Step 7** Insert the spare part vertically into the corresponding position, as shown in **Figure 8-73**.

**Figure 8-73** Connecting a mini SAS HD cable



**Step 8** View the Port indicator, and determine whether the mini SAS HD cable has been installed successfully.

- If the indicator is steady green or blue, the cable has been successfully installed.
- If the indicator is steady yellow or off, the newly installed cable is faulty, the cable slot is faulty, or the cable is incorrectly installed.

**Step 9** Confirm the replacement.

1. Perform a post-replacement inspection.

   After the parts replacement, return to the SmartKit page and click **Replaced**. Then complete the check after the replacement as prompted.
2. Check system status.

   On the **Parts Replacement** page, click **Inspection** to check the system status again. If any item fails inspection, rectify the fault based on the suggestions in the inspection report.
3. After the preceding procedure is complete, check services on the host for storage-related errors.

**----End**

## Follow-up Procedure

After the cable is replaced, label it to facilitate subsequent operations.

# 8.5.2 Replacing an RDMA/AOC Cable

This section describes how to replace an RDMA/AOC cable.

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NOTE

- In this section, an RDMA cable refers to a cable with optical modules at both ends. For other cables, when replacing an optical module or a cable, see **7.7 Replacing an Optical Module** or **8.5.3 Replacing Other Cables**.
- RDMA/AOC cables with optical modules at both ends vary slightly in appearance such as the puller, but the replacement methods are the same.

## Impact on the System

During the replacement of a cable, the system switches services from the port of the cable to another redundant port.

- For front-end and scale-out links, if available links are unable to carry the current service load, the service I/O response latency increases and the system performance deteriorates. If there are no other redundant links, services run on a single link and the system reliability decreases.
- For back-end links, disks in a loop run on a single link and the system reliability decreases.

You are advised to replace a cable in off-peak hours.

## Prerequisites

- The spare part is on hand.
- The cable that you want to replace has been located.
- Data has been backed up before you replace the cable in online mode.

## Precautions

- Remove and insert a cable with even force. Excessive force may damage the appearance of the cable or cause faults.
- Do not frequently remove and insert a cable. Wait at least 15 seconds between removal and insertion.

## Tools and Materials

- ESD wrist strap
- ESD bag
- Labels

## Procedure

**Step 1** Perform a pre-replacement check.

1. Check system status.

   Start SmartKit and choose **Home** > **Storage** > **Routine Maintenance** > **Health Check**. On the **Health Check** page, perform inspection as instructed. For details, see **8.1.2 Checking System Status**.

   NOTE

   If any items fail the inspection, rectify the faults by performing the recommended actions in the inspection reports. Ensure that all other parts except the parts to be replaced are working properly.

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2. Check the status of the parts to be replaced.

   Start SmartKit and choose **Home** > **Storage** > **Parts Replacement** > **Parts Replacement**. On the **Parts Replacement** page, click **FRU Replacement**. Then complete the check before the replacement as prompted. For details, see **8.1.3 Replacing an FRU**.

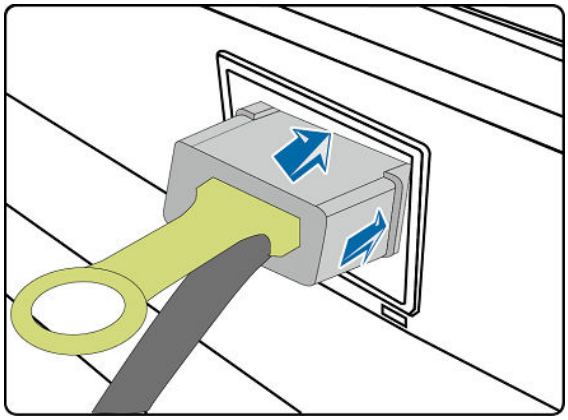
**NOTICE**

You can proceed to next steps only when all items pass the pre-replacement check and the replacement page is displayed. If any item fails, rectify the fault as prompted.

**Step 2** Wear an ESD wrist strap.

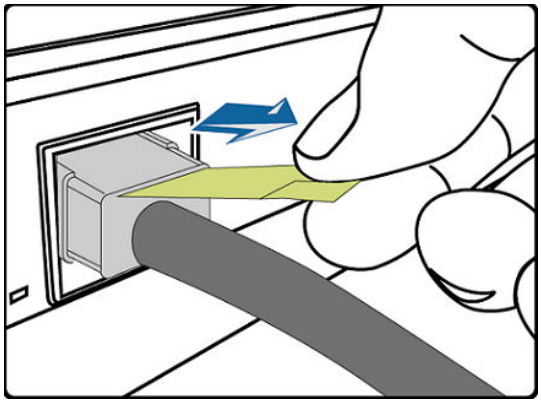
**Step 3** Hold the cable and push the connector slightly inwards, as shown in **Figure 8-74**.

**Figure 8-74** Pushing the cable connector inwards



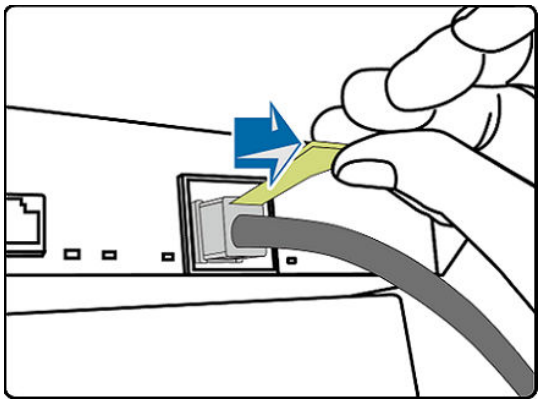
**Step 4** Hold the plastic ring and pull it out in the arrow direction until the cable is unlocked, as shown in **Figure 8-75** and **Figure 8-76**.

**Figure 8-75** Top view of removing a cable



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**Figure 8-76** Bottom view of removing a cable

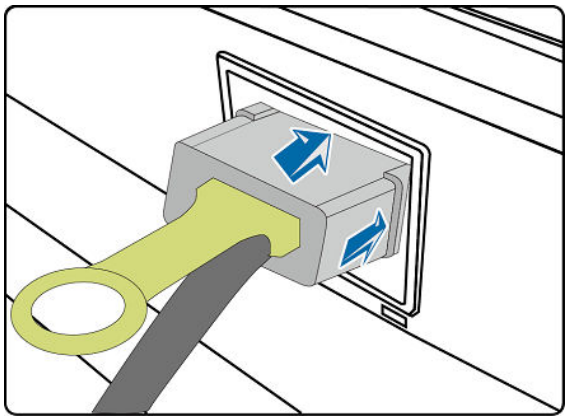


**Step 5** Pull the cable connector out of the port and put it into an ESD bag.

**Step 6** Take the spare part out of its ESD bag.

**Step 7** Insert the spare part vertically into the original position, as shown in **Figure 8-77**.

**Figure 8-77** Connecting a cable



**Step 8** Check the status of the port indicator to determine whether the cable has been successfully installed.

- If the indicator is steady green or blue, the cable has been successfully installed.
- If the indicator is steady yellow or off, the newly installed cable is faulty, the cable slot is faulty, or the cable is incorrectly installed.

**Step 9** Confirm the replacement.

1. Perform a post-replacement inspection.

   After the parts replacement, return to the SmartKit page and click **Replaced**. Then complete the check after the replacement as prompted.

2. Check system status.

   On the **Parts Replacement** page, click **Inspection** to check the system status again. If any item fails inspection, rectify the fault based on the suggestions in the inspection report.

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3. After the preceding procedure is complete, check services on the host for storage-related errors.

**----End**

### Follow-up Procedure

After the RDMA cable is replaced, label it to facilitate subsequent operations.

## 8.5.3 Replacing Other Cables

This section describes how to replace other cables.

### Impact on the System

During the replacement of a cable, the system switches services from the port of the cable to another redundant port.

- For front-end and scale-out links, if available links are unable to carry the current service load, the service I/O response latency increases and the system performance deteriorates. If there are no other redundant links, services run on a single link and the system reliability decreases.
- For back-end links, disks in a loop run on a single link and the system reliability decreases.

You are advised to replace a cable in off-peak hours.

### Prerequisites

- The spare part is on hand.
- The cable that you want to replace has been located.
- Data has been backed up before you replace the cable online.

### Precautions

- Remove and insert a cable with even force. Excessive force may damage the cable.
- Do not frequently remove and insert a cable. Wait at least 15 seconds between removal and insertion.

### Tools and Materials

- ESD wrist strap
- ESD bag
- Labels

### Procedure

**Step 1** Check status before replacement.

1. Check system status.

   Start SmartKit and choose **Home** > **Storage** > **Routine Maintenance** > **Health Check**. On the **Health Check** page, perform inspection as instructed. For details, see **8.1.2 Checking System Status**.

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NOTE

If any items fail the inspection, rectify the faults by performing the recommended actions in the inspection reports. Ensure that all other parts except the parts to be replaced are working properly.

2. Check the status of the parts to be replaced.

   Start SmartKit and choose **Home** > **Storage** > **Parts Replacement** > **Parts Replacement**. On the **Parts Replacement** page, click **FRU Replacement**. Then complete the check before the replacement as prompted. For details, see **8.1.3 Replacing an FRU**.

NOTICE

You can proceed to next steps only when all items pass the pre-replacement check and the replacement page is displayed. If any item fails, rectify the fault as prompted.

**Step 2** Wear an ESD wrist strap.

**Step 3** Confirm the position of the cable to be replaced and record the cable's label.

**Step 4** Cut the binding tapes and remove the cable to be placed.

DANGER

Do not look into the optical port without eye protection. The laser beams inside an optical port can cause damage to your eyes.

**Step 5** Put the removed cable into an ESD bag.

**Step 6** Take the spare part out of its ESD bag.

**Step 7** Write the information recorded in **Step 4** to a new label and attach the new label to the cable to be installed.

**Step 8** Insert the spare part to the position of the original cable.

NOTICE

If various cables at different locations have been replaced simultaneously, ensure that the cables before and after the replacement have the same types.

DANGER

Do not look into the optical port without eye protection. The laser beams inside an optical port can cause damage to your eyes.

**Step 9** (Optional) View the indicator of the cable port, and determine whether the cable has been installed successfully if you replace the cable online.

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NOTE

The meanings of indicator colors vary across different interface modules. In general, a yellow indicator indicates that the system has alarms or is abnormal. For details, see the *Product Description* specific to your product.

**Step 10** Bind the cables.

**Step 11** Confirm the replacement.

1. Perform a post-replacement inspection.

   After the parts replacement, return to the SmartKit page and click **Replaced**. Then complete the check after the replacement as prompted.

2. Check system status.

   On the **Parts Replacement** page, click **Inspection** to check the system status again. If any item fails inspection, rectify the fault based on the suggestions in the inspection report.

3. After the preceding procedure is complete, check services on the host for storage-related errors.

**----End**

### Follow-up Procedure

After the cable is replaced, label it for subsequent operations.

## 8.6 Replacing an Interface Module

This section describes how to replace an interface module.

NOTE

When the operation space is narrow, you can use a fiber extractor to remove and insert the LC optical fiber, pluggable optical module, and unshielded network cable. For details about related operations involved during the replacement, see **A Replacing an Optical Fiber, Optical Module, Electrical Module, or Network Cable Using a Fiber Extractor**.

### Impact on the System

- During the replacement of a front-end interface module, the system switches services from the port of the interface module to another redundant port. If available links are unable to bear the current service load, the service I/O response latency increases and the system performance degrades. If there are no other redundant links, services run on a single link and the system reliability degrades.
- During the replacement of a back-end interface module, the system switches services from the port of the interface module to another redundant port. If there are no other redundant links, disks in the loop all run over a single link, causing the system reliability to degrade.
- During the replacement of an interface module used for interconnecting controllers, the controller on which the interface module resides goes offline and all services on the controller are automatically switched to the peer controller. The service switchover duration increases if the service load exceeds

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the load bearing limit of a single controller. The replacement may fail due to a heavy service load. In addition, the replacement degrades system performance and reliability. You are advised to perform interface module replacement during off-peak hours. After the replacement is complete, the controller on which the interface module resides will restart and services will be automatically switched back to the controller.

NOTE

Use SmartKit to replace an interface module used for interconnecting controllers.

You are advised to replace an interface module in off-peak hours.

## Prerequisites

- The spare part is on hand based on the BOM code of the interface module you want to replace and the type of the spare part is the same as that of the interface module you want to replace.
- A label has been attached to the handle of the spare part.
- The interface module that you want to replace has been located.

NOTE

You can locate a component in either of the following ways:

- Locating a component based on alarms in DeviceManager: On the **Alarms and Events** page of DeviceManager, view the help information and determine the ID of the component to be replaced. Then locate the component at your site based on its ID.
- Locating a component based on the status of its Running/Alarm indicator: For details about the indicators on different components, see "Indicator Introduction" of each component in the *Product Description* specific to your product model and version.

- The cable connection positions of the interface module that you want to replace are labeled on the cables.

## Precautions

- The type of the spare part must be same as that of the one you want to replace. Otherwise, parts replacement will fail and the configuration of the interface module will be lost. If the configuration of the interface module is lost, collect logs and contact Huawei technical support.
- Note the following if you want to replace an interface module with optical/electrical module:
  - For the new interface module without an optical/electrical module

    Remove the optical/electrical module from the interface module you want to replace and insert the new interface module into the controller enclosure. After the Power indicator of the new interface module is steady green, wait at least one minute and insert the removed optical/electrical module into the new interface module.
  - For the new interface module with an optical/electrical module

    Insert the new interface module into the controller enclosure. If you want to use the optical/electrical module on the replaced interface module, wait at least one minute after the Power indicator of the new interface module is steady green, and then insert the optical/electrical module into the new interface module.

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- Remove and insert an interface module with even force. Excessive force may damage the appearance of the interface module or cause faults.
- An interface module must be replaced within five minutes. Otherwise, the system heat dissipation is compromised.
- After removing an interface module, wait at least fifteen seconds before inserting one. Otherwise, the system cannot identify the status change of the interface module.
- If you replace an interface module that uses Ethernet protocol with one that uses Fibre Channel protocol, the Ethernet port configuration information will be deleted, and VLANs, logical ports, and bonded ports on the original interface module will become unavailable. If you replace the interface module again with one that uses Ethernet protocol, the Ethernet port configuration information will not be restored, but the VLANs, logical ports, and bonded ports on the Ethernet interface module will be restored.
- If you replace an interface module that uses Fibre Channel protocol with one that uses Ethernet protocol, the Fibre Channel port configuration information will be deleted. If you replace the interface module again with one that uses Fibre Channel protocol, the Fibre Channel port configuration information will not be restored.
- If you want to use interface modules of different types, contact Huawei technical support.

## Tools and Materials

- ESD wrist strap
- ESD bag
- Labels

## Procedure

**Step 1** Check status before replacement.

1. Check system status.

   Start SmartKit and choose **Home** > **Storage** > **Routine Maintenance** > **Health Check**. On the **Health Check** page, perform inspection as instructed. For details, see **8.1.2 Checking System Status**.

   NOTE

   If any items fail the inspection, rectify the faults by performing the recommended actions in the inspection reports. Ensure that all other parts except the parts to be replaced are working properly.

2. Evaluate the replacement.

   Start SmartKit and choose **Home** > **Storage** > **Parts Replacement** > **Parts Replacement Evaluation**. If any check item fails, rectify the fault as instructed.

   NOTE

   Only IP scale-out interface modules support parts replacement evaluation.

3. Check the status of the parts to be replaced.

   Start SmartKit and choose **Home** > **Storage** > **Parts Replacement** > **Parts Replacement**. On the **Parts Replacement** page, click **FRU Replacement**.

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Then complete the check before the replacement as prompted. For details, see **8.1.3 Replacing an FRU**.

**NOTICE**

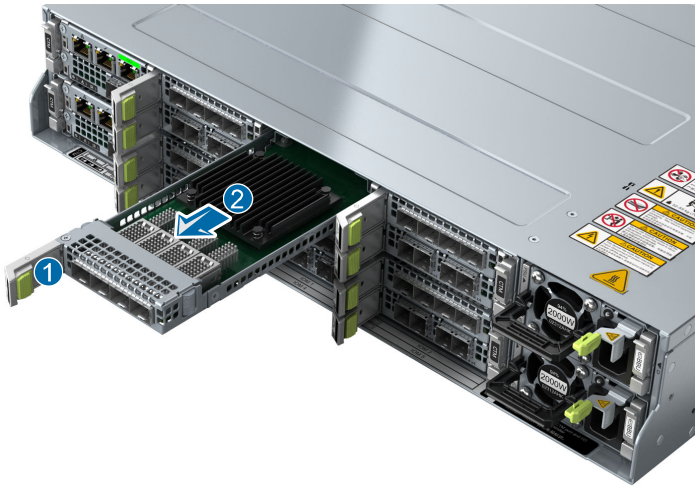
You can proceed to next steps only when all items pass the pre-replacement check and the replacement page is displayed. If any item fails, rectify the fault as prompted.

**Step 2** Wear an ESD wrist strap.

**Step 3** Remove the cables from the interface module that you want to replace.

**Step 4** Press the latch on the interface module to release the handle and pull out the interface module, as shown in **Figure 8-78**.

**Figure 8-78** Removing the interface module




**NOTE**

This figure uses a 2 U controller enclosure as an example. The method used to replacing an interface module for a 4 U controller enclosure is the same as that for a 2 U controller enclosure.

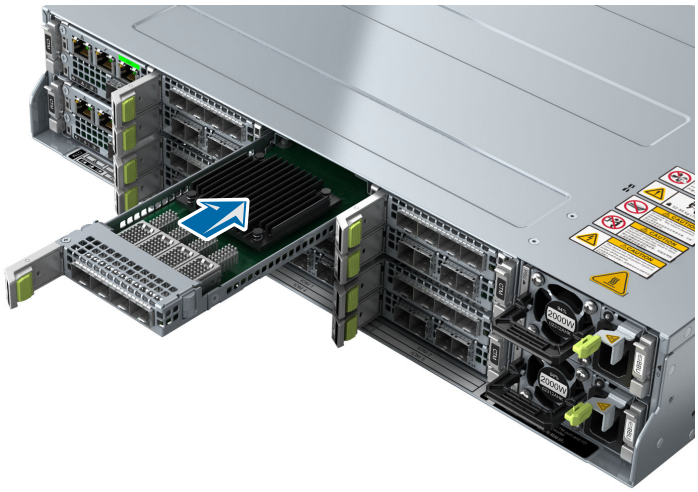
**Step 5** Put the removed interface module into an ESD bag.

**Step 6** Take the spare part out of its ESD bag.

**Step 7** Insert the interface module into the slot until it clicks into place, as shown in **Figure 8-79**.

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**Figure 8-79** Installing the interface module



NOTE

This figure uses a 2 U controller enclosure as an example. The method used to replacing an interface module for a 4 U controller enclosure is the same as that for a 2 U controller enclosure.

**Step 8** Connect the cables.

NOTICE

The cable connection positions of the new interface module must be identical to those of the original interface module. Otherwise, service operations will be affected.

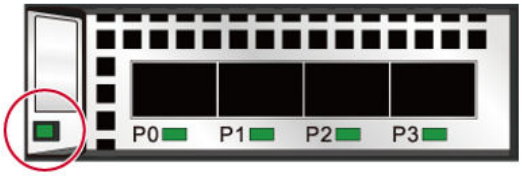
NOTE

After the interface module is installed, you are advised to wait four minutes before connecting the cables so that the status of the new interface module can be updated.

**Step 9** Wait about two minutes and check the status of the Power indicator on the interface module to determine whether the interface module has been successfully installed. **Figure 8-80** shows the location of the Power indicator.

- If the indicator is steady green, the interface module has been successfully installed.
- If the indicator is steady yellow or off, the newly installed interface module is faulty, the interface module slot is faulty, or the interface module is incorrectly installed.

**Figure 8-80** Power indicator on an interface module




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**Step 10** Confirm the replacement.

1. Perform a post-replacement inspection.

   After the parts replacement, return to the SmartKit page and click **Replaced**. Then complete the check after the replacement as prompted.

2. Check system status.

   On the **Parts Replacement** page, click **Inspection** to check the system status again. If any item fails inspection, rectify the fault based on the suggestions in the inspection report.

3. After the preceding procedure is complete, check services on the host for storage-related errors.

**----End**

### Follow-up Procedure

After the interface module is replaced, label it to facilitate subsequent operations.

# 8.7 Replacing a Power Module

This chapter describes how to replace a power module.

## 8.7.1 Replacing a Power Module (for OceanStor 18500 V5, 18500F V5, 18800 V5, or 18800F V5)

This section describes how to replace a power module.

### Prerequisites

- The spare part is on hand.
- The power module that you want to replace has been located.

  NOTE

  You can locate a component in either of the following ways:

  - Locating a component based on alarms in DeviceManager: On the **Alarms and Events** page of DeviceManager, view the help information and determine the ID of the component to be replaced. Then locate the component at your site based on its ID.
  - Locating a component based on the status of its Running/Alarm indicator: For details about the indicators on different components, see "Indicator Introduction" of each component in the *Product Description* specific to your product model and version.

- Before replacing a power module, ensure that the other power module is working properly.
- Check whether connectors of other power modules are securely inserted. Otherwise, connectors of other power modules may become loose during replacement and may be powered off unexpectedly.

### Precautions

- Do not touch the connectors of a power module and a power cable.

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- Remove and insert a power module with even force. Excessive force may damage the appearance of the power module or cause faults.
- Remove only one power module at a time.
- A power module must be replaced within three minutes. Otherwise, the system heat dissipation is compromised.

## Tools and Materials

- ESD wrist strap
- ESD bag
- Labels
- Phillips screwdriver

## Procedure

**Step 1** Perform a pre-replacement check.

1. Check system status.

   Start SmartKit and choose **Home** > **Storage** > **Routine Maintenance** > **Health Check**. On the **Health Check** page, perform inspection as instructed. For details, see **8.1.2 Checking System Status**.

   NOTE

   If any items fail the inspection, rectify the faults by performing the recommended actions in the inspection reports. Ensure that all other parts except the parts to be replaced are working properly.

2. Check the status of the parts to be replaced.

   Start SmartKit and choose **Home** > **Storage** > **Parts Replacement** > **Parts Replacement**. On the **Parts Replacement** page, click **FRU Replacement**. Then complete the check before the replacement as prompted. For details, see **8.1.3 Replacing an FRU**.

   NOTICE

   You can proceed to next steps only when all items pass the pre-replacement check and the replacement page is displayed. If any item fails, rectify the fault as prompted.

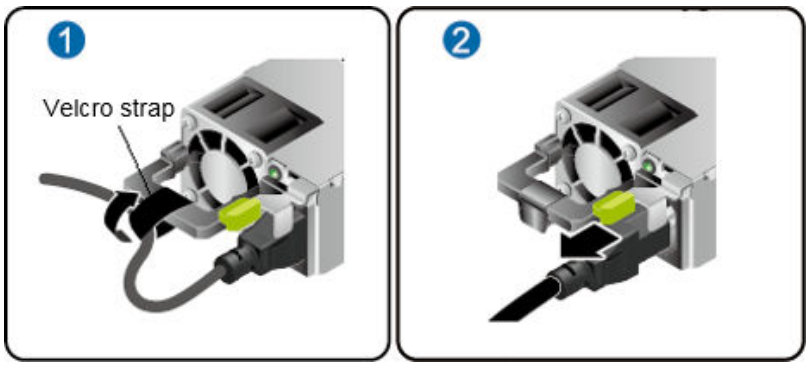
**Step 2** Wear an ESD wrist strap.

**Step 3** Remove the power cable.

1. Remove the velcro strap that secures the power cable, as shown in step 1 in **Figure 8-81**.

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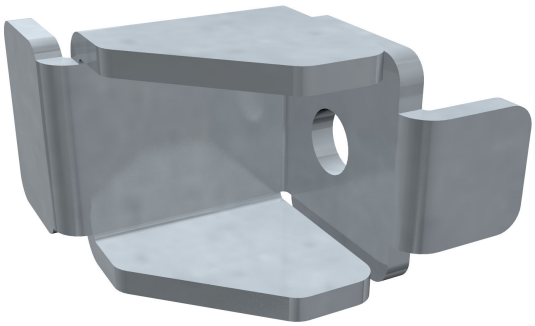
**Figure 8-81** Removing the AC power cable




2. Remove the AC power cable, as shown in step 2 in **Figure 8-81**.

**Step 4** (Optional) If there is a positioning block next to the power module to be replaced and the positioning block hinders the removal of the power module, remove the positioning block first. **Figure 8-82** shows the appearance of the positioning block.

**Figure 8-82** Positioning block



The method of removing positioning blocks for a controller enclosure is the same as that of removing positioning blocks for a smart disk enclosure. For details, see **Step 4** in **7.2.7 Replacing a Power Module (for a Smart Disk Enclosure)**.

**Step 5** Press the latch on the power module and pull the handle of the power module outwards to pull out the power module, as shown in **Figure 8-83**.

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**Figure 8-83** Pulling out the power module

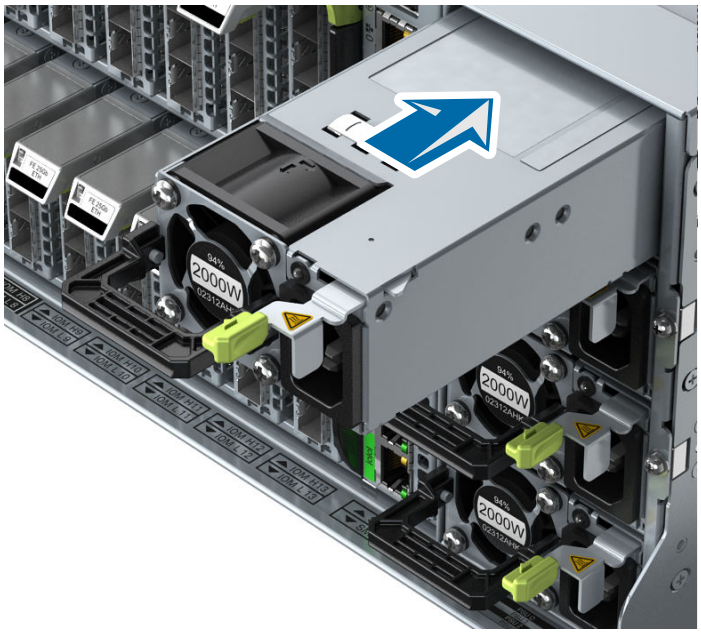



**Step 6** Put the removed power module into an ESD bag.

**Step 7** Take the spare part out of its ESD bag.

**Step 8** Insert the spare part into the empty slot, as shown in **Figure 8-84**.

**Figure 8-84** Inserting the power module into the empty slot

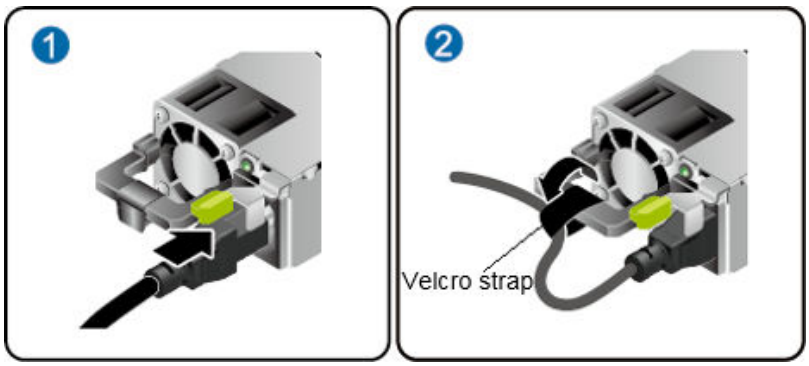



**Step 9** Connect the power cable.

1. Connect the power cable to the cable port on the spare part that has been inserted, as shown in step 1 in **Figure 8-85**.

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**Figure 8-85** Connecting the power cable




2. Secure the power cable using a velcro strap, as shown in step 2 in **Figure 8-85**.

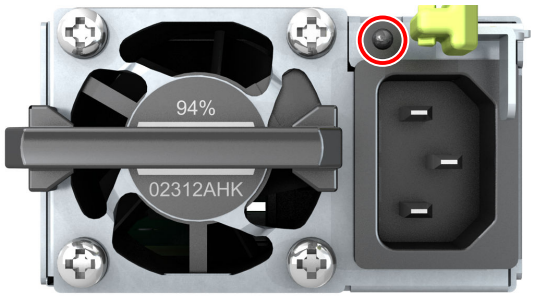
NOTE

Adjust the velcro strap to ensure that it fastens the power cable so that the connector of the power cable is secured tightly.

**Step 10** Wait about two minutes and check the status of the Running/Alarm indicator on the power module to determine whether the power module has been successfully installed. **Figure 8-86** or **Figure 8-87** shows the location of the Running/Alarm indicator.

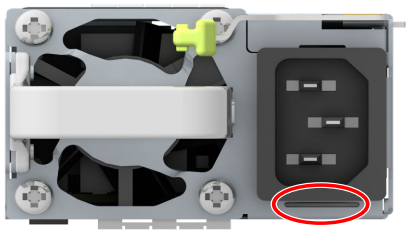
- If the indicator is steady green, the power module has been successfully installed.
- If the indicator is blinking green, the power input is normal but the controller enclosure is powered off.
- If the indicator is steady yellow or off, the newly installed power module is faulty or the power module slot is faulty.

**Figure 8-86** Running/Alarm indicator on a power module




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**Figure 8-87** (Optional) Running/Alarm indicator on a power module



**Step 11** Confirm the replacement.

1. Perform a post-replacement inspection.

   After the parts replacement, return to the SmartKit page and click **Replaced**. Then complete the check after the replacement as prompted.

2. Check system status.

   On the **Parts Replacement** page, click **Inspection** to check the system status again. If any item fails inspection, rectify the fault based on the suggestions in the inspection report.

3. After the preceding procedure is complete, check services on the host for storage-related errors.

**----End**

### Follow-up Procedure

After the power module is replaced, label it to facilitate subsequent operations.

# 8.8 Replacing a Fan Module

This section describes how to replace a fan module.

## 8.8.1 Replacing a Fan Module (for OceanStor 2600 V5, 5300 V5, or 5300F V5)

This section describes how to replace a fan module.

**NOTICE**

When replacing a fan module, remove the controller where the fan module resides.

### Impact on the System

During the replacement of a fan module, removing the controller where the fan module resides decreases the system performance and reliability. Therefore, you are advised to replace the fan module during off-peak hours.

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## Prerequisites

- If services are running on the controller to which the fan module to be replaced belongs, ensure that the average CPU usage of a controller does not exceed 40%.
- The cable connection positions of the controller to which the fan module to be replaced belongs are marked.
- The spare part is on hand.
- The fan module that you want to replace has been located.

NOTE

You can locate a component in either of the following ways:

- Locating a component based on alarms in DeviceManager: On the **Alarms and Events** page of DeviceManager, view the help information and determine the ID of the component to be replaced. Then locate the component at your site based on its ID.
- Locating a component based on the status of its Running/Alarm indicator: For details about the indicators on different components, see "Indicator Introduction" of each component in the *Product Description* specific to your product model and version.

## Precautions

- Do not touch rotating fan blades.
- Remove and insert a fan module and the controller to which the fan module belongs with even force. Excessive force may damage the appearance of the fan module or cause faults.
- The interval between the removal and insertion of a controller must be within three minutes. Otherwise, the system heat dissipation is compromised.
- After all indicators on the rear panel of a controller are off, the air baffle can be removed. A fan module must be replaced within three minutes.

## Tools and Materials

- ESD table
- ESD wrist strap
- ESD bag
- Labels

## Procedure

**Step 1** Check status before replacement.

1. Check system status.

   Start SmartKit and choose **Home** > **Storage** > **Routine Maintenance** > **Health Check**. On the **Health Check** page, perform inspection as instructed. For details, see **8.1.2 Checking System Status**.

   NOTE

   If any items fail the inspection, rectify the faults by performing the recommended actions in the inspection reports. Ensure that all other parts except the parts to be replaced are working properly.

2. Evaluate the replacement.

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Start SmartKit and choose **Home** > **Storage** > **Parts Replacement** > **Parts Replacement Evaluation**. If any check item fails, rectify the fault as instructed.

3. Check the status of the parts to be replaced.

   Start SmartKit and choose **Home** > **Storage** > **Parts Replacement** > **Parts Replacement**. On the **Parts Replacement** page, click **FRU Replacement**. Then complete the check before the replacement as prompted. For details, see **8.1.3 Replacing an FRU**.

**NOTICE**

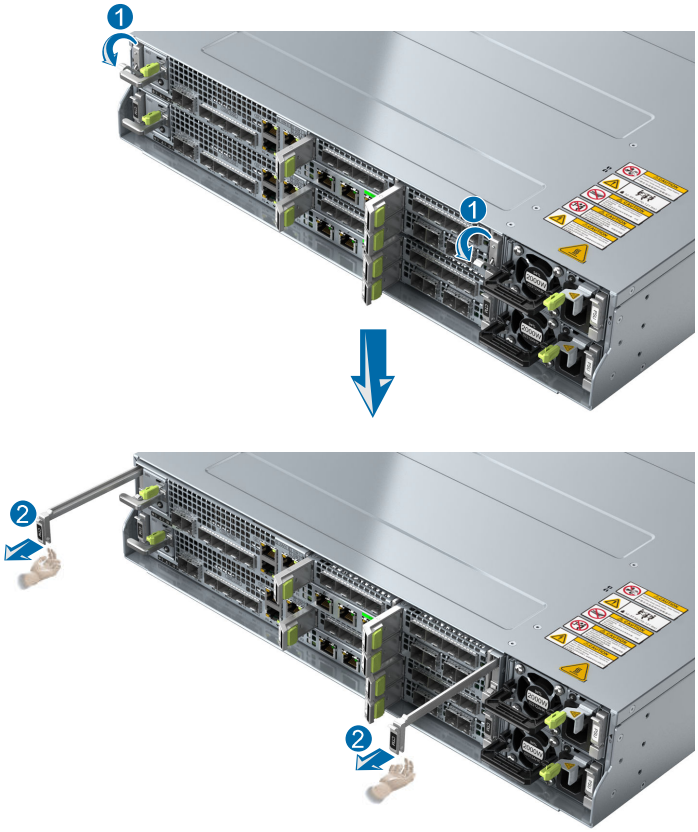
You can proceed to next steps only when all items pass the pre-replacement check and the replacement page is displayed. If any item fails, rectify the fault as prompted.

**Step 2** Wear an ESD wrist strap.

**Step 3** Remove the cable from the interface module of the controller to which the fan module to be replaced belongs.

**Step 4** Open the latches on the ejector levers on both sides of the controller, and hold the ejector levers to pull out the controller, as shown in **Figure 8-88**.

**Figure 8-88** Opening the latches to pull out the controller




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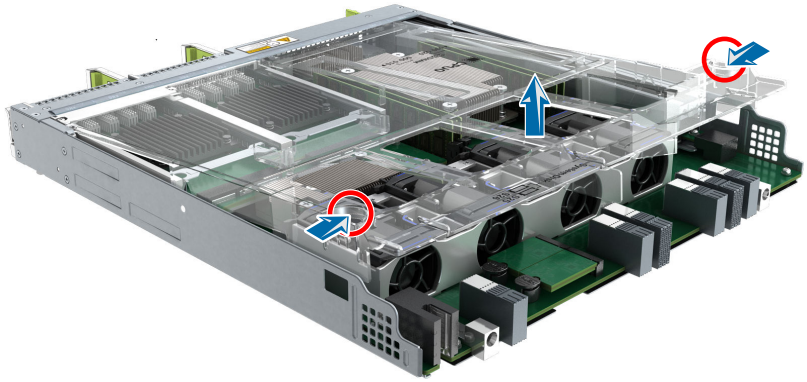
**Step 5** Place the removed controller on the ESD table.

**Step 6** Lift the air baffle according to the signs on the air baffle, as shown in **Figure 8-89**.

**NOTICE**

You can remove the air baffle only after all indicators on the rear panel of the controller are off.

**Figure 8-89** Removing the air baffle

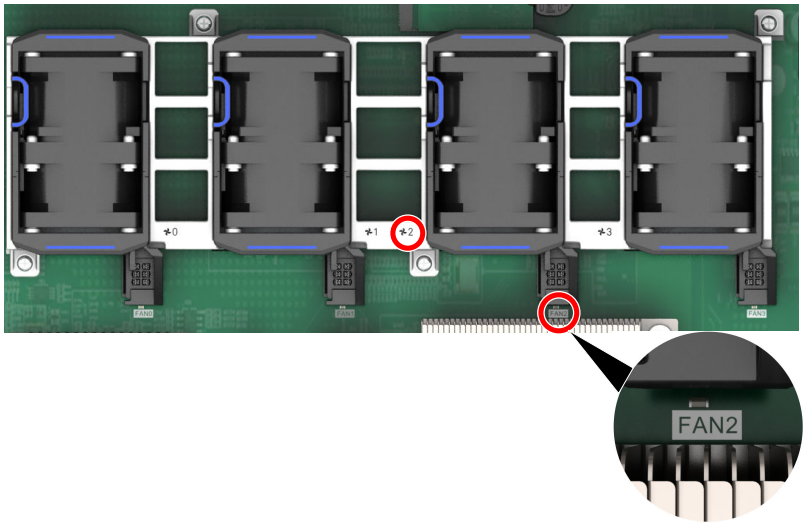


**Step 7** Locate the fan module you want to replace based on its ID and indicator, as shown in **Figure 8-90**.

NOTE

- If the indicator is steady yellow, the fan module is faulty.
- If the indicator is steady green, the fan module is working properly.

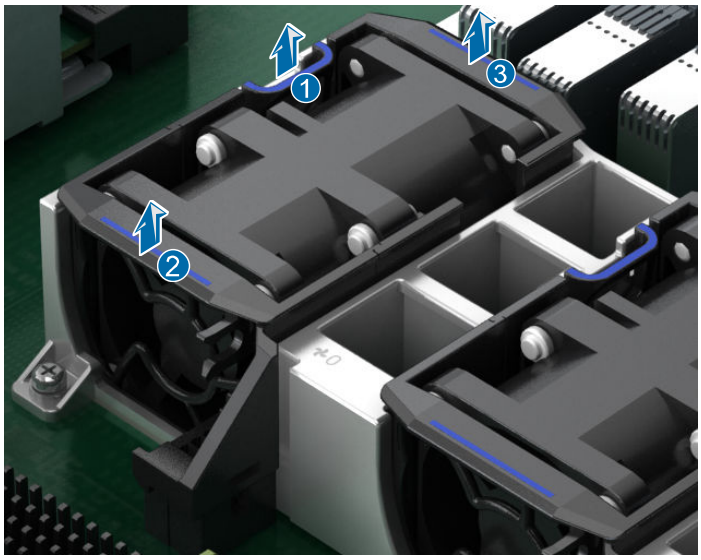
**Figure 8-90** ID and indicator on the fan module




**Step 8** Hold the latch on the fan module, lift the handle on the front and rear of the fan module, and pull out the fan module, as shown in **Figure 8-91**.

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**Figure 8-91** Removing the fan module




**NOTICE**

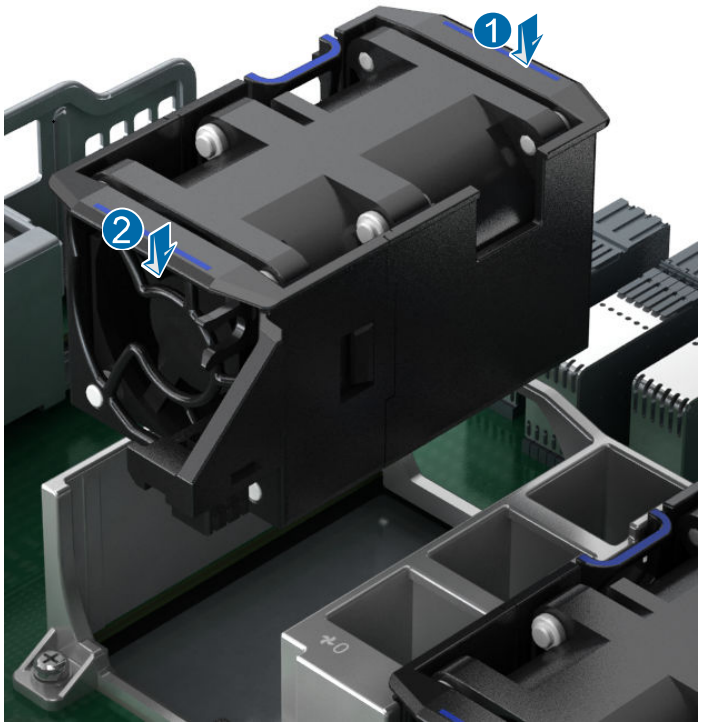
You must vertically remove the fan module upward. Otherwise, connectors of the fan module will be damaged.

**Step 9** Put the removed fan module into an ESD bag.

**Step 10** Take the spare part out of its ESD bag.

**Step 11** Insert the fan module to be installed into the empty slot, as shown in **Figure 8-92**.

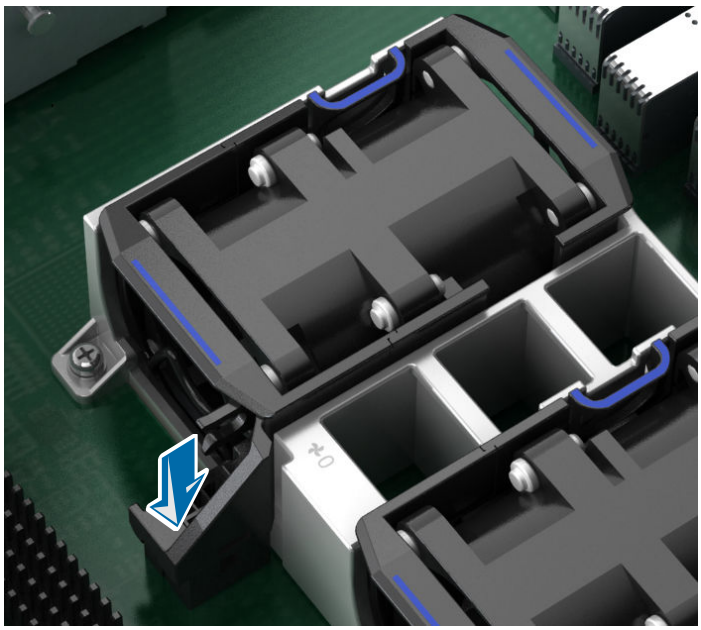
**Figure 8-92** Installing the fan module




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**Step 12** Press connectors of the fan module to ensure that the connectors are fastened, as shown in **Figure 8-93**.

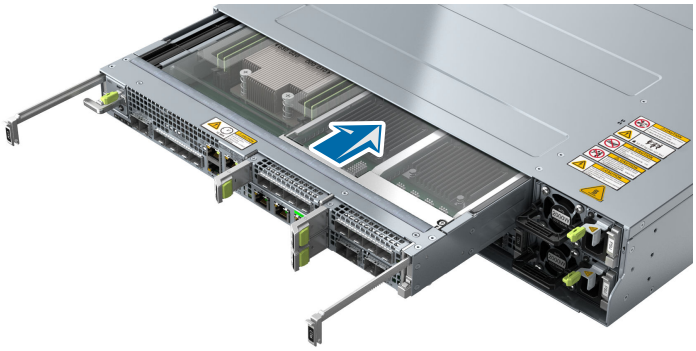
**Figure 8-93** Fastening connectors of the fan module



**Step 13** Close the air baffle of the controller.

**Step 14** Open the ejector levers of the controller to be installed, insert the controller into the empty slot, and push the controller into the slot as much as possible, as shown in **Figure 8-94**.

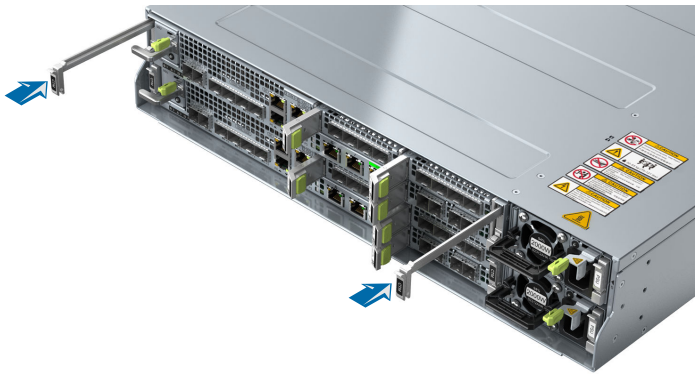
**Figure 8-94** Pushing the controller to be installed into the empty slot



**Step 15** Press and hold the ejector levers and push the controller inwards until the controller is fully inserted into the slot, as shown in **Figure 8-95**.

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**Figure 8-95** Installing the controller



**NOTICE**

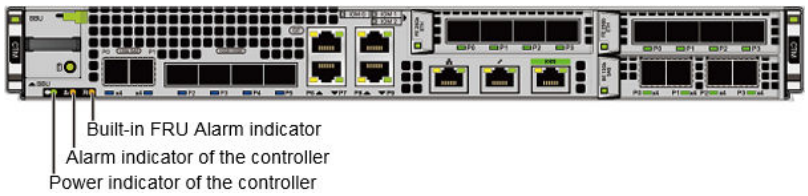
Hold the ejector levers on both sides and push the controller into the slot with even force to prevent poor contact between the controller and the backplane.

**Step 16** Connect cables to their corresponding locations.

**Step 17** Wait until the controller is powered on and check the status of the Power indicator, Alarm indicator, and built-in FRU Alarm indicator on the controller to determine whether the fan module has been successfully installed, as shown in **Figure 8-96**.

- If the Power indicator is on and the Alarm indicator is off, the controller has been installed successfully.
- If the Power indicator is off or the Alarm indicator is on, the newly installed controller is faulty, the controller slot is faulty, or the controller is not properly installed or is not powered on.
- If the built-in FRU Alarm indicator is on, the newly installed fan module is faulty, the fan module slot is faulty, or the fan module is not properly installed.
- If the built-in FRU Alarm indicator is off, the fan module has been installed successfully.

**Figure 8-96** Indicators of the controller




**Step 18** Confirm the replacement.

1. Perform a post-replacement inspection.

   After the parts replacement, return to the SmartKit page and click **Replaced**. Then complete the check after the replacement as prompted.

2. Check system status.

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On the **Parts Replacement** page, click **Inspection** to check the system status again. If any item fails inspection, rectify the fault based on the suggestions in the inspection report.

3. After the preceding procedure is complete, check services on the host for storage-related errors.

**----End**

## Follow-up Procedure

After the fan module is replaced, label it to facilitate subsequent operations.

# 8.8.2 Replacing a Fan Module (for OceanStor 5500 V5, 5500F V5, 5600 V5, 5600F V5, 5800 V5, or 5800F V5)

This section describes how to replace a fan module.

**NOTICE**

When replacing a fan module, remove the controller where the fan module resides.

## Impact on the System

During the replacement of a fan module, removing the controller where the fan module resides decreases the system performance and reliability. Therefore, you are advised to replace the fan module during off-peak hours.

## Prerequisites

- If services are running on the controller to which the fan module to be replaced belongs, ensure that the average CPU usage of a controller does not exceed 40%.
- The cable connection positions of the controller to which the fan module to be replaced belongs are marked.
- The spare part is on hand.
- The fan module that you want to replace has been located.

**NOTE**

You can locate a component in either of the following ways:

- Locating a component based on alarms in DeviceManager: On the **Alarms and Events** page of DeviceManager, view the help information and determine the ID of the component to be replaced. Then locate the component at your site based on its ID.
- Locating a component based on the status of its Running/Alarm indicator: For details about the indicators on different components, see "Indicator Introduction" of each component in the *Product Description* specific to your product model and version.

## Precautions

- Do not touch rotating fan blades.

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- Remove and insert a fan module and the controller to which the fan module belongs with even force. Excessive force may damage the appearance of the fan module or cause faults.
- The interval between the removal and insertion of a controller must be within 10 minutes.
- After all indicators on the rear panel of a controller are off, the air baffle can be removed. A fan module must be replaced within three minutes.

## Tools and Materials

- ESD table
- ESD wrist strap
- ESD bag
- Labels

## Procedure

**Step 1** Check status before replacement.

1. Check system status.

   Start SmartKit and choose **Home** > **Storage** > **Routine Maintenance** > **Health Check**. On the **Health Check** page, perform inspection as instructed. For details, see **8.1.2 Checking System Status**.

   NOTE

   If any items fail the inspection, rectify the faults by performing the recommended actions in the inspection reports. Ensure that all other parts except the parts to be replaced are working properly.

2. Evaluate the replacement.

   Start SmartKit and choose **Home** > **Storage** > **Parts Replacement** > **Parts Replacement Evaluation**. If any check item fails, rectify the fault as instructed.

3. Check the status of the parts to be replaced.

   Start SmartKit and choose **Home** > **Storage** > **Parts Replacement** > **Parts Replacement**. On the **Parts Replacement** page, click **FRU Replacement**. Then complete the check before the replacement as prompted. For details, see **8.1.3 Replacing an FRU**.

   NOTICE

   You can proceed to next steps only when all items pass the pre-replacement check and the replacement page is displayed. If any item fails, rectify the fault as prompted.

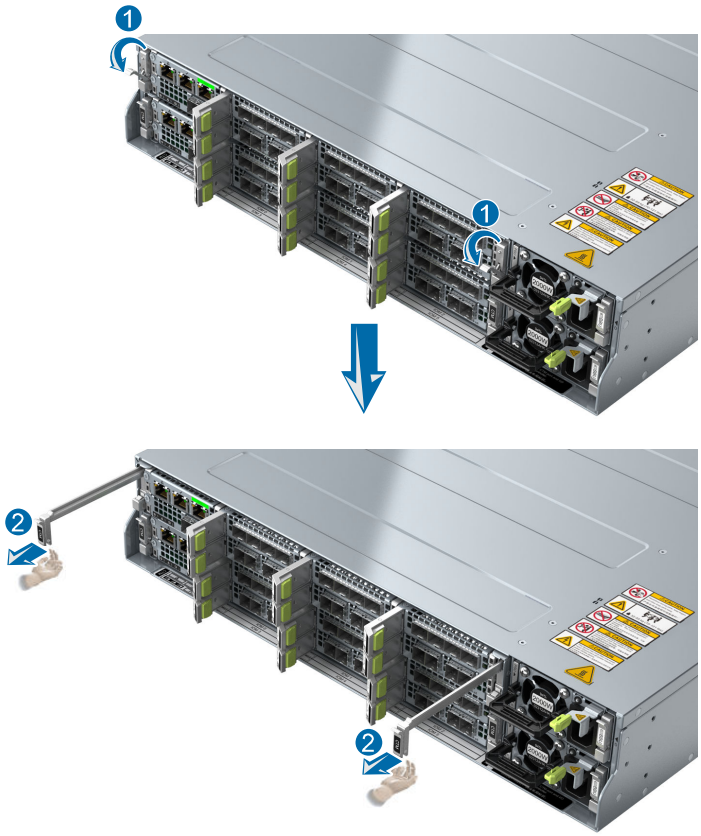
**Step 2** Wear an ESD wrist strap.

**Step 3** Remove the cable from the interface module of the controller to which the fan module to be replaced belongs.

**Step 4** Open the latches on the ejector levers on both sides of the controller, and hold the ejector levers to pull out the controller, as shown in **Figure 8-97**.

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**Figure 8-97** Opening the latches to pull out the controller



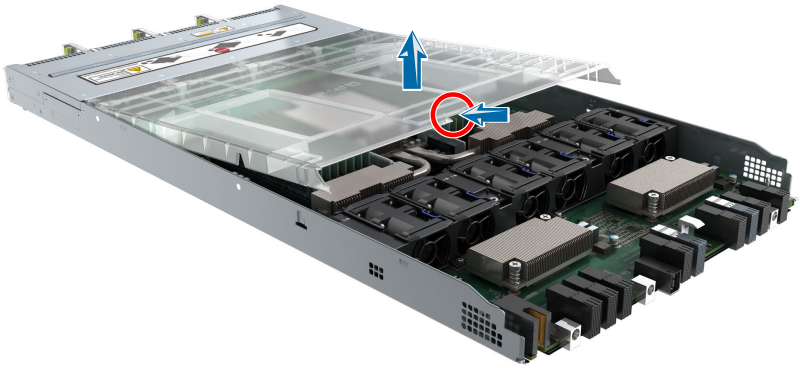
**Step 5** Place the removed controller on the ESD table.

**Step 6** Lift the air baffle according to the signs on the air baffle, as shown in **Figure 8-98**.

**NOTICE**

You can remove the air baffle only after all indicators on the rear panel of the controller are off.

**Figure 8-98** Removing the air baffle



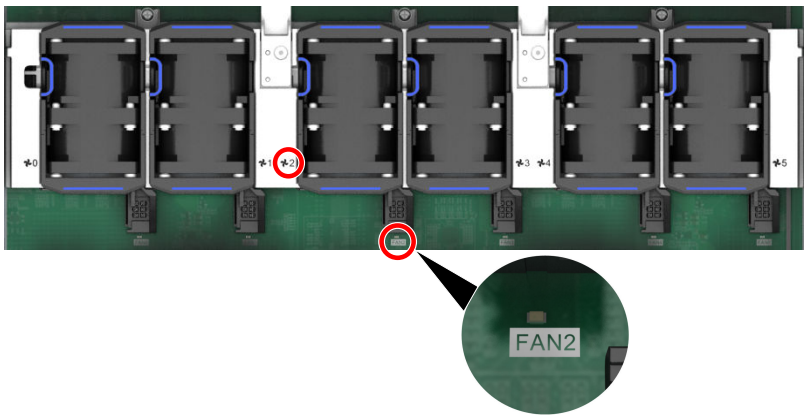
**Step 7** Locate the fan module you want to replace based on its ID and indicator, as shown in **Figure 8-99**.

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NOTE

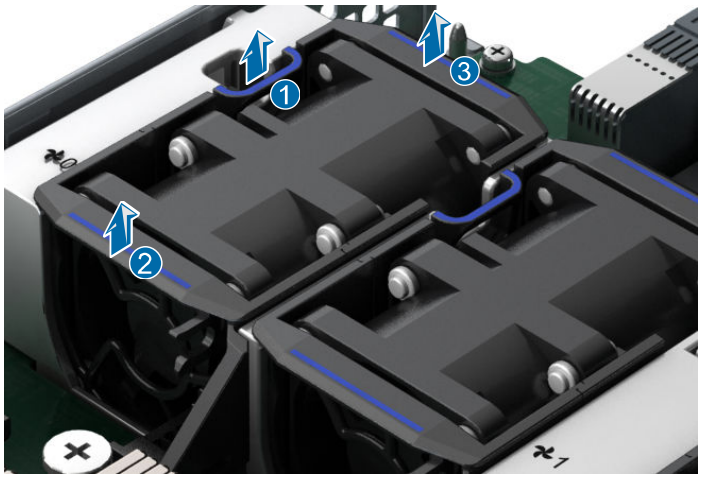
- If the indicator is steady yellow, the fan module is faulty.
- If the indicator is steady green, the fan module is working properly.

**Figure 8-99** ID and indicator on the fan module




**Step 8** Hold the latch on the fan module, lift the handle on the front and rear of the fan module, and pull out the fan module, as shown in **Figure 8-100**.

**Figure 8-100** Removing the fan module




**NOTICE**

You must vertically remove the fan module upward. Otherwise, connectors of the fan module will be damaged.

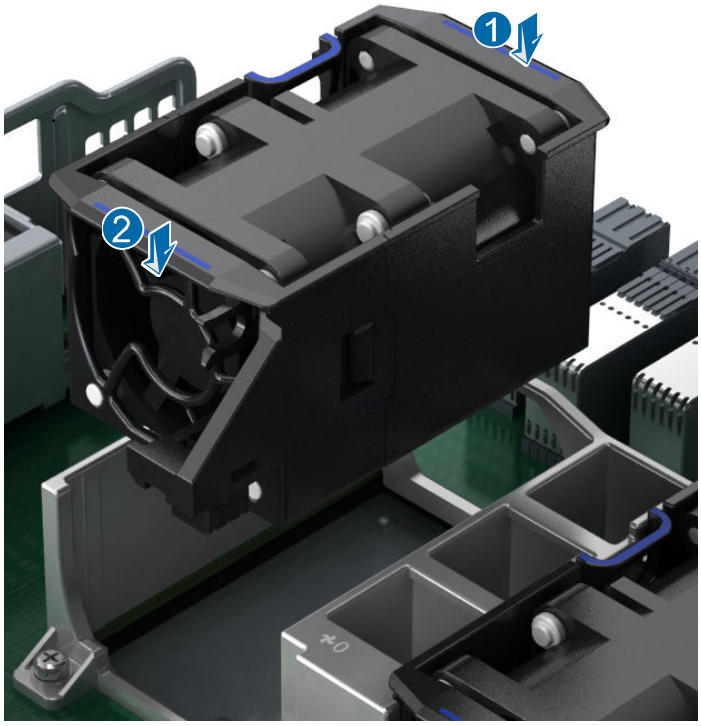
**Step 9** Put the removed fan module into an ESD bag.

**Step 10** Take the spare part out of its ESD bag.

**Step 11** Insert the fan module to be installed into the empty slot, as shown in **Figure 8-101**.

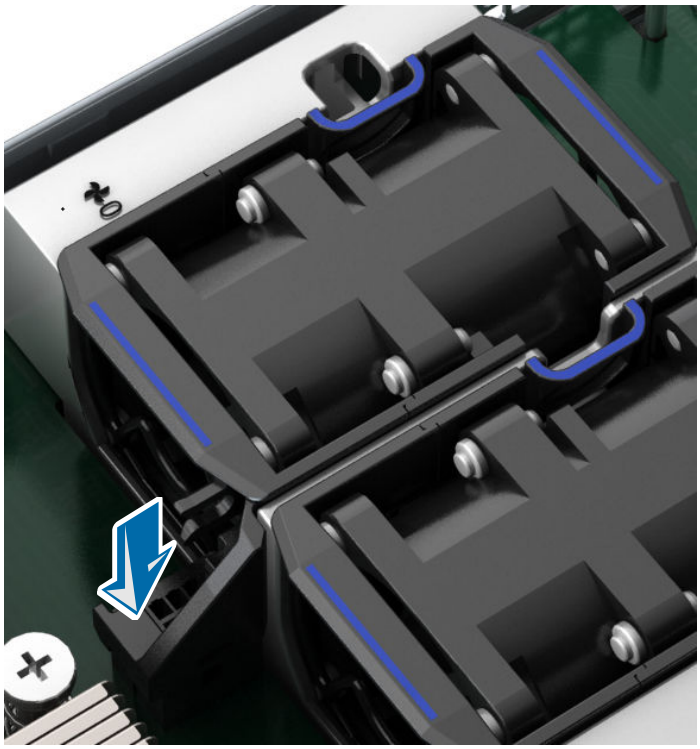
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**Figure 8-101** Installing the fan module




**Step 12** Press connectors of the fan module to ensure that the connectors are fastened, as shown in **Figure 8-102**.

**Figure 8-102** Fastening connectors of the fan module

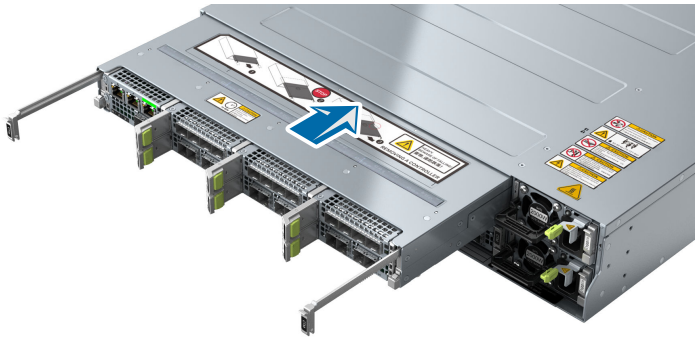


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**Step 13** Close the air baffle of the controller.

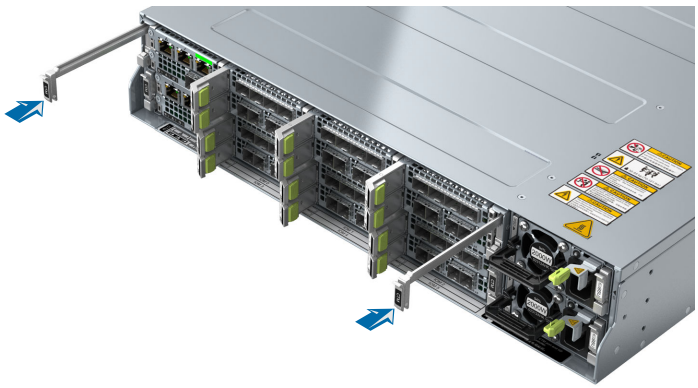
**Step 14** Open the ejector levers of the controller to be installed, insert the controller into the empty slot, and push the controller into the slot as much as possible, as shown in **Figure 8-103**.

**Figure 8-103** Pushing the controller to be installed into the empty slot



**Step 15** Press and hold the ejector levers and push the controller inwards until the controller is fully inserted into the slot, as shown in **Figure 8-104**.

**Figure 8-104** Installing the controller



**NOTICE**

Hold the ejector levers on both sides and push the controller into the slot with even force to prevent poor contact between the controller and the backplane.

**Step 16** Connect cables to their corresponding locations.

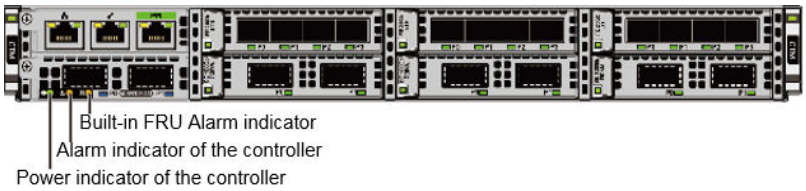
**Step 17** Wait until the controller is powered on and check the status of the Power indicator, Alarm indicator, and built-in FRU Alarm indicator on the controller to determine whether the fan module has been successfully installed, as shown in **Figure 8-105**.

- If the Power indicator is on and the Alarm indicator is off, the controller has been installed successfully.
- If the Power indicator is off or the Alarm indicator is on, the newly installed controller is faulty, the controller slot is faulty, or the controller is not properly installed or is not powered on.

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- If the built-in FRU Alarm indicator is on, the newly installed fan module is faulty, the fan module slot is faulty, or the fan module is not properly installed.
- If the built-in FRU Alarm indicator is off, the fan module has been installed successfully.

**Figure 8-105** Indicators of the controller




**Step 18** Confirm the replacement.

1. Perform a post-replacement inspection.

   After the parts replacement, return to the SmartKit page and click **Replaced**. Then complete the check after the replacement as prompted.
2. Check system status.

   On the **Parts Replacement** page, click **Inspection** to check the system status again. If any item fails inspection, rectify the fault based on the suggestions in the inspection report.
3. After the preceding procedure is complete, check services on the host for storage-related errors.

**----End**

## Follow-up Procedure

After the fan module is replaced, label it to facilitate subsequent operations.

# 8.8.3 Replacing a Fan Module (for OceanStor 18500 V5, 18500F V5, 18800 V5, or 18800F V5)

This section describes how to replace a fan module.

## Prerequisites

- The spare part is on hand.
- The fan module that you want to replace has been located.

NOTE

You can locate a component in either of the following ways:

- Locating a component based on alarms in DeviceManager: On the **Alarms and Events** page of DeviceManager, view the help information and determine the ID of the component to be replaced. Then locate the component at your site based on its ID.
- Locating a component based on the status of its Running/Alarm indicator: For details about the indicators on different components, see "Indicator Introduction" of each component in the *Product Description* specific to your product model and version.

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## Precautions

- Do not touch rotating fan blades.
- Remove and insert a fan module with even force. Excessive force may damage the appearance of the fan module or cause faults.
- A fan module must be replaced within three minutes. Otherwise, the system heat dissipation is compromised.
- Remove only one fan module at a time.
- To avoid the sharp increase of the system temperature, replace only faulty fan modules.

## Tools and Materials

- ESD table
- ESD wrist strap
- ESD bag
- Labels

## Procedure

**Step 1** Check status before replacement.

1. Check system status.

   Start SmartKit and choose **Home** > **Storage** > **Routine Maintenance** > **Health Check**. On the **Health Check** page, perform inspection as instructed. For details, see **8.1.2 Checking System Status**.

   NOTE

   If any items fail the inspection, rectify the faults by performing the recommended actions in the inspection reports. Ensure that all other parts except the parts to be replaced are working properly.

2. Check the status of the parts to be replaced.

   Start SmartKit and choose **Home** > **Storage** > **Parts Replacement** > **Parts Replacement**. On the **Parts Replacement** page, click **FRU Replacement**. Then complete the check before the replacement as prompted. For details, see **8.1.3 Replacing an FRU**.

   NOTICE

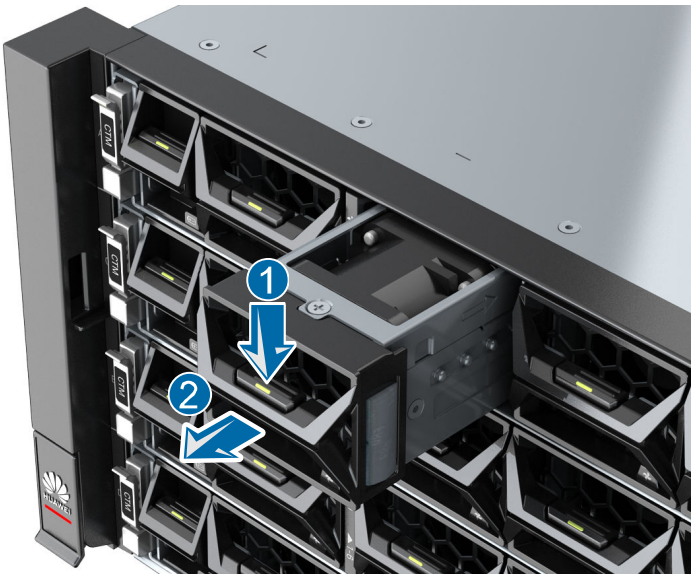
   You can proceed to next steps only when all items pass the pre-replacement check and the replacement page is displayed. If any item fails, rectify the fault as prompted.

**Step 2** Wear an ESD wrist strap.

**Step 3** Press the latch on the fan module to release the handle and pull out the fan module, as shown in **Figure 8-106**.

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**Figure 8-106** Removing the fan module




**Step 4** Put the removed fan module into an ESD bag.

**Step 5** Take the spare part out of its ESD bag.

**Step 6** Insert the spare part into the empty slot, as shown in **Figure 8-107**.

**Figure 8-107** Installing the fan module

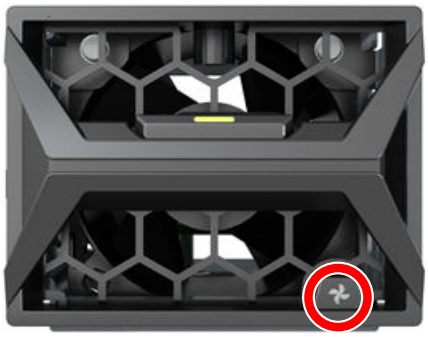


**Step 7** Wait about two minutes and check the status of the Running/Alarm indicator on the fan module to determine whether the fan module has been successfully installed, as shown in **Figure 8-108**.

- If the indicator is steady green, the fan module has been successfully installed.
- If the indicator is steady yellow or off, the newly installed fan module is faulty, the fan module slot is faulty, or the fan module is incorrectly installed.

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**Figure 8-108** Running/Alarm indicator on a fan module



**Step 8** Confirm the replacement.

1. Perform a post-replacement inspection.

   After the parts replacement, return to the SmartKit page and click **Replaced**. Then complete the check after the replacement as prompted.

2. Check system status.

   On the **Parts Replacement** page, click **Inspection** to check the system status again. If any item fails inspection, rectify the fault based on the suggestions in the inspection report.

3. After the preceding procedure is complete, check services on the host for storage-related errors.

**----End**

## Follow-up Procedure

After the fan module is replaced, label it to facilitate subsequent operations.

# 8.8.4 Replacing a Fan Module (for a Smart Disk Enclosure)

This section describes how to replace a fan module.

**NOTICE**

When replacing a fan module, remove the expansion module of the disk enclosure where the fan module resides.

## Impact on the System

During the replacement of a fan module, when the expansion module of the disk enclosure where the fan module resides is removed, the system switches services from the port to the peer cascading port. The back-end port has no redundant links, and disks in the loop all run with a single path, degrading the system reliability. Therefore, you are advised to replace an expansion module in off-peak hours.

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## Prerequisites

- The spare part is on hand.
- The fan module that you want to replace has been located.

NOTE

You can locate a component in either of the following ways:

- Locating a component based on alarms in DeviceManager: On the **Alarms and Events** page of DeviceManager, view the help information and determine the ID of the component to be replaced. Then locate the component at your site based on its ID.
- Locating a component based on the status of its Running/Alarm indicator: For details about the indicators on different components, see "Indicator Introduction" of each component in the *Product Description* specific to your product model and version.

- The cable connection positions on the expansion module of the disk enclosure where the fan module to be replaced resides are clearly marked.
- The cables have been disconnected from the expansion module of the disk enclosure where the fan module to be replaced resides.

NOTE

When removing a cascading cable from a disk enclosure, gently push the cable connector inward, then pull the plastic ring on the connector outward and hold the plastic ring, and pull out the cable.

## Precautions

- Do not touch rotating fan blades.
- Remove and insert a fan module and the expansion module of the disk enclosure where the fan module resides with even force. Excessive force may damage the appearance of the fan module or cause faults.
- The interval between the removal and insertion of an expansion module must be within 10 minutes.
- After all indicators on the rear panel of an expansion module are off, the air baffle can be removed. A fan module must be replaced within three minutes.

## Tools and Materials

- ESD table
- ESD wrist strap
- ESD bag
- Labels

## Procedure

**Step 1** Check status before replacement.

1. Check system status.

   Start SmartKit and choose **Home** > **Storage** > **Routine Maintenance** > **Health Check**. On the **Health Check** page, perform inspection as instructed. For details, see **8.1.2 Checking System Status**.

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NOTE

If any items fail the inspection, rectify the faults by performing the recommended actions in the inspection reports. Ensure that all other parts except the parts to be replaced are working properly.

2. Check the status of the parts to be replaced.

   Start SmartKit and choose **Home** > **Storage** > **Parts Replacement** > **Parts Replacement**. On the **Parts Replacement** page, click **FRU Replacement**. Then complete the check before the replacement as prompted. For details, see **8.1.3 Replacing an FRU**.

NOTICE

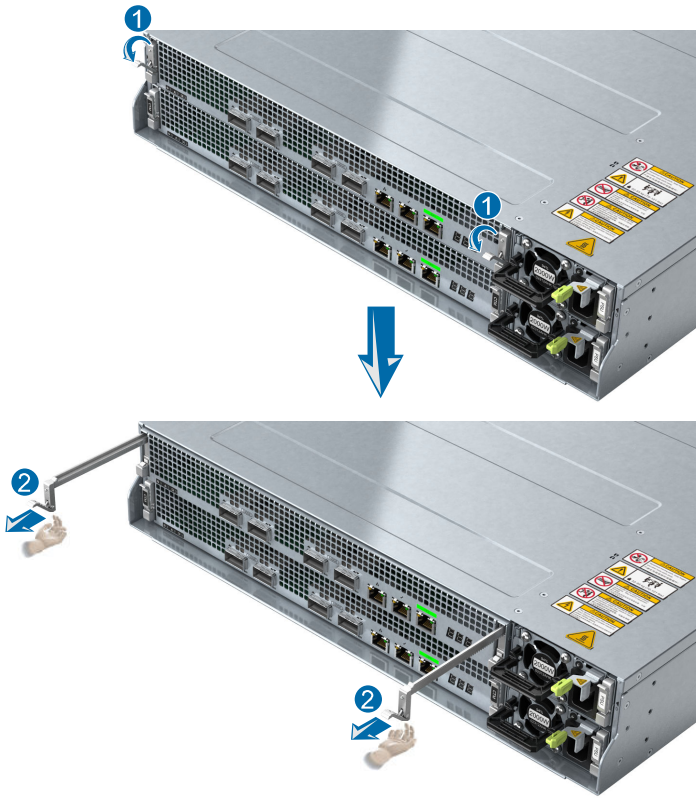
You can proceed to next steps only when all items pass the pre-replacement check and the replacement page is displayed. If any item fails, rectify the fault as prompted.

**Step 2** Wear an ESD wrist strap.

**Step 3** Remove the cable from the expansion module to which the fan module to be replaced belongs.

**Step 4** Open the latches on the ejector levers on both sides of the expansion module, and hold the ejector levers to pull out the expansion module, as shown in **Figure 8-109**.

**Figure 8-109** Opening the latches to pull out the expansion module




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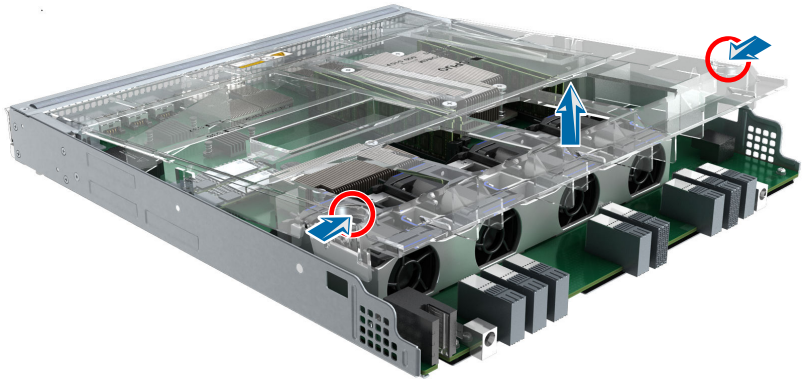
**Step 5** Place the removed expansion module on the ESD table.

**Step 6** Lift the air baffle according to the signs on the air baffle, as shown in **Figure 8-110**.

**NOTICE**

You can remove the air baffle only after all indicators on the rear panel of the expansion module are off.

**Figure 8-110** Removing the air baffle

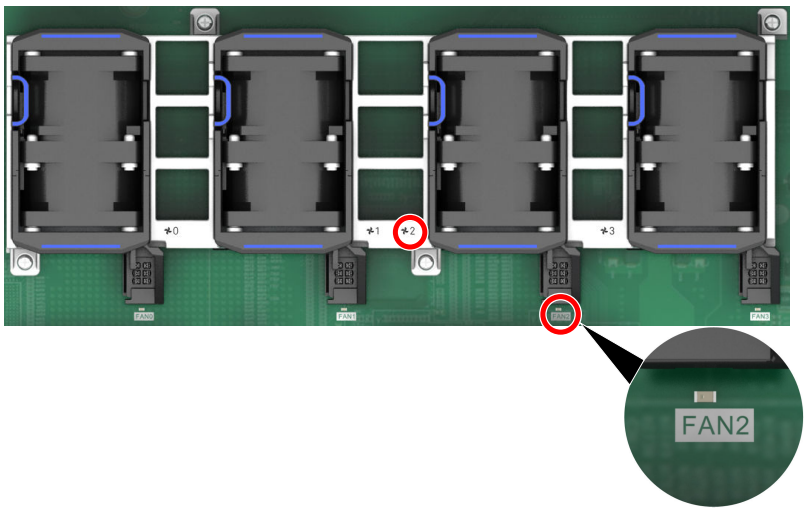


**Step 7** Locate the fan module you want to replace based on its ID and indicator, as shown in **Figure 8-111**.

NOTE

- If the indicator is steady yellow, the fan module is faulty.
- If the indicator is steady green, the fan module is working properly.

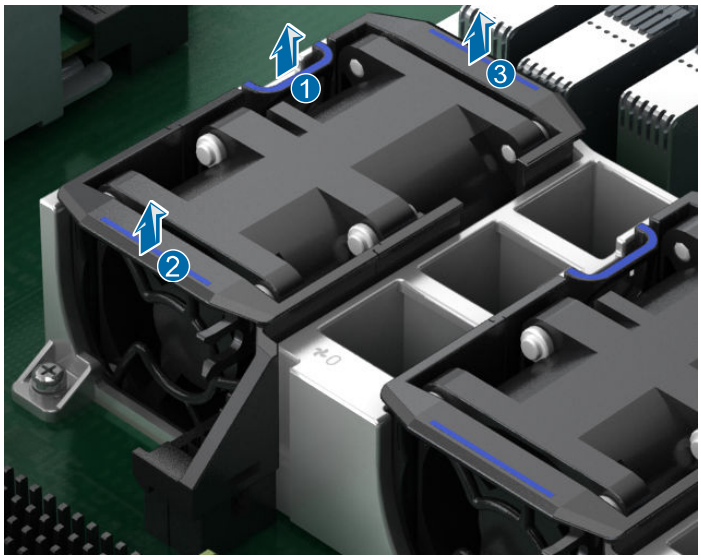
**Figure 8-111** ID and indicator on the fan module




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**Step 8** Hold the latch on the fan module, lift the handle on the front and rear of the fan module, and pull out the fan module, as shown in **Figure 8-112**.

**Figure 8-112** Removing the fan module




**NOTICE**

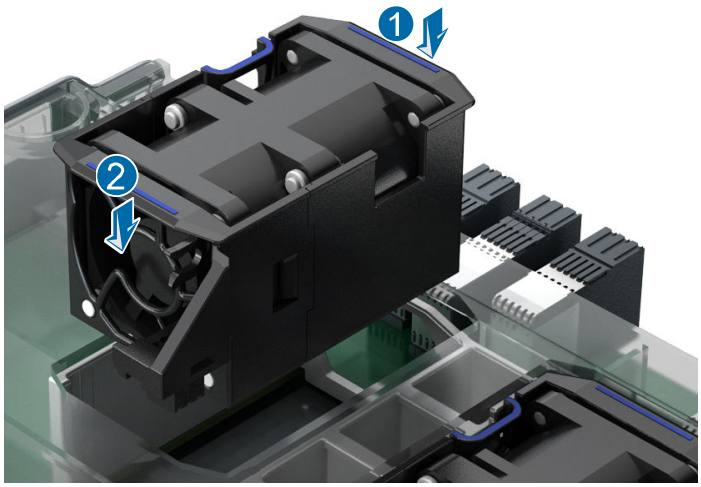
You must vertically remove the fan module upward. Otherwise, connectors of the fan module will be damaged.

**Step 9** Put the removed fan module into an ESD bag.

**Step 10** Take the spare part out of its ESD bag.

**Step 11** Insert the fan module to be installed into the empty slot, as shown in **Figure 8-113**.

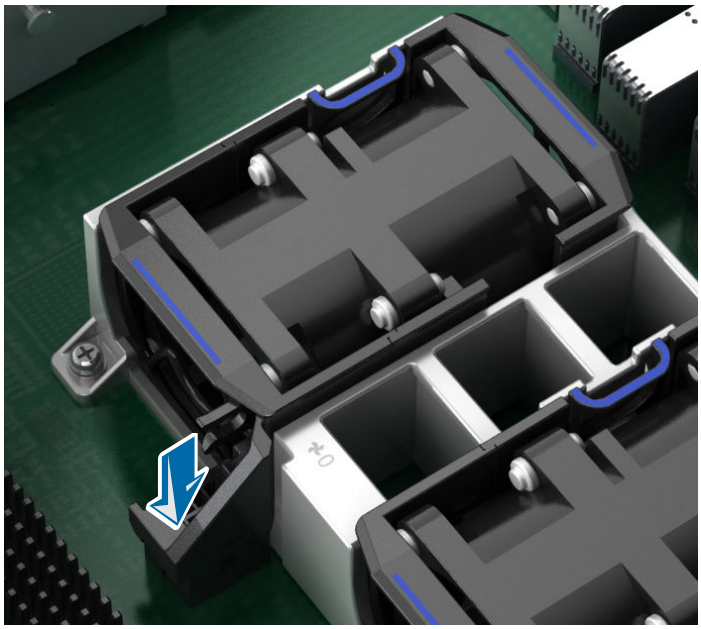
**Figure 8-113** Installing the fan module




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**Step 12** Press connectors of the fan module to ensure that the connectors are fastened, as shown in **Figure 8-114**.

**Figure 8-114** Fastening connectors of the fan module



**Step 13** Close the air baffle of the expansion module.

**Step 14** Open the ejector levers of the expansion module to be installed, insert the expansion module into the empty slot, and push the expansion module into the slot as much as possible, as shown in **Figure 8-115**.

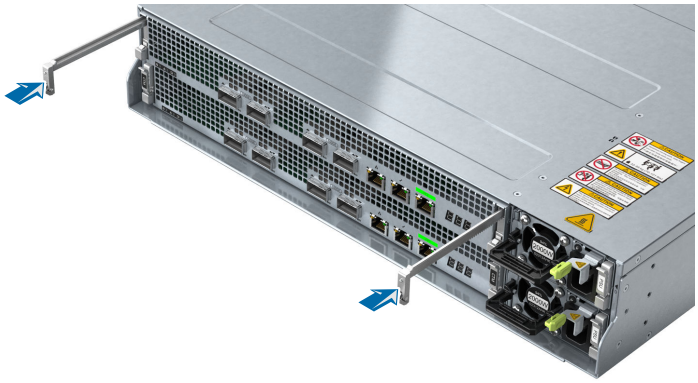
**Figure 8-115** Pushing the expansion module to be installed into the empty slot



**Step 15** Press and hold the ejector levers and push the expansion module inwards until the expansion module is fully inserted into the slot, as shown in **Figure 8-116**.

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**Figure 8-116** Installing the expansion module



NOTICE

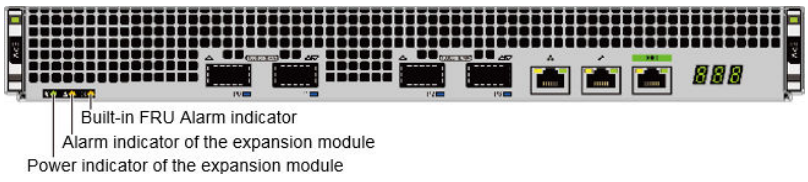
Hold the ejector levers on both sides and push the expansion module into the slot with even force to prevent poor contact between the expansion module and the backplane.

**Step 16** Connect cables to their corresponding locations.

**Step 17** Wait until the expansion module is powered on and check the status of the Power indicator, Alarm indicator, and built-in FRU Alarm indicator on the expansion module to determine whether the fan module has been successfully installed, as shown in **Figure 8-117**.

- If the Power indicator is on and the Alarm indicator is off, the expansion module has been installed successfully.
- If the Power indicator is off or the Alarm indicator is on, the newly installed expansion module is faulty, the expansion module slot is faulty, or the expansion module is not properly installed or is not powered on.
- If the built-in FRU Alarm indicator is on, the newly installed fan module is faulty, the fan module slot is faulty, or the fan module is not properly installed.
- If the built-in FRU Alarm indicator is off, the fan module has been installed successfully.

**Figure 8-117** Indicators of the expansion module




**Step 18** Confirm the replacement.

1. Perform a post-replacement inspection.

   After the parts replacement, return to the SmartKit page and click **Replaced**. Then complete the check after the replacement as prompted.

2. Check system status.

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On the **Parts Replacement** page, click **Inspection** to check the system status again. If any item fails inspection, rectify the fault based on the suggestions in the inspection report.

3. After the preceding procedure is complete, check services on the host for storage-related errors.

**----End**

### Follow-up Procedure

After the fan module is replaced, label it to facilitate subsequent operations.

# 8.9 Replacing a BBU

This chapter describes how to replace a BBU.

## 8.9.1 Replacing a BBU (for OceanStor 2200 V5)

This section describes how to replace a BBU. The procedure for replacing the BBU in a 12-slot controller enclosure is the same as that for replacing the BBU in a 25-slot controller enclosure. This section describes how to replace the BBU in a 12-slot controller enclosure.

**NOTICE**

When replacing a BBU, remove the controller where the BBU resides.

### Impact on the System

During the replacement of a BBU, removing the controller where the BBU resides decreases the system performance and reliability. Therefore, you are advised to replace the BBU during off-peak hours.

### Prerequisites

- If services are running on the controller to which the BBU to be replaced belongs, ensure that the average CPU usage of a controller does not exceed 40%.
- The cable connection positions of the controller to which the BBU to be replaced belongs are marked.
- The spare part is on hand.

  **NOTICE**

  Prepare the BBU to be replaced in advance, unpack the BBU, and place it in a convenient position for timely replacement.

- The BBU that you want to replace has been located.

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NOTE

You can locate a component in either of the following ways:

- Locating a component based on alarms in DeviceManager: On the **Alarms and Events** page of DeviceManager, view the help information and determine the ID of the component to be replaced. Then locate the component at your site based on its ID.
- Locating a component based on the status of its Alarm indicator: For details about the indicators on different components, see "Indicator Introduction" of each component in the *Product Description* specific to your product model and version.

## Precautions

- Remove and insert a BBU and the controller to which the BBU belongs with even force. Excessive force may damage the appearance of the BBU or cause faults.
- The interval between the removal and insertion of a controller must be within three minutes. Otherwise, the system heat dissipation is compromised.
- After you release the controller handle to unlock the controller, you can remove the controller and replace the BBU only after all indicators on the rear panel of the controller are off.

## Tools and Materials

- ESD table
- ESD wrist strap
- ESD bag
- Labels

## Procedure

**Step 1** Check status before replacement.

1. Check system status.

   Start SmartKit and choose **Home** > **Storage** > **Routine Maintenance** > **Health Check**. On the **Health Check** page, perform inspection as instructed. For details, see **8.1.2 Checking System Status**.

   NOTE

   If any items fail the inspection, rectify the faults by performing the recommended actions in the inspection reports. Ensure that all other parts except the parts to be replaced are working properly.

2. Evaluate the replacement.

   Start SmartKit and choose **Home** > **Storage** > **Parts Replacement** > **Parts Replacement Evaluation**. If any check item fails, rectify the fault as instructed.

3. Check the status of the parts to be replaced.

   Start SmartKit and choose **Home** > **Storage** > **Parts Replacement** > **Parts Replacement**. On the **Parts Replacement** page, click **FRU Replacement**. Then complete the check before the replacement as prompted. For details, see **8.1.3 Replacing an FRU**.

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**NOTICE**

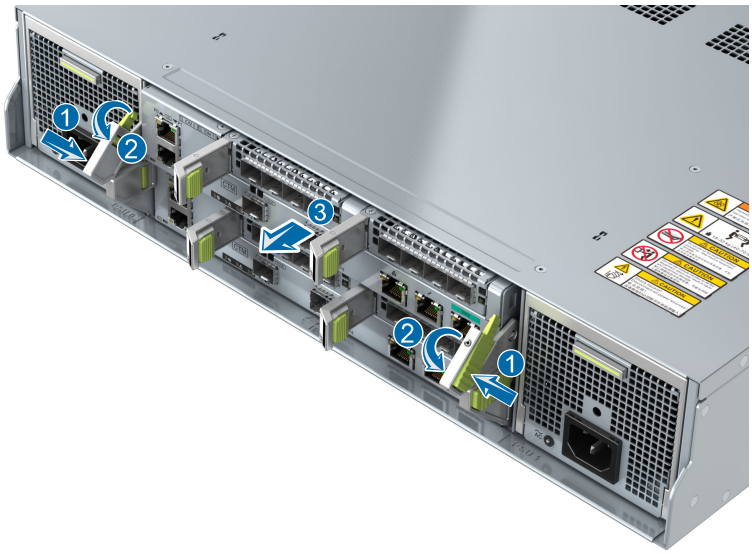
You can proceed to next steps only when all items pass the pre-replacement check and the replacement page is displayed. If any item fails, rectify the fault as prompted.

**Step 2** Wear an ESD wrist strap or ESD gloves.

**Step 3** Remove the cable from the interface module of the controller to which the BBU to be replaced belongs.

**Step 4** Press the latch on the controller to release the handle and unlock the controller in the direction of the arrow. After all indicators on the rear panel of the controller are off, pull out the controller, as shown in **Figure 8-118**.

**Figure 8-118** Removing the controller




**Step 5** Place the removed controller on the ESD table.

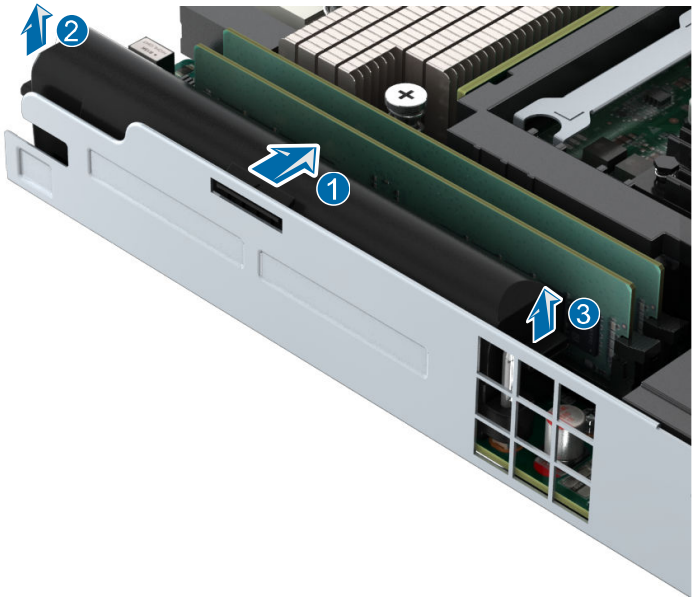
**Step 6** Press the latch to unlock the BBU, lift two sides of the BBU in sequence, and remove the BBU, as shown in **Figure 8-119**.

**NOTICE**

Do not touch the memory module when replacing a BBU.

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**Figure 8-119** Removing the BBU




**Step 7** Put the removed BBU module into an ESD bag.

**Step 8** Take the spare part out of its ESD bag.

**Step 9** Insert the spare part into the empty slot, as shown in **Figure 8-120**.

**Figure 8-120** Installing the BBU



**Step 10** Fully open the handle of the controller, insert the controller into the empty slot, and close the handle, as shown in **Figure 8-121**.

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**Figure 8-121** Installing the controller

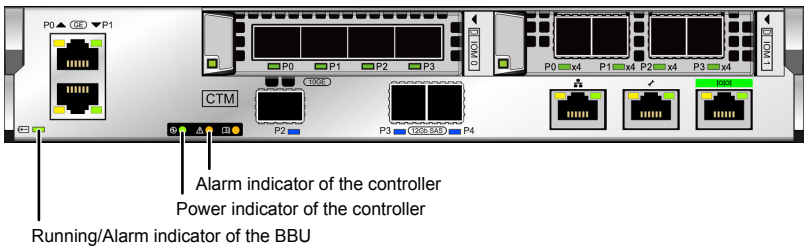


**Step 11** Connect cables to their corresponding locations.

**Step 12** Wait until the controller is powered on and check the status of the Power indicator, Alarm indicator, and built-in FRU Alarm indicator on the controller to determine whether the BBU has been successfully installed, as shown in **Figure 8-122**.

- If the Power indicator is on and the Alarm indicator is off, the controller has been installed successfully.
- If the Power indicator is off or the Alarm indicator is on, the newly installed controller is faulty, the controller slot is faulty, or the controller is not properly installed or is not powered on.
- If the BBU Running/Alarm indicator is steady yellow or off, the newly installed BBU is faulty, the BBU slot is faulty, or the BBU is incorrectly installed.

**Figure 8-122** Indicators of the controller




**Step 13** Confirm the replacement.

1. Perform a post-replacement inspection.

   After the parts replacement, return to the SmartKit page and click **Replaced**. Then complete the check after the replacement as prompted.

2. Check system status.

   On the **Parts Replacement** page, click **Inspection** to check the system status again. If any item fails inspection, rectify the fault based on the suggestions in the inspection report.

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3. After the preceding procedure is complete, check services on the host for storage-related errors.

**----End**

### Follow-up Procedure

After the BBU is replaced, label it to facilitate subsequent operations.

## 8.9.2 Replacing a BBU (for OceanStor 18500 V5, 18500F V5, 18800 V5, or 18800F V5)

This section describes how to replace a BBU.

### Prerequisites

- The spare part is on hand.
- Configuration data has been backed up.
- The BBU that you want to replace has been located.

  NOTE

  You can locate a component in either of the following ways:
  - Locating a component based on alarms in DeviceManager: On the **Alarms and Events** page of DeviceManager, view the help information and determine the ID of the component to be replaced. Then locate the component at your site based on its ID.
  - Locating a component based on the status of its Running/Alarm indicator: For details about the indicators on different components, see "Indicator Introduction" of each component in the *Product Description* specific to your product model and version.
- When a BBU is being replaced, the other BBU is working properly.

### Precautions

- Remove and insert a BBU with even force. Excessive force may damage the appearance of the BBU or cause faults.
- Remove only one BBU at a time.
- A BBU must be replaced within three minutes. Otherwise, the system heat dissipation is compromised.

### Tools and Materials

- ESD wrist strap
- ESD bag
- Labels

### Procedure

**Step 1** Check status before replacement.

1. Check system status.

   Start SmartKit and choose **Home** > **Storage** > **Routine Maintenance** > **Health Check**. On the **Health Check** page, perform inspection as instructed. For details, see **8.1.2 Checking System Status**.

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NOTE

If any items fail the inspection, rectify the faults by performing the recommended actions in the inspection reports. Ensure that all other parts except the parts to be replaced are working properly.

2. Check the status of the parts to be replaced.

   Start SmartKit and choose **Home** > **Storage** > **Parts Replacement** > **Parts Replacement**. On the **Parts Replacement** page, click **FRU Replacement**. Then complete the check before the replacement as prompted. For details, see **8.1.3 Replacing an FRU**.

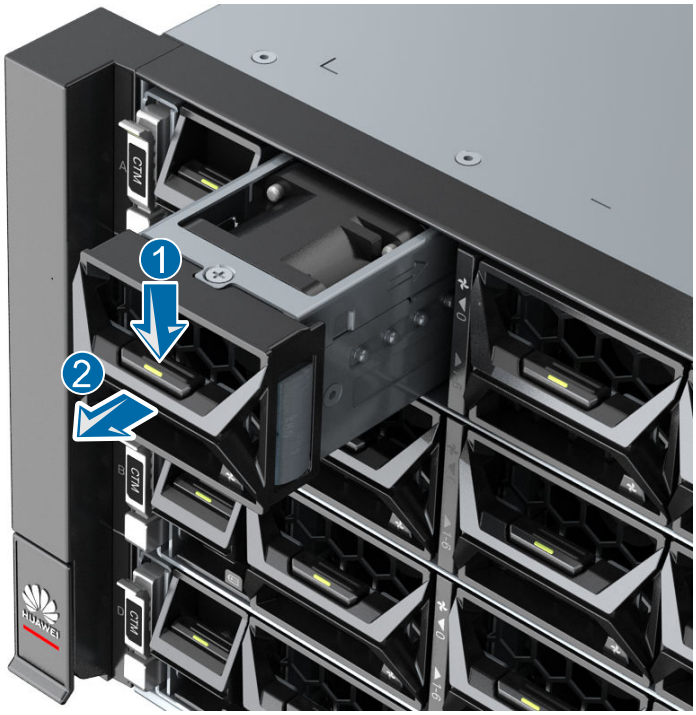
NOTICE

You can proceed to next steps only when all items pass the pre-replacement check and the replacement page is displayed. If any item fails, rectify the fault as prompted.

**Step 2** Wear an ESD wrist strap.

**Step 3** Press the latch on the fan module and pull the handle of the fan module outwards to pull out the fan module, as shown in **Figure 8-123**.

**Figure 8-123** Pulling out the fan module

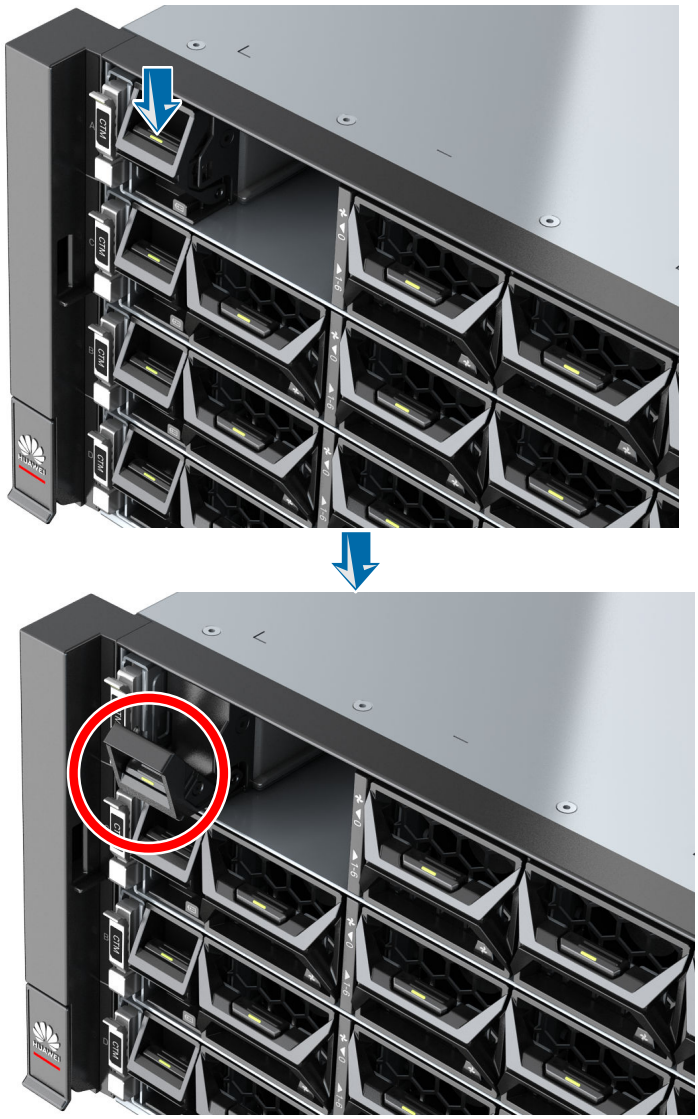



**Step 4** Put the removed fan module into an ESD bag.

**Step 5** Press the latch on the BBU to release the handle of the BBU, as shown in **Figure 8-124**.

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**Figure 8-124** Releasing the handle of the BBU



**Step 6** Hold the handle of the BBU to pull it out, as shown in **Figure 8-125**.

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**Figure 8-125** Pulling out the BBU

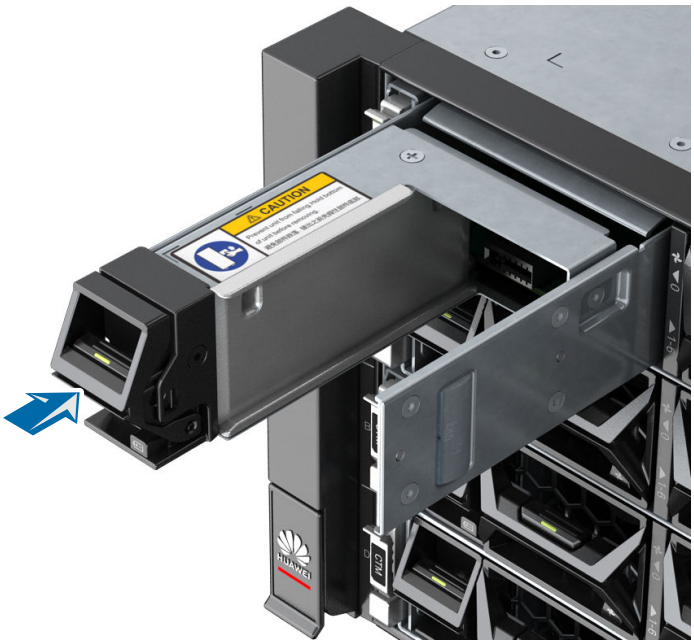


**Step 7** Put the removed BBU into an ESD bag.

**Step 8** Take the spare part out of its ESD bag.

**Step 9** Insert the spare part into the empty slot, as shown in **Figure 8-126**.

**Figure 8-126** Installing the BBU



**Step 10** Take the fan module out of its ESD bag and insert the fan module into the empty slot, as shown in **Figure 8-127**.

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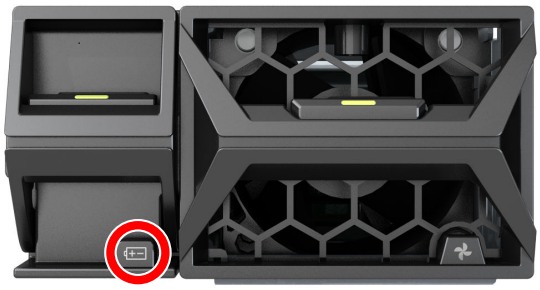
**Figure 8-127** Inserting the fan module into the empty slot



**Step 11** Wait about two minutes and check the status of the Running/Alarm indicator on the BBU to determine whether the BBU has been successfully installed. **Figure 8-128** shows the location of the Running/Alarm indicator.

- If the indicator is steady green or blinking green, the BBU has been successfully installed.
- If the indicator is steady yellow or off, the newly installed BBU is faulty, the BBU slot is faulty, or the BBU is incorrectly installed.

**Figure 8-128** Running/Alarm indicator on a BBU



**Step 12** Confirm the replacement.

1. Perform a post-replacement inspection.

   After the parts replacement, return to the SmartKit page and click **Replaced**. Then complete the check after the replacement as prompted.

2. Check system status.

   On the **Parts Replacement** page, click **Inspection** to check the system status again. If any item fails inspection, rectify the fault based on the suggestions in the inspection report.

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3. After the preceding procedure is complete, check services on the host for storage-related errors.

**----End**

## Follow-up Procedure

After the BBU is replaced, label it to facilitate subsequent operations.

# 8.10 Replacing a Management Module

This section describes how to replace a management module.

## Prerequisites

- The spare part is on hand.
- The management module that you want to replace has been located.

  NOTE

  You can locate a component in either of the following ways:

  - Locating a component based on alarms in DeviceManager: On the **Alarms and Events** page of DeviceManager, view the help information and determine the ID of the component to be replaced. Then locate the component at your site based on its ID.
  - Locating a component based on the status of its Running/Alarm indicator: For details about the indicators on different components, see "Indicator Introduction" of each component in the *Product Description* specific to your product model and version.
- The cable connection positions of the management module that you want to replace have been labeled on the cables.

## Precautions

- You are advised to replace one management module at a time.
- Remove and insert a management module with even force. Excessive force may damage the appearance of the management module or cause faults.
- A management module must be replaced within five minutes. Otherwise, the system heat dissipation is compromised.
- After removing a management module, wait at least 15 seconds before inserting one.

## Tools and Materials

- ESD wrist strap
- ESD bag
- Labels

## Procedure

**Step 1** Perform a pre-replacement check.

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1. Check system status.

   Start SmartKit and choose **Home** > **Storage** > **Routine Maintenance** > **Health Check**. On the **Health Check** page, perform inspection as instructed. For details, see **8.1.2 Checking System Status**.

   NOTE

   If any items fail the inspection, rectify the faults by performing the recommended actions in the inspection reports. Ensure that all other parts except the parts to be replaced are working properly.

2. Check the status of the parts to be replaced.

   Start SmartKit and choose **Home** > **Storage** > **Parts Replacement** > **Parts Replacement**. On the **Parts Replacement** page, click **FRU Replacement**. Then complete the check before the replacement as prompted. For details, see **8.1.3 Replacing an FRU**.

NOTICE

You can proceed to next steps only when all items pass the pre-replacement check and the replacement page is displayed. If any item fails, rectify the fault as prompted.

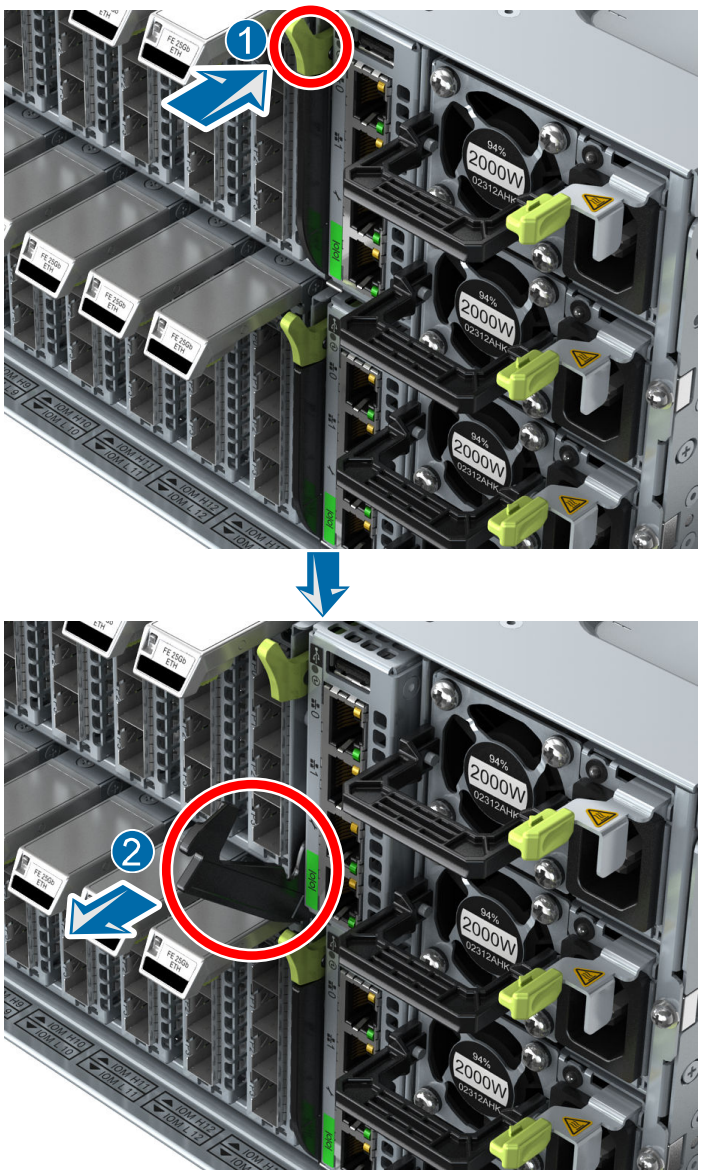
**Step 2** Wear an ESD wrist strap.

**Step 3** Remove the cables from the management module that you want to replace.

**Step 4** Press the latch to release the handle of the management module and pull out the management module, as shown in **Figure 8-129**.

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**Figure 8-129** Removing the management module



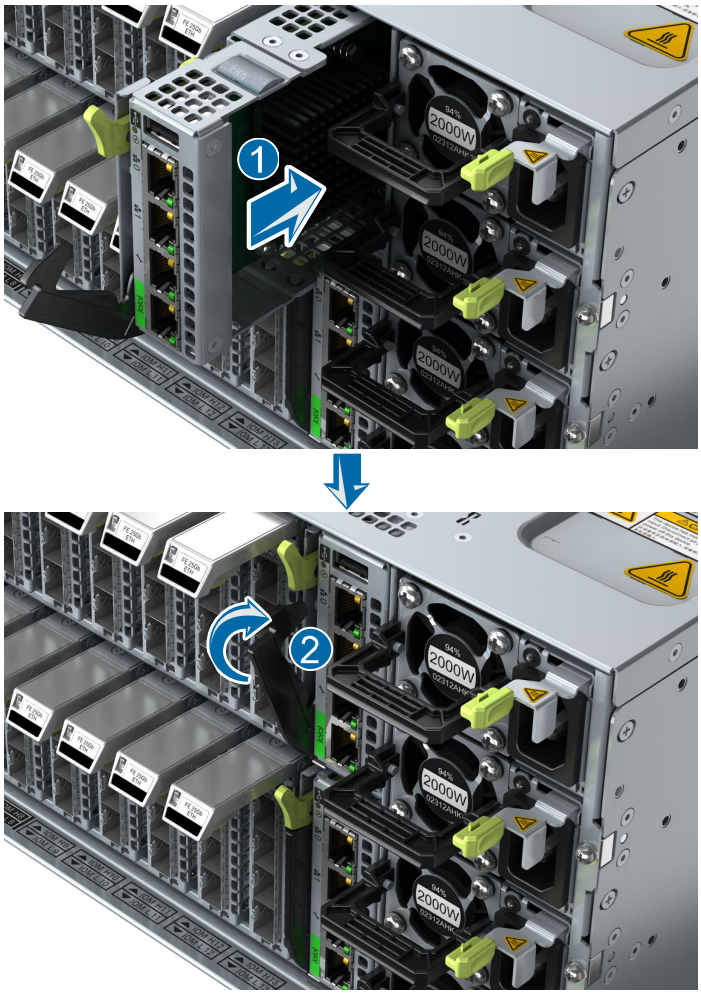

**Step 5** Put the removed management module into an ESD bag.

**Step 6** Take the spare part out of its ESD bag.

**Step 7** Insert the spare part into the empty slot until it clicks into place, as shown in **Figure 8-130**.

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**Figure 8-130** Installing the management module



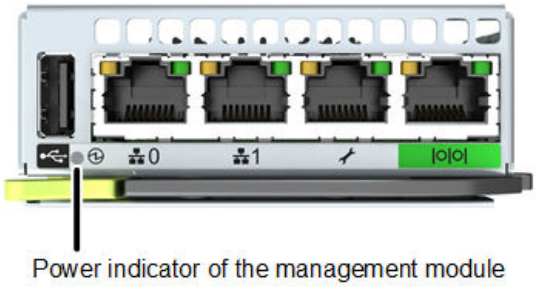

**Step 8** Connect the cables as labeled.

**Step 9** Wait about two minutes and check the status of the Power indicator on the management module to determine whether the management module has been successfully installed. **Figure 8-131** shows the location of the Power indicator.

- If the indicator is steady green, the management module has been successfully installed.
- If the indicator is steady yellow or off, the newly installed management module is faulty, the management module slot is faulty, or the management module is incorrectly installed.

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**Figure 8-131** Power indicator on a management module




**Step 10** Confirm the replacement.

1. Perform a post-replacement inspection.

   After the parts replacement, return to the SmartKit page and click **Replaced**. Then complete the check after the replacement as prompted.

2. Check system status.

   On the **Parts Replacement** page, click **Inspection** to check the system status again. If any item fails inspection, rectify the fault based on the suggestions in the inspection report.

3. After the preceding procedure is complete, check services on the host for storage-related errors.

**----End**

## Follow-up Procedure

After the management module is replaced, label it to facilitate subsequent operations.

# 8.11 Replacing the Parts of a Quorum Server

This chapter describes how to replace the parts in a quorum server.

Table 8-2 lists the parts that can be replaced in a Huawei quorum server.

**Table 8-2** Parts that can be replaced in a Huawei quorum server

| Part | Active-Active Service Affected or Not |
| --- | --- |
| Entire quorum server | If you power off the quorum server, the arbitration mode of the active-active service changes to the static priority mode. The reliability of the active-active service decreases. |
| Disk module | |
| Power module | |

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NOTE

2280 balanced model (2280 for short) of the TaiShan 200 server and 1288H V5 can be used as quorum servers. If you want to replace a component such as a VGA board, indicator board, or disk backplane in a quorum server, see "Removal and Installation" in the *Maintenance and Service Guide* specific to your product.

# 8.11.1 Replacing an AC Power Module

This section describes how to replace an AC power module.

## 8.11.1.1 Replacing an AC Power Module (Applicable to 1288H V5)

This section describes how to replace an AC power module.

### Prerequisites

- When two power modules are configured, remove one power module without powering off the quorum server if the other power module is operating properly and its power rating is greater than or equal to the rated power of the quorum server.
- You have determined the position on the quorum server for removing a power module.
- You have obtained the cabinet number and chassis number of the quorum server.
- You have located the quorum server based on the preceding information, and labeled its panel to prevent misoperations.
- A spare part is on hand.

### Tools and Materials

- ESD gloves or ESD wrist strap
- Packaging materials, for example, an ESD bag

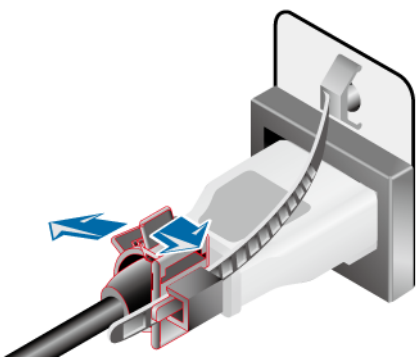
### Procedure

**Step 1** (Optional) If only one power module is configured, power off the quorum server.

**Step 2** Remove the AC power module.

1. Open the cable tie for the power cable. See **Figure 8-132**.

**Figure 8-132** Opening a cable tie



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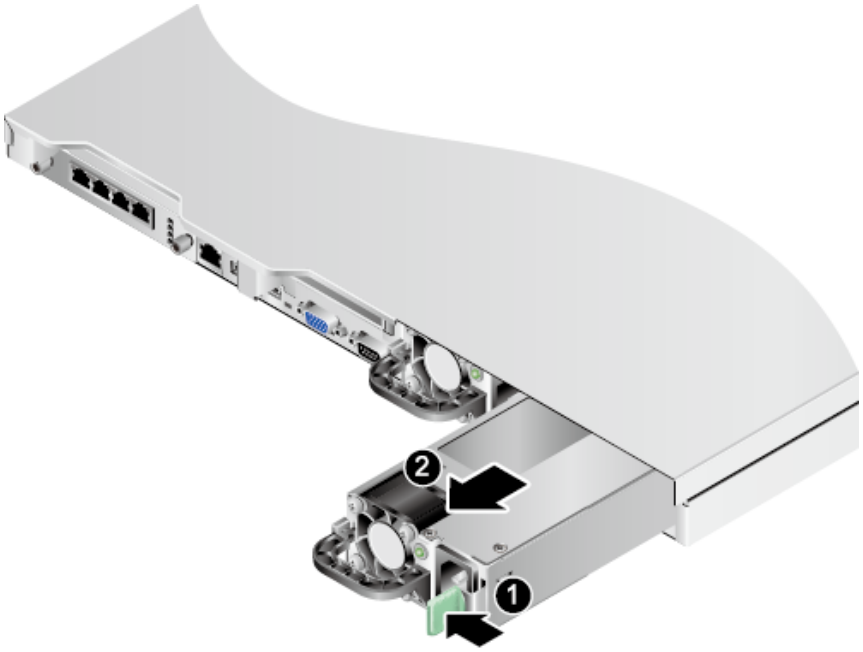
2. Remove the power cable from the power module to be replaced. See **Figure 8-133**.

**Figure 8-133** Removing a power cable



3. Press the spring on the power module in the arrow direction, and pull the power module out of the slot while holding the handle. See steps (1) and (2) in **Figure 8-134**.

**Figure 8-134** Removing a power module




4. Place the removed power module in an ESD bag.

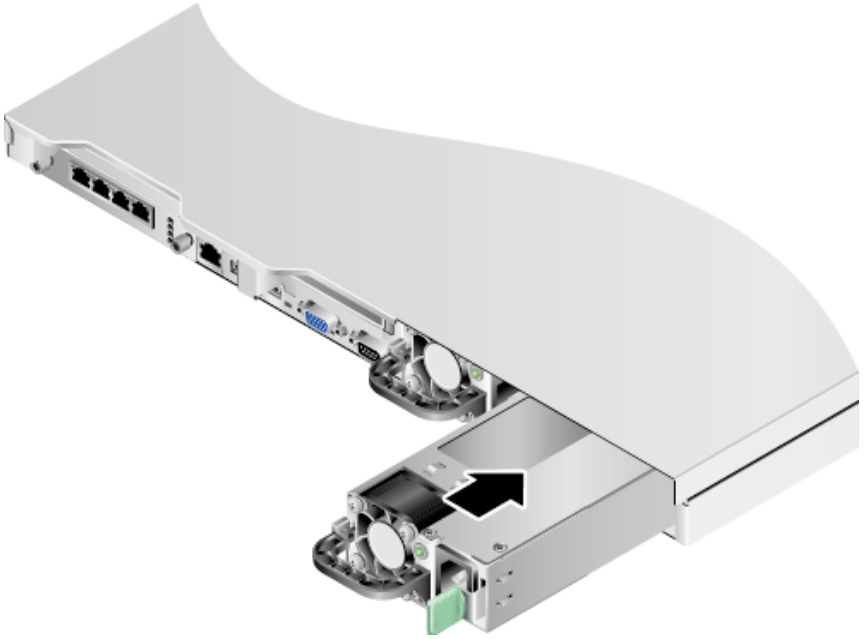
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**Step 3** Install the AC power module.

1. Take the spare part out of its ESD bag.
2. Push the spare part along the guide rails into a slot until you hear a click.

   Spare part spring snaps into the latch so that the spare part does not move. See **Figure 8-135**.

   **Figure 8-135** Installing an AC power module



3. Connect the power cable to the spare part. See **Figure 8-136**.

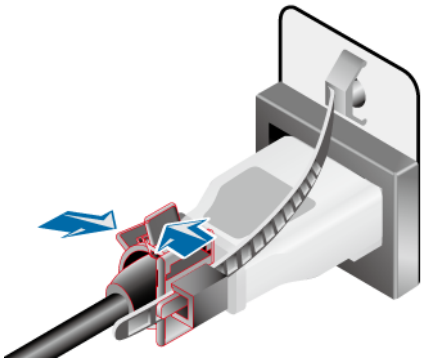
   **Figure 8-136** Connecting a power cable to an AC power module



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4. Secure the power cable using a cable tie. See **Figure 8-137**.

**Figure 8-137** Securing a power cable



**Step 4** (Optional) If only one power module is configured, power on the quorum server.

**----End**

## 8.11.1.2 Replacing an AC Power Module (Applicable to 2280)

This section describes how to replace an AC power module.

### Prerequisites

- When two power modules are configured, remove one power module without powering off the quorum server if the other power module is operating properly and its power rating is greater than or equal to the rated power of the quorum server.
- You have determined the position on the quorum server for removing a power module.
- You have obtained the cabinet number and chassis number of the quorum server.
- You have located the quorum server based on the preceding information, and labeled its panel to prevent misoperations.
- A spare part is on hand.

### Tools and Materials

- ESD gloves or ESD wrist strap
- Packaging materials, for example, an ESD bag

### Procedure

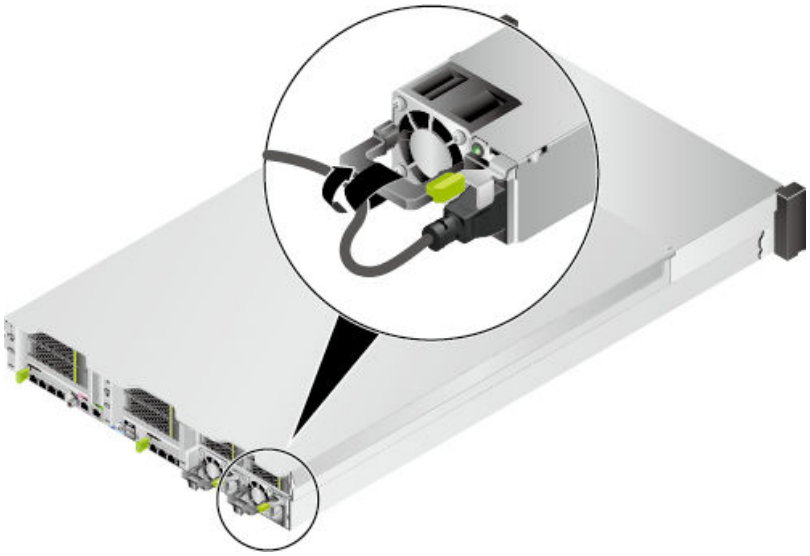
**Step 1** (Optional) If only one power module is configured, power off the quorum server.

**Step 2** Remove the AC power module.

1. Undo the velcro strap that secures the power cable. See **Figure 8-138**.

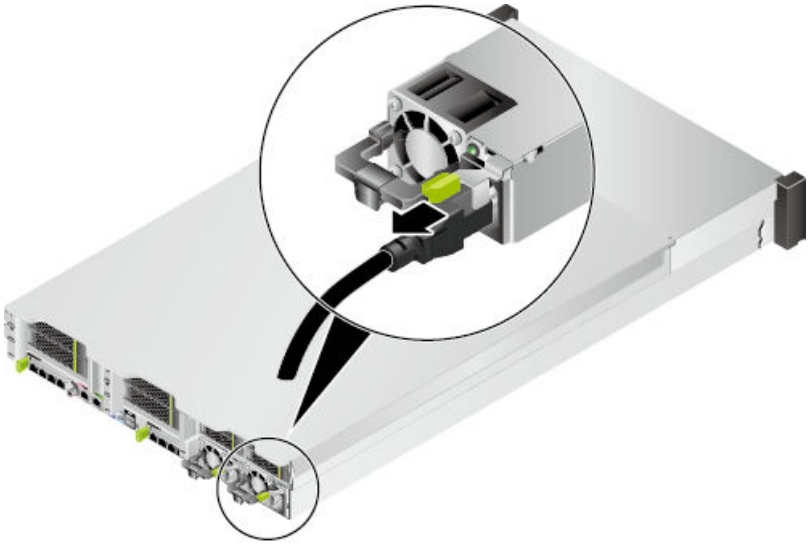
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**Figure 8-138** Undoing the velcro strap



2. Remove the power cable from the power module to be replaced. See **Figure 8-139**.

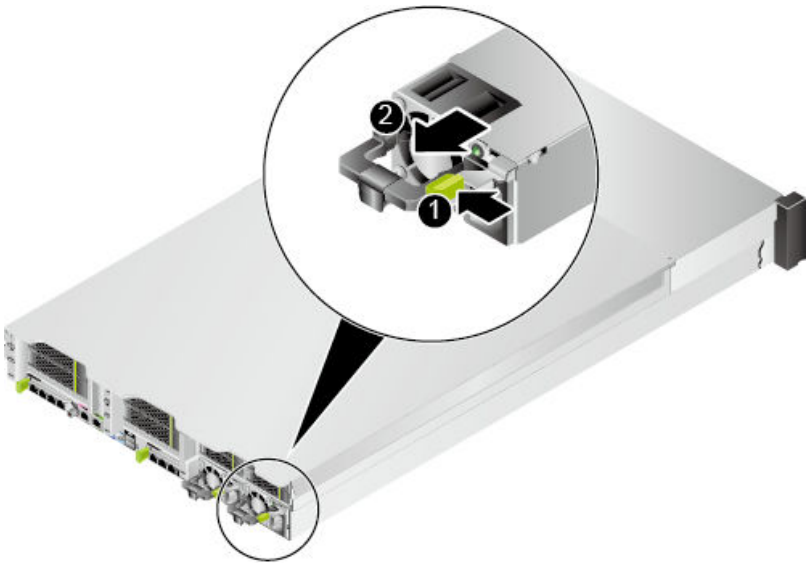
**Figure 8-139** Removing a power cable



3. Press the spring on the power module in the arrow direction, and pull the power module out of the slot while holding the handle. See steps (1) and (2) in **Figure 8-140**.

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**Figure 8-140** Removing a power module



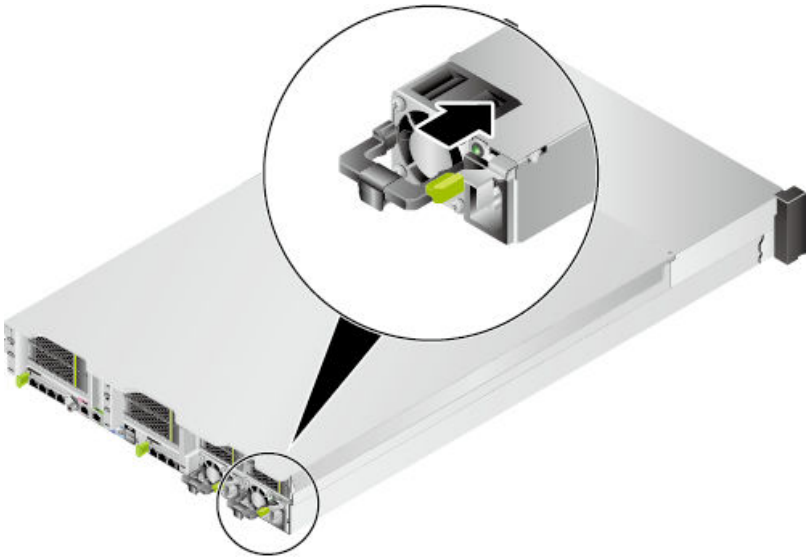

4. Place the removed power module in an ESD bag.

**Step 3** Install the AC power module.

1. Take the spare part out of its ESD bag.
2. Push the spare part along the guide rails into a slot until you hear a click.

   Spare part spring snaps into the latch so that the spare part does not move. See **Figure 8-141**.

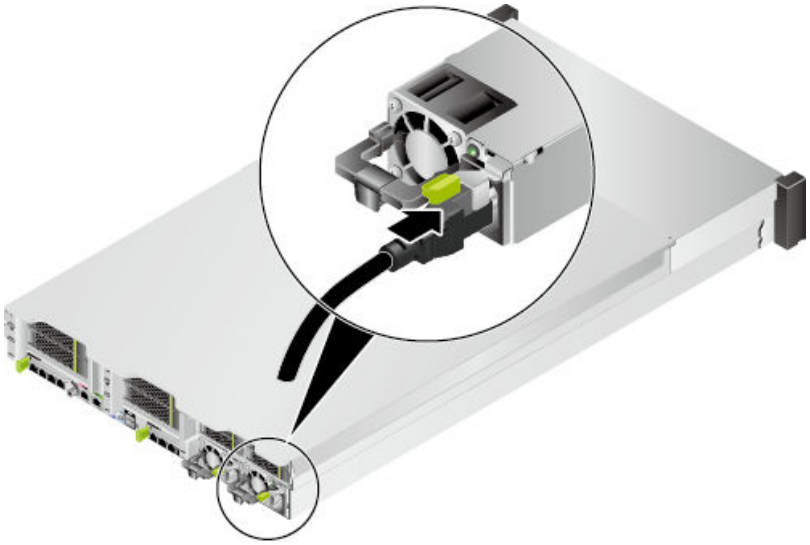
**Figure 8-141** Installing an AC power module



3. Connect one end of the power cable to the cable port on the AC power module of the server. See **Figure 8-142**.

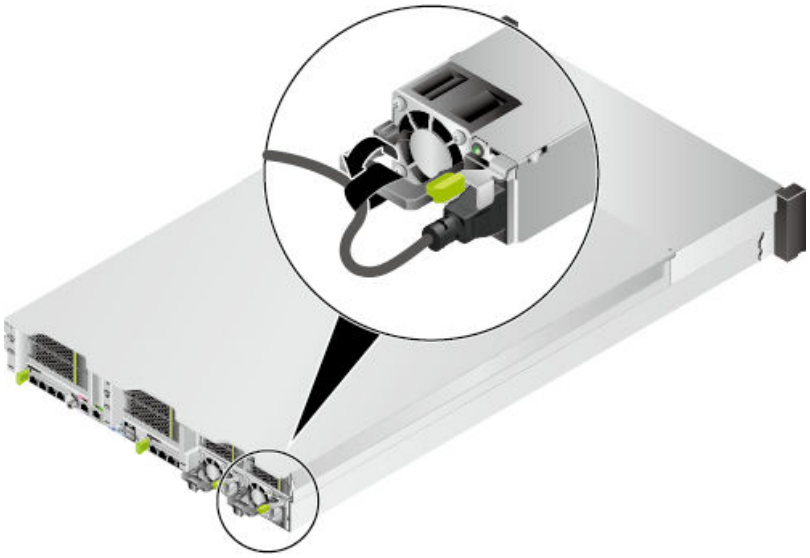
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**Figure 8-142** Connecting a power cable to an AC power module



4. Secure the power cable using a velcro strap. See **Figure 8-143**.

**Figure 8-143** Securing a power cable



**Step 4** (Optional) If only one power module is configured, power on the quorum server.

**----End**

## 8.11.2 Replacing a Disk Module

This section describes how to replace a disk module.

NOTE

The procedures for replacing disk modules of 1288H V5 and 2280 are the same. This section uses 2280 as an example.

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## Impact on the System

During the replacement of a disk module, if system reconstruction is complete, host services are not affected; if system reconstruction is not complete, the quorum server software may fail, and the arbitration mode of the active-active service will switch to the static priority arbitration mode.

## Prerequisites

- You have determined the position on the quorum server for removing a disk.
- You have obtained the cabinet number and chassis number of the quorum server.
- You have located the quorum server based on the preceding information, and labeled its panel to prevent misoperations.
- A spare part is on hand.

## Tools and Materials

- ESD gloves or ESD wrist strap
- Packaging materials, for example, an ESD bag

## Procedure

**Step 1** Remove the disk.

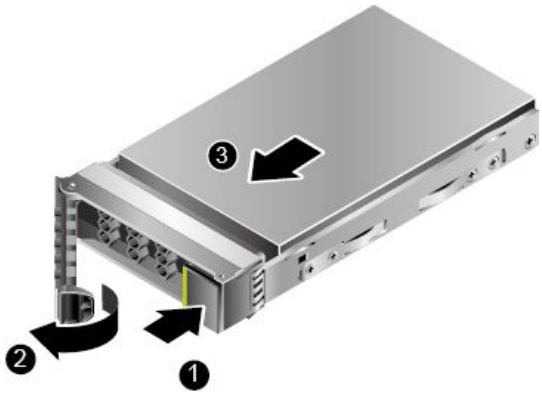
NOTE

- You do not need to power off the server when removing a disk module.
- Determine the location of the disk module to be replaced before the operation.

1. Push the spring that fastens the disk ejector lever. See step (1) in **Figure 8-144**.

   The ejector lever automatically ejects.

   **Figure 8-144** Removing a disk




2. Hold the ejector lever, and pull out the disk for about 3 cm (1.18 in.). See step (2) in **Figure 8-144**. Wait for at least 30 seconds until the disk stops working. Then remove the disk from the quorum server. See step (3) in **Figure 8-144**.

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NOTE

- Wait for at least 30 seconds until the disk module stops working and remove it.
- If a disk module is frequently removed and inserted in an interval shorter than 30 seconds, there are risks that the disk module cannot be identified.

3. Place the removed disk in an ESD bag.

**Step 2** Install the disk.

1. Take the spare part out of its ESD bag.
2. Fully raise the ejector lever and push the spare part into the chassis along the guide rails until it does not move. See step (1) in **Figure 8-145**.

**Figure 8-145** Installing a disk




3. Ensure that the ejector lever is fastened to the chassis beam, and lower the ejector lever to completely insert the spare part into the chassis. See step (2) in **Figure 8-145**.

**Step 3** Wait until the disk indicator turns normal, indicating that the disk is powered on.

**----End**

## Follow-up Procedure

Log in to the quorum server.

1. Run the **qsadmin** command to check whether the configuration page of the quorum server software is displayed.

```
Q2qumrom:~ # qsadmin
start main!
Waiting for connecting to server...
admin:/>
```

- If the preceding command output is displayed, go to **2**.
- If the preceding command output is not displayed, the arbitration configuration information has been lost. In this case, reinstall and configure the quorum server software.

NOTE

For details, see the *HyperMetro Feature Guide for Block* or *HyperMetro Feature Guide for File* specific to your product model.

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2. Run the **show server_ip** command to check whether the connection between the quorum server and storage devices is in **Established** state.

```
admin:/>show server_ip
Index    Server IP          Server Port
-----    ---------------    ---------------
1        192.168.6.31       30002
2        192.168.7.31       30002
Index    Local IP           Local Port        Remote IP          Remote Port        State
-----    ---------------    ---------------   ---------------    ---------------    ---------
0        192.168.6.31       30002             192.168.6.17       44510              Established
1        192.168.6.31       30002             192.168.6.18       36836              Established
2        192.168.7.31       30002             192.168.7.16       57416              Established
3        192.168.7.31       30002             192.168.7.28       49752              Established
```

   - If yes, the quorum server can work properly.
   - If no, check whether the IP address of the quorum server is correct.

# 8.11.3 Replacing a Quorum Server

This section describes how to replace a quorum server.

**NOTE**

The procedures for replacing 1288H V5 and 2280 are the same. This section uses 2280 as an example.

## Impact on the System

The services and programs running on the quorum server will be interrupted when it is removed. The arbitration mode of the active-active service automatically switches to the static priority arbitration mode.

## Prerequisites

- A spare part is on hand.
- You have determined the position of the quorum server for replacement.
- All running services and programs on the quorum server are stopped, and the quorum server is powered off.
- Data is backed up for the quorum server before it is removed.
- The cable connection positions on the quorum server to be replaced are clearly marked.

## Precautions

- Remove or insert a quorum server with even force. Excessive force may damage the appearance or connectors of the quorum server.
- The quorum server is heavy so that at least two persons are required to move it.

## Tools and Materials

- ESD wrist strap or ESD gloves
- Screwdriver

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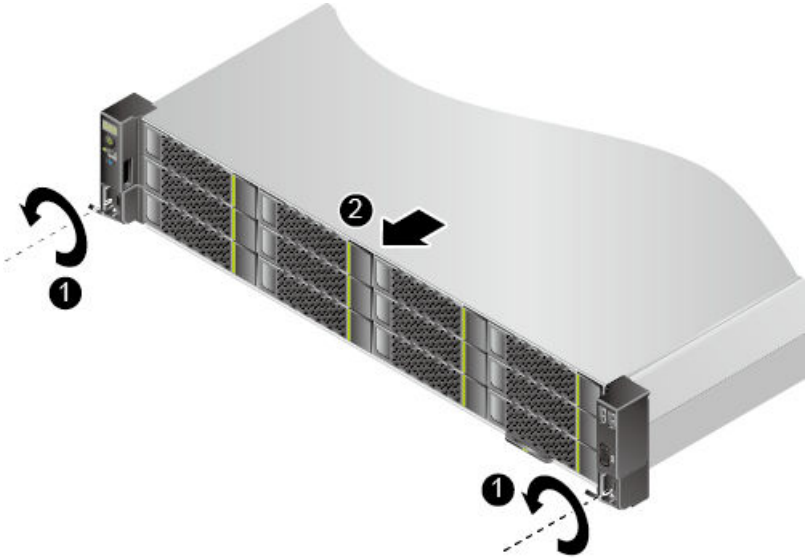
## Procedure

**Step 1** Power off the quorum server.

**Step 2** Remove the quorum server.

1. Disconnect all power cables and signal cables from the quorum server.
2. Loosen the captive screws on the quorum server panel using a screwdriver. See step (1) in **Figure 8-146**.

**Figure 8-146** Removing the quorum server



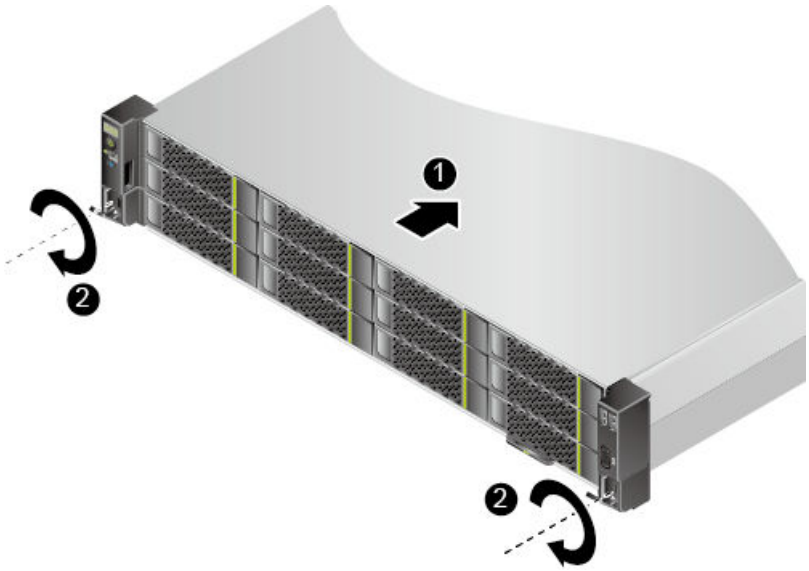

3. Pull out the quorum server along the guide rails away from the cabinet. See step (2) in **Figure 8-146**.
4. Place the removed quorum server on the ESD platform for maintenance.

**Step 3** Reinstall the quorum server.

1. At least two persons lift the quorum server on two sides and move it to the cabinet.
2. Place the quorum server on the guide rails and push it into the cabinet, as shown in **Figure 8-147**.

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**Figure 8-147** Installing the quorum server




3. When the two mounting ears on the quorum server contact the mounting bars on the cabinet, tighten the captive screws on the mounting ears to secure the quorum server.

**Step 4** Connect the cables and power on the quorum server.

**Step 5** After the quorum server is powered on, reinstall and configure the quorum server software.

NOTE

For details, see the *HyperMetro Feature Guide for Block* or *HyperMetro Feature Guide for File* specific to your product model.

**----End**

## Follow-up Procedure

Log in to the quorum server, run the **qsadmin** command to go to the configuration page of the quorum server software, and run the **show server_ip** command to check whether the connection between the quorum server and storage devices is in **Established** state.

```
Q2qumrom:~ # qsadmin
start main!
Waiting for connecting to server...
admin:/>show server_ip
Index    Server IP          Server Port
-----    ---------------    ---------------
1        192.168.6.31       30002
2        192.168.7.31       30002
Index    Local IP           Local Port       Remote IP          Remote Port        State
-----    ---------------    ---------------  ---------------    ---------------    ---------
0        192.168.6.31       30002            192.168.6.17       44510              Established
1        192.168.6.31       30002            192.168.6.18       36836              Established
2        192.168.7.31       30002            192.168.7.16       57416              Established
3        192.168.7.31       30002            192.168.7.28       49752              Established
```

- If yes, the quorum server is added successfully.

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- If no, the quorum server fails to be added. Check whether the IP address of the quorum server is correct.

# 8.12 Replacing a Data Switch

This section describes how to replace a data switch.

## Impact on the System

During the replacement of a data switch, the data switch is powered off. This causes all I/O forwarding workload to be transferred to another data switch, degrading the system reliability.

## Prerequisites

- A spare part is on hand.

  NOTE

  Ensure that the model of the new switch is the same as that of the replaced switch.

  - For a 2 U controller enclosure, if switch networking is used, only Huawei CE6865-48S8CQ-EI switches are supported. Ensure that the switch software version is V200R005C10SPC800 (with the V200R005C10SPH017 patch installed) or later. For details about how to query and upgrade the switch version, see the product documentation of CE6865-48S8CQ-EI switches. To obtain the documentation, log in to Huawei's technical support website (**https://support.huawei.com/enterprise/**), enter the product model (for example, CE6865) in the search box, and click the suggested path beneath the search box. On the documentation page of the product model, search for, browse through, and download the desired documentation.
  - For a 4 U controller enclosure, if switch networking is used, only Huawei CE8850-32CQ-EI or CE8850-SAN switches are supported.
    - For CE8850-32CQ-EI switches, ensure that the switch software version is V200R005C10SPC800 (with the V200R005C10SPH017 patch installed) or later. For details about how to query and upgrade the switch version, see the product documentation of CE8850-32CQ-EI switches. To obtain the documentation, log in to Huawei's technical support website (**https://support.huawei.com/enterprise/**), enter the product model (for example, CE8850) in the search box, and click the suggested path beneath the search box. On the documentation page of the product model, search for, browse through, and download the desired documentation.
    - For CE8850-SAN switches, ensure that the switch software version is V300R020C10SPC200 or later. For details about how to query and upgrade the switch version, see the product documentation of CE8850-SAN switches. To obtain the documentation, log in to Huawei's technical support website (**https://support.huawei.com/enterprise/**), enter the product model (for example, CE8850) in the search box, and click the suggested path beneath the search box. On the documentation page of the product model, search for, browse through, and download the desired documentation.
- The data switch to be replaced has been located.
- The cable connection position on the data switch to be replaced has been clearly marked.
- The data switch to be replaced has been powered off.

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## Precautions

Remove or insert a data switch with even force. Excessive force may damage the appearance or connectors of the data switch.

## Tools and Materials

- Phillips screwdriver (M3 to M6)
- ESD wrist strap
- ESD bag
- ESD table
- Labels

## Procedure

**Step 1** Perform a pre-replacement check.

1. Check system status.

   Start SmartKit and choose **Home** > **Storage** > **Routine Maintenance** > **Health Check**. On the **Health Check** page, perform inspection as instructed. For details, see **8.1.2 Checking System Status**.

   NOTE

   If any items fail the inspection, rectify the faults by performing the recommended actions in the inspection reports. Ensure that all other parts except the parts to be replaced are working properly.

2. Check the status of the parts to be replaced.

   Start SmartKit and choose **Home** > **Storage** > **Parts Replacement** > **Parts Replacement**. On the **Parts Replacement** page, click **FRU Replacement**. Then complete the check before the replacement as prompted. For details, see **8.1.3 Replacing an FRU**.

   NOTICE

   You can proceed to next steps only when all items pass the pre-replacement check and the replacement page is displayed. If any item fails, rectify the fault as prompted.

**Step 2** Wear an ESD wrist strap.

**Step 3** Remove cables connected to the data switch that you want to replace.

NOTE

For the ground cable of the data switch, you only need to remove the end that connects to the cabinet in this step. (The other end of the cable is secured to a side of the data switch and will be removed after the data switch is removed from the cabinet.)

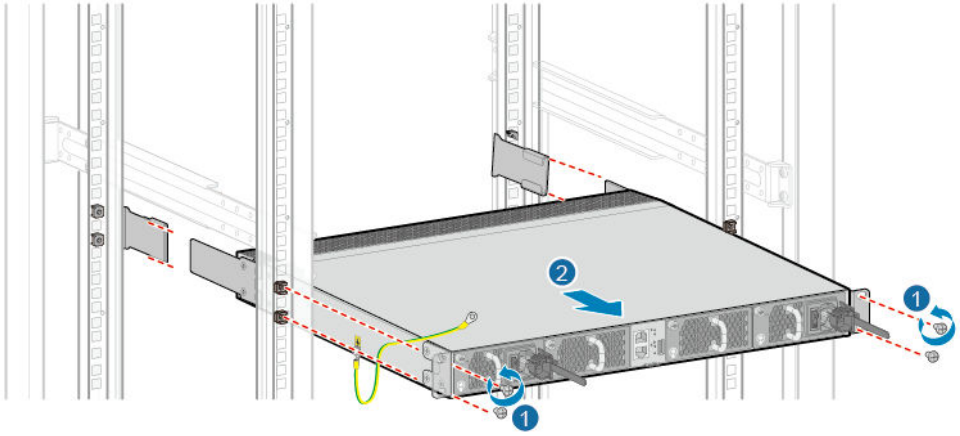
**Step 4** Remove the data switch from its cabinet, as shown in **Figure 8-148**.

1. Use the Phillips screwdriver to remove the M6 screws from the data switch's mounting ears.

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2. Pull the data switch out of the cabinet along guide rails and place it on the ESD table.

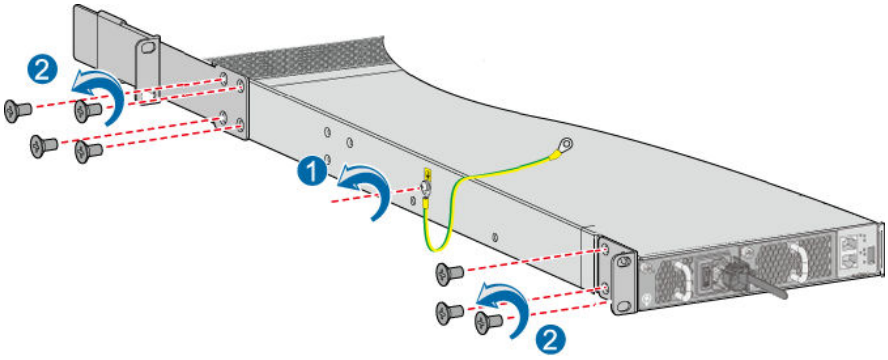
**Figure 8-148** Removing a data switch



**Step 5** Remove the ground cable and mounting ears from the data switch, as shown in **Figure 8-149**.

1. Use the Phillips screwdriver to remove the ground cable from the data switch.
2. Use the Phillips screwdriver to remove the mounting ears from both sides of the data switch.

**Figure 8-149** Removing the ground cable and mounting ears



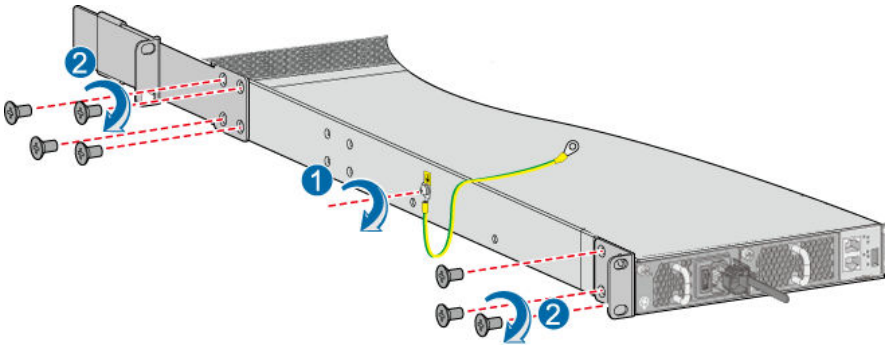
**Step 6** Take the spare part out of its ESD bag and place it on the ESD table.

**Step 7** Install the ground cable and mounting ears on the spare part, as shown in **Figure 8-150**.

1. Use the Phillips screwdriver to install the ground cable on a side of the data switch.
2. Use the Phillips screwdriver to install the mounting ears on both sides of the data switch.

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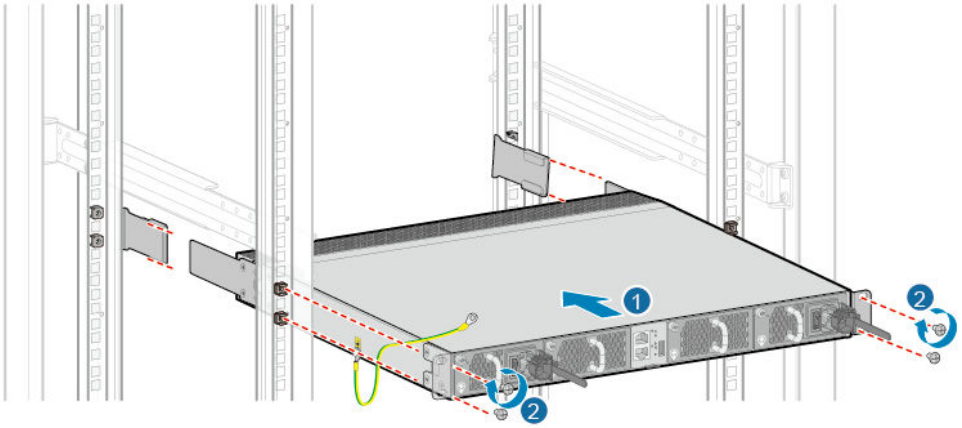
**Figure 8-150** Installing the ground cable and mounting ears



**Step 8** Place the data switch to be installed in the cabinet, as shown in **Figure 8-151**.

1. Slide the data switch into the cabinet along the guide rails.
2. Use M6 screws to secure the data switch in the cabinet.
3. Verify that the data switch is horizontally installed and firmly secured.

**Figure 8-151** Installing a data switch



**Step 9** Connect cables to the data switch and power it on.

**Step 10** After the Power indicator is steady on, check whether each component is working properly.

- If working properly, it indicates that the data switch has been successfully installed.
- If not working properly, it indicates that cable connections are incorrect, components are incorrectly installed, or the data switch is faulty.

NOTE

After the check is complete, configure the IP address of the data switch and SSH login user information. For details, see "Configuring New IP Addresses for the Management Network Ports on the Switches and SSH Login User Information" in the installation guide of the corresponding product model.

**Step 11** Confirm the replacement.

1. Perform a post-replacement inspection.

   After the parts replacement, return to the SmartKit page and click **Replaced**. Then configure the data switch and complete the check after the replacement as prompted.

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2. Check system status.

   On the **Parts Replacement** page, click **Inspection** to check the system status again. If any item fails inspection, rectify the fault based on the suggestions in the inspection report.

3. After the preceding procedure is complete, check services on the host for storage-related errors.

**----End**

## Follow-up Procedure

- After the data switch is replaced, label it to facilitate subsequent operations.
- For details about how to configure the IP address, see *Installation Guide* of the appropriate version.

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# A Replacing an Optical Fiber, Optical Module, Electrical Module, or Network Cable Using a Fiber Extractor

If the operation space is limited, a fiber extractor can be used to replace LC fibers, pluggable optical modules, electrical modules, and unshielded network cables.

NOTE

The procedure of replacing an optical module is similar to that of replacing an electrical module. This section uses an optical module as an example.

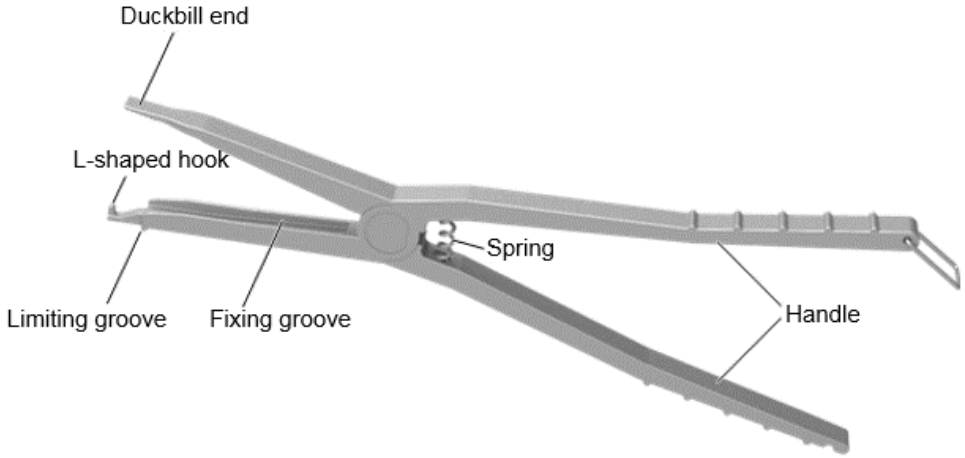
## A.1 Introduction to the Fiber Extractor

A fiber extractor helps you replace LC fibers, pluggable optical modules, and unshielded network cables.

### Structure

Figure A-1 shows the structure of the fiber extractor.

**Figure A-1** Fiber extractor





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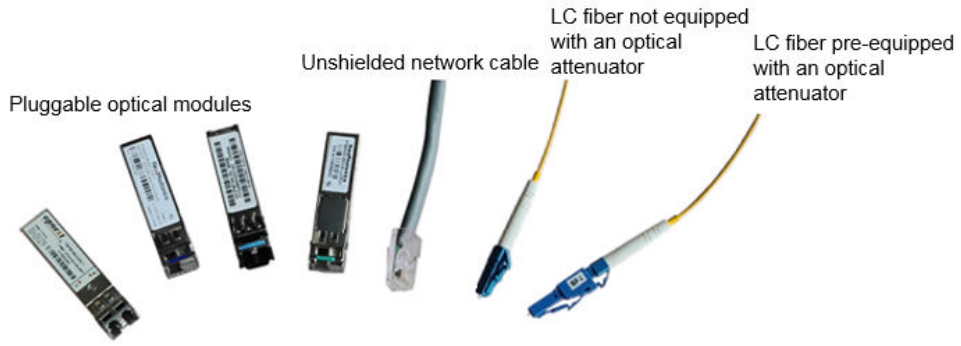
A fiber extractor consists of the following parts:

- Duckbill end: It helps the fiber extractor enter the board and clamp the optical module when the fiber extractor is used to remove an optical module from a board.
- L-shaped hook: It hooks the security pin of an optical module when the fiber extractor is used to remove an optical module. After the optical module is removed, it holds the optical module so that the optical module will not drop down.
- Limiting groove: It limits the insertion depth of the fiber extractor to prevent damage to the optical module when the fiber extractor is used to remove an optical module.
- Fixing groove: It is used to fix the connector of the optical fiber to prevent the optical fiber from swinging when the fiber extractor is used to remove an optical fiber.
- Spring: It provides the elastic force to enable the fiber extractor to automatically open.
- Handle: Users need to hold the handles when using the fiber extractor.

## Applicable Objects of the Fiber Extractor

The fiber extractor is used to replace LC optical fibers, pluggable optical modules, and unshielded network cables, as shown in **Figure A-2**.

**Figure A-2** Applicable objects of the fiber extractor




**NOTICE**

The fiber extractor cannot be used to replace shielded network cables.

# A.2 Replacing an Optical Fiber, Optical Module, Electrical Module, or Network Cable

## Tools, Instruments, and Materials

Fiber extractor, ESD gloves, and ESD bag

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### Precautions

- Replacing an optical fiber, network cable, optical module, or electrical module will interrupt services.
- Wear ESD gloves or an ESD wrist strap when using a fiber extractor to replace the optical fiber, network cable, optical module, or electrical module.
- Do not exert too much force when using the fiber extractor to prevent damage to the optical fiber, network cable, optical module, or electrical module.

## A.2.1 Replacing an Optical Fiber

### Replacing an Optical Fiber Pre-equipped with an Optical Attenuator

- Use a fiber extractor to remove the optical fiber pre-equipped with an optical attenuator.

  a. Acquire the clamping method of the fiber extractor.

  When using the fiber extractor to remove an LC fiber pre-equipped with an optical attenuator, lock the fiber connector with the fixing groove and clamp the clip on the fiber connector with the duckbill end, as shown in **Figure A-3**.

  **Figure A-3** Clamping method for removing the optical fiber pre-equipped with an optical attenuator

  b. Remove the LC fiber pre-equipped with an optical attenuator.

  Align the fiber extractor with the fiber connector. Clamp the fiber connector with proper force as shown in **Figure A-3**, and then pull the fiber outwards as shown in **Figure A-4**.

  **Figure A-4** Removing the optical fiber pre-equipped with an optical attenuator


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- Use a fiber extractor to install the optical fiber pre-equipped with an optical attenuator.

  a. Acquire the clamping method of the fiber extractor.

  **Figure A-5** shows the clamping method of the fiber extractor when the fiber extractor is used to install an LC fiber pre-equipped with an optical attenuator.

  **Figure A-5** Clamping method for installing the optical fiber pre-equipped with an optical attenuator

  b. Install the optical fiber pre-equipped with an optical attenuator.

  Clamp the fiber connector as shown in **Figure A-5**. Then insert the fiber connector into an optical port until the clip locks the fiber connector. (You can hear a click when the connector gets locked.)

## Replacing an Optical Fiber Not Equipped with an Optical Attenuator

- Use a fiber extractor to remove the optical fiber not equipped with an optical attenuator.

  a. Acquire the clamping method of the fiber extractor.

  **Figure A-6** shows the clamping method of the fiber extractor when the fiber extractor is used to remove an LC fiber not equipped with an optical attenuator.

  **Figure A-6** Clamping method for removing the optical fiber not equipped with an optical attenuator

  b. Remove the LC fiber not equipped with an optical attenuator.

  Align the fiber extractor with the fiber connector. Clamp the fiber connector with proper force as shown in **Figure A-6**, and then pull the fiber outwards as shown in **Figure A-7**.


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**Figure A-7** Removing the optical fiber not equipped with an optical attenuator



- Use a fiber extractor to install the optical fiber not equipped with an optical attenuator.
  a. Acquire the clamping method of the fiber extractor.

     **Figure A-8** shows the clamping method of the fiber extractor when the fiber extractor is used to install an LC fiber not equipped with an optical attenuator.

     **Figure A-8** Clamping method for installing the optical fiber not equipped with an optical attenuator

  b. Install the optical fiber not equipped with an optical attenuator.

     Clamp the fiber connector as shown in **Figure A-8**. Then insert the fiber connector into an optical port until the clip locks the fiber connector. (You can hear a click when the fiber connector gets locked.)

## A.2.2 Replacing a Network Cable

**NOTICE**

The fiber extractor cannot be used to replace shielded network cables.

- Use a fiber extractor to remove the unshielded network cable.
  a. Acquire the clamping method of the fiber extractor.

     **Figure A-9** shows the clamping method of the fiber extractor when the fiber extractor is used to remove the unshielded network cable.

     **Figure A-9** Clamping method for removing the unshielded network cable

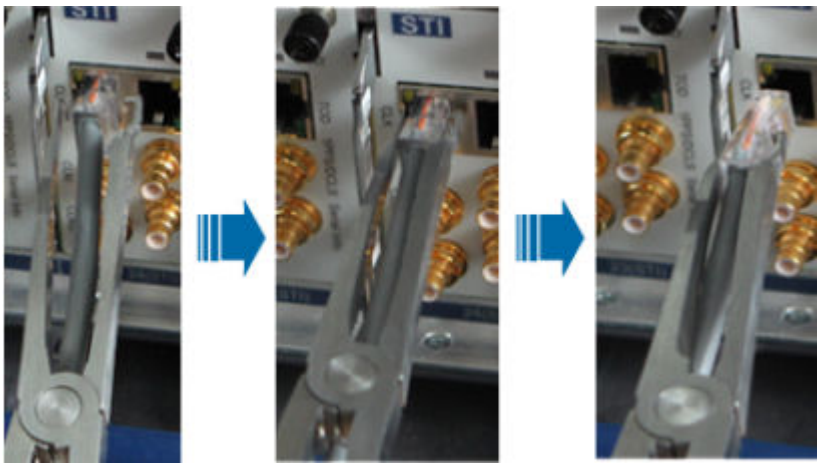
     


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b. Remove the unshielded network cable.

Align the fiber extractor with the RJ45 connector of the network cable. Clamp the connector with proper force as shown in **Figure A-9**, and then pull the cable outwards as shown in **Figure A-10**.

**Figure A-10** Removing the unshielded network cable



- Use a fiber extractor to install the unshielded network cable.

a. Acquire the clamping method of the fiber extractor.

**Figure A-11** shows the clamping method of the fiber extractor when the fiber extractor is used to install the unshielded network cable.

**Figure A-11** Clamping method for installing the unshielded network cable



b. Install the unshielded network cable.

Clamp the RJ45 connector as shown in **Figure A-11**. Then gently insert the connector into an Ethernet port until the clip locks the connector. (You can hear a click when the connector gets locked.)

## A.2.3 Replacing an Optical or Electrical Module

The procedure of replacing an optical module is similar to that of replacing an electrical module. This section uses an optical module as an example.


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**NOTICE**

Before removing or installing an optical or electrical module, ensure that no fiber jumpers are connected to the optical ports or no network cables are connected to the electrical ports on the module.

- Use a fiber extractor to remove the optical module.
  a. Acquire the clamping method of the fiber extractor.

     When using the fiber extractor to remove a pluggable optical module, apply proper force to clamp the security pin of the optical module with the L-shaped hook, as shown in **Figure A-12**.

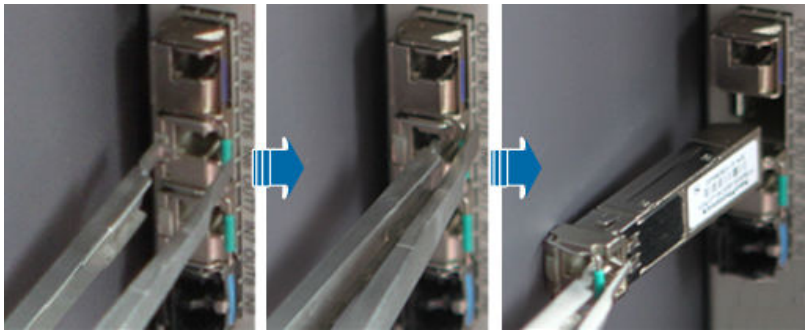
     **Figure A-12** Clamping method for removing the optical module

  b. Remove the optical module.

     Align the fiber extractor with the pluggable optical module. Clamp the security pin of the module with proper force as shown in **Figure A-12**, and then pull the module outwards as shown in **Figure A-13**.

     **Figure A-13** Removing the optical module

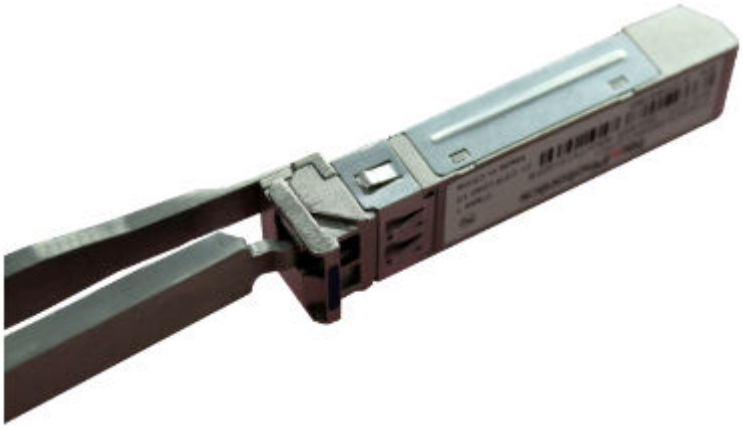
     

- Use a fiber extractor to install the optical module.
  a. Acquire the clamping method of the fiber extractor.

     **Figure A-14** shows the clamping method of the fiber extractor when the fiber extractor is used to install the optical module.

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**Figure A-14** Clamping method for installing the optical module



b. Install the optical module.

   Clamp the optical module as shown in **Figure A-14**. Then insert the optical module into an optical port until the module is fully inserted.

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# B FAQs

This chapter describes FAQs that may be involved in parts replacement.

## B.1 How Can I Identify Host Services Running on the System Subrack?

The following describes how to identify host services running on a system subrack and provides a reference for stopping services before you replace a system subrack.

**Step 1** Log in to DeviceManager of the storage system.

**Step 2** Determine disk domains involved in the system subrack.

1. In the navigation tree, click **System**.
2. In the left function pane, click the cabinet where the system subrack resides.
3. Click the system subrack.
4. In the function pane below, view and record the disk domain where each disk in the subrack resides.

**Step 3** Determine file systems and LUNs contained in those disk domains.

1. In the navigation tree, click **Provisioning**.
2. In the **Storage Configuration and Optimization** area, click **Storage Pool**.
3. Select all storage pools that belong to disk domains in **Step 2.4**. In the function pane below, view and record file systems and LUNs of which **Mapping** is **Mapped**.

**Step 4** Determine share paths to which these file systems map.

1. In the navigation tree, click **Provisioning**.
2. In the **File Storage Service** area, click **Share**.

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3. In the function pane, check whether all file systems in **Step 3.3** exist. View and record the share path. Stop the services running on the share path on the host.

**Step 5** Determine the hosts to which these LUNs map.

1. In the navigation tree, click **Provisioning**.
2. In the **Block Storage Service** area, click **Host**.
3. Select the hosts of which **Added to Host Group** is **Yes**. In the **Mapped LUNs** tab below, check whether the LUNs that have been recorded in **Step 3.3** exist.
   - If yes, there are services related to the system subrack running on this host. Stop the services running on the LUN of the host.
   - If no, go to **Step 3.3** until the services on all recorded LUNs are stopped on the host. Then replace the system subrack.

**----End**

# B.2 How Can I Clear Data of a To-Be-Replaced Controller?

This section describes how to clear data of a to-be-replaced controller. If you cannot log in to the controller, you cannot use commands to clear its data.

**Step 1** Log in to the controller you want to replace through a serial port or management network port, and go to the minisystem mode. You can use one of the following methods to go to the minisystem mode.

- If the following information is displayed on the CLI, you have already entered the minisystem mode.
  ```
  Storage: minisystem>
  ```
- Run the **change user_mode current_mode user_mode=developer** command to go to the developer view, and run the **minisystem** command to go to the minisystem mode.
  ```
  developer:/>minisystem
  Storage: minisystem>
  ```
- When "System is not ready, Please wait (Ctrl+c to exit or Input minisystem to minisystem mode)" is displayed on the CLI during the system power-on, run the **minisystem** command to go to the minisystem mode.
  ```
  Authorized users only. All activities may be monitored and reported.
  WARNING! The remote SSH server rejected X11 forwarding request.

  WARNING: You have accessed the system.
  You are required to have a personal authorisation from the system administrator before you use this computer. Unauthorised access to or misuse of this system is prohibited.

  System is not ready, Please wait(Ctrl+c to exit or Input minisystem to minisystem mode).\minisystem
  ```

**Step 2** If you cannot log in to the controller to be replaced using the serial port or management network port, log in to another controller in the controller enclosure and run the **sshtoremoteExt** *SlotId* command to log in to the controller to be replaced. In the preceding command, *SlotId* is the controller's slot ID and its value ranges from 0 to *N* - 1, where *N* indicates the maximum number of controllers that can be inserted in the current controller enclosure.

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After the command is executed successfully, enter the password as prompted. Then, you are logged in to the system.

```
Storage: minisystem> sshtoremoteExt 1
Ssh to controller(SlotId=1) with admin.....
Warning: Permanently added '127.127.127.11' (ECDSA) to the list of known hosts.

Authorized users only. All activities may be monitored and reported.
password:
```

**Step 3** Run the **showsysstatus** command and obtain value of **local node id** from the command output. Then, check the value of **Status** corresponding to the **local node id** value, which is **offline**.

If the value of **Status** is not **offline**, perform **Step 2** again to go to the specified controller to be replaced.

```
Storage: minisystem> showsysstatus
Show system status
admin:/diagnose>sys showcls
mode      : normal
status    : none
node cfg  : 2
node max  : 8
group cfg : 1
group max : 4
product   : 0
serial    : 210XXXXXXXXXXXXX002
WWN       : 0x210XXXXXXX9a020
local node id  : 1
normalNodeBitmap : 1
faultNodeBitmap  : 0
offlineNodeBitmap: 0
standbyNodeBitmap: 0
       id                role              status              group               engine
------------------- ------------------- ------------------- ------------------- --------------------
0                  master             normal             0                  0
1                  slave              offline            0                  0
```

**Step 4** In the minisystem mode, run the **sys.sh clearnode -c** command. Wait for the system's automatic data clearing. (Usually, it will take about 6 minutes, and the time in clearing the data does not exceed 30 minutes.)

If "Clear local node successful." is displayed in the command output, the data is cleared. In this case, you do not need to restart the controller and can directly perform subsequent replacement operations.

```
Storage: minisystem> sys.sh clearnode -c
DANGER: You are going to perform a danger command, this behavior will clear all data on this system.
1.This operation will cause service data loss and roll back cluster configurations. Have you read danger alert message carefully?(y/n)
y
2.This command brings irreversible results. The system cannot be restored to the original status after this command is executed. Are you sure you really want to perform the operation?(y/n)
y
DANGER: You are going to perform a danger command.
Suggestion: Before you perform this operation, make sure that the operation will not affect working of system.
Have you read danger alert message carefully?(y/n)
y
Enter "I have read and understand the consequences associated with performing this operation." to confirm running this command.
I have read and understand the consequences associated with performing this operation.
admin:/diagnose>sys clearnode -c
Start clear, local nid(Id: 1), it will takse about a few minutes, please wait .....
******************  Clear Node info:  ******************
Proc: XXXXXX, Result:       PASS
... ...
Proc: XXXXXX, Result:       PASS
Clear local node successful. If necessary, please continue to clear the other nodes in this engine.
```

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```
After that, you must restart the storage system to enable the command to take effect.
admin:/diagnose>exit
```

**----End**

# B.3 How Can I Deal with Free Disks After Replacing Disks and System Subracks?

This section describes how to deal with disks of which role is Free Disk after a disk and its system subrack are replaced due to concurrent failures of the disk and its system subrack in a disk domain.

## Querying Disk Information ("--" in Disk IDs)

Run the **show disk general** command. "--" is displayed in the ID list. A faulty disk in slot DAE010.0 is used as an example here.

**Step 1** Log in to the CLI of the storage system.

**Step 2** Run the **change user_mode current_mode user_mode=developer** command to go to the developer view.

**Step 3** Run the **show disk general |filterColumn include columnList=ID,Health \sStatus,Running\sStatus,Type,Role,Disk\sDomain\sID,Model,Serial \sNumber,Manufacture\sCapacity** command to record serial numbers of the slot (in which the disk is replaced) and "--" respectively.

```
developer:/>show disk general |filterColumn include columnList=ID,Health\sStatus,Running
\sStatus,Type,Role,Disk\sDomain\sID,Model,Serial\sNumber,Manufacture\sCapacity

  ID         Health Status  Running Status  Type  Role         Disk Domain ID  Model            Serial
Number           Manufacture Capacity
  ---------  -------------  --------------  ----  -----------  --------------  ---------------  --------------------
--------------------
  DAE010.0   Normal         Online          SSD   Free Disk    --              HSSD-D5222AM59A0
2102350SSK10G6001099  3.840TB
  ......
  DAE010.24  Normal         Online          SSD   Member Disk  0               HSSD-D5222AM59A0
HS000000000000428843     3.840TB
  --         Fault          Offline         SSD   Member Disk  0               HSSD-D5222AM59A0
2102351KCL9WJ8000051  3.840TB
```

**Step 4** Run the **poweroff disk disk_id** command to power off the disk.

```
developer:/>poweroff disk disk_id=DAE010.0
DANGER: You are about to power off the disk. This operation causes the disk to be unreadable and
unwritable for services. If the disk domain where the disk resides is in the reconstruction or degradation
state, this operation may cause reconstruction failure, service interruption, and data loss.
Suggestion: Before performing this operation, check the disk properties and status of the disk domain that
houses the disk to avoid reconstruction failure, service interruption and data loss. Back up data before
powering off.
Have you read danger alert message carefully?(y/n)y

Are you sure you really want to perform the operation?(y/n)y
Command executed successfully.
```

**Step 5** Run the **change disk sn** command to modify the serial number of the disk. In the command output, **src_sn** indicates the serial number of "--", and **tgt_sn** indicates the serial number of the slot in which the disk is replaced.

```
developer:/>change disk sn src_sn=2102351KCL9WJ8000051 tgt_sn=2102350SSK10G6001099
DANGER: You are about to set the SN of a logical disk.This operation may cause system abnormalities.
Suggestion: Note the following before and after the command execution:
```

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```
1. Ensure that the command is to be executed by the R&D personnel.
2. The command will set the SN of a logical disk. The system may report the disk is in.
3. After executing this command, check whether the service system is running correctly.
Have you read danger alert message carefully?(y/n)y

Are you sure you really want to perform the operation?(y/n)y
Command executed successfully.
```

**Step 6** Run the **poweron disk** command to power on the disk.

```
developer:/>poweron disk disk_id=DAE010.0
Command executed successfully
```

**Step 7** Run the **show disk general |filterColumn include columnList=ID,Health\sStatus,Running\sStatus,Type,Role,Disk\sDomain\sID,Model,Serial\sNumber,Manufacture\sCapacity** command to check whether "--" is cleared and whether the status of the disk (corresponding to the slot) is **Normal**, **Online**, and **Member Disk**.

```
developer:/>show disk general |filterColumn include columnList=ID,Health\sStatus,Running
\sStatus,Type,Role,Disk\sDomain\sID,Model,Serial\sNumber,Manufacture\sCapacity

  ID         Health Status  Running Status  Type  Role         Disk Domain ID  Model             Serial
Number         Manufacture Capacity
  ---------  -------------  --------------  ----  -----------  --------------  ----------------  --------------------
--------------------
  DAE010.0  Normal       Online         SSD  Member Disk 0             HSSD-D6223AL960N
2102350SSK10G6001099  3.840TB
  ......
  DAE010.24  Normal         Online         SSD   Member Disk  0             HSSD-D5222AM59A0
HS000000000000428843  3.840TB
```

**Step 8** (Optional) If the result in **Step 7** is abnormal, run the **restore disk general disk_id** command to restore member disks that are isolated by the system.

```
developer:/>restore disk general disk_id=DAE010.0
WARNING: You are about to restore an isolated member disk. This operation connects an identified risky
disk (such as a failed or faulty disk) to the system, which may cause data loss.
Suggestion: Before performing this operation, ensure that the isolated member disk needs to be recovered.
Have you read warning message carefully?(y/n)y

Are you sure you really want to perform the operation?(y/n)y
Command executed successfully.
```

**Step 9** (Optional) Run the **show disk general |filterColumn include columnList=ID,Health\sStatus,Running\sStatus,Type,Role,Disk\sDomain\sID,Model,Serial\sNumber,Manufacture\sCapacity** command to check whether the status of the disk (corresponding to the slot) is **Normal**, **Online**, and **Member Disk**. If no, contact Huawei technical support.

**----End**

## Querying Disk Information ("--" Not in Disk IDs)

Run the **show disk general** command. "--" is not displayed in the ID list. A faulty disk in slot DAE010.0 is used as an example here.

**Step 1** Log in to the CLI of the storage system.

**Step 2** Run the **change user_mode current_mode user_mode=developer** command to go to the developer view.

**Step 3** Run the **show disk general |filterColumn include columnList=ID,Health\sStatus,Running\sStatus,Type,Role,Disk\sDomain\sID,Model,Serial\sNumber,Manufacture\sCapacity** command to record the serial number of the slot in which the disk is replaced.

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```
developer:/>show disk general |filterColumn include columnList=ID,Health\sStatus,Running
\sStatus,Type,Role,Disk\sDomain\sID,Model,Serial\sNumber,Manufacture\sCapacity

  ID        Health Status  Running Status  Type  Role        Disk Domain ID  Model           Serial
Number          Manufacture Capacity
  --------- -------------  --------------  ----  ----------  --------------  ----------------  --------------------
--------------------
  DAE010.0  Normal         Online          SSD   Free Disk   --              HSSD-D5222AM59A0
2102350SSK10G6001099  3.840TB
  ......
  DAE010.24  Normal        Online          SSD   Member Disk  0              HSSD-D5222AM59A0
HS000000000000428843     3.840TB
```

**Step 4** Run the **poweroff disk disk_id** command to power off the disk.

```
developer:/>poweroff disk disk_id=DAE010.0
DANGER: You are about to power off the disk. This operation causes the disk to be unreadable and
unwritable for services. If the disk domain where the disk resides is in the reconstruction or degradation
state, this operation may cause reconstruction failure, service interruption, and data loss.
Suggestion: Before performing this operation, check the disk properties and status of the disk domain that
houses the disk to avoid reconstruction failure, service interruption and data loss. Back up data before
powering off.
Have you read danger alert message carefully?(y/n)y

Are you sure you really want to perform the operation?(y/n)y
Command executed successfully.
```

**Step 5** Run the **show disk general |filterColumn include columnList=ID,Health \sStatus,Running\sStatus,Type,Role,Disk\sDomain\sID,Model,Serial \sNumber,Manufacture\sCapacity** command to record the serial number of the slot in which the disk is replaced again.

```
developer:/>show disk general |filterColumn include columnList=ID,Health\sStatus,Running
\sStatus,Type,Role,Disk\sDomain\sID,Model,Serial\sNumber,Manufacture\sCapacity

  ID        Health Status  Running Status  Type  Role        Disk Domain ID  Model           Serial
Number          Manufacture Capacity
  --------- -------------  --------------  ----  ----------  --------------  ----------------  --------------------
--------------------
  DAE010.0  Fault          Offline         SSD   Member Disk  0              HSSD-D5222AM59A0
2102351KCL9WJ8000051  3.840TB
  ......
  DAE010.24  Normal        Online          SSD   Member Disk  0              HSSD-D5222AM59A0
HS000000000000428843     3.840TB
```

**Step 6** Run the **change disk sn** command to modify the serial number of the disk. In the command output, **src_sn** indicates the serial number recorded in **Step 5**, and **tgt_sn** indicates the serial number recorded in **Step 3**.

```
developer:/>change disk sn src_sn=2102351KCL9WJ8000051 tgt_sn=2102350SSK10G6001099
DANGER: You are about to set the SN of a logical disk.This operation may cause system abnormalities.
Suggestion: Note the following before and after the command execution:
1. Ensure that the command is to be executed by the R&D personnel.
2. The command will set the SN of a logical disk. The system may report the disk is in.
3. After executing this command, check whether the service system is running correctly.
Have you read danger alert message carefully?(y/n)y

Are you sure you really want to perform the operation?(y/n)y
Command executed successfully.
```

**Step 7** Run the **poweron disk** command to power on the disk.

```
developer:/>poweron disk disk_id=DAE010.0
Command executed successfully
```

**Step 8** Run the **show disk general |filterColumn include columnList=ID,Health \sStatus,Running\sStatus,Type,Role,Disk\sDomain\sID,Model,Serial \sNumber,Manufacture\sCapacity** command to check whether the status of the disk (corresponding to the slot) is **Normal**, **Online**, and **Member Disk**.

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```
developer:/>show disk general |filterColumn include columnList=ID,Health\sStatus,Running
\sStatus,Type,Role,Disk\sDomain\sID,Model,Serial\sNumber,Manufacture\sCapacity

  ID         Health Status  Running Status  Type  Role         Disk Domain ID  Model            Serial
Number          Manufacture Capacity
  ---------  -------------  --------------  ----  -----------  --------------  ---------------  --------------------
--------------------
  DAE010.0  Normal        Online          SSD   Member Disk  0               HSSD-D6223AL960N
2102350SSK10G6001099  3.840TB
  ......
  DAE010.24  Normal         Online          SSD   Member Disk   0               HSSD-D5222AM59A0
HS000000000000428843  3.840TB
```

**Step 9** (Optional) If the result in **Step 8** is abnormal, run the **restore disk general disk_id** command to restore member disks that are isolated by the system.

```
developer:/>restore disk general disk_id=DAE010.0
WARNING: You are about to restore an isolated member disk. This operation connects an identified risky
disk (such as a failed or faulty disk) to the system, which may cause data loss.
Suggestion: Before performing this operation, ensure that the isolated member disk needs to be recovered.
Have you read warning message carefully?(y/n)y

Are you sure you really want to perform the operation?(y/n)y
Command executed successfully.
```

**Step 10** (Optional) Run the **show disk general |filterColumn include columnList=ID,Health\sStatus,Running\sStatus,Type,Role,Disk\sDomain\sID,Model,Serial\sNumber,Manufacture\sCapacity** command to check whether the status of the disk (corresponding to the slot) is **Normal**, **Online**, and **Member Disk**. If no, contact Huawei technical support.

**----End**

# B.4 How Can I Deal with Disks of Which IDs Are "--" If I Continue to Replace Disks After Replacing System Subracks?

This section describes how to deal with a disk of which ID is "--" in scenarios where a system subrack is replaced first (components in it are removed and inserted into a new system subrack that is used as a spare part) and then a disk is replaced due to concurrent failures of the disk and its system subrack in a disk domain. The faulty disk in slot DAE010.0 is used as an example here.

**Step 1** Log in to the CLI of the storage system.

**Step 2** Run the **change user_mode current_mode user_mode=developer** command to go to the developer view.

**Step 3** Run the **show disk general |filterColumn include columnList=ID,Health\sStatus,Running\sStatus,Type,Role,Disk\sDomain\sID,Model,Serial\sNumber,Manufacture\sCapacity** command to record the serial number of "--".

```
developer:/>show disk general |filterColumn include columnList=ID,Health\sStatus,Running
\sStatus,Type,Role,Disk\sDomain\sID,Model,Serial\sNumber,Manufacture\sCapacity

  ID         Health Status  Running Status  Type  Role         Disk Domain ID  Model            Serial
Number          Manufacture Capacity
  ---------  -------------  --------------  ----  -----------  --------------  ---------------  --------------------
--------------------
  DAE010.1   Normal        Online          SSD   Member Disk  0               HSSD-D5222AM59A0
2102350SSK10G6001111  960.000GB
  ......
```

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```
 DAE010.24  Normal        Online        SSD   Member Disk  0             HSSD-D5222AM59A0
HS000000000000428843   960.000GB
 --         Fault         Offline       SSD   Member Disk  0             HSSD-D5222AM59A0
2102351KCL9WJ8000051 960.000GB
```

**Step 4** Replace the faulty disk.

**Step 5** After the new disk is powered on, run the **show disk general |filterColumn include columnList=ID,Health\sStatus,Running\sStatus,Type,Role,Disk\sDomain\sID,Model,Serial\sNumber,Manufacture\sCapacity** command to record the serial number of the slot in which the disk is replaced.

```
developer:/>show disk general |filterColumn include columnList=ID,Health\sStatus,Running
\sStatus,Type,Role,Disk\sDomain\sID,Model,Serial\sNumber,Manufacture\sCapacity

 ID         Health Status  Running Status  Type  Role        Disk Domain ID  Model            Serial
Number           Manufacture Capacity
 ---------  -------------  --------------  ----  ----------  --------------  ---------------  --------------------
--------------------
 DAE010.0  Normal        Online         SSD   Free  Disk  --            HSSD-D5222AM59A0
2102350SSK10G6001099  960.000GB
 DAE010.1   Normal        Online         SSD   Member Disk  0            HSSD-D5222AM59A0
2102350SSK10G6001111     960.000GB
 ......
 DAE010.24  Normal        Online         SSD   Member Disk  0            HSSD-D5222AM59A0
HS000000000000428843     960.000GB
 --         Fault         Offline        SSD   Member Disk  0            HSSD-D5222AM59A0
2102351KCL9WJ8000051     960.000GB
```

**Step 6** Run the **poweroff disk disk_id** command to power off the new disk.

```
developer:/>poweroff disk disk_id=DAE010.0
DANGER: You are about to power off the disk. This operation causes the disk to be unreadable and
unwritable for services. If the disk domain where the disk resides is in the reconstruction or degradation
state, this operation may cause reconstruction failure, service interruption, and data loss.
Suggestion: Before performing this operation, check the disk properties and status of the disk domain that
houses the disk to avoid reconstruction failure, service interruption and data loss. Back up data before
powering off.
Have you read danger alert message carefully?(y/n)y

Are you sure you really want to perform the operation?(y/n)y
Command executed successfully.
```

**Step 7** Run the **change disk sn** command to modify the serial number of the disk. In the command output, **src_sn** indicates the serial number recorded in **Step 3**, and **tgt_sn** indicates the serial number recorded in **Step 5**.

```
developer:/>change disk sn src_sn=2102351KCL9WJ8000051 tgt_sn=2102350SSK10G6001099
DANGER: You are about to set the SN of a logical disk.This operation may cause system abnormalities.
Suggestion: Note the following before and after the command execution:
1. Ensure that the command is to be executed by the R&D personnel.
2. The command will set the SN of a logical disk. The system may report the disk is in.
3. After executing this command, check whether the service system is running correctly.
Have you read danger alert message carefully?(y/n)y

Are you sure you really want to perform the operation?(y/n)y
Command executed successfully.
```

**Step 8** Run the **poweron disk** command to power on the new disk.

```
developer:/>poweron disk disk_id=DAE010.0
Command executed successfully
```

**Step 9** Run the **show disk general |filterColumn include columnList=ID,Health\sStatus,Running\sStatus,Type,Role,Disk\sDomain\sID,Model,Serial\sNumber,Manufacture\sCapacity** command to check whether "--" is cleared and whether the status of the disk (corresponding to the slot) is **Normal**, **Online**, and **Member Disk.**

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```
developer:/>show disk general |filterColumn include columnList=ID,Health\sStatus,Running
\sStatus,Type,Role,Disk\sDomain\sID,Model,Serial\sNumber,Manufacture\sCapacity

  ID         Health Status  Running Status  Type  Role         Disk Domain ID  Model            Serial
Number          Manufacture Capacity
  ---------  -------------  --------------  ----  -----------  --------------  ---------------  --------------------
--------------------
  DAE010.0  Normal        Online          SSD   Member Disk  0               HSSD-D6223AL960N
2102350SSK10G6001099  960.000GB
  DAE010.1   Normal         Online          SSD   Member Disk  0               HSSD-D5222AM59A0
2102350SSK10G6001111  960.000GB
  ......
  DAE010.24  Normal         Online          SSD   Member Disk  0               HSSD-D5222AM59A0
HS000000000000428843  960.000GB
```

**Step 10** (Optional) If the result in **Step 9** is abnormal, run the **restore disk general disk_id** command to restore member disks that are isolated by the system.

```
developer:/>restore disk general disk_id=DAE010.0
WARNING: You are about to restore an isolated member disk. This operation connects an identified risky
disk (such as a failed or faulty disk) to the system, which may cause data loss.
Suggestion: Before performing this operation, ensure that the isolated member disk needs to be recovered.
Have you read warning message carefully?(y/n)y

Are you sure you really want to perform the operation?(y/n)y
Command executed successfully.
```

**Step 11** (Optional) Run the **show disk general |filterColumn include columnList=ID,Health\sStatus,Running\sStatus,Type,Role,Disk\sDomain\sID,Model,Serial\sNumber,Manufacture\sCapacity** command to check whether the status of the disk (corresponding to the slot) is **Normal**, **Online**, and **Member Disk**. If no, contact Huawei technical support.

**----End**

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# C How to Obtain Help

If a tough or critical problem persists in routine maintenance or troubleshooting, contact Huawei for technical support.

## C.1 Preparations for Contacting Huawei

To better solve the problem, you need to collect troubleshooting information and make debugging preparations before contacting Huawei.

### C.1.1 Collecting Troubleshooting Information

You need to collect troubleshooting information before troubleshooting.

You need to collect the following information:

- Name and address of the customer
- Contact person and telephone number
- Time when the fault occurred
- Description of the fault phenomena
- Device type and software version
- Measures taken after the fault occurs and the related results
- Troubleshooting level and required solution deadline

### C.1.2 Making Debugging Preparations

When you contact Huawei for help, the technical support engineer of Huawei might assist you to do certain operations to collect information about the fault or rectify the fault directly.

Before contacting Huawei for help, you need to prepare the boards, port modules, screwdrivers, screws, cables for serial ports, network cables, and other required materials.

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# C.2 How to Use the Document

Huawei provides guide documents shipped with the device. The guide documents can be used to handle the common problems occurring in daily maintenance or troubleshooting.

To better solve the problems, use the documents before you contact Huawei for technical support.

# C.3 How to Obtain Help from Website

Huawei provides users with timely and efficient technical support through the regional offices, secondary technical support system, telephone technical support, remote technical support, and onsite technical support.

Contents of the Huawei technical support system are as follows:

- Huawei headquarters technical support department
- Regional office technical support center
- Customer service center
- Technical support website: **https://support.huawei.com/enterprise/**

You can query how to contact the regional offices at **https://support.huawei.com/enterprise/**.

# C.4 Ways to Contact Huawei

Huawei Technologies Co., Ltd. provides customers with comprehensive technical support and service. For any assistance, contact our local office or company headquarters.

Huawei Technologies Co., Ltd.

Address: Huawei Industrial Base Bantian, Longgang Shenzhen 518129 People's Republic of China

Website: **https://e.huawei.com/**

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# D Glossary

If you want to obtain information about glossaries, visit **https://support.huawei.com/enterprise/**. In the search field, enter a product model, and select a path from the paths that are automatically displayed to go to the document page of the product. Browse or download the *OceanStor V500R007 Glossary*.

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# E Acronyms and Abbreviations

| | |
|---|---|
| **A** | |
| **AC** | Alternating Current |
| **AD** | Active Directory |
| **AES** | Advanced Encryption Standard |
| **ANSI** | American National Standards Institute |
| **ASHRAE** | American Society of Heating, Refrigerating and Air-Conditioning Engineers |
| **ASP** | Application Service Provider |
| **B** | |
| **BBU** | Backup Battery Unit |
| **BMC** | Baseboard Management Controller |
| **C** | |
| **CLI** | Command Line Interface |
| **CSA** | Canadian Standards Association |
| **D** | |
| **DC** | Direct Current |
| **3DES** | Triple Data Encryption Standard |
| **DES** | Data Encryption Standard |
| **DLC** | Double Lucent Connector |
| **DNS** | Domain Name Server |
| **E** | |

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| | |
|---|---|
| **ESD** | Electrostatic Discharge |
| **ESDP** | Electronic Software Delivery Platform |
| **ESN** | Equipment Serial Number |
| **F** | |
| **FC** | Fibre Channel |
| **FC-AL** | Fibre Channel Arbitrated Loop |
| **FCoE** | Fibre Channel over Ethernet |
| **FRU** | Field Replaceable Unit |
| **FTP** | File Transfer Protocol |
| **G** | |
| **GE** | Gigabit Ethernet |
| **GTS** | Global Technical Service |
| **GSM** | Global System for Mobile Communications |
| **H** | |
| **HBA** | Host Bus Adapter |
| **HD** | High Density |
| **I** | |
| **IEC** | International Electrotechnical Commission |
| **IP** | Internet Protocol |
| **IPv4** | Internet Protocol version 4 |
| **IPv6** | Internet Protocol version 6 |
| **ISA** | Instrument Society of America |
| **iSCSI** | Internet Small Computer Systems Interface |
| **ISM** | Integrated Storage Manager |
| **ISO** | International Organization for Standardization |
| **L** | |
| **LDAP** | Lightweight Directory Access Protocol |
| **LUN** | Logical Unit Number |
| **M** | |
| **MD5** | Message Digest Algorithm 5 |

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| | |
|---|---|
| **MIB** | Management Information Base |
| **MPO** | Multiple-fiber Push-on/Pull-off |
| **MGMT** | Network Time Protocol |
| **N** | |
| **NDMP** | Network Data Management Protocol |
| **NEG** | Negative |
| **NIS** | Network Integration Service |
| **NTP** | Network Time Protocol |
| **O** | |
| **ODF** | Optical Distribution Frame |
| **OID** | Object Identifier |
| **OTDR** | Optical Time Domain Reflectometer |
| **P** | |
| **PDU** | Power Distribution Unit |
| **PO** | Purchase Order |
| **PPB** | Part Per Billion |
| **PSTN** | Public Switched Telephone Network |
| **R** | |
| **RoHS** | Restriction of the use of certain Hazardous Substances |
| **RH** | Relative Humidity |
| **RTN** | Return Current |
| **S** | |
| **SAN** | Storage Area Network |
| **SAS** | Serial Attached SCSI |
| **SFP** | Small Form-factor Pluggable |
| **SFTP** | Secure File Transfer Protocol |
| **SHA** | Secure Hash Algorithm |
| **SMTP** | Simple Mail Transfer Protocol |
| **SMS** | Short Messaging Service |
| **STP** | Shielded Twisted Pair |

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| | |
|---|---|
| **SSD** | Solid State Disk |
| **SSH** | Secure Shell |
| **T** | |
| **TC** | Technical Committee |
| **TLS** | Transport Layer Security |
| **U** | |
| **UDP** | User Datagram Protocol |
| **UL** | Underwriters Laboratory |
| **UTP** | Unshielded Twisted Pair |
| **USM** | User-based Security Model |
| **V** | |
| **VLAN** | Virtual Local Area Network |

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